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Abstracts

17th European Congress of Trauma and Emergency Surgery

April 24–26, 2016
Vienna, Austria

Congress President

Prof. Dr. Richard Kdolsky

Vienna, Austria

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Abstracts for the 17th European Congress of Trauma and Emergency Surgery
April, 24–26, 2016
Vienna, Austria

Organized by
European Society for Trauma & Emergency Surgery
Austrian Trauma Society

Contents

Dear Colleagues, dear Friends,

It is a great honor to welcome you to the 17th European Congress of Trauma and Emergency Surgery from April 24–26, 2016 in Vienna, Austria.

"Myths & Truths"

is the leading theme of this congress.

Colleagues of all national ESTES member societies in Europe as well as from other continents will share their knowledge and experience during these three days.

Instructional lecture courses, keynote sessions, mini-battles, case presentations and poster sessions will present the state of the art in emergency and trauma surgery. Distinguished speakers will share their personal experiences in invited lectures at noon.

Also, in order to intensify the cooperation and understanding within the ESTES community we have prepared several sessions involving more than one section, e.g.

- Mangled extremity in war, disaster and civil
- Interface between trauma and emergencies
- Cross border rescue
- Interface: prehospital & inhospital
- Nightmare session

… and many more

For the first time, an EBSQ trauma exam will be held in Vienna on April, 23rd, 2016.

Furthermore, a Modular Ultra Sound Estes Course (MUSEC) will be offered.

The 17th European congress of Trauma and Emergency Surgery (ECTES) is organised by the European Society for Trauma and Emergency Surgery (ESTES) in close cooperation with the Austrian Trauma Society.

Vienna – I am sure you know our keywords like Schönbrunn, Mozart, Apfelstrudel and the Opera. But, you may be certain, Vienna offers much more and will fascinate you with culture, lifestyle, hundreds of restaurants and lovely places to relax. "Vienna waits for you" – as Billy Joel sang in 1977…

I am glad to be a part of this congress and it will be my pleasure to welcome you to my hometown Vienna!

Prof. Dr. Richard Kdolsky
Congress president

Oral Presentations

SPORTS MEDICINE – UPPER EXTREMITY

O001

INJURIES OF THE UPPER EXTREMITY AND PREVENTION IN EQUINE RELATED SPORTS

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Introduction: Equine related sports are very popular. In this present study patients, hurt by horses or during riding, were analysed, to gain knowledge of injury patterns, mechanisms, circumstances and to identify groups of risk.
Material and methods: 667 patients injured by horses since 2006, were analysed regarding epidemiology, initial fettle, based on GCS and the injury severity, based on the ISS. All injuries were categorized, based on AO classifications, treatment duration and information about intensive care. To obtain information about the accident, patients were surveyed.
Results: Average age was 25 (std.dev. 6 years) and 90 % were female. 72 % were injured while riding, with an average ISS of 5.7. 33 % suffered from injuries of the upper extremity. 51 % were contusions, mostly affecting hands and shoulder, followed by fractures with 41 %. 48 % of the upperarm fractures occured distal and were simple without joint involvement. 70 % of the forearm fractures occured distal, involving the wrist in 30 % of the cases. 68 % of the patients wore a helmet. Accidents at courtyards had an average ISS of 10. The average ISS in riding halls was 5.7 and 6.6 on outside courts. 35 % of the accidents occured during jumping. While handling the horse 79 % wore no protection.
Conclusion: Riders jumping in riding halls bear the highest risk of getting injured. Handling and riding injuries are equally severe, although fewer persons wear protection when handling their horse. Therefore wearing protection at all time is mandatory. Riders need to be well trained in falling techniques in order to prevent injuries of the upper extremity.
References: Niedersächsisches Landesamt für Statistik (2006) Die beliebtesten Sportarten in Niedersachsen. Statistische Monatshefte Niedersachsen, 10/2006. Busch M, Schröter C, Schulte-Sutum A, Bielefeld D, Mommsen P, Krettek C, Zeckey C (2015) Injuries of the upper extremity and prevention in equine related sports.
Disclosure: No significant relationships.

O002

"THE LABRALBRIDGE" – A NOVEL TECHNIQUE FOR ARTHROSCOPIC ANATOMIC KNOTLESS BANKART REPAIR

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Introduction: Arthroscopic Bankart repair is widely considered a mainstay for surgical treatment of anterior shoulder instability. Traditionally, the displaced capsulolabral complex is restored and firmly attached to the glenoid by placing multiple suture anchors individually from a 5 to 3 o'clock position. Different techniques utilizing different anchors and materials have been described. However, these techniques result in a concentrated point load of the reduced labrum to the glenoid at each suture anchor. Thus, the remaining tissue between the suture anchors is not firmly attached to the bone.
Material and methods: The following technique, developed by the first author, describes a method using the 1.5 mm LabralTape (Arthrex) in combination with knotless suture anchors (3.5 mm PEEK PushLock anchors; Arthrex) for hybrid fixation of the labrum. The LabralTape is utilized to secure the torn labrum to the glenoid between each suture anchor creating some kind of seal, thus potentially providing a more even pressure distribution.
Results: This technique avoids the direct labral fixation in a horizontal way, thus potentially preventing from interruption of the blood supply to the labrum and capsule, since the supplying vessels in that area are running vertical to the rim of the glenoid.
Conclusion: Since tissue to bone healing is what one wants to achieve, one could expect that this is achieved to a superior grade, if the tissue was attached to the bone over a larger total length. Since no suture material is running perpendicular to the newly created capsulolabral bump, the suction cup effect of the labrum might be less compromised.
References:
Disclosure: Medical advisor for Arthrex

O003

CLINICAL OUTCOME AND PAIN RELIEF AFTER ARTHROSCOPIC REPAIR OF ISOLATED TYPE II SLAP LESIONS – THE PROGRESS OVER TIME

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Introduction: Recent literature provides only few prospective studies addressing the pain component when performing SLAP repairs, although it is well known that patients complain of pain especially after refixation of the biceps tendon anchor. The aim was to prospectively evaluate the chronological sequence of function and pain after arthroscopic isolated type II SLAP repair.
Material and methods: Outcome measures were assessed using the Individual Relative Constant Score (CS_{indiv}), the American Shoulder and Elbow Surgeons (ASES) Score, the Visual Analogue Scale (VAS), and the Short Form 36 (SF-36). Data was collected preoperatively as well as 3, 6, 12 and >24 months postoperatively.
Results: Twelve patients with an average age of 33.9 years (range 22.8 to 56.6 years) underwent arthroscopic repair of isolated type II SLAP lesions. The mean follow-up was 41.9 months (range 36.1 to 48.4 months). Six months after surgery, there was a statistically significant improvement of function according to the CS_{indiv} ($p = 0.004$), the ASES Score ($p = 0.006$), and the SF-36 subscale "physical functioning" ($p = 0.014$) and a statistically significant decrease of pain according to the VAS ($p = 0.007$) and the

SF-36 subscale "bodily pain" ($p = 0.022$) compared to preoperative levels.

Conclusion: Arthroscopic repair of isolated type II SLAP lesions utilizing suture anchors leads to a satisfactory functional outcome and return to pre-injury sports levels. Although this satisfying result is not reached immediately after surgery, there is a significant increase of function and decrease of pain at six months after surgery. Thus, 6 months after surgery seems to be an appropriate time point for returning to sports.

References: Andrews JR, Carson WG, Jr., McLeod WD. Glenoid labrum tears related to the long head of the biceps. *Am J Sports Med 1985;13-5:337-41.* Snyder SJ, Karzel RP, Del Pizzo W, Ferkel RD, Friedman MJ. SLAP lesions of the shoulder. *Arthroscopy 1990;6-4:274-9.* Snyder SJ, Banas MP, Karzel RP. An analysis of 140 injuries to the superior glenoid labrum. *J Shoulder Elbow Surg 1995;4-4:243-8.* Provencher MT, McCormick F, Dewing C, McIntire S, Solomon D. A prospective analysis of 179 type 2 superior labrum anterior and posterior repairs: outcomes and factors associated with success and failure. *Am J Sports Med 2013;41-4:880-6.*

Disclosure: No significant relationships.

O004

PLATE FIXATION VERSUS NONOPERATIVE TREATMENT FOR DISPLACED MIDSHAFT CLAVICULAR FRACTURES: A RANDOMIZED CONTROLLED TRIAL

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Introduction: It is still debated whether adult patients with a displaced clavicular fracture are better off with operative treatment. The aim of this study was to compare patient outcomes and complications of nonoperative treatment versus plate fixation for displaced, midshaft clavicular fractures.

Material and methods: In this multicenter, prospective, randomized controlled trial, patients between eighteen and sixty years old with a fully displaced, midshaft clavicular fracture were randomized between nonoperative treatment and open reduction with internal plate fixation. The outcomes; nonunion, secondary operations, complications, arm function, pain, and quality of life, were recorded at two and six weeks, three months and one year.

Results: One hundred and sixty patients were randomized. The incidence of nonunion was higher in the nonoperative group (2.4 % vs 21.4 %, $p < 0.0001$), as was the incidence of symptomatic nonunion (1.2 % vs 12.9 %, $p = 0.006$). After one year, the secondary operation rate due to complications was 10.7 % in the operative group (27.4 % including plate removal operations), and 17.1 % in the nonoperative group. Constant scores did not differ between groups. Shortly after injury, DASH-scores and physical quality of life scores were better in the operative group, but these differences ceased to exist beyond six weeks.

Conclusion: Plate fixation significantly reduces the incidence of (symptomatic) nonunion, but imposes a considerable risk of complications necessitating a reoperation. Plate fixation does not result in a long term better functional outcome. Nonoperative treatment is a good option in many patients, whereas early operative treatment can offer advantages for patients who have physical demands shortly postoperative or have high pain scores.

References: Stegeman, S.A., et al., Displaced midshaft fractures of the clavicle: non-operative treatment versus plate fixation (Sleutel-TRIAL). A multicentre randomised controlled trial. BMC Musculoskelet Disord, 2011. 12:196.

Disclosure: No significant relationships.

O005

MINIMAL INVASIVE PLATE OSTEOSYNTHESIS IN MIDSHAFT CLAVICULAR FRACTURES

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Introduction: From September 2009 on, we treated 121 patients with clavicular fractures. 85 cases were midshaft clavicular fractures. Operations were performed in a minimal invasive approach using a locking plate osteosynthesis. Indication for plate osteosynthesis were clavicular fractures B1 and higher (AO-Classification). This study evaluates the clinical and radiographic outcome of midshaft clavicular fractures treated by minimal invasive plate osteosynthesis.

Material and methods: Operation was performed with the patient lying on a radiolucent operating table in a supine position. For osteosynthesis we used an anatomical shaped (s-shaped) locking plate. Reposition of fracture was achieved with the plate attached to the lateral fragment. The locking plate was positioned lateral-superior and medial-anterior. All patients were reexamined after one year with radiographs and functional tests like DASH- and Constant-Score.

Results: All examined cases showed consolidation after one year except four of them who acquired revision because of cutting out of the lateral screws in the early postoperative time. In two cases we had to perform open reposition because adequate reposition could not be achieved with closed reposition. All patients had a good functional outcome in DASH- and Constant Score.

Conclusion: Minimal invasive plate osteosynthesis (MIPO) of midshaft clavicular fractures shows to be an effective treatment with a good functional as well as cosmetic outcome. An approximate reposition of fracture can already be achieved with the patient lying in supine position. This facilitates the final reposition via the minimal invasive approach. Cosmetic results were better than after conventional approach.

References:

Disclosure: No significant relationships.

O006

RAPID PROTOTYPING IN CLAVICLE FRACTURES REPAIR: CLINICAL STUDY

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Introduction: During open reduction and internal fixation of a mid-shaft clavicle fracture it is not uncommon that the osteosynthesis plate has to be bent perioperatively to fit the curvature of the clavicle. This takes time and is suboptimal in the sterile environment. To avoid the need for bending the plate we developed a method where the plate is preoperatively bent according the curvature of a plastic replica of the fractured clavicle, created using rapid prototyping. The aim of this study was to test this method. The hypothesis was that this will shorten plate handling time and improve surgical workflow.
Material and methods: A non-blinded, prospective cohort study was performed. The control group received conventional operative treatment using standard precontoured clavicle locking plates. The intervention group received operative treatment by means of described method. In both groups four specific proceedings were timed.
Results: Eight subjects were included in the control group and seven in the intervention group. A plate handling time reduction of 2:04 minutes (p:0.563) was measured, however this time reduction was associated with a lengthened average surgery time of 9:22 minutes (p:0.132). A good integration of the method in the workflow of the surgical team was accomplished.
Conclusion: It is possible to implement this rapid prototyping method in fracture treatment. No significant time reduction can be stated, however the concept of having a preoperatively contoured plate available is dearly appreciated by the surgeons. The method would be more valuable with more complex fracture types.
References: [1] Brown GA, Firoozbakhsh K, DeCoster TA, Reyna JR Jr, Moneim M., Rapid prototyping: the future of trauma surgery? J Bone Joint Surg Am. 2003;85-A Suppl 4:49-55. [2] Chung KJ, et al., Preshaping plates for minimally invasive fixation of calcaneal fractures using a realsize 3D-printed model as a preoperative and intraoperative tool. Foot Ankle Int. 2014 Nov;35(11):1231-6. [3] Jeong HS, Park KJ, Kil KM, Chong S, Eun HJ, Lee TS, Lee JP., Minimally invasive plate osteosynthesis using 3D printing for shaft fractures of clavicles: technical note. Arch Orthop Trauma Surg. 2014 Nov;134(11):1551-5.
Disclosure: No significant relationships.

EDUCATION AND TRAINING

O007

REMOTE SURGICAL EDUCATION - CAN SURGICAL SKILLS BE TAUGHT REMOTELY?

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Introduction: Virtual medics is a not for profit organisation that is a world leader in the field of innovating medical and surgical education. We have developed a programme - ROSE - remote online surgical education. As a preliminary study we taught a group of students how to tie and hand reef knot using either face to face or virtual teaching and then assessed them.
Material and methods: 20 first year medical students with no previous exposure/experience in suturing were enrolled. They were randomly allocated to one of two group - Pott or Blizzard. The virtual teaching was a high quality teaching video of the stitch. The Pott group received only face-to-face teaching for 15 minutes. The Blizzard group received only virtual teaching for 15 minutes. Both groups were then assessed immediately after, at one week, two weeks and one month. The Blizzard group had access to the online teaching materials for the follow up period while the Pott group did not.
Results: The Pott group (face-to-face) all 10 received 100 % on initial assessment. The Blizzard group (virtual) 2/10 got 50 % and 1/10 got 25 %, 7/10 got 100 % on initial assessment. Follow up assessment is still pending but we expect a high rate of retention for those with access to online videos compared to just face-to-face teaching.
Conclusion: Remote teaching of surgical skills leads to a good appreciation of technique with good assessment results. We expect those with access to online resources to have greater retention of skills compared to face-to-face teaching. More studies are needed.
References:
Disclosure: No significant relationships.

O008

SEVERITY, SOCIAL AND EDUCATIONAL PROFILE OF THE CAREGIVER AND THE CHILD VICTIM OF UNINTENTIONAL TRAUMA INJURIES. A STUDY CONDUCTED BY NGO CRIANçA SEGURA - SAFE KIDS BRAZIL

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Introduction: Safe Kids Brazil, the Pediatric Brazilian Society and PROTESTE joined to elaborate a questionnaire about non intentional pediatric injuries, to build a permanent pediatric trauma data bank to evaluate the social and educational profile of parents and children with non intentional injuries; its severity and risk factors and the use and knowledge about prevention.
Material and methods: 4 month observational prospective study conducted in five hospitals in the city of São Paulo.
Results: 916 cases in 4 months.
Parents: 83.5 % female, 33.4 years, median schooling (39.6 %) and income (<R$1244.00) in 57.3 %.
Children: 61.5 % male, 6.4 years; 36 % (1-4 years) and 31 % (5-9 years); 26.9 % (out of school); peripheric regions (58 %). Incidence was higher on Sundays. Child's home (42 %). Alone at the moment the accident (18.9 %). 59.8 % of parents believe that the accident could be prevented. Accident types: falls 48.4 %; bicycle/sport accidents 14.5 %; choking/foreign bodies-7.6 %; pedestrian/collisions-5.9 %. ***Severity:*** child age ($p < 0.001$), parent age ($p < 0.001$), falls ($p < 0.001$), sports ($p < 0.001$), foreign bodies ($p = 0.043$), pedestrian ($p = 0.006$), penetrating wounds ($p = 0.018$), poisoning ($p = 0.005$), male parent ($p < 0.001$), child schooling ($p < 0.001$), central housing ($p = 0.003$).
Conclusion: Most injured children live in peripheric regions, are male and have 6.4 years of age. A great part of the accidents occurred inside the child home, but also at school and on the street. Parents profile is female, aged from 26 to 44 years, medium schooling and low family wage. Severity criteria were observed in 8.5 % and was related to falls, sport and bicycle accidents, pedestrian, child schooling ($p = 0.015$) and male parent. Simple actions could have prevented such accidents.

References: DATASUS: Database of the Unified Health System. Brasilia, Ministry of Health, Department of SUS Informatics (http://w3.datasus.gov.br/datasus/datasus.php, accessed 20th June 2014) Peden M, Oyegbite K, Ozanne-Smith J, Hyder A, Branche C, Rahman, Rivara F, Bartolomeos K. World Health Organization: World report on child injury prevention. ISBN 978 92 4 156357 4 (NLM classifi cation: WA 250) © World Health Organization 2008. Grabowski J, Simmons J, Eichelberger M. Preventing Unintentional Pediatric Injuries at Evacuation Centers. *J Trauma* 2009;67: S94–S95. Chandran A, Hyder A, Peek-Asa C. The Global Burden of Unintentional Injuries and an Agenda for Progress. *Epidemiol Rev* 2010;32:110–120.
Disclosure: No significant relationships.

O009

CAN WE BALANCE SERVICE PROVISION AND EMERGENCY GENERAL SURGICAL TRAINING? A TRAINEES' PERSPECTIVE

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Introduction: Emergency general surgery is an upcoming sub-specialty and training the future specialists can be challenging. A balance between service provision and training is vital in achieving this goal. This study is aimed at evaluating emergency surgical training, from a trainee perspective.
Material and methods: This study was conducted in a busy teaching Hospital in London, UK. Trainees at different levels of training in general surgery were involved in the study. A semi-qualitative questionnaire was used anonymously to explore training issues in emergency general surgery. Data was collected and a thematic analysis was done to evaluate the results.
Results: Majority of trainees felt that dedicated surgical assessment unit and emergency 'Hot' clinic, led by a senior surgeon provided valuable training opportunities. Trainees also felt that a consultant led emergency surgical theatres, with a dedicated trainee in attendance, improved emergency general surgery training. A multidisciplinary team approach (with increased involvement of nurses and allied professionals) improved service provision, providing more training opportunities. With protected training sessions, trainees were more prepared to do on call commitments. Junior trainees found it difficult to balance service provision with training opportunities, especially during out-of-hours work.
Conclusion: Dedicated surgical training sessions with senior input and a departmental setup to deliver training improves emergency surgical training with high satisfaction rates. More research is needed to evaluate the specific surgical procedures and the training processes to improve surgical training.
References: V. J. Gokani, et al. Defining our destiny: trainee working group consensus statement on the future of emergency surgery training in the UK World. J Emerg Surg. 2015; 10: 26.
Disclosure: No significant relationships.

O010

THE NEED FOR A CONTINUOUS EDUCATIONAL PROGRAM: THE RESULTS AFTER 1 YEAR OF CLINICAL PATHWAY ON ACUTE CALCULUS CHOLECYSTITIS

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Introduction: Clinical Pathways (CP) have been demonstrated to improve patient management as well health resources.
Material and methods: the CP, based on EBM, has been developed according to the Institutional rules. The analysis has been done by measuring the result indicators provided before the release of the CP. When comparable, the results were matched to pre-CP observation. TG13 diagnostic criteria for ACC were used. A questionnaire to test the acceptance of the CP was administered to surgeons
Results: 134 patients with biliary disease were observed mean age 60.3 yo, 64.4 % males; 65 patients (48.5 %) reached the diagnosis of ACC: 48 (73.9 %) were admitted at the first presentation, 12 were discharged home but 5 (41.6 %) required a second ED into 72 h and 3 (25 %) were admitted. Among admitted patients (n 51), 29 (57 %) were operated on at the index admission while the remnant were discharged home: the 85 % because high risk patients and 15 % for refusal of the operation. Admission to Surgical Unit correlates with a higher rate of operation (58.5 %). Among surgical patients we observed 1 readmission for abdominal pain requiring observation (IVB Clavien complication). The comparison to pre-CP on ACC shows significant decrease in the rate of delayed operation for patient admitted to the Surgical Unit, a significant decrease in the rate of controversies among surgeons on preoperative biliary tree clearance and on surgical timing
Conclusion: Despite some positive results, in our hospital, there is a strong need for continuous sharing the ACC CP in order to improve all the aspects of the ACC patient treatment
References: Brooks, Kelli R., et al. "No need to wait: An analysis of the timing of cholecystectomy during admission for acute cholecystitis using the American College of Surgeons National Surgical Quality Improvement Program database."Journal of Trauma and Acute Care Surgery 74.1 (2013): 167-174.
Disclosure: No significant relationships.

O011

THE TRAINING AND PROVISION OF PERSONAL PROTECTIVE EQUIPMENT FOR VASCULAR TRAINEES IN THE UK: A RE-AUDIT INTO IONISING RADIATION (MEDICAL EXPOSURE) REGULATIONS

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Introduction: The benefits of radiologically-guided interventional procedures are beyond dispute, but not without risk. There has been particular concern regarding occupational dose to the lens of the eye. This study hopes to evaluate the provision of IR(ME)R schooling amongst vascular trainees, and the availability of personal protective equipment to those performing endovascular procedures.
Material and methods: Data was gathered via an email survey, disseminated to all Rouleaux-registered individuals. Have you received IR(ME)R training? Who provided IRMER training? Do you have concerns regarding your personal health or safety during IR or endovascular cases? In 2014, a follow-up questionnaire was performed, which also asked about the availability of personal protective equipment, including eyewear.
Results: Our research shows that 27.4 % of respondents in the primary survey had received IR(ME)R accreditation, compared with 36.4 % in the follow-up survey. "Serious" health and safety concerns were identified in 58.1 % during the primary survey, compared to a subsequent 79.5 %, which was significant ($p = 0.0024$). Lead coats were provided by the employer "often" for 72.7 % and thyroid shields for 54.5 %, whereas protective eyewear was available for only 5.7 %.
Conclusion: These results highlight a considerable lack of compliance with IR(ME)R training among vascular surgical trainees, which is a departure from existing legislation. Most alarming is the incomplete provision of PPE for vascular trainees, with the lack of protective eyewear being a major concern. With the NHS retirement age now advanced to 68 years and the full scope of national deficiencies in PPE provision unknown, more stringent laws should be enforced to protect staff and their eyesight.
References:
Disclosure: No significant relationships.

O012

QUALITY MANAGEMENT OF ACUTE CARE SURGERY TRAINING PROGRAM BASED ON PDCA CYCLE

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Introduction: We have no means to evaluate acute care surgery training program.
Material and methods: Walter A. Shewhart reported that PDCA cycle is very effective to manage the quality of industrial products. We have 25 young ACS residents and examined survival rate of trauma patients who received surgery. and we seek suitable clinical indicators of education to evaluate and keep our acute care surgery (ACS) training program based on PDCA cycle.
Results: In surgical trauma patients, total survival rate has no difference between operators. There was a significant difference between operators, instructors and residents in survival rate of surgical trauma patients whose probability of survival under 0.5. Instructors saved 100 % of trauma patients, on the other hand, residents saved 0 %(2012), 25.0 %(2013), 42.9 %(2014) of trauma patients.
Conclusion: We try to keep the survival rate of trauma patients (probability of survival under 0.5) over 0.5 based on PDCA cycle every year, because it is the important benchmark for residents and our educational concept. We should monitor specific clinical indicators to improve our educational performance.
References:
Disclosure: No significant relationships.

O013

MASS CATASTROPHE TRAINING IN A CIVIL UNIVERSITY HOSPITAL, 5 YEARS AFTER START OF POLYTRAUMA MANAGEMENT

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Introduction: Mass casualties can occur in a variety of ways, and military conflicts are considered to be a special type of them. We present disaster training model designed to confirm the emergency response of the civil hospital in case of explosion at military bases located across Latvia with a lot of casualties with severe blast injuries transferred to the hospital right from the scene.
Material and methods: Training for Mass Casualty in civil university hospital.
Results: The legend of training was unknown for Emergency Department personnel. Totally 28 patients were transferred to Riga East clinical university hospital Emergency department after explosion in two military bases in Latvia. During the five hours 21 patient were delivered with USA military helicopters, 5 patients with military ambulances of Latvian national armed forces and 2 patients with Latvian border guard helicopter. All patients were triaged in four groups: 14 patients had immediate (red) tag, 10 patients with observation (yellow) tags, 14 patients with wait (green) tags and 2 patients with non-survivable injury or black tags, 14 of all patients underwent immediately surgery.
Conclusion: The only way to check the emergency response, capacity and resources of civil hospital in case of mass casualty is well-organized and realistic training. Important role in disaster medicine have the collaboration between military and civilian medics, communication, pre-hospital care, time of transportation, hospital readiness and resources.
References:
Disclosure: No significant relationships.

O014

BEDSIDE EXTENDED FOCUSED ASSESSMENT SONOGRAPHY FOR TRAUMA TRAINING FOR UNDERGRADUATE MEDICAL STUDENTS

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Introduction: Extended Focused Assessment Sonography for Trauma (EFAST) is important in evaluating multiple trauma patients.

We aim to report our recent experience in bedside teaching of EFAST for undergraduate medical students.
Material and methods: 101 fifth and sixth year medical students of the UAE University were trained on performing EFAST on trauma patients in Al-Ain Hospital during the period of October 2014 to June 2015 by an Acute Care Surgeon having 25-year experience in point-of-care ultrasound. Bedside Training included a 4-hour round with groups of 3-6 students each. Training did not affect the patient management, was performed on stable patients in the ward during the tertiary survey as an extension of the clinical examination after patients were orally consented to be examined by the students according to our educational standards. Training included understanding the basic physics, konbology, and artifacts. Students were then trained to perform EFAST on patients to find intra-peritoneal, pleural, and pericardiac fluid; and pneumothorax in 8 points. An audit structured questionnaire was distributed to the students after finishing each session.
Results: The students could quickly grasp the principles of EFAST and perform it in an efficient organized way in about 5-10 minutes. Students highly enjoyed the training, thought it should be integrated in their curriculum, and were enthusiastic in including ultrasound in their future practice.
Conclusion: Undergraduate medical students can efficiently learn EFAST in the clinical setting which is advised to be included in their undergraduate curriculum.
References:
Disclosure: No significant relationships.

POLITICS

O015

WHY ARE WE SO UNCONSCIOUSLY INSECURE? THE THREATS PROJECT

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Introduction: Terrorism against the health sector represents a real danger. Despite this the perception of the risk and the actions to increase the resilience of the Health Critical Infrastructures are lacking. The THREATS Project has the main objective to analyze the risk, the risk perception and the level of protection of the EU hospitals. Additionally the project aims to develop a set of tools for conducting risk analysis, evaluating the level of protection and suggesting possible countermeasures.
Material and methods: The first 18 months of the project has been spent analyzing the literature and conducting surveys among the EU hospital personnel, trying to gain a snapshot the status quo. In the meanwhile Ospedale San Raffaele, selected as prototype of National Health Critical Infrastructure, has been studied to assess its risk and level of protection and to prepare for simulations of terrorist scenarios.
Results: Hospitals are very attractive targets for terrorists. Despite this protection is far from being adequate. Some of the protection methodologies implemented by other Critical Infrastructures can easily be transferred to the Health Sector. OSR processes can be modeled and the model used for simulate some terrorist scenarios. Some many scenarios have been selected according with a risk matrix produced by an internal group of experts. Suggestions how to increase the hospital protection will hopefully arrive from the use of a set of tool to risk assess and simulate terrorist scenarios.
Conclusion: THREATS Project suggests a practical way to risk assess and propose measures to increase the EU hospitals protection against terrorist attacks.
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Disclosure: No significant relationships.

O016

NARCOTIC OVERPRESCRIBING AND ABUSE

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Introduction: Narcotic prescriptions are legitimately written for patients with pain after trauma. In the State of Kentucky the uncontrolled use of narcotic prescriptions led to an alarming rise in narcotic use. Narcotics were also diverted for non-medical use.
Material and methods: To control inappropriate use of narcotics the State introduced a documentation system - KASPER where all narcotic prescriptions were put in a data base which included patient, doctor, medication and amount. Physicians were obligated to obtain a report (KASPER report) prior to prescribing narcotics for patients. Patterns of inappropriate narcotic prescription writing were detected by the State and monitored.
Results: The narcotic monitoring system led to a reluctance on the part of doctors treating injuries to prescribe narcotics outside the limits mandated by State Law. Short term (month or so) narcotics were allowed for injuries with drug contracts, narcotics screening tests and complete examinations required for longer term prescriptions. As narcotics became less available, patients resorted to illegal drugs including Heroin which was taken nasally or injected. With the fall in use of medically prescribed narcotics there has been in the State a concomitant rise in the use of Heroin and the appearance of HIV and Hepatitis in at-risk patients.
Conclusion: A well meaning attempt to control the use of prescription narcotics can have unanticipated late effects. The current plan is to seek, test, treat and retain at-risk individuals.
References:
Disclosure: No significant relationships.

O017

PLASTICS OPERATIVE WORKLOAD IN MAJOR TRAUMA CENTRES: A NATIONAL PROSPECTIVE SURVEY

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Introduction: The introduction of the major trauma network in England 2012 has resulted in a 63 % improvement in probability of survival from trauma [1]. However orthoplastic services at major trauma centers were found to be inadequate by the national peer review [2]. The impact of the major trauma network on plastic surgery operative workload has not been quantified. Such information is essential to help guide workforce provision and postgraduate training.
Material and methods: A prospective, multicentre study was performed. All major trauma patients, as defined by the Trauma and Audit Research Network (TARN), presenting to eleven major trauma centers (MTCs) in England over a set three-month period were identified. Operative data were recorded for those requiring plastic surgery.
Results: A total of 2,056 patients were admitted to 11 MTCs within the study period. 53 % required surgical intervention, of which 242 (22 %) required plastic a surgery procedure. A total of 902 plastic surgical procedures were performed. Wound debridement accounted for 27 % and free-flaps for 4 %. The most frequently operated on body regions were the upper (17 %) and lower (27 %) extremities. Consultant plastic surgeons performed 26 % of the procedures.
Conclusion: Major trauma is a significant yet often unrecognised aspect of the plastic surgeon's workload. This data demonstrates that the plastic surgery skill set is required in this patient population. To ensure on going quality care, enable workforce planning, and specialist training needs the important role which plastic surgery plays in the management of major trauma patients must be acknowledged. On behalf of POW-MTC collaboration.
References: 1. TARN Press Release. https://www.tarn.ac.uk/Content.aspx?c=3477. Accessed October 22nd, 2015. 2. National Peer Review Report: Major Trauma Networks 2013/2014. An overview of the findings from the 2013/2014 National Peer Review of Trauma Networks in England National Peer Review Programme; 2014.
Disclosure: No significant relationships.

O018

PEDIATRIC TRAUMA SCORES – SYSTEMATIC REVIEW AND NEEDS ASSESSMENT IN LOW-RESOURCE SETTINGS

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Introduction: Trauma is a leading cause of mortality and disability in children worldwide. The World Health Organization (WHO) reports that 95 % of all childhood injury deaths occur in Low-Middle Income Countries (LMIC) (1). Injury scores have been developed to facilitate trauma stratification, clinical decision-making and research. Trauma registries in LMIC depend on adapted trauma scores that do not rely on investigations that require unavailable material or human resources. We sought to review and assess the existing trauma scores used in pediatric patients. Our objective is to determine their validity, setting of use, outcome measures and criticisms. We believe there is a need for further development of a truly adapted trauma score for pediatric patients in low resource settings.
Material and methods: A systematic review of the literature was conducted to identify and compare existing injury scores used in pediatric patients. We constructed a peer-reviewed search strategy in collaboration with a senior hospital librarian. Multiple databases were searched, including sources of gray literature. Articles were selected based on predefined inclusion criteria by 2 reviewers and underwent qualitative analysis.
Results: All scores identified are suboptimal for use in Pediatric patients in low-resource settings based on various factors. An ideal score should be easy to calculate using point-of care data that is readily available in resource limited settings, and can be easily adapted to the specific physiologic variations of different age groups.
Conclusion: There appears, therefore, to exist a gap in our ability to simply and reliably estimate injury severity in pediatric patients and understand their probability of poor outcome
References: 1. Mock C, Abantanga F, Goosen J, Joshipura M, Juillard C. Strengthening care of injured children globally. Bulletin of the World Health Organization. 2009;87(5):382-9.
Disclosure: No significant relationships.

O019

A DECADE OF ADVANCED TRAUMA LIFE SUPPORT TRAINING IN THE UNITED ARAB EMIRATES: LESSONS LEARNED

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Introduction: ATLS is one of the most common courses taught worldwide. We aim to present the lessons we learned over a decade from teaching ATLS courses in the United Arab Emirates in educational, clinical, research, and international collaboration areas.
Material and methods: We have started teaching ATLS in 2004. More than 2000 doctors have been trained in three centres. More than 85 % were residents and specialists (1). They stand in the first line of managing multiple trauma patients.
Results: Teaching ATLS in UAE was helpful in increasing the knowledge of our doctors and develop and update their management plans. It was made obligatory for all doctors who manage trauma patients in most of our major hospitals to attend this course. Our ATLS training had a major impact on other countries in our region as it helped to start ATLS training in Egypt, Syria, India, and Iran. Furthermore, it helped us to perform high level educational research and its value using evidence based approach (2).
Conclusion: ATLS courses are very useful for doctors who treat multiple trauma patients although they may not alone improve trauma death rates and disability. Our experience supports its use and spread worldwide.
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Disclosure: No significant relationships.

O020

LOSS TO FOLLOW-UP IN ORTHOPAEDIC TRAUMA: FACT OR FICTION?

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Introduction: Patients lost to follow-up (LTFU) contribute to bias in randomized controlled trials (RCTs). In particular, trauma patients have been suggested to be at risk for LTFU. The purpose of this study is to evaluate the LTFU in orthopaedic RCTs. The goal is to identify risk factors for LTFU. We hypothesize that trials from the orthopaedic trauma literature have a higher LTFU than other orthopaedic subspecialties.
Material and methods: A systematic review of orthopaedic RCTs published from 2008 to 2011 was performed using a hand search of 32 scientific journals. This included all major orthopaedic journals and five leading medical journals. The percentage of LTFU, minimum follow-up time, orthopaedic subspecialty, publication date, journal name, country and region of publication, number of enrolled patients, mean patient age, follow-up strategy and funding type were recorded.
Results: A total of 559 RCTs with 129,370 enrolled subjects were included in the review. Mean loss to follow-up was 11 %. LTFU in orthopaedic trauma trials was not significantly higher than in other orthopaedic subspecialties. Studies performed in the United States had a significantly higher rate of LTFU. Studies with a remote follow-up strategy (telephone or mail) did not show significantly better follow-up rates. Minimum follow-up length of three or more years was significantly correlated with greater LTFU.
Conclusion: We reject our hypothesis that RCTs performed in orthopaedic trauma patients are associated with a higher LTFU than other orthopaedic subspecialties. Studies performed in the United States and those with more than three years of minimum follow-up seem to have significantly higher rates of LTFU.
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2. Zelle BA, Bhandari M, Sanchez AI, et al. Loss of follow-up in orthopaedic trauma: is 80 % follow-up still acceptable? J Orthop Trauma. 2013;27:177-181. 3. Somerson JS, Bhandari M, Vaughan CT, et al. Lack of diversity in orthopaedic trials conducted in the United States. J Bone Joint Surg Am. 2014;96:e56. 4. Pape H-C, Zelle B, Lohse R, et al. Evaluation and outcome of patients after polytrauma–can patients be recruited for long-term follow-up? Injury. 2006;37:1197-1203.
Disclosure: No significant relationships.

O021

THE AUSTRIAN HAND PREVENTION CAMPAIGN TO AVOID HAND INJURIES

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Introduction: Hand injuries are a frequent occurrence and account in occupational accidents up to 41 %. The main reasons for hand injuries are stress, inattention, tiredness and the use of maintained machinery. So in the last 10 years much affords had been carried out in Europe to reduce the numbers of hand injuries. In Austria the Austrian Workerś Compensation Board has started in 2014 a prevention campaign to reduce the numbers of hand injuries during work.
Material and methods: Hand injuries at work had been analysed in the years 2010 – 2011 in respect of nature of the injury, time of the injury, sick leave duration, and cause of injury. Furthermore the costs for each type of hand injury for the AUVA, companies and economy had been calculated.
Results: At all 632.693 injuries had been treated in hospitals of the Austrian Workerś Compensation Board. From these 174.855 involved hand injuries. Total sick leave of all hand injuries amount in total 474.859 days per year, which means 12.3 days per hand accident. In 26 % of the cases not powered handheld tools, in 25 % (building-) materials and in 10 % Machines had been the reason for a hand injury. Hand injuries entail annual costs of 309 Million € years. Average costs per hand accident was 7.778 € per patient.
Conclusion: Hand injuries are very common and account for up to 41 % of all injuries and they cause annual costs in Austria by 309 Million €. So the last decade much affords have been done to reduce hand injuries.
References:
Disclosure: No significant relationships.

O022

PREVENTION STRATEGIES AND COST ANALYSIS OF COMPLEX HAND INJURIES

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Introduction: Complex hand injuries are very rare and occur with an incidence of 5.74 in 100.00 inhabitants per year. Calculated costs in the United States are 38.000 $ per patient. Complex hand injuries often lead to a reduction of hand function and posttraumatic psychological restriction.
Material and methods: All complex hand injuries in the years 2010 - 2011, that had been treated in hospitals of the Austrian Workers' Compensation Board (AUVA) had been analyzed in respect of the time of the accident, age, profession and object causing the injury. A complex hand injury had been defined as an injury with a combination of at least two injuries: fracture/dislocation fracture, vascular injury, nerve injury, tendon injury, gunshot injury and amputation.
Results: From 174.855 treated hand injuries 814 (0.5 %) had been complex hand injuries. Fifth-eight % of all work-related complex hand injuries had been between 26 and 50 years of age. Forty-two % of the patients had been in the construction and metalworking industries. The calculated lifetime costs per complex hand injury were 110.846 € per case. A combination of three injuries showed in mean significant higher total lifetime costs and sick leave than a combination of two injuries.
Conclusion: Complex hand injuries are very rare with 0.5 % of all hand injuries. All hand injuries lead to 309 Million € costs per year for the AUVA. Therefore 0.5 % of all hand injuries causes 4,2 % of all work related lifetime costs.
References:
Disclosure: No significant relationships.

GERIATRICS

O023

OUTCOME OF POLYTRAUMATIZED GERIATRIC PATIENTS IN A LEVEL ONE TRAUMA CENTER

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Introduction: According to aging and more active older population an increase of geriatric trauma patients need to be expected. The geriatric polytrauma patient present with a poorer functional outcome and increased mortality compared to a younger patient collective. Thus the aim of this study was to evaluate factors influencing outcome and survival in a geriatric polytraumatized collective.
Material and methods: Included were all patients over the age of 64 with a minimum ISS $\geq$ 16 who were treated between January 1992 und January 2014. Descriptive analysis of all evaluated data was performed focusing on injury mechanism, GCS-, ISS-, AIS-, GOS-score and clinical outcome.
Results: 82 patients with a mean age of 74.8 $\pm$ 8.64 matched our inclusion criteria. Patient group consisted of 47 men (57.3 %) and 35 women (42.7 %) aged between 65 and 97 years. Injury pattern was in 37.8 % of the patients (N = 31) a fall, followed by traffic accidents as pedestrian (36.6 %; N = 30), other traffic accidents (19.6 %; N = 16) and other accidents (6 %; N = 5). The following parts were injured: Head (92.7 %; N = 76), thorax (78 %; N = 64), extremities (57.3 %; N = 47) and abdomen (28 %; N = 23).31 patients (38 %) died of disease with a mean ISS of 37.8 $\pm$ 15.5. 62 % of the patients (N = 51) a median GOS of 4 could be reached after treatment.
Conclusion: The geriatric polytrauma is a rare disease mostly with severe and combined injuries with a high morbidity and mortality. Although the field of geriatric trauma is still in its infancy, research on this topic is ongoing to develop advanced management strategies and improve outcome.
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Disclosure: No significant relationships.

O024

INJURY PATTERNS, CAUSES AND OUTCOMES OF GERIATRIC MULTITRAUMA PATIENTS – AN ANALYSES OF TRAUMA REGISTRIES

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Introduction: Due to the growth of the elderly population and their improved mobility the multitrauma patient tends to be nowadays more often an elder. The aim of this study is to compare demographics, injury patterns, causes and outcomes in these two groups of multitrauma patients.
Material and methods: Our study includes all Dutch multitrauma (ISS $\geq$ 16) patients between 2008-2012 extracted from the Dutch trauma registry (LTR) and was completed with data from the UMCG. We compared the younger (Group A: 18-59 years) and elder (Group B: $\geq$60 years) multitrauma patient. Main outcomes were: injury severity, trauma cause, injury patterns, ICU characteristics and mortality.
Results: This analysis included 11.297 multitrauma patients. The elderly represented 43.9 % of the multitrauma population. The younger group have a worse Glasgow coma scale (A: GCS = 3: 21.4 %, B: 14.4 %). Trauma cause in elderly was more likely to be a bicycle accident (A: 11.9 %; B: 27.1 %) or fall >3 meters (A: 11.7 %; B: 30.9 %). Serious head injury is more often seen in elderly (A: 43.4 %; B: 64.3 %) and associated with a lesser chance of recovering with low disability after sustaining traumatic brain injury (A: 72.4 %; B: 46.7 %). The elderly have a higher chance of developing multi organ failure (A: 30.9 %; B: 38.8 %) or sepsis (A: 24.8 %; B: 32.7 %) during ICU admission and have an overall doubled mortality risk (A: 10.6 %; B: 21.9 %).
Conclusion: Elderly are more often involved in multitrauma. Although injury severity does not differ between groups, they are at an increased risk of dying compared to their younger counterparts while sustaining less high energy accidents.
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Disclosure: No significant relationships.

O025

DOES THE FIRST HOSPITAL PROVIDING CARE DETERMINE THE OUTCOME OF GERIATRIC TRAUMA PATIENS?

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Introduction: In a constantly aging society, the higher degree of activity among the elderly also increases the risk of severe injuries. Due to presumably higher number of pre-existing conditions and reduced physiological reserves optimized and more intense diagnostics and therapy than with comparable injured younger patients may be required. The present study aims to determine whether geriatric patients benefit from immediate treatment in higher-level trauma centers.
Material and methods: Over a period of five years (2009 - 2013) datasets of 54 784 patients from the TraumaRegister DGU® were analysed. Included were patients >16 years with an ISS $\geq$9, who were admitted to an intensive care unit. We compared the outcome of patients < 65 vs. $\geq$ 65 years, with regard to the primary care level treated.
Results: During the observation period, the proportion of patients >65 years increased from 25.1 % to 31.2 %. The percentage

of older patients treated was higher in Level III (38.4 %) than in higher ranked trauma centers. Injury severity (ISS 17.7 Level III vs. 23.4 Level I) and the rate of severe head injuries (AIS-Head $\geq$3: 30.0 % in Level III vs. 60.7 % in Level I) increased accordingly. Independent of the supply stage, the observed mortality matches the expected according to RISCII (Level III 18.5 %vs. 17.5 %; Level I 30.7 %vs. 28.1 %).
Conclusion: The allocation of elderly patients to the different levels of care follows predominantly the entity and severity of injury. However, patients >65 years are mostly treated in local and regional centers compared to younger patients. Nevertheless, the standardized mortality ratio indicates a good quality of care in all health care levels.
References:
Disclosure: No significant relationships.

O026

GERIATRIC POLYTRAUMA PATIENTS WITH SEVERE PELVIC FRACTURES: COMPARISON WITH YOUNGER ADULT PATIENTS

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Introduction: The elderly patients complicated with polytrauma and severe pelvic fractures are presumed to present with extremely severe conditions [1-4]. The aims of this study are to describe the clinical features of these patients in comparison with younger adult patients.
Material and methods: This is a retrospective cohort study at a single institution. Patients with pelvic AIS score of 3 or more, and with at least 2 body lesions of AIS score of 3 or more were included. Fifteen patients older than 65 years (group G) and 13 of younger adults (group A) were identified. We compared the data of two groups and evaluated factors related to severity that is defined as receiving massive transfusion (MT) and/or death.
Results: Mean age was 75 $\pm$ 7/38 $\pm$ 11 (group G/A). Mean injury severity score was similar in two groups. Differences among two groups in systolic blood pressure, heart rate, shock index, Hb level, PT-INR, and base deficit were not significant. Two patients in group G and 1 in group A died. Over two third of group G demanded MT. The number of patients receiving MT was significantly greater in the group G. In group G, hypotension, anemia, coagulopathy, base deficit $>$ 2, extravasation on CT scan were predictors for severity. In group A, shock index >1 showed relationship with severity.
Conclusion: Two-thirds of geriatric polytrauma patients with pelvic fractures demanded MT, and it showed a significant difference from younger adult patients. The severity of these patients could be predicted by hypotension, abnormality in a blood test, and extravasation on CT scan.
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Disclosure: No significant relationships.

O027

DIABETES AND MORTALITY IN ORTHOGERIATRIC NECK OF FEMUR FRACTURE PATIENTS

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Introduction: Diabetes has become an increasingly common co-morbidity [1]. Orthogeriatric neck of femur fracture patients more commonly present with this co-morbidity. Diabetic patients are thought to pose a higher risk of post-operative mortality and morbidity due to diabetic control. There is little previous literature detailing this [2]. We aimed to assess relative mortality of all operated orthogeriatric diabetic neck of femur fracture patients for an orthopaedic centre in Birmingham, UK.
Material and methods: 6 months of operations identified 43 diabetic patients (mean age 78.9). Diabetic control ($HbA1_c$) and comorbidities (generally classified to cardiovascular, respiratory, vascular, neurology, gastrointestinal, renal, ophthalmological, and malignancies) were recorded. Mortality from the operation was recorded at 30 days, 3, 6 and 12 months.
Results: 30-day mortality rates were equal between non-diabetic and diabetic patients (9.3 %), but above national average (8.2 %) [3]. 1-year mortality was higher in the non-diabetic population (30.2 % vs. 11.6 %). No significant difference between number of co-morbidities or age of patients. There was a significant difference in renal function (creatinine) between diabetic and non-diabetic deaths (mean non-diabetic 88, diabetic 115, $p = 0.007$). Type of prosthesis had no impact. Diabetic patients who died had a significantly higher age than those who survived (mean alive 76.2, dead 91.3, $p = 0.027$). There was no significant difference in co-morbidities ($p = 0.656$), $HbA1_c$ ($p = 0.123$), or renal function ($p = 0.193$).
Conclusion: We evaluated the perception that diabetes increases post-operative mortality in an orthogeriatric neck of femur fracture population. Diabetic patients are not at higher risk of mortality, but elderly diabetics have a higher mortality risk than their younger diabetic counterparts.
References: 1. Diabetes: Facts and Stats May 2015, Diabetes UK, https://www.diabetes.org.uk/Documents/Position%20statements/Facts%20and%20stats%20June%202015.pdf. 2. 'Mortality after hip fracture in diabetic patients', 2011, Karakaya J, Exp Clin Endocrinol Diabetes, 119(7):P 414-8 3. UK National Hip Fracture Database 2013, Royal College of Physicians
Disclosure: No significant relationships.

O028

THE BURDEN OF INFECTION IN POLYTRAUMATIZED GERIATRIC TRAUMA PATIENTS

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Introduction: Infectious complications in multiply injured patients are common and have major impact on survival and patient outcomes.

Especially in the subgroup of geriatric trauma victims, little is known about the drivers for infectious complications. The objective of this study was to characterize the burden of all-cause infections in the severely injured elderly.
Material and methods: Cohort study of consecutive geriatric trauma patients. Setting: Level-I Trauma Center. Elderly trauma victims (>60 yrs) with ICU admission following resuscitation were included. Data collection (1-12/2013) included patient demographics, comorbidities, injury mechanisms/characteristics (AIS; ISS, NISS), baseline physiology, objective score systems (e.g. SAPS II) and therapeutic interventions (e.g. vasopressor use, antibiotic coverage, organ replacement therapy). Infections loci were documented according to CDC/ACS: Bacteremia, respiratory, urinary tract, vascular catheter line, wound and surgical site infection. Furthermore, microbiological findings and resistograms were evaluated. Statistical analyses were performed with SPSS statistics (IBM, Version 21).
Results: There were no significant differences in age (mean 75.6 ± 9.2 years; $p = 0.12$), sex, injury severity (mean ISS 23.9 ± 9.3; $p = 0.33$) and objective scores (SAPSII) between patients who developed infection (39 %, $n = 14$) and those who did not (61 %, 22). There were 9 respiratory, 5 bloodstream, 2 SSI, and 2 urinary tract infections. A high number of "exotic" or resistant pathogens, and polybacterial infections (mean 3.0 ± 1.7) were identified. ICU stay was prolonged in septic patients (5 vs. 17.5 days, $p = 0.001$). Regression analysis identified hemodynamic instability at ER admission as major independent risk factor for infectious complications (OR 20.8, 95 %-CI: 1.03-420.21).
Conclusion: Infectious complications occur frequently in elderly trauma patients and must be considered as major burden for patients and society.
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Disclosure: No significant relationships.

O029

BACTERIURIA AND URINARY TRACT INFECTION ASSOCIATED WITH PROXIMAL FEMUR FRACTURES

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Introduction: Increasing number of orthogeriatric patients with proximal femur fracture makes co-managed care more important for the outcome than fracture treatment alone. Source of major complications are infections associated with diminished immune response system in geriatric population. Infections are associated with in-hospital delirium. One of the most frequent is urinary tract infection. Do we have to wait and treat urinary tract infection or is it better to treat bacteriuria during the perioperative period?
Material and methods: 20 consecutive patients with proximal femur fracture were included in the study. At the time of admission urine was taken for analysis. If there were nitrates, leukocytes or bacteria in basic urine analysis, urine was sent for further microbiological analysis and immediate treatment with Sulfametoksazol/Trimetoprim was initiated. Incidence of further delirium and infections was analyzed.
Results: 10 % of patients had no bacteriuria at the time of the admission. With 25 % of patients there were nitrites and numerus bacteria present at the time of admission. Later microbiological testing was positive with these patients. In 65 % of patients there was either small amount of bacteria or leucocytes present in these microbiology was positive in 54 %. Post-operative delirium developed in 15 % of patients. Urosepsis developed in one patient without bacteriuria at the time of admission. No surgical site infections or symptomatic infection was present where antibiotic treatment was initiated.
Conclusion: Early treatment of bacteriuria and urinary tract infection may reduce the level of post-operative delirium. New guidelines for treatment of bacteriuria with orthogeriatric patients may be needed to reduce post-operative delirium and infection-rate.
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Disclosure: No significant relationships.

INNOVATIONS

O030

APOSEC TREATMENT IMPROVES OUTCOME FOLLOWING TRAUMA & HAEMORRHAGE IN RATS

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Introduction: Trauma & hemorrhage (TH) is a leading cause of death worldwide and is often associated with general inflammatory response, cell and organ injury. Recent preclinical studies have shown that APOSEC, a newly developed compound, exerts cytoprotective and/or immune modulating effects [1]. We evaluated the therapeutic potential of APOSEC in a TH model in rats.
Material and methods: Anesthetized rats were subjected to TH and a resuscitation protocol mimicking pre-hospital setting with a restrictive reperfusion phase (30 ml/kg/h, MAP maintained at 50-55 mmHg for 40 min) followed by an adequate reperfusion phase (75 ml/kg/h over 60 min, MAP to baseline). Animals received either APOSEC or vehicle intravenously 20 minutes after onset of

reperfusion. Blood samples were taken at baseline, end of resuscitation (EOR), 24 and 48 h after shock and survival was followed for 28 days.
Results: APOSEC treatment modulated the immune response reflected in IL-10 (decrease by 26 % at EOR) compared to vehicle group ($p < 0.01$). Changes in IL-6 and MCP-1 were not different between groups. APOSEC attenuated apoptosis reflected by plasma histone release up to 24 h ($p < 0.003$). Cell injury assessed by lactate dehydrogenase was 40 % decreased by APOSEC treatment 24 h post shock ($p < 0.05$). HTS-induced liver injury determined by plasma alanine aminotransferase was 1.6 and 1.5 fold higher in vehicle compared to APOSEC group at EOR and 24 h respectively. The 28-day mortality (25 %) was prevented by APOSEC treatment (100 % survival).
Conclusion: Here we show for the first time that APOSEC supplemented resuscitation ameliorates the TH-related inflammation, apoptosis, cell and organ injury, and prevents TH-induced long term mortality in rats.
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Disclosure: No significant relationships.

O031

THERAPEUTIC HYPOTHERMIA AND ITS EFFECT ON SYSTEMIC AND LOCAL INFLAMMATION - RESULTS FROM A PORCINE MODEL OF COMBINED TRAUMA

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Introduction: Background: Therapeutic hypothermia has been shown to have beneficial effects after trauma by altering the early post-traumatic inflammatory reaction. However, little is known about the impact of induced hypothermia in long term application and on local inflammatory response. We therefore investigated the kinetics of systemic and local inflammation in the late posttraumatic phase after induction of therapeutic hypothermia in an established porcine polytrauma model.
Material and methods: Male pigs (35 ± 5 kg) were subjected to multiple trauma consisting of extremity fracture, unilateral lung contusion, liver laceration and pressure-controlled hemorrhagic shock (MAP $<30 \pm 5$ mmHg for 90 min). After resuscitation, hypothermia (33 °C) was induced for a period of 12 h (HT-T group) with subsequent re-warming. Systemic and local (fracture hematoma) cytokine levels and alarmins were measured.
Results: Severe signs of shock occurred in both trauma groups. Systemic pro-inflammatory parameters also increased. Pro- and anti-inflammatory mediator concentrations were significantly increased in fracture hematoma compared to systemic values. In the HT-T group, significantly prolonged increased concentrations of both systemic and local pro-inflammatory mediators were observed compared to the normothermic group.
Conclusion: Therapeutic hypothermia seems to affect long-term inflammatory response after trauma and thus might reduce the well-described protective effects on organ and immune function observed in the early phase after induction of hypothermia. Moreover, the immunologic milieu of fracture hematoma seems to be affected. Future studies must investigate effects of therapeutic hypothermia in the multiple injured and should focus on depth and duration of application.
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Disclosure: No significant relationships.

O032

NON-INVASIVE, INDIVIDUAL-SPECIFIC, REAL-TIME TRENDING OF SIGNIFICANT HUMAN BLOOD LOSS

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Introduction: Humans are able to compensate for significant blood loss with little change in traditional vital signs, limiting early detection and intervention. We hypothesized that an algorithm, which monitors subtle compensatory changes in pulse oximetry waveforms (PPG) caused by acute changes in central volume, would accurately differentiate asymptomatic and symptomatic humans who are bled.
Material and methods: Men/women, 18-55 years, underwent stepwise (~333 ml aliquot) removal of 20 % blood volume (males 15 ml/kg; females 13 ml/kg). PPG waveforms were processed in real-time by a computational algorithm that calculated each subject's compensatory reserve index (CRI). CRI is a physiological measure of compensation related to changes in central volume. A CRI of "1" represents supine normovolemia and "0" represents the circulatory volume at which hemodynamic decompensation will occur; values between 1 and 0 are estimates of the proportion of reserve remaining (e.g. CRI = 0.5 implies 50 % compensatory reserve remaining before decompensation). Withdrawn blood was re-infused at the end of each experiment.
Results: 42 subjects (24 men/18 women). 3 had corrupted data. 32 subjects achieved maximum blood loss volume and were never symptomatic: baseline CRI = 0.9 +/-0.07 and lowest CRI = 0.6 +/-0.17 at maximum blood loss. 7 subjects became symptomatic and collapsed (SBP <80): baseline CRI = 0.9 +/-0.08 and lowest CRI = 0.15 +/-0.08 at maximum blood loss. The symptomatic subjects were rescued with saline/stored blood. Statistics (alpha 0.05 range) for CRI sampled in asymptomatic versus symptomatic subjects at baseline and maximum blood loss.
Conclusion: The Compensatory Reserve Index (CRI) exploits information present in the PPG waveform to trend individual-specific,

real-time compensatory changes associated with acute blood loss from normovolemia to collapse.
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Disclosure: SL Moulton: Ownership, equity, IP, Consultant, board of directors at Flashback Technologies, Inc. J Mulligan: Ownership,, equity, IP at Flashback Technologies, Inc. GZ Grudic: Ownership, equity, IP, board of directors at Flashback Technologies, Inc.

O033

THE IL-33/ST2 PATHWAY IN POLYTRAUMATIZED PATIENTS AND ITS POTENTIAL ROLE AS NOVEL BIOMARKER

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Introduction: Severe injuries are associated with profound systemic implications on the immune response, which increases susceptibility to acute respiratory distress syndrome and infections. The interleukin-1 receptor family member soluble ST2 (sST2) is secreted by lung tissue and binds to interleukin-33 (IL-33), thereby acting as a "decoy receptor" counteracting its pro-inflammatory potential. With this study we sought to investigate the potential involvement of this pathway in immunosuppression and pulmonary complications observed after severe injuries.
Material and methods: Therefore, we included polytraumatized patients admitted to our level I trauma center in this study. Blood withdrawals were performed at admission and 24 to 48 hours later and levels of IL-33 and sST2 were evaluated using ELISA technique.
Results: Our study population consists of 130 patients with a mean injury severity score (ISS) of 32. ARDS was present in 42 patients (32.1 %), while pulmonary infections manifested in 41 patients (31.3 %). ARDS was associated with higher IL-33 serum levels on both time points (1:5.65 vs. 8.15 pg/ml, $p < 0.01$; 2:3.38 vs. 5.42 $p < 0.01$). In patients suffering from pulmonary infections plasma levels of sST2 were significantly increased at the 2nd measurement (2083.38 vs. 4569.78, $p < 0.01$). Soluble ST2 was elevated at the follow-up measurement (2580.51 vs. 16015.21 pg/ml, $p < 0.05$) in non-surviving patients.
Conclusion: Our data suggest involvement of the IL-33/ST2-pathway in pulmonary complications commonly seen after severe injuries. Here presented results indicate the potential utility of IL-33 and sST2 as a biomarker for mortality and pulmonary complications in these patients.
References:
Disclosure: No significant relationships.

O034

SERUM TROPONIN IN PATIENTS WITH TRAUMATIC BRAIN INJURIES: IMPLICATIONS AND OUTCOMES

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Introduction: We aimed to study the implications of serum Troponin and outcomes in traumatic brain injury (TBI) patients in the absence of cardiac injury.
Material and methods: A retrospective analysis was conducted for TBI patients admitted between 2010-2014. Patients were divided into 2 groups according to the serum Troponin (Group 1; negative *vs* Group 2; positive).
Results: Over the study period, we identified 805 TBI patients with a median age of 28 years. MVCs were the main injury mechanism in group 2 (51.8 % vs 38 %, $p = 0.01$). Ejection from the car was frequent in group 2 ($p = 0.005$). Age and chest AIS were comparable in the 2 groups. Admission blood pressure and GCS were lesser in group 2 ($p = 0.001$). Mean ISS (28 ± 10 vs 21 ± 9), head AIS (4.04 ± 1.1 vs 3.7 ± 1.0) were greater in group 2($p = 0.001$). Skull fracture, brain edema and diffuse axonal injury were significantly more prevalent in group 2. Brain contusion, and subdural and extradural hematoma, subarachnoid and interventricular hemorrhage were comparable in the 2 groups. Pneumonia and sepsis rates were higher in group 2 ($p = 0.001$). Median ventilatory days, hospital and ICU length of stay were prolonged in group 2 ($p = 0.001$ for all). Overall mortality was 24 % with a higher proportion in group 2 (36 % vs 11 %, $p = 0.001$). On multivariate analysis, positive troponin was independent predictor for mortality (OR 2.71; 95 %CI 1.77-4.14) after adjusting for ISS, GCS and head AIS.
Conclusion: TBI patients with positive serum troponin has a 3-fold increase in mortality and prolonged hospitalization in the absence of traumatic cardiac injury. The implications of positive troponin among TBI need further assessment.
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Disclosure: No significant relationships.

O035

FEMALE PATIENTS HAVE LOWER EARLY SYSTEMIC IL-6 LEVELS AND LESS SIRS AND SEPSIS AFTER MAJOR TRAUMA

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Introduction: Gender influences the outcome and recovery of severely injured trauma patients (TP). Female sex is associated with lower rates of systemic inflammatory response syndrome (SIRS), sepsis and single and/or multiple organ failure (MOF). Here, we analyzed the influence of gender on systemic Interleukin (IL)-6 levels and outcome in TP.
Material and methods: Upon admittance to emergency department (ED), 343 TP with injury severity scores (ISS) $\geq$16 were included and grouped to male vs. female. Injury severity, vital signs, physiological parameters, length of intensive care unit (ICU) and in-hospital stay, SIRS, sepsis, pneumonia, acute respiratory distress syndrome (ARDS) single- and/or MOF and in-hospital mortality were analyzed.

Systemic IL-6 levels during the first 10 post-injury days were determined. P-value < 0.05 was considered statistically significant.
Results: Eighty-six female and 257 male TP comparable in age and ISS were included. Abbreviated Injury Scale (AIS) ≥ 3 of chest and abdominal body regions were significantly more prevalent in male *vs*. female TP (Chest: 51.02 % vs. 36.05 %, Abdomen: 19.84 % vs. 10.47 %, $p < 0.05$). Female TP had significantly lower SIRS and sepsis rates (SIRS: 53.31 % vs. 40.70 %, $p < 0.05$; Sepsis: 19.46 % vs. 6.98 %, $p < 0.05$). On post-injury days 1 and 2 IL-6 was significantly increased in male TP (d1: 363.9 ± 72.58 vs. 163.7 ± 25.98 pg/ml; d2: 194.3 ± 31.38 vs. 114.3 ± 17.81 pg/ml, $p < 0.05$). There were no further significant gender-based differences in IL-6 levels during the later post-injury course.
Conclusion: This study indicates that early increased systemic IL-6 levels may contribute to higher susceptibility for SIRS and sepsis development in male compared to female TP.
References:
Disclosure: No significant relationships.

O036

MIGHT EXOGENOUS LEPTIN SERVE AS THERAPEUTIC AGENT FOR THE TREATMENT OF SEPTIC TRAUMATIZED PATIENTS?

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Introduction: 10 % of multiple injured develop sepsis during their hospital stay, 18.2 % of them die. The objective of our study was to evaluate the impact of exogenous leptin, related to the presence of IL-6, in an animal model that simulated the processes referring to trauma patients.
Material and methods: Following the same scheme 69 wild type and 63 IL-6−/− mice were evaluated separately in three models each subdivided into three groups, the 2Hit-model (first hit: standardized closed fracture using a blunt guillotine, hemorrhage by orbital plexus puncturing; second hit: cecal ligitation and puncture two days later), the 1Hit-model (first hit and laparotomy) and the Sham-model (laparotomy). In the three models equivalent tests series were performed, applying recombinant leptin in two different doses to the Leptin2-groups (5 μg/g body weight) and the Leptin1-groups (2.5 μg/g body weight), respectively, whereas a saline solution was administered to the Vehicle-groups. All animals were exsanguinated by direct cardiac puncture six days after the test started.
Results: Our test series revealed a dose-dependent immunomodulatory effect of exogenous leptin by influencing the immunologic pathways corresponding to patient's medical condition. Whereas the lethality rate of sepsis significantly decreased in wild type mice (2HitVehicle-group: 36.4 %, 2HitLeptin1-group: 25 %, 2HitLeptin2-group: 0 %), it increased in IL-6 knockout mice (53.8 %, 83.4 %, 100 %).
Conclusion: Preventive leptin administration to trauma patients seems to have no negative impact on their medical condition. Leptin might be a therapeutic agent for the prevention or treatment of sepsis after initial trauma.
References:
Disclosure: No significant relationships.

O037

TARGETED ANTIOXIDANT TREATMENT WITH MITOCHONDRIAL ROS-SCAVENGERS SKQ1 AND MITOTEMPO IS DETRIMENTAL IN THE MOUSE ABDOMINAL SEPSIS

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Introduction: Altered mitochondrial function by excessive production of reactive oxygen species (ROS) has been considered an important factor in pathogenesis of organ failure in sepsis. We investigated effects of two specific mitochondria-targeted antioxidants (SkQ1: lipophilic; MitoTEMPO: hydrophilic) on outcome, inflammatory response and organ homeostasis in a mouse model of cecal ligation and puncture (CLP) sepsis.
Material and methods: 3-month old female CD-1 mice ($n = 90$) were subjected to moderate-severity CLP, and treated intraperitoneally with SkQ1 (5 nmol/kg), MitoTEMPO (50 nmol/kg) or saline at 1 h, 12 h, 24 h, 36 h, 48 h post-CLP. We assessed 28-day survival, and circulating parameters over 0 h-72 h post-CLP. Additional SkQ1/saline-treated CLP mice ($n = 24$) were sacrificed within the first 48 h for peritoneal lavage fluid (PLF) and spleen characterization.
Results: SkQ1 exacerbated mortality by 29 % (to 67 %; $p = 0.04$) and MitoTEMPO by 15 % (to 53 %; $p = 0.24$). CLP induced a systemic protracted cytokine release (IL-1β,-5,-6,-10,-12p70, CXCL-1, MCP-1, MIP-1α, IFN-γ, TNFα) and deregulation of organ function (urea, ALT, LDH, glucose), but antioxidant treatment failed to further modify them. Similar was true for CLP-induced lymphopenia/neutrophilia and NO-release in the blood. Dying CLP mice had approximately 100-fold more CFUs in the spleen than survivors, but this effect was not SkQ1-related. In PLF, macrophage (CD11b+/F4/80+) and granulocyte (Ly6G+) counts and intra-/extracellular ROS release were similar, irrespectively of the SkQ1 treatment.
Conclusion: This CLP study shows that even refined, target-tailored antioxidant treatment is detrimental rather than beneficial. It is suggestive that the negative role of mitochondrial ROS as the contributory factor to MODS is overestimated, at least in the young mice in acute CLP peritonitis.
References:
Disclosure: No significant relationships.

CHEST INJURIES

O038

POPULATION–BASED INVESTIGATION OF TRAUMATIC VASCULAR INJURIES IN ESTONIA: 353 CONSECUTIVE CASES ANALYSED

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Introduction: The epidemiology of vascular trauma in Estonia is unknown. Thus, the objective of this study was to evaluate the population-based incidence and outcomes of traumatic vascular injuries in Estonia.
Material and methods: After IRB, consecutive autopsy reports from the national department of forensic medicine and trauma admissions to trauma centers between 1/2009 and 12/2013 in Estonia were queried for vascular injuries per ICD-10. Data accrued included demographics, injury profile, hospital admission data, surgical interventions, and in-hospital outcomes. Primary outcome was population-based vascular injury related mortality. Secondary outcomes were surgical interventions, complications per Clavien-Dindo, hospital length of stay (HLOS), and in-hospital mortality for admitted cases.
Results: During the 5-year study period, 353 autopsies and hospital admissions met the inclusion criteria. The overall mean incidence of vascular injuries was 5.4/100,000 annually. 75.9 % of patients were male and 43.6 % suffered penetrating trauma. Most frequently injured vessel was the aorta at 43.6 %. A total of 27.8 % (n = 98) of patients survived to hospital admission and 79.6 % of these patients required surgical interventions. Primary repair, ligation and graft repair was deployed in 41.0 %, 33.3 % and 12.8 %, respectively. Mean HLOS was 15.9 ± 26.8 days. In-hospital mortality was 11.2 % in hospital admissions. Overall population-based mortality was 75.4 % (n = 266).
Conclusion: The population-based mean annual incidence of vascular injuries is 5.4/100,000 in Estonia. The overall vascular injury related mortality was 75.4 %. Current study contributes data to national and regional trauma epidemiology.
References:
Disclosure: No significant relationships.

O039

NEEDLE THORACOSTOMY FOR TENSION PNEUMOTHORAX: IS THERE A POINT?

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Introduction: Tension pneumothorax (TPT) is a significant cause of potentially-preventable mortality following trauma, occurring in up to 5.4 % of pre-hospital trauma patients [1]. Decompression by needle thoracostomy (DNT) remains widely-advocated, most notably by the most recent ATLS guidelines [2], but is associated with iatrogenic morbidity and a reported failure rate of 38 % [3]. Given its controversial role, we performed a systematic review of the published literature relevant to DNT for TPT.
Material and methods: We searched CENTRAL, MEDLINE, EMBASE, and trial registries from inception to August 2015, including any randomised controlled trials(RCTs) or observational studies in which the effectiveness and safety of DNT to treat tension or simple pneumothorax was evaluated or compared with any other intervention. Study selection, qualitative assessment using GRADE methodology [4] and extraction of relevant data were performed independently by the review authors, with disagreements resolved by an additional review author.
Results: 47 papers were included in this review - 7 case series, 32 cohort studies, 8 case reports and no RCTs. Overall, the quality of evidence was low, ranging from moderate to very low. The quoted effectiveness of DNT ranged from 40.7 % - 85.3 %. The existing literature describes several complications following DNT, including failure to reach the pleural space, catheter dislodgement, lumen obstruction, and tissue/vessel injury.
Conclusion: Evidence quality is poor with regard to the effectiveness of DNT. Continued use of this procedure as a first-line intervention may delay definitive treatment and lead to increased patient mortality. In the absence of prospective RCTs reporting adverse events, expert consensus is needed in this field.
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Disclosure: No significant relationships.

O040

RESUSCITATIVE ENDOVASCULAR OCCLUSION OF THE AORTA IMPROVED IN-HOSPITAL MORTALITY OF SURGICALLY TREATED TORSO TRAUMA PATIENTS WITH NON-COMPRESSIVE HEMORRHAGE IN COMPARISON OF AORTIC CROSS CLAMP –A INSTRUMENTAL VARIABLE ANALYSIS

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Introduction: Resuscitative endovascular occlusion of the aorta (REBOA) is expected as an alternative to aortic cross clamp (ACC) in recent years, however clinical evidences have largely lacked [1].
Material and methods: This study included adult torso trauma subjects who underwent surgery after undergoing REBOA or ACC from subjects of the Japan Trauma Databank. Subjects with out-of-hospital cardiac arrest or subjects who underwent both procedures were excluded. A linear regression analysis adjusted for the probability of death based on the Trauma Injury Severity Score estimated differences in mortality between subjects with REBOA or ACC. Two-stage least square (2SLS) of instrumental variable method [2] which enabled to adjust for even unmeasured confounders demonstrated sensitivity analysis for the result of adjusted linear regression analysis.
Results: Out of a total of 644 subjects eligible to the selection criteria, 279 (60.8 %) of 459 subjects underwent REBOA and 152 (82.2 %) of 185 subjects underwent ACC died during hospitalization, respectively. An adjusted linear regression analysis estimated that difference in in-hospital mortality was lower in subjects with REBOA

(−14.6 %, 95 %CI [−22.2, −6.9], P < 0.001). We found that number of REBOA use per institute per year was appropriate as an instrumental variable. Sensitivity analysis on 2SLS did not altered the result and estimated non-significantly lower in-hospital mortality in subjects with REBOA (−29.8 %, 95 %CI [−77.2, 17.5], P = 0.216).
Conclusion: This study showed that mortality of surgically treated torso trauma patients with non-compressive hemorrhage was better in association with REBOA than ACC and warranted further prospective studies to test efficacy and feasibility of REBOA in those trauma population.
References: 1.Biffl WL, Fox CJ, Moore EE. The role of REBOA in the control of exsanguinating torso hemorrhage. J Trauma Acute Care Surg 78:1054–1058;2015 2. Imbens G, Angrist J. Identification and estimation of local average treatment effects. Econometrica 62:467–476;1994
Disclosure: No significant relationships.

O041

EMERGENCY DEPARTMENT THORACOTOMY IN A WESTERN EUROPEAN LEVEL 1 TRAUMA CENTER

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Introduction: According to literature ED thoracotomy is an unquestionable procedure in the treatment of a selected group of patients with penetrating or blunt trauma. Currently EDT is indicated in penetrating (with or without vital signs or in case of witnessed arrest in ED) or rarely in blunt trauma, due to low survival and poor neurological outcomes. In case of arrest before arrival to ED, CPR has to be executed for less than 15 minutes in penetrating wounds and 10 minutes in blunt ones.
Material and methods: In our institution 17 EDT were performed from 2011 till 2015. Among them 14 (82 %) were due to blunt trauma, and 3 (18 %) to penetrating ones. Road traffic accidents appear to be the most common process involved (9 cases), followed by 5 falls. Regarding penetrating trauma, we approached 2 stab wounds and one gunshot. 5 EDT were executed in the ED, while 12 patients were addressed directly to the OR.
Results: Our results show that most of the patients were male (88 %) and a mean age of 42 years old. Five patients survived (29 %) without neurological outcomes; in particular 67 % of penetrating trauma and 21 % of blunt injuries.
Conclusion: From this observational study we can understand the critical value of EDT in penetrating trauma. Even if poorer survival rates are reported in blunt trauma, in our trauma center an aggressive approach is dedicated to them. We trust in the value of this lifesaving procedure if promptly performed, demonstrated by our encouraging results.
References: Pendulum knife on a stabbed heart. Di Saverio S, Kawamukai K, Biscardi A, Boaron M, Tugnoli G.Emerg Med J. 2014 Jan;31(1):29. Working Group, Ad Hoc Subcommittee on Outcomes, American College of Surgeons. Committee on Trauma. Practice management guidelines for emergency department thoracotomy. Working Group, Ad Hoc Subcommittee on Outcomes, American College of Surgeons-Committee on Trauma. J Am Coll Surg. 2001;193(3):303-9. Western Trauma Association critical decisions in trauma: resuscitative thoracotomy. Burlew CC, Moore EE, Moore FA, Coimbra R, McIntyre RC Jr, Davis JW, Sperry J, Biffl WL.J Trauma Acute Care Surg. 2012 Dec;73(6):1359-63.
Disclosure: No significant relationships.

O042

SURGICAL STABILIZATION OF COMBINED FLAIL CHEST INJURIES AND CLAVIULA FRACTURE – A CASE SERIES OF COSTOCLAVICULAR INJURIES

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Introduction: Flail chest injuries after blunt trauma to the thorax Show a high morbidity and mortality rate. Especially when serial rib fractures are combined with fractures of the ipsilateral clavicula a good functional outcome might be endangered . In this special case the framework of the shoulder and the chest lost its stability so muscular imbalance and a loss of function can occur.
Material and methods: 10 patients with flail chest injury combined with a fracture of the clavicula, were surgical stabilized by addressing the ribs and the Clavicula. Locked plate Fixation was performed through limited surgical approaches to the ribs under general anaesthesia. Patients were followed up after 2, 6 and 12 weeks.
Results: All patients showed severe chest wall deformity due to severely displaced fractures of the ribs and the clavicle. They were suffering from pain and restriction of respiratory movements. The chest wall could be restored to normal shape in all cases. The healing was uneventful in all cases. Plates showed a high patients convenience. Fractures of the clavicle and the second rib were managed through an innovative clavipectoral approach. Fractures involving the anterolateral chest wall were managed through an anterolateral Approach and those involving posterior ribs through an interspinoscapular Approach. Since the limited approaches were performed in muscle sparing technique there was no loss of muscular function of the shoulder.
Conclusion: Stabilizing of combined costoclavicular fractures restores the function and the shape of the chest wall and the shoulder. It reduces the morbidity after complex flail chest injuries. Conservative Treatment of severely displaced fractures may not be a sufficient strategy,
References:
Disclosure: The Senior author has Consultant Agreement with DePuySynthes. He also joins the Thoracic expert Group of the AO Foundation. The other authors are not involved in any COI

O043

SURGICAL TREATMENT OF ASSOCIATED THORACIC TRAUMA AND SHOULDER GIRDLE FRACTURES

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Introduction: Multiple chest injuries associated with fractures of the ribs and shoulder girdle are shockogenic traumas due to multifocal

pain impulses and development of severe respiratory failure. Treatment of each injury is very difficult due to multiple associated trauma. Because of respiratory complications fractures are treated conservatively with poor outcomes.
Material and methods: This study included 139 patients with multiple injuries treated in clinic of surgery from 2011 to 2015. Injuries of the rib cage were combined with traumatic brain injury, abdominal trauma, fractures of the long bones and pelvis. Multiple fractures of the shoulder girdle were observed in 49 patients and 12 had fractures of the thoracic vertebrae.
Results: Fractures of the clavicle, scapula with unilateral multiple ribs injuries formed a pronounced deformation of the chest wall, with retraction of the dome and the "floating shoulder". If significant displacement of fragments of ribs, sternum was present after unsuccessfully orthopedic treatment, open reduction and intramedullary fixation of ribs was performed, retrosternal hematoma was evacuated. All patients after surgery completed treatment successfully.
Conclusion: The stabilization of fractures of the shoulder girdle and the floating ribs valve in patients with favorable and uncertain outlook reduces the treatment time. Mininvasive osteosynthesis of bones of the shoulder girdle in victims with stable hemodynamics is made urgently. In patients with unstable hemodynamics it is necessary to use a pneumatic fixation of the rib and mini invasive osteosynthesis made after stabilization of vital functions in the delayed order before transferring a patient from mechanical ventilation to spontaneous respiration.
References:
Disclosure: No significant relationships.

O044

OUR EXPERIENCE OF THE USE OF INVASIVE AND NON-INVASIVE ANALGESIA IN THE MANAGEMENT OF THORACIC TRAUMA AT A MAJOR TRAUMA CENTRE

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Introduction: It has been established that rib fractures in the trauma patient are associated with significant morbidity due to hypoventilation, atelectasis and pneumonia [1, 2]. Early effective analgesia is a core component in reducing these risks. We aim to show how the use of different analgesia modalities may affect patient morbidity and pain scores.
Material and methods: A prospective audit was undertaken to evaluate the management of pain in patients with thoracic trauma admitted between May and September 2015 at Aintree University Hospital. Patients were split into 4 groups: those receiving oral analgesia only, those with patient controlled analgesia (PCA), those who received paravertebral blocks (PVB) and those who received epidural infusions (EDI) as part of their analgesia. The Rib Fracture Score, pain score on moving on admission, pain score on moving on discharge was well was morbidity were recorded.
Results: Out of 66 patients, 44 received oral analgesia only. of these 3 suffered from a pneumonia, the mean Rib Fracture Pain score was 6.24. There was a mean improvement of 2.24 between first recorded and discharge pain score. Patients given PCA, PVB or EDIs as part of their management numbered 30, 8 and 3 respectively with Rib Fracture Scores of 8.56, 8.5 and 6.5 respectively and a mean improvement of pain scores of 3.8, 2.9 and 6.4 respectively.
Conclusion: The use of PCA and invasive analgesia is associated with a lower incidence of morbidity and a greater improvement in perception of pain on discharge when compared to oral analgesia in the context of thoracic trauma.
References: 1. Easter, A. (2001) Management of patients with multiple rib fractures. *American Journal of Critical Care.* 10 (5) p. 320-327. 2. Carrier, F. M. et al (2009) Effect of epidural analgesia in patients with traumatic rib fractures: a systematic review and meta analysis of randomized controlled trials. *Canadian Journal of Anesthesia* (56) 3 p 230-242
Disclosure: No significant relationships.

O045

BLUNT TRAUMATIC DIAPHRAGMATIC INJURY: DATA ON 231 PATIENTS IDENTIFIED IN THE ISRAELI NATIONAL TRAUMA REGISTRY

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Introduction: Blunt diaphragmatic injury (DI) is an uncommon injury and one which is difficult to diagnose. The objective of this study was to identify features associated with this injury based on a large data registry.
Material and methods: This was a retrospective study based on records of 354,307 blunt trauma victims treated between 1998 and 2013 collected by the Israeli National Trauma Registry.
Results: Blunt DI was reported in 231 (0.065 %) patients. Motor vehicle accidents were responsible for 86.2 % of the injuries: 97 (42.0 %) were reported as drivers; 54 (23.4 %) were reported as passengers; 34 (14.7 %) were pedestrians hit by cars; and 10 (4.3 %) were injured while riding a motorbike. Males outnumbered females 2.5:1 ($p < 0.0001$). Blunt DI was more common in patients aged 15-29 years ($p < 0.0001$) and 30-44 years ($p < 0.0001$). ISS was 9-14 in 5.2 %, 16-24 in 16.9 %, 25-75 in 77.9 %. Urgent surgery was performed in 67.5 % of the patients and 79.7 % were operated within the first day. Overall mortality was 26.8 %. Though over 40 % of patients with blunt DI had associated rib, pelvic and/or extremity injuries, less than 1 % of patients with these injuries had associated diaphragmatic injury.
Conclusion: 1. Blunt DI is most common following motor vehicle accidents, in males, and in those aged 15-44 years of age. 2. Most patients suffering from DI have severe associated injuries resulting in high ISS and need for urgent surgery. 3. Inability to rule out missed cases in patients not diagnosed during their index hospitalization is a major limitation of this study.
References:
Disclosure: No significant relationships.

MALIGNANT COLONIC OBSTRUCTION

O046

EMERGENCY COLECTOMY FOR CANCER: AN ADVERSE FACTOR FOR APPROPRIATE ONCOLOGIC SURGERY?

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Introduction: For several variables, the principles of a radical resection for colon and intra-peritoneal rectum tumors are usually very difficult to guarantee in emergency [1,2]. The aim of this study was to establish if an oncologically adequate colectomy would be possible in such scenario.
Material and methods: We reviewed 576 patients undergone colic resection at our Unit for colon-rectum cancer during 2006-2015. 123 (21 %) were excluded from this study because of a M1 stage. The remaining 453 patients were divided in two groups: 91 (20 %) treated in emergency (Group A) for obstruction (75 %), perforation (18 %) or acute bleeding (7 %) and 362 (80 %) in election (Group B). We compared mean age, ASA score, neoplastic stage, number of lymph nodes removed, mean distal colonic margin, morbidity and mortality.
Results: Group A patients were meanly older (A:75.58 yr vs B:70.95 yr, $p < 0{,}0001$) with a main prevalence of III-IV ASA score (63.7 % vs 44,3 %, $p < 0{,}0001$). A higher prevalence of Stage III/IV tumors in group A (96.7 %) rather than group B (72.9 %) ($p < 0.0001$) was identified. Both groups had a mean adequate free margin distal to the tumor (A:11.3 cm vs B:10.0 cm, p = NS). The mean number of lymph nodes removed did not differ significantly (A: 32[± 20], B: 28[± 14], p = NS). Morbidity (A:7.6 % vs B:3.8 %, p = NS) and mortality (A:14.3 % vs B:1.1 %, $p < 0{,}0001$) were higher in Group A.
Conclusion: From this study, it emerges that emergency does not appear as an adverse factor for a radical resection of complicated colorectal tumors, even if it is related to a higher mortality.
References: 1. Chiarugi M, Galatioto C, Panicucci S, Scasa F, Zocco G, Seccia M. *Oncologic Colon cancer resection in emergency: are we doing enough?* Surg Oncol. 2007;16 Suppl 1:S73–7. 2. Teixeira F, Akaishi EH, Ushinohama AZ, Dutra TC, Netto SD, Utiyama EM, Bernini CO, Rasslan S. *Can we respect the principles of oncologic resection in an emergency surgery to treat colon cancer?* World J Emerg Surg. 2015 Feb 14;10:5.
Disclosure: No significant relationships.

O047

EMERGENCY SURGICAL MANAGEMENT AND OUTCOME OF COMPLICATED COLORECTAL CANCER IN THE ELDERLY AT A TERTIARY HOSPITAL

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Introduction: Colorectal cancer is the second cause of death by cancer in the population. Seventy-five percent of these tumors are found in patients over 65 years-old. Around 6 % to 30 % of the patients experience symptoms that require emergency solutions. Mortality and morbidity can be quite high among such patients.
Material and methods: Retrospective data of 69 patients admitted to the emergency department were analysed, including age, gender, operative treatment, tumor staging, and mortality. ASA score was used to assess patients comorbidities. Complications were addressed according to the Clavien-Dindo classification.
Results: Mean age was 73.9 years. The majority of patients were ASA scores II (57 %) and III (17 %). Sixty-two percent presented with obstruction, while perforation and bleeding were seen in 13 % and 12 % of the patients, respectively. Tumor resection was possible in 82 % of the cases, and primary anastomosis in half of them. Fourty-two percent were defined as stage II, and as both stages III e IV 23 % each. Some form of complication was present in 64 % of the patients and Clavien-Dindo grades I, II and IV were the most frequent. In-hospital mortality was 14 %. Regression analysis showed correlation between mortality and age, staging and Clavien grade ($p \leq 0.01$). Complications were correlated with days of ICU stay ($p \leq 0.05$).
Conclusion: Management of colorectal cancer in the elderly still poses a challenge to surgeons. When in life-threatening situations such as obstruction, perforation and bleeding are at hand, becomes more complex, and the outcome worse. Identifying patients at risk of surgical complications can influence perioperative decisions and improve morbidity and mortality.
References: Askari A, Malietzis G, Nachiappan S, et al. Defining characteristics of patients with colorectal cancer requiring emergency surgery, Int J Colorectal Dis (2015) 30:1329–1336 E. Hermans, P. M. van Schaik, H. A. Prins, M. F. Ernst, P. J. L. Dautzenberg, K. Bosscha. Outcome of Colonic Surgery in Elderly Patients with Colon Cancer, Journal of Oncology Volume 2010. Edward A. McGillicuddy; Kevin M. Schuster; Kimberly A. Davis; Walter E. Longo, Factors Predicting Morbidity and Mortality in Emergency Colorectal Procedures in Elderly Patients, Arch Surg. 2009;144(12):1157-1162 A. Gainant, Emergency management of acute colonic cancer obstruction, Journal of Visceral Surgery (2012) 149, e3—e10
Disclosure: No significant relationships.

O048

EMERGENCY SURGICAL ONCOLOGY IN A DEDICATED CANCER CENTRE

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Introduction: An oncologic emergency is defined as an acute, potentially life threatening condition in a cancer patient that has developed as a result of the malignant disease or its treatment. Understanding the importance of a competent surgical approach of the oncologic emergencies is pivotal for the success of the increasingly complexity of the cancer treatment. In 2013 total of 3558 interventions were performed in the Central Operating Theater by the Surgical Oncology Department of the Portuguese Institute of Oncology - Porto Regional Centre, (IPO-Porto), 10 % of those emergent. This study characterizes the reasons for emergency surgery and outcome of those surgical oncology patients.
Material and methods: A retrospective chart review for all emergency surgical procedures performed in the Operating Room of the IPO-Porto between January 1, 2013, and May 31, 2013.
Results: A total of 113 emergent operations were performed in 98 patients (mean age 62.1 years): 58.4 % admitted by the non programmed service (exclusive for patients enrolled in the Institute). 30.0 % of the patients were affected to the Medical Oncology

Department. Abdominal pathology was the main diagnosis (62.8 %), of those, 45.0 % with peritonitis, 18.3 % in occlusion and 12.7 % with incisional hernia. The most frequent reason for surgery was related to 30 day elective surgery complications (52.2 %). The 30-day mortality for these patients was 31.6 %.
Conclusion: Any cancer patient can experience emergencies that require surgical consultation and possible surgical treatment. The Surgical Oncology Department should be ready to deal with a great variety of surgical emergencies, inside and outside the department, in a multidisciplinary setting.
References:
Disclosure: No significant relationships.

O049

LARGE BOWEL OBSTRUCTION DUE TO COLORECTAL CANCER AND LYMPH NODE CLEARANCE: A RESULTS OF A STANDARDIZED RESECTIVE STRATEGY

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Introduction: Colorectal cancer is still the main cause of large bowel obstruction. Surgical resection is the gold standard treatment and the latest international guidelines recommend to sample at least 12 lymph nodes to obtain an adequate staging. This study is comparative evaluation of the lymph node clearance obtained in emergency and elective colorectal surgery.
Material and methods: Data were obtained from prospective registry of emergency and elective colorectal surgery. We selected patients with colorectal cancer underwent R0 resection, and the two groups were compared using the Propensity Score Method (PSM) using the following variables: gender, age, location and stage of disease. Results in terms of lymph node clearance were assessed using lymph -node harvest (NHL), number of positive lymph nodes in the surgical specimen and lymph -node ratio (LNR).
Results: From 2006 to 2012, 87 patients were operated for colorectal cancer in emergency with an R0 resection. The most frequent localization was the one left colic (52.8 %). The majority of patients (42.5 %) underwent surgery for Stage III tumor. The NHL average in this group was 18.6, with an average of positive lymph nodes of 3.1 and an average 0.18 LNR.
Conclusion: The preliminary analysis conducted so far has documented how the nodal clearance obtained in patients operated in emergency has to be considered adequate and higher than recommended in international guidelines (average 18 vs. 12 nodes). No difference were obtained between the two groups in terms of linfonode clearance
References: Patel et al Can J Surg 2014 Ansaloni et al World J Emerg Surg 2010 Gunderson et al J Clin Onco 2008
Disclosure: No significant relationships.

O050

A RARE CAUSE OF ACUTE ABDOMINAL PAIN: ACTINOMYCES INFECTION OF COLON MIMICKING A MALIGNANT NEOPLASM DUE TO INTRAUTERINE DEVICE

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Introduction: Actinomycosis is a rare, progressive granulomatous disease. Here, we present a patient who had a mass both in the proximal part and in the distal part of transverse colon due to Actinomyces infection.
Material and methods: A case report.
Results: A 47-years-old woman was admitted to emergency unit with abdominal pain and fever. She had a history of abdominal pain for four days. She has been with an intrauterin device for 10 years. On her physical examination, her abdomen was distended and tenderness was found on the right upper quadrant. Contrast-enhanced computed tomography revealed 17 mm wall thickness compatible with tumor growth in the 6 cm segment of the proximal part of the transverse colon and 2 nodular lesions which are compatible with implants and 5.5 × 4 cm another tumoral lesion in the distal part of transverse colon. Colonoscopy revealed edema and induration at the long segment of the colon wall. Biopsies taken at colonoscopy was resulted as actinomyces like microorganism colonies. Computerized tomography guided trucut biopsy was taken from the lesion which was thought implant and the microscopic examination of the specimen revealed a granulation tissue rich from polymorphic nuclear leukocyte. Upon receiving the pathology report, she treated with systemic intravenous penicillin for 14 days. Intrauterin device was removed. She saved from the nontherapeutic laparotomy. She was discharged on 24th day with complementary treatment using oral antibiotics. 3 months later after treatment, lesions totally disappeared in the control computed tomography.
Conclusion: This case demonstrates that development of inflammatory mass mimicking colon tumor secondary to actinomycosis is difficult to predict in the preoperative period and unnecessary surgery can be performed.
References: 1. Intrauterine device associated actinomycosis mimicking sigmoid colon tumor. Muezzinoglu B, Kus E. Indian J Pathol Microbiol. 2010 Oct-Dec;53(4):848-9. doi:10.4103/0377-4929.72083. 2. A rare case of ascending colon actinomycosis mimicking cancer. Filippou D, Psimitis I, Zizi D, Rizos S.BMC Gastroenterol. 2005 Jan 4;5:1. 3. Actinomycosis mimicking abdominal neoplasm. Case report. Waaddegaard P, Dziegiel M. Acta Chir Scand. 1988 Apr;154(4):315-6.
Disclosure: No significant relationships.

COMPLICATIONS: EXTREMITY FRACTURES

O051

RISK FACTORS FOR INFECTIOUS COMPLICATIONS AFTER OPEN FRACTURES. A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: Despite therapeutic advancements, amputation rate due to chronic osteitis or severe soft tissue infection is still estimated between 4-10 % [1-3]. Many factors are believed to influence the development of infectious complications, but a risk assessment model has not yet been established. The aim of this study is to provide an overview of described risk factors for infections after open fractures.

Material and methods: A comprehensive search in all literature of the last 30 years was performed to identify described risk. Studies were included when infectious complications were assessed in light of one or more risk factors. A meta-analysis was performed using review manager 5.3. Risk Ratios and 95 % confidence intervals were calculated.
Results: A total of 101 articles were included. Eight patient related, six trauma related, and six treatment related risk factors were described. Male gender (RR 1.55), lower extremity fractures (RR 2.04), Gustilo-anderson grade III fractures (RR 2.41), contaminated fractures (RR 7.85) and polytrauma patients (RR 2.05) were identified as significant risk factors for the development of infectious complications. None of the treatment related risk factors showed statistical significance, but selection bias was highly suspected.
Conclusion: A number of risk factors for the development of infections after open fractures have been identified in the available literature. However, scientific proof of most circumstances that are assumed risk factors for infection after an open fracture, is of poor quality. A structured model to register data prospectively is required to obtain better quality data. Our study can serve as the basis of the development of this model.
References: 1. Kanakaris N et al, The treatment of intramedullary osteomyelitis of the femur and tibia using the Reamer-Irrigator-Aspirator system and antibiotic cement rods., Bone Joint J. 2014 Jun;96-B(6):783-8 2. Huh J et al, Infectious complications and soft tissue injury contribute to late amputation after severe lower extremity trauma., J Trauma. 2011 Jul;71(1 Suppl):S47-51. 3. Bose D et al, Management of infected nonunion of the long bones by a multidisciplinary team, Bone Joint J. 2015 Jun;97-B(6):814-7
Disclosure: No significant relationships.

O052

TREATMENT OF SEGMENTAL BONE INFECTIONS-PROBLEMS, RESULTS

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Introduction: Bone infections require complex treatment, starting with debridement and sequestrectomy; consequently, a bone defect results, thus necessitating complex procedures in order to graft it. This paper analyses the type of surgery required to completely heal a bone infection in order to establish a potential algorithm for treating these complications
Material and methods: Authors retrospectively analyze 12 patients with segmental bone infections operated between 01.01.2009-01.06.2014, regarding: age, gender, type of fracture - closed or open, initial treatment, microbiology, type of injuries time from trauma to surgical treatment, number and type of surgical procedures, mean time of hospitalization, local and systemic complications
Results: Mean age was 34 yrs. (14- 62 yrs.); high energy trauma were responsible for the fracture in 10 cases.; there were 8 open fractures, 1 case type I, 1 type II, 1 type III A, 4 cases III B, 1 case IIIC, The medium value of the number of surgical procedures was 5, and bone defects were 6-20 cm long. External fixation was used in all the cases; Local procedures (peroneum pro tibia) was used in 4 cases and vascularised peroneal graft for the rest. In all the cases, the alternative in case of failure would have been amputation
Conclusion: Our experience with microvascular transfer of fibular grafts has shown that, with negligible donor site morbidity, massive autogenous bone grafting with an intact vascular pedicle can provide healing in bone infection, when debridement generated a defect larger than 6 cm.
References: Minami A, Kaneda K, Itoga H, Usui M: **Free vascularized fibular grafts.** *J Reconstr Microsurg* 1989, **5**(1):37-39
Disclosure: No significant relationships.

O053

RIA BONE GRAFT HARVESTING FOR THE TREATMENT OF NONUNION AND DEFECT FRACTURES: PRELIMINARY RESULTS OF A SINGLE CENTRE EXPERIENCE

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Introduction: The management of fracture nonunion poses a significant clinical challenge for musculoskeletal trauma surgeons and has an important socio-economic impact. The incidence of nonunion varies among different studies. Recent large retrospective series showed nonunion rates higher than 10 % in lower extremity fractures. This study evaluated our experience in treating patients with nonunions or defect fractures using the RIA (Reamer/Irrigator/Aspirator) technique for bone graft harvesting.
Material and methods: We retrospectively evaluated patients with nonunions or defect fractures, who were treated with bone graft harvested using the RIA technique between June 2008 and March 2015. Our primary outcome was clinical and radiographical bone healing.
Results: We included 75 patients who underwent a RIA procedure for bone graft harvesting. Indications for the RIA procedure were defect fractures (12 %), and septic or aseptic nonunions (17 %, respectively 71 %). In total 57.3 % of the patients were classified as having a clinical and radiographical union after treatment with bone graft harvested with the RIA technique.
Conclusion: In recent years, the RIA technique has emerged as an alternative in harvesting autologous bone graft. Several studies previously published positive results with high rates of union after the use of this graft material. The preliminary results of our study show less promising results in a large patient cohort, with healing rates up to 57 %. Although we believe that this technique has its place in the treatment algorithm of these complex lesions, future randomised trials are necessary to evaluate the specific indications for its use.
Disclosure: The department of Trauma Surgery of the University Hospitals Leuven receives an unrestricted research grant from DepuySynthes and is a training centre for DepuySynthes.

O054

IS IT POSSIBLE TO PREDICT WHICH FEMORAL FRACTURES WILL NEED DYNAMISATION DURING THE TREATMENT USING INTERNAL FIXATION?

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Introduction: Axial dynamization is recognized as method which encourages bone union. Because of that many doctors routinely remove one screw from interlocking nail, two months after primary operation to provide axial dynamization. Dynamization is happened in about 20-25 %, according to the literature.
Material and methods: We analyzed series of 849 patients with 871 fractures treated by the use of extramedullary nail, one selfdynamizable internal fixator for proximal, diaphyseal and distal femur fractures treatment.
Results: The average operative time was 44 minutes (23-119), average fluoroscopy time was 12 seconds (6-92) while average blood loss of 90 milliliters (60 to 250 milliliters) when minimally invasive technique used. None of the patients developed complications during the intraoperative period. Healing time was 3.9 months (3-9). Healing was achieved in 99.1 %. Superficial infection developed after 7 fixations (0.9 %) while deep infection developed in 8 patients (1.0 %). The screw breaking occurred 6-18 weeks after 19 fixations (2.6 %). Cut out phenomenon happened in 24 cases. Spontaneous axial dynamization was observed in seventy-one patient (23.8 %), 5 millimeters on average (2 to 12 millimeters).
Conclusion: Extramedullary nail, as a selfdynamisable internal fixator, is one effective method and device for the treatment of femoral fractures but at the same time can be regarded as one suitable tool to define the need for axial dynamisation.
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Disclosure: Author is inventor of internal and external devices and has licence contract with the producer.

O055

HIGH PERCENTAGE OF COMPLICATIONS FOLLOWING DYNAMIC LOCKING PLATE FIXATION WITH THE TARGON® FN FOR INTRACAPSULAR PROXIMAL FEMORAL FRACTURES: AN ANALYSIS OF RISK FACTORS

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Introduction: The primary aim of this study was to evaluate the number of complications and re-operations following dynamic locking plate fixation of intracapsular proximal femoral fractures (AO 31 B1-3). The secondary aim was to identify risk factors for these complications.
Material and methods: Single-centre retrospective case series of 55 consecutive patients with proximal femoral fractures (AO 31 B1-3), treated with the Targon® FN (B. Braun Melsungen AG) between 2010 and 2014. Setting: Level 1 trauma center. Demographic data and data on postoperative complications and reoperations were collected. Fractures were classified according to the AO and Garden classification and postoperative x-rays were reviewed. Statistical analysis was performed to reveal factors influencing patient outcome.
Results: During a median follow-up of 12 months, 20 complications were encountered in 55 patients (36 %). Complications were: tractus irritation (55 %), avascular necrosis of the femoral head (15 %), screw perforation into the joint (10 %), secondary loss of reduction (10 %), implant failure (5 %), infection (5 %). Twenty-seven re-operations were performed in 20 patients. Out of these 20 patients implants had to be removed in eleven cases due to tractus irritation. A secondary joint replacement was required in four patients after an average of three months. Patients age, type of reduction (open versus closed), number of telescoping screws and postoperative caput-collum-diaphyseal (CCD) angle were significantly different between patients with and without a second operation.
Conclusion: The use of Targon® FN for intracapsular proximal femoral fractures was associated with a high number of re-operations. Patients age and predominantly surgery related factors (reduction, number of screws and CCD angle) did impact patient outcome significantly.
References:
Disclosure: No significant relationships.

O056

FREE TISSUE FLAPS IN TIBIAL PLAFOND FRACTURES

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Introduction: Combined orthopaedic and plastic surgery of severe open tibial fractures has been widely studied. Evidence regarding optimum management of severe tibial plafond fractures is however scarce. Unplanned plastic surgery due to wound complications is common among these patients. The goal of our study was to review our results with the combined orthopaedic and plastic surgical treatment of these fractures
Material and methods: We reviewed all tibial plafond fractures (AO 43) surgically treated at our centre over 6 years, with a minimum 1-year follow-up. 86 cases in 76 patients were available for follow-up. of these, 16 were treated with a free tissue flap in addition to surgical fixation of the fracture.
Results: of the 16 cases, 8 were initially closed fractures. Bridging negative pressure wound therapy was used in half of the cases. The free tissue flaps used were gracillis in 6 cases, anterolateral thigh in 5 cases and latissimus dorsi in 5 cases. Seven patients suffered complications of the free tissue transfer: 4 of the 16 flaps failed, and one patient required below the knee amputation. Fourteen patients suffered some type of orthopaedic complication: wound infection (50 %), wound dehiscence (37.5 %), delayed union (47.8 %), and skin necrosis (12.5 %). Overall, time to union was 9.25 $\pm$ 3.6 months and AOFAS scores averaged 65.3 $\pm$ 16.8 points.
Conclusion: The need for unplanned free tissue flaps in tibial plafond fractures is relatively high. Tibial plafond fractures in need of flap coverage have a high complication rate and delayed time to union, and clinical results are only average.
References:
Disclosure: No significant relationships.

O057

EFFECT OF INFRAPATELLAR NERVE BLOCK ON CHRONIC ANTERIOR KNEE PAIN AFTER TIBIAL NAILING; A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY (INCOP)

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Introduction: Chronic knee pain is a common complaint after tibial nailing. Injury or entrapment of the infrapatellar nerve is a possible explanation for this persisting post-operative knee pain. The purpose of this randomized, placebo-controlled, double blind crossover trial was to compare changes in knee pain after an infrapatellar nerve block with lidocaine or placebo.
Material and methods: Patients with chronic anterior knee pain after tibial nailing were randomized to an infrapatellar nerve block with a subcutaneous injection of lidocaine or placebo after which they were supervised in performing eight activities. Before and after these activities, pain was recorded using a numeric rating scale. Hereafter patients crossed over to the alternate group. Primary endpoint was the change in pain intensity during kneeling after each infrapatellar nerve block. Secondary outcomes were changes in pain intensity during rest, walking, running, jumping, squatting, climbing stairs and sitting with flexed knees.
Results: 28 patients aged 18 – 62 years (mean, 41 years ± 13) were equally randomized. A significant reduction of the NRS for kneeling pain with an infrapatellar nerve block with lidocaine was found compared with placebo (median [range], -4 [-10 – +1] vs -1 [-11 – +8]; $P = 0.022$. There were no differences between the treatments for the NRS values for the secondary outcomes.
Conclusion: Compared with placebo, an infrapatellar nerve block with lidocaine was more effective in reducing pain during kneeling in patients with chronic knee pain after tibial nailing. Data from the present study support the contention that kneeling pain after tibial nailing is a peripheral nerve-related problem.
References:
Disclosure: No significant relationships.

O058

IS THERE A NEED FOR POSTOPERATIVE STANDARDISED RADIOGRAPHS AFTER OPERATIVE FIXATION OF WRIST- OR ANKLE FRACTURES?

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Introduction: The consequence and utility of standardised postoperative radiographs after having obtained an intraoperative C-arm control remains under debate. The purpose of this study was to evaluate the frequency of changes in treatment plan due to standardised postoperative radiographs.
Material and methods: Single centre retrospective case series of 167 consecutive patients, operated with ORIF for distal radius or ankle fractures in 2014. Fractures were classified according to the AO classification. Intra-operative radiographs were not standardised. Postoperative files were evaluated if the postoperative radiographs did lead to a change in treatment protocol. Changes in treatment protocol were defined as additional CT-imaging, reoperation or other changes as defined in the postoperative orders.
Results: In 7.2 % (12/167) of the patients, a change in the treatment plan was recorded after the postoperative radiographs. Ten patients (6 %) were reoperated (three without additional imaging, seven after additional imaging with CT). of these 10, 8 required a reosteosynthesis. Two patients had additional imaging (CT) without further consequences. There was no statistical difference between changes in the treatment plan depending on night or daytime surgery or if the surgeon was a resident or consultant and also independent of the fracture classification.
Conclusion: Standardised postoperative radiographs led to over 7 % changes in the postoperative treatment protocol. Moreover, 6 % of the patients required a second operation. These numbers are high and suggest that standardised postoperative radiographs do add to the quality of fracture care. In the future, standardised intra-operative radiographs will be defined at our institution in order to prevent the need of postoperative radiographs.
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Disclosure: No significant relationships.

O059

COMPLICATION RATES OF VOLAR PLATING OF DISTAL RADIUS FRACTURES – A RETROSPECTIVE ANALYSIS OF 576 CONSECUTIVE CASES

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Introduction: The current trend in treatment of displaced distal radius fractures favours volar plating. However, recent studies question both the clinical advantage and the cost effectiveness of this treatment modality. An alarming number of complications ranging from 5 to 30 % have been reported in the literature. The aim of the study was to estimate the complication rate of volar plating of distal radius fractures in correlation to surgeon experience, type of plate (VariAx® and Acu-Loc®) and AO-fracture type.
Material and methods: We reviewed all cases operated with a volar locking plate at Aarhus University Hospital between February 2009 and June 2013. Surgeon experience was categorized as orthopaedic consultant, 2^{nd}-5^{th}-year resident, or 1^{st}-year resident. Correlation coefficients between complications, surgeon's experience, type of volar plate and type of fracture (AO) were estimated.
Results: 576 patients (median age 63, 78 % females) presenting with distal radius fractures were operated with a volar plate by 21 consultants, 27 2^{nd}-5^{th}-year residents and 16 1^{st}-year residents. Within the mean observation time of 3.2 years (min = 1.0; max 5.4) 69 reoperations were performed including 44 plate removals. We observed 30 nerve complications, 4 flexor tendon ruptures, 12 extensor tendon ruptures, 3 cases of complex regional pain syndrome, 5 disturbances of the distal radius ulna joint or scapholunar dissociations and 2 deep

infections. No correlation was found between complication rates and type of plate or surgeon experience. We observed significantly more intraarticular fractures in the complication- than in the no-complication group ($p < 0.01$).
Conclusion: The reoperation rate was 12 %. Only type of fracture was related to complications.
References:
Disclosure: No significant relationships.

DISTINGUISHED OUTSTANDING PAPERS

O060

EXPLORING MORBIDITY ASSESSMENT FOR TRAUMA PATIENTS: A PILOT STUDY OF THE ADAPTED CLAVIEN-DINDO FOR TRAUMA (ACT) CLASSIFICATION SYSTEM

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Introduction: Trauma outcomes in the published literature are often limited to mortality. No validated tools for the assessment of post-traumatic morbidity exist. We describe initial experience with the "Adapted Clavien-Dindo for Trauma" method (ACT)—a derivative of an established tool [1] for grading elective surgical complications. This new tool accounts for patients both managed surgically and by selective non operative management (SNOM).
Material and methods: This is an observational, prospective pilot study tested the ACT scoring system in patients admitted to critical care at a UK Major Trauma Centre. Demographics, mechanisms of injury, critical care and hospital lengths of stay, organ dysfunction and 30-day mortality were compared between patients with and without complications.
Results: Fifty-one patients were included. Median age was 37.5 (26.6 – 53.2) years, and 76.5 % were male. Median ISS was 16 (11.5 – 24.5). Median Sequential Organ Failure Assessment scores on Days 1 and 4 were 4 (2 – 7) and 1 (0 – 5.5) respectively. 30-day mortality was 11.8 %. 15/51 (29 %) patients suffered complications. ACT grades were successfully assigned to all of these. Patients with complications had longer critical care stays than patients without (10 (7 – 18) days vs. 3.5 (2 – 8) days; $p = 0.009$), and had higher SOFA scores on day 4 (5 (2 – 9) vs. 0 (0 – 3.25); $p = 0.023$).
Conclusion: This initial exploration suggests that the ACT scoring system may be both feasible and useful for grading post-traumatic complications. It is the first tool to assess trauma patients following both surgery and SNOM. Further prospective multi-centre validation is required.
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Disclosure: No significant relationships.

O061

I-FABP IS A NOVEL MARKER FOR THE DETECTION OF INTESTINAL INJURY IN SEVERELY TRAUMATIZED PATIENTS

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Introduction: Delayed diagnosis of an injury of the intestine increases the risk of sepsis, multiple organ failure and mortality. The Intestinal fatty acid binding protein (I-FABP) is a protein solely expressed in the intestine and is released extracellular after tissue damage. This study evaluates the value of I-FABP as an early biomarker in particular to detect an injury to the intestine.
Material and methods: Prospective matched pair-analysis of 20 patients with an abdominal injury, of which 10 patients suffered from an intestinal injury. Every patient with an intestinal injury was matched with an abdominal injury but without an intestinal injury (no int. injury) using the Injury Severity Score (ISS) and the abdominal Abbreviated Injury Scale score (AIS abdomen). Twenty healthy volunteers served as controls. Plasma I-FABP levels were measured at admission to the emergency room (ER) and up to ten days daily (d1-d10).
Results: Median I-FABP levels were significantly higher in the "int. injury" group (2101.0 pg/ml [IQR = 1248.1-4117.8]) compared to the "no int. injury" group (351.4 pg/ml [IQR = 287.6-963.3]), $p < 0.05$. Furthermore I-FABP levels of both patient groups were significantly higher compared to the control group (127.2 pg/ml [IQR = 57.4-310.6]), $p < 0.05$. The time course of I-FABP levels showed a peak on the day of admission and a decline to the control levels in the further post-traumatic course.
Conclusion: This study confirmed our previous findings that I-FABP might be used as an early biomarker for the detection of abdominal injuries. In addition, the results indicate that I-FABP might be an even more specific and promising parameter in the diagnosis of intestinal injuries.
Disclosure: No significant relationships.

O062

CHANGES OF LOCAL MICROCIRCULATION IN SOFT TISSUES ASSOCIATED WITH HEMORRHAGIC SHOCK AND SURGICAL STRATEGY (NAILING VERSUS EXTERNAL FIXATION)

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Introduction: Soft tissues are known to be of importance for local and systemic inflammation and bone healing. However, studies dealing with local changes after trauma are rare. In this study we have analysed changes of microcirculation in soft tissues associated with haemorrhagic shock and surgical strategy after femoral fracture.
Material and methods: Male pigs (german land race, 30 kg) were used. Combined trauma consisted of lung contusion, femoral fracture, liver laceration and controlled haemorrhage (HS) (MAP 40 ± 5 mmHg) for 90 minutes. O2C (oxygen to see) device was used to measure a blood flow (Flow), the oxygen saturation (SO2) and relative Haemoglobin amount (rHb). Microcirculation was measures on healthy muscle. Femoral fracture was treated either with intramedullary nailing or with external fixation. Microcirculation was measures daily in fracture site of this animals. The observation period of this study was 3 days.
Results: During HS ($n = 6$) we have found a significant increase of blood flow (Flow) and elevated local SO2 and rHb. All these

parameters indicate a presence of hyperaemia in soft tissues after haemorrhage. Moreover, the analysis of microcirculation after fracture fixation has shown a significant reduced circulation in musculature on a day 2 and 3 after fracture treatment with external fixation. After intramedullary nailing no differences of Blood Flow, SO2 and rHb was observed in comparison to the non-injured site.
Conclusion: We have observed increased microcirculation in soft tissues after HS. This might be if importance in development of local and systemic inflammation. Moreover, External fixation led to reduced microcirculation in musculature.
References:
Disclosure: No significant relationships.

O063

THE RETROGRADE TIBIAL NAIL - ANATOMICAL IMPLANTATION AND SURGICAL FEASIBILITY STUDY

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Introduction: The treatment of distal tibial fractures requires a stable fixation while preserving the soft tissues. The experimental Retrograde Tibial Nail (RTN) is currently under investigation as a minimally invasive alternative to angle stable plating and antegrade intramedullary nailing. The purpose of this study was to evaluate the surgical feasibility in a cadaver model for all types of distal tibial fracture types considered treatable by nailing.
Material and methods: Five different fracture types (AO/OTA 43-A1/A2/A3 and 43-C1/C2) were created on separate cadaveric limbs. In simple fracture types primary nailing was performed. In fractures with intraarticular involvement reduction of the articular block and lag screw fixation was performed before nailing. Intraoperative complications, quality of reduction, fluoroscopy duration and operative time were evaluated.
Results: Retrograde intramedullary nailing was possible in simple fracture types by closed manual reduction and percutaneous reduction forceps. Retrograde nailing is also feasible in fractures with simple intraarticular involvement after primary lag screw fixation. Postoperative evaluation of alignment showed an excellent reconstruction of the normal anatomy. The varus-valgus axis deviation was between 0° to 4° varus. The distance from the joint line to achieve triple distal interlocking was between 26 and 29 mm. The duration of surgery ranged from 40 to 62 min. No major complications occurred.
Conclusion: The minimally invasive retrograde nail combines a minimally invasive local osteosynthesis with the ability to adequately fix extraarticular and simple intraarticular distal tibial fractures. The results suggests that retrograde tibia nailing is a promising new concept for the treatment of distal tibia fractures.
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Disclosure: No significant relationships.

O064

STRUCTURAL VALIDITY OF THE SHORT MUSCULOSKELETAL FUNCTION ASSESSMENT IN TRAUMA PATIENTS

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Introduction: The Short Musculoskeletal Function Assessment (SMFA) is a widely used patient reported outcome, designed to assess physical functioning. The aim of this study was to evaluate the structural validity of the SMFA in a broad range of trauma patients and hence to evaluate which factor structure (e.g. scoring model) fitted best.
Material and methods: Trauma patients, treated at the University Medical Center Groningen (The Netherlands), completed the SMFA at 6 weeks post injury. A Confirmatory Factor Analysis was performed on a total of 6 factor structures and their corresponding bifactor structure, in which a general factor is hypothesized. Reliability of subscales was analyzed with Cronbach's α and ω parameters. Statistical power was retrospectively evaluated with a Monte Carlo simulation.
Results: A total of 491 patients participated (response rate: 74 %). The correlated 4-factor (RMSEA = 0.061, CFI = 0.961, TLI = 0.959) and corresponding bifactor model (RMSEA = 0.063, CFI = 0.960, TLI = 0.956) fitted best. The correlated 4-factor model showed high factor loadings and scale reliability($\alpha \geq 0.81$, $\omega_T = 0.98$). The bifactor model showed high loadings and reliability on the general factor (*General Physical Functioning,* $\omega_H = 0.90$) and the *Upper Extremity* factor($\omega_s = 0.85$), substantial reliability and loadings on the factors *Lower Extremity Dysfunction*($\omega_s = 0.34$) and *Mental and Emotional Problems*($\omega_s = 0.44$), but low reliability and loadings on the *Daily Activities* factor($\omega_s = 0.02$). Other models, including the original 2-index structure, had a mediocre or unacceptable fit. Statistical power was estimated >99 %.
Conclusion: The four factor model showed best structural validity and high scale reliability. The SMFA is best scored and interpreted conform the 4-factor structure, including a newly introduced total score (*General Physical Function*).
References:
Disclosure: No significant relationships.

O065

IN VITRO BIOMECHANICAL CHARACTERISTICS OF THE PORCINE ANTERIOR CRUCIATE LIGAMENT

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Introduction: Anterior cruciate ligament (ACL) ruptures are the most common ligament injuries in the knee joint. In order to test novel reconstruction techniques it is important to search for animal models with representative biomechanical characteristics. The aim of this study was to determine biomechanical characteristics of porcine ACL and compare this with the human situation.

Material and methods: The study was carried out on porcine cadaver knees from large animals (50-60 kg). All the knee joints were dissected, and the ACL was the only ligament that we kept intact. Furthermore bony structures were stabilized by the use of Technovit. All samples were subjected to a uniaxial tensile test and load-extension characteristics were registered. Moreover, cyclic tests (10.000×) were performed to test the impact of cyclic loading on biomechanical characteristics of the porcine ACL.
Results: Median maximal load (N = 8) of the pigs ACL was 374 N and varied between 421 N und 363 N. Load-displacement curves showed comparable patterns in all animals. We observed a bimodal peak was at 370 N und 240 N and this represents the sequential rupture of the anteromedial and posterolateral bundle of the ACL. Furthermore, porcine ACL Stiffness was significantly decreased after cyclic loading.
Conclusion: Maximal load and stiffness measurements of the porcine anterior cruciate ligament showed homogenous data. Furthermore the pattern of sequential rupture of ACL-bundles is comparable to the human ACL. Moreover, the impact of cyclic stress on biomechanical properties of the ACL makes the pig model suitable for proof-of principle studies for novel treatment modalities for the ruptured ACL.
References:
Disclosure: No significant relationships.

O066

RELIABILITY OF THE AMERICAN SOCIETY OF ANESTHESIOLOGISTS PHYSICAL STATUS RATING FOR EMERGENCY GASTROINTESTINAL SURGERY

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Introduction: The American Society of Anesthesiologists (ASA) physical status (ASA-PS) is used worldwide and has also been incorporated into various prediction rules [1, 2]. However, concerns have been raised regarding inter-rater agreement [3]. Furthermore, a reliability study has not yet been conducted in the field of emergency gastrointestinal surgery. Therefore, the aim of the present study was to investigate the inter-rater reliability of ASA-PS for emergency gastrointestinal surgery.
Material and methods: Three sets of scenarios were generated for each ASA-PS class (2E, 3E, and 4E) in emergency gastrointestinal surgery, resulting in 9 scenarios. These scenarios described the preoperative profiles of patients who underwent emergency gastrointestinal surgery in one hospital. Two or 3 anaesthesiologists from 18 other hospitals provided scores for ASA-PS for each scenario. We measured the reliability of ASA-PS ratings assigned by anaesthesiologists using Fleiss' kappa statistics (F-κ) and intraclass correlations (ICC).
Results: Fifty anaesthesiologists scored the ASA-PS class. Thirty-three (66 %) to 45 (90 %) of these anaesthesiologists assigned the same ratings as the reference ratings for the individual scenarios. Inter-rater reliability was assessed as F-κ (95 % CI) of 0.55 (0.54–0.56, $p < 0.001$) and ICC (95 % CI) of 0.79 (0.63–0.93, $p < 0.001$). The absence of significant differences in the ratings between the hospitals was verified by the Kruskal–Wallis one-way analysis of variance test.
Conclusion: The results of the present study revealed the consistency of ASA-PS ratings between anaesthesiologists for emergency gastrointestinal surgery. ASA-PS may serve as a reliable variable in the prediction rules for this field.
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Disclosure: No significant relationships.

O067

CLINICAL OUTCOME AND MUSCULAR FUNCTION AFTER POSTERIOR STABILIZATION OF THE THORACOLUMBAR JUNCTION: AN ULTRASOUND CONTROLLED SHORT-TERM FOLLOW-UP

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Introduction: Posterior stabilization of the spine can lead to muscle damage. The aim of our study was to visualize muscularly changes after posterior stabilization of thoracolumbar spine fractures and to investigate if these changes are related to the clinical outcome.
Material and methods: Study performance between 05/2012 and 10/2014. Including criteria: Bisegmental stabilization and isolated traumatic thoracolumbar fracture without neurological deficit (T11-L2). Muscularly size and activity of the lumbar multifidus and the abdominal muscles were examined by a standardized ultrasound protocol one year after surgery. Furthermore standardized questionnaires (VAS-Spine-Score; ODI; SF-36) were subjected. A healthy control group was matched regarding age, BMI and gender distribution. Data were analyzed using SPSS (Version 20). Statistical significance was defined as $p < 0.05$.
Results: Twenty-five patients and 23 control probands could be incorporated into the study. Fifteen patients were treated by open surgery while ten were treated percutaneously.The patients showed a diminished muscularly function of the lumbar multifidus one year after surgery compared to the control group ($p < 0.05$). The abdominal muscles showed no differences between both groups ($p > 0.05$). No difference between patients treated by open or percutaneous surgery were found. The questionnaires showed worse results in all categories for the patients compared to the control group. A correlation between muscle activity and clinical outcome could not been demonstrated ($rs > 0.07$; NS).
Conclusion: Muscularly deficits of the lumbar multifidus still occur one year after surgery. Results of patients treated by open or percutaneous surgery were comparable. Furthermore no correlation between the muscularly deficit and the clinical outcome was found.
References:
Disclosure: No significant relationships.

O068

HYPERCHLOREMIA IS ASSOCIATED WITH 30-DAY MORTALITY IN MAJOR TRAUMA PATIENTS

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Introduction: Chloride is important to maintain acid-base balance, muscular activity, and osmosis. Several studies have been showed the association of hyperchloremia with hospital mortality in critically ill septic patients. However, there are no studies about trauma patients. The purpose of our study was to identify the association of serum chloride (Cl) levels with 30-day mortality in major trauma patients.
Material and methods: This study was enrolled 243 major trauma patients by retrospective chart review, from January 2011 to August 2015. Patients were over 16 years of age, and major trauma were defined as injury severity score (ISS) being greater than 15. Serum chloride levels were measured after 24 hours from initial evaluation, and Cl > 110 mEq/L was defined as hyperchloremia. Clinical and laboratory parameters were compared in between the two groups (hyperchloremic group and non-hyperchloremic group). Survival curves were constructed using a Kaplan-Meier survival analysis with comparisons between the curves based on a log-rank χ^2 statistic. A multivariate Cox regression model was applied to assess the association between serum chloride levels and 30-day mortality.
Results: 30-day mortality of total patients was 8.6 % and 51 patients (21 %) showed hyperchloremia on hospital day 1(HOD-1). The significant difference in survival between hyperchloremic group and non-hyperchloremic group was shown in the Kaplan-Meier survival curve ($p = 0.001$). In multivariate Cox regression model, hyperchloremia (Odds ratio, 5.549; 95 % confidence interval, 1.800 – 17.110; $p = 0.003$) was independent predictive factor for 30-day mortality in major trauma patients.
Conclusion: Hyperchloremia on HOD-1 was associated with 30-day mortality in major trauma patients.
References: 1. Neyra JA, Canepa-Escaro F, Li X, et al. Association of Hyperchloremia With Hospital Mortality in Critically Ill Septic Patients. Crit Care Med. 2015;43(9):1938-1944. 2. Boniatti MM, Cardoso PR, Castilho RK, Vieira SR. Is hyperchloremia associated with mortality in critically ill patients? A prospective cohort study. J Crit Care. 2011;26(2):175-179. 3. McCluskey SA, Karkouti K, Wijeysundera D, Minkovich L, Tait G, Beattie WS. Hyperchloremia after noncardiac surgery is independently associated with increased morbidity and mortality: a propensity-matched cohort study. Anesth Analg. 2013;117(2):412-421.
Disclosure: No significant relationships.

O069

PJ-TRAUMA-TEAM - A "BLENDED LEARNING" POLYTRAUMA CURRICULUM FOR FINAL YEAR MEDICAL STUDENTS

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Introduction: The care of severely injured patients is an interdisciplinary task. A large proportion of medical students will be involved in the care of seriously injured patients later in their medical career. The current medical curriculum does not adequately teach the technical and non-technical skills necessary for an adequate patient care.
Material and methods: We developed a new "blended learning" curriculum, made up of four learning modules, each consisting of a eLearning unit of 1-2 h self-study and a 3 h long skills and simulation training. They are accompanying the 4-week rotation in traumatology. The overall design was influenced by the CanMEDS (particularly the roles "Professional", "Communicator" and "Collaborator") and in light of the recently adopted National Competency-based Objective Catalogue for Medicine. The learning modules take place in small groups of max. 8 students with 2 instructors with a clinical background in trauma surgery, anaesthesia and radiology.
Results: 2 Pilot courses were instructed in the fall of 2015. Results derived for self and objective assessment showed that final year medical students can achieve the theoretic, practical and non-technical skills to perform as an effective team member in polytrauma care.
Conclusion: New teaching strategies should be implemented in order to advance the knowledge and skills of medical school graduates.
References: Capella J et al, Teamwork training improves the clinical care of trauma patients. J Surg Educ. [Comparative Study]. 2010 Nov-Dec;67(6):439-43. Flin R, The Non-Technical Skills for Surgeons (NOTSS), System Handbook v1.2, 2006 CanMEDS Physician Competency Framework, http://www.royalcollege.ca/portal/page/portal/rc/canmeds, accessed on Oct 29th 2015
Disclosure: No significant relationships.

JOINT REPLACEMENT IN FRACTURE CARE

O070

PROXIMAL HUMERUS FRACTURES: WHAT LESSONS HAVE WE LEARNED IN THE LAST 10 YEARS

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Introduction: In the last 10 years we have used Locking plates for proximal humerus fractures, we have identified various problems. Our indications for fixation have changed from fixation of nearly all fractures to a much more conservative approach with and increased number of arthroplasty cases. The loss of the medial calcar has become an important part of the decision making process and this is an aspect of the proximal humerus fracture that is extremely difficult to manage well, especially in the younger patient.
Material and methods: We have evaluated 80 proximal humerus fixations that have been done at Tygerberg hospital. The fixation was done using the Proximal humerus plates from ITS®, the older plate and in some cases the new plate. The x-rays where reviewed and the reduction was evaluated. The humerus neck shaft angle was measured in each case as well as the lateral angulation.
Results: Neck shaft angles where restored in >90 % of the cases and the lateral angulation is within 10° in more than 95 % of cases. Plate Breakage in 6 cases with concurrent non union with the old plate system. The new plate system had 3 screw problems that resulted from technical issues during surgery.
Conclusion: The proximal humerus fixation in patients with severe proximal humerus fractures are difficult to treat and can lead to non-union. The proximal fixation of the head remains an important aspect of fixation as well as plate strength for medial calcar fractures. The other aspect is how much of the head is held by the locking plate.

With many plates the so called multiple axis fixation does not allow more fixation into the head due to a narrow plate design. We will present a review of the popular plate designs and how they have changed over the last 10 years. We will also present the volume of the head that each plate can hold. The important aspect of this is that the more head you can hold with a plate the easier it is to place your plate.
References: Complications that occur in proximal humerus fractures are more common than we would like to admit. We will also present an extensive review of all our complications and options on how to deal with these severe problems.
Disclosure: No significant relationships.

O071

ACUTE FIXATION AND TOTAL HIP REPLACEMENT FOR THE MANAGEMENT OF ACETABULAR FRACTURES IN PATIENTS OVER 55

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Introduction: Acute total hip replacement (THR) has become popular as a treatment for older patients with acetabular fractures as it enables earlier return to good function. When THR is used for post-traumatic hip osteoarthritis, the procedure can be more difficult and there is an interval of pain, stiffness and poor function for the patient. Controversies for acute surgery involve higher complication rates including infection, loosening and revision surgery.
Material and methods: This prospective study reports the functional outcome and complications experienced by 50 consecutive patients over 55 who sustained an acetabular fracture and underwent open reduction and internal fixation (ORIF) plus acute THR or ORIF alone. Merle D'aubigne and SF36 scores were analysed.
Results: A total of 26 patients were treated with acute ORIF and THR with a mean age of 76.4 years. The majority of patients were independent ambulators at most recent follow-up. Two patients were transferred to our institution with periprosthetic fractures sustained at the time of primary THR. Both developed periprosthetic infection and underwent subsequent debridement with retention of implants. One patient experienced a dislocation of the total hip replacement. One patient underwent revision surgery for secondary cup migration.
Conclusion: Acute ORIF and THR is an effective treatment method for older patients who have sustained an acetabular fracture. Operative principles include sufficient lateralisation of the centre of rotation, maximal bony contact with the acetabular implant, maximal fixation of implant to bone and restoration of stability. The cases illustrate that at least one of these principles was compromised in the patients with complications.
References:
Disclosure: Paul Culpan has a consulting contract with ITS.

O072

LONG TERM EXPERIENCE WITH PIPKIN FRACTURES AND DISLOCATIONS

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Introduction: To present and analyse the long term clinical results after treatment of Pipkin fractures and dislocations.
Material and methods: For a period of 13 years we treated 18 patients with Pipkin fractures dislocations. They were distributed according to classification of Pipkin: Type I- 4, Type II- 5, Type IIIA-1, Type IIIB-3 and Type IV-6. 3 patients were treated nonoperatively. Smith-Peterson approach was used for 7 fractures Pipkin I, II, for fractures Pipkin IV was chosen Kocher –Langebeck (5 cases) and 1 with "Flip osteotomy". Watson-Jones and Hardinge approaches was used for Pipkin IIIA (1 case) and Pipkin IIIB (2 cases). 3 fractures were treated by primary THA, 2 fragments from the femoral head were excised and 11 fractures were reduced and fixed.
Results: All patients were followed up. From 18 patients with 19 fractures of the femoral head assessed by HHS, we obtained 10 excellent and good, 5 fair and 4 poor results. The distribution of the results is as follows: Pipkin I – 2 excellent, 1 good and 1 fair, Pipkin II- 2 excellent,1 good, 1 fair and 1 poor, Pipkin IIIA – 1 excellent, Pipkin IIIB- 2 excellent, 1 poor, and Pipkin IV- 1 excellent, 3 fair and 2 poor. With iatrogenic temporary nerve dysfunction (n. ischiadicus) was 1 patient, 4 achieved avascular necrosis of the femoral head, Type I,II (Brooker) ectopic ossifications developed 4 patients and 4 with osteoarthritis.
Conclusion: Results after Pipkin fractures dislocations are directly connected to the correct choice of approach, method of treatment and type of the fracture.
References:
Disclosure: No significant relationships.

O073

PERIPROSTHETIC FRACTURES OF THE FEMUR - CHANGING THE TREATMENT PARADIGM?

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Introduction: Current treatment of fractures around femoral stems is invasive, expensive, and result with high complication and reoperation rates. Aim of our study was to design a technique of less invasive intramedullary fixation in periprosthetic fractures and deformities of the femur to provide primary stability of the stem and the femur.
Material and methods: Fixator-assisted internal fixation with a slotted nail connecting to the stem was used in the treatment of 71 consecutive femoral periprosthetic fractures. Vancouver B1 - 23 cases (8 cemented), Vancouver B2 - 24 (2 cemented), B3 - 17 (3 cemented), C- 7 (2 cemented). In 29 of 41 B2/B3 fractures femoral stems were subsided 10 mm and more.
Results: Frame application allowed to restore length and alignment of the segment in all 30/71 cases of stable stems (B1 and C). With fixator-assisted nailing it appeared attainable to reduce stem position in all cases of subsided stems. 64 patients (90 %) were available for follow up in 1 year. 62 healed (4 after secondary procedures). There were no signs of stem loosening revealed in all cases (24) of subsided non-cemented stems that were reduced.
Conclusion: In case of loose subsided stems the presented approach provides not only strong primary fixation but also correction of the stem position along. In patients with uncemented loose stems secondary stem stabilization can be expected so formal revision with

stem replacement renders unnecessary. The current approach with plating in stable stems and revision in loose ones can be replaced by the introduced approach in vast majority of cases.
References:
Disclosure: No significant relationships.

O074

PRIMARY ARTHROPLASTY WITH A BURCH-SCHNEIDER ANTIPROTRUSION CAGE AS A STRONG ALTERNATIVE TO PLATE OSTEOSYNTHESIS FOR ACETABULAR FRACTURES IN ELDERLY

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Introduction: The standard treatment of displaced acetabular fractures is open reduction and internal fixation (ORIF). Since patients age is a relevant factor in combination with comorbidities, ORIF may not be the best option. Primary total hip arthroplasty (THA) including an antiprotrusion cage and autologous bone grafting, for selected acetabular fractures may provide several advantages in elderly osteoporotic patients. In our retrospective study we aimed to delineate the special indications for THA.
Material and methods: Our clinical retrospective study was carried out between 2010 and 2015. We analyzed 19 patients with THA and 21 after ORIF including 22 males and 16 females with an average age of 69 years. The fractures were classified using Letournel and Judet classification. Basic operative parameters, complications, heterotopic ossification after the radiologically based Brooker Classification, length of hospital stay (LOS), return to mobility, and clinical outcome assessed with the Harris hip score and the Merle d'Aubigne score were evaluated.
Results: THA provides primary stability and immediate pain relief, permits graded weight-bearing and early pain-free mobilization, and may also treat hip arthritis, if it exists.
Conclusion: In selected acetabular fracture types, we believe that a primary THA may provide several advantages including quick weight bearing with a lower rate of complications and a lower 5-year mortality rate.
References:
Disclosure: No significant relationships.

MANGLED EXTREMITY

O075

SALVAGE NAILING FOR MANGLED ANKLES

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Introduction: Patients with severe polytrauma can present with significant fractures of the distal tibia and ankle joint. Conventional algorithms for the repair of these fractures with plates and screws can lead to significant morbidity adversely affecting outcome.
Material and methods: A two step method applying first an external fixateur and in a second operative stage the hindfoot nailing of Lexer can prove a useful solution to this problem. The external fixateur is a simple large pin frame with a 'kickstand' extension that suspends the heel to prevent skin breakdown during the intensive care stage of the patient's care. The second stage is performed about a week later and is a nailing across the subtalar and tibiotalar joints. Four representative cases show the phases of this treatment program.
Results: Patients can be mobilized to a standing position after a few days. There has been rapid consolidation of fractures and no delay in rehabilitation. Longterm the nail can be removed with some return of tibiotalar function in appropriate cases.
Conclusion: Salvage of mangled ankle joints with transarticular nailing is a useful treatment pattern in seriously injured patients or patients with special care problems.
Disclosure: Consultant for Stryker orthopedics.

O076

VACUUM THERAPY IN COMPLEX INJURIES OF THE LIMBS

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Introduction: As severe open injuries are more and more frequent in modern traumatology, threatening not only the integrity of the affected limb, but even the life of the patients, new methods desired to cope with the consequences of these trauma were described. Vacuum therapy is one such method which has been described as enhancing healing in trauma with extensive soft-tissue injuries, included those with septic complications
Material and methods: Authors prospectively analyse 15 patients with severe lower limb trauma with MESS less than 6, with considerable soft tissue loss following initial debridement and fracture fixation. The patients needed serial debridements and vacuum therapy was applied after delayed healing due to initial severity of the trauma, for an average period of 12 days (7 - 23 days).In 7 cases vacuum therapy was applied for septic complications
Results: Within the study group, there were no local complications; secondary debridements were performed for all the patients and vacuum system was re-installed after these debridements. No amputations were needed. Medical records were reviewed in order to compare the outcome of the patients: the hospital stay, anti-microbial therapy, time to healing of the bone and soft tissues (there is no standard group to be compared with) and the result shoed considerable improvements in the outcome of the patients.
Conclusion: Vacuum therapy improves healing of the soft tissues, including those infected; hospital stay and the number of secondary necessary procedures are reduced, therefore it is considered a valuable support in treating trauma of the limbs with severe soft tissue injuries.
References: Krug E et al., Evidence-based recommendations for the use of Negative Pressure Wound Therapy in traumatic wounds and reconstructive surgery: steps towards an international consensus. Injury. February 2011;42 Suppl1:S1-12
Disclosure: No significant relationships.

O077

DIRECT FASCIOTOMY CLOSURE ACHIEVED MORE OFTEN WITH SHOELACE TECHNIQUE THAN WITHOUT THEM IN TIBIA FRACTURES

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Introduction: There is consensus in treatment of compartment syndrome, however there is no data about fasciotomy closure nor complications related to them published from Finland to date. Therefore, we conducted this study to find out the amount of tibia fractures treated with tibia nailing and compartment syndromes associated to them in Finnish patient cohort between years 2007 and 2015. We also wanted to know the fasciotomy closure method used and if it had any influence to patient recovery. An additional goal was to discover if there was a relation between fasciotomies and deep infections.
Material and methods: Retrospective case series Setting: Tampere University Hospital, Finland. Level I trauma hospital. Inclusion criteria: All intramedullary nailed tibia fractures in our institute April between 2007 and April 2015. Exclusion criterion: Postoperative care in different hospital district. 359 patients met the inclusion and exclusion criteria. Intervention: Intramedullary nailing of tibia fracture. Main Outcome Measurements: Fracture morphology, infections, complications, fasciotomies made and closure method used.
Results: 359 intramedullary nailing of tibia fractures (67 (19 %) open fractures). 23 deep infections (6 %). 69 (19 %) fasciotomies. 47 fasciotomies were closed using vessel loop shoelace technique. Direct closure was successful 49 patients (38 (81 %) in vessel loop-group and 11 (50 %) in without vessel loop-group ($p = 0.008$)). No difference in infections between fasciotomy + or fasciotomy − groups.
Conclusion: Tibia fracture can cause acute compartment syndrome, but there is no evidence that it increases infections or complications, if fasciotomies are made on time. Direct closure of crus fasciotomies can be done more often with shoelace technique than without.
References: Park S, Ahn J, Gee AO, Kuntz AF: Compartment syndrome in tibial fractures. J Orthop Trauma. 2009;23:514-518. Branco BC, Inaba K, Barmparas G, Schnuriger B.: Incidence and predictors for the need for fasciotomy after extremity trauma: a 10-year review in a mature level I trauma centre. Injury. 2011;42:1157-1163. Papakostidis C, Kanakaris NK, Pretel J, Faour O, Morell DJ, Giannoudis PV: Prevalence of complications of open tibial shaft fractures stratified as per the Gustilo-anderson classification. Injury. 2011;42:1408-1415. Berman SS, Schilling JD, McIntyre KE, Hunter GC, Bernhard VM: Shoelace technique for delayed primary closure of fasciotomies. Am J Surg. 1994;167:435-436.
Disclosure: No significant relationships.

O078

INFECTION AFTER OPEN FRACTURES- TIME FROM TRAUMA TO SURGICAL DEBRIDEMENT IS THE KEY FACTOR

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Introduction: Septic risk after Open Fractures (OF) is unanimously recognised but the factors influencing its onset have not been yet clearly quantified. The authors intend to check in this paper the hypothesis that time form trauma to initial complete surgical debridement influences the onset of infection after OF.
Material and methods: A retrospective study was performed in a Level 1 Trauma Center regarding OF operated with at least 18 months follow-up. From 588 open injuries, only 362 completed the follow-up regarding the time from trauma to the first antibiotic dose and time from trauma to surgical debridement. The outcome was the incidence of infection within the first 18 months after trauma.
Results: Following Gustillo Classification, there were 172 type I, 101 type II and 90 type III open fractures. The mean time from trauma to first antibiotic dose was 2.8 hrs (0.5-6 hours),mean time from trauma to initial debridement was 3 hrs (42 min-48 hrs). The incidence of infection was 6.9 %; time between trauma and antibiotic treatment significantly increased the incidence of sepsis from 4.8 % (antibiotics before 3 hrs) to 7.8 % (after 3 hrs), while time from trauma to debridement increased the risk from 3.8 % (debridement before 6 hrs) to 7.6 % -after 6 hrs.
Conclusion: The current study suggests that, more than time from trauma to antibiotics, time from trauma to surgical debridement is essential for the incidence of infection. Despite its limitations, this study suggests that surgical treatment is unfairly underestimated, being at least as important as the antibiotics in open fractures.
References: 1. J Am Acad Orthop Surg. 2006;14(10 Spec No.):S48-51. Timing of débridement of open fractures. Pollak AN.
Disclosure: No significant relationships.

O079

OUR EXPERIENCE IN THE USE OF THE COMPOSITE OSTEOCUTANEOUS FREE FIBULAR GRAFT FOR REPLACING COMPLEX GUNSHOT TISSUE LOSS OF THE UPPER EXTREMITIES

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Introduction: The use of modern high-energy weapons in modern wars is a cause of multifactorial injury of the extremities. The projectile creates a zone of necrosis that leads to the extensive tissue loss.
Material and methods: Between April 2013 and April 2015, four patients with gunshot wounds of the upper extremities, complicated by extensive loss of bone substance, were operated with free composite fibular graft. Three patients were injured at the shoulders. One injured had forearm wound. The wounded in the forearm had a gunshot fracture of both bones of the forearm, mainly affecting the diaphysis of the radius. Preoperatively there were routinely performed angiography of the injured extremity and the donor lower leg. Fixation of the bone part of the graft on the shoulder was carried out with spanning plate in all cases. Bone stabilization with rigid nail fixation was applied for reconstruction of the radius.
Results: One flap transferred on forearm healed completely. Fasciocutaneous part of the graft had partial necrosis in two cases. Last patient had thrombosis varicose changed veins of the flap in the early postoperative period that caused the total necrosis of the fasciocutaneous skin paddle of the graft. Despite this complication, the bone portion of the flap healed successfully. Healing took no more than 6 months in all cases.

Conclusion: The experience of treating patients with gunshot tissue loss of the upper extremities showed that free composite osteocutaneous fibular flap allows replace complex gunshot defects of the upper extremities simultaneously with minimal functional and cosmetic loss of the donor segment.
References:
Disclosure: No significant relationships.

O080

POSTTRAUMATIC OSTEOMYELITIS

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Introduction: A full 20 years after the war research is being conducted on the most adequate therapeutic approach for chronic osteomyelitis of long bones caused by high kinetic energy projectiles.
Material and methods: This study shows 60 patients who were treated by the classic surgical method and 60 patients who were treated in accordance with the suggested original surgical protocol. Patient selection was random. Selection of patients was done on the basis of clinical and radiologic examination which included RTG and CT scanning. Osteomyeltises were selected in line with the McCollis classification and the dictated by the physiologic class of patients ABC.
Results: The combined original suggested protocol showed superior comparative advantages statistically defined as significant.
Conclusion: The combined original suggested protocol showed superior comparative advantages statistically defined as significant.
References:
Disclosure: No significant relationships.

COMPLICATIONS: VISCERAL TRAUMA

O081

GASTRIC ADENOCARCINOMA RELATED GASTRIC PERFORATION: CASE SERIES OF SINGLE INSTITUTE IN A PERIOD OF 16 YEARS

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Introduction: Gastroduodenal perforation is one of most common surgical emergency. Immediate surgical intervention is usually necessary. Under some rare condition, the perforation is related to gastric adenocarcinoma.
Material and methods: In Chang Gung Memorial Hospital, Linkou, there were 2738 patients diagnosed with ICD 9 codes of gastrointestinal perforation while 6864 patients with ICD codes of malignancy of stomach from 1997 to 2013. There were 50 patients with both groups of ICD codes and only 29 were diagnosed with gastric adenocarcinoma related gastric perforation.
Results: The mean age for the series of 29 patients is 77 year-old, male dominant (n = 19), and most of patients with chronic underlying diseases (n = 25). There were 15 patients with preoperatively diagnosed gastric adenocarcinoma while 14 patients were diagnosed intra-operatively or postoperatively. The surgical procedures (15 patients were treated radically), locations of perforation, and TNM stage (25 patients with stage III or more advanced) were all evaluated. For survival analysis, we compared this series with a cohort of 232 patients with non-malignant gastroduodenal perforation. Hospital mortality for these patients was significantly higher for malignant perforation (24.1 % vs. 8.9 %).
Conclusion: Gastric adenocarcinoma related gastric perforation is a condition of surgical emergency. According to our study, these patients were with relative advanced stages and radical surgery can not usually be done. In addition, clinical outcome is dismal.
References: 1. Ergul E, Gozetlik EO. Emergency spontaneous gastric perforations: ulcus versus cancer. *Langenbecks Arch Surg*. 2009 Jul; **394**: 643–646. 2. Kotan C, Sumer A, *et al*. An analysis of 13 patients with perforated gastric carcinoma: A surgeon's nightmare? *World J Emerg Surg*. 2008; **3**: 17. 3. Tsujimoto H, Hiraki S, *et al.* Outcome after emergency surgery in patients with a free perforation caused by gastric cancer. *Exp Ther Med*. 2010 Jan; **1**: 199–203. 4. Thorsen K, Soreide JA, *et al*. Epidemiology of perforated peptic ulcer: age- and gender-adjusted analysis of incidence and mortality. *World J Gastroenterol*. 2013 Jan; **19**: 347–354.
Disclosure: No significant relationships.

O082

LONG-TERM SURVIVAL AFTER SURGICAL TREATMENT FOR PERFORATED PEPTIC ULCER

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Introduction: Perforated peptic ulcer (PPU) is associated with high short-term mortality. Data on long-term outcome is sparse. Our aim was to investigate long-term follow up and factors associated with long-term survival
Material and methods: All patients operated for PPU at Stavanger University Hospital between 2001-2014 were reviewed and long-term survival assessed. Patients who died within 30 days of surgery were excluded from long-term survival analysis. Survival was investigated by univariate (log rank test) analysis and displayed by Kaplan Meier survival curves. Multivariable analysis of factors associated with long-term outcome was done by Cox regression analysis.
Results: of 244 patients surgically treated for PPU, 38(15.6 %) died within 30 days. Ninety day mortality was 19.2 %, 1 year mortality was 22.6 %, 2 year mortality 24.8 % and in total 46.6 % were deceased at the time of follow up. For survival analyses we excluded the 38 patients who died within 30 days, 5 patients lost to follow up, and 4 patients due to several admissions, leaving 197 patients available for long-term survival analyses. Median follow up time was almost 10 years (119 months). Cox regression analyses showed that age > 60 years, active cancer, hypoalbuminemia, pulmonary disease, cardiovascular disease and severe postoperative complications were independently associated with long-term survival. Total mortality was attributed to sepsis and/or multiorgan failure in 25 % (28/71) of late fatalities.
Conclusion: Age > 60 years, hypoalbuminemia comorbidity and severe postoperative complications were all independently associated with poor long-term survival
References:
Disclosure: No significant relationships.

O083

THE RISK FACTORS OF THE REQUIREMENT OF OPEN ABDOMEN IN THE PATIENTS RECEIVED THE DAMAGE CONTROL SURGERY

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Introduction: The open abdomen management (OAM) has been utilized for the patients who received the damage control surgery. It was usually decided intra-operatively just based on physicians' clinical judgment and experience. In current study, the risk factors of the patients who required the OAM were discussed.
Material and methods: The patients who received the damage control surgery were enrolled. The OAM was performed according to clinical requirement. The patients' demographics, method of surgery, amount of blood transfusion and operation time were recorded. The factors which may result in the difficulties of the closure of abdominal wound were analyzed in the subgroup of trauma and non-trauma patients.
Results: There were 266 patients received the damage control surgery, and 32.7 % (N = 87) required the OAM. There were 58 patients received such management due to intra-abdominal trauma, the other 29 OAMs were originated from non-trauma disease. Compared with the patients who did not require the OAM, there were significantly more patients received the surgery due to intra-abdominal trauma in the patients required the OAM (66.7 % vs. 29.1 %,$p < 0.001$).The patients who received the OAM had significantly more amount of blood transfusion(trauma: 2355.6 vs 877.6 ml, $p < 0.001$)(non-trauma: 1541.2 vs 141.0 ml, $p > 0.001$) and longer operation time(trauma: 188.5 vs. 116.1 minutes, $p < 0.001$)(non-trauma: 148.0 vs. 91.8 minutes, $p < 0.001$) in the subgroup of trauma and non-trauma patients respectively.
Conclusion: In the patients received the damage control surgery, the trauma patients seemed have higher probability of the required the OAM than the non-trauma patients. The more blood transfusion amount and longer operation time served as risk factors of requirement of OAM.
References:
Disclosure: No significant relationships.

O084

ERCP IN THE DIAGNOSIS AND TREATMENT OF PANCREATIC TRAUMA PATIENTS

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Introduction: To evaluate the usefulness of ERCP in the diagnosis and treatment of pancreatic trauma patients.
Material and methods: We reviewed the medical records of 72 pancreas trauma patients who were evaluated by endoscopic retrograde cholangiopancreatography (ERCP) for the suspicion of pancreatic duct injury. Patient demographics, mechanism of injury, initial CT findings, endoscopic intervention, methods of surgical treatment and outcomes were evaluated.
Results: From February 1988 to June 2015, 57 men and 15 women with a mean age of 35.51 ± 15.1 years were underwent ERCP at Wonju Serverance Christian Hospital for suspected pancreatic duct injury. Blunt abdominal trauma was the injury mechanism in all cases. Pancreatic duct injury was confirmed with ERCP in 34 patients. 12 patients were found to have duct injury which was not found in pre-ERCP CT image. The initial treatment modalities of pancreatic duct injury patients were surgery in 15 patients, conservative management in 8, endoscopic stent insertion without further surgical intervention in 11. There were two failed treatment cases in endoscopic treatment group. One patient underwent percutaneous drainage procedure, the other underwent Roux-en-Y pancreaticojejunostomy. Endoscopic treatment group had no generalized peritoneal irritation sign in pre-ERCP physical examination. There were 2 pancreas related mortality (13.3 %) in surgical treatment group, 1 pancreas related mortality(9.0 %) in endoscopic treatment group.
Conclusion: ERCP is necessary for the accurate diagnosis of duct injury in pancreas trauma patients. In regard to treatment of pancreatic duct injury patients, it can be an effective treatment modality equal to surgery in patients without generalized peritonitis.
References:
Disclosure: No significant relationships.

O085

ENDOVASCULAR TREATMENT OF RUPTURED POSTERIOR INFERIOR PANCREATICODUODENAL ARTERY ANEURYSM

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Introduction: True pancreaticoduodenal artery (PDA) aneurysm is a rare, but potentially fatal disease, accounting for <2 % of all visceral aneurysms. Open surgical repair, endovascular or a combination of these two technique have been used for treating ruptured PDA aneurysms. Very few cases of successful endovascular treatment of ruptured PDA aneurysm have been reported in the literature.
Material and methods: A 62-year-old man was admitted to our hospital for a 2-day history of epigastric pain. Contrast-enhanced CT identified a large retroperitoneal hematoma around pancreatic head and a 1,5 cm posterior inferior pancreaticoduodenal artery aneurysm. At angiography selective catheterization of the superior mesenteric artery and then sub-selective catheterization of the branches feeding the aneurysm sac has been performed: both inflow and outflow of the aneurysm has been embolized with microcoils. Postoperative course was uneventful, patient was discharged in 6th postoperative day.
Results: PDA aneurysms could occur following trauma, surgery, pancreatitis, but more often association with stenosis of the celiac artery due to arteriosclerosis or compression by median arcuate ligament has been described. The development of PDA aneurysms may be related to increased retrograde blood flow through the pancreaticoduodenal arcades. The incidence of PDA aneurysm rupture is up to 65 %, and the risk of rupture appears to be unrelated to the size of the aneurysm. In case of rupture treatment is challenging and mortality has been reported in literature up to 50 %.
Conclusion: Endovascular treatment of ruptured PDA aneurysms is less invasive than surgical resection and should be attempted first if possible in the management of these patients.

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Disclosure: No significant relationships.

O086

VISCERAL PSEUDOANEURYSMS AFTER HEPATIC AND BILIOPANCREATIC SURGERY; REPORT OF A NUMBER OF CASES AND REVIEW OF LITERATURE

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Introduction: Pseudoaneurysms of visceral arteries are an infrequent complication after invasive procedures or surgeries, specially of the biliary tract. In the last years, we have seen an increase of this pathology. We present our experience of 12 cases of pseudoaneurysms after surgery, including manifestation, treatment and outcomes.
Material and methods: We perform a retrospective study of all pseudoaneurysm diagnosed after abdominal surgery in our hospital between 2008 and 2014.
Results: 12 patients were included, 8 men and 4 women. All patients presented surgery of biliary tract. 75 % of cases had post-operative complication as intraabdominal infection, bile or pancreatic fistula. Clinical manifestations were observed in 9 patients, 6 as gastrointestinal bleeding, 3 as hemoperitoneum. All patients except one were treated with embolization or stenting. One of the total needed surgery despite previous embolization, to control the bleeding. A small percentage of patients, 4 out of the total, had unceasing bleeding and died.
Conclusion: Pseudoaneurysms of visceral arteries are an unusual postoperative complication; they are also increasingly seen as a complication in procedures involving bile tract manipulation. Different hypothesis are accepted as it is described in literature: direct vascular injury at clipping, electrocautery erosions, bile leakage or postoperative infection. The most frequent clinical manifestation is acute bleeding, well as hemobilia, or as hemoperitoneum. The diagnosis is made with CT scan and angiography establishes the definitive diagnosis. A high index of suspicion is needed, because it may produce massive bleeding. Therapeutic option includes angiographic embolization, solving the problem the most of the times.
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Disclosure: No significant relationships.

ABDOMEN: DIVERCULITIS

O087

QUALITY OF LIFE FOLLOWING NON-SURGICAL TREATMENT OF ACUTE DIVERTICULITIS

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Introduction: Although conservative treatment of acute diverticulitis is successful in the majority of cases, recurrences are often and complains like persisting abdominal pain or bloating common after conservative treatment.
Material and methods: Follow up study that included patients that underwent successful conservative treatment for acute diverticulitis.
Results: During the last 30 months, 156 patients were admitted in Bucharest Emergency Hospital with acute diverticulitis. Among these, 116 patients with staged Hinchey Ia, Ib and II and III acute diverticulitis, underwent successful medical treatment, the rest of the patients requiring surgical intervention either as first intention or following failure of medical treatment. We contacted a sample of 30 patients randomly selected from this group and realised a quality of life (QOL) assessment using a EuroQol-like classification that was completed by a health care professional over the phone. From these patients we managed to get a full questionnaire in only 20 cases, the rest of the selected patients either refused to answer or could not be reached. Recurrences of diverticular disease were seldom and only a few patients required readmission for surgery.
Conclusion: Successful outcome of medical treatment of acute diverticulitis should be assessed not only on short term evaluation but also on long term for an exact evaluation the benefits and risks of this approach
References:
Disclosure: No significant relationships.

O088

EMERGENCY MANAGEMENT OF DIVERTICULITIS

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Introduction: Diverticulitis is a common problem, and although most cases will respond to conservative measures, surgeons will frequently need to treat patients requiring emergency surgery. Surgical management has progressed over the past 30 years, with a change in practice from routine drainage and proximal diversion (necessitating two further major procedures) to primary resection and anastomosis in selected cases.
Material and methods: Although substantial progress has been made in the conservative management of sigmoid diverticulitis, a significant number of patients require operative management emergently or urgently after presentation. Most patients with sigmoid diverticulitis present with the classic triad of signs: left lower quadrant tenderness, fever, and leukocytosis. 25 patient Clinica Lancet" Georgia + Da Vinci hospital. BKR **Methods:** US, CT, colonoscopy.
Results: Several case series have demonstrated the safety of primary anastomosis without diversion for the treatment of acute diverticulitis and have found that the morbidity and mortality of primary anastomosis compared favorably to patients treated with the Hartmann procedure. When evaluating the results of such case series, it is important to note that patients selected for the Hartmann procedure likely differed substantially from those selected for primary anastomosis in ways
Conclusion: Prior to closure, the abdomen should be copiously irrigated with saline. If there is an established abscess cavity, drainage should be considered, otherwise routine drainage is unnecessary. The fascia should be closed as per usual routine, but in the case of Hinchey Stage IV or in the immunocompromised patient, consideration of internal retention sutures should be given.
References:
Disclosure: No significant relationships.

O089

DIVERTICULITIS: VIDEOLAPAROSCOPIC HARTMANN'S RESECTION AND SINGLE-PORT HARTMANN'S REVERSAL THROUGH THE STOMA SITE

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Introduction: Restoration of bowel continuity after Hartmann's resection is technically challenging. High morbidity and mortality have been reported: respectively 15-50 % and 5-10 %. Laparoscopic approach have been reported to decrease perioperative complications, but until now very few papers have been published about single-incision laparoscopic surgery.
Material and methods: We retrospectively analyzed data of 14 patients who underwent laparoscopic Hartmann's resection for acute diverticulitis (10 Hinchey Stage III and 4 Hinchey Stage IV).
Results: There were 9 men and 5 women and the mean age was 63 years (range 42 – 83 years). Laparoscopic Hartmann's resection was performed at first cutting both, inferior mesenteric artery and vein at their origin, than mobilizing left splenic flexure and detaching colon-epiploic ligament before to sew the stoma. There were no conversions. The mean time to the reversal procedure was 6 months (range 2-13 months): single-port laparoscopic operations (SILS) were successfully performed in 100 % of patients through the pre-existing stoma site. The detachment of colon-epiploic ligament done during the first procedure greatly facilitated the SILS reversal operation facilitating the colorectal anastomosis: a colon-rectal mechanical anastomosis (with EEA28) was performed. No intraoperative complications were noted and no blood transfusion were required. The median operative time and postoperative length of stay were 120 min (range, 90-150 min) and 7 days (range, 5-18 days), respectively. There were 3 postoperative complications (21.4 %): 1 (7.2 %), wound infection, 1 (7.2 %) urine retention and 1 (7.2 %) atrial fibrillation.
Conclusion: Restoration of bowel continuity after Hartmann's resection by SILS approach is feasible with low rate of perioperative complications.
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Disclosure: No significant relationships.

O090

A SINGLE CENTER EXPERIENCE OF AN EMERGENCY LAPAROSCOPIC HARTMANN'S PROCEDURE FOR COLORECTAL PERFORATION

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Introduction: Though Hartmann's procedure is a common operation for colorectal perforation, abdominal contamination often leads to surgical site infection (SSI). Laparoscopic Hartmann's procedure (LH) was less invasive and was expected as an alternative to conventional Hartmann's procedure (CH) for mildly or moderately contaminated colorectal perforation, however, lacked clinical evidence.
Material and methods: This retrospective observational study included all patients who underwent CH or LH after colorectal perforation, from April 2007 to October 2015. Exclusion criteria were severe contamination categorized by CT, systolic blood pressure of < 90 mmHg, white blood cell count of $< 4000/\mu L$, age of >80 y, subjects with malignancy or subjects previously underwent surgery on lower abdomen.[AS1] Descriptive statistics of baseline characteristics and outcome after CH or LH were assessed.
Results: A total of 13 subjects out of 55 consecutive patients with colorectal perforation was included. The median age was higher in subjects with CH than LH (60 vs 54 y). The median operation time of the subjects with LH was longer than those with CH (253 vs 210 minutes). SSI did not occur in subjects in LH (0/3) whereas occurred in a half of subjects with CH (5/10) and needed longer median hospital stay in comparison with CH subjects without SSI (21 days versus 13 days). Median hospital stay was 10 days (9-12) in subjects with LH and 18 days (10-75) in subjects with CH. No patients in both groups have died during hospitalization.
Conclusion: In our first experience, LH was feasible for in terms of SSI incidence and length of hospital stay.
References:
Disclosure: No significant relationships.

O091

PATIENT-RELATED AND SURGERY-RELATED PROGNOSTIC FACTORS IN HINCHEY III AND IV ACUTE PERITONITIS

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Introduction: The surgical treatment of generalized peritonitis due to colonic perforation has been a matter of debate. The aims of the study was to analyze the outcomes of patients presenting with peritonitis due to colonic perforation, in order to highlight patient-related and surgery-related prognostic factors which concur to determine the patients' short-term prognosis.
Material and methods: Data were collected concerning 205 patients, who underwent surgery for generalized peritonitis due to colonic perforation at San Gerardo Hospital in Monza (Italy), between January 2002 and September 2014.
Results: Hartmann's procedure was performed in 108 patients (52.7 %), while resection with primary anastomosis was performed in 59 patients (28.8 %); the remaining 38 patients (18.5 %) underwent either primary suture of perforation or diverting stoma creation. The overall mortality rate was 26.3 %. Non connection was found to exist between in-hospital mortality and the choice of surgical treatment. Factors such as the presence of severe sepsis at admittance, major peritoneal contamination, advanced age and comorbidities appeared to strongly affect short-term outcomes. Major post-operative complications (i.e. Clavien-Dindo stages IIIb to IV) occurred in 38 patients (18.54 %) and were mostly due to the presence of septic shock.
Conclusion: The short-term prognosis of patients presenting with generalized peritonitis due to colonic perforation is mainly determined by patient-related factors, and particularly by the presence of deranged physiology at admittance and of previous comorbid conditions. Since no differences were noticed in outcomes of patients who underwent resection with primary anastomosis, this procedure appears to be acceptable and should be considered an alternative to Hartmann's procedure in stercoral peritonitis.
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Disclosure: No significant relationships.

O092

NEW MINIMALLY INVASIVE PERSPECTIVES IN EMERGENCY LAPAROSCOPY FOR THE SURGICAL TREATMENT OF COMPLICATED DIVERTICULITIS

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Introduction: To date, laparoscopy is emerging as a feasible alternative to the standard open procedures in several cases of complicated diverticulitis. We report our early experience with minimally invasive surgery for the treatment of complicated diverticulitis.
Material and methods: Between 2011 and 2015, 55 patients with diagnosis of acute diverticulitis, graded according to the Hinchey Classification, were laparoscopically operated on at our Center. 15 patients (mean age 57y – r.35-88), 4 H2 and 11 H3, underwent laparoscopic peritoneal lavage (LPL) and 40 patients were operated on laparoscopic sigmoid resection: 22 (mean age 63y– r.39-85), 7 H2, 10 H3 and 5 H4, underwent laparoscopic Hartmann's intervention (LH) and 18 (mean age 59y– r.32-76) 6 H2, 8 H3 and 4 H4, underwent resection with primary anastomosis (PA).
Results: In LPL group post-operative complications have been recorded in 3 H2 and in 1 H3 ($p < 0.05$). 2 H2 were re-operated on and underwent open Hartmann's procedure because of persistent fistula and recurrence of perforation on 45th post-operative day. In LH group 1 patient died for pulmonary edema and myocardic infarction. In AP group 1 patient was complicated by pelvic abscess on 7th post-operative day, treated by percutaneous drainage, and 1 patient developed a low output fistula, managed conservatively.
Conclusion: Laparoscopy can be feasible as safe and effective in properly selected cases after early onset of symptoms. Careful patient selection is mandatory before attempting LPL, since it is suitable only in cases of purulent peritonitis (H3). If a perforation is identified (H4), resection with or without primary anastomosis is still required.
Disclosure: No significant relationships.

MILITARY SURGERY AND AUSTERE ENVIROMENT

O093

MILITARY MEDICAL SUPPORT CHAIN: THE IMPORTANCE OF EXPEDITIOUS EVACUATION

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Introduction: An important factor within the military medical logistical chain is the capability of expeditious evacuation from point of injury, through an MTF, to the country of residence where highest level of care can be provided. To investigate possibilities for improvement in this domain, it is necessary to analyze the relationship between duration of evacuation and long-term functional outcome and QoL of injured repatriated Dutch service members.
Material and methods: Repatriated service members were invited to participate in a survey concerning functional outcome and QoL. LEFS, SF-36 and EuroQol-6D questionnaires were used. A possible association between functional outcome and QoL in respect to duration of medical evacuation from point of injury to arrival in the Netherlands was analyzed with dichotomization of evacuation within, and after 72 hours.
Results: Sixty percent (28/47) of BCs arrived in the Netherlands within 72 h and 40 % (19/47) past 72 h. For the DNBI-injury cohort this distribution was 30 % (7/23) within, and 70 % (16/23) after 72 h. Within the DNBI-illness group 19 % (5/27) was evacuated in 72 h or less and 81 % (22/27) in more than 72 h. No significant independent associations between interval duration and measured outcomes were found.

Conclusion: Significant difference in functional outcome and QoL between the two groups was not found. Specialized tactical evacuation and enroute care capability during strategic evacuation, developed and matured in Afghanistan. This trend combined with our results could implicate that the medical evacuation paradigm has shifted from the best care as soon as possible towards delivery of the right care to the right patient at the right time.

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Disclosure: No significant relationships.

O094

WAR SURGERY: MANAGING PERINEAL TRAUMA IN CIVIL WAR-WOUNDED

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Introduction: Ziv Medical Center in Israel (the closest hospital to the Israel-Syria border) has treated 500 civil war-wounded since 2013. The majority of the wounded have suffered blast and/or gun shots. A cohort of patients presented with challenging perineal injuries. We report their presentation, management and outcome.

Material and methods: With institutional ethics committee approval, electronic and paper case notes of all 500 Syrian patients were retrieved. of 500 patients, 11 were found to have perineal injuries.

Results: of the 11 patients with perineal injuries, 4 had isolated perineal injuries, 4 had perineal injuries extending into the abdomen, 1 had perineal injuries extending down to the thigh, 1 had perineal injuries extending to the back and 1 had pelvic and perineal injuries. Six patients had gunshot wounds only, 4 patients had combined gunshot and shrapnel injuries and in one patient the mechanism of injury remains unknown (most likely blast injury). There were no vascular injuries, 1 pelvic fracture, 1 colonic injury, 3 small bowel injuries, 1 ureteric injury and 1 complex rectal injury.

Conclusion: All patients underwent CT imaging with intravenous contrast, wound debridement and drainage of wounds with irrigation or with negative pressure wound therapy. With meticulous wound care, all patients recovered fully.

Disclosure: No significant relationships.

O095

CARDIAC WAR INJURIES, MANAGEMENT OF PENETRATING SHRAPNELS TO THE HEART

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Introduction: Penetrating cardiac injuries pose great challenge in diagnosis as well as management. Military weaponry shrapnel injuries are rare and seldom reported.

Material and methods: Methods: To review our experience in managing penetrating shrapnel to the heart due to combat injuries Retrospective review of medical records of all the injured admitted with penetrating shrapnel chest injuries due to combat injuries. Only wounded with cardiac injuries were included.

Results: Over a two year period (August 2013- October 2015) 8 patients were identified with penetrating shrapnel injuries to the pericardium and/ or the heart resulting from combat etiology. All the patients were male but one female, mean age was 26.6 years (Range 13 – 47 years). Associated injuries were common. Five patients were awake and alert and three were mechanically ventilated. All had FAST, CT and Echocardiography studies. Five had positive FAST for the pericardial fluid. CTS demonstrated the shrapnel location. In 5 patients shrapnel into the pericardial space and 2 patients with shrapnel into the myocardium were identified and one patient with shrapnel into the Right Atrium. One patient underwent percutaneous pericardiocentesis. The Female patient was operated due to her intracardiac shrapnel. Six patients were treated non- operatively. One patient in the non-operative group died (14 %) due to severe head injury.

Conclusion: Non operative management of penetrating pericardial or myocardial shrapnel injuries in hemodynamic ally stable patients may be managed non-operatively. Strict evaluation and monitoring are mandatory. Intracardiac shrapnel need to be operated

References:

Disclosure: No significant relationships.

O096

ASSESSMENT OF THE MANAGEABILITY OF A DISASTER MEDICAL CARE SYSTEM IN OSAKA CITY BY A SIMULATION OF A NANKAI TROUGH QUAKE USING A GIS

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Introduction: Japan and the Osaka prefectural government has publicized the estimation of the damage caused by the Nankai Trough quake, whose probability of recurrence in the next 30 years is 70 %. Osaka prefecture is preparing for the disaster by establishing "disaster coping" hospitals: 7 disaster base hospitals, 2 municipal disaster coping hospitals, and 92 "disaster cooperative" hospitals in Osaka City. Studies have not fully examined whether the medical care system will be able to manage the high number of casualties. This study assesses the manageability of the disaster medical care system in Osaka City by integrating the data on damage estimation and those on disaster coping hospitals using a GIS (geographic information system).

Material and methods: The following geographic spatial data was used: height of the tsunami, distribution of seismic intensity, percentage of roadblocks, and distribution of casualties and disaster

coping hospitals. These data were expanded on GIS using ARCGIS software.
Results: A water level of more than 30 cm, which prevents the movement of EMS vehicles, was found around 35 hospitals largely along the coast of Osaka Bay. The percentage of roadblocks caused by the collapse of buildings was high in the outskirts of Osaka City, where a higher number of casualties was found as well. A large number of casualties are estimated to be concentrated in 5 disaster base hospitals at the center of Osaka City.
Conclusion: The uneven distribution of medical resources and medical requirements in Osaka City becomes apparent in a simulation of a Nankai Trough quake.
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Disclosure: No significant relationships.

O097

A NEW PROTOCOL FOR WAR-WOUNDED PATIENTS WITH IMPROVISED PRIMARY CARE IN SYRIA

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Introduction: Since February 2013, 500 Syrian civil-war wounded patients have been treated in Ziv Medical Center, the closest hospital in Israel to the border with Syria. In spite of the destruction of Syrian health facilities, some patients arrived after initial treatment in Syria.
Material and methods: With institutional ethics committee approval, the files of all 500 Syrian patients were reviewed.
Results: Fifty three had received treatment in Syria prior to their arrival in Israel. On arrival in Ziv Medical Center a protocol for the management of stable patients who had undergone previous surgery evolved as it emerged that treatment, though life-saving, had been partial and other injuries remained that required attention, for example, ureteric injury, bowel perforation and limb ischaemia. All patients were assessed in the Trauma Room along ATLS guidelines. Stable patients routinely underwent whole body CT scan with intravenous contrast. All patients with previous laparotomy underwent repeat laparotomy. Intercostal drains were removed and new drains inserted. Patients received vancomycin and amikacin antibiotic therapy until culture and sensitivity results were obtained.
Conclusion: The destruction of health facilities in conflict zones is a source of great concern. Initial care, even though improvised and partial was, most likely, life-saving for these patients.
Disclosure: No significant relationships.

O098

INFECT DEFECT PSEUDARTHROSIS OF TIBIA AFTER GUNSHOT WOUND - COMBINATED SOFT TISSUE AND BONE RECONSTRUCTION IN SEVERAL STEPS - CASE REPORT

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Introduction: A case report about an infected gunshot-wound with a pseudarthrosis of the lower leg.
Material and methods: Fix ex and free flap, final plate fixation.
Results: The patient is cured.
Conclusion: A few steps are necessary.
References:
Disclosure: No significant relationships.

O099

PRACTISE OF ORTHOPAEDIC IN AUSTERE ENVIRONMENT OF DEVELOPING COUNTRIES

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Introduction: The burden of trauma is large and neglected in low income developing countries as compare to discussion about communicable diseases. The socioeconomic impact of injury related disability is magnified in low income countries, where there are often poorly developed trauma care and rehabilitation centers. Injuries contribute to poverty and economic, social costs have an impact on individuals and society. Sometimes simple fractures like colles fracture are not treated with standard recommendations. Non availability of fluoroscope and portable radiographic machines at many hospitals of developing countries leads to difficult situation in managing simple fractures. The orthopaedic surgeons are left with choice but clinical judgment after reduction of colles fracture and later on radiographs done in radiology department.
Material and methods: Study conducted at Fazle Omar Hospital Chenab Nagar on 50 patients with non intra articular colles fractures and reduction was done without using the fluoroscope. The reduction was assessed by clinical assessment like shape of the wrist and clinical palpitation of radial styloid and POP back slab applied and later on post reduction check radiographs in radiology department.
Results: The post reduction radiographs were assessed for reduction if meets acceptable criteria, patients were discharged otherwise again attempt is made. Thirty patients post reduction radiographs meet acceptable criteria.
Conclusion: Orthopaedic surgeons should have good clinical skills to work in bizarre conditions.
References: Clin Orthop Relat Res. 2008 Oct; 466(10): 2443–2450 Injuries in Developing Countries How Can We Help the Role of Orthopaedic Surgeons Lewis G. Zirkle, Jr
Disclosure: No significant relationships.

MYTHS & TRUTHS: SURGICAL TREATMENT OF FRACTURES OF THE ANKLE AND TALOCALCANEAL JOINT

O100

DEMOGRAPHIC PATTERNS AND INJURY CHARACTERISTICS OF PATIENTS WITH A CALCANEAL FRACTURE IN A REGIONAL TRAUMA SYSTEM

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Introduction: Calcaneal fractures are known to cause a considerable long-term disability. Little is known about outcome differences between different levels of trauma care. This study describes the demographic patterns and outcomes of patients with a calcaneal fracture in a regional trauma system.
Material and methods: This is a retrospective regional cohort study including all patients aged 16 years or older with a calcaneal fracture admitted in a level I or II hospital from 2010 to 2012. All demographics and patient and fracture characteristics data were collected. The outcome was measured with a questionnaire, consisting of the EQ-6D, patient-specific characteristics, satisfaction on appearance of foot and wearable range of shoes, complications, and the capability to work.
Results: In total 66 (level I) and 219 (level II) were admitted. The level I population was significantly younger, sustained a more severe injury and had more concomitant injuries. 30 (level I) and 96 (level II) patients filled out the questionnaire. The median EQ-5D index value of the level I population was significantly lower compared to the level II population (0.72 vs. 0.83, $p = 0.022$). Furthermore, these patients returned less often to work, 72 % versus 90 % ($p = 0.022$). Complications, satisfaction with wearable range of shoes or appearance of foot did not differ.
Conclusion: There is a substantial difference between the patient and injury characteristics and outcome of patients with a calcaneal fracture in level I and level II hospitals. Therefore, trauma centers with different level of care should account for this in the management of these patients.
References:
Disclosure: No significant relationships.

O101

CALCANEAL FRACTURE - NAILING

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Introduction: The high risk of shortening and reduction of the hight of the calcaneus is related with comminuted fractures. Displaced fractures are need at some type of the operative treatment. CRIF is difficult, especially reduction and stabile fixation of the upper subtallar joint surface. ORIF is usually relate with wound complication and is contraindicated in diabetes, heavy smokers etc. The authors present sinus tarsi approach and nailing of the calcaneal fractures.
Material and methods: The 176 patients with 196 fractures of the calcaneus was treated by sinus tarsi approach and nailing during last 3 years. Standard preop procedure was performed. One shot of antibiotics in the close fractures case, open fractures were excluded. The sinus tarsi approach was made, the reduction of the upper subtalar surface, lenght and hight of the calcaneus and stabilisation with one or two cannulated screws which fixed subtalar fragments. Definitive fixation we make by calcaneal nail (C-nail by Medin).
Results: We treated 176 patients during last 3 years by this. The aftertreatment was without the cast, simple movement from the first postop day, half weight bearing after 6-8 weeks. All fractures was healed during 10 weeks after surgery without the wound complications. The full weight bearing was possible 3 month after procedure.
Conclusion: This method provide anatomical reduction and fixation of the upper subtalar joint, no wound healing problem and good stability without lose of the reduction in this type of fixation. We can recommend this approach and stabilisation by nailing. Our experiences shows that the definitive fixation with the nail (C-nail).
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Disclosure: No significant relationships.

O102

INTRAMEDULLARY NAILING OF CALCANEAL FRACTURES - EXPERIENCE WITH C-NAIL

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Introduction: The aims of the operative treatment of intraarticular fractures of os calcis are the anatomic reduction of articular surfaces and the restoration of the shape of calcaneus. The extensile surgical approaches are associated with high risk of serious wound healing problems. The authors present their experience with less invasive treatment of intraartricular calcaneal fractures using C-nail.
Material and methods: Nineteen patients with twenty intraarticular calcaneal fractures type II and III according to Sanders classification were treated with C-nail in years 2014 and 2015. The follow-up period was at least 6 month. The operation time, wound healing, bone healing, stability of osteosynthesis (talocalcaneal height and Böhler angle changes) and clinical results (AOFAS scoring system) were analyzed.
Results: No wound healing problems were observed and all fractures healed successfully. We noticed only a minimal loss of talocalcaneal high and Böhler angle during follow-up. Clinical score in all patients was between 81-100 points (good to excellent result).
Conclusion: Intramedullary nailing of less severe intraarticular calcaneal fractures using C-nail seems to be a good alternative to plate osteosynthesis. Clinical and radiological results are very satisfactory with a low rate of complications.
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Chiergatti R.: Primary stability of an intramedullary calcaneal nail and an angular stable calcaneal plate in a biomechanical testing model of intraarticular calcaneal fracture. Injury. 2014, 45 Suppl 1: 49-53.
Disclosure: No significant relationships.

O103

INSERTION OF ANTEROMEDIAL WIRES IN THE APPLICATION OF A HIND FOOT FRAME IN DISTAL TIBIAL AND CALCANEAL FRACTURES

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Introduction: External fixation using Ilizarov frames provides good outcomes for severe comminuted fractures, however, a safe angle of insertion has not yet been examined when applying hind foot frames for these fractures. This study investigated the risk to the posterior tibial neurovasculature (PTN) when anteromedial wires were inserted into the calcaneus.
Material and methods: Twenty cadaveric limbs had 5 wires inserted into the calcaneus. In Group A, wires were inserted 1/3 of the distance from the posterior tip of the heel to the tip of the lateral malleolus ($n = 50$). In Group B, wires were inserted halfway between these landmarks ($n = 50$). Angle of insertion was varied between -10° and 50° in both groups. Vernier calipers were used to measure the distance between the wires and the PTN.
Results: In Group A, no wires pierced the PTN. At an increased angle of insertion (> 30°) there was greater risk to the PTN (Pearson's correlations coefficient $r = -0.785$, $p < 0.001$). In Group B, 11 wires pierced the posterior tibial neurovascular bundle and 3 passed within 1 mm of it. Wires in Group B were significantly closer than in Group A ($t = 6.852$, $df = 93.73$, two-tailed $p < 0.01$). With an increased angle of insertion there was greater risk to the PTN ($r = -0.801$; $p < 0.01$).
Conclusion: Based on these results, a maximum angle of 25° is recommended for insertion of calcaneal wires at 1/3 from the heel. If greater bone purchase is required, a halfway insertion point may be used, with a maximum angle of insertion < 10° decreasing risk to the PTN.
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Disclosure: No significant relationships.

O104

CALCANEAL FRACTURE: 3D AS NEW GENERATION IMAGING

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Introduction: Calcaneal fracture is rare and difficult to treat. His treatment remains controversial, but the gold standard treatment is to operate in case of displaced intra-articular fracture. The main goal of surgery is the repair of the posterior subtalar joint (PSJ) facet. At our hospital we developed a 3D model analysis to assess the fractured bone and the bone after osteosynthesis. Both are compared to the uninjured side. Results of this technique are presented.
Material and methods: 16 patients with unilateral calcaneal displaced intra-articular fractures were operatively treated at our Hospital. Pre-op, post-op, and contralateral uninjured foot CT images were segmented with Mimics® software(Materialise®), and analyzed with a homemade program based on MeVisLab® technologies.
Results: 16 patients were operatively treated. 9 presented an improvement of the distance between talus and calcaneus, 6 presented an improvement of the orientation of the PSJ calcaneal facet. Three had a significant remaining subsidence of the PSJ calcaneal facet, without clinical significance.
Conclusion: The calcaneal anatomy is very complex and 3D reconstruction imaging gives a clear overview of the fracture pattern and of the osteosynthesis. It helps to plan the surgical technique and to assess the postop result. Several measurements are available: the distance from the calcaneus to the talus, the surface of the joint facet and the orientation of the joint facet.
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Disclosure: No significant relationships.

O105

ORIF TREATMENT OF 54 DISPLACED INTRA ARTICULAR CALCANEAL FRACRURES

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Introduction: The fracture of the calcaneus accounts for about 1 % of all fractures. The majority of these fractures are intra-articular. Surgical intervention is an accepted way of treatment of these fractures
Material and methods: In a period of nineteen years 47 patients ages between 19-77 years old, were treated surgically using the lateral extensile approach. Follow-up ranged from 1-19 years. The evaluation was based on x-ray appearance (calcaneal morphology, Bohler's angle, Gissane's angle), active ROM, footwear problems, time off work. The SF-36 health status survey was used for outcome assessment.
Results: All fractures have been healed in an average time of 15.3 weeks. The outcome was excellent for 24 cases, good for 17 cases and poor for 10 cases. Complications were malposition of fixation in 8 cases, superficial wound slough in 5 cases, reflex

sympathetic dystrophy in 6 cases and deep infection in one case which cleared up with antibiotics and metalwork removal following union of the fracture. Two patients who had late reconstruction resulted in malunion which was corrected with an osteotomy.
Conclusion: ORIF is an effective method of treatment for these fractures provided that restoration of calcaneal height and talocalcaneal relationship is achieved. Based on these results, if severe posttraumatic subtalar arthritis does not occur, long-term (10-20 years) functional results with mild pain, minimal alterations in activities of daily living or work, and normal shoe wear can be expected from a properly performed ORIF. Patients must be counseled regarding difficulty with uneven ground and an inability to return to vigorous sports activities.
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Disclosure: No significant relationships.

O106

SYNDESMOTIC RECONSTRUCTIONS - EVALUATION USING WEIGHTBEARING CT

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Introduction: There is evidence that both incomplete treatment and malreduction of injuries to the syndesmosis can lead to poor clinical outcomes. This study's aim is to compare the ability of two reconstructive techniques to restore anatomic positioning of the syndesmosis.
Material and methods: Fourteen paired, fresh-frozen human cadaveric limbs were mounted in a weight-bearing simulation jig. CT scans were obtained in the simulated foot-flat loading (75 N) and in single-legged stance (700 N), in five foot positions: neutral, external rotation, internal rotation, dorsiflexion, and plantar flexion. The elements of the syndesmosis and deltoid ligament were sequentially sectioned and rescanned following each resection. One of each pair was then reconstructed via two methods: Achilles autograft and peroneus longus ligamentoplasty.
Results: Multiple measurements were made to define the position of the fibula in the incisura. The deformity at the incisura was consistent with clinical injury, and the degree of displacement in all ligament states was dependent on the foot position. Statistically significant differences between the intact and reconstructed states were found with all measurements, specifically when the foot was in external rotation and dorsiflexion, $p < 0.05$. There was no significant difference with direct comparison of the reconstructions.
Conclusion: This study has detailed the motion of the fibula in the incisura and its variation with foot position. Neither reconstruction was clearly superior, and both techniques had difficulty in the externally rotated and dorsiflexed positions. This study design can serve as a model for future ex-vivo testing of reconstructive techniques.
Disclosure: No significant relationships.

O107

TREATEMENT OF ANKLE FRACTURES WITH THE LOCKED INTRAMEDULLARY STRAIGHT XS NAIL IN COMPLEX FRACTURES, OSTEOPOROTIC BONE AND SOFT TISSUE DAMAGE

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Introduction: In unstable ankle fractures many authors found a better outcome after surgical management. Plate osteosynthesis is the standard procedure today. However soft tissue problems due to trauma, arterial or venous problems and diabetes can cause severe soft tissue problems. The screw fixation in osteoporotic bone and in comminuted fractures can be insufficient . After ankle osteosynthesis Zaghloul reported in over 60 year old patients a rate of infection of 2 % but 21,5 % of the patients had complications and 10.8 % where major requiring operative revisions. The XS nail a straight 4.5 mm intramedullary implant which can be locked every 9 mm with threaded wires showed significant lower deformation and higher bearing capacity as plate osteosynthesis in experimental tests and avoids soft tissue problems.
Material and methods: From December 1999 to march 2001 214 patients with a ankle fracture were treated consecutively with a XS nail in all ankle fractures except patients having a medullar canal too thin for nail insertion. All patient data pre, intra and postoperative data where recorded prospectively and clinical and radiological re-examination 6-18 months after operation was performed and evaluated according to the Olerud score. A long time follow up was also performed.
Results: Olerud score n Exzellent 71,4 % n Good 24,3 % n Satisfactory 1,2 % n Bad 2,2 % (bad results in 4 patients with regional pain syndrome, Parkinson, reosteosynthesis after plate, complete joint dislocation)
Conclusion: The XS nail allows a stable fixation also in comminuted and osteoporotic fractures. The soft tissue problems are rare and because of the intraosseous implant position their management is simple. There were no infections and low complication rate
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Disclosure: I am the author of the implant

ABDOMINAL EMERGENCIES

O108

ACUTE MESENTERIC ISCHEMIA: DO WE NEED TO BE FASTER? AN ALGORITHM PROPOSAL

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Introduction: Acute Mesenteric Ischemia (AMI) has not changed mortality rates in the past 50 years. Such poor outcome is influenced by treatment delay due to diagnostic difficulties. After an observational retrospective analysis at Humanitas Research Hospital Analysis of patients with AMI a diagnostic algorithm was designed to shorten presentation to treatment time.
Material and methods: We retrospectively analyzed 36 patients with postoperative diagnosis of AMI; medical history, clinical features, laboratory, imaging, time to treatment, in-hospital complications and mortality were considered. Mann-Whitney non parametric test and Fisher's exact test were considered for statistical analysis. All CT scan were reviewed by a single radiologist according to the Furukawa criteria. AMI were classified in Embolic, Thrombotic, Non Occlusive and Venous AMI.
Results: Medical history, risk factors, clinical features at presentation seemed to have no influence to identify patients with worst outcome except tachycardia that is associated with severe complications ($p = 0.006$); no laboratory test was statistically significant in order to obtain early diagnosis. Systematic CT reviewing according to Furukawa criteria identified many radiologic features not reported before surgery. Mortality was strictly related to time to treatment: (<6 hrs: 30 %, 6 to 12 hrs: 36,4 %, >12 hrs: 53,3 %).
Conclusion: Our study confirmed the difficulties to achieve an early diagnosis and underlined the necessity to treat these patients within 6 hours; therefore we introduced in our clinical practice an algorithm to guide emergency physicians to a faster assessment of patients with suspected AMI. Further analysis after the introduction of the algorithm need to be performed in the future to evaluate its efficacy.
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Disclosure: No significant relationships.

O109

IMPACT OF SYSTEMATIC USE OF US-GUIDED DPA IN THE MANAGEMENT OF ABDOMINAL EMERGENCIES

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Introduction: Free fluid is a common finding in many abdominal acute diseases. Interpretation of the nature of the fluid could be critical for the management. We prospectively evaluate the impact of the systematic use of US-guided Diagnostic Peritoneal Aspiration (US-DPA) in the decision making of abdominal emergencies.
Material and methods: US-DPA was systematically performed in all patients with acute abdominal problems (no trauma) submitted to US and/or CT when free fluid was detected, whenever uncertainty remained on the final diagnosis and right clinical decision. Analysis of the fluid was performed only every time the gross appearance was not considered enough for decision. The following data were analyzed: DPA feasibility, time to clinical decision (surgery, observation, new investigation), rate of decisions definitely changed by DPA. US-DPA was performed bedside, with 19/21 G needle, preferably by an in-plane technique.
Results: Seventy nine patients underwent DPA for the following conditions or suspicions: 17 SBO, 15 NSAP, 25 postoperative complications, 9 perforated-peptic-ulcer (PPU) or visceral perforations, 9 bowel ischemia, 4 gynecological disorders vs. localized peritonitis. US-DPA feasibility (fluid retrieval) was 98.7 % (78/79). No complications were reported. The overall rate of clinical decisions impacted by US-DPA was 58.9 % (46/78 pts): definitive surgical indication (29.4 %), shortening or prolonged observation (15.3 %), time for new investigations (14.1 %). In 32 cases (40.5 %) US-DPA was performed after CT; in this subgroup, US-DPA entailed a definite clinical decision in 19 (59.3 %), with a clear change on previous plans in 12 (37.5 %).
Conclusion: US-DPA revealed a simple bedside maneuver with an important clinical impact on decision making.
Disclosure: No significant relationships.

O110

POINT OF CARE US. ARE ACUTE CARE SURGEON HANDS SAFE ENOUGH?

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Introduction: Point of Care Ultrasound (POCUS) has extended its applications to Acute Care Surgery. The aim of the study was to analyse the value of surgeon-performed POCUS for decision making.
Material and methods: During 16 months, surgeons in different hospitals have been performing POCUS to diagnose patients with acute abdomen or soft tissue infection. Results were collected in a prospective database and compared with posterior radiologist-performed results (US or CT) and/or diagnosis at surgery. $\chi 2$ and Student-t test were used for statistical analysis. Sensitivity, specificity, PPV and NPV were calculated.
Results: 228 POCUS were performed to patients aged (±SD) 44.5 ± 22yo. POCUS were divided in categories according to suspected diagnosis: RLQ(104), LLQ(13), RUQ(49), Hernia(19), Bowel Obstruction(7), Postoperative Abdominal Complication(10) and Soft Tissue Infection(26). 75 % of patients have posterior conventional radiologist test, US(130), CT(59) or both(19). Surgery was finally performed in 120 patients (40 without conventional radiologist confirmation). Overall success rate for POCUS was 87 %, without significative differences between centers. POCUS success rate was different when considering suspected diagnosis separately (RLQ: 80 %, LLQ: 84 %, RUQ: 90 %, Soft Tissue Infection: 92 % and Hernia, BO or PAC: 100 %; $p = 0.018$). Matches' percentage between surgeon and radiologist was 82 %; 77 % with conventional US and 85 % with CT. In 14 of the 30 cases of disagreement between POCUS and radiologist-performed US, POCUS was right. POCUS success rate in patients operated straight was 85 %. POCUS showed 90 % sensitivity, 91 % specificity, 95 % PPV and 84 % NPV for surgical disease diagnosis.

Conclusion: POCUS performed by ACS offers similar results than conventional radiologist-performed tests for surgical diagnosis and decision making process.
References:
Disclosure: No significant relationships.

O111

DECREASING OVERUTILIZATION OF DAMAGE CONTROL LAPAROTOMY DECREASES MORTALITY

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Introduction: Introduction: The aim of our study was to evaluate outcomes in matched patients undergoing damage control laparotomy (DCL) and definitive laparotomy (DL).
Material and methods: We performed an 8-year retrospective analysis of all trauma laparotomies at our level 1 trauma center. Patients undergoing DCL were matched to patients with DL using propensity score matching in a 1:1 ratio for abdominal Abbreviated Injury Scale (AIS), intra-abdominal organ injury grades, admission and intraoperative vitals and laboratory values, and amount of crystalloid and blood product resuscitation. Outcome measures were mortality and complications.
Results: A total of 947 patients who underwent a trauma laparotomy were reviewed of which, 216 [DCL = 108, DL = 108] were included. The two groups were similar in matched variables. Patients in DCL group had higher mortality (DCL: 36.1 % vs. DL: 19.4 %; OR: 2.34; 95 % CI: 1.26 – 4.34; $p = 0.006$) and major complication rate (DCL: 48.1 % vs. DL: 30.6 %; OR: 2.11; 95 % CI: 1.20 – 3.68; $p = 0.008$) compared to the DL patients. In sub-analysis, patients with less than 4 intra-abdominal organ injuries had higher mortality rate in DCL group (DCL: 38.3 % vs. DL: 16.0 %; $p = 0.001$). In patients with all components of the lethal triad DCL group had higher mortality rate (DCL: 55.0 % vs. DL: 25.0 %; $p = 0.006$). There were no difference in mortality ($p = 0.48$) or major complications ($p = 0.49$) in patients with a vascular and two or more organ injuries.
Conclusion: Patients undergoing a DCL had a higher mortality, major complication rate, and higher hospital costs compared to a matched cohort of patients that underwent DL.
References:
Disclosure: No significant relationships.

O112

PRE-OPERATIVE DESIGNED EXPLORATION LAPAROTOMY IN SOLID ORGAN BLUNT TRAUMA: A NOVEL MODULE OF OPERATIVE MANAGEMENT

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Introduction: Blunt abdominal trauma patients are prone to hemodynamic deterioration once laparotomy abolishes the hemostat effect of the abdominal wall. In such situation time factor is crucial and procedure results demands essentially a highly skilled exploring surgeon. This study is trying to minimize the skill difference factor among trauma surgeons through proposing a methodology standard plan to apply in abdominal trauma exploration. .
Material and methods: This is a multi-center clinical trial on multi-organ blunt abdominal trauma patients. Between March 2012 and August 2015 the study recruited 78 isolated blunt abdominal trauma patients with more than one solid organ injury whom needed surgical exploration. Computerised tomographic scan is the basis of organ injury assessment and plan designation. The proposed protocol gave priority criteria of management as follows: Priority is given to the highest grade of organ injury, then the highest organ blood perfusion found injured and lastly the least time needed to manage the organ. Also priority is given to control haemorrhage over definitive procedure per organ.
Results: Patients' data regarding clinical status progression is tabulated. Protocol violation points and related deviation of results are all recorded. Procedure time, haemoglobin status and number of blood transfusion units, hemodynamic progression and the final outcome of procedure are all documented. Collective data processing in horizontal and vertical directions achieved to extract maximal information.
Conclusion: The applied protocol proved, less demand regarding patients' hemodynamic support, procedure time saving and showed promising and less moribund outcome. The proposed protocol needs to be verified on wider scale studies.
References: (12) References.
Disclosure: No significant relationships.

O113

CLINICAL PRESENTATION, MANAGEMENT AND OUTCOME OF 58 ADULT PATIENTS WITH BOWEL VOLVULUS

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Introduction: Small and large bowel volvulus (S/LBV) are rare surgical conditions. We aimed to assess all adult S/LBV in our center to look for its presentation, management and outcomes.
Material and methods: A retrospective analysis included all S/LBV adult patients between 1990 and 2014.
Results: There were 58 BV patients (males = 71 %) with mean age of 47 ± 19 yrs. Among SBV patients (n = 17), the affected segments were jejunum, ileum, and jejunum plus ileum (2, 6 and 9 respectively). Seven patients had bowel gangrene, and 1 died subsequent to surgery. Nine patients had resection and primary anastomosis, 6 had simple derotation and 1 had reduction of hernia and repair. Postoperatively, 2 patients developed sepsis and none had anastomotic leak. Median hospital length of stay (HLOS) was 9 days (5-52) and the overall mortality was 6 %. In LBV (n = 41), sigmoid was the most frequently involved segment (95 %), followed by cecal (2.4 %) and transverse colon (2.4 %). Thirteen patients underwent endoscopy and 8 had surgery alone. Ten had endoscopic deflation followed by elective surgery. In 4 cases, endoscopic deflation failed which required emergency surgery, 1 patient required laparotomy, adhesiolysis, simple derotation and deflation through cecostomy and 1 underwent laparoscopy converted to open sigmoidectomy. Post-

operatively, 1 patient had anastomotic leak and 1 developed wound infection. Median HLOS was 10.5 (2-73) days and all LBV patients survived. Recurrent volvulus was identified in 4 cases.
Conclusion: S/LBV are uncommon among adults. Endoscopic deflation of sigmoid volvulus is safe and effective initial treatment option. To avoid recurrence of colonic volvulus, patients fit for operation should undergo definitive procedure during the same admission
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Disclosure: No significant relationships.

O114

LAPAROSCOPIC ADHESIOLYSIS IN ADHESIVE SMALL BOWEL OBSTRUCION

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Introduction: The role of laparoscopy for the treatment of adhesive small bowel obstruction (ASBO) is still pending. To date, a few reports exist on this issue and no randomized controlled trials compare open with laparoscopic adhesiolysis. We aim to assess our experience with emergency laparoscopy for ASBO from a single operator series of 73 cases.
Material and methods: From 2011 to 2015, 73 patients with suspected single band ASBO underwent laparoscopy at our Center. Prerequisites for laparoscopic approach were preoperative CT-scan and appearance of complete SBO with transition point between distended and collapsed loops. Previous midline incision was not exclusion criteria from laparoscopy. 30 patients had previous midline laparotomy, 43 had previous McBurney or Pfannenstiel incision. A bowel resection with intracorporeal anastomosis has been performed in 6 cases (8.2 %).
Results: The mean follow-up time was 12 months. Overall conversion rate was 26 % (19/73), significantly higher in patients with previous midline laparotomy or multiple episodes of ASBO (17/30-56.6 % vs 2/43-4.7 %, $p < 0.01$). Mean operative time 54 min (range 19'-128'). Average VAS was 2.1 (POD #1), without regular analgesics. ASBO recurred in 6/73 patients (8.2 %), successfully re-operated on laparoscopically.
Conclusion: Laparoscopic adhesiolysis is feasible as well as safe and effective only in selected patients with a suspected single-band obstruction, even in cases of previous laparotomy, especially if a McBurney or Pfannenstiel incision.
Disclosure: No significant relationships.

O115

CT CAN MAKE THE MANAGEMENT OF ABDOMINAL STAB WOUNDS MUCH MORE PROPER

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Introduction: In the evaluation of stab wounds of the anterior abdomen (ASW), CT has been said to be not helpful.
Material and methods: One hundred sixty patients with ASW in the past 30 years were studied (68 % male, mean age of 44-years-old, self-inflicted of 76 %, shock state in 30 %, having evisceration in 22 %). The period was divided into three groups: the first 8 years (G1) without CT scan; the next 5 years (G2) with occasional scan when a chief doctor judge it necessary; and recent 17 years (G3) with routine scanning for all patients being hemodynamically stable after resuscitation. The results were evaluated by whether the management was proper (necessary laparotomy and successful NOM) or improper (unnecessary laparotomy and NOM failure). Furthermore, CT effectiveness was also assessed in total. Chi-square test was used for the statistical analysis.
Results: CT was applied in 39 % in G2 and 83 % in G3. The management was judged proper in 67 %, 86 %, 91 % in G1, G2, G3, respectively ($p = 0.0008$ between G1/G3). In total, the rate of proper management was 93 % when the patients underwent CT and 76 % without CT ($p = 0.002$). The reason for choosing NOM in G2 (21 %) was simply no significant abnormality on CT, but patients of NOM in G3 (46 %) included hepatic injury, large hematoma of the abdominal wall, etc.
Conclusion: CT make the management more proper: widening the application of NOM and reducing the unnecessary laparotomy rate. The CT information was advantageous not merely for choosing the management way but also for preoperative planning of surgical procedure.
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Disclosure: No significant relationships.

O116

HOLLOW VISCUS INJURY DUE TO BLUNT TRAUMA: A DESCRIPTIVE STUDY OF EPIDEMIOLOGY AND OUTCOME IN A LARGE URBAN AREA

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Introduction: Hollows viscus injury (HVI) is a rare occurrence and represents a clinical challenge because of its subtle and nonspecific clinical findings. The specific aims of this study were to determine the overall frequency of HVI in blunt trauma patients occurring in large urban area, the relative frequency of various hollow organ injuries, and the outcomes of such injuries
Material and methods: A retrospective trauma registry review was performed by analysing data from the University Hospital Sant' andrea in Rome and data from the Emergency Surgery and Trauma Care Unit of S. Filippo Neri Hospital in Rome The clinical records of all blunt abdominal trauma observed between January 2006 and December 2014 were blind analysed. Variables considered for analysis were: sex, age, time/type of trauma, associated injuries, timing/characteristics of operative treatment, ISS, AIS, length of hospital stay, morbidity and mortality.

Results: Seventy-one, 7.5 % of all abdominal trauma recorded, were coded having 89 HVI. The overall morbidity and mortality rates were 29.6 % (n = 21/71) and 19.7 % (n = 14/71) respectively. Multivariate analysis indicated that only WBC ($p = 0.007$) was significant independent predictor of morbidity whereas preoperative transfusion ($p = 0.010$) and ISS ($p < 0.001$) were significant risk factors for mortality.
Conclusion: HVI is rarely found in patients with blunt abdominal trauma and it can be fatal and life-threatening, particularly in patients for whom a pertinent diagnosis is delayed. It appears clearly that during an ER evaluation of a blunt abdominal trauma an HIV has nowadays always to be considered to reach a quick diagnosis and prompt surgical intervention.
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Disclosure: No significant relationships.

MYTHS & TRUTHS: GERIATRIC HIP FRACTURES

O117

PROTHROMBIN COMPLEX CONCENTRATE IN PATIENTS ON ANTICOAGULATION WHO REQUIRE HIP FRACTURE SURGERY

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Introduction: Proximal femoral fractures are common in the elderly and are associated with a high rate of mortality and morbidity. Many of these patients are under oral anticoagulation by vitamin K antagonists (VKA) [1]. The purpose of this study was to examine the current practice of perioperative management of anticoagulation in proximal femoral fractures and to get data about the use of vitamin K and PCC, which may allow early surgery in this delicate patient group.
Material and methods: Data from patients with proximal femoral fractures were recorded retrospectively. PCC together with vitamin K was compared to the use of vitamin K alone. Time to surgery, bleeding, hospital stay and complications were analyzed.
Results: A total of 678 patients were analyzed. 110 (16 %) patients received VKA prior to the fracture. In patients treated by osteosynthesis, PCC significantly reduced the time to surgery, compared to vitamin K alone (6.5 vs. 82.7 hours). Total hospital stay could be reduced by PCC and there were no differences in hemoglobin drop or need for packed red blood cells or revision rates.
Conclusion: The administration of PCC together with vitamin K prior to surgery in patients with proximal femoral fractures on VKA therapy who need surgery by osteosynthesis leads to shorter time to surgery than the administration of vitamin K alone without increasing bleeding risk. Patients under anticoagulation by VKA who need arthroplasty due to femoral neck fractures could also benefit from the use of PCC for faster VKA reversal and a shorter time to surgery.
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Disclosure: No significant relationships.

O118

THE USE OF TRANEXAMIC ACID IN THE PREVENTION OF ANAEMIA FOLLOWING HIP SURGERY

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Introduction: Hip surgery, both elective and trauma, is associated with major bleeding. Mortality is increased five-fold in patients suffering from anaemia, but blood transfusion is not without risks. Tranexamic acid is an antifibrinolytic agent that can be used in the prevention and treatment of haemorrhage; the leading cause of preventable death in trauma.
Material and methods: We included patients undergoing hip arthroplasty over a three-month period, and measured pre- and post-operative haemoglobin, transfusion rates, and side effects following tranexamic acid. We retrospectively investigated these same outcomes in patients who had not received tranexamic acid.
Results: Forty patients given 1 g of tranexamic acid pre-operatively were audited, and the results compared with forty patients who had not received treatment. 7/40 in our control group required a post-operative transfusion. The mean pre-op haemoglobin in this group was 130 g/L, and post-operatively 98 g/L. One patient suffered an early transfusion reaction. None treated required a transfusion, and the mean haemoglobin dropped from 132 g/L to 116 g/L post-operatively.
Conclusion: Tranexamic acid is an inexpensive anti-fibrinolytic agent, with 1 g costing £3.00 [1]. In comparison a single unit of red blood cells has an estimated cost of £120 [2]. In our study, none of the patients who received tranexamic acid required a blood transfusion, compared to almost 20 % in our control group. In addition, those who were treated saw an average drop in haemoglobin of 16 g/L; a value doubled in our control group. The authors conclude tranexamic acid is an effective way to prevent post-operative anaemia, as well as eliminate the risks and costs associated with transfusion.
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Disclosure: No significant relationships.

O119

FASCIA ILIACA BLOCKADE IN HIP FRACTURE PATIENTS: THE EFFECT ON DELIRIUM INCIDENCE

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Introduction: Hip fractures mainly occur in the elderly population. This group is fragile and has a high risk for perioperative complications such as delirium. Mainly opioids are used for pain management in this population and have frequently proven to be inadequate. Use of opioids and inadequate pain management is believed to increase the risk of developing delirium. This study therefore evaluates the effect on incidence of delirium of the fascia iliaca blockade (FICB) in hip fractures.
Material and methods: In a 2 year prospective cohort setting two groups were defined. Patients aged 60 years and older with a hip fracture were included on admission. In the first period conventional pain management was applied. In the second cohort patients received an ultrasound guided FICB on admission. The primary outcome variable was perioperative delirium, diagnosed by a geriatric specialist.
Results: Demographics, mean ASA classification, comorbidities, anesthetic and operative procedures were comparable in both groups. However the intervention group showed a higher incidence of mental dysfunction (dementia or Parkinson) on admission (20.0 % vs. 3.9 %). Delirium occurred in 28 (22.8 %) of the 123 included patients. Incidence of perioperative delirium in the FICB group was 50.0 % (10/20), significantly different compared to 17.5 % in the control cohort (18/103).
Conclusion: Patients who received a FICB showed a significant increase of delirium incidence. This could be due to the higher presence of mental dysfunction or the so far limited sample size of the intervention group. More data is needed to state a conclusion about the effect of FICB on the incidence of delirium.
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Disclosure: No significant relationships.

O120

DYNAMIC HIP SCREW WITH OR WITHOUT ANTI-ROTATION SCREW

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Introduction: Femoral neck fractures are common but can be challenging injuries with high re-operation rates after internal fixation. The Dynamic Hip Screw (DHS) is a frequently used internal fixation device. To prevent rotation of the femoral head, an anti-rotation screw is sometimes added to the DHS. Although proven in small biomechanical studies, its additional value in clinical studies remains controversial. The aim of this study is to assess the difference in re-operation rates after a DHS with and after a DHS without anti-rotation screw.
Material and methods: We reviewed all patients operated with a DHS for intra-capsular fractures between January 2010 and December 2013. Minimal follow-up was 1 year. The participating hospitals were one academic and two teaching hospitals in the Netherlands.
Results: 368 patients after a DHS were included: of which 50 with and 318 without additional anti-rotation screw. Mean age was 70 years (median 70), 58 % was female and mean ASA classification was 1.86 (median 2). In total there were 91 failures of osteosynthesis (34 with avascular necrosis of the head, 25 with pain related to the osteosynthesis, 10 non-unions, 10 displacements, and 12 due to other causes). There were 85 reoperations: 70 (22.0 %) in the group without anti-rotation screw and 15 (30.0 %) in the group with anti-rotation screw. This was non-significant.
Conclusion: This study did not reveal a significant difference in re-operation rates between a DHS with and a DHS without additional anti-rotation screw. Further analysis will be performed, using additional patient characteristics (Garden Classification, Pauwels classification and quality of reduction).
References:
Disclosure: No significant relationships.

O121

PROPHYLACTIC AUGMENTATION OF THE OSTEOPOROTIC PROXIMAL FEMUR: CEMENT OR METAL? INSIGHTS FROM COMPUTER SIMULATIONS

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Introduction: The high risk of secondary, contralateral hip fractures and the associated, significantly increased mortality [1, 2] underline the need for prophylactic reinforcement to avoid these injuries in case of a low energy fall. Invasive, internal augmentation approaches show high potential [3, 4], but there is no ideal methodology available yet. Computer models can aid the development of optimized reinforcement strategies.
Material and methods: A previously validated, non-linear finite element (FE) analysis framework was applied to predict the fracture load of fifteen proximal femora in sideways fall based on high resolution CT images. Various augmentation strategies using bone cement or metal implants were developed and virtually performed on the bone models. The relative strengthening compared to the non-augmented state was evaluated using case-specific FE analyses.
Results: For the cement-based strategies, strengthening was linearly proportional to cement volume and was significantly affected by cement location. With an optimized location and 12 ml cement, 64 ± 33 % and 156 ± 126 % increase in yield load and energy was reached, respectively. With 19 ml, these were 87 ± 42 % and 209 ± 187 %, and not significantly different from those achieved using metal implants. However, for metal implants, higher risk of subcapital fractures was indicated. Weaker bones were strengthened exponentially more for all augmentation strategies.
Conclusion: Despite the encouraging results of this study, further development is required to identify the ideal, clinically relevant augmentation strategy that can deliver sufficient strengthening and avoid inducing damage within important regions of the femur. This numerical analysis technique helps to screen the potential mechanical

benefit of various augmentation approaches and highlight promising candidates for experimental evaluation.
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Disclosure: No significant relationships.

O122

EARLY SURGERY FOR HIP FRACTURES: A SUCCESSFUL IMPLEMENTATION

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Introduction: Early hip surgery is acknowledged as a quality indicator. Guidelines recommend surgery within 24 to 48 hours from admission for emergent hip fractures, however, the effect of operative delay on morbidity and mortality remains controversial. The objective was to determine whether early surgery affects postoperative outcomes.
Material and methods: Early surgery was defined as surgery within the next calendar day from admission. This case-control observational study, including 242 patients aged 60 years and above, compares 123 patients in 2014 after 'early surgery' was implemented with 119 patients in 2013. Primary endpoint was mortality and secondary endpoints were demographics, complication rate, and length of stay (LOS).
Results: Median age was 84 yo (IQR 77-88). Early surgery was achieved in 88.6 % vs. 50.4 % of the patients in 2014 and 2013, respectively ($p < 0.001$). Despite a tendency to lower mortality in 2014, six and twelve month mortality did not significantly differ between 2014 and 2013 (respectively, 9.8 % vs. 13.4 %, 2014 vs. 2013, $p = 0.370$, 6 months; 12.2 % vs. 14.3 %, 2014 vs. 2013, $p = 0.667$, 12 months). Also complication rate did not significantly differ between 2014 and 2013 (73.2 % vs. 65.5 %, $p = 0.198$). Except for less thromboembolic complications ($p = 0.020$), subanalyses showed no significant differences for pneumonia, wound infection, mechanical failure, delirium, and bladder infection. LOS was significantly lower in 2014 as compared to 2013 (12 vs. 16 days, $p = 0.016$).
Conclusion: We successfully implemented early surgery for hip fractures. As a consequence of early surgery, we hospitalized shorter and had less thromboembolic events. However, there was no significant reduction in six and twelve month mortality.
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Disclosure: No significant relationships.

O123

ASSOCIATED INJURIES AFTER HIP FRACTURE IN THE ELDERLY

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Introduction: Annually some 18.000 hip fracture patients are admitted to Dutch hospitals. Older people are at a higher risk of hip fracture being accompanied by additional injury. This study aims to explore this increased risk in the elderly.
Material and methods: All hip fractures that occurred between January 2010 and December 2013 were extracted from the trauma records of one academic hospital and two teaching hospitals in the Netherlands. All patients over 70 were included. The exclusion criterion was an Injury Severity Score of 16 or higher (multi-trauma). Using the Abbreviated Injury Scale, the types of accompanying injury following hip fracture were identified.
Results: 2,402 patients could be included, and 14 were excluded because of multi trauma. 279 (11.6 %) suffered a total of 319 accompanying injuries: 225 patients (9.4 %) had one accompanying injury and 54 patients (2.2 %) had two or more accompanying injuries. The most common injury involved the upper extremity (44.8 % of all the accompanying injuries), followed by head injuries (31.0 %). The principal upper extremity injuries were wrist fracture ($N = 54$), skin cuts and abrasions ($N = 29$) and humerus fractures ($N = 26$). Head injury mostly involved skin cuts and abrasions.
Conclusion: Some 10 % of elderly hip fracture patients suffer one or more accompanying injuries that also require treatment. Therefore it is important to perform a full-body examination in case of hip fracture. The accompanying injury occurring most frequently is related to the upper extremity.
References:
Disclosure: No significant relationships.

O124

OLDER HIP FRACTURE PATIENTS LOSE A SUBSTANTIAL AMOUNT OF SKELETAL MUSCLE MASS DURING SHORT-TERM HOSPITAL ADMISSION

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Introduction: Sarcopenia, defined as loss of skeletal muscle mass with aging, results in impaired mobility, thereby increasing the risk of falls and (hip)fractures (1). In elderly hip fracture patients,

immobilization in combination with stress-inducing events such as trauma and operative treatment may result in further loss of muscle mass, possibly increasing the risk of adverse outcomes. However, it is unclear to what degree loss of muscle mass occurs during hospitalization in this patient group.
Material and methods: Hip fracture patients ($\geq$ 65 y) were included in the study at hospital admission. A single-slice CT-scan of the non-fractured upper leg was performed at time of admission and prior to discharge. The muscle cross-sectional area (CSA) of the whole upper leg and the quadriceps muscle were measured using ImageJ software. We used Wilcoxon-Signed Rank tests in combination with data-imputation models to compare the data between time-points.
Results: So far, 11 elderly hip fracture patients (age: 82.3 $\pm$ 2.1 y) were included in the study. The mean period between two measurements was 7.3 $\pm$ 0.4 days. The whole thigh muscle CSA significantly declined with an average of 4.7 $\pm$ 2.1 % (9148 $\pm$ 633 vs 7827 $\pm$ 493 mm^2 at admission and end of hospital stay, respectively, $P = 0.013$). In accordance, *quadriceps* muscle CSA was on average 5.3 % lower at the end of hospital stay (3845 $\pm$ 291 mm^2) when compared to the CSA at admission (4302 $\pm$ 385 mm^2, $P = 0.058$).
Conclusion: Elderly hip fracture patients lose a substantial amount of muscle mass during hospital admission. Effective interventional strategies are needed to preserve muscle mass and strength during hospitalisation of hip fracture patients.
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Disclosure: The project is funded by TI Food and Nutrition, a public-private partnership on precompetitive research in food and nutrition. The researchers are responsible for the study design, data collection and analysis, decision to publish, and preparation of the

EMERGENCIES IN PEDIATRIC PATIENTS

O125

INCREASED MORBIDITY ASSOCIATED WITH WEEKEND PEDIATRIC ROAD TRAFFIC INJURIES: 10-YEAR ANALYSIS OF TRAUMA REGISTRY DATA

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Introduction: Road traffic injury (RTI) is a significant worldwide cause of pediatric morbidity and mortality, with a disproportionate number occurring in low- and middle-income countries. Whether children are at increased risk of RTI on weekends has not previously been investigated. This study sought to assess weekend patterns in pediatric RTIs using hospital-based data in Cape Town, South Africa.
Material and methods: Data was analyzed from Childsafe South Africa's prospectively collected trauma surveillance registry for injured children aged < 13-years, presenting to a tertiary pediatric Trauma Department between 2004-2013.
Results: A total of 71,180 patients presented with traumatic injuries, of which 8,815 (12.4 %) resulted from RTIs. RTI patient median age was 4.5-years, and were predominantly males and pedestrians. RTIs were more common on weekends than on weekdays (2.98 vs. 2.19 patients/day; 15.5 % vs. 11.2 %, $p < 0.001$). Moreover, injuries sustained by RTI patients on weekends were more severe than on weekdays, and when compared to weekend all-cause trauma patients (injury score 1.66 vs. 1.46 and 1.43, $p < 0.001$). RTI patients were more likely to require admission to the trauma ward (1.14 vs. 0.79 patients/day, $p < 0.001$) and ICU (0.10 vs. 0.07 patients/day, $p < 0.05$) on weekends than on weekdays. There were most weekend RTIs during the last annual quarter, and these also more frequently required admission to the trauma ward and ICU. Weekend Trauma Department mortality secondary to RTI was rare.
Conclusion: Pediatric RTI patients are more frequently brought to hospital and require admission during weekends, with particular risk during the last annual quarter. These findings indicate potential for targeted community prevention strategies.
References:
Disclosure: No significant relationships.

O126

CLINICAL OUTCOME OF POLYTRAUMATIZED CHILDREN AND ADOLESCENT PATIENTS IN A LEVEL ONE TRAUMA CENTER

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Introduction: The polytraumatized child is rare condition facing several challenges in treatment. Paediatric trauma is still the number one cause of death in children, exceeding all other causes of death combined.
Material and methods: This study was performed as a retrospective data analysis including patients aged <16 and ISS $\geq$16 who were treated between August 1992 und June 2013 at our Department. Statistical analysis focused on injury mechanism, GCS, ISS, AIS, GOS and clinical outcome of all patients.
Results: 100 patients with a mean age of 9.5 years $\pm$ 5.0 were available for retrospective follow up (64 male, 36 female). The injury pattern was in 50 % caused by traffic accidents, in 41 % by a fall and other reasons in the remaining 9 %. With an initial GCS of 7.2 and ISS of 32.7 patients were taken to our clinic. Injured organs were; 73, head (mean AIS 3.9), 78 thorax (mean AIS 3.4), 43, abdomen (mean AIS 3.4), 70, extremities (mean AIS 2.5), two, skin (mean AIS 1.5) and four, neck (mean AIS 4). 28 patients died with a mean ISS of 41.5. 62 % of the patients reached a GOS of five after treatment.
Conclusion: The polytrauma in children is a very rare disease mostly with severe injuries with a high morbidity and mortality. Caused by better security reasons polytrauma in children decreased over the last decades, nevertheless it is necessary to treat such patients in a specialised centre to secure good clinical outcome.
Disclosure: No significant relationships.

O127

OCCIPITAL CONDYLE FRACTURES IN ADOLESCENTS

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Introduction: The aim of the present paper was to present cases of occipital condyle fractures treated at our Department, review the literature, and stress the importance of MRI studies in the diagnostic work-up of these injuries
Material and methods: Our retrospective study involved a group of 3 female patients (mean age was 16.3 years) with occipital condyle fractures diagnosed/treated .We assessed the cause and type of fracture, additional damage, available classification systems, treatment methods, outcomes and complications.
Results: Mean follow-up period was 18 (10-24) months. We achieved good clinical outcomes (NDI scores) in all the patients. In one patient, a follow-up MRI scan revealed the presence of a clinically silent post-traumatic epidural meningeal cyst at the C2-C6 level, anterior to the spinal cord.
Conclusion: 1. The choice of an appropriate treatment method is decisively based on the assessment of the morphology and stability of the fracture in a CT/MRI scan rather than on the fracture type alone. 2. There is no noticeable difference between the usefulness of the classification system developed by anderson and Montesano and that according to Tuli et al. 3. The use of the halo-vest is a good method of treating unstable occipital condyle fractures. 4. Early diagnosis and appropriate treatment of cranio-cervical junction fractures make it possible for the fracture to heal without severe clinical sequelae.
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Disclosure: No significant relationships.

O128

TRAUMATIC PEDIATRIC HIP DISLOCATION - A CASE REPORT WITH COMPREHENSIVE LITERATURE REVIEW

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Introduction: A 3-year old child presented as a Level 1 Trauma with a traumatic posterior hip dislocation and acetabular fracture after being struck by a vehicle on a bicycle. The patient was neurovascularly intact. Imaging revealed a posterior dislocation of the left hip. The patient was taken to the operating room for closed reduction under anesthesia with radiographic guidance. The patient was stabilized and discharged with instructions for partial weight bearing. A review of the literature was performed to discuss the incidence, management, complications and outcome of pediatric traumatic hip dislocation.
Material and methods: Literature review was performed using OvidMD, Cochrane, and Pubmed using the following keywords: "pediatric hip dislocation", "traumatic pediatric hip dislocations," "traumatic hip dislocation," and "hip dislocation."
Results: Literature search revealed 15 relevant articles with 115 patients sustaining hip dislocation. Average age was 9.5 years; 70 % were boys, 103 were posterior dislocations, 8 were anterior dislocations, 3 were central/obturator dislocations, and one was unknown.
Conclusion: The management of traumatic hip dislocation in the pediatric population is divisive. Some advocate for reduction in the emergency room, while others for reduction in the operating room under general anesthesia. Diagnosis is multimodal and related to the patient's age. Initial diagnosis is made by the history and physical examination, followed by radiography. Hip dislocations require emergent reduction due to a number of sequelae. Multiple studies describe treatment options with differences in outcome. Generally, pediatric hip dislocations have a good prognosis. Long-term follow up into adulthood has not been documented. Further studies are needed to investigate long-term sequelae.
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Disclosure: No significant relationships.

O129

THE THREE STEP APPROACH TO THE MANAGEMENT OF ACUTE PEDIATRIC MONTEGGIA LESIONS

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Introduction: The literature places the occurrence of paediatric Monteggia lesions between 1.5 %–3 % of all childhood elbow injuries. Failure to make an early correct diagnosis may have catastrophic consequences. The goal of this paper is describe our three-step approach to the treatment of acute Monteggia lesions based on the stability and radiological appearance of the fracture dislocation, to give an overview of possible pitfalls and clinical and radiological signs that aid the diagnostic process.
Material and methods: Retrospective analysis of 23 patients treated for this type of injury at our Department over a period of 7 years was performed. Treatment options were 1. closed reduction under image intensifier followed by immobilization in over the elbow cast, 2. open reduction and intramedullary nailing with ESIN, or 3. open reduction and plate osteosynthesis. Average follow-up was 37 months.
Results: By managing the patients with the Three Step Method retaining the reduction was successful in all but one of our acute cases in the study period. Excellent range of motion was observed in all three groups.
Conclusion: The Three Step Method allows for primary definitive treatment of these lesions with low complication rates and good range of motion result. Implementing the three step method in the acute phase helps avoid catastrophic consequences on joint range of motion in the chronic stage.

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Disclosure: No significant relationships.

HEPATO-BILIARY SURGERY

O130

ACUTE CHOLECYSTITIS AND PERCUTANEOUS CHOLECYSTOSTOMY. IS IT STILL NECESSARY?

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Introduction: Every day we can use more and more of new surgical innovations in our practice. But many emergency surgical conditions still have not a wide range of operative techniques. High surgical risk patients with acute obstructive cholecystitis are prove this statement. US-guided percutaneous cholecystostomy (PC) is a method of choice for this patients. PC is a very useful, but it has high rates of comorbidity (up to 16.3 %) and mortality (up to 1.2 %).
Material and methods: In our prospective non-randomized study we exam 103 patients with acute cholecystitis. All patients were unfit for cholecystectomy, and were with SIRS-signs. PC have been performed at 52 patients. 51 - percutaneous transhepatic gallbladder aspiration (PTGBA). We analyze all information about endoscopic treatment of acute cholecystitis, exam all indication and contraindication for this techniques.
Results: Firstly, efficacy of percutaneous manipulations had no significant differences in both groups (PC (94.2 %) vs PTGBA (92.2 %)). Postoperative morbidity were significantly higher at PC-group (23.1 % vs 3.9 %, $p > 0.5$). Procedure related mortality were 3.9 % at PC-group. Were no deaths in the PTGBA-group. Endoscopic gallbladder technique includes transpapillary nasogallbladder drainage (ENGBD) and gallbladder stenting, or EUS-guided transmural gallbladder drainage. Endoscopy, like a less invasive surgical technique, has fewer rates of complications and mortality. Efficacy are the same like a percutaneous operations. But it has some technical difficulties.
Conclusion: EUS-GBD is preferable in patients unfit for surgery. If delayed surgery are planned, we need to use percutaneous transhepatic gallbladder aspiration like a decompressive procedure with the exception of emphysematous or gangrenous cholecystitis.
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Disclosure: No significant relationships.

O131

SAFETY OF EARLY REMOVAL OF PERCUTANEOUS CHOLECYSTOSTOMY TUBE IN MODERATE/SEVERE ACUTE CHOLECYSTITIS: A SINGLE-CENTER EXPERIENCE AND A REVIEW OF THE LITERATURE

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Introduction: Percutaneous cholecystostomy (PC) is safe and effective procedure to treat moderate or severe acute cholecystitis (AC) in high-risk patients. The ideal timing of the drainage removal is argued. The aim of this study was to evaluate the safety of the early removal of the PC tube and to compare the present results with the available literature.
Material and methods: Patients who underwent PC in our institution from 2011 to 2014 were retrospectively analyzed. Clinical success, morbidity, mortality and recurrence rates were recorded. The patients who underwent surgery were excluded avoiding recurrence bias. Results were compared to the previous literature: Pubmed was investigated from 2000 to 2015 and papers mentioning the length of the catheter maintenance were reviewed and analyzed.
Results: 33 patients were included, mostly elderly with high ASA score, P-POSSUM estimated morbidity or mortality. The procedure-related morbidity was 36.36 %: 1 ascites, 2 abscesses, 3 bleeding and 6 tube dislodgment. Biliary leakage was not reported. 30-day overall mortality was 12.2 %. The median follow-up was 12 months. 3/25 patients (12 %) had further hospital readmission. Analyzing the previous literature a total of 50 papers were identified. Linear regression analysis showed no correlation between length of indwelling catheter and morbidity, recurrence and mortality rates.
Conclusion: PC is an effective procedure in high-risk patients affected by moderate or severe acute cholecystitis. By our experience, a short-term PC tube indwelling still carries acceptable outcomes in terms of morbidity and recurrence rates.
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Disclosure: No significant relationships.

O132

AN INNOVATIVE EMERGENCY LAPAROSCOPIC CHOLECYSTECTOMY TECHNIQUE; EARLY RESULTS TOWARDS COMPLICATION FREE SURGERY

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Introduction: Emergency laparoscopic cholecystectomy (ELC) holds relatively high rates of complications. In such cases surgeons face dense adhesions and oedematous tissues that constitute an indefinite anatomical scene. Traditional gall bladder antegrade dissection starting with cystic duct first to fundus carries risk of iatrogenic complications. Clipping of the cystic duct using metal clips is accompanied with potential risk of biliary leakage and injury. In addition intraoperative bleeding would dim the field of vision and adds difficulty to the procedure. The proposed technique is applied trying to resolve such situation.
Material and methods: Between January 2012 and August 2015 the study has recruited 383 patients whom needed emergency laparoscopic cholecystectomy. The proposed technique defined three new items to implement:

1. Dissection starts from gall bladder fundus towards cystic duct in retrograde manner.
2. "Controlling" the cystic duct without clipping.
3. Applying "white material" into Morrison's pouch to absorb blood and maintain highly illuminated field with minimal need to fluid suction.

The details of the technique will be played on the presentation.
Results: Patients' preoperative and postoperative clinical data in addition to procedure details are all tabulated.
Conclusion: All patients had the surgical procedure as proposed initially without any modification. There was no procedure conversion to open surgery, no biliary exploration,no biliary leakage / stinting. The three novel procedure items are tested and found practically efficient. The proposed technique proved applicable with high safety and time saving in comparison to the traditional one. Application of such technique in emergency cholecystectomy seems ideal and needs verification on larger scale.
References: (13) References
Disclosure: No significant relationships.

O133

MANAGEMENT AND OUTCOME OF BLUNT LIVER INJURY : A SINGLE CENTER EXPERIENCE

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Introduction: Treatment of blunt liver injuries (BLIs) has dramatically changed during the last decade. Predictors for success and failure in management of BLI for both low and high grade injuries vary from center to another. We aimed to assess the presentation, management and outcomes of BLIs
Material and methods: We conducted a retrospective analysis of prospectively collected data for all patients with BLIs who were admitted to level 1 trauma center between 2011 and 2014
Results: We identified 300 BLI patients; of them 203 patients (68 %) presented with low grade injury (I-II), while 97 patients (32 %) presented with high grades (III-V). There were 123 Intubated patients and 275 BLIs were associated with other body injuries. Injury severity score (ISS) was 19.5 ± 11. Exploratory laparotomy was performed for 80 patients (26.6 %) in the first 24 hours of admission, where liver injury was the main reason for laparotomy in 23 patients (7.6 %).Three patients with low grade injury were operated immediately for hemodynamic instability, otherwise, patients with low grade liver injury (I-II) were successfully managed non-operatively. Four patients of grade-4 injured liver failed initially plan for non-operative management, developed pseudoaneurysm and underwent interventional radiology and operative intervention. Four patients of high grade liver injury needed further interventions for complications (bile leak, biliary peritonitis, and hematomas). Overall mortality was 16 %, where mortality from liver injury alone accounts for 7 deaths (2.3 %).
Conclusion: Low grade BLIs can be successfully managed non-operatively whereas high grade injuries need definitive intervention in most of cases either by radiological or operative intervention.
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Disclosure: No significant relationships.

O134

DELAYED SURGERY IN NON OPERATIVE LIVER BLUNT TRAUMA TREATMENT

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Introduction: Initial non operative treatment (INOT) of liver blunt trauma (LBT) is considered as a safe and effective method. The need of delayed surgery is wrongly considered as a failure of it.
Material and methods: From a series of 359 LBT admitted between 01/01/2002 and 30/04/2015, 202 were severe (Moore 3 and more). Among them 41 were immediately operated and 161 had an INOT.
Results: All 161 patients with INOT had an enhanced CT-scan, which led to an arteriography in 42 cases (embolization in 40). A delayed surgery (DS) was performed in 56 cases (35 %). The causes were abdominal compartment syndrome, inflammatory peritoneal disease, suspicion of associated organ injury, and bleeding for respectively 52 %, 31 %, 10 % and 7 % of patients. In average, the DS was decided on day 4 after injury. The DS was performed laparoscopically in 42/56 cases. Peritoneal lavage with drainage was performed in 42/56 cases (75 %), repair of other organ injury in 9 patients, perihepatic packing in 4 patients, liver necrosectomy in 1 patient. Three patients died during the post-operative course. Causes

of death were mesenteric ischemia, severe sepsis and hemorrhagic shock. Liver related post-operative complications underwent in 60 % of cases with mainly bilomas, or biliary fistulas. Two hepatic resections for necrosis were secondarily performed.
Conclusion: In our practice, DS is a very useful part of the INOT of severe LBT, more particularly in case of embolization and large haemoperitoneum. In our opinion, laparoscopy is most of the time very efficacious.
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Disclosure: No significant relationships.

O135

FRENCH MULTICENTRIC COHORT OF BLUNT PANCREATIC TRAUMA MANAGED WITH ENDOSCOPY

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Introduction: In case of blunt pancreatic trauma, the diagnostic of the main pancreatic duct injury and its location is essential to guide the management. The aim of this study was to evaluate the use of endoscopy in blunt pancreatic trauma and analyze the short-term results concerning its success or failure.
Material and methods: Multicentric retrospective cohort of 16 patients having a blunt abdominal and pancreatic trauma and an ERCP (endoscopic retrograde cholangio-pancreatography), between 1998 and 2014. Each patient had an abdominal CT-scan at time of admission. NISS, AAST grade, delay between endoscopy and initial trauma, types of lesion noted, treatment applied, hospital stay, and follow up have been determined. Failure of endoscopic procedure was defined by the incapacity to perform the ERCP or echo-endoscopy, the persistence of a fistula, stenosis or pseudocyst.
Results: Only 13 patients had an endoscopic treatment: 10 stenting of the main pancreatic duct, 4 cystogastrostomy and 1 sphincterotomy. Overall success rate of endoscopic management was 62.5 %. After 21 days post-trauma, it was about 85.7 %. Among grade I, II, III and IV of AAST classification, the success rate of endoscopic procedure was respectively 100 %, 66.7 %, 20 % and 50 %. Pseudocysts have all been treated successfully. Stenting was efficient in the treatment of 2 stenosis, 2 fistulae and adding to a cystogastrostomy. The mean follow-up after endoscopy was 7.5 months. There was no death.
Conclusion: Recent literature confirms that in case of partial or complete pancreatic injury, concerning the pancreatic duct, and a cephalic or isthmic location, early and prolonged stenting provides good results.
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Disclosure: No significant relationships.

O136

A 5-YEAR EXPERIENCE WITH HEPATIC TRAUMA IN A PORTUGUESE HOSPITAL

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Introduction: Liver trauma stills an important problem in severely injured patients. We analyse strategies of operative management (OM) and non-operative management (NOM) of hepatic trauma patients.
Material and methods: We reviewed 50 consecutive patients with blunt or penetrating hepatic trauma admitted at the Emergency Department of our hospital between January 2010-December 2014. Data on demographics, mechanism of trauma, American Association for the Surgery of Trauma grade, initial management, and outcome were collected.
Results: All patients were initially assessed according to ATLS guidelines. Hemodynamically stable patients, underwent CT scan and the unstable ones emergent laparotomy. There were 30 men and 20 women with a median age of 43.98 years. Hepatic trauma was penetrating in 3 patients and blunt in 47(94 %). Twenty-six(52 %) liver injuries were of low severity (grades I/II), while 24(48 %) were of high severity(grades III, IV, V and VI). Liver trauma with associated injury of other abdominal organs was noted in 18(36 %) patients and that one associated with thoracic trauma was noted in 21(62 %), both abdominal (with hepatic) and thoracic trauma occurred in 8(16 %) patients. Twelve(24 %) patients underwent OM within the first 24 h of admission and 38(76 %) underwent NOM, 1 patients later required laparotomy. Twenty-four(92 %) of the 26 patients with low-grade hepatic injuries were managed conservatively-no mortality occurred. The overall mortality rate was 4 %(2 patients).
Conclusion: Trauma remains more common in younger populations and males. Approach to the hepatic trauma gradually changed over the last decades with the increasing of NOM and in our casuistic NOM seems to be safe and effective.
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Madrazo-González Z, Ramos-Rubio E. Current treatment of hepatic trauma. Cir Esp. 2008 May;83(5):227-34.
Disclosure: No significant relationships.

O137

EARLY SURGERY IN PRONE POSITION IN PATIENTS UNDERGOING NON-OPERATIVE MANAGEMENT FOR SPLENIC AND LIVER INJURIES

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Introduction: In polytraumatized patients, early surgery in prone position may be beneficial to achieve better functional outcomes. However, in patients undergoing non-operative management (NOM) of splenic and/or liver injuries, no data exists on the safety of early (same-admission) surgery in prone position for concomitant injuries.
Material and methods: Single-center, retrospective study including adult trauma patients with blunt splenic and/or liver injuries undergoing attempted NOM from 01/2009-12/2013. Patient and injury characteristic and outcomes (failed NOM, mortality) of patients with and without surgery in prone position for concomitant injuries were compared ('prone' vs. 'non-prone group').
Results: A total of 146 patients with attempted NOM were included. of these, 63.0 % were male, median age was of 36.5 years, and the median ISS was 22.0. A total of 15 patients (10.3 %) underwent surgery in prone position on median post-injury day 2.0 (IQR 6.0). In all 15 cases, surgery was performed for spinal injuries. The ISS and proportion of patients with an OIS liver and/or spleen ≥ 3 were not statistically different between the 'prone' and 'non-prone group' (median 18.0 vs. 22.0, $p = 0.352$ and 42.9 % vs. 53.8 %, $p = 0.308$). Overall, five patients (3.4 %) failed NOM. No patient failed NOM after surgery in prone position. In–hospital mortality was not significantly different between the two groups (6.7 % vs. 3.8 %, $p = 0.484$).
Conclusion: In this single-center analysis, surgery in prone position was performed in a substantial number of patients undergoing NOM for splenic and/or liver injuries. Although performed early, surgery in prone position did not increase NOM failure.
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Disclosure: No significant relationships.

NEW SURGICAL TECHNIQUES IN FRACTURE CARE

O138

TREATMENT OF STERNAL FRACTURES: NEW SYSTEM FOR STERNUM OSTEOSYNTHESIS WITH TITANIUM STAPLES

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Introduction: Isolated sternal fracture is a benign condition that usually is cured with conservative treatment. The indications for surgical repair include severe pain, aesthetic problems, malunion, disunity and compression of the heart. The best way to repair is controversial. The results of a new system of sternal osteosynthesis using titanium staples, designed specifically for the treatment of sternal fractures, are presented.
Material and methods: Between 2013 and 2014, 12 patients with sternal fracture were surgically treated. 9 were women with an average age of 65 years. All injuries were due to traffic accidents. It was used for sternal osteosynthesis titanium clips specifically designed for this purpose by MedXpert GmbH. Different sizes of 3D clips were used depending on the width of the sternum. A film with surgical technique is shown.
Results: There were no postoperative complications. The average operating time was 45 minutes. The mean postoperative hospital stay was 48 hours. All patients were discharged with oral analgesia. Outpatient follow-up at 1, 6, 12 and 18 months were performed. All patients were satisfied with the operation, had no pain and performed a normal life. There were observed no breakage 3D clip osteosynthesis.
Conclusion: Based on our study, we believe that sternal 3D clip osteosynthesis screwless system is a simple method for setting the sternal fracture, surgical technique is not associated with complications and allows the sternal stability, pain management and recovery functional patients
Disclosure: This Study has been supported by Medxpert (germany) Grant.

O139

DIF (DYNAMIC INTERNAL FIXATOR) A NEW DEVICE FOR DIFFICUL FRACTURES

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Introduction: The author herewith shows the results obtained in diaphyseal as well as distal and proximal epiphyso-metaphyseal femoral fracture treatment by means of the DIF innovative system. Such system belongs to the so-called "internal fixators" category, i.e. angular stability plates which have been modified so as to become dynamic, when required. Within the action limit of the external fixators, this system, therefore, allows modulating the need to increase compression. The biomechanics osteo-implant system theory is discussed and the clinical and radiographic results obtained in fractures and pseudoarthrosis treatment are shown
Material and methods: The DIF was applied to 10 patients with different femural fracture with patterns at risk of pseudoarthrosis. In all these patients the system was dynamized at a period between the 40th and the 60th day after the implantation. Xrays were taken every 30 days. The follow up was for all the 10 patients carried on until the radiographic evidence of bone repair.
Results: In all the patients we observed a fast bone recovery and no case of implant failure.

Conclusion: We think that DIF allows the possibility of increasing fractur site compression when charging during the healing process. Furthermore, the possibility of a plate-sliding system discharges the angular flexion pressure (flexing movement) becoming a sliding movement and thus an axial compression.
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Disclosure: No significant relationships.

O140

TREATMENT OF ACETABULAR FRACTURES IN THE ELDERLY - INTRODUCTION OF A NEW IMPLANT

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Introduction: Fractures of the acetabulum in younger patients are commonly treated by open reduction and internal fixation. Due to reduced bone quality providing a stable situation in elderly patient is more and more challenging for every surgeon so that an immediate postoperative mobilisation is hardly possible. Because of co-morbidities and less physiologic tolerance stable primary total-hip arthroplasty with the advantage of immediate postoperative mobilization might be the adequate treatment. For this purpose a sufficiently stable fixation of the acetabular component is required.
Material and methods: Between August 2009 and 2014, 30 cases were recounted in which all patients underwent total hip arthroplasty additionally to a customized implant designed as an antiprotrusion cage providing angel-stable fixation. Inclusion criteria were an acetabular fracture with or without a previous hemiarthroplasty, age above 65 years and pre-injury mobility dependant on a walking frame at the most.
Results: 9.4 days was the average time from injury to surgery and the mean time of surgery was 154.4 minutes. Within the first ten days 21 patients (70 %) could be mobilized with full weight-bearing. Six patients died before the follow-up examination 3 and 6 months after surgery, while 24 patients underwent radiologic examination showing bony consolidation. 13 had regained their pre-injury level of mobility including the nonunion case.
Conclusion: The presented cage provides the possibility of early mobilization with full weight bearing which represents a valuable addition to the treatment spectrum in this challenging patient group.
References:
Disclosure: No significant relationships.

O141

EARLY EXPERIENCES OF A NEW ANATOMIC PLATING SYSTEM FOR POSTERIOR ACETABULAR FRACTURES IN A LEVEL 1 UK TRAUMA CENTRE

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Introduction: The use of plates for the fixation of posterior column or wall fractures is well described. However, small posterior wall fragments can be difficult to secure and comminuted wall fragments may not be adequately captured by conventional plates. Our aim is to report early findings of an anatomical plating system for posterior wall and column acetabular fractures.
Material and methods: Over 12 months, 14 consecutive fractures were treated with PRS (RX) posterior plates (ITS). Outcome measures included SF36, Merle D'Aubigne and VAS. X-rays were independently assessed for loss of reduction. Secondary outcomes included infection, VTE, nerve injury and reoperation.
Results: Mean age was 51.7 (range 24-84). Two patients were lost to follow-up. There were no cases of infection, VTE, iatrogenic nerve palsy or re-operation. Mean Merle D'Aubigne score was 11.2/18. Mean VAS was 0.4/10 at rest (0-2) and 2.2 on mobilisation (3-5). There were no cases of loss of radiological reduction or early joint incongruence.
Conclusion: Our early results of anatomically contoured pelvic plates are promising, with no early failures. Perceived surgical benefits of the plates include the ease of application, the ability to put screws through the plate and posterior wall fragment, superior containment of both comminuted and very marginal posterior wall fragments and the multiple hole options anteriorly reduce the need for gluteal retraction.
References: 1. Mast J. Jacob R. Gary R. Planning and reduction technique in fracture surgery. Berlin:Springer-Verlag. 1989 2. Goulet JA, Rouleau JP, Mason DJ. Comminuted fractures of the posterior wall of the acetabulum. A biomechanical evaluation of fixation methods. JBJS(Am) 1994. 76A. 1457-63 3. Im GI, Chung WS. Fractures of the posterior wall of the acetabulum: treatment using cannulated screws. Injury 2004;35. 782-6. 4. Giannoudis PV, Tzioupis C, Monday BR. Two level reconstruction of comminuted posterior wall fractures of the acetabulum. JBJS(Br) 2007. 89B (4) 503-9 5. Matta JM. Anatomic joint fracture fixation and long term results. Procs Hip Society. 13th Open Scientific Meeting 2002
Disclosure: I can confirm that two of the authors, Paul Culpan and Peter Bates acted as consultants for the design of the ITS plates used in the study.

O142

EARLY EXPERIENCES OF A NEW ANATOMIC ANTERIOR PLATING SYSTEM FOR ACETABULAR FRACTURES IN A LEVEL-1 UK TRAUMA CENTRE

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Introduction: Acetabular fracture patterns involving anterior and medial displacement can be technically challenging, particularly in older patients. Medial migration/loss of reduction is reported in 10-15 % cases, which rises to 30-45 % in patients over 65. Aims: To report the early findings of an anatomic plating system for anterior acetabular fractures and to describe our concept of injury to 'the middle column' in acetabular fractures in the elderly population.

Material and methods: Over 12 months, 16 consecutive fractures were treated with PRS (RX) medial 'bird-foot' plates (ITS) through an anterior intra-pelvic (Stoppa) approach. Extent of middle column involvement was quantified pre-operatively. Outcome measures included SF36, Merle D'Aubigne and VAS. X-rays were independently assessed for loss of reduction. Secondary outcomes included infection, VTE, nerve injury and reoperation.
Results: Mean age was 58.8 (28-91), two were lost to follow-up and mean follow-up was 29.9 weeks (6-52). Five of 16 (31.2 %) were planned for fixation in two stages - anterior fixation, followed by THR within 1-2 weeks. Mean Merle D'Aubigne score was 12.6/18 (8-18); mean VAS was 0.3/10 at rest (0-2) and 2.0 on mobilisation (0-5).
Conclusion: Early results of anatomically contoured intra-pelvic plates are promising. Perceived surgical benefits of the plates include ease of application, broad foot-print over the quadrilateral surface and screw fixation within the sciatic buttress. We propose an algorithm for assessing *middle column* damage, as an indication for early THR.
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Disclosure: I can confirm that two of the authors, Paul Culpan and Peter Bates acted as consultants in the design of the ITS plates used in this study.

O143

THE NEW FEMORAL NECK SYSTEM FOR FEMORAL NECK FRACTURE FIXATION. BIOMECHANICAL PERFORMANCE VERSUS DIVERSE STANDARD IMPLANTS FOR OSTEOSYNTHESIS

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Introduction: Three Cannulated Screws (3CS), Dynamic Hip Screw (DHS) with antirotation screw (DHS-Screw) or with a Blade (DHS-Blade) are the gold standards for fixation of unstable femoral neck fractures. Compared to 3CS, both DHS systems require larger skin incision with more extensive soft tissue dissection while providing the benefit of superior stability. A newly designed Femoral Neck System (FNS) combines the advantages of angular stability with a less invasive surgical technique. The aim of this study is to evaluate the biomechanical performance of FNS in comparison to established methods for fixation of the femoral neck in a cadaveric model.
Material and methods: Twenty pairs fresh-frozen human cadaveric femora were instrumented with either DHS-Screw, DHS-Blade, 3CS or FNS. A reduced unstable femoral neck fracture 70° Pauwels III, AO/OTA31–B2.3 was simulated with 30° distal and 15° posterior wedges. Cyclic axial loading was applied with 16° adduction, starting at 500 N and with progressive peak force increase at 0.1 N/cycle until construct failure. Relative interfragmentary movements were evaluated with motion tracking.
Results: Highest axial stiffness was observed for FNS (748.9 $\pm$ 66.8 N/mm), followed by DHS-Screw (688.8 $\pm$ 44.2 N/mm), DHS-Blade (629.1 $\pm$ 31.4 N/mm) and 3CS (584.1 $\pm$ 47.2 N/mm) with no statistical significances. Cycles until 15 mm leg shortening were comparable for DHS-Screw (20542 $\pm$ 2488), DHS-Blade (19161 $\pm$ 1264) and FNS (17372 $\pm$ 947), and significantly higher than for 3CS (7293 $\pm$ 850), $p < 0.001$. Similarly, cycles until 15 mm femoral neck shortening were comparable between DHS-Screw (20846 $\pm$ 2446), DHS-Blade (18974 $\pm$ 1344) and FNS (18171 $\pm$ 818) and significantly higher than 3CS (8039 $\pm$ 838), $p < 0.001$.
Conclusion: From a biomechanical point of view, the Femoral Neck System is a valid alternative to treat unstable femoral neck fractures, representing the advantages of a minimal invasive implant with comparable stability to the two DHS systems and superior to Three Cannulated Screws.
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Disclosure: D. Mueller and M. Oswald are employees of the implant producer

O144

RECONSTRUCTION OF FEMORAL NON-UNION WITH MAL-ALIGNMENT USING CHIPPING TECHNIQUE

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Introduction: The purpose of this study was to investigate the possibility of reconstruction and biological stimulation with chipping technique for femoral non-unions, especially ones with mal-alignment.
Material and methods: A total of 21 femoral non-unions were treated with chipping procedure and re-fixation. 15 femoral non-unions associated with mal-alignment such as angulations, rotations, and limb length discrepancy. These deformities were simultaneously corrected by a combination of chipping and temporal external fixator. The median age of patients were 41 years (range, 19 – 73 years). The median time from injury or the final surgery to the initial chipping procedure was 24 months (range: 9 – 240 months). The non-unions were classified as hypertrophic in 9, oligotrophic in 5 and atrophic in 7. Clinical and radiological assessment was performed.
Results: All femoral non-union clinically and radiographically healed with one (19 cases) or two (2 cases) chipping procedures without bone grafting. Pre-existing angular deformity was corrected from 14° to 2°, mal-external rotation 27° to 3°, and limb length discrepancy 16 mm to 7 mm. There were no major complications, although swelling of thigh and anemia was common after surgery.
Conclusion: Chipping the non-union site was likely to biologically enhance fracture healing, and this technique was useful new surgical option for reconstruction of femoral non-union with mal-alignment.
References: Chipping and Lengthening Technique for Delayed Unions and Nonunions with Shortening or Bone Loss Matsushita T, Watanabe Y J Orthop Trauma 21(6):404-406, 2007.7
Disclosure: No significant relationships.

O145

RETROGRADE TIBIAL NAIL - A NEW BIOMECHANICALLY SUPERIOR NAILING CONCEPT FOR THE TREATMENT OF DISTAL TIBIA FRACTURES

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Introduction: Surgical treatment of distal tibial fractures demands a stable fracture fixation while minimizing the irritation to the soft tissues by approach and implant. The experimental Retrograde Tibial Nail is a minimally invasive local intramedullary osteosynthesis, which has been under design by our group. The aim of this study was to investigate the biomechanical properties of the new implant in comparison to a standard antegrade nail (Expert Tibial Nail, Synthes®).
Material and methods: Biomechanical testing was conducted in fourth-generation biomechanical composite tibiae (Sawbones Europe, Malmö, Sweden). A 10-mm wide transverse defect osteotomy served as an AO/OTA 43 A3 fracture model. In both groups, the distal fragment was secured by triple interlocking, while double interlocking was performed proximally. Non-destructive testing was measured under low and high axial compression (350 and 600 N) and under torsional load (8 Nm). Afterwards an axial "load to failure" test (1200 N) was performed for extra-axial compression.
Results: Biomechanical testing results showed similar axial stiffness of both implant device during the low and high axial loading tests. The torsional stability was almost 2-fold higher for the RTN (1.10 vs. 0.66 Nm/°). Destructive extra-axial compression resulted in no failure of any implant-bone construct.
Conclusion: The experimental Retrograde Tibial Nail provides the key features for the treatment of distal tibial fractures. It combines a minimally invasive local intramedullary osteosynthesis with a stable fracture fixation. An introduction as a medical device is planed for summer 2016.
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Disclosure: Mizuho Medical is the planed manufacturer of this medical device under development and the department received financial contributions for the biomechanics evaluation.

O146

INTRODUCTION OF A NEW REPAIR TECHNIQUE IN BONY AVULSION OF THE FDP TENDON USING A SUTURE ANCHOR

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Introduction: The purpose of this study was to determine strength and failure characteristics of a newly designed repair technique based on a tension banding principle using a suture anchor compared to two commonly used surgical repair techniques in bony avulsions of the flexor digitorum profundus tendon.
Material and methods: Bony avulsion of the flexor digitorum profundus tendon was simulated in 45 fresh frozen distal phalanges from human cadavers. Three study groups were formed. Allocating 15 specimen into each group repair was performed with minifragment screws, transosseous FiberWire sutures and the new technique using a Corkscrew 2.2 × 4.0 mm (# 2/0 FiberWire). All specimens were loaded cyclically from 2 to 15 N at 5 N/s for a total of 500 cycles. Samples were tested to failure at the completion of 500 cycles. Load at failure, load at first noteworthy displacement (>2 mm), elongation of the system, gap formation at the fragment-phalanx interface, and the mechanism of failure were assessed.
Results: The new techniques' superior performance in load to failure (100 N), load at first noteworthy displacement (77.4 N), and gap formation (0.2 mm) at the fragment–phalanx interface was statistically significant. A non-significant decrease in elongation of the tendon-suture complex was observed, which implies a certain rigidity of the repair. No implant extrusion or suture rupture was recorded as failure mechanism in the new technique.
Conclusion: This new repair technique is superior biomechanically to other commonly used surgical reattachment methods, when considering an early passive mobilization protocol. Due to its subcutaneous position, reduction of complications can be achieved.
References:
Disclosure: No significant relationships.

O147

KIRSCHNER WIRE EXTENSION BLOCKING TECHNIQUE FOR CLOSED BONY MALLET INJURIES; RESULTS OF 42 CASES

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Introduction: Extensor tendon injuries of the fingers are commonly seen in the emergency department. Discontinuities of the extensor insertion at the distal phalanx can be purely tendinous, or bony avulsion fractures (bony mallet injuries). Treatment of the bony mallet injuries still remains controversial. Some advocate conservative treatment with a splint while others prefer surgical treatment. Different surgical techniques have been described. We describe the results of the k-wire extension blocking technique by Ishiguro for the treatment of displaced bony mallet injuries.
Material and methods: A retrospective observational cohort study was performed. Patients who underwent surgery with this specific technique were identified over a time frame of 5 years. Patient characteristics, operative parameters and postoperative results were collected. Radiographic parameters and complication rates were analyzed.

Results: 42 cases with displaced closed bony mallet injuries were identified between January 2010 and June 2015 in a level II trauma center in the Netherlands. Surgery was done either under general anesthesia (50 %) or locoregional anesthesia (50 %). Average surgery time was 27 minutes. Six weeks after initial surgical treatment, k-wires were removed in outpatient clinic under local anesthesia. Mean follow-up period was four months. Radiographic bony healing was achieved in 90 % of the cases. According to the Crawford rating system most patients showed good results. Only 2 patients (5 %) were treated for a superficial wound infection with oral antibiotics.
Conclusion: The minimal invasive k-wire extension blocking technique for closed bony mallet injuries is a safe and quick surgical procedure. This technique provides satisfactory functional results with excellent radiographic bony healing.
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Disclosure: No significant relationships.

SEVERE EXTREMITY INJURIES

O148

MISSED DIAGNOSIS IN POLYTRAUMA - WHAT ARE THE CONSEQUENCES?

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Introduction: Patients with Injury Severity Scores 25 or greater are at risk for missed or delayed diagnosis of fractures. In this study the incidence of missed diagnoses is measured and the morbidity associated with the initial failure to find these injuries is assessed.
Material and methods: Three hundred and ninety patient records of admissions with Injury Severity Scores (ISS) of 25 or greater to our Trauma Center were reviewed for skeletal injuries not identified within twenty-four hours of admission. The missed injuries were catalogued by body region, severity, and method of eventual treatment. The missed injury group and the group without missed injuries were compared using statistical tests for significance.
Results: Sixty-two patients (16 % of 390) had a total of 97 missed orthopedic injuries. The average time to diagnosis of these missed injuries was 5 days (range 1-38.) Most of the injuries were in the lower extremities (50 of 97.) The most common reasons for missed injury were lack of findings on physical examination, late radiographs, and injuries not seen on plain x-ray but found on CT scanning. There were significant differences for the group with missed in contrast to the group without missed injuries. These differences included greater length of stay, more ICU days, higher ISS scores, and more ventilator days for the group with missed injuries.
Conclusion: Delayed diagnosis of lower extremity injuries in polytrauma patients is associated with longer hospitalizations, ICU stays and ventilator times. The routine use of total body CT scanning (man scan) decreases the incidence of this problem.
Disclosure: No significant relationships.

O149

REPLANTATION OF PARTIAL UPPER LIMB AMPUTATION AFTER SUICIDE ATTEMPT

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Introduction: Self afflicted wrist cuttings as suicidal attempts are a frequent encounter, usually causing only minimal trauma afflicting superficial structures. We report the outcome of 5 patients with deep self afflicted cutting trauma, involving soft tissue, vascular and nervous structures.
Material and methods: Retrospective case analysis at an academic tertiary referral center.
Results: 5 Patients (4 M, median age 46 yrs, 24-88), suicide attempt with a kitchen knive on the non-dominant hand. Median hematocrit at admission 8 (4-16). Median time from injury to presentation: 65 minutes (35-180). Hemodynamically unstable at admission: 2. Complete ischemia: 4. Radial artery dissection: 5, Ulnar artery: 4, Deep nerve injury: 5, Tendon/muscle dissection: 4, bone trauma: 1. Interdisciplinary repair was performed in all, involving arterial repair (direct suture: 3, bypass 2), no venous repair, tendon reconstruction and nerve repair (interposition graft in 3). All extremities could be salvaged. Patients received psychologic counseling as soon as possible after surgery, continuing after discharge. After a median follow up of 9 months 4 patients are alive. At last follow up all patients demonstrated satisfactory motor function of the hand. Sensory function was severely impaired in 4.
Conclusion: Severe self-mutilating injuries with knives as a suicidal attempt are rarely reported. In the presented 5 patients interdisciplinary management involving trauma, vascular and plastic surgery has been the key to success for functional limb salvage. This highlights the need for multi-speciality approach in tertiary trauma centers. Psychologic counseling is necessary to ensure patient survival.
Disclosure: No significant relationships.

O150

THE IMPACT OF REVASCULARIZATION TIME ON POST-OPERATIVE COMPLICATIONS AND RELATED OUTCOMES OF ISCHEMIC EXTREMITY INJURIES

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Introduction: In the management of ischemic extremity injuries, early diagnosis and revascularization is the prerequisite for limb salvage. However, acceptable duration of ischemia remains controversial. In this study, we investigated the impact of ischemic time on the incidence of post-operative complications and related outcomes.
Material and methods: We performed revascularization surgery in 43 cases with ischemic extremity injuries from 2004 to 2014. With

these cases, we analyzed the correlation between ischemic time and the incidences of reperfusion injury requiring fasciotomy, post-operative infection, and limb salvage.
Results: Limb salvage succeeded in 37 and failed in 7 cases. Their durations of ischemia were 486[356,554] (median[25,75 percentile]) and 614[488,652] minutes respectively, with no significant difference ($p = 0.088$). Re-perfusion injury required fasciotomy in 21 and did not in 22 cases. The durations were 497[450,657] and 443[338,538] minutes with significant difference ($p = 0.05$). We diagnosed post-operative infections in 19 and did not in 24 cases. The durations were 484[451,630] and 456[354,557] minutes with no significant difference ($p = 0.26$).
Conclusion: According to our results, the duration of ischemia had significant impact on the severity of reperfusion injury, but not on the incidence of post-operative infection and limb salvage. The results also suggested that, the reperfusion injury would not require fasciotomy, if the revascularization is achieved within 7 hours. Further investigation is needed to clarify the reason, why extent of reperfusion injury did not affect the outcome in terms of limb salvage.
References:
Disclosure: No significant relationships.

O151

PRIMARY RADIAL NERVE PALSY ASSOCIATED WITH TRAUMATIC HUMERAL SHAFT FRACTURES – DOES THE TYPE OF TREATMENT INFLUENCE RECOVERY?

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Introduction: Adult humeral shaft fractures occur with an incidence of 3 % of all long-bone fractures. They are associated with primary radial nerve palsy in 2 %-18 %. Both, ORIF or intramedullary nailing are well-established treatment methods. However in case of primary radial nerve palsy, a decision whether or not an additional early exploration is indicated has to be made. Therefore the purpose of this study was to assess the influence surgical treatment on recovery in patients with primary radial nerve palsy following traumatic humeral shaft fractures.
Material and methods: A *retrospective analysis* of *prospectively collected data* for all patients treated *with* humeral shaft fracture and accompanying primary radial nerve palsy at our level-I trauma center was performed. Trauma mechanism, fracture type, type of treatment as well as time of onset of recovery and time to full recovery were evaluated.
Results: A total of 35 patients were treated with ORIF using dynamic compression plate- or angular stable plate-fixation. Twenty patients underwent treatment with closed reduction and interlocking intramedullary nails. In the ORIF and intramedullary group mean time of onset of recovery was 10.5 weeks, whereas the time of full recovery or significant improvement was 27.5 weeks and 24.5 weeks respectively. There was no significant difference in time to onset of recovery or full recovery between patients treated with ORIF or IN ($p < 0.7118$; $p < 0.2009$).
Conclusion: Type of treatment, ORIF or intramedullary nailing, had no significant influence neither on time to onset of recovery nor time to total recovery or significant improvement in humeral shaft fractures with primary radial nerve palsy.
References:
Disclosure: No significant relationships.

O152

LONG-TERM OUTCOME AFTER TOE-TO-HAND TRANSFER FOR RECONSTRUCTION OF AMPUTATION INJURIES OF THE HAND

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Introduction: Amputation injuries often lead to a restricted hand function and job loss. In the late 19th century Nicoladoni performed the first toe-to-hand transfer. Through better microsurgical technics the toe-to-hand transfer has been revolutionized and in 1969 Cobbett performed the first toe-to-thumb transfer. Since then toe-to-hand transfers have been undertaken with increased frequency, not only for post-traumatic indications, but also in congenital defects and tumors. Especially in amputation injuries, affecting all three-membered fingers, the toe-to-hand transfer offers a good possibility to restore hand function.
Material and methods: Three patienťs, one woman and two men, with toe-to-hand transfers after amputation injuries with a mean long-term follow up of 11 years have been retrospective reviewed clinically and radiologically. The mean age was 27 years. In all cases a transfer from the second toe of both feet's to the hand has been performed. For analyses of functional outcome the DASH-Score, Michigan Hand Questionnaire and Patient-Rated Wrist Evaluation Score were used. As well range of motion and VAS was measured.
Results: All toe-to-hand transfers healed without any complications. Mean DASH Score was 24/100 points and PRWE Score 16/100 points. The mean Michigan Hand Questionnaire was 74 %. In all cases a complete restoration of the sensitivity in the Semmes-Weinstein test has been reported and a reintegration in the working process was possible.
Conclusion: The toe to hand transfer offers a good possibility for reconstruction after amputation injuries of all three-membered fingers with a good clinical and functional outcome. It leads to an improvement of hand function and increased work ability.
References:
Disclosure: No significant relationships.

O153

PERILUNATE (FRACTURE) DISLOCATION IN POLYTRAUMA

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Introduction: Generally there is a high rate of missed perilunate (fracture) dislocations (PD). Especially in severe injured or polytrauma patients the focus of diagnosis and treatment is restoring vital functions. Thus the aim of this study was to analyze the diagnosis,

management and outcome of PD in polytrauma in our level I trauma center.
Material and methods: All PD in polytrauma between 10/1994 and 06/2011 were included in this study. All eight patients with a mean age of 37.3 years (range: 17.2-60.9) were male. **Diagnosis**:Most cases (6) were initially diagnosed by conventional x-ray. A CT scan was performed additionally in 6 patients within two weeks. **Treatment:** In two cases closed reduction and immobilisation was performed, in two additional k-wire stabilization was used. In two cases the scaphoid fracture was stabilized by screw fixation + k-wires and plaster-immobilization. Only one patient was treated by open reduction and direct ligament repair. One greater arc lesion was diagnosed immediately, but was not treated, because of lethal complications.
Results: The mechanism of injury included falls from >3 meter in five patients and traffic accidents in three cases. The mean ISS was 40 (range: 25-75). We found two persistent carpal instabilities, one compression of the median nerve. All scaphoid fractures healed uneventfully. Most wrists (6) showed degenerative changes.
Conclusion: Closed reduction should be performed acutely, followed by open reduction and ligamentous and bony repair with internal fixation, whenever possible. In the special setting of polytrauma life threatening injuries are prioritised influencing the outcome of this severe wrist injuries.
References:
Disclosure: No significant relationships.

O154

RECONSTRUCTIVE INTERVENTION AFTER TRAUMATIC FINGER AMPUTATIONS: POLLIZISATION AND RAY AMPUTATION CAN IMPROVE HAND FUNCTION AND COSMETIC APPEARANCE

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Introduction: According to increased security measures severe hand injuries got rare but if they occur they are still challenging. Every effort is made to preserve or salvage the thumb, the most important digit from a functional standpoint for the hand. But severe damage to fingers and thumb may necessitate amputation or prevent replantation.
Material and methods: Pollicization of index fingers and ray amputations after severe hand trauma are presented from time of trauma and first operation to reconstructive intervention and accompanied to present long term results up to 10 years. Operation techniques are briefly explained and alternatives such as subcapital amputation of the proximal phalanx discussed.
Results: Ray amputation is most frequently undertaken as an elective procedure but in some cases a good choice for a single stage procedure. It shows a good cosmetic and functional outcome when preservation of a functional digit is unattainable. The loss of grip and pinch strength after ray amputation compared to amputation at the proximal phalangeal level is discussed controversial in literature. However, the better cosmetic look and similar function result in improved patient satisfaction. Pollicization of an index finger is a good procedure to recreate a new thumb and increase hand function after traumatic loss of the thumb.
Conclusion: Pollicization and ray amputation result in a good cosmetic and functional outcome and are a good option when preserving a functional digit is impossible.
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Disclosure: No significant relationships.

O155

MONITORING RECOVERY OF OPEN TIBIAL FRACTURES, USING OBJECTIVE FUNCTIONAL MEASURES WITH PRELIMINARY DATA FROM A COMBINED ORTHOPLASTIC RESEARCH CLINIC

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Introduction: Open tibial fractures are severe injuries and can be associated with severe complications, such as osteomyelitis and amputation [1] which can be life-changing. Assessing recovery from these injuries is helpful in monitoring progress and developing better patient treatment.
Material and methods: This study evaluates objective functional outcome measures for open tibial fracture patients attending a combined Orthoplastic Research Clinic over a one year period. These include traditional tests, such as range of movement (ROM) of adjacent joints; and functional measures of agility and balance, such as comfortable gait speed (CGS); and the 'timed up and go test' (TUAG). A principal component analysis (PCA) was performed to determine the correlation of different variables in predicting recovery.
Results: In total, 22 patients, with follow up periods ranging from 74 to 390 days, had results which met our inclusion criteria and have been analysed. Many of the functional measures could be transformed into linear paths when both axes were plotted logarithmically. Traditional measures did not show these clear trends, and PCA strongly suggested functional tests showed a stronger correlation and, are therefore, a better indicator of recovery than tests such as ROM.
Conclusion: Measures of agility and balance, such as CGS, show markedly clearer trends in terms of reflecting patient progress than more traditional measures, such as ROM, which doesn't show much variation, and is therefore limited in assessing recovery. The ability of functional tests to indicate at an earlier stage a patient's recovery from these injuries could be key in helping detect problems earlier.
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Disclosure: No significant relationships.

O156

EXTERNAL SKELETAL FIXATION AS TEMPORARILY METHOD IN DAMAGE CONTROL. WHEN AND WHERE EXTERNAL FIXATION CAN BE DEFINITIVE METHOD OF FRACTURE TREATMENT?

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Introduction: External skeletal fixation has already became on the end of last century as routine temporarily method of fracture bone fixation, especially in the light of polytrauma and damage control. External skeletal fixation (especially hybrid devices) has also been accepted in many developed countries as important method in the treatment of complex articular fractures (knee, ankle, elbow). In some indication external skeletal fixation is recognized as definitive treatment methods. In this paper, it is also presented possibility of using of already applied external fixator as accurate reduction device before internal fixation or if used as a definitive treatment method.
Material and methods: One week after external fixation, external fixator device, if need, was used as accurate reduction device on the new and simple method. Once, desirable fracture reduction achieved, internal fixation is very easy and we do no need prolonged fluoroscopy control for reduction.
Results: Transforming of external into internal fixation in femoral fracture treatment, was short - average operation time was 34 minutes (23-52). Mean fluoroscopy time was 4 sec (2-18). Intraoperative blood loose was 80 ml (40-200). They are presented indications when and where external skeletal fixation can be definitive method of treatment of tibia, radius and humerus.
Conclusion: From results obtained it can be concluded that original external fixator is suitable for routine fractures fixation but also to be used as accurate reduction device useful during the transformation of external to internal fixation.
References:
Disclosure: Author is the inventor of internal and external devices and has licence contract with the producer.

O157

NATURALLY DERIVED ACELLULAR SMALL DIAMETER VASCULAR GRAFTS FROM HUMAN PLACENTA FOR RECONSTRUCTIVE SURGERY

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Introduction: The presented study had its main focus on the vascular network of the human placenta chorionic plate. Due to a distinctive vasculature of the human placenta chorion, blood vessels within a wide range of inner diameter can be obtained from this tissue. Vascular scaffolds in diverse sizes were utilized from this tissue for tissue engineering and reconstructive medicine. In fact, it was possible to isolate and decellularize single arteries with a very small inner diameter of 1 mm and an average length of 4-5 cm. The clinical need for such a material is beyond doubt.
Material and methods: With our decellularization protocol and a detailed characterization of the acellular scaffolds we can produce acellular small diameter vascular grafts (SDVG). A fully decellularization was confirmed by histology, electron microscopy and biochemical quantification methods. For a covalent immobilization of heparin molecules to the decellularized vessel matrix, a protocol was adapted for our material. To prove the anticoagulative influence of heparin, covalently bound to the surface of acellular vascular grafts, in vitro tests were established.
Results: A surface modification of the vascular grafts with heparin molecules should create the possibility to directly use the acellular SDVG without a previous graft reendothelialization or an additional anticoagulation of the host.
Conclusion: In case of regenerative biomaterial therapies those cell-free materials can often be used "off the shelf" and are generally less expansive than cell-based strategies. Such modified small diameter vessel grafts are currently tested in vivo in a small rodent model.
References:
Disclosure: No significant relationships.

SEPTIC ABDOMEN

O158

OPEN ABDOMEN OUR EXPERIENCE

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Introduction: Open abdomen refers to a solution in which the abdominal contents is left deliberately exposed under a temporary cover. Since 1970 the method has gained widespread acclaim in the treatment of severe intra-abdominal infections. In the 80 s the concept has been adopted for trauma surgery.
Material and methods: Technique was first used as damage control in trauma. Subsequently we start to the treat septic complications and even as prevention of abdominal hypertension. Between 2002 and 7/2015 we have treated 119 patients. In 24 cases the disease was traumatic, in the remaining cases was inflammatory.
Results: At the beginning of the experience we completed 4 drainage of the abdominal cavity according to Mickulizt, 5 laparotomy with mesh, 18 Bogota bag. These techniques have been abandoned in favor of the negative pressure therapy with Barker vacuum pack (36 cases), VAC (Vacuum Assisted Closure) AB Thera KCI® (32 patients) and CNP Suprasorb® of Lohmann & Raucher (24 patients). This is our choice in case of massive intestinal edema, risk/treatment of compartment syndrome, lethal triad (hypothermia, acidosis and coagulopathy), rapid conclusion in the case of damage control, need for multiple abdomen explorations and massive peritonitis. Negative Pressure guarantees removal of infected material, reduces intra-abdominal pressure, removes and quantifies the peritoneal fluid, promotes healing and protects the surgical wound.

Conclusion: The NPT is effective in the management of the open abdomen and in the case of traumatic pathology that inflammatory and infectious required is fully aware of the possible complications.
Disclosure: No significant relationships.

O159

THE MANAGEMENT OF SMALL BOWEL AND MESENTERIC INJURIES IN BLUNT ABDOMINAL TRAUMA: LATE DOES NOT MEAN WORSE

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Introduction: Blunt traumatic injuries to small bowel (SB) and its mesentery could be misdiagnosed. Specific symptoms due to perforation and/or ischaemia may develop hours after trauma. Associated abdominal injuries may represent a confounding factor but also mandate surgery through an early diagnosis of SB trauma is cleared. Aim of this study was to detect if a delayed diagnosis of SB blunt trauma may worsen the surgical outcome.
Material and methods: We reviewed 43 patients undergone surgery for SB and mesenteric blunt trauma. Two groups were identified. Group A included 35 patients (69 %) in which SB/mesenteric injuries were recognized and fixed within 12 hrs from admission. of these, 19 pts had immediate laparotomy for hemoperitoneum and shock due to severe multiple abdominal injuries and SB injuries were diagnosed occasionally. Group B included 8 patients (31 %) with isolated SB injuries in which diagnosis and surgery was accomplished more than 12 hrs from admission.
Results: Group A patients presented with higher OIS grades. Among these 19 patients had multiple abdominal injuries and 16 of them had isolated SB injuries. Morbidity (34 % group A; 25 % group B, $p > 0.01$) and mortality (14 % group A, nihil group B, $p < 0.01$) were lower in Group B. However, no fatality was related to the SB trauma itself.
Conclusion: In blunt abdominal trauma, the presence of multiple severe abdominal injuries requiring laparotomy makes possible a prompt diagnosis of SB/mesenteric lesions. When injuries are isolated, a delay in diagnosis and surgery could be expected. In these circumstances however late surgery does not seem to affect the outcome.
References:
Disclosure: No significant relationships.

O160

AUDITING SURGICAL SEPSIS IN A REGIONAL TRAUMA CENTRE

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Introduction: Our Lady of Lourdes (OLOL) Hospital is a regional trauma centre with an established sepsis-screening pathway. If two or more SIRS criteria are positive then the *Sepsis Six* regimen must be completed including: 1. Blood culture (BC); 2. Full blood count (FBC); and 3. Serum lactate (SL).
Material and methods: Microbiology, Haematology and Biochemistry exported data from January to June comprising: 2,204 BC, 51,720 FBC and 563 SL. All data cleaning, joining and analysis was performed in **R**.
Results: BC requests are split equally by gender (Female: 50.9 %; Male: 49.1 %) but skewed towards fertile Females (median: 62 yr) and elderly Males (median: 67 yr). Almost 2/5 (37.3 %) of all BC requests were sent by ED. Abnormal (high or low) WCC was *not* correlated with positive blood culture. 2,204 adult BC requests produced 321 (14.6 %) positive results. 77 (24 %) were coagulase-negative *Staphylococci* (CoNS); and 8 (2.5 %) were mixed CoNS. Both are *normal* skin flora. ED (20.3 %) produced almost twice the average number of positive cultures of all wards (10.7 %) . of the pathogenic organisms grown, 31.6 % respond to Gentamicin or Vancomycin whereas 22.0 % respond to broad-spectrum Co-Amoxiclav. 81.7 % BC requests are sent without a Serum Lactate (SL); only 8.6 % of ABG measurements have patient details populated.
Conclusion: 86 % of all BC are 'negative-for-growth' at 5-days: over ¼ of positive BC are due to skin contaminants. Oral antibiotics are *potentially* effective in up to ½ of pathogenic cases. 87 % of BC requests are sent with a contemporaneous FBC; poor data quality precludes the use of ABG data.
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Disclosure: No significant relationships.

O161

THE VALUE OF ABSOLUTE LEUKOCYTE NUMBERS IN PERIPHERAL BLOOD OF PATIENTS WITH PENETRATING SPLENIC INJURY IN THE EARLY DETECTION OF SEPTIC COMPLICATIONS

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Introduction: Penetrating abdominal trauma is frequently complicated by infection. Severe infection can result in sepsis which has high mortality rates. Blood leukocyte numbers are utilized to diagnose and monitor infectious complications in patients with splenic trauma. However little is known regarding leukocyte kinetics in this specific patient group. So the aim of this study was to determine the feasibility of peripheral blood leukocyte numbers to predict infectious complications in patients with penetrating splenic injury (PSI).
Material and methods: We included patients with a minimum age of 14 years and treated for PSI in two level-one trauma centers. Blood was sampled 4 times during the first day of hospital stay and after 24 hours on a daily basis. We compared leukocyte kinetics between patients who developed sepsis and those without sepsis.

Results: A total of 103 patients with a median age of 27 and a median ISS of 25 (iqr; 18-34) were included. A total of eight patients were diagnosed with sepsis. All patients had leucocytosis 4 hours after hospital admission: 19.0 (iqr; 13.3-23.9) cells/ml. After 10 hours there was a more prominent decrease of absolute leukocytes in blood of patients who later developed sepsis (9.9(iqr; 4.4-13.3) vs. 3.8(2.3-6.4), $p < 0.05$). Thereafter white blood cell counts remained higher in the non-sepsis group compared with the sepsis group at all time points.
Conclusion: Absolute leukocyte numbers in patients developing sepsis show a different pattern in peripheral blood than patients without sepsis and therefore white blood cell count level potentially have additional predictive value in this patient group.
References:
Disclosure: No significant relationships.

INNOVATIONS: EXPERIMENTAL RESULTS

O162

IN VITRO EFFECTS OF FIBRINOGEN SUPPLEMENTATION ON CLOT INITIATION AND STABILITY – A ROTEM STUDY

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Introduction: Fluids administered during acute haemorrhage are causing dilutional coagulopathy that deteriorate bleeding control. In this study, the preclinical volume administration was simulated in vitro and different fibrinogen sources were supplemented to compare the haemocoagulative potential by using a thromboelastometric approach (ROTEM).
Material and methods: A haemodilution model was prepared by diluting whole blood of six healthy volunteers with 33 % crystalloid fluid. Seven emergency therapies were simulated to normalize coagulation. Coagulation-promoting agents such as fibrinogen in both regular and high dosage with and without factor XIII (FXIII), fresh frozen plasma (FFP) and cryoprecipitate were supplemented. Full blood count and coagulation factors were measured as well as the haemostatic potential via ROTEM assay.
Results: Substituting blood by crystalloid fluid resulted in reduced blood cell quantity and haemoglobin level. The adjunct of fibrinogen concentrates elevated fibrinogen level and high dosage improved the extrinsic clot formation time (CFT), α-angle and the EXTEM and FIBTEM maximum. Low-dose fibrinogen adjunct enhanced the early FIBTEM clot amplitude (A5), irrespective of FXIII, while the combination of both increased extrinsic A5 and MCF. The supplementation of FFP and cryoprecipitate did not result in a significant fibrinogen increase and had only minor effects on clot initiation and stability.
Conclusion: Haemodilution-induced changes in blood clotting were improved after fibrinogen supplementation at which high dosage was highly efficient in enhancing clot dynamics and clot stability. The combination of fibrinogen and FXIII seems to be promising for increasing FIBTEM MCF, but only in high-dose fibrinogen adjunct. Unexpectedly, FFP and cryoprecipitate had a comparatively low efficacy in improving clotting.
References:
Disclosure: No significant relationships.

O163

HIND-LIMB ISCHEMIA IS INSUFFICIENT TO INDUCE SYSTEMIC HYPERFIBRINOLYSIS IN A RAT MODEL OF ISCHEMIA-REPERFUSION INJURY

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Introduction: Fibrinolytic activation (FA), a vital feature of trauma-induced coagulopathy, is initiated by the vascular release of tissue plasminogen activator (tPA) from ischemic tissue. Hyperfibrinolysis, a severe manifestation of FA, is associated with a poor outcome and is historically diagnosed with a maximum lysis (ML) >15 % in viscoelastic tests. Hypothermia, acidosis and hemodilution are considered key factors in the amplification of FA but the isolated impact of ischemia on ML has not been investigated. We aimed to study whether ischemia and reperfusion could induce hyperfibrinolysis in rats in the absence of hemodilution, hypothermia and severe tissue trauma.
Material and methods: Nine rats were subjected to a unilateral hind-limb ischemia by applying a tourniquet under deep anaesthesia. After three hours, the tourniquet was released and the extremity was reperfused for one hour. At baseline (BL), end of ischemia (EOI) and during reperfusion (REP 5, 30 and 60 mins) systemic blood was drawn from a catheter in the jugular vein and viscoelastic tests (ROTEM), as well as blood cell counts and blood gas analysis were performed. During the entire procedure, animals were kept on a warming pad to prevent hypothermia.
Results: Surgical intervention, ischemia and reperfusion resulted in elevated leukocyte counts and increased lactate levels. However, at none of the time points observed, ML exceeded 15 %.
Conclusion: We conclude that severe ischemia of one large extremity is insufficient to induce hyperfibrinolysis in this rat model. We assume that hemodilution and the depletion of coagulation factors and endogenous antibrinolytic mediators are crucial for the manifestation of hyperfibrinolysis.
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Disclosure: MP and CJS received research support from CSL Behring and TEM International. CJS and HS received travel funding and speaker fees from CSL and TEM. All other authors declare no conflicts of interest.

O164

INTRAOSSEOUS APPLICATION OF PROTHROMBIN COMPLEX CONCENTRATE WITH/WITHOUT FIBRINOGEN CONCENTRATE IN A SWINE MODEL OF HAEMODILUTION

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Introduction: Prothrombin complex concentrate (PCC) and fibrinogen concentrate (FC) are used in some trauma centers as haemostatic agents in severe bleeding patients based on a goal directed treatment algorithm [1]. In hypovolaemic patients venous access is sometimes limited, especially in case of severe haemorrhage, and intraosseous access is recommended in some trauma guidelines as an alternative route for fluid and drug administration [2]. We investigated in vivo whether intraosseous administration of PCC ± FC results in the same systemic coagulation test values as compared to intravenous administration.
Material and methods: Twenty-four pigs were enrolled into this study. Following controlled blood loss (35 ml/kg) and fluid replacement with a balanced crystalloid, intraosseous (IO, proximal tibia) administration of PCC (25 IU/kg bodyweight) alone or in combination with FC (80 mg/kg) was compared to intravenous (IV) administration.
Results: All tested laboratory parameters (blood cell count, standard coagulations tests PT, PTT, Clauss plasma fibrinogen and thromboelastometry) were not different between the IO and IV group at baseline, haemodilution, and 30 min after PCC ± FC administration. Three pigs receiving PCC intraosseously developed a livid extremity after administration.
Conclusion: In conclusion, IO application of PCC ± FC results in equal systemic coagulation test values as compared to IV application. A possible use may be considered in critical situation where IV vascular access is not possible in an exsanguinating patient, however, local thromboembolic events may occur.
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Disclosure: C.J.Schlimp and H.Schöchl have received research support and speaker fees from CSL Behring and TEM International.

O165

SPLENIC HOMING OF NEUTROPHIL SUBTYPES IN A MICE MODEL OF HYPOVOLEMIC SCHOCK AND TRAUMA

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Introduction: Activation and migration of polymorphonuclear neutrophils are key mechanisms in the development of severe complications such as ARDS and MODS. Recently, different neutrophils phenotypes were identified in acute systemic inflammation. The spleen is the largest lymphoid organ and seems to play a modulatory role in the immune response to trauma. Therefore the aim of this study was to determine characteristics of different neutrophil phenotypes in the spleen in response to trauma and hypovolemic shock.
Material and methods: We utilized a mice (C57BL/6) model of hemorrhagic shock/resuscitation (HS/R) combined with a unilateral femur fracture. Blood and spleen neutrophil subtypes were studied 2 and 6 hours after reperfusion. Neutrophil membrane receptor expression profiles were assessed by flow cytometry and compared between intervention groups, sham and control animals.
Results: Trauma with HS/R results in increased numbers of splenic neutrophils after both 2 and 6 hours ($P < 0.05$). We identified 4 neutrophil subtypes based on differences in the receptor expression of CD11b (Mac-1) and CD62L (L-selectin). Interestingly not all these subtypes were present in peripheral blood as well. Furthermore, morphological differences were observed between the blood and splenic neutrophil population in response to trauma.
Conclusion: Trauma with hypovolemic shock results in evident changes in the splenic neutrophil pool. Splenic neutrophil numbers increase and we were the first to identify splenic neutrophil subtypes characterised by different membrane expression patterns of CD11b and CD62L. In order to identify novel treatment modalities for inflammatory complications after trauma, the exact role and function of these subtypes should be studied in more detail.
References:
Disclosure: No significant relationships.

O166

STIMULATING AND INHIBITORY EFFECT OF SEVERE POLYTRAUMA ON EARLY IMMUNE RESPONSES IN THE BLOOD AND BONE MARROW COMPARTMENT OF YOUNG MICE

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Introduction: In humans and mice, severe polytrauma affects the immune system, often triggering strong immunological deregulation, which predisposes subjects for secondary complications. Yet not all body compartments are equally responsive to development of immunosuppression. We investigated early immune responses evolving in the blood/bone marrow compartment in a severe murine model of polytrauma.
Material and methods: 3-month old, female, balb/c mice ($n = 35$) underwent polytrauma (TSH) including unilateral femur fracture, splenectomy and hemorrhagic shock (30 % blood loss). Whole blood (WB) and bone marrow (BM) were collected at baseline and 24 h or 48 h. In WB and BM, mean fluorescence intensity (MFI) of total MHC-2 expression, and leukocyte populations (CD11b/LY6G) were assessed. In WB, CD4+, CD8+, CD4+ CD25+ CD127- T-cells, and phagocytic capacity of leukocytes were evaluated by flow cytometry and complement component C5a by ELISA.
Results: At 48 h, TSH induced neutrophilia and lymphocytosis and a 2-fold increase of C5a ($p < 0.05$). In BM, at 48 h a 20 % decrease in

granulocytes (CD11b+ Ly6G+) MFI occurred ($p < 0.05$). MHC-2 on BM cells decreased by 3-fold, while a contrasting trend occurred in circulation. Within 48 h of TSH, there was a relative decline of CD4+ and CD8+ T-lymphocytes (by 25 % and 30 %; $p < 0.05$), while regulatory T-cells (CD4+ CD25+ CD127-) increased by 1.5-fold ($p < 0.05$). Phagocytic capacity of WB cells did not decline; it gradually increased until 48 h post-TSH.
Conclusion: The analysis of immune responses in the blood/bone marrow compartment shows a simultaneous activation and impairment of the murine innate and adaptive immunity post-TSH. Therefore, assessment of any single compartment is insufficient to characterize the magnitude of the developing immunosuppression after polytrauma.
References:
Disclosure: No significant relationships.

O167

PERIPHERAL BLOOD MONONUCLEAR CELL SECRETOME AMELIORATES WOUND HEALING IN A PORCINE 3RD DEGREE BURN MODEL

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Introduction: Thermal injuries are a frequent and serious threat to patients and often require surgical treatment. The cell-free secretome of peripheral blood mononuclear cells (PBMCs) – comprising all secreted factors over 24 hours – has been shown to improve wound healing in previous in vivo and in vitro studies. We used the PBMC secretome in an in vivo model in pigs that resembles the clinical setting to investigate its potential to improve the quality of regenerating skin, increase angiogenesis, and reduce scar formation after burn injury and skin grafting.
Material and methods: PBMC secretomes were harvested after 24 hours under standard cell culture conditions. Gamma irradiation was used to induce apoptosis and create an additional stimulus. Standardized full-thickness burn injuries were created on the back of female pigs. After 24 hours, the necrotic areas were excised and the wounds were covered with split-thickness mesh skin grafts. Wounds were then treated repeatedly with either the secretome of cultured PBMCs (Sec^{PBMC}), apoptotic PBMCs ($Apo\text{-}Sec^{PBMC}$), or controls. Wounds were analysed and wound biopsies were taken on days 2, 5, and 10.
Results: The wounds treated with PBMC secretomes had an increased epidermal thickness, higher number of rete ridges, and more advanced epidermal differentiation than controls. The samples treated with $Apo\text{-}Sec^{PBMC}$ had a two-fold increase in CD31+ cells, indicating more angiogenesis. The parameters of early scarring were improved in secretome-treated wounds.
Conclusion: These data suggest that repeated application of PBMC secretomes significantly improves wound healing, skin quality, and scar formation in a porcine model of burn injury and skin grafting.
References:
Disclosure: Funding: Christian Doppler Research Association, Aposcience AG, Medical University of Vienna, LBG. The Medical University of Vienna has claimed financial interest. The Aposcience AG holds patents related to this work. HJA is a shareholder of Aposcience AG

O168

COMPARISON OF DIFFERENT SCAFFOLDS IN RELATION OF OSTEOGENIC ACTIVITY IN BONE MARROW MONONUCLEAR CELL-SUPPORTED THERAPY OF LARGE FEMORAL BONE DEFECTS IN RATS

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Introduction: Large bone defects are a major problem in orthopedic surgery. Application of long term cultured stem cells combined with a scaffold lead to significant improvement of bone healing but is strongly restricted by EU-law. Bone marrow mononuclear cells (BMC), can be isolated, reintroduced within hours and were effective in experimental models of bone healing. The efficacy of BMC supported therapy might be influenced by the scaffold type. We compared three different scaffolds as carrier for BMC in a rat femoral critical size defect with regard to the osteogenic activity in the defect zone.
Material and methods: Human demineralized bone matrix (DBM), bovine cancellous bone (BS), or b-TCP were seeded with human BMC and implanted into a critically sized bone defect of male athymic nude rats ($n = 6$ per scaffold and time point). Autologous bone served as control. Gene expression was measured after one week, histological (e.g. osteocalcin, vascularization) and radiological evaluation of bone formation was performed after 8 weeks. $p < 0.05$ is significant. Additional we evaluated the flexural stiffness after 8 weeks.
Results: Generally, regenerative gene expression (BMP2, RUNX2, VEGF, SDF-1, RANKL) as well as bony bridging, flexural stiffness and callus formation was highest in defects filled with autologous bone, followed in descending order by DBM, b-TCP and BS.
Conclusion: DBM was superior to b-TCP and BS in most aspects of bone regeneration analysed, but the level of autologous bone was not reached. Hereby, we provide evidence the scaffold is critical for the regenerative response in the defect zone during BMC supported therapy of large bone defects.
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Disclosure: Funding: German Institute for Cell and Tissue Replacement gGmbH (DIZG), Berlin, Germany.

O169

APOSEC ENHANCES WOUND HEALING IN A DIABETIC MOUSE MODEL

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Introduction: Diabetic foot ulcer displays a severe complication of diabetes [2], however, no sufficient therapeutic option exists. APOSEC, the supernatant of apoptotic PBMCs, has displayed beneficial effects in tissue regeneration and wound healing in previous studies [3-8], however, has not been tested in diabetic wound healing.
Material and methods: We used genetically diabetic *db/db* mice in our study. 12 mice were assigned per group. We used a common full-thickness wound model. APOSEC or control were topically administered to the wound site for the following ten days. To determine if the effect of APOSEC is dose dependent three concentrations were applied. Wound size was measured at day 0, 3, 7, 11, 14, 18 and 25 by tracing the wound on an acrylic foil for planimetry and using a stereoscopic camera for 3D wound measurement (circumference, surface, average depth).
Results: In this study we showed that local administration of APOSEC enhances wound healing in diabetic mice. Wound circumference, size of wound surface and wound size assessed planimetrically at day 18 was significantly reduced in mice treated with APOSEC. A significant dose dependency of the treatment with APOSEC could be shown for the wound circumference and planimetry.
Conclusion: We could demonstrate that topical application of APOSEC in diabetic mice significantly enhances wound healing. Chronic diabetic ulcers display a severe burden. Hitherto no adequate therapy to address this problem exists. PBMCs are a side-product of blood donations and are usually discarded. Utilising this regenerative potential of a yet side product could provide an inexpensive possibility to address this burden in the future.
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Disclosure: No significant relationships.

O170

IMPROVEMENT IN HISTOLOGICAL COLLAGEN TYPE II MAPPING IN HYALINE CARTILAGE AND TISSUE ENGINEERED SAMPLES

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Introduction: Collagen-type-II is the key marker for differentiated hyaline cartilage and widely applied in osteoarthritis and cartilage regeneration studies. The current study aimed to define antibodies for immunolabelling, not only to detect collagen-type-II in general, but to identify newly synthesized and degraded collagen.
Material and methods: Articular cartilage of healthy patents, either directly harvested or cultivated under different conditions, as well as osteoarthritic cartilage and tissue engineered constructs were embedded for paraffin- and resin-histology and stained with three different antibodies binding to specific regions of the collagen molecule: the triple helix, C-termini of freshly cleaved collagen and cross linked C-telopeptides of degraded collagen.
Results: The collagen-type-II antibody binding to the triple helix stained the whole matrix of healthy and osteoarthritic cartilage and the hyaline regions in tissue engineered cartilage. C-termini binding antibody was restricted to the close surrounding of chondrocytes depending on the sample type and cultivation protocol. Cross linked C-telopeptide was only present around specific regions in the osteoarthritic cartilage samples. The triple helix binding antibody staining the total collagen type II matrix could also be used in resin sections, enabling high resolution images, even in combination with polarisation microscopy.
Conclusion: The results of this methodical studies showed that the use of determined antibodies, specific for different regions in the collagen molecule, enable detailed analysis of newly synthesized, freshly degraded as well as the general collagen type II. A defined application of the different antibodies may increase the scientific information of the development as well as degradation of hyaline cartilage matrix.
References:
Disclosure: No significant relationships.

O171

DEVELOPMENT OF A CLINICALLY REALISTIC LONG TERM POLYTRAUMA MODEL

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Introduction: Multiple trauma remains to be the leading cause of death in the younger population. Research is limited due to a lack of models that adequately mimic the clinical situation. Therefore we aimed on development and implementation of a standardized large animal model of combined trauma that extends previous published observation periods.
Material and methods: Male pigs (sus scrofa; 30 ± 5 Kg) were used. Combined trauma consisted of femur fracture, unilateral lung contusion, liver laceration, and controlled hemorrhage (Injury Severity Score: 27). Animals were treated according to established trauma guidelines, mechanically ventilated and under ICU-treatment for 72 h. Vital parameters were monitored, blood and urine sample were collected. Necropsy was performed at the end of observation period.
Results: Induction of trauma resulted in a significant increase of heart rate and mean arterial pressure reduction. Furthermore blood gas analysis showed significant deranged shock parameters (lactate, pH

and BE). Full blood count detected early signs of organ damage and necropsy revealed macroscopic and histopathologic signs of organ injury. Posttraumatic immunologic deterioration was observed by increase of pro-inflammatory parameters (IL-6).
Conclusion: The presented model successfully combines a relevant trauma severity and a long-term observation period of 72 h. Thus, relevant shortcomings of previous models were determined. A useful long-term large animal model was established that will allow to investigate physiologic changes, organ injury as well as systemic and local inflammation in the multiple injured organism.
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Disclosure: No significant relationships.

O172

THE BARE AREA OF PROXIMAL ULNA: AN ANATOMIC STUDY WITH RELEVANCE TO CHEVRON OSTEOTOMY

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Introduction: Chevron osteotomy is a well-accepted technique, providing the greatest exposure of the distal humerus articular for treating type C fractures. The sigmoid notch of the proximal ulna were separated to two articular facets by the bare area. Ideally, the osteotomy should enter the joint at the bare area while ensuring the saw itself does not enter the joint, where it can damage the joint cartilage. The purpose of this study was to define the bare area of proximal ulna anatomy and design the chevron shape for olecranon osteotomy.
Material and methods: Thirty-eight cadaver elbows were dissected. The anatomic data of the bare area were measured, and the chevron shape osteotomy were designed.
Results: The bare area was present in all specimens. The mean width of the bare area (lacking articular cartilage) was 0.4 cm (range, 0.10-0.86 cm), The coronal width corresponding to the bare area was the narrowest portion in the proximal ulna, the mean width was 1.90 cm (range, 1.69-2.38 cm). The mean distance from the triceps insertion to the corresponding area of the bare spot on the dorsal cortex was 1.95 cm (range, 1.65-2.30 cm), the bilateral part corresponding to the bare area were also devoid of cartilage. 34.21 % specimens(13/38) were devoid of the cortical notch, bilateral cortical notchs were present in 21.05 % specimens(8/38), 36.84 % specimens(14/38) were only existed in the medial side, while 7.9 % specimens(3/38) for only existed in the medial side. The bare area was analogous to arc through the lateral view, the mean distance from the triceps insertion to osteotomy apex was 2.25 cm (range, 1.82-2.42 cm), the mean angle between the osteotomy surface and the vertical plane corresponding to the tangent plane was 20° (range, 10-25°). The mean angle of the V shape was 140° (range, 130-150°).
Conclusion: The bare area lies at the narrowest part of the proximal ulna, the lateral or medial narrowest edge where lack of cortical notch can be used for position mark of the bare area. In 84 % specimens, the designed chevron osteotomy could enter the joint at the bare area.
References:
Disclosure: No significant relationships.

PELVIS & HIP

O173

THE DEVELOPMENT OF ACETABULAR FRACTURES OVER A TREATMENT PERIOD OF 12 YEARS

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Introduction: The incidence of fractures of the acetabulum is going to increase in the next decades due to a dramatically increase of fragility fractures. Beside the final functional and subjective result the acute and late complications of our therapy whether operatively vs. conservatively is of extreme importance. We made a retrospective study comparing two time periods and looking for the different outcome including complications.
Material and methods: Clinical data of 411 patients with acetabular fractures from 01/2000 to 12/2012 were analysed. There were 283 males and 127 females aged from 14 to 96 years. Patients were divided into two age groups. First group with patients until 60 years (n = 238.57.9 %) and second group with people older then 60 years (n = 173.42.1 %).Initially treated by operation were 275(67.2 %) in total, 134 patients (32.8 %) were treated nonsurgically. We analysed the development of our therapy by dividing the total time into two periods (01/2000-04/2005; 05/2005-12/2012).
Results: The number of acetabular fractures increased by 164.7 %.During the two periods the part of elderly people increased from 30.9 % to 46.2 %.The average age rose by 10 years. Among the younger patients the fracture of the dorsal column is most common(22.7 %).Among the elderly patients the fracture of the ventral column is the most common(20.2 %) in front of 2 column fracture(18.5 %).All patients were mainly treated operatively (67.2 %).Comparing the two time frames there is a significant increase of primary operatively treated elderly patients. The complication rate of operative and conservative treated patients was 29.7 %in total.
Conclusion: The most important result was the fact that although the rate of operatively treated patients over 60 years increased (+12.6 %), we could reduce our complication rate of the elderly patients significantly. Furthermore there was no significant difference in the prevalence of secondary coxarthrosis between younger and elderly patients.
References:
Disclosure: No significant relationships.

O174

THE ROLE OF PELVIC STABILITY IN THE PATIENTS WITH PELVIC FRACTURE IS DIMINISHING IN THE EVALUATION OF ASSOCIATED INTRA-ABDOMINAL INJURIES OR RETROPERITONEAL HEMORRHAGE

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Introduction: Pelvic fractures can result in life-threatening hemorrhage or other associated injuries. The computed tomography (CT) scan plays a key role in the management of the patients with pelvic fracture. We tried to evaluate the role of CT scan in the era of advanced technology. The significance of the pelvic stability was also analyzed.
Material and methods: In our institution, the PXR was used as a primary tool to screen the pelvic fractures, and the pelvic stabilities were evaluated accordingly. The CT scan was performed in the patients suspected associated intra-abdominal injuries (IAI) or other conditions which decided by physicians' clinical judgment. The clinical features of patients with stable and unstable pelvic fractures were compared. The patients with stable pelvic fractures were analyzed to determine the characteristics of patients who had associated retroperitoneal hemorrhage or IAIs.
Results: A total of 1433 patients were enrolled in the current study. There were 1066(74.4 %) patients with stable pelvic fractures of these patients, there were 133(12.5 %) and 101(9.5 %) patients with associated retroperitoneal hemorrhage and IAI respectively. There was no significant difference between the patients with associated retroperitoneal hemorrhage in their results of primary evaluation(vital sign, amount of blood transfusion, level of hemoglobin).Similarly, the demographics and the results of primary evaluation(symptoms, coma scale, level of WBC) in the patients with associated IAIs were also not significant different from the patients without associated IAIs.
Conclusion: The role of the pelvic stability is not significant in the evaluation of the associated retroperitoneal hemorrhage or IAI. The routine CT scan was suggested for the patients with pelvic fracture because of the rapid scanning time and sufficient information.
References:
Disclosure: No significant relationships.

O175

PERCUTANEOUS SACRO-ILIAC SCREWS IN UNSTABLE PELVIC INJURIES - OUR APPROACH AND RESULTS AFTER 95 CONSECUTIVE CASES

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Introduction: Unstable pelvic ring fractures usually occur in polytrauma patients and are associated with high rates of morbidity and mortality [1,4]. Operative treatment has been shown to reduce morbidity and mortality [2]. Ilio-sacral fixation was first described by Routt and can be placed percutaneously if a satisfactory closed reduction can be obtained [3,5]. Our objective is to report the clinical results of the patients treated with sacro-iliac screws for unstable pelvic ring injuries.
Material and methods: We included in our study group the patients operated with sacro-iliac screws (SIS) for unstable pelvic injuries between 01.03.2009–01.12.2014. We assessed the following parameters: trauma cause, associated lesions, type of the fracture, method of treatment, complications.
Results: Study group: 95 patients (p)–61 male (64 %) and 34 female (36 %), mean age 40 years. The car accidents were the most frequent trauma cause–53 %. The average ISS: 32 and the most frequent associated injuries were skeletal-58 % and thorax lesions-44 %. According to Tile classification we had 63p-typeC and 32p-typeB and open fractures in 2p. The SIS were placed in S1-74p and S2-21p. 17p needed bilateral screw fixation and for 46p additional anterior fixation was used. Complications: misplaced screws-3p, nerve injury-3p, infection-1p, loss of reduction-2p, screw loosening-5p. The last two were noticed in type C lesions without anterior fixation. 12 deaths occured in our group (13 %) due to severe associated lesions, all these patients having an ISS >40.
Conclusion: Closed reduction and SIS fixation is a fast and safe method for treating unstable pelvic ring injuries. In polytrauma situations it can play a double role: definitive fixation and damage-control procedure.
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Disclosure: No significant relationships.

O176

THE PARARECTUS APPROACH PROVIDES MORE SURGICAL EXPOSURE AND DIFFERENT OPTIONS FOR INSTRUMENTATION THAN THE MODIFIED STOPPA APPROACH FOR FIXATION OF ACETABULAR FRACTURES

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Introduction: Alternatively to the modified Stoppa approach, the Pararectus approach is used clinically for treatment of acetabular fractures. This study assessed the surgical exposure and the options for instrumentation using both of these approaches.
Material and methods: Dissections were conducted on five human cadavers (male, mean age 88 years (82 to 97)) using modified Stoppa and Pararectus approach (same skin incision length 10 cm). Distal boundaries of the exposed surfaces were marked using a chisel, soft-tissues removed and distances from the boundaries in the false and true pelvis were measured (reference: pelvic brim). Exposed bone was coloured, calibrated digital images of each inner hemipelvis were taken. The amount of exposed surface using both approaches was assessed and represented as a percentage of the total bony surface of each hemipelvis. For instrumentation, a suprapectineal plate was used. Screw lengths were documented, screw trajectories were

assessed by three-dimensional CT. Wilcoxon's signed rank test for paired groups was used (level of significance: $p < 0.05$).
Results: Percentage (mean ± SD) of exposed bone accessible after utilizing the Pararectus approach was 42 ± 8 % versus 29 ± 6 % using the modified Stoppa ($p = 0.011$). By use of the Pararectus approach, screws placed for posterior fixation and as a posterior column screw were longer by factor 1.8 and 2.1, respectively ($p < 0.05$), could be placed more posteromedial towards the posterior inferior iliac spine or the ischial tuberosity.
Conclusion: Compared to the modified Stoppa, the Pararectus approach facilitates a greater surgical access in the false pelvis, provides versatility for fracture fixation in the posterior pelvic ring and allows for the option to extend the approach without a new incision.
Disclosure: No significant relationships.

O177

THE ANTERIOR INTRAPELVIC APPROACH FOR ACETABULUM FRACTURES

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Introduction: For nearly a half-century the open osteosynthesis of acetabulum fractures has for the most part been achieved with the posterior approach of Kocher and Langenbeck and the anterior approach of Judet and LeTournel. With improvement in Emergency and Trauma Care patients with more complex injuries involving the hip socket survive and require internal fixation. The exposure of the Anterior Column with access to the pelvic brim from Stoppa's approach using special retractors provides a new alternative for fixation of difficult acetabulum fractures.
Material and methods: The first five cases of anterior intrapelvic surgery were reviewed to determine fracture types, surgical times, blood loss, results and complications. Since this is an preliminary experience in a trauma center there was a definite learning experience in applying the approach and fixation.
Results: All five patients had complex fracture patterns which were transverse with associated anterior or posterior column comminution or both column fractures. Operative times and blood loss was similar to the classic approaches. Fracture reduction was good. One case was complicated by entrapment of the femoral head in the pelvis with an attempt to percutaneously fix the posterior column by flexing the hip. In another patient, dissection of the pelvis was particularly difficult because of a prior C-section. Clinical results were good.
Conclusion: The anterior intrapelvic fixation of complex acetabulum fractures is an innovation which improves the care of patients with difficult fractures involving the anterior column.
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Disclosure: Dr. Seligson is a consultant for Stryker orthopedics.

O178

DO WE REALLY REQUIRE MAGNETIC RESONANCE IMAGING TO DIAGNOSE FRAGILITY FRACTURES OF THE PELVIS?

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Introduction: Objectives: Magnetic resonance imaging (MRI) is one of the most sensitive diagnostic modalities for fragility fractures of the pelvis (FFPs). We hypothesized that MRI could affect the treatment strategy for FFPs by detecting fractures that could not be detected using CT.
Material and methods: Design: Retrospective observational study. **Patients**: Ninety-six consecutive patients with a mean age of 83.1 years were treated for FFPs in our center. Sixty-two of 96 underwent both diagnostic CT and MRI. **Outcome Measures**: The number of cases wherein the MRI findings resulted in a diagnosis different from that based on the CT findings, the MRI-based diagnosis resulted in a different treatment strategy and the patient was indicated for operative treatment and/or teriparatide therapy, and overall union rates.
Results: of these 62 patients, MRI findings resulted in a diagnosis different from that based on the CT findings in 23. MRI resulted in a different treatment strategy in 5 of the 62 patients. Three of the 62 patients needed operative treatment, but the MRI-based diagnosis did not influence the treatment strategy in these cases. We also found that 17 of the 62 patients required teriparatide therapy, and the MRI findings influenced the treatment strategy in 2 of these cases. The fractures heeled in 57 cases; there were 2 non-unions and 3 cases of death early after injury without union.
Conclusion: MRI efficiently yielded an accurate diagnosis of FFP, but in very few cases was the treatment strategy affected. The findings from the present study thus question the utility of routine use of MRI for the diagnosis of FFPs.
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Disclosure: No significant relationships.

O179

COMBINATION OF MODIFIED FREE VASCULARIZED FIBULAR GRAFTING AND REVERSE LESS INVASIVE STABILIZATION SYSTEM (LISS) FOR THE MANAGEMENT OF FEMORAL NECK NONUNION IN PATIENTS THIRTY YEARS OF AGE OR YOUNGER

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Introduction: Femoral neck nonunion (FNN) is a potential complication in patients with displaced femoral neck fractures, occurring in 33 %. This may lead to early hip dysfunction or arthroplasty. Combination of modified free vascularized fibular grafting (FVFG) and a reverse LISS may provide a reasonable means to salvage a painless, functional and native hip.
Material and methods: Between August 2010 and August 2012, sixteen patients with femoral neck nonunion were treated with a combined procedure involving modified free vascularized fibular grafting and a reverse LISS. The average age of them is 20.3 years (range, 12.0-28.0 years). After removing old implants, the nonunion

site was debrided, reduced and fixed with a LISS. The fibular grafts were compacted into a trough in the femoral neck. The Harris Hip score system was used to assess hip function and anteroposterior and frog-lateral hip roentgenograms were used to evaluate bone healing.
Results: All femoral neck nonunion healed without severe complications. The mean follow-up time was 32.9 months (range, 23.0-47.0 months) and the average union time was 7.6 months (range, 5.0-10.0 months). All coxa vara deformities and retroversions of the femoral head were corrected. The Harris hip scores (HHS) were improved 36.6 points on average (59.6 points preoperatively to 96.2 points postoperatively). No incidences of osteonecrosis of the femoral head were observed.
Conclusion: The combined modified FVFG and reverse LISS plating is a suitable procedure for the management of femoral neck nonunion in patients younger than 30 years, especially for those patients with a revision history.
References:
Disclosure: No significant relationships.

O180

SURGICAL TREATMENT OF TROCHANTERIC FRACTURES

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Introduction: Fractures of proximal femur worsen reasonably the quality of life and decrease average index of human life duration in 12-15 %. Treatment of such fractures is a difficult task, because general health status, age, structural and functional conditions of bone tissue of the patient, character of fracture and many other matters in the field of traumatology and orthopaedics, gerontology and vascular pathology, anaesthesiology and rehabilitation should be taken into consideration.
Material and methods: 103 cases of trochanteric femoral fractures treatment by proximal femoral nailing has been analyzed and on the grounds of biomechanical simulation optimal type of intramedullary implant fixation has been developed depending on type of trochanteric fracture.
Results: After application of the developed algorithm, bone consolidation was observed in all cases; average Harris hip score in 4 weeks: 57.2; in 4 months: 64.3; in 1 year: 73.4. Due to specific health conditions of the patients we have encountered with local (superficial wound infection - 4 cases, hematoma - 4 cases) and general (cardiovascular - 8 cases, pulmonary - 2 cases, blood pressure - 3 cases) complications, however eliminated.
Conclusion: Treatment results have been monitored for 2 years. Application of the method increased the number of good results and social adaptation of the patients in 27.4 % and reduced the number of dissatisfactory results of treatment in 9.3 % compared to the control group, treated with DHS.
Disclosure: No significant relationships.

O181

DOES AN ADDITIONAL ANTIROTATION U-BLADE LAGSCREW IMPROVE TREATMENT OF PERTORCHANTERIC FRACTURES WITH GAMMA 3 NAIL?

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Introduction: Osteoporosis and unstable fractures increase the cutout rate in implants with gliding lagscrews. Therefore, an additional lagscrew U-Blade for the gamma3 nail was introduced to provide monoaxial rotational stability of the femoral head/neck fragment. The purpose of this study is to evaluate wether the additional use of the U-Blade is associated with a reduced cutout rate.
Material and methods: 751 patients with pertrochanteric femur fractures were treated with a gamma3 nail between 2009-2014 at our institution. Out of this sample 199 patients received an antirotation U-blade lagscrew. A total of 135 patients (117 female, 18 male) with standard lagscrew (group A) were matched equally regarding age, sex, fracture type and location to 135 patients with U-blade lagscrew (group B). Within a 6-12 month follow-up we assessed the cutout rate, the Parker's ratio, lateralization, lagscrew position and migration. Furthermore we recorded all complications, hospital instay and duration of surgery retrospectively.
Results: The most common fractures among group B with a cutout of the lagscrew were AO/OTA 2.3 and 3.2 whereas in group A 2.1, 2.2 and 2.3. There was no significant reduction of the cutout rate in group B 2.2 % ($n = 3$) compared to group A 3.7 % ($n = 5$). The duration of surgery was significantly shorter in group A ($p < 0.001$). There was no significant difference in lagscrew placement, lateralization, the Parker's ratio and hospital instay.
Conclusion: The antirotation U-Blade lagscrew did not reduce the cutout rate in treatment of pertrochanteric femur fractures. Considering higher costs and longer duration of implantation of the U-Blade, its use is questionable.
References:
Disclosure: No significant relationships.

APPENDICITIS

O182

ACUTE APPENDICITIS: ANALYSIS OF 16544 CASES

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Introduction: Appendicitis is the most common surgical emergency around the world. Historically the definitive treatment is surgery;

nowadays the role of surgery is debated with increasing evidences toward the conservative treatment. The aim of our work was to describe the epidemiology of acute appendicitis and its treatment in a large population study.
Material and methods: A retrospective analysis was performed from 1997 to 2013. All cases of acute appendicitis were selected from the administrative database of Bergamo district health system. Demographic data, surgical interventions and further hospital admissions due to appendicitis and bowel obstructions were recorded
Results: During the study period 16544 acute appendicitis were recorded with an estimated incidence of 89/100.000 per year. Mean age was 24.51 (±16.17) and 54.7 % of patients were male. Appendectomy was performed in 94.7 % of cases, with laparoscopic technique in 47 %. Conservative treatment was performed in only 5.3 % of cases, with a mean length of stay of 3.98 days versus 5.98 of operated patients. ($p < 0.0001$). 1.3 % of operated patients required further hospitalizations due to bowel obstruction after a mean time of 30 (±41) months; 57 % of them required surgery. Among conservatively treated patients a relapse rate of 23.1 % was recorded after a mean time of 6.5 (±15) months; 90 % of them were operated. Cumulative hospital stay was similar between the groups (5.2 vs 5.5 days, $p = 0.02$).
Conclusion: Acute appendicitis is a common surgical emergency; conservative treatment is still offered to a very small percentage of the population with a relapse rate of 23 % and similar results to operative treatment.
References:
Disclosure: No significant relationships.

O183

COMPLICATED ACUTE APPENDICITIS: OPEN VS LAPAROSCOPIC APPROACH IN THE ELDERLY

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Introduction: Complicated acute appendicitis is one of the most common emergencies worldwide needing an urgent surgical approach. To date there is no clear data about real advantages of the laparoscopic appendectomy(LA) vs open appendectomy(OA).In particular, evidence is lacking for the subgroup of old people, which is characterized by a frail clinical condition.
Material and methods: This retrospective study includes all the patients undergoing appendectomy for complicated acute appendicitis(with an intra surgery evidence of peritonitis),operated in our surgical department from September 2013 to June 2015. The choose of the surgical technique was left to operator's discretion. To evaluate patients' outcome we analyzed the post surgical days of hospitalization, the duration of antibiotic therapy, the number of deaths and a composite endpoint of post-surgical complications.
Results: We analyzed 206 patients, with a mean age of 31 ± 19 years. OA patients were 63;143 for LA. There was no significant difference between the groups for BMI, for white blood cell count, and imaging evidence of abscess or perforation. The mean hospitalization time was 4.6 ± 2.6 days in OA group and 4.4 ± 2.2 in LA group. The mean duration of antibiotic therapy was 2.3 ± 2.1 days in OA and 2.6 ± 2.3 days in LA. Post surgical complications were recorded in 5/63 OA patients vs 15/143 for LA. In detail, a trend towards an higher incidence of postsurgical abscess was observed in AL group. For elderly patients (age >65 years, $n = 24$) no significant difference was observed in the duration of hospital stay (6.2 ± 3.6 vs 6.2 ± 4.0 days p = ns),of antibiotic therapy (3 ± 2.9 vs 2.8 ± 2.3 days)and the composite endpoint of post surgical complications (2 vs 3)
Conclusion: In our experience, laparoscopic appendicectomy proved to be safe and effective but didn't show significant advantages compared to open approach in elderly patients as well as in overall population
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Disclosure: No significant relationships.

O184

APPENDICEAL MASS: IS INTERVAL APPENDECTOMY NECESSARRY?

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Introduction: Evaluate the necessity of interval appendectomy in patients who had treatment with diagnosis of appendiceal mass
Material and methods: Between 01 January 2010 - 31 December 2014, 43 patients who had diagnosed as Appendiceal mass were analyzed retrospectively regarding age, genre, time between the onset of symptoms and admission to the hospital, duration of hospitalization and follow-up.
Results: 25 of patients were male (% 58.2) and 18 of patients were female (% 41.8). Mean age was 47.7 (range 19-87). Mean time between the onset of symptoms and admission to the hospital was 9.1 (7-12) days for first diagnosis. At the second hospitalization with diagnosis of appendiceal mass, mean time between the onset of symptoms and admission to the hospital was 2.7 (1-4) days. 2 patients underwent diagnostic laparoscopy, 5 patients underwent diagnostic laparotomy and drainage. 2 patients underwent right hemicolectomy, one of it is because of the suspicion of malignancy and the other one is because of iatrogenic caecum injury. Malignancy was detected in two patients during routine colonoscopy after 1 month from discharge. 2 patients with malignancy underwent right hemicolectomy. 3 patients with periappendicular abscess underwent percutaneous drainage. Mean hospitalization duration was 8.7 (5-12) days. 1 patient required rehospitalization at 26. month and 30. Month because of appendicular disease and appendectomy was performed in third administration. No signs of recurrence was determined in other patients.
Conclusion: In patients diagnosed as appendiceal mass who treated conservatively and after discharge with colonoscopy the ileocecal pathologies was ostracised, the follow-up without perform interval appendectomy is a suitable option.
References:
Disclosure: No significant relationships.

O185

IS INTERVAL APPENDECTOMY MANDATORY IN CONSERVATIVE TREATMENT OF COMPLICATED APPENDICITIS WITH A PALPABLE MASS OR LOCALIZED ABSCESS?

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Introduction: In 3-12 % of cases, appendicitis manifests as palpable mass or localized abscess. Conservative treatment, with antibiotics and percutaneous puncture, has been gaining strength because of high incidence of complications arising from surgery in the acute phase. Interval appendicectomy is not consensus on the follow-up of these patients. Objectives: observe incidence of appendiceal tumor in patients with complicated appendicitis with palpable mass or localized abscess.
Material and methods: Retrospective review of patients with palpable mass or localized abscess from December 2013 to May 2015, in Hospital das Clínicas, São Paulo University, Brazil. After conservative treatment, patients were subjected to laparoscopic appendectomy, according to our institutional protocol. Incidence of appendiceal tumor was registered.
Results: Twelve patients were admitted with appendiceal abscess and treated with percutaneous drainage and antibiotics. Two (18 %) were lost to follow-up. The remaining were submitted to interval appendectomy after four weeks to ten months. In three patients (27.2 %) appendiceal cancer was diagnosed.
Conclusion: Patients with complicated appendicitis with a palpable mass or localized abscess must be operated on after conservative treatment, because of the high incidence of cancer in this population.
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Disclosure: No significant relationships.

O186

ANTIBIOTIC THERAPY FOLLOWING APPENDECTOMY FOR ACUTE APPENDICITIS. SURGICAL FINDINGS REMAIN MORE IMPORTANT THAN NATIONAL GUIDELINES

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Introduction: In France, an antibiotic therapy longer than 72 h is not recommended after an appendectomy for acute appendicitis (GRADE® 2+, 2014). The goal of this study was to determine if this guideline is routinely applied by the surgeons.
Material and methods: From 01/09/2013 to 31/05/205, all patients presenting an acute appendicitis have been retrospectively included. All patients treated with an antibiotic therapy >72 h were in the group ANTIBIO. The other patients were in the group CONTROL.
Results: 103 patients were included, 80 in the group CONTROL and 20 in the group ANTIBIO (3 patients were excluded for peritonitis). The demographics and co-morbidity were not significantly different. The guidelines were not respected for 25 % of the patients. In the group ANTIBIO: the median duration of antibiotic therapy was 6.375 days (+/-2.71; 3-10); in 90 %, co-amoxiclav was used. In univariate analysis, 3 criteria were determinant to initiate a post-operative antibiotic therapy: 'abscess on pre-op CT-scan' ($p = 0.0005$), 'cloudy intra peritoneal liquid' ($p = 0.002$) and 'local signs of peritoneal inflammation' ($p = 0.01$). In multivariable analysis, the only significant criteria was 'local signs of peritoneal inflammation' No patient presented postoperative complications
Conclusion: Despite the current recommendations, surgical findings remains the key element in the establishment of a post-operative antibiotic therapy after appendectomy for acute appendicitis
References:
Disclosure: No significant relationships.

SPLEEN & TRAUMA

O187

THE DEVELOPMENT OF THE EUROPEAN TRAUMA COURSE IN AUSTRIA – DATA ON 30 COURSES

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Introduction: Worldwide, trauma claims more productive life years than any other disease. The World Health Organization estimates that the mortality of major trauma in Europe could be decreased up to 30 % by improving the chain of care for major trauma patients. In recent years different trauma teaching programmes have been established in working towards decreasing the burden of death and disability of traumatized patients. European Trauma Course (ETC) goal is to teach a simplified and standardised approach to trauma patient management. ETC was designed in collaboration with the ERC, EuSEM, ESTES and ESA. Austrian group of experts in trauma patient management and the Austrian societies joined ETC initiative from the early beginning, being the first group providing in-house courses.
Material and methods: Database search of the records of ETC Austria from 2008 until April 2015
Results: 30 courses were completed, with 669 participants (199 females, 470 males). More than two thirds of participants were doctors (627), followed by nursing staff (22) and ambulance personnel

(20). The majority of participants were anesthesiologists (323), alongside with trauma surgeons (232), emergency medicine specialists (82) and others (33). of 30 courses 20 were open ones with individual registration and 10 were closed in-house courses for single institution trauma teams training.
Conclusion: In the past six years ETC has become the standard trauma course in Austria. Every year more and more medical personnel from nursing and ambulances join our courses, building the whole concept closer towards ETC goal of multi-specialty and multi-professional trauma team approach.
References:
Disclosure: Chair of the society organising ETC in Austria

O188

FREQUENCY, PRESENTATION, MANAGEMENT AND OUTCOMES OF BLUNT SPLENIC INJURY IN A SINGLE CENTER OVER A 3-YEAR PERIOD

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Introduction: The spleen is the most injured organ in blunt abdominal trauma. We studied the frequency, presentation, management and outcomes of blunt splenic injury (BSI) in a single center.
Material and methods: We conducted a retrospective analysis for all adult and pediatric BSI patients admitted between 2011 and 2014.
Results: We identified 191 BSI patients (166 adults and 25 children). Motor vehicle crashes (MVCs) were the main mechanism of injury (70 %) followed by fall (19 %). On admission, 10 % had SBP <90 mmHg and 19 % had GCS <8. Majority of BSI were associated with chest (45 %), head injuries (25 %) and solid organ injuries (20 %). Injury severity scores (ISS) ranged from 20 in Grade I to 30 in Grade V. Initial and follow-up CT scan were done in 173 and 29 cases respectively. Pseudoaneurysm was found in 3 follow-up CT scan cases who then underwent angioembolization. Majority of cases had Grade II and III BSI (36 % and 30 %, respectively). Around 146 patients (76 %) underwent conservative management while splenectomy was done in 24 % mainly for Grade IV and V, and only one case had splenorrhaphy. overall mortality was 7.9 % (13 adults and 2 children) and most of deaths were related to polytrauma and severe traumatic brain injury. Adults had longer ICU stay compared to pediatric group. Rate of failure of conservative treatment was 0 and 0.6 % in pediatric and adult groups, respectively.
Conclusion: In Qatar, the majority of BSI is related to MVCs and associated with high ISS, chest and head injuries. Most of cases treated conservatively and angioemblization was done in few cases.
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Disclosure: No significant relationships.

O189

CONTRIBUTION OF THREE-DIMENSIONAL RECONSTRUCTIONS FROM CT-SCAN FOR ASSESSING THE FACTORS ASSOCIATED WITH BLUNT SPLENIC INJURY SEVERITY

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Introduction: Analysis of the influence of anthropo-morphometry and 3D splenic variability on the severity of splenic injury in blunt abdominal trauma.
Material and methods: Seventy-seven patients with a blunt splenic trauma had a tomodensitometry at admission. A severe splenic lesion was defined by the presence of: grade 4 or 5 according to AAST classification, lesion of the entire parenchyma, or lesion corresponding to a fracture or burst fracture. Splenic segmentation permitted to calculate splenic volume, orientation in space (colatitude, azimuth), morphometry, morphology and degree of span of the hilar vessels. Relationships between spleen stomach, liver and 10th left rib, were detailed.
Results: In univariate analysis, splenic parameters for a severer lesion were: orientation of the hilar side turned towards the vertebral column (azimuth, $p = 0.047$), a spread conformation of the hilar vessels ($p = 0.10$) and a high splenic volume ($p = 0.059$). The more the patient was young, the more the splenic lesion was severe ($p = 0.073$). A full stomach and a left liver overflowing in the left hypochondrium were associated with a low gravity splenic lesion, $p = 0.024$ and $p = 0.027$, respectively. In multivariate analysis, injured patients whom hilar area was vertically oriented, were more at risk of a severe splenic lesion (OR = 0.92 (0.85-0.99). $p = 0.021$). Finally, an abdominal-shape liver were associated with a low gravity splenic lesion (OR = 0.13. (0.02-0.93). $p = 0.042$).
Conclusion: Using this analysis with studying the biomechanical behaviour of the splenic tissue in case of trauma, will permit to create a numerical model of this organ, and integrate it to Virtual Human scientific application of modern traumatology.
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geometrical acquisition to model validation with radioss. *Comput Methods Biomech Biomed Engin*. 2003; 6(4): 263-273.
Disclosure: No significant relationships.

O190

DIAGNOSTIC ACCURACY OF VITREA VERSUS CONVENTIONAL CT – OUTCOME PREDICTABILITY FOR NOM IN SPLENIC INJURIES

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Introduction: There are no definitive criteria to determine which patients with splenic trauma are better candidates for nonoperative management (NOM). Current risk factors for failure include contrast blush on the CT, advanced age and higher grade of injury. The first two factors can be determined with certainty, but the severity of injury is more difficult to assess. We used a new method of volume measurement for more precise determination of the degree of injury and in turn the likelihood of successful NOM.
Material and methods: We collected data prospectively for two years from all our patients with splenic injuries and made volumetric measurements of the injured and healthy areas of the spleen based on conventional assessment of CT images and images processed with the new Vitrea software. Data collected included injury severity score (ISS), age, and degrees of splenic injury according to both conventional CT and Vitrea. A statistical outcome analysis was performed for the three treatment groups: NOM, surgical splenic preservation or splenectomy.
Results: We saw 140 patients with splenic injuries. Ninety-one were chosen for NOM, which was successful in 82 cases and failed in 9. Sixteen patients had surgical splenic preservation and 33, splenectomy. Vitrea was more accurate than conventional CT in determining the degree of injury and so allows better prediction of the likelihood of successful NOM.
Conclusion: The preliminary results indicate that this new CT analysis software shows promise for better assessment of the degree of injury and for better selection of patients for nonoperative management of splenic injuries.
References:
Disclosure: No significant relationships.

O191

ANGIO-EMBOLIZATION IN BLEEDING BLUNT SPLENIC INJURIES: IT WORKS BUT LOOK OUT CONSEQUENCES

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Introduction: Non operative management (NOM) of blunt splenic injuries has been widely accepted, and the splenic angio-embolization (SAE) has been more and more becoming an effective tool in haemodynamically stable patients with all AAST grade splenic injuries. Overall complication rate of SAE is 6-8 %. Aim of this study was to analyze complications that may occur after SAE
Material and methods: We reviewed 24 consecutive patients with blunt splenic trauma admitted to our Unit who underwent SAE. All these patients were managed in according to a diagnostical-therapeutic algorithm taken from international guidelines. Indications for SAE included evidence of spleen contrast extravasation/blush, pseudoaneurysm and/or AAST grade III-V splenic injury. SAE included 15 distal, 3 proximal and 6 combined arterial embolizations. The complications occured after SAE procedure have been analysed
Results: Major complications occurred in 5 SAE-treated patients (20.8 %). 4 patients developed post-procedure bleeding and underwent early splenectomy. One patient developed an abscess in a total infarcted spleen and underwent late splenectomy. Minor complications, not requiring a surgical operation, occurred in 24 % patients and included fever and pleural effusion with an average hospital stay meanly longer than 7 days.
Conclusion: Major and minor SAE complications could jeopardize the conservative management of blunt spleen injuries. A strict clinical and radiological follow up must be taken into account after a SAE procedure. SAE major complication rate could be considered acceptable for the effectiveness of the procedure, but it is likely that the other minor ones could be related to an increased cost of hospitalization and a longer mean hospital stay.
References:
Disclosure: No significant relationships.

O192

BLUNT SPLENIC TRAUMA IN A LEVEL III TRAUMA CENTER: A 5-YEAR COHORT

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Introduction: The spleen is one of the most frequently injured organs in blunt abdominal trauma. There has been a shift towards non-operative management (NOM), provided the patient is hemodynamically stable and without peritonitis. Angioembolisation may be of use in higher grade splenic injury but emergent splenectomy remains a life-saving approach for many patients. We aimed to review the current practice for the evaluation, diagnosis and management of blunt splenic trauma in our hospital.
Material and methods: Cohort of patients admitted in our institution with blunt splenic trauma, from January 2010 to December 2014. We analyzed demographic, clinical and imagiologic characteristics of these patients and compared outcomes according to their management.
Results: 35 patients were admitted with blunt splenic trauma (12 females, 23 males; median age 52 years), 7 with grade I lesions, 6 with grade II, 12 with grade III and 10 with grade IV. The most common associated injury was hepatic trauma, retroperitoneal hematoma, renal trauma and diaphragm rupture. We performed emergent or urgent splenectomy in 45.7 % patients and NOM in 54 % with a failure rate of 31 %. 57 % were admitted in Intensive Care Unit. Total in-hospital time was longer in the group of patients submitted to surgical treatment. 1 of the patients died of refractory hemorrhagic shock.
Conclusion: Due to evolving imaging techniques, the current approach to splenic trauma aims to avoid unnecessary surgery. However, in our hospital, NOM rates are below expected. The lack of availability of Radiology and Interventional Radiology can be a limiting factor in both diagnosis and management.

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Disclosure: No significant relationships.

O193

SPLENIC EMBOLIZATION AFTER BLUNT TRAUMA - A 7 YEAR EXPERIENCE

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Introduction: Conservative management of blunt trauma to the spleen is now a standard for hemodynamically stable patients. Acute embolization of splenic artery seems to be a suitable method of nonoperative treatment.
Material and methods: This retrospective review was performed to evaluate the outcome and complications of patients with blunt trauma to spleen treated with embolization in Level I trauma center between January 2008 and December 2014. There were 21 patients. We analyze the demographic data of these patients, grade of splenic injury according to AAST, concomitant injuries, duration of hospitalization and frequency and severity of complications.
Results: The group consisted of 8 female and 13 male with a mean average 41.7 years and with average grade of spleen injury to be 2.9 according to AAST. All patients underwent distal embolization and there were no necessity to convert patients to surgical treatment. Average duration of hospitalization was 15 days but this item was significantly affected by other concomitant trauma. We noticed one severe complication: renal failure after contrast administration with the need for subsequent dialysis Minor complications consisted of fever, fluidothorax and one splenic artery dissection by coil.
Conclusion: Acute splenic embolization of hemodynamically stable patients with blunt trauma to spleen seems to be a safe and effective technique of non-surgical therapy. Complications related to this methods can manifest but these are mainly minor, however.
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Disclosure: No significant relationships.

O194

MANAGEMENT OF BLUNT SPLENIC INJURY: A RETROSPECTIVE REVIEW OF PRACTICE AND OUTCOMES AT A UK MAJOR TRAUMA CENTRE

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Introduction: Blunt splenic injury can be managed safely with non-operative management (NOM), with the selective use of angioembolisation (AE) for patients with high-grade injuries and/or contrast extravasation (CE) on CT scan.
Material and methods: Analysis of retrospective data from the East Midlands Major Trauma Centre (EMMTC) database between April 2012 and January 2015.
Results: 124 patients (mean age 39.1 years, 75.8 % male) were included. Five unstable/peritonitic patients were taken straight to theatre prior to imaging. 116 of 119 patients had CT images available. Thirty four (26.7 %) patients had a splenectomy. of 11 grade I injuries, 3 underwent laparotomy for concomitant injuries, 100 % (8/11) had successful NOM without AE. Sixty four (55.2 %) patients had low grade injury (I-III) without CE (low risk group). 55 had NOM (10 % failed) all failures were Grade III injuries. Four patients had AE (2 failed). There were 9 splenectomies & 10 spleen-conserving operations. Fifty two (44.8 %) had high grade injuries (IV-V) or CE on CT (high risk group). 20 had NOM (no AE) of which 40 % failed. 20 had AE with 3 failures. 14 patients underwent splenectomy with 1 spleen-conserving operation. The risk of failure of NOM (+/- AE) was 14.9 % in low risk group vs 42.3 % in high-risk group (Chi2 $p = 0.0489$).
Conclusion: The NOM failure rate for grade I-III injuries with no CE is high in our study compared to other studies (Bullah et al). The failure rate for NOM without AE in grade IV/V injuries or in presence of CE is high (40 %) and should not be considered.
References: Bhullar I et al. At first blush: Absence of computed tomography contrast extravasation in Grade IV or V adult blunt splenic trauma should not preclude angioembolization. J Trauma Acute Care Surg; 2013 74(1): 105-112.
Disclosure: No significant relationships.

EMERGENCY SERVICE

O195

ACUTE CARE SURGERY SERVICES: BEYOND JUST THE OPERATING ROOM

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Introduction: The acute care surgery (ACS) model was developed to acknowledge the complexity of a traditionally fractured population of emergency general surgery patients. The purpose of this study was to prospectively examine the case mix of an ACS service at a tertiary center to identify the frequency and distribution of both operatively and non-operatively managed emergency general surgery conditions.
Material and methods: This prospective cohort study evaluated consecutive patients assessed by the ACS team at a large Canadian tertiary care center over 2 months. This included all consults, as well as outside hospital transfers. Diagnoses, demographics, and co-morbidities were captured as were intervention(s) performed, complications, re-admissions, and in-hospital mortality.
Results: The ACS team was involved in the care of 359 patients, 175 (49 %) of whom were admitted under the direct care of the ACS

team. No operative management was required in 47 % of ACS admission and 81 % of in-patient consults. Bowel obstruction (21 %) was the most common reason for admission, followed by skin and soft tissue infections (14 %), appendiceal (13 %) and biliary (13 %) pathology. The majority of in-patients consults were from trauma (36 %), medicine (28 %), and oncology (15 %). Thirty-day return to ER and re-admission rates were 17 % and 9 % respectively, and in-hospital mortality was 2 %.

Conclusion: Acute care surgery teams care for a wide breadth of disease, a considerable amount of which is managed non-operatively. This study is one of the first to describe the burden of non-operative care provided by an ACS team for patients admitted to both surgical and non-surgical services.

References:

Disclosure: No significant relationships.

O196

DRAGON STADIUM EMERGENCY SERVICES - CHAMPIONS LEAGUE OF THE SPORTS EMERGENCY SERVICES

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Introduction: To ensure safety and emergency medical assistance to a major football match requires a multidisciplinary approach, which implies collaboration between the different entities involved in event security, including security forces, fire department and medical emergency services. Sensitive to this issue, the FCPorto, has created in 2004 a dedicated team of emergency medical assistance to the Dragon Stadium. It is the responsibility of this team to coordinate medical emergency services of the stadium and its perimeter, ensuring that both the more than fifty thousand supporters and all agents involved in the game receive the best medical care, timely. The aim of this study is to review the emergency medical apparatus of the Stadium in the match setting.

Material and methods: The Emergency Medical Services composed of 5 First Response Teams (Emergency Doctor and Nurse), 2 Nurse Teams and 1 Coordinator Nurse. The Services follow the UEFA Minimum Medical Requirements. The physician and nurse teams, equipped with advanced life support gear, assist an average of 30 supporters and staff during the events, assure on-site advanced trauma and life support, care for minor injuries and illnesses, effective stabilizing and transporting injured or ill patients.

Results: In 10 seasons te Emergency Services assisted 257 matches (8979763 spectators). There were 3089 patient contacts (12.02 per match), 148 of those were evacuated to the Hospital. No fatalities.

Conclusion: This approach has allowed to deliver the best immediate care for the serious injured and avoid any death in the last ten years, making the Dragon Stadium Medical Emergency Services a National reference.

Disclosure: No significant relationships.

O197

ESTABLISHMENT OF SEVERE TRAUMA RESCUE SYSTEM IN CHINA

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Introduction: Primary study showed that the application of standardized rescue and treatment improved the prognosis of severe trauma patients; decreased the lethality and the rate of disability. Rescue and treatment of trauma was limited by rescue time and the regional area.

Material and methods: In this study, Pilot areas were selected in several provinces and cities in China. Regional trauma rescue systems were established according to the population and the area of the regions and also combined with the local medical resource. Severe trauma patients were treated under this rescue system. We tried to explore a regional severe trauma rescue system suitable for China's national conditions and the local characteristics.

Results: 32 hospitals which were selected in the different regions of China were set up as regional trauma centers. Several smaller hospitals were set up as the trauma stations in each region to form 2 level trauma rescue system. In the system, the evaluation and transfer rules of severe trauma patients were established; the information exchange and warning system were installed; Severe trauma patients' databases were set up; The pre-hospital and in hospital medical workers were trained. Severe trauma patients were rescued and treated under the improved regional rescue system.

Conclusion: Totally, there were 32 trauma rescue systems of 2-level established in 18 provinces, 26 cities in China. Severe trauma patients began to rescued and treated under this new system.

References: To be added.

Disclosure: No significant relationships.

O198

REDEFINING TRAUMA POST SERVICE CENTRALISATION IN THE UK

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Introduction: Centralisation of trauma services occurred in the England in 2012, with the development of major trauma networks with a specialist trauma centre receiving patients from significant geographical distances. We aim to compare the change in the trauma demographic and patient outcomes post reconfiguration.

Material and methods: Data was analysed from a prospectively maintained database located at a major trauma centre in Liverpool, England, from Jan 2012 to Jun 2014. Demographic details included age of patients, mechanism of injury and injury severity scores (ISS). Primary outcomes were interventions/operation and mortality rates pre and post centralisation. Data was analysed using the t test and Fisher's exact test

Results: 1418 trauma patients were analysed. Mean monthly admissions increased significantly 15.7 vs 63.1 ($p < 0.005$). There were no significant differences in age (39.8 vs 37.0 years, pre and post), there were more patients with an ISS >15 in the pre centralisation group, 58 % vs 27 % ($p < 0.0001$). Proportionally there were less patients suffering assaults (40 %vs 21 %) similar road traffic accidents (30 %vs 34 %) and significantly more falls (24 %vs 43 %) post centralisation. Less patients required radiological or operative intervention, 28 % vs 13 % ($p < 0.0001$). Similar numbers of patients required neurosurgical transfer, 12 % vs 11 % ($p = 0.506$). There

was a non-significant decrease in mortality rate, 7 % vs 5 % ($p = 0.23$).
Conclusion: The advent of centralisation has changed the demography of the trauma population to high volume, less severely injured with different injury mechanisms, leading to increased interventions with no change in mortality. Recommended reconfiguration guidelines have changed the face of trauma we see today.
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Disclosure: No significant relationships.

O199

IMPLEMENTING AN ACUTE CARE SURGERY SERVICE MODEL IN A MIDDLE-INCOME COUNTRY HOSPITAL GENERATES SIGNIFICANT GROWTH IN PRODUCTIVITY AND PROCEDURE RVUS

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Introduction: Acute Care Surgery Model changes a hospital ER solving capacity. The aim of this study is to show the difference in RVUs generated by surgical procedures between the Traditional Model and the Acute Care Surgery Model.
Material and methods: A descriptive, retrospective study in a referral hospital comparing 2 one-year periods, 2011 vs. 2014, with two-different models of surgical care: Period 1 (P1), Traditional Model of care by general surgeons with 8 hr. in-house and 16 hr. home call Vs. Period 2 (P2), Acute Care Surgery Model with trauma and general surgeons taking 24hr in-house call. Number and type of procedures was used to calculate the RVUs generated in each period. Variables were analyzed based on frequencies and percentages. Chi-square was used to determine statistical significance.
Results: In P1, 2,132 total surgical procedures were performed Vs. 4,268 in P2. Emergency procedures were 730 (34.24 %) in P1 vs. 1,679(39.34 %) in P2, representing 130 % increase. RVUs generated in P1 were $ 216,633.42 vs. $ 563,118.66 in P2. The $p = 0.0001$ by chi-square. There was a 185 % increase in appendectomies, which is above the expected 10.65 % adjusted per population growth.
Conclusion: Implementing the Acute Care Surgery Model generated a significant growth in productivity expressed by an increase in the number of surgical procedures and the RVUs generated through emergency department surgical admissions. Further studies should be conducted to determine additional RVU's generated by consultations and minor procedures performed outside the operating room.
References: 1. Galante JM, Phan HH, Wisner DH. MD Trauma Surgery to Acute Care Surgery: Defining the Paradigm Shift. Journal of Trauma-Injury Infection & Critical Care. 2010. 68:5,1024-1031 2. Barnes SL, Cooper C J, Coughenour JP, MacIntyre AD, Kessel JW. Impact of Acute Care Surgery to Departmental Productivity. Journal of Trauma-Injury Infection & Critical Care. 2011. 71:4, 1027-1034.
Disclosure: No significant relationships.

O200

CURRENT STATE OF TRAUMA CARE SYSTEM IN SHANGHAI

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Introduction: To investigate the patterns of trauma care in Shanghai.
Material and methods: Data was from a retrospective questionnaires in 14 hospitals (1evel >II) from the downtown, nearby area and suburb of Shanghai. Materials of different modes of emergency cure for the trauma in hospital were gathered from Jan, 2012 to Dec, 2014.
Results: There are two modes of trauma care in Shanghai. The first one is emergency trauma center, the other one is the emergency department first-diagnosis system. The first one is better than the second one in equipment, trauma score and trauma professional team. Low proportion of using of trauma database was a severe problem in the two modes.
Conclusion: Trauma care systems develop unbalance in Shanghai. The pattern of emergency trauma center is superior to traditional one. To improve trauma physician training and establish trauma database in the city level is a matter of great urgency.
References:
Disclosure: No significant relationships.

O201

1 LIMITATIONS IN PREHOSPITAL COMMUNICATION BETWEEN TRAUMA HELICOPTER, AMBULANCE SERVICES AND DISPATCH CENTRES

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Introduction: Prehospital communication between Emergency Medical Services (EMS) is done in hectic situations. Smooth communication between all medical personal is required to provide the best care. Proper communication enhances collaboration and enables shared situational awareness. The objective of this paper was to give insight in current Dutch prehospital emergency care communication between all EMS and evaluate the usage of a new Helicopter EMS(HEMS) cancellation model.
Material and methods: Trauma related HEMS dispatches between November 1 st 2014 and May 31st 2015 for the Lifeliner 1 were included, of which a random sample of 100 dispatches was generated. Tape recordings on all prehospital communication between the Dispatch center, EMS and HEMS. Qualitative content analysis was performed, using open coding to code key messages.
Results: 92 tape-recording were analyzed. Most frequent reason for HEMS dispatch was suspicion of brain injury 24 %. The cancellation model was followed in 66 %, overruled in 9 %, not applicable in 25 %. Main reason for not adhering to the model was hemodynamic stability. In 5 % of HEMS dispatches a complete ABCD-methodology was used for handover, in 9 % the Situation-Background-

Assessment-Recommendation technique, in 2 % the Mechanism-Injuries-Signs -Treatment method was used. The other handovers were incomplete.
Conclusion: Prehospital communication between EMS on-scene and HEMS often entails little information. The cancellation model for HEMS is frequently used and promotes adequate information transfer. To increase joined decision-making more patient and situational information needs to be transferred. Standardization of prehospital trauma handovers will facilitate this In order to increase quality of care and improve patient's outcome.
References:
Disclosure: No significant relationships.

O202

'THE WEEKEND EFFECT': DOES IT REALLY AFFECT SURGICAL MORTALITY RATES, A REVIEW OF SURGICAL ADMISSIONS FROM A BUSY TEACHING HOSPITAL IN LONDON

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Introduction: Surgical admissions at weekends are associated with higher mortality rates compared to midweek admissions (1). The aim of this study was to evaluate mortality rates with weekend admissions in comparison to mortality rates during the rest of the week.
Material and methods: This study was conducted at Queen's Hospital, London over a 12-month period from Sept 2014 – Aug 2015. All surgical admissions during this period were included in the study. Ethical approval was not deemed necessary as it was an evaluation of routine practice and the study was registered with the audit department of the trust.
Results: There were 89 surgical mortalities during the study period, which included 40 men and 49 women. The mean age of the patients was 79. There was higher mortality rate on Saturdays. Patients admitted on Thursdays had a higher risk of dying. Patients admitted on Sundays tend to stay longer before death.
Conclusion: Patients admitted just before the weekends are at a higher risk of dying with higher mortality rate at the weekend. A lower senior surgical input, with reduced medical cover and poor access to investigations at the weekends might explain a higher mortality rate for these patients. The data does support a case for expanded seven-day services, with implications for health care providers.
References: 1. Freemantle et al. Increased mortality associated with weekend hospital admission: a case for expanded seven day services? BMJ. 2015 Sep 5;351:h4596.
Disclosure: No significant relationships.

INNOVATIONS: IMAGING & NAVIGATION

O203

CLINICAL EVALUATION OF INFRASCANNER MODEL 2000 FOR DETECTION OF TRAUMATIC INTRACRANIAL HEMATOMAS

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Introduction: The purpose of this study was to evaluate the sensitivity and specificity of a portable device that uses near-infrared (NIR) to screen for traumatic intracranial hematomas. During the ESTES meeting of 2015 we presented our preliminary results. Now we show the complete dataset.
Material and methods: We conducted a prospective pilot study at the Emergency Department of a level 2 trauma center in the Netherlands. Adults with Traumatic Brain Injury (TBI) were included and received both a CT scan and a scan with the NIR device. Blinding of operator and radiologist was performed.
Results: We enrolled 52 patients. 8 patients had intracranial hematoma, whereas 16 patients showed extracranial hematoma on CT scan. Sensitivity of the NIR device was 100 %. For all 28 cases without intracranial or extracranial hematomas specificity was 85.7 %. When correcting for extracranial hematomas specificity was 54.5 %. However, in our study a trend towards higher delta optical density was seen in patients with intracranial hematoma, compared to extracranial hematoma. The use of the NIR device would have let to an avoidance of 24 CT scans.
Conclusion: Our results demonstrate, that the NIR device is a safe tool, with a sensitivity of 100 % for detecting traumatic intracranial hematoma. Although it's not a CT scan, it can aid in the decision making to transport patients to a neurosurgical center. In military settings it supports early diagnosing and therefore quick evacuation to a higher echelon. Further investigation is needed to show if the NIR device can be a substitute for the CT scan in the Emergency Department.
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Disclosure: The infrascanner used in this study was provided by QRSHC.

O204

RADIOLOGICAL EVALUATION OF THE ACL AND SEMITENDINOSUS, GRACILIS TENDON WITH CHILDREN AGE

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Introduction: The aim was the retrospective assessment the ACL and semitendinosus (ST) and gracilis (G) tendon in correlation with the children's age.
Material and methods: Knee MRI examinations from December 2012 to July 2014 were evaluated in 132 patients (83 female and 49 male patients).The mean age was 14,9 years old (8-18) . Patients were grouped according to their age and a gap of 1-year was maintained between each group. Each examination comprised sagittal and coronal T1, T2-weighted and merge MR imaging series and pictures adequately depicted the ACL. Statistical analysis was to determine correlation between age, G and ST tendon transversal surface, transversal surface of the ACL and tibio-ACL angle.

Results: It was found, that (diameter) surface area of hamstring tendons (ST, G) is related to age . The highest tendon transversal surface growth of the ST and G take place for ST at age of 12 yo, and for G at age 13 yo. The transversal surface growth of the ST and G after this age is completed. ACL is correlated with age and the transversal surface highest growth rate of the ACL and the tibio-ACL angle highest rate take place at age of 10 yo and the ACL 's growth lasts to the age of 18 yo.
Conclusion: The ST and G tendon can be used for future grafts for ACL reconstruction after the age of 12 yo.
References: Shelbourne KD, Gray T, Wiley BV. Results of transphyseal anterior cruciate ligament reconstruction using patellar tendon autograft in Tanner stage 3 or 4 adolescents with clearly open growth plates. Am J Sports Med. 2004;32(5):1218-1222. Kelly PM, Diméglio A, Lower-limb growth: how predictable are predictions? J Child Orthop. 2008 Dec;2(6):407-15 Fules PJ, Madhav RT, Goddard RK, Newman-Sanders A, Mowbray MA.. Evaluation of tibial bone tunnel enlargement using MRI scan cross-sectional area measurement after autologous hamstring tendon ACL replacement. Knee. 2003 Mar;10(1):87-91.
Disclosure: No significant relationships.

O205

NAVIGATION WITH IMAGE-FUSION METHOD FOR TRANSILIAC-TRANSSACRAL SCREWS

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Introduction: Transiliac-transsacral (TITS) screws have been a challenging technique with conventional image intensifiers (IIs). Recent IIs and navigation systems can be reduce the difficulty of TITS screws. We showed the clinical results for patients inserted TITS screws.
Material and methods: Eight patients treated with percutaneous TITS screws in S1 and/or S2 using image-fusion navigation were included in this study. 3.2 mm guide pin passed the safety corridors in S1 or S2 vertebral body using navigation, then 6.5 mm diameter cannulated fully threaded screws were inserted percutaneously. We evaluated injury types, number of screws in S1 and S2, screw positions by postoperative CT scan and complications.
Results: Acute seven patients had sacral fracture; two cases to zone 1, four to zone 2 and one to zone 3 in Denis classification. In OTA classification, there were five cases to 61-B1 and two to B2. One nonunion case was classified as FFP type IIIc by Rommens. Eleven TITS screws were inserted to S1 or S2; three screws to S1 and eight to S2. Postoperative CT scan showed ten screws were placed in correct position. A neuropathic pain occurred after the operation in the patient with a zone 2 fracture. Another patient caused late infection.
Conclusion: The size of sacral ala is a critical factor at S1 level. The decision of the screw direction at S2 level is easier than at S1, but the safety corridor of S2 is narrower than S1 in most patients. Our results were acceptable and TITS screws can be expected a less invasive stable fixation procedure.
Disclosure: No significant relationships.

O206

TRAUMATOLOGICAL APPLICATION OF THREE-DIMENSIONAL RECONSTRUCTION AND RAPID PROTOTYPING TECHNOLOGY IN COMPLEX ACETABULAR FRACTURES

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Introduction: 3d reconstruction and rapid prototyping (RPT) from CT data could effort, in some surgical specialities, an important improvement in planning and during surgery. This technology can help the diagnosis but also the treatment of complex fracture. We think that in acetabular traumatology the application of RPT can reduce the operating time and can facilitate the understanding of fracture patterns and the reduction strategies. We show our first case of a bilateral acetabular fracture treated with the help of intraoperative £D solid model of the patient's pelvis.
Material and methods: two acetabular complex fractures of both hips in the same patient were first of all studied with ct. The 3d radiological reconstruction was processed to obtain the 3d solid model using RPT. We perform the operation with this sterile solid model in the operative field. It was very useful in understanding the position of the fracments in the no looking zones of acetabula and also in pre-modeling the plate on this solid prototype.
Results: The operating time, the blood loss and the fracture reductions resulted improved by using the 3d intra-operative model. Every person of the team could better understand every reduction step. The premodeling of the plate could effort easy positioning in one time.
Conclusion: we can thing in this preliminary results that this technique can really improve the understand of complex fracture patterns, can help the reduction, can optimize the synthesis.
References: clinical application of thee-dimensional reconstruction and rapid prototyping technology of multislice spiral computer tomography angiography for the repair of ventricular septal defect of tetralogy of Fallot. X.J. Ma, Genetics and Molecular Research 14(1): 1301-1309.
Disclosure: No significant relationships.

O207

3D QUANTIFICATION OF POSTERIOR MALLEOLAR FRAGMENT-REDUCTION PREDICTS CLINICAL OUTCOME IN A PROSPECTIVE TRIAL

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Introduction: In ankle fractures involving the posterior tibial margin, articular congruity is believed to be a strong predictor for clinical

outcome [1-3]. In a separate submitted study, contemporary measurements of fracture displacement using quantification of three-dimensional computed tomography (Q3DCT) were introduced. This study aims to correlate Q3DCT fracture displacement with clinical outcome.

Material and methods: Twenty-eight patients with twenty-eight ankle fractures including a posterior malleolar fragment (AO/OTA type 44) were included. Post-operative CT-scans were evaluated using Q3DCT techniques. Posterior fragment size (%), postoperative gaps (mm^2), step-off (mm) and 3D-displacement of the posterior fragment were quantified. We evaluated early posttraumatic arthrosis, Foot and Ankle Outcome Score (FAOS) pain and symptoms subscales, American Orthopaedic Foot and Ankle Society (AOFAS) and Quality of Life (Short Form 36) at one year.

Results: Q3DCT measurements showed a mean posterior fragment size of 11.8 % of the tibial plafond. 17/28 (61 %) of posterior fragments were surgically addressed. Early posttraumatic arthrosis, FAOS, AOFAS and SF-36 did not significantly differ between fixed or non-fixed fragments. Total gap surface showed a median of 14.5 mm^2 (IQR 4.7 – 30.0 mm^2) (Figure 1) but did not correlate with posttraumatic arthrosis, FAOS-, AOFAS- nor SF-36-scores. However, step-off (median 0.6 mm, IQR 0.0 - 1.1 mm) (Figure 2) and 3D-displacement (0.7 mm, IQR 0.0 – 1.1 mm) (Figure 3) correlated significantly with posttraumatic arthrosis and FAOS pain and symptoms subscales.

Conclusion: In rotational type ankle fractures involving the posterior tibial margin, intra-articular step-off and overall multidirectional displacement significantly correlate with development of early posttraumatic arthrosis and patient-reported pain and symptoms.

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Disclosure: No significant relationships.

O208

ARTICULAR GAP AND STEP-OFF REVISITED: 3D QUANTIFICATION OF POSTERIOR MALLEOLAR FRAGMENT REDUCTION

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Introduction: Despite advanced imaging techniques, classic measurements of post-operative fracture reduction (i.e. Knirk & Jupiter's "classic" two-millimeter displacement)[1] have not been revisited to date. The purpose of this study was to explore contemporary measurement techniques of postoperative fracture fragment displacement by using state-of-art quantification of three-dimensional computed tomography (Q3DCT).

Material and methods: Twenty eight ankle rotational-type fractures including a posterior malleolar fragment (AO/OTA type 44) were evaluated using Q3DCT to quantify posterior fragment size (% of tibial plafond) and articular involvement (http://www.traumaplatform.org [2]). Postoperative gap and step-off of the posterior fragment were calculated by virtually reducing fragments to their anatomical position. In addition, overall multidirectional displacement (mm) and gap-surface (mm^2) were measured. Measurements were compared to conventional to-dimensional computed tomography (2DCT)

Results: Q3DCT revealed a median posterior fragment size of 11.8 % (IQR 5.9-23.8 %). 2DCT showed a median post-operative maximum step-off of 1.1 mm (IQR 1.1 – 1.8 mm), compared to a median step-off of 0.6 mm (IQR 0.0 - 1.1) on Q3DCT. Median maximum post-operative gap was 1.2 mm (IQR 0.0 - 3.8) on 2DCT; median gap surface on Q3DCT was 14.5 mm^2 (4.7 – 30.0). Overall multidirectional displacement was 0.7 mm (IQR 0.0 – 1.1)

Conclusion: Q3DCT is a feasible technique in the post-operative evaluation of posterior fragments. We propose total gap surface in mm^2 and overall multidirectional displacement as contemporary measurements. A separate study reveals the clinical relevance of these new measurements in predicting clinical outcome in a prospective patient series.

References: 1. Knirk JL, Jupiter JB. Intra-articular fractures of the distal end of the radius in young adults. *J Bone Joint Surg Am.* 1986;68(5):647-659. 2. Mangnus L, Meijer D, Stufkens S a., et al. Posterior Malleolar Fracture Patterns. *J Orthop Trauma.* 2015;29(9):428-435.

Disclosure: No significant relationships.

O209

THREE DIMENSIONAL VIRTUAL PLANNING OF CORRECTIVE OSTEOTOMIES OF DISTAL RADIUS MALUNIONS: A SYSTEMATIC REVIEW

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Introduction: Approximately 5 % of distal radius fractures results in a malunion, often causing pain and limited function. A corrective osteotomy is the preferred treatment to restore the anatomical configuration and optimize functional outcome. To reach anatomic reconstruction, detailed preoperative planning is essential. Conventional preoperative planning does not address complex deformations that are frequently present in malunions. Computer-assisted techniques with three dimensional (3D) images and models address 3D-deformity and may optimize functional and radiological results in corrective osteotomies of the radius. The aim of this study was to summarize and evaluate the results of 3D-planned corrective osteotomies of malunited distal radius fractures.

Material and methods: We systematically searched PubMed, EMBASE and the Cochrane library (1 January 2000 – 1 March 2015) for studies that performed a 3D-planned corrective osteotomy on patients with a malunited distal radius fracture. We performed an

individual patient data meta-analysis (IPDMA) of included cases with focus on radiographic and functional outcomes of the procedure.
Results: Fourteen studies with a total of 65 participants were included in the analysis. Improvement on volar tilt, radial inclination and ulnar variance showed statistical significance ($p < 0.05$). All directions were improved to within 5 degrees of their normal value. Mean flexion-extension, pro-supination and grip strength showed statistically significant improvement ($p < 0.05$). Complications were reported in four out of 65 patients (6 %).
Conclusion: 3D-planned corrective osteotomies significantly improve both radiographic and functional results in patients with a distal radius malunion.
Disclosure: No significant relationships.

O210

ULTRASOUND BASED SHEAR-WAVE ELASTOGRAPHY FOR THE NON-INVASIVE EARLY DIAGNOSIS OF ACUTE COMPARTMENT SYNDROME – DEVELOPMENT OF A METHOD BASED ON TISSUE STRAIN ANALYTICS

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Introduction: Compartment syndrome of a limb is a severe and dynamic condition. A compartment syndrome is difficult to diagnose reliably and safely, a true gold standard does not exist. The pathophysiological conditions of the compartment syndrome affect amongst other things the elasticity of tissue.
Material and methods: The usefulness of ultrasound based shear-wave elastography for the early non-invasive diagnosis of acute compartment syndrome was assessed in a group of subjects by using the validated models (Wiemann et al.) to simulate conditions of a cut compartment syndrome.
Results: With using the ultrasound based shear-wave elastography a measurement of the shear wave speed was done and a colour overlay was created. After analysis of the colour overlay we could show that the proportional intensity of the less elastic parts increase. We calculated a median intensity for less elastic parts of 24.6 % (12.9-42.9 %) at rest. When the intracompartimental pressure was increased it may be observed a increase of intensity for less elastic parts of the ROI (median of +30.0 %). Simultaneous the intensity for middle and very elastic parts decreased.
Conclusion: The change of quantifiable shear-wave speed parameters in tissue elasticity as well as the strain of tissue can be registered and so compartment syndrome can be detected. The method presented in this study thus proved to be a useful tool in the early non-invasive diagnosis of acute compartment syndrome. Further studies are required to assess the reliability and validity of this new technique, the suitability and the benefits of this method, however, may already be expected.
References: Ulmer; 2002 - Shadgan et al.; 2010 - Wiemann et al.; 2006 - Arda et al.; 2011.
Disclosure: No significant relationships.

SPORTS MEDICINE: KNEE

O211

THE DIAGNOSTIC VALUE OF THE 'LEVER SIGN' TEST

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Introduction: The anterior cruciate ligament (ACL) has an important role in knee function and stability. Partial or total rupture of this ligament is a very common injury. Cruciate ligament rupture is highly associated with the development of osteoarthritis. Therefore, early diagnosis and treatment are essential. The aim of this study is to validate a new clinical test, the 'Lever Sign' test, comparing it to knee arthroscopy.
Material and methods: Patients with post-traumatic knee complaints are prospectively included and examined by a surgeon and physical therapist for either ACL rupture or meniscal injury. The Lever Sign test, anterior drawer test, Lachman test and pivot shift test were used to diagnose ACL tear. Subsequently the patients underwent therapeutic knee arthroscopy. Using the arthroscopic findings as the gold standard, sensitivity and specificity were calculated.
Results: Thus far 25 patients are included, of which 76 % male and 24 % female. Overall, the mean age was 33.6 years varying from 19 to 60. The sensitivity of the Lever Sign test was 63.6 % and 77.8 % for surgeon and physical therapist, respectively. In total, 14 out of the 25 included patients did not have a ruptured ACL. In all 14 cases, the Lever Sign test was negative, so specificity was 100 % for both surgeon and physical therapist.
Conclusion: One of the major findings of this study is the perfect conformity, when the ACL is intact, between the outcome of the Lever Sign test and arthroscopic findings. The Lever Sign test shows to be very specific and may help in more accurately diagnosing ACL tears.
References:
Disclosure: No significant relationships.

O212

OUTCOMES FOLLOWING BRACED, FULL WEIGHT-BEARING REHABILITATION AFTER MENISCAL REPAIR USING THE ALL INSIDE FAST-FIX REPAIR SYSTEM AT A MEAN FOLLOW UP OF 2 YEARS

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Introduction: Rehabilitation following meniscal surgery is a crucial component of injury management, contributing significantly to improved post-operative outcomes. However the optimal

rehabilitation programme following meniscal repair remains uncertain. As such, the present study aims to examine the post-operative outcomes, including failure rates, in patients undergoing aggressive post-operative rehabilitation following all-inside meniscal repair.
Material and methods: Data was collected on consecutive series of patients undergoing all inside meniscal repair between 2011-2014. Rehabilitation involved full weight bearing in a hinged knee brace for six weeks limited from 0 to 90 degrees. The primary outcome measure was defined as any re-operation due to failure of the primary procedure, whilst the secondary outcome measures were the Lysholm and Tegner functional knee scores functional knee scores.
Results: A total of 68 patients were included in the study, with a mean follow up of 23.9 months. 31 (45.6 %) patients suffered an isolated medial meniscus injury, whilst 27 (39.7 %) suffered an isolated lateral meniscal tear. 36 patients (52.9 %) suffered a concurrent ACL tear, all of whom underwent synchronous ACL reconstruction. Over the course of the study period, there were no re-operations due to failures of the primary repair. Furthermore there was a significant increase in the post-operative Lysholm score following meniscal repair and rehabilitation (38.2 pre-operative vs. 85.23 post-operative; $p < 0.01$).
Conclusion: Aggressive rehabilitation protocols can facilitate significant increase in post-operative Lysholm scores, and is not associated with any failures requiring further surgery. This suggests early and free weight bearing following all inside meniscal repair is a safe and effective post-operative rehabilitation protocol.
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Disclosure: No significant relationships.

O213

ACL REGENERATION USING A NOVEL SILK FIBER BASED SCAFFOLD - HISTOLOGICAL RESULTS OF A LARGE ANIMAL STUDY

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Introduction: Hypothesis 1) A novel degradable silk-fiber based scaffold with mechanical properties similar to the native ACL is able to initiate ligament regeneration after ACL resection and reconstruction under in-vivo conditions. 2) The additional cell seeding of the scaffold with autologous stroma vascular fraction containing adipose derived stem cells is increasing the regenerative activity.
Material and methods: Thirty-three mountain sheep underwent ACL resection and randomization to two experimental groups: 1) ACL reconstruction with scaffold alone (SA), 2) ACL reconstruction with cell- seeded scaffold (CS). Histological evaluation of the intra-articular portion of the reconstructed/regenerated ligament was performed after six and twelve months.
Results: After six months, connective tissue surrounded the silk scaffold with ingrowth in some areas. The cell seeded scaffolds had significant lower silk content ($p < 0.05$) compared to the unseeded scaffolds and demonstrated higher content of newly formed tissue ($p < 0.01$). After twelve months, the density of the silk fibers decreased significantly ($p < 0.01$), and the ingrowth of newly formed tissue increased in both groups ($p < 0.05$). No differences between the two groups regarding the silk fiber degradation as well as the regenerated tissue were detected anymore.
Conclusion: The novel silk-fiber based scaffold was able to stimulate ACL regeneration under in-vivo conditions. Additional cell seeding lead to increased tissue regeneration and decreased silk-fiber content, whereas these differences diminished after twelve months.
References:
Disclosure: No significant relationships.

O214

CLINICAL AND FUNCTIONAL OUTCOME AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING THE LARS™ SYSTEM AT A MINIMUM FOLLOW-UP OF 10 YEARS

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Introduction: *Purpose:* The aim of this study was to assess the clinical and functional outcomes of primary anterior cruciate ligament (ACL) reconstruction using the Ligament Augmentation Reconstruction System (LARS™) with a minimum follow-up of 10-years.
Material and methods: The outcomes of fifteen patients who underwent arthroscopic ACL reconstruction using the LARS™ system between 2000 and 2004 with a minimum follow-up of ten years were observed. The International Knee Documentation Committee score (IKDC), Visual Analog Scale (VAS), Lysholm score, and Tegner Activity Scale were assessed. Clinical assessment was performed by Lachman testing, assessment of side-to-side difference on KT-2000 testing and plain radiography evaluation of osteoarthritis.
Results: There were seven males and eleven females with a mean age of 29 years (range, 18 to 44 years) and a mean follow-up of 151.5 months (range, 120.4-165.0 months). Five patients (27.8 %) sustained a re-rupture of the LARS™ system and underwent revision surgery after a mean time of 23 months and four patients (22.2 %) presented with a re-rupture at final follow-up. The average IKDC score was 76.60 ± 18.18, the average Lysholm score was 88.00 ± 10.07 and the average Tegner activity score was 5 at final follow-up.
Conclusion: Our results indicate that the LARS™ system should currently not be suggested as a potential graft for primary reconstruction of the ACL. In special cases (e.g. multiple revision procedures), however, the LARS™ system can serve as an alternative graft.
Disclosure: No significant relationships.

O215

CLINICAL AND FUNCTIONAL OUTCOME OF ALL-INSIDE ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION AT A MINIMUM OF 2-YEAR FOLLOW-UP

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Introduction: To evaluate the clinical and functional outcomes for anatomic anterior cruciate ligament (ACL) reconstruction using the all-inside technique with a minimum follow-up of 24 months.
Material and methods: Patients undergoing anatomic ACL reconstruction using the all-inside technique between January 2011 and October 2012 were reviewed for inclusion in this study. Functional outcome measures including the Lysholm score, IKDC- score, Visual Analog Scale (VAS) score, Tegner Activity Scale were used to evaluate outcomes before surgery and at 3-, 6-, 12- and >24 months. At final follow-up, anterior-posterior knee stability was assessed with KT-2000 measurements.
Results: of the 92 patients who underwent primary all-inside ACL reconstruction, 79 patients returned to final follow-up with a minimum of two years. There were 53 males and 26 females with a mean age of 29 years (range, 18 to 54 years) and a mean follow-up of 29 months (range, 24 to 45 months). The IKDC-score (44.6 vs. 89.7, $p < 0.0001$), Lysholm-score (53.4 vs. 93.1, $p < 0.001$), VAS-score (5 vs. 0.1, $p < 0.001$) and Tegner activity score (2 vs. 6, $p < 0.001$) showed a significant improvement between baseline and final clinical follow-up. The mean side-to-side KT-2000 difference at final follow-up was 1.7 mm (range; 0 mm to 6 mm).
Conclusion: The current data supports our first hypothesis that primary anatomic ACL reconstruction using the all-inside technique leads to improved functional outcome between baseline and clinical follow-up at 24 months. Further, there was no difference in knee stability between the ACL reconstructed- and the contralateral normal knee at 24 months, which confirms our second hypothesis.
References:
Disclosure: No significant relationships.

O216

SEX DOES NOT INFLUENCE THE CLINICAL OUTCOME OF ANATOMIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION IN THE SHORT TERM UTILIZING THE "ALL-INSIDE" TECHNIQUE

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Introduction: To determine whether there are sex differences on objective and functional outcomes after anterior cruciate ligament (ACL) reconstruction utilizing the all-inside technique with a minimum follow-up of 24 months.
Material and methods: All patients who underwent anatomic ACL reconstruction using the all-inside technique between January 2011 and October 2012 were reviewed and divided into two groups (group A: males and group B: females) that were equal according to the patients' number and age. Functional outcome measurements included the Lysholm score, IKDC - score, VAS-score, Tegner Activity Scale before surgery and at 3-, 6-, 12- and >24 months follow-up.
Results: A total of 54 patients met the inclusion criteria study; 27 males and 27 females with a mean age of 29 years (range, 18 to 54 years) and a mean follow-up of 31 months (range, 24 to 45 months). The evaluated scores showed no significant difference between baseline, 3-, 6-, 12-, and >24 months clinical follow-up. However, women presented with a poorer outcome between baseline, 3- and 6- months leading to equal results at 12 and >24 months. The mean side-to-side KT-2000 difference and functional scores at final follow-up did not differ significantly between the two groups.
Conclusion: In conclusion, our study shows that equal objective and subjective success can be obtained following primary anatomical ACL reconstruction utilizing the all-inside technique in both male and female patients. We found, that women need a longer time period to obtain the same activity levels compared to their male counterpart.
Disclosure: No significant relationships.

O217

IN VIVO KNEE ROTATIONAL STABILITY 2 YEARS AFTER DOUBLE-BUNDLE AND ANATOMIC SINGLE-BUNDLE ACL RECONSTRUCTION

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Introduction: It is technically difficult to evaluate objectively the rotational stability of the knee. Navigation systems give us such an option. The objective of this study was to evaluate knee rotational stability at least 2 years after anatomic single-bundle anterior cruciate ligament (ACL) reconstruction (SB) and double-bundle ACL reconstruction (DB) in comparison with the contralateral healthy knee joint.
Material and methods: In both groups, 20 cases were evaluated. The mean follow-up was 27 months (range, 24 to 33). For all measurements, the navigation system was used. All measurements were taken on both the reconstructed and healthy knee. All measurements were repeated 3 times for each knee joint. The nonparametric Wilcoxon test was used to evaluate results.
Results: After the DB reconstruction, the mean external rotation of the tibia (ER) was 8.2° and the mean internal rotation of the tibia (IR) was 10.1°. In the contralateral healthy knee joint, ER was 8.5° ($p = 0{,}431$) and IR was 12.1° ($p = 0.218$). We didńt find any statistically significant difference in rotational stability between reconstructed and healthy knees. After the SB reconstruction, ER was 9.6° and IR was 13.1°. In the contralateral healthy knee joint, ER was 7.7° ($p = 0.121$) and IR was 9.8° ($p = 0.045$). We found statistically significant difference in internal rotational stability between reconstructed and healthy knees.
Conclusion: The data shows that the DB reconstruction of the ACL restores the rotational stability of the knee joint without any significant difference in comparison to the contralateral healthy knee ($p > 0.05$).
References:
Disclosure: No significant relationships.

O218

KNEE JOINT STABILITY AFTER DYNAMIC INTRALIGAMENTARY STABILIZATION

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Introduction: A novel technique called Dynamic Intraligamentary Stabilization (DIS) for treatment of acute anterior cruciate ligament (ACL) tears by using the Ligamys® implant system creates immediate joint stability close to the pre-injury level. The aim of this study was to biomechanically investigate the course of antero-posterior (AP) translational knee stability during the early post-operative phase. It is hypothesized that AP-translational knee stability is fully maintained over a simulated rehabilitation period of 50'000 gait cycles.
Material and methods: Eight fresh-frozen human cadaveric knee joints were subjected to 50'000 cycles of 0°- 70° flexion-extension movements in a custom-made test setup. AP-translational knee stability was assessed with simulated Lachman/KT-1000 testing in 0°, 15°, 30°, 60° and 90° of flexion in knee joints treated with DIS at cycle numbers 0, 100, 500, 2500, 10'000, 25'000, 50'000 and after Ligamys® explantation. Statistical analysis was performed using the Wilcoxon Signed-Rank Test with Bonferroni correction for multiple comparisons. The level of significance was set at $p = 0.05$.
Results: AP translation increased for all degrees of flexion over the whole cyclic test. The highest increase of 1.4 mm was observed between cycle numbers 0 and 50,000 in 30° flexion. For all flexion angles the AP translation after 50'000 cycles remained lower compared to the state after Ligamys® explantation.
Conclusion: DIS provides AP-translational knee stability close to the immediate post-operative level over a simulated rehabilitation period of 50'000 gait cycles and therefore supports the ACL during biologic healing.
Disclosure: This study was funded by Mathys Ltd Bettlach, where J. Häberli was an former employee.

POLYTRAUMA 1

O219

PATTERN OF MORTALITY AND CAUSES OF DEATH AFTER MULTIPLE TRAUMA: A SYSTEMATIC REVIEW OF AUTOPSY STUDIES

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Introduction: A high percentage (50 %-60 %) of severely injured patients die prior admission to the hospital. Moreover, preclinical studies including autopsies are rare. In this systemic literature review, we searched for publications focusing on clinical and preclinical mortality and post-mortem examinations. Moreover, we aimed to prove the consistency and value of data in autopsy studies using a systematic review of literature.
Material and methods: We have performed a literature research via PubMed/Medline database. The following search terms were used in different combinations: "multiple trauma", "epidemiology", "patterns of mortality", "trauma deaths", and "autopsy". References from available studies were searched as well. Relevant medical literature in English or German language published within the last four decades (1980-2015) was included.
Results: In this review we have identified marked differences in demographic parameters and injury severity between studies. In addition, the incidence of penetrating injuries was significantly different in studies (between 4 % and 38 %). Both unimodal and bimodal concepts of trauma mortality were mainly favoured. Thus, it is difficult to say which distribution is correct.
Conclusion: We have identified clear inconsistency between publications. Further studies in this field are needed; however, we would like to encourage investigators to choose the inclusion criteria more critically and to consider factors affecting the pattern of mortality
References:
Disclosure: No significant relationships.

O220

POLYTRAUMA PATIENTS IN THE NETHERLANDS AND THE USA: A BI-INSTITUTIONAL COMPARISON OF DEMOGRAPHICS AND OUTCOMES OF CARE

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Introduction: Dutch and American trauma systems have many similarities, but also important differences. Our objective was to compare characteristics and outcomes of polytrauma patients admitted to a US (Massachusetts General Hospital, MGH) versus a Dutch (Trauma Center West Netherlands, TCWN), Level 1 Trauma Center.
Material and methods: The records of 1,378 blunt trauma patients ≥15 years of age with an Injury Severity Score (ISS) ≥16 admitted between July 1, 2011 and December 31, 2013 (640 from TCWN, 738 from MGH) were retrospectively analyzed.
Results: The U.S. group had a higher mean Charlson Comorbidity Index (1.8 ± 2.8 vs. 1.2 ± 2.3, $p < 0.001$) and ISS (25 ± 9 vs. 23 ± 8, $p < 0.001$). In-hospital mortality was similar in both centers (11 % vs 10 %, $p = 0.61$), even after correction for baseline differences. MGH had a longer ICU stay (median 4 [IQR 2-11] vs. 2 [IQR: 2-7] days, $p = 0.008$) but shorter hospital stay (median 6 [IQR 3- 13] vs. 8 [IQR 4-16] days, $p < 0.001$). They also developed fewer complications (28 % vs. 37 %, $p < 0.001$), but had a higher complication-related readmission rate (7 % vs. 4 %, $p = 0.003$). More US patients were discharged to a rehabilitation center (42 % vs 9 %, $p < 0.001$) and less to home (41 % vs. 60 %, $p < 0.001$).
Conclusion: While mortality was similar between the two trauma centers, morbidity, hospital stay, and discharge disposition were different, pointing to different processes of care. The study of international variation in trauma care will allow further insight into the different trauma systems and the elements that should be adopted in order to improve the care overall.

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Disclosure: No significant relationships.

O221

ANALYSIS OF PELVIC/ACETABULAR INJURIES IN A MIDDLE-EAST GOVERNMENT HOSPITAL

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Introduction: We analyse pelvic/acetabular injuries in a 5-year period (2010-2014). Specificity of the country is an „abnormal" structure of inhabitants because of the high % of expatriate employees compared to the native population, lack of (appropriate) insurance for the expats and the need of the employeŕs consent with the treatment of the employee. In case of lack of insurance the employer or employee should cover treatment expenses.
Material and methods: In the years 2010-2014 234 patients were treated for pelvic/acetabular fractures mainly because of high-energy trauma 112 patients had unstable/displaced fractures indicated for surgery. Surgery was done in 65 patients. 22 were granted treatment abroad, 7 refused surgery, 12 not consented by employers. There were 3 open fractures, 7× additional abdominal injuries, 6 patients could not be operated. Diagnostics: plain x-rays, CT-scans, 3D-reconstructions. Surgery was performed in average on the 5th-7th post-injury day. Approach: anteriorly Pfannenstiel incision combined with a modified ilio-inguinal approach, dorsally a sacrum bridging double-plating giving high mechanical stability for early mobilization.
Results: Complication: 2 superficial, 0 deep infections, 1 transient sciatic nerve palsy, 3 implant failures (1 plate breakage, 2 screw migration). Patients returned to their previous activities within 4-6 months. In the follow-up period (average 28 months) patients had no or minimal pain with high patient satisfaction.
Conclusion: Surgical management of unstable/displaced pelvic ring/acetabular fractures enables early mobilization of the patients. The application of combined ventral-dorsal plating gives excellent mechanical stability. In our opinion this was also the cause that patients were predominantly pain-free in the follow-up period.
References:
Disclosure: No significant relationships.

O222

EPIDEMIOLOGICAL PROFILE OF MAJOR TRAUMA PATIENTS ADMITTED TO A TRAUMA CENTER IN BRAZIL

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Introduction: Trauma is the leading cause of death in the young adults around the world. Since the majority of the victims are economically active, the social burden can be quite high. Injured patients rely on strategies that improve outcome and minimize sequelae. Identifying the profile of trauma admissions is an indispensable tool that should be used to optimize those strategies.
Material and methods: All patients admitted to the trauma center of Hospital das Clinicas from December 2014 to September 2015 were analyzed. Data were retrospectively collected including age, gender, type and mechanism of injury, type and time of transport, hemodynamic status, Injury Severity Score (ISS) and outcome. Mortality during the first hour was also observed.
Results: During the study period, 672 trauma admissions were registered, with 272 having an ISS over 15. of the major traumas, mean age was 36 years and 80 % were male. Blunt trauma compromised 88 % of the admissions. of those, the most common mechanisms were motor vehicle collisions (49 %), being run over (24 %) and falls (18 %). The majority were brought in by ambulance (64 %), and the mean time to arrival was 53 minutes. Twenty-five percent were hypotensive upon admission. Mean ISS was 38. Mortality in the first hour was 12 %.
Conclusion: The profile of major trauma patients is a valuable parameter that can be used to improve quality of care. These characteristics should be used to optimize pre-hospital approach, transport logistics, and in-hospital strategies.
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Disclosure: No significant relationships.

O223

POST TRAUMATIC STRESS DISORDER IN A CIVILIAN TRAUMA POPULATION - A POINT PREVALENCE STUDY

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Introduction: Post traumatic stress disorder (PTSD) was initially described and is well recognized in conflict medicine, but is rarely reported in civilian trauma.
Material and methods: A prospective study was conducted following a cohort of patients admitted to a level 1 UK major trauma centre during a 7 month period. Patient related outcome measures were measured during the initial admission and then at the first clinic visit 6 to 8 weeks after discharge. This included the EQ-5D QoL score, the Hospital Anxiety and Depression Score (HADS) and the 4 point PTSD screening tool – the Primary Care PTSD screen, by Prins, Ouimette, & Kimerling, which has been validated for use in civilian settings (Freedy et al).
Results: A total of 86 patients attended follow up. From this group 9 patients were screened as having PTSD, giving a point prevalence of 10.5 %. On analysis of the subgroups, in a cohort with ISS >15 9.4 % of patients scored for PTSD, as compared to 12.5 % of patients with

ISS <15. 10.4 % of patients scored significantly abnormal on the HADS, and there was a correlation with this and a high PTSD score, with a further 14 % scoring moderately abnormal. 63 % patients had a tangible decrease in quality of life scores as defined by EQ-5D, but there didn't seem to be an association with high PTSD scores.
Conclusion: PTSD is a real problem in civilian trauma, with a prevalence in our study estimated at 10.5 %. This fuels the need for psychological services input at major trauma centres.
Disclosure: No significant relationships.

O224

IMPACT OF PELVIC FRACTURE (TYPE B/C) ON THE CLINICAL OUTCOMES OF SEVERELY INJURED TRAUMA PATIENTS: ARE THEY STILL A LIFE THREATENING?

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Introduction: Pelvic fractures are implicated in morbidity and mortality following traumatic injury. We sought to study the impact of pelvic fractures on clinical course and outcomes of trauma patients with a pelvic fracture in comparison to the general trauma population.
Material and methods: A cohort of 206 blunt trauma survivors, studied over 5-year period, 75 patients (36.4 %) had a pelvic fracture post-injury. To perform a pairwise, case-control study with 1:1 matching set, 60 patients of the pelvic fracture group (41 males and 19 females; age: 39.5 $\pm$ 2.2; Injury Severity Score (ISS): 26.6 $\pm$ 1.2) were compared to 60 patients without pelvic fracture trauma as controls (41 males and 19 females; age: 40 $\pm$ 1.7; ISS: 26.9 $\pm$ 1), both with matching demographic and injury characteristics.
Results: Statistically significant differences were observed in Intensive Care Unit (ICU) length of stay (LOS), total LOS, and Marshall MODScore between pelvic fracture and non-pelvic fracture groups respectively. Shock markers of pH, lactate, LDH, and base deficit were all significantly altered in pelvic fracture patients when compared to non-pelvic fracture cohort upon admission. Moreover, our analysis showed a significant differences in inflammatory biomarkers (Prolactin, IL-6, and CRP), and clinical parameters (CPK, Hct, WBC, and Platelets count) over the 7 days clinical course in patients with pelvic fracture when compared to non-pelvic fracture cohort.
Conclusion: In this stringently matched cohorts, analysis revealed that even upon admission, patients with pelvic fractures exhibited early biochemical and physiological alterations. In addition suggests that pelvic fracture affects the clinical outcome in severely-injured patients, independently of injury severity, mechanism of injury, age or gender.
References:
Disclosure: No significant relationships.

O225

QUALITY OF LIFE AFTER PELVIC RING FRACTURES: LONG TERM OUTCOMES; A CROSS-SECTIONAL STUDY

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Introduction: Pelvic ring fractures typically occur as a result of high energy trauma and might have long-term consequences on Health-related-Quality-of-Life (HrQoL). Many studies focused on functional outcome. However, only few studies focused on the HrQoL. Therefore, the purpose of this study is to conduct a cross-sectional analysis of patients using HrQoL-instruments.
Material and methods: We used the EuroQol-5D questionnaire and the pelvic Majeed score to assess the HrQoL after pelvic ring injury. Mean hospital stay, complications of pelvic ring fractures and one-year survival were measured.
Results: All 272 patients (147 male, 125 female, mean age 58 $\pm$ 23,0 years) with pelvic ring fractures referred to our hospital for conservative- or surgical-treatment between January 2011 and June 2015 were included in this study. There were 170 A, 73 B and 29 C Tile type fractures (mean age 62 $\pm$ 23, 51 $\pm$ 21 and 44 $\pm$ 18 years, respectively). A high energy traffic accident was the most common trauma mechanism in type A, B and C patients. The mean injury severity score was 16 $\pm$ 13, 21 $\pm$ 13 and 34 $\pm$ 19. The one-year survival rate was 82 % A, 90 % B and 85 % in type C patients. All differences between the groups are statistical significant ($P < 0.05$), except for the one-year survival rate ($P = 0.27$).
Conclusion: We analysed all pelvic ring fractures from our center between 2011-2015. We will finalize our results concerning HrQoL after pelvic ring fractures soon. We will give an overview of the data above at ESTES 2016 and present our HrQoL results.
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Disclosure: No significant relationships.

O226

EVOLUTION OF SEVERE TRAUMA IN ESTONIA COMPARING TIME SEGMENTS OF EARLY VERSUS ESTABLISHED INDEPENDENCE OF THE STATE

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Introduction: Trauma mechanisms and patterns of severe injuries during the Estonian independence have not been evaluated. The aim of the study was to compare severe injuries between time periods of early independence from the Soviet Union versus the current era.
Material and methods: After the ethics review board approval, all adult trauma admissions to major trauma facilities in 1993-1994 and

2013-2014 with Injury Severity Score (ISS) >15 were identified. Data collection included demographics, injury severity variables, interventions, and in-hospital outcomes. Primary outcome was in-hospital mortality. Secondary outcomes included incidence of penetrating trauma, hospital length of stay (HLOS), and complications. Primary outcome difference comparing the two time segments was determined using logistic regression model.

Results: A total of 1,064 patients were included, 593 and 471 from 1993-1994 and 2013-2014. Incidence of penetrating trauma in 1993-1994 and 2013-2014 was 11.1 % and 6.4 % ($p = 0.007$), respectively. Gunshot injuries constituted 62.1 % and 23.3 % of all penetrating trauma in 1993-1994 and 2013-2014, respectively ($p < 0.001$). The rate of trauma laparotomies declined significantly from 13.7 % in 1993-1994 to 7.9 % in 2013-2014 ($p = 0.003$). The overall mean HLOS was 15.5 ± 19.8 and did not differ between the periods. The rate of complications was significantly higher during 1993-1994 at 42.2 % vs. 35.2 % in 2013-2014, $p = 0.022$. Mortality was 50.3 % and 16.4 % during 1993-1994 and 2013-2014, respectively (adj. OR, 7.01; 95 % CI, 4.69-10.47; $p < 0.001$).

Conclusion: Effective law enforcement, gun control, and reduction of interpersonal violence have significantly decreased the incidence of penetrating trauma, injury-related complications, and all-cause mortality during the 20 years of Estonian independence.

References:

Disclosure: No significant relationships.

INTERFACE: PREHOSPITAL & INHOSPITAL

O227

TRAUMA MANAGEMENT DURING FINANCIAL CRISIS : THE FIRST TRAUMA DATABASE IN GREECE

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Introduction: The goal is to record and evaluate trauma management in our University Hospital, while setting up the first trauma database in the country.

Material and methods: Retrospective study of patients (n = 1128) between March and December 2014 using hospital records. ISS was used to categorize. Demographic information, injury patterns, hospital transfer, diagnostic and therapeutic procedures, duration of hospitalization, outcomes, complications and cost were recorded.

Results: Overall number of surgical emergencies was 2506, with trauma constituting 45 % of those. An 8 % steady, incremental increase of trauma was observed, although the majority (52.4 %) could have been treated at a lower level healthcare facility and only 15.2 % were considered polytrauma. Only 9.7 % (n = 109) of the patients received first aid and were transferred to the hospital by the National Emergency Medical Services. Overall, 3.5 % of trauma patients underwent surgical treatment (75 % of surgeries categorized as major or critical), with 19.5 % of these patients undergoing 2-5 surgeries with 30 day surgical mortality 7.3 %. ICU admissions were only 0.7 %.

Conclusion: Despite the lack of nationally organized trauma healthcare structure and database and a national financial crisis, it is possible to achieve respectable results. However, this effort shows the need for a national trauma database.

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Disclosure: No significant relationships.

O228

THE HEALTHCARE COSTS OF PEDESTRIAN INJURIES IN QATAR

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Introduction: In Qatar, injuries are the leading killer and documenting their direct medical costs are necessary for the national prioritization and planning of healthcare systems. This study aims to quantify, analyze and report the direct medical cost of admissions of patients, injured as pedestrians, to the national trauma referral center, the Hamad Trauma Center [HTC].

Material and methods: This is a retrospective review of all pedestrian injuries admitted to the HTC between 1 Jan, 2009 to 31 Dec, 2012. Computations for pre-hospital, emergency department, in-hospital and management costs for patient were done using the technique previously reported by Tuma et al.

Results: 281 pedestrian injuries were analyzed, all were male with a median age of 32 years (IQR, 24-39) and 12 in-patient deaths. The Ambulance Service was utilized by 265 (94.3 %) patients. The most common injuries affected the spine (41.3 %), head (38.4 %) and chest (28.5 %). The Injury Severity Score ranged from 2 to 66, with mean ISS of 13 (SD, 9.99). The mean length of stay in hospital was 14.38 days (SD, 19.3). The estimated annual hospital cost of pedestrian injury patients was $1,108,475, with a mean cost of $15,779 per patient. The breakdown of costs is as follows; pre-hospital care-$467, Emergency department procedures-$156, computed tomography scans-$365, magnetic resonance imaging-$87, Trauma Resuscitation Unit-$136, Operating Room-$ 914, Intensive Care Unit -$3606 and in-patient-$10878.

Conclusion: This study documents the significant burden of pedestrian injuries on the healthcare system of Qatar, identifies areas for cost reduction and provides the evidence for earmarking more resources for its treatment and prevention.

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O229

DIRECT ADMISSION VERSUS TRANSFER TO A LEVEL 1 TRAUMA CENTER IMPROVES SURVIVAL

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Introduction: The outcome of transfer patients to Level I Trauma Centers is relatively understudied. We aimed to determine whether direct admission has a survival advantage compared with inter-hospital transfers.
Material and methods: Data were retrieved from the Trauma Registry and included demographics, mechanism of injury, injury severity score (ISS), ICU admission, length of stay (LOS) and mortality. Mortality for patients transferred from other hospitals within 72 hours from injury (transfer group) was compared to those admitted directly to the level 1 Trauma Center (direct group).
Results: of 6602 patients admitted to our level I trauma center, 942 (14 %) were inter-hospital transfers. Median age was 28 and 358 (38 %) under 16 year old. The median ISS for both groups was 9. ICU need and LOS were higher in transfer group ($p < 0.05$). Overall mortality was 100 patients (1.8 %) for the direct group and 28 (3 %) for the transfer group ($p = 0.02$). Need for neurosurgical care was a reason for transfer in 365 patients (39 %). They were less severe injured (median ISS 16 vs 11) and required less ICU care ($p < 0.05$), but mortality was not significantly different from direct admissions with head trauma. Patients 65 and older in transfer group had higher mortality (7.2 and 4.4 %, $p < 0.04$).
Conclusion: Our results demonstrate that direct admission to a higher-level trauma center associated with better survival. These findings are more pronounced in elderly patients who are often under-triaged to lower-level trauma centers. Prospective studies are warranted to establish whether inter-hospital transfer negatively impacts clinical outcomes for trauma patients.

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Disclosure: No significant relationships.

O230

LACK OF PRE HOSPITAL TRIAGE RESULTS IN EMERGENCY DEPARTMENT BURDEN TRAUMA AS WELL AS NON-TRAUMA RELATED EMERGENCIES

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Introduction: Emergency Departments in Israel are constantly severely overcrowded. This situation has reportedly reached a crisis proportions. In mass casualty incidents EMS systems provide pre-hospital superb triage and evacuation. We assume that the Israeli ED overcrowding is due to lack of pre hospital triage. Overcrowding in the ED can worsen patient's outcome.
Material and methods: This is a prospective cohort study in a tertiary facility mixed ED to scrutinize the indications for patients' referral. A questioner for paramedics, patients or their relatives who arrived by the national EMS or private services was developed to examine the reasons for referral to our medical center.
Results: There were 315 questioners. 108(34 %) patients were referred due to trauma and 207 (66 %) due non- trauma related conditions. 236 (78 %) arrived by the national EMS and 67 (22 %) by private EMS. 193 (61 %) of the referrals were by patients request, 33 % were referral from other hospitals, 21 % from pre hospital emergency services, 8 % from general practitioner offices. Fifty percent of the patients were medical, 30 %surgical. 14 % were admitted to the shock-trauma center room and 8 % to the ED walking clinic. Only in 5 % of the referrals a pre hospital triage process was performed.
Conclusion: patient preference was the main indication for transfer to our tertiary facility. No central command for pre hospital triage is practiced in non MCU scenarios. EMS central control triage process should be developed and forced in order to reduce overcrowding of the ED.
References:
Disclosure: No significant relationships.

O231

ACUTE CARE LENGTH OF STAY FOR INJURY ADMISSIONS: A COMPARISON ACROSS TRAUMA SYSTEMS

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Introduction: Injuries represent 200,000 hospital admissions per year in Canada **but l**ittle is known about variations in LOS for trauma admissions across Canada or the influence of recommended trauma system components on LOS. We aimed to assess the variation in LOS across Canadian trauma centers and provinces and to identify trauma system elements that may explain inter-provincial variations.
Material and methods: We conducted a retrospective cohort study of adults admitted for major injury to level I and II trauma centers across Canada (2006–2012). Multilevel linear models were used to compare risk-adjusted LOS across trauma centers and systems and to assess the impact of 13 recommended trauma system components on LOS. Analyses were conducted for all injury admissions then for severe traumatic brain injury and thoracoabdominal injury.
Results: Mean LOS was 10.9 days for all injury admissions, 11.3 for severe traumatic brain injury and 10.9 for severe thoracoabdominal injury. Risk-adjusted LOS varied significantly from 9.6 to 15.5 days across provinces ($p = 0.02$) and from 8.5 to 15.5 days across trauma centers ($p = 0.001$). Variations were greater for TBI than thoracoabdominal injuries. Provinces with a prehospital definition of major

trauma, pre-hospital destination protocols, and no refusal policies had lower mean LOS than provinces without these trauma system components ($p < 0.05$).
Conclusion: We observed significant variation in risk-adjusted mean LOS across Canadian trauma centers and provinces and several recommended trauma system components were associated with reduced LOS. Results suggest that there is potential for reducing hospital days for Canadian injury admissions and that trauma system configuration may have a role to play.
References:
Disclosure: No significant relationships.

O232

A CLOSED LOOP AUDIT CYCLE OF SURGICAL READMISSIONS TO AN EMERGENCY GENERAL SURGERY UNIT

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Introduction: Readmission to hospital contributes to the substantial financial and capacity burden that emergency departments are faced with. The aims of this study were to identify reasons for emergency readmissions, and to implement changes in order to reduce such admissions.
Material and methods: An initial audit cycle was carried of all patients readmitted between March 2012 and March 2013. Reasons for readmission were collated and the development of strategies to reduce such re-admissions were put in place. Once changes were implemented a re-audit was carried out between April and July 2014 and the audit cycle closed.
Results: Between March 2012 and March 2013 5088 7,400 patients were admitted via the Emergency general surgery unit, of which 5088 were general surgical. 493 of 7,400 were readmissions (6.7 %); 51 % ($n = 254$) of which were general surgical emergency admissions. 100 patients (39 %) were readmitted due to pain, 20 % of which were due to inadequate analgesia. Implementation of change involved development of analgesic pain cards and patient education leaflets to reduced re-admissions. Re-audit showed between April 2014 and July 2014, 2479 patients were admitted; 1725 were general surgical. 151 of 2479 (6.09 %) were readmissions, 79 were general surgery readmissions (4.58 %). 3.8 % of readmissions were due to inadequate analgesia, compared to 20 % prior to implementation of changes.
Conclusion: Overall this completed audit cycle achieved a minimal cost saving to the trust of £18,000 per annum, without taking into consideration financial implication of readmission, investigation cost and hospital pressures. This has been achieved by the use of improved prescribing and patient education.
References: n/a
Disclosure: No significant relationships.

O233

REDUCED MORTALITY FOLLOWING THE INTRODUCTION OF A MULTIMODAL MULTIDISCIPLINARY PERIOPERATIVE PROTOCOL IN HIGH RISK EMERGENCY GASTROINTESTINAL SURGERY PATIENTS

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Introduction: Emergency abdominal surgery is associated with high mortality and morbidity rates in a population dominated by elderly comorbid patients with a severe acute physiological deranged condition [1]. The aim of this study was to evaluate the effect of a multimodal and multidisciplinary perioperative protocol in major emergency gastrointestinal surgery patients [2, 3].
Material and methods: The trial was a single center intervention study in a consecutive cohort. 600 patients >18 years old underwent emergency high risk abdominal surgery treated according to a perioperative protocol. 600 consecutive patients in the same department from January 1, 2011 were defined as the control group. The primary outcome was 30-day mortality. Secondary outcomes were 180-day mortality, length of stay in hospital and length of ICU stay. Outcomes were analyzed using an intention-to-treat approach.
Results: The unadjusted 30-day mortality rate was reduced from 21.8 % to 15.5 % after the implementation of the protocol ($P = 0.0049$). The 180-day mortality rate in the control group was 29.5 % compared to 22.2 % in the intervention group ($P = 0.0037$). Median length of stay in hospital was 10 days (IQR 5-22) before and 11 days (IQR 6-21) after the introduction of the protocol. Additionally, the median ICU stay was reduced from 5 days (IQR 2-17) to 3 days (IQR 1-9).
Conclusion: The introduction of a multimodal multidisciplinary perioperative protocol in a high risk major emergency surgery patient group is associated with a reduced mortality and ICU stay, while length of hospital stay was marginally increased.
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Disclosure: No significant relationships.

O234

THE LIVERPOOL ORTHO-PLASTIC SERVICE; WHAT HAVE WE ACHIEVED?

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Introduction: Open fractures require joint input from orthopaedic and plastic surgeons as per BOA/BAPRAS guidelines. This is usually unavailable in most trauma units, resulting in transfer to specialised centres which may be costly and may jeopardise timely intervention. Joint input is not only necessary in acute settings but also elective care. This study aims to highlight the impact of a full time plastic surgeon within our regional trauma unit.
Material and methods: Time from referral to review and intervention by a plastic surgeon, in addition to inpatient stay and cost, was

compared prior to and following the presence of a on-site consultant plastic surgeon. We also evaluated the effect of this on our elective care, in particular the foot and ankle, sarcoma and limb reconstruction services.
Results: To evaluate the impact on acute care, nine patients were included within each group. Median time until review and intervention by a plastic surgeon was 6 and 9 days respectively in the retrospective group, compared to within 24 hours and 3 days in the prospective group. Cost of inpatient stay was £12,452.66 per patient in the retrospective group compared to £2,750.28 in the prospective group. Within elective sarcoma care, two patients were included within each group. Average time until review and definitive coverage was 8 and 20 days respectively in the retrospective group, compared to within 24 hours and 11 days in the prospective group.
Conclusion: A reduction of 83 % and 67 % in review and intervention time was seen in acute cases, and in 87.5 % and 45 % of elective sarcoma cases.
References:

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Disclosure: No significant relationships.

O235

RESPONDING TO AN INFLUX OF WAR-WOUNDED PATIENTS: NURSING STAFF IN THE TRAUMA ROOM

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Introduction: Ziv Medical Center in Israel (the closest hospital to the Israel-Syria border) has treated 500 civil war-wounded since 2013. All patients are received initially in a 4-bed trauma room. We report changes in the staffing and training of nursing staff in the Trauma Room in response to the influx of Syrian wounded and in readiness for conflict.
Material and methods: During primary survey, two nurses look after each patient. Their nursing duties in the rapid resuscitation and assessment of patients involves attaching monitors, preparing mechanical ventilators, establishing intravenous access, taking venous blood samples, working blood warmers, inserting urinary catheters and nasogastric tubes, and ensuring that warming devices are applied.
Results: At night, only three nurses from the Emergency Department are available to work in the Trauma Room. Nurses from other departments, therefore, join the team. In order to increase familiarity with equipment, even basic equipment is labelled, and stored in packs, e.g, blood-taking packs and catheter insertion packs. Weekly simulations are held in the Trauma Room.
Conclusion: In order to ensure that Trauma skills are maintained and that the hospital is prepared for potential mass casualty scenarios, there is a need for nurses from all departments to maintain important Trauma skills.
References:
Disclosure: No significant relationships.

O236

DANISH TRAUMA TEAM COMPETENCIES- A NATIONAL POINT PREVALENCE STUDY

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Introduction: In Denmark, systematic trauma care is based on Advanced Trauma Life Support (ATLS) principles. National guidelines have few recommendations regarding trauma relevant education. We set out to investigate the organization of trauma reception in Denmark; the level of education and self-evaluated competence of doctors involved in trauma.
Material and methods: A cross-sectional survey with a structured questionnaire. On two nights in June 2015 all doctors on call involved in trauma care in Denmark, were interviewed anonymously by phone.
Results: All doctors answered the questionnaire (n = 66). Years of experience varied from 0-4 (30.3 %), 5-9 (27.3 %), to more than 9 years (42.4 %). 81.8 % had attended trauma-related courses, most frequently ATLS (65 %). Regarding self-evaluated skills, 95 % of anesthesiologists felt capable of performing damage control resuscitation, airway management and needle thoracostomy. Among orthopedic surgeons 91 % felt competent to perform needle thoracostomy, 82 % felt competent to perform tube thoracostomy and damage control surgery of the extremities. of gastro-intestinal surgeons, 85 % felt competent in needle/tube thoracostomy and 90 % to decide indication for surgery based on FAST. However, only 65 % felt competent in performing FAST. 70 % felt competent to perform damage control surgery in the abdomen, 30 % in thorax and 15 % in the head-neck area.
Conclusion: The organization of trauma reception in Denmark is heterogeneous and levels of education and experience vary. Almost 20 % of doctors involved in trauma reception had no trauma-specific education and 35 % had not attended the ATLS course. All members of the trauma team should have the same formalized approach to the trauma patients, as to minimize adverse outcomes due to human errors.
References:
Disclosure: No significant relationships.

POLYTRAUMA 2

O237

ELEVEN DEFINITIONS OF POLYTRAUMA IN COMPARISON

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Introduction: Many different definitions of "polytrauma" are currently in use. Therefore we hypothesized that depending on the applied definition the measured outcome would differ.
Material and methods: We classified all patients treated at our level I trauma centre between 2009 and 2011 according to selected, well-known definitions (including the latest proposal of the "Berlin definition" published in 2014). Patients of at least 18 years or older who

were classified "polytraumatised" by at least one of 11 definitions (McLain, Dick, Pape 2000, DGU, Blacker, Schalamon, Sikhand, Zelle, Pape 2006, Balogh and "Berlin definition") were included in our study. We compared mean age, ISS, sex, length of intubation, ICU-stay, length of hospital stay as well as lethality of the eleven different groups. The obtained data was statistically evaluated using IBM SPSS Statistics 20.

Results: 375 patients with a mean age of 47 years (73 % male) met the inclusion criteria. Depending on the definition patient count differed between 55 and 346 and the ISS between 9 and 75. Most definitions showed a lethality rate of 21 % to 26 %. However, polytraumatised patients who met the criteria according to Blacker had a lower lethality rate (17.7 %) whereas a lethality rate of 40 % was revealed for polytraumatised according to Schalamon. All other parameters were subject to similar variations, too.

Conclusion: The documented differences – depending on the definition applied – highlight the importance of establishing a single, common definition of polytrauma, as this would facilitate the comparison of treatment results at different institutions and published studies.

References:

Disclosure: No significant relationships.

O238

IMPACT OF SELF-INFLICTED INJURIES AND FALL FROM HEIGHT MECHANISM ON THE OUTCOME OF TRAUMA PATIENTS

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Introduction: Self-inflicted injuries represent a consistent cause of trauma. The aim of this study is to describe the clinical issues and outcomes of self-inflicted injury patients and fall from height injury patients.

Material and methods: All patients admitted to the Papa Giovanni XXIII Hospital (Bergamo) from March 2014 to May 2015 were included in this study. Data relative to these patients are collected into the Hospital Trauma Database. Patients were classified by type of injury (accidental, self-inflicted, violent) and mechanism of injury. Differences in clinical scores, management and outcome were considered.

Results: 803 consecutive cases were analyzed: 762 (94.9 %) with accidental injuries, 33 (4.1 %) with self-inflicted injuries and 8(1 %) with violent mechanism of trauma. A fall from height was the cause of trauma in 122(15.2 %) patients, of which 22 (18 %) with suicidal intention. Self-inflicted injury patients had higher ISS score (16 vs 10, $p = 0.001$) and longer hospital stay (23 vs 15 days, $p < 0.0001$), as compared to unintentional and violent injuries. The fall from height patients presented with higher ISS(15 vs 9, $p < 0.0001$) and more severe head injuries(3 vs 2, $p < 0.001$) when compared to other mechanisms of trauma. Inside the fall from height group, jumpers presented with more severe injuries (ISS 20 vs 14, $p = 0.025$) than fallers and had a longer hospital stay (26 vs 15 days, $p = 0.032$). In univariate analysis, self-inflicted trauma, fall from height mechanism and intentional fall were correlated with mortality.

Conclusion: Self-inflicted injuries, especially with a fall from height mechanism, are correlated with high mortality risk; this relationship is likely to be due to a high ISS score and severe head injuries.

References:

Disclosure: No significant relationships.

O239

COVERAGE AND ACCURACY OF DIAGNOSIS AND PROCEDURAL CODING OF SEVERELY INJURED PATIENTS IN FINNISH HOSPITAL DISCHARGE REGISTRY - COMPARISON OF DATA TO HELSINKI TRAUMA REGISTRY

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Introduction: The Finnish National Hospital Discharge Register (FHDR) is among the oldest individual hospital discharge registers in the world. The data is used intensively for research purposes. The validity has been proven in single injury or disease group but not with severely injured patients. We wanted to evaluate the accuracy of FHDR in severely injured patients with several trauma diagnoses and procedural codes.

Material and methods: The accuracy of FHDR was assessed by comparing the FHDR-data with the original patient files and trauma registry files from Helsinki Trauma Registry (TR-THEL) in Helsinki University Hospital, Finland. For patients we chose severely injured patients in trauma registry with severe thorax injury from year 2013. Our hypothesis was that FHDR might be missing valuable information in these patients.

Results: We identified 107 patients with 965 *ICD-10* diagnoses. In TR-THEL there were 924 (i.e. coverage: 95.8 %) diagnoses but only 632 (65.5 %) in FHDR. This is only partly due to the ICD-10 coding system that f.ex. combines some injuries under one code. The accuracy was 97.6 % in TR-THEL and 73.8 % in FHDR. 249 operations with *NOMESCO* coding had been done to these patients and in FHDR there were 40(16.1 %) codes missing or wrong, in TR-THEL only 19(7.6 %).

Conclusion: Our results show that the validity of FHDR data was not good enough when considering coverage and accuracy of diagnoses in patients with multiple trauma diagnoses. With procedural codes the coverage and accuracy were better. Special trauma registry data (like TR-THEL) is better in epidemiological evaluations of polytrauma patients.

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Disclosure: No significant relationships.

O240

MISSED INJURY IN POLYTRAUMA PATIENTS. THE EFFECT OF TERTIARY TRAUMA SURVEY

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Introduction: Missed injury in the context of a major trauma remains a persistent problem. Diagnostic delay has clinical complications in terms of worsened outcome and potential long-term disability. The aim of this study is to develop a new protocol of tertiary trauma survey (TTS) that allows an early detection of injuries not found at presentation.
Material and methods: Prospective study. All polytrauma patients admitted to Polytrauma Intensive Care unit at 12 de Octubre Hospital between November 2014 and May 2015. TTS were formalised during the patient stay in Trauma ward.
Results: A total of 51 patients were included, with a mean injury severity score (ISS) of 22.5. TTS were formalised during the first six days of admission in Trauma ward. Missed injury were discovered in 14 cases (prevalence 27 %). The most affected body regions were extremities (86 %). 8 of the 14 cases needed a surgical treatment (57 %) and 6 (43 %), an orthopaedic treatment.
Conclusion: A TTS performed in Trauma ward may be a very useful tool to minimising the delay in ultimate diagnosis of missed injury in polytrauma patients. In fact, our previous protocol has been modified following the findings of this study.
References: Polytrauma, Missed Injury, Tertiary Survey, Trauma Ward.
Disclosure: No significant relationships.

O241

THE IMPACT OF CARDIORESPIRATORY AND/OR HEMODYNAMIC INSTABILITY ON THE MORTALITY OF POLYTRAUMATIZED PATIENTS

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Introduction: At present there is no consensus for defining the cardiorespiratory and/or hemodynamic unstable condition of polytraumatized patients at the time point of admission. Additionally, there is a lack of investigation dealing with these patients.
Material and methods: To ensure comparability we established criteria for seven physiologic parameters (including the Horowitz and Shock index), each of them providing a limit value. Instability was defined if five of these seven criteria were fulfilled. The information content of our definition was retrospectively analyzed by means of polytraumatized unstable patients who had been admitted to our level I trauma center between 2009 and 2011. In order to evaluate the impact of instability on mortality, these patients were matched with 64 stable polytraumatized patients according to age, gender and ISS.
Results: Our data base scan identified 64 patients who met the inclusion criteria. Their mean ISS was 43.6. The most common injury was to the thorax (75.0 %), followed by the lower extremity (67.2 %), head (57.8 %), upper extremity (50.0 %), abdomen (43.8 %), and spine (35.9 %). 36 patients (56.3 %) died, thus revealing a threefold higher mortality compared to the mortality of 18.8 % in the matched group. Compared to the unstable survivors, the mean age of the unstable deceased was significantly higher (53.4 years versus 42.1 years, $p = 0.037$) and their ISS was significantly higher (53.7 versus 30.6, $p = 0.000001$), too.
Conclusion: Our definition of instability might be appropriate to identify a high risk group of polytraumatized patients with a poor prognosis.
Disclosure: No significant relationships.

O242

FIBRINOGEN LEVEL AT ADMISSION IS ASSOCIATED WITH 24-HOUR MORTALITY IN POLYTRAUMATIZED ADULTS

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Introduction: Hemorrhage is the leading cause of preventable death after injury. The objective of this study was to estimate the effect of fibrinogen level at admission on 24-hour mortality in polytraumatized patients, and analyze whether this relationship is modified by sex, age, or traumatic brain injury (TBI).
Material and methods: Patients treated in 2004-2013 at a level one trauma center with New Injury Severity Score (NISS) >15 and age of 18-80 years were included. Patient's characteristics consisted of demographics, shock-related, and coagulation parameters at admission. Multivariable Cox regression analysis was used to investigate the effect of fibrinogen level at admission on 24-hour mortality in polytraumatized patients.
Results: Out of 1491 included patients, 1377 (92.4 %) survived and 114 patients (7.6 %) died within the first 24 hours after admission. Median age was 45 (25th-75th percentile, 28-60). The majority of patients were male (76.3 %) and had blunt trauma (95.3 %). Median Glasgow Coma Scale (GCS) and median NISS were 14 (8-15) and 33 (25-43), respectively. The most important causes of death within 24 hour were TBI and hemorrhage. A significant adjusted effect of fibrinogen level at admission on 24-hour mortality was found (hazard ratio 0.524, 95 % confidence interval 0.355-0.773; $P = 0.001$). Sex, age and TBI did not modify this association.
Conclusion: The present study demonstrates a significant adjusted association between fibrinogen level at admission and 24-hour mortality in polytraumatized adults. This effect of fibrinogen was not modified by sex, age, or TBI. Monitoring and actively supplementing fibrinogen levels could reduce (potential) preventable deaths.
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Disclosure: No significant relationships.

O243

SURGICAL TREATMENT IS RARELY REQUIRED IN POLYTRAUMA PATIENTS WITH SEVERE CHEST INJURY

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Introduction: Around 50 % of severely injured trauma patients suffer an injury of the chest. In the literature up to 10 % of these patients require thoracic surgery. For our patients collective we claim to treat them as conservatively as possible.
Material and methods: At our Level I Trauma Center we retrospectively analyzed from 01/2010 to 12/2014 all patients receiving an operative treatment for severe thoracic injury (AIS $\geq$3). Data were collected throughout the German trauma registry.
Results: In 472/908 (52 %) of the patients thoracic AIS was $\geq$3. Only 25 (2.8 %) out of 908 patients (ISS $\geq$10) had surgical treatment for thoracic injuries; 25/472 (5.3 %) patients with thoracic AIS $\geq$3. 7 of these 25 patients died (72 % survival): 6 patients underwent immediate thoracotomy or sternotomy unsuccessfully because of massive haemorrhage. 1 death occured after empyema. Due to gun shots or stab wounds 4 patients were treated successfully with thoracotomy. In additional 2 patients intercostal vessels were ligated. 4 surviving patients with flail chest received rib plating. For empyema following haemotothorax 4 patients underwent thoracic surgery; 3 survivors. 5 patients were successfully operated on cardiac trauma. All other 447 patients (thoracic AIS $\geq$3) could be treated conservatively (observation, chest tubes, pressure ventilation); their survival rate was 92 %, mean ISS 27.
Conclusion: Operative treatment for severe thoracic trauma is only needed in patients with massive haemorrhagies, cardial lesion, pneumothorax and flail chest refractive to conservative treatment, and empyema. Our indication rate is lower compared to the literature with a comparatively small mortality rate except for severe haemorrhage.
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Disclosure: No significant relationships.

O244

POLYTRAUMA PATIENTS WITH SEVERE THORAX INJURIES - HAS ANYTHING CHANGED? A 9-YEAR EXPERIENCE AT A TERTIARY TRAUMA CENTER

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Introduction: Severe thorax injury is common with polytrauma patients with blunt trauma. Different methods and protocols have been introduced in treating these patients during last decade both in prehospital setting and in hospital treatment. Those include f.ex. more active plating of flail-chest, new ICU treatment protocols, MTP-protocol and more controlled fluid resuscitation in prehospital setting. In this study we wanted to find out what has changed in patient demographics and if the outcome of those patients has improved during years 2006-2014.
Material and methods: This was a retrospective study from TR-THEL trauma registry. We included all polytraumatized patients (NISS $\geq$16) over 16 years of age with severe thorax trauma (AIS thx $\geq$3) treated in Helsinki University Hospital Töölö, Finland (Tertiary trauma center, taking care of population approx. 1.5 milj.). Vital signs both in prehospital and on admission were collected among mechanism of injury, GCS, prehospital and in hospital intubation rates, NISS, AIS, ICU and hospital length of stay, days ventilated, mortality, expected mortality (with RISC II) and SMR (Standardized Mortality Ratio).
Results: A total of 1074 patients were included. The mean patient age was 45.6 years and 75 % were males. We report the results mainly in 3-year cohorts: 2006-2008, 2009-2011 and 2012-2014. The percentage of patients over 60 y.a. went up **21.3** %-**27.3** %-**30.7** %, NISS mean(**median**) went slightly down 34.6(**34**)-33.5(**29**)-31.2(**27**), percentage of patients receiving blood products went down 30.5 %-27.2 %-25.4 % and SMR (95 %CI) remained appr. the same: **0.93**(0.70-1.16)-**0.77**(0.52-1.02)-**0.89**(0.59-1.20).
Conclusion: Major changes could not be seen in patient demographics or results when treating polytrauma patients with severe thoracic trauma during last 9 years.
References: Lefering R. et al. Trauma registries in Europe. Eur J Trauma Emerg Surg (2012) 38:1-2. Söderlund T et al. Factors associated with in-hospital outcomes in 594 consecutive patients suffering from severe blunt chest trauma. Scand J Surg. (2014) 0:1-6. Hani O. EId et al. NISS is a better predictor of mortality for blunt trauma patients than the ISS. World J Surg (2015) 39:165-171. Brinck T. et al. Trauma registry comparison: six-year results in trauma care in Southern Finland and Germany. Eur J Trauma Emerg Surg (2014) online.
Disclosure: No significant relationships.

O245

EPIDEMIOLOGY OF STERNOVERTEBRAL INJURIES IN GERMANY

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Introduction: In literature only a few studies and single cases are presented for patients with the combination of sternal and spinal injuries. Sternovertebral injuries often occur in context with a high velocity trauma. Rising motor traffic accidents lead to rising number of sternovertebral fractures caused due to direct impact or indirect flexion-compression mechanism. The sternum is suggested as the fourth vertebral column and being relevant in the evaluation of the rigidity of the thoracic complex (1). This study describes the epidemiology of sternovertebral injuries in Germany.
Material and methods: 24960 patients with the main diagnose of sternal fractures recorded by the refund statistic (19§ Entgeltgesetz) in Germany within the years 2005 to 2012 were evaluated. The

combination of sternal fractures and concomitant injuries of the spine are subdivided in cervical, thoracic and lumbar spine. The distribution of level of vertebral fracture in combination with sternal fracture was analyzed in a statistical evaluation.
Results: The highest incidence of a vertebral fracture at thoracic spine in combination with a sternal fracture can be seen at Th3/4(0.34 %; n = 86) and Th 5/6 (0.32 %; n = 81). Another peak can be seen at Th11/12 (0.36 %; n = 89). At lumbar spine the most frequent level is L1 (0.39 %; n = 97) and L2 (0.34 %; n = 84). A minor role as an associated fracture plays the cervical spine with a portion of 0.004 %.
Conclusion: The statistic shows in the case of a sternal fracture the highest incidence of concomitant injuries of the spine at mid-level, as the most rigid part of the thoracic spine and at the thoraco-lumbar area.
References: 1. Berg EE. The sternal-rib complex. A possible fourth column in thoracic spine fractures. Spine 1993;18(13):1916-1919.
Disclosure: The Senior author has Consultant Agreement with DePuySynthes. He also joins the Thoracic expert Group of the AO Foundation. The other authors are not involved in any COI.

O246

TRAFFIC-RELATED INJURIES AMONG THE YOUTH IN THE UNITED ARAB EMIRATES

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Introduction: Traffic-related injuries are the largest cause of premature morbidity and leading cause of death among the youth in the UAE. Our aim was to study epidemiology, risk factors and outcome of hospitalized youth injured patients in order to give recommendations for prevention.
Material and methods: We prospectively studied all youth patients with traffic-related injuries admitted to Al Ain or Tawam Hospitals, Al-Ain City, or who died after arrival to the hospital, during an 18 months period. Demography, location and time of injury, other body region, severity, hospital and intensive care unit (ICU) stay were analysed.
Results: 333 patients having a mean age (SD) of 20 (2.5) were studied. 87.1 % were males and 71.5 % were UAE nationals. Majority of injured patients (69.6 %) were drivers or front-seat passengers, followed by back seat passengers (15.6 %), motorcyclists (8.7 %) and pedestrians (4.5 %). Rollover was most often crash mechanism (29.7 %), followed by front crash (29.4 %). 15 % of patients were ejected from the car during rollover crash. 19.8 % of the patients were admitted to the ICU. Median Glasgow Coma Scale was 15 (Range 3-15), Injury Severity Score 5 (1-41), Revised Trauma Score 12 (7-12) and median total hospital stay was 3 (Range 1-73). 9 (2.7 %) patients died.
Conclusion: Young UAE-national males are at a higher risk of being injured at traffic. Rollover crash was frequent with high risk of ejection. Promotion of traffic safety and enforcement of safety legislation is neccesary.
References:
Disclosure: No significant relationships.

BLEEDING 1

O247

A REVIEW OF 24 MONTHS OF TRAUMATIC MASSIVE HAEMORRHAGE MANAGEMENT IN A UK LEVEL ONE MAJOR TRAUMA CENTRE - AINTREE UNIVERSITY HOSPITAL

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Introduction: The delivery of care for trauma patients has changed recently in the UK, with centralisation of services and the development of trauma networks. Our institution currently receives the majority of the trauma patients from Cheshire and Merseyside in the UK. Aintree University Hospital receives the majority of trauma patients from Cheshire and Merseyside in the UK, following service centralisation and trauma network development. We reviewed the incidence and management of traumatic massive haemorrhage over two years at our level one major trauma centre.
Material and methods: We retrospectively reviewed case notes, rotational thromboelastometry (ROTEM) and transfusion practice in trauma patients activating the massive haemorrhage protocol (MHP) on admission to Aintree University Hospital, from 1st January 2013 to 31st December 2014.
Results: Over this period we managed 1710 trauma patients; 177 (10.4 %) activated the MHP. of the traumatic haemorrhage population, the mean age was 41 years (range 16-95); 85.3 % were male. Eighty-three percent received tranexamic acid within three hours of their trauma. Nine patients (5.1 %) presented in traumatic cardiac arrest, all died on the day of admission and five had emergency thoracotomy; seven presented following road traffic collision, one following blunt trauma assault and one post thoracic stabbing. From 2013 to 2014, we increasingly utilised ROTEM from 38.0 % to 61.2 %, with increasing appropriate actioning of results from 40 % to 53.8 %. Forty-one percent of admission ROTEMs were abnormal; the most frequent abnormality reflecting fibrinogen deficiency associated with acute coagulopathy of shock trauma (ACoST) [1, 2].
Conclusion: Traumatic massive haemorrhage can lead to the vicious cycle of ACoST and be catastrophic [2, 3]. Early, rapid, goal-directed transfusion is essential and can be provided using the MHP and point-of-care coagulation testing. We aim to increase ROTEM knowledge and practice using high fidelity simulation and a ROTEM interpretation algorithm with its incorporation into the MHP.
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Disclosure: No significant relationships.

O248

INCREASE IN HEART RATE VARIABILITY CAN BE AN INDEX FOR END POINT OF RESUSCITATION IN TRAUMA PATIENTS

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Introduction: Heart Rate Variability (HRV) is now considered as a new method for triage and predicting the mortality in trauma patients. Changes in HRV may be used as an index for sufficiency of treatment in trauma patients. According to the study conducted by Norris and colleagues a decrease in HRV (cardiac uncoupling) during ICU stay in trauma patients was associated with higher mortality [1, 2]. In this study we hypothesized that a rise in HRV (cardiac recoupling) in trauma patients may indicate sufficiency of fluid resuscitation and uncoupling indicate the need for further hydration or packed RBC transfusion.
Material and methods: Fifty trauma patients were included in this study. An Electrocardiography (ECG) were captured at the onset of their admission, after hydration with ringer lactate the arterial blood gas (ABG) analysis and ECG were repeated. If a patient needed further hydration or packed RBC transfusion the ECG and ABG were repeated. Fast Fourier Transform was used for analysis of HRV .Then the changes of base deficit and HRV were compared.
Results: A rise in HRV after hydration with ringer lactate were associated with normalization of Base Deficit (p value: .05). A decrease in HRV after primary hydration were associated with the need of transfusion and base deficit deterioration and normalization of Base Deficit after transfusion was associated with a rise in HRV (cardiac recoupling). Cardiac uncoupling (decrease in HRV) was also associated with higher need of ICU care.
Conclusion: Cardiac recouping (increase in HRV) can be considered as an index for end point of resuscitation.
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Disclosure: No significant relationships.

O249

PREHOSPITAL VOLUME RESUSCITATION - DID EVIDENCE DEFEAT THE CRYSTALLOID DOGMA? AN ANALYSIS OF THE TRAUMAREGISTER DGU® 2002 - 2012

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Introduction: Various studies have shown the deleterious effect of high volume resuscitation following severe trauma promoting coagulopathy by haemodilution, acidosis and hypothermia. As the optimal resuscitation strategy during prehospital trauma care is still discussed, we raised the question if the amount and kind of fluids administered changed over the recent years. Further, if less volume was administered, fewer patients should have arrived in coagulopathic depletion in the Emergency Department resulting in less blood product transfusions.
Material and methods: A data analysis of the 100 489 patients entered into the TraumaRegister DGU® (TR-DGU) between 2002 and 2012 was performed of which a total of 24 597 patients (24.5 %) matched the inclusion criteria. Volume and type of fluids administered as well as outcome parameter were analysed.
Results: Between 2002 and 2012, the amount of volume administered during prehospital trauma care decreased from 1726 ml in 2002 to 985 ml in 2012 resulting in higher haemoglobin value, higher Quick's value and reduced aPTT. Simultaneously, more patients received catecholamines (2002: 9.4 % to 2012: 13.3 %). Interestingly, the amount of volume administered decreased steadily regardless of the presence of shock. Fewer patients were in the need of blood products and the number of massive transfusions ($\geq$10 pRBC) more than halved.
Conclusion: The volume administered in severely injured patients decreased considerably during the last decade. This results in beneficial effects such as minimizing the risk of coagulopathy and avoiding potential harmful effects caused by blood product transfusions. Despite outstanding questions in trauma resuscitation, principle evidence quickly merges into clinical practice and algorithms.
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Disclosure: No significant relationships.

O250

CAN ONE SIZE FIT ALL? FIRST FIXED-DISTANCE MODEL FOR THE PLACEMENT OF A BALLOON DURING FLUOROSCOPY-FREE REBOA IN A CIVILIAN MIXED POPULATION

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Introduction: Resuscitative endovascular balloon occlusion of the aorta (REBOA) is an emerging promising technique for the

management of non-compressible hemorrhage. Recently, both a linear and a fixed-distance model have been proposed to predict the correct placement of a balloon during fluoroscopy-free REBOA, in a male combatant population [1]. However, no such research has been performed on a civilian mixed population. The aim of this study was to develop a fixed-distance model in a civilian mixed population for REBOA implementation in the pre-hospital setting.

Material and methods: 280 whole body CT scans from a civilian mixed population of trauma patients (height: 150–198 cm, 140 males) from the University Hospitals of Lyon were analyzed to calculate the distances from the superior border of the pubic symphysis (PS, overlying the common or superficial femoral arteries (FA)) on both sides to aortic Zones I (left subclavian artery to celiac trunk) and III (infra-renal aorta). Segments common to all CT scans in both zones were sought. The probability of existence in the general population was calculated by inversing 99 % certainty tolerance limits.

Results: The segment [414 mm, 474 mm] from the PS was present in 100 % of CT scans in Zone I (both FAs). The segment [238 mm, 258 mm] was present in 97.5 % (left FA) and 99.6 % (right FA) of CT scans in Zone III. 98.9 % (Zone I) and 95.9 % (Zone III) of the general population is projected to have these segments.

Conclusion: This study proposes a >95 % accurate fixed-distance model based on a simple external landmark (PS) for fluoroscopy-free placement of a balloon during REBOA.

References: [1] Morrison JJ, Stannard A, Midwinter MJ, et al. (2014) Prospective evaluation of the correlation between torso height and aortic anatomy in respect of a fluoroscopy free aortic balloon occlusion system. Surgery 155:1044–1051.

Disclosure: No significant relationships.

O251

THE PERFORMANCE OF BARE-METAL VERSUS COVERED STENTS IN AN OVINE MODEL OF BLUNT OCCLUSIVE ARTERIAL TRAUMA

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Introduction: The aim of this study is to evaluate arterial patency following the deployment of a bare-metal or covered stent across a traumatic occlusive arterial lesion.

Material and methods: Fifteen sheep (23-43 kg) underwent general anaesthesia and the laparoscopic induction of a left external iliac artery (EIA) thrombosis by means of repeated clamping. Animals were then randomized equally into one of three groups: no-treatment (control group), a bare-metal stent (BMS group) or covered stent (CS group). Animals were followed up for 14 days and no anticoagulants were administered postoperatively. Doppler ultrasound and computed tomography angiography (CTA) were used to evaluate EIA patency. Function of the injured limb was evaluated according to the ordinal Tarlov gait score (0 – 4, ascending score better).

Results: Compared to the control group, stent implantation resulted in an increase in the median (interquartile range) systolic velocity (SV, cm/sec) from 0 (0) to 31 (28–37) and 24 (21–29) in the BMS group and CS group, respectively ($p < 0.001$). By post-injury day 3, there was no difference in the SV between the groups. At day 14, CTA demonstrated stent occlusions in 4 out of 5 animals in each stent group. The lowest Tarlov score occurred on post-injury day 1 (mean $\pm$ SEM): 3.0 ± 0.3, 3.2 ± 0.5, and 2.4 ± 0.3 in the BMS group, CS group and control group, respectively ($p = 0.12$).

Conclusion: Stent (BMS or CS) implantation restores arterial patency of a traumatic occlusive lesion. High incidence of early re-thrombosis does not affect the functional outcome in this ovine model.

References:

Disclosure: This experimental study was funded by a research grant MK-3439-2014-7 of the President of The Russian Federation.

O252

THE EFFICACY AND SAFETY OF 7FR INTRA-AORTIC BALLOON OCCLUSION (IABO) CATHETER AS A REBOA DEVICE FOR TRAUMATIC HEMORRHAGE SHOCK PATIENTS

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Introduction: Recently, IABO (intra-aortic balloon occlusion) for traumatic hemorrhagic shock cases has been re-recognized as a REBOA. It would be less invasive than aortic cross clamp. But devices used in the world are not so small (11 or 12Fr system) and needed to open groin access. We used to use 10Fr devices as REBOA catheter but have had a chance to evaluate and use 7Fr devices in clinical in Japan. So we examined the efficacy and safety about REBOA with 7Fr devices.

Material and methods: Consecutive traumatic hemorrhagic shock patients whose FAST were positive and undergone REBOA for the latest 81 months were included. 10Fr or 7Fr IABO catheter were inserted to zone 1 with only Seldinger technique and ultrasonography guided method. All of them were underwent fundamental hemostasis by operative management (OM) or transcatheter arterial embolization (TAE). We sorted them into 10Fr group or 7Fr group. The primary end point was the changes of blood pressure (BP) and Shock Index (SI) before and after doing REBOA. The Secondly end points were survival rate in 30th days and the complications with REBOA or IABO devices.

Results: 40 patients includes CPA were studied (10Fr were 27 patients and 7Fr were 13 patients). There were no significant differences in baseline characteristics. Systolic BP were significantly increased after REBOA and SI were significantly decreased in both groups. The changes of them were no significant difference. Survival rate and rate of complications did not differ significantly between them and no major complications.

Conclusion: 7Fr IABO device would be efficacy and safe as REBOA device.

References:

Disclosure: No significant relationships.

O253

SIXTY-MINUTES REBOA WORSENS OUTCOME IN AN OVINE MODEL OF SEVERE HEMORRHAGIC SHOCK

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Introduction: The aim of this study is to evaluate the early survival and organ damage following 30 and 60 minutes of thoracic resuscitative endovascular balloon occlusion of the aorta (REBOA) in an ovine model of severe hemorrhagic shock.
Material and methods: Eighteen sheep were induced into shock by undergoing a 35 % controlled exsanguination over 30 minutes. Animals were randomized into three groups: 60-min REBOA 30 mins after the bleeding (60-REBOA), 30-min REBOA 60 mins after the bleeding (30-REBOA) and no-REBOA control (n-REBOA). Resuscitation with crystalloids and whole blood was initiated 20 and 80 mins after the induction of shock. Animals were observed for 24 hours with serial potassium and lactate measurements. Autopsy was performed to evaluate organ damage.
Results: Two animals of the n-REBOA group died within 90 min of shock induction; no hemorrhagic deaths were observed in the REBOA groups. Twenty-four hour survival for the 60-, 30-, and n-REBOA groups was 0/6, 5/6, and 4/6. Mean survival time was lower in the 60-REBOA groups versus 30-REBOA group ($p = 0.005$). In 60-REBOA, potassium and lactate were increased at 270-min time point: from 4.3 to 5.1 mEq/l and from 3.7 to 5.1 mmol/l, respectively. Both these values were significantly higher than in the n-REBOA group ($p = 0.029$ for potassium and $p = 0.039$ for lactate). Autopsy revealed acute tubular necrosis (ATN) in all died REBOA group animals.
Conclusion: REBOA can be used to prevent early death from hemorrhage; however, 60 minutes of occlusion results in significant metabolic derangement and organ damage that offsets this gain.
References:
Disclosure: No significant relationships.

O254

DETERMINANTS OF MORTALITY IN HEMODYNAMICALLY UNSTABLE PELVIC FRACTURES

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Introduction: Mortality rate for hemodynamically unstable pelvic fractures remains high. The initial assessment of polytrauma by a multidisciplinary team is an essential step. We aim to quantify mortality in a cohort of patients with pelvic fracture and hemodynamic instability treated according an specific management algorithm in our hospital.
Material and methods: Our trauma database (TraumaSur) was used to conduct a retrospective cohort analysis. We identified patients admitted to the ICU from 2003 to 2014 suffering from hemodynamically unstable pelvic fractures. We evaluated epidemiologic features, type of fracture (AO-OTA), associated injuries, ISS, TRISS, invasive and surgical procedures and mortality.
Results: 114 patients presented hemodynamic instability despite fluid resuscitation. There were 77 patients in our study after excluding 37 patients with severe TBI. 61 % were males, mean age was 42.8 years. Mean ISS was 41.5. According to AO/OTA, 60 % type C, 26 % B and 15 % A, and open fractures in 7.6 % 74 % presented chest trauma with mean AIS score 3.54 and 57 % abdominal trauma with mean AIS 3.70. TRISS was 71.5 % We performed arteriography in 56 % in 168 minutes (average) after admission. In 20.9 % of these, pelvic external fixation was performed before arteriography and in 9.3 % also extraperitoneal packing. We performed external fixation in 80 %. Mortality was 14.3 %. Age (p.006), chest trauma severity (p.012) and TRISS (p.032) were associated to mortality.
Conclusion: The combination of external fixation, arteriography and packing controls bleeding in 85 % of our sample. The main determinants of mortality are chest trauma severity, TRISS and age. The type of fracture (AO-OTA, open/closed) has no direct effect on mortality.
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Disclosure: No significant relationships.

INTESTINAL EMERGENCIES

O255

RAZOR BLADE INGESTIONS: IS THE CONSERVATIVE MANAGEMENT SAFE?

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Introduction: Foreign body ingestion (FBI) is a common problem encountered in the Emergency Department. Approximately 10 % to 20 % may require an intervention and 1 % a surgical exploration. Although studies with large series of FBI patients have been published, there are none that specifically focus on the razor blade ingestions. Our hypothesis is that the ingestion of razor blade should be managed non-operatively.
Material and methods: All patients admitted to our institution with a razor blade ingestion over the last five years were retrospectively reviewed. The primary outcomes analyzed were hospital length of stay (HLOS) and clinical outcomes. The study population was stratified according to the treatment (conservative vs. endoscopic).
Results: There were 37 patients who met inclusion criteria. Average age was 29.2 years, 94.6 % were male and 86.5 % were inmates. A psychiatric disorder was found in 33 patients. A significant number of patients (54.1 %) had a previous or subsequent history of FBI (average ingestion per patients 1.7). The total number of admissions was 64. 12.5 % of the patients underwent a CT-scan. The treatment was non-operative in 77.6 % and endoscopic in 23.4 %. Zero patients

required surgery. The median number of chest or abdomen x-rays for each patient was comparable between the groups (7.0 vs. 7.5 respectively). The median HLOS was 3 days in the non-operative group and 3.5 days in the endoscopy group ($p = 0.843$). No gastrointestinal perforations were observed.
Conclusion: Razor blade ingestions can be safely managed with a conservative approach. No advantages in terms of HLOS and x-rays performed were found in the endoscopic group.
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Disclosure: No significant relationships.

O256

PROGNOSTIC FACTORS IN PATIENTS SURGICALLY TREATED FOR BLUNT ABDOMINAL TRAUMA – A RETROSPECTIVE STUDY

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Introduction: Blunt abdominal trauma (BAT) is a major health care concern. Recognition of predictors of outcome can aid on its approach. We aimed to identify determinants of prognosis in patients surgically treated for BAT.
Material and methods: Our study involved a retrospective analysis of the clinical records of all patients admitted to our hospital for BAT and in whom laparotomy was performed, between January/2007 and June/2015. Predictors for mortality and morbidity were evaluated in univariate and multivariate statistical analysis.
Results: A total of 76 patients were included, with a mean age of 49.5 years and male predominance (76.3 %). The most frequent mechanism of trauma was road traffic accidents. Solid visceral organs were the most affected, mainly the spleen (53.8 %) and the liver (23.7 %). Severe postoperative complications (Clavien-Dindo classification equal or higher than III) were identified in 75 % of the patients. They were related to the presence of extra-abdominal injury (EAI) and shock, need for blood transfusion, New Injury Severity Score (NISS) and American Society of Anesthesiologists (ASA) classification. Twelve patients died during hospital stay. The determinants of mortality were the presence of multiple EAI, recognition of shock, ASA score and NISS. Logistic regression for mortality identified NISS ($p = 0.041$) and ASA score ($p = 0.027$) as independent risk factors. For morbidity, it attributes prognostic value to NISS ($p = 0.004$) and presence of shock ($p = 0.047$).
Conclusion: In our study, we couldn't identify modifiable determinants of prognosis as it was mainly related to severity criteria. Recognition of clinical variables and severity scores associated with an adverse outcome can facilitate optimal approach to BAT.
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Disclosure: No significant relationships.

O257

BENEFITS OF COMPUTED TOMOGRAPHY TRACTOGRAPHY IN EVALUATION OF ANTERIOR ABDOMINAL STAB WOUNDS

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Introduction: The study aimed to identify the presence of peritoneal penetration in management of anterior abdominal stab wound by using computed tomography (CT) tractography
Material and methods: Hemodynamically stabile, CT tractography-performed patients who were admitted to our emergency clinic with anterior abdominal stab wounds between the years 2012 and 2014 were included in this study, and all images were evaluated in terms of peritoneal penetration and possible intra-abdominal injury.
Results: In the study CT tractography identified necessity of laparotomy accurately in 90 % of the patients, and none of the patients without peritoneal penetration needed surgical treatment in their follow-up.
Conclusion: The procedure may be used for some selected cases of hemodynamically stable patient with anterior abdominal stab wounds to abstain from local wound exploration.
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Disclosure: No significant relationships.

O258

USE OF LAPAROSCOPY IN THE DIAGNOSIS AND TREATMENT OF ABDOMINAL STABBING AND BUNT INJURIES: 10-YEAR EXPERIENCE AT A SINGLE INSTITUTION

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Introduction: To evaluate whether laparoscopy decreases the laparotomy rates for patients suffering from abdominal stabbing and blunt injuries.
Material and methods: All patients undergoing laparoscopy over a 10-year period (2003–2013) in Far-Eastern Memorial Hospital for abdominal trauma were classified by the mechanism of injury. Demographic and perioperative data were compared using the Student t and Fisher exact tests.
Results: There were 204 patients included in the time period, 85 of whom sustained stabbing injuries and 119 from blunt mechanisms. Patients with blunt injuries were more severely injured (Injury Severity Score, 17.6 vs. 4.5, $p < .001$). Patients undergoing laparoscopy after stabbing injuries were based on the assumption of peritoneal violation by varied diagnostic methods. The most common indication for laparoscopy after blunt injuries was physical findings associated with

computed tomographic findings for hollow viscus and mesenteric injuries (53.8 %). The rate of laparotomy for patients sustaining stabbing and blunt injuries was 3.5 % and 10.9 %, respectively.
Conclusion: Laparoscopy is a feasible and safe tool for the diagnosis and treatment of stabbing and blunt abdominal injuries.
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Disclosure: No significant relationships.

O259

TEMPORARY ARTERIAL SHUNTS IN DAMAGE CONTROL: EXPERIENCE AND OUTCOMES

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Introduction: Arterial shunting (AS) is a well-described method to control hemorrhage and rapidly re-establish flow, but optimal shunt dwell times remain controversial. We hypothesized that shunt dwell time is unrelated to outcomes after major vascular injury.
Material and methods: A review (2005-2013) of all patients with AS after traumatic injury at our urban Level-I trauma center was undertaken. Patients who expired prior to shunt removal ($n = 8$) were excluded. Shunt complications were defined as dislodgement, thrombosis and distal ischemia. Patients were compared on the basis of shunt complications with respect to clinical parameters.
Results: The 42 patients who underwent AS after major vascular injury were primarily young (median 26 years, [IQR 22-31]) males (100 %), severely injured (ISS 18 [14-29], shunted vessel AIS 4 [3-4]) by gunshot (86 %) requiring neck/torso (23 %), upper (23 %) or lower (54 %) extremity shunts. Thirty-four patients survived until shunt removal and 5/34 (15 %) developed shunt complications. When compared with respect to shunt complications, no differences ($p > 0.05$) in age, mechanism, hemodynamics, systemic heparin use, injury severity or location were determined. No patients (0/21) with shunt dwell times < 6 hours developed complications while 5/13 (39 %) with dwell times > 6 hours developed shunt complications ($p = 0.005$). After controlling for ISS, AIS, SBP and shunted vessel, patients with shunt dwell times > 6 hours were 22× more likely to develop shunt complications than those with dwell times < 6 hours (OR 22; 95 %CI 21-25; $p < 0.001$).
Conclusion: In this civilian series, 15 % of patients with AS developed shunt complications. Our data suggests that limiting shunt dwell times to < 6 hours when clinically feasible may decrease adverse outcomes.
References:
Disclosure: No significant relationships.

BLEEDING 2

O260

TRAUMA-INDUCED COAGULOPATHY: POTENTIAL ROLE OF PLATELET-LEUKOCYTE AGGREGATION

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Introduction: Platelet dysfunction is a feature of trauma-induced coagulopathy (TIC) and is associated with a poor outcome. Following major trauma, immobilization of platelets on activated leukocytes might contribute to TIC. This study investigated *ex vivo*, whether states of activation forwarded the prevalence of platelet-leukocyte aggregates (PLA) and whether this was associated with changes in the haemostatic potential of whole blood.
Material and methods: Blood of healthy donors was pre-stimulated with selective and general leukocyte and/or platelet activators such as bacterial peptides (fMLP), protein kinase C activator (phorbol-myristate-acetate, PMA) and thrombin receptor activating peptide (TRAP) and was examined for changes in maximum clot firmness (MCF) on a rotation-thromboelastometer (ROTEM). Activation and platelet-leukocyte aggregation were assessed by flow cytometry. Blood cell counts were performed to investigate changes in platelet numbers.
Results: Profound co-activation of platelets with leukocytes resulted in an immobilization of platelets on the surface of leukocytes and a significant impairment of MCF. Immobilization of platelets and reduction of MCF was dependent on the upregulation of the phagocytosis marker CD11b but did not occur when both cell types were stimulated selectively. None of the activated states was associated with altered platelet counts.
Conclusion: Our data indicate that the immobilization of platelets on leukocytes is associated with an impairment of the haemostatic potential of whole blood. The observed mechanism is dependent on the up-regulation of phagocytic integrins but requires a co-activation of leukocytes with platelets. In states of coagulation factor depletion and systemic pro-inflammatory response, immobilization on leukocytes might contribute to platelet dysfunction and the amplification of TIC.
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O261

LOW-MOLECULAR-WEIGHT HEPARIN PROPHYLAXIS IN PATIENTS WITH BLUNT SOLID ORGAN INJURIES UNDERGOING NON-OPERATIVE TREATMENT

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Introduction: Patients with blunt solid organ injuries (SOI) are at risk for venous thromboembolism (VTE) and VTE prophylaxis is crucial. However, to date little is known about the optimal timing of Low-Molecular-Weight-Heparin (LMWH) administration in these patients.
Material and methods: Retrospective study including adult trauma patients with SOI (liver, spleen, kidney) undergoing non-operative management (NOM) 01/2009-12/2014. Three groups were distinguished: LMWH administration $\leq$72 h after admission ('early LMWH-group'), > 72 h after admission ('late LMWH-group') and 'no LMWH-group'. Patients and injury characteristics, transfusion requirements and outcomes (failed NOM, VTE, mortality) were compared between the three groups.
Results: Overall, 179 patients were included; 44.7 % in the 'early LMWH-group', 34.6 % in the 'late LMWH-group' and 20.8 % in the 'no LMWH-group'. In the 'late LMWH-group', the ISS was higher than in the 'early' and 'no LMWH-groups' (median 29.0 vs. 17.0 vs. 19.0; $p < 0.001$). The overall NOM failure rate was 3.9 %. Failed NOM was more frequent in the 'no LMWH-group' compared to the 'early' and late LMWH-groups' (10.8 % vs. 3.2 % vs. 1.3 %; $p = 0.043$). In the 'early LMWH-group' 27.5 % patients suffered from a high-grade SOI; none of these patients failed NOM. Mortality did not differ statistically. There were a trend towards more frequent VTE in the 'no LMWH-group' than in 'early' and 'late LMWH-groups' (10.8 % vs. 4.8 % vs. 1.3 %; $p = 0.066$).
Conclusion: In patients with SOI undergoing NOM, the administration of LMWH within the first 72 h was not associated with an increased NOM failure or higher in-hospital mortality. Further Validation of this finding in larger cohort studies is warranted.
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Disclosure: No significant relationships.

O262

ACUTE FIBRINOLYSIS SHUTDOWN WITHOUT COAGULOPATHY FOLLOWING SEVERE INJURY IS THE MOST COMMON PHENOTYPE OF POST INJURY MORTALITY

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Introduction: The pathologic extremes of fibrinolysis Hyperfibrinolysis (HF) and fibrinolysis shutdown (SD)] are associated with increased morality following trauma. Little is known how this interaction is effected by impaired clot formation. The purpose of this study was to assess the effect modification of impaired clot forming on these different phenotypes of fibrinolysis.
Material and methods: Analysis was limited to severely injured patients. Admission fibrinolysis phenotypes was determined by clot lysis at 30 minutes (LY30): SD $\leq$0.8 %, physiologic 0.9-2.9 %, HF $\geq$3 %. Phenotypes were further sub-classified into patients with coagulation abnormalities that were dichotomized as normal or abnormal based off of current transfusion TEG thresholds [ACT >128; angle <65; MA <55].
Results: 2570 patients with a median ISS 25 (IQR:20-33) were evaluated. SD was the most prevalent phenotype (46 %), followed by physiologic (36 %) and HF(18 %, $p < 0.0001$). The combination of low MA and hyperfibrinolysis had the highest mortality (73 %), which was reduced to 25 % with a normal MA ($P < 0.001$). This same association was seen with angle (73 % low vs 24 % normal angle $p < 0.001$) and ACT (53 % prolonged vs 24 % $p < 0.001$). The most common fibrinolysis sub-classification representing 38 % of all deaths in this study were trauma patients in fibrinolysis shutdown with no abnormality of clot strength.
Conclusion: One in three trauma deaths in these severely injured patients were associated with normal clot strength and fibrinolysis resistance compared to less than 10 % of deaths that had impaired clot formation and hyperfibrinolysis. Understanding the mechanisms of fibrinolysis shutdown and developing strategies to attenuate this phenomena are needed to improve survival in severely injured civilian patients.
References:
Disclosure: No significant relationships.

O263

ACTIVATED THROMBIN-ACTIVATABLE FIBRINOLYSIS INHIBITOR (TAFIA) LEVELS ARE SIGNIFICANTLY DECREASED IN PATIENTS WITH EARLY TRAUMA-INDUCED COAGULOPATHY

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Introduction: The thrombin-activatable fibrinolysis inhibitor (TAFI) is a potent inhibitor of fibrinolysis. However, the role of TAFI and its activated form TAFIa in the development of trauma-induced coagulopathy is poorly understood.
Material and methods: A total of 40 severely injured trauma patients were prospectively enrolled. TAFI and TAFIa levels were measured upon arrival and through hospital days one to seven. Early trauma-induced coagulopathy was defined as elevated international normalized ratio (INR), and/or prolonged activated partial thromboplastin time (aPTT) and/or thrombocytopenia on admission to the emergency department.
Results: TAFIa and TAFI levels showed the largest decrease on hospital day one, with a progressive increase thereafter. Coagulopathic patients ($n = 11$) showed significantly lower TAFI (42677.5 $\pm$ 21978.1 vs. 58917.0 $\pm$ 17408.0 ng/mL, $p = 0.033$) and TAFIa levels (59.3 $\pm$ 19.4 vs. 106.0 $\pm$ 33.1 ng/mL, $p < 0.001$) on

admission compared to non-coagulopathic patients ($n = 29$). Statistically significant correlations were found between the admission TAFIa level and the amount of packed red blood cells and fresh frozen plasma transfused within the initial 24 hours (both $p < 0.05$).
Conclusion: Depletion of TAFIa may significantly contribute to the development of early trauma-induced coagulopathy.
References:
Disclosure: No significant relationships.

O264

HEMOSTASIS EFFICACY COMPARISON AMONG CHITOSAN-BASED DRESSINGS IN A FORMAT OF SPONGE, NON-WOVEN AND WOVEN GAUZE

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Introduction: Chitosan-based dressings have been wildly used to control traumatic bleeding because chitosan can facilitate crosslinking reactions of erythrocytes at wounds with its cationic force and fluid absorbency. The effect of dressing format on hemostasis performance remains unclear because the chitosan content, molecular weight and deacetylation level varies within previous studies. The present study aims to control chitosan baseline properties and investigate the hemostasis efficacy of dressings in different formats.
Material and methods: Lyophilized chitosan sponge (CS, thickness: 0.5 cm), pure non-woven chitosan gauze (PNWCG, thickness: 0.1 cm), non-woven rayon-chitosan gauze (NWRCG, thickness: 0.1 cm), and woven rayon-chitosan gauze (WRCG, thickness: 0.1 cm) were prepared. Each format contained 0.15 ± 0.02 g chitosan (MW: 200-300 kDa, deacetylation level: 92-95 %). For the group of NWRCG and WRCG, 0.35 ± 0.02 g rayon fibers were further added. A 0.5 ml healthy human blood was dipped into 10 samples of each group and lasted for 1 minute. Samples were immersed into 20 ml simulated wound fluid (SWF) and shaken steadily for 30 seconds. The optical density (O.D value) of 1 ml (SWF) was measured by a spectrophotometer projecting 540 nm light.
Results: The fluid absorption rate was highest for CS followed by PNWCG, NWRCG and WRCG. The 1-min O.D value was lowest for CS, followed by PNWCG, NWRCG, and WRCG. The 2-min O.D value was not significantly different among the other groups.
Conclusion: The hemostasis efficacy of chitosan sponge is greatest compared to other formats containing the same chitosan materials.
References:
Disclosure: Receipt of grants/research supports: CoreLeader Biotech Co., Ltd Participation in a company sponsored speaker's bureau: CoreLeader Biotech Co., Ltd.

O265

THE USE OF MASSIVE TRANSFUSION PROTOCOL FOR TRAUMA AND NON-TRAUMA PATIENTS IN A CIVILIAN SETTING: WHAT CAN BE DONE BETTER?

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Introduction: Massive transfusion protocol (MTP) is increasingly used in civilian trauma cases to achieve better haemostatic resuscitation in patients requiring massive blood transfusions (MTs), with improved survival outcomes. However, in non-trauma patients, evidence for MTP is lacking. This study aims to assess the outcomes of a newly established MTP in a civilian setting, for both trauma and non-trauma patients, in an acute surgical care unit.
Material and methods: A retrospective cohort analysis was performed on 46 patients whose MTP was activated in Changi General Hospital, Singapore. The patients were categorised into the trauma and non-trauma groups. Assessment of Blood Consumption (ABC) score was used to identify MTP trauma patients and analyse over-activation rates.
Results: Only 39.1 % of all cases with MTP activations eventually received MTs; 39.8 % of the MTs were for non-trauma patients. Mean fresh frozen plasma to packed red blood cells (pRBC) ratio achieved in MTP was 0.741, while mean platelet to [ll1] pRBC ratio was 0.213. The 24-hour mortality rate for all patients who received an MT upon MTP activation was 33.3 % (trauma vs. non-trauma group: 45.5 % vs. 14.3 %). The ABC scoring system used for trauma patients had a sensitivity and specificity of 81.9 % and 41.2 %, respectively.
Conclusion: MTP may be used for both trauma and non-trauma patients in acute care surgery. Scoring systems to predict the need for an MT, improved compliance to pre-defined transfusion ratios and regular reviews of the MTP are necessary to optimise MTPs and to improve the outcomes of patients receiving MTs.
References:
Disclosure: No significant relationships.

O266

COAGULOPATHY IN TRAUMATIC BRAIN INJURY: FACT OR FICTION?

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Introduction: Recent reports have identified a high incidence of the coagulopathy of trauma [COT] in severely injured patients. This study aims to explore the associations between the survival of isolated severe traumatic brain injury [ISTBI] patients and the incidence of coagulopathy.
Material and methods: A retrospective review of data from a trauma registry at a Level I trauma center was conducted. All ISTBI [(AIS $\geq$3 & GCS $\leq$8] patients who received $\geq$10 u prbc in their 1st 24 hours were included. Patients were divided into two groups: survivors and non-survivors. Compliance with COT criteria [PT >18 seconds, INR >1.5 and PTT >60 seconds] and their coagulation and physiologic parameters were compared.
Results: 472 patients met inclusion criteria, 309 survivors and 163 non-survivors. All were victims of blunt trauma. Statistically significant differences between groups were noted for age, ISS, platelet count, prothrombin time, PTT, initial fibrinogen time, and INR

(Table 1). The proportion of survivors who did not meet standard COT criteria was significantly higher in the survivors than the non-survivors.
Conclusion: This initial study on coagulopathy and the survival of ISTBI patients showed that a significant percentage of non-survivors met standard criteria for COT and that 'failing' these criteria had a survival advantage.
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Disclosure: No significant relationships.

O267

UNDEFINED GASTROINTESTINAL BLEEDING SOURCE IN ELDERLY: EXPLORING AETIOLOGY AND PROPOSING CONSERVATIVE MANAGEMENT CONCEPT

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Introduction: Obscure gastrointestinal bleeding represents 5 % of all gastrointestinal tract cases. Intestinal bleeding is the most difficult regarding diagnosis and management. Geriatrics are known for increased comorbidity namely chronic diseases and medicine usage. Despite of using various diagnostic imaging and endoscopic methods, the source of bleeding could be undefined and surgical intervention might be an option. On the other hand, general anesthesia is an added risk factor with guarded outcome procedure. A situation in which conservative management might have rationale behind.
Material and methods: This is a multi-center clinical trial applied between January 2012 and August 2015. Study group is selected upon hospital admission from a wider spectrum study including all gastrointestinal bleeding cases. Patients matching study criteria were primarily recruited until investigation reveal the source of bleeding or otherwise remain undefined. The later group is recruited in the study protocol and number of patients reached 31. Supportive measures, biochemical correction, and specific GIT conservative measures were applied to all cases according to need.
Results: All patients' admission, clinical progression and final results data are tabulated. Rapid clinical deterioration was the cutting edge for conservation and intervening surgically a situation that occurred in one patient.
Conclusion: Undefined GIT bleeding affecting senile patients is mostly referring to small intestinal bleeding. In elderly this bleeding has peculiar criteria and etiology that could essentially managed conservatively. In senile patients with GIT bleeding of undefined source, surgical intervention carries high morbidity with very limited outcome if any. Conservative management and holding surgical intervention as last resort is highly recommended.
References: (8) References
Disclosure: No significant relationships.

EXPERIMENTAL RESEARCH IN FRACTURE TREATMENT

O268

INCREASED SERUM CONCENTRATIONS OF NOGGIN DURING HUMAN FRACTURE HEALING

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Introduction: Bone Morphogenetic Protein (BMP)-2 and BMP-7 are in clinical use for treatment of non-union of long bones and open tibia fractures. Noggin and follistatin are antagonists of BMP and are able to neutralize BMP. This is the first study to document the course of noggin and follistatin in normal human fracture healing.
Material and methods: Peripheral venous blood of a consecutive series of 56 patients (30 males, 26 females, mean age: 50.0 ± 20.0 years) with long bone fractures, treated surgically, was collected at 1, 2, 4, 6, 8, 12, 24 and 48 weeks after trauma. 34 healthy volunteers (15 males, 19 females, mean age: 37.0 years) served as controls. Noggin and follistatin concentrations were quantified using enzyme-linked immunosorbent assay (ELISA).
Results: The median noggin serum concentration was significantly elevated in patients in week 1 (0.57 ng/ml; $p = 0.020$) and in week 4 (0.58 ng/ml; $p = 0.003$) compared to healthy controls (0.49 ng/ml). Noggin serum concentrations were significantly elevated in male patients compared to healthy male controls. Follistatin serum concentrations differed significantly between men and women at week 1 (1360 pg/ml vs. 1954 pg/ml ($p = 0.017$)) and week 8 (1173 pg/ml vs. 1863 pg/ml ($p = 0.003$)).
Conclusion: Elevated noggin levels observed during the first 4 weeks after fracture emphasize its systemic involvement in fracture healing and may be associated with the increased expression of BMPs. No data on the involvement of noggin and follistatin in fracture healing in humans has been published so far. Antagonizing noggin and follistatin might evolve to be a future therapy in fracture non-union.
References:
Disclosure: No significant relationships.

O269

THE ROLE OF DICKKOPF-1 IN HUMAN FRACTURE HEALING

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Introduction: Dickkopf-1 (Dkk-1) is known to be a negative regulator of the Wnt/ß-catenin signal pathway and inhibits bone formation. No data on the spatial and temporal presence of Dkk-1

during fracture healing in human exist so far. The aim of this study is to analyze the local and systemic levels of Dkk-1 during physiological fracture healing.
Material and methods: Serum samples of 69 patients with long bone fractures were collected over 48 weeks. Blood samples of 35 volunteers served as control. The concentration of Dkk-1 in all serum samples as well in fracture hematoma of 15 patients was measured by ELISA
Results: In control serum the concentration of Dkk-1 was significantly higher than in patient's serum and patient's serum contained significantly higher Dkk-1 concentrations than patient's fracture haematoma. Two weeks after the trauma Dkk-1 levels in patient's serum rose to a maximum but there was no significant change of Dkk-1 levels in patient's serum after the second week compared to the controls.
Conclusion: Apart from a peak 2 weeks after fracture, the concentrations did not change during the entire healing period at all. Consequently our findings did not show a relevant involvement of Dkk-1 in physiological fracture healing in human.
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Disclosure: No significant relationships.

O270

THERAPEUTIC CELLS ISOLATED FROM HUMAN ADIPOSE TISSUE – TOWARDS A NON-ENZYMATIC ONE-STEP PROCEDURE

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Introduction: In the past decade adipose tissue became a highly interesting source of therapeutic cells for different surgical disciplines and regenerative medicine. The isolated stromal vascular fraction (SVF) is a heterogeneous cell population including the adipose-derived stromal/stem cells (ASC), with high regenerative potential. Current isolation methods for cells from adipose tissue are dependent on enzymes such as collagenase. However, enzymes may impact safety and efficacy, complicate regulatory authorization and are expensive reflected in the cost of cell products.
Material and methods: Therefore we compared classical enzymatic cell isolation methods to reduced enzyme concentration methods regarding cell yield, identity and potency. Further we aimed to develop a closed, sterile and safe isolation process limiting donor variations, risk for contaminations and unpredictability of the cell material.
Results: Our results demonstrate that reduction of enzyme concentration to 30 % and 10 % result in lower cell yields. In contrast, the metabolic activity of the isolated cells as determined via cellular ATP decreased with increasing collagenase concentration. Reduced enzyme treatment resulted in a higher number of endothelial progenitor cells (CD45-/CD31+/CD34+), pericytes (CD45-/CD31-/CD146+), and supra-adventitial cells (CD45-/CD31-/CD146-/CD34+) and significantly higher adipogenic, osteogenic and chondrogenic differentiation potential. Further we found that a system incorporating non-enzymatic treatment steps is suitable to isolate therapeutically relevant subpopulations with high cellular ATP content and elevated differentiation potency.
Conclusion: In this work we could show that the use of enzymes such as collagenase impacts cellular properties. Our findings support the concept of using non-enzymatic systems which allow the isolation of therapeutically active cells in a one-step procedure.
References:
Disclosure: No significant relationships.

O271

FIRST EXPERIMENTAL EXPERIENCES OF CALCIUM SULPHATE BONE FILLER FOR TREATMENT OF PRIMARY TRAUMATIC BONE DEFECTS AND SECONDARY BONE DEFECTS IN POSTTRAUMATIC OSTEOMYELITIS

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Introduction: Traumatic bone defects especially in osteoporosis and osteomyelitis are hard to heal and often related with recurrent complications and delayed bone healing.
Material and methods: In the period 11.2014-10.2015, 25 patients (13 female, 12 male, mean age 54 years) were admitted for following indications in long bones: bone defect (n = 10), pseudarthrosis/osteomyelitis (n = 15). In 15 patients risk factors could be identified (coronary heart disease (2), pulmonary disease (2), obesity (2), diabetes (1), psychiatric (6), nicotine (1), neoplasia (1). 31 surgical procedures (surgical debridement, bone biopsies for microbiology) were performed (mean hospital stay 21.5 days). For bone filler calcium sulphate (with or without gentamycin) alone or in combination with allograft (bone chips or femoral head, n = 12) was used. In total 350 ml calcium sulphate (256 ml with gentamycin, 94 ml without gentamycin) was inserted (31 surgical procedures, mean 11.3 ml).
Results: In 23 of 25 patients, stimulation of bone healing could be achieved. In cases with osteomyelitis (bacterial specimen S.aureus, S.epidermidis, E.faecalis. Ps.aeruginosa, Streptococcus species) the bone filling procedure was combined with antibiotic therapy. During follow up (11 months) in 2 cases secondary removal of the bone filler was necessary because of ongoing osteomyelitis. In one case (large femoral bone defect), because of broken hardware, screws were exchanged
Conclusion: Our first experimental impressions with use of a calcium sulphate bone filler for treatment of bone defects and pseudoarthrosis / osteomyelitis of long bones are showing encouraging results for stimulation new bone formation with until now a low number of complications.
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chronic osteomyelitis: a series of 195 cases. Bone Joint J. 2014 Jun;96-B(6):829-36.
Disclosure: Bone Support, Switzerland

O272

IMPACT OF BONE CEMENT AUGMENTATION ON THE FIXATION STRENGTH OF TFNA BLADES AND SCREWS

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Introduction: Intramedullary nailing of osteoporotic proximal femoral fractures can be challenging because of poor implant anchorage in the femoral head. Recently, cement augmentation of PFNA blades with PMMA has shown promising results. Aim of this study was to assess the impact of augmentation on the fixation strength of TFNA blades and screws within the femoral head, and compare its effect with head elements placed in center or antero-posterior off-center positions.
Material and methods: Eight groups were formed out of 97 polyurethane foam specimens, simulating isolated femoral heads with severe osteoporotic bone. The specimens in each group were implanted with either non-augmented or augmented TFNA blades or screws in center or antero-posterior off-center position, 7-mm anterior or posterior. They were mechanically tested in a setup simulating an unstable pertrochanteric fracture with lack of postero-medial support and load sharing at the fracture gap. All specimens underwent progressively increasing cyclic loading until failure. Varus-valgus and head rotation angles were monitored by an inclinometer mounted on the head. A varus collapse of 5° or a 10° head rotation were defined as the clinically relevant failure criterion.
Results: Load at failure for specimens with augmented TFNA head elements (screw center: 3799 N ± 326; blade center: 3228 N ± 478; screw off-center: 2680 N ± 182; blade off-center: 2591 N ± 244) was significantly higher compared to the respective non-augmented specimens (screw center: 1593 N ± 120; blade center: 1489 N ± 41; screw off-center: 515 N ± 73; blade off-center: 1018 N ± 48), $p < 0.001$. In both non-augmented and augmented head elements, failure load in center position was significantly higher compared to the respective off-center position, $p < 0.001$. Augmented off-center head elements had significantly higher failure loads compared with non-augmented centrally placed implants, $p < 0.001$.
Conclusion: Cement augmentation clearly enhances fixation stability. Non-augmented blades outperformed screws in off-center position. Augmentation with TFNA has not been approved by FDA.
References: 1. Sermon et al, Clin Biomech. 2012;27(1):71-6 2. Sermon et al, J Trauma Acute Care Surg. 2012;72(2):E54-9 3. Sermon et al, J Orthop Res. 2014;32(3):362-8.
Disclosure: S. Scherrer, M. Altman and A. Weber are employees of the implant producer.

O273

INTRAMEDULLAR POLYMER FOR RAPID STABILIZATION OF PATHOLOGICAL PELVIC FRACTURES

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Introduction: Progress in oncological therapy leads to an increase of pathological fractures. Pathological pelvic fractures usually require extensive surgical interventions. The use of conventional implants often is not to the utmost satisfaction of the surgeon due to the reduced bone quality. The photodynamic polymer can be used minimally invasive to stabilize the tumor-associated fractures. In combination with metal implants it provides a counter bearing for the stabilization of larger bony defects.
Material and methods: The method used integrates the properties of light cured (photodynamic) plastics, used successfully for decades in dentistry, filled into Dacron (PET) balloon catheters. Through a small incision in Seldinger-technique a balloon catheter is inserted into the marrow cavity which has been previously expanded with use of a flexible cannulated drill. The balloon is filled with liquid plastic monomer, and using a system of visible blue light at a wavelength of 436 nm, is converted into a hard polymer.
Results: So far four female patients suffering from an anterior or posterior pelvic ring fracture at an average age of 68 years (57 - 75) were treated. 2 patients had a multiple myeloma, one patient suffered from breast cancer and one patient had a traumatic anterior pelvic ring fracture without tumor. In one patient the polymer was combined with sacral rods and an internal fixator to the lumbar spine.
Conclusion: The patient customized implant is characterized by its high restoring force and its excellent rotational stability. With the presented implant a stable situation could be achieved. Postoperative mobilization and nursing care improved.
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Disclosure: Consultant for Product Development IlluminOss Medical

O274

EXTRACORPOREAL SHOCKWAVE THERAPY (ESWT) AMELIORATES HEALING OF TIBIAL FRACTURE NON-UNION UNRESPONSIVE TO CONVENTIONAL THERAPY

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Introduction: Tibial non-unions significantly affects patientś quality of life, health care costs, and is challenging in treatment. Extracorporeal shockwave therapy (ESWT) has been shown to stimulate and improve osseous healing.
Material and methods: Based on a prospective open clinical trial a retrospective data analysis of tibial non-unions was performed. Non-unions meeting the FDA criteria (> 9 months old, lacking osseous healing over the last 3 months assessed radiologically) were included and analyzed with respect to bony consolidation, being the primary study readout parameter.
Results: Fifty eight eligible tibial non-unions were treated with electrohydraulic ESWT (3000-4000 impulses, 5 Hz, 0.4 mJ/mm^2 energy flux density) of which 52 could be pursued until final study observation timepoint (6 months post ESWT). An osseous

healing assessed radiologically could be achieved in 88.5 % irrespective of location or underlying pathology. Superior results were seen in patients receiving ESWT within 1 year after the last surgical intervention in comparison to later timepoints.
Conclusion: Non-unions unresponsive to standard therapies could be effectively treated by ESWT, which is a non-invasive and cost effective modality lacking undesired side effects. Therefore, ESWT should be considered as a first choice treatment in tibial non-unions.
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Disclosure: No significant relationships.

O275

TIBIA DEFORMATION IN PARTIAL WEIGHT BEARING

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Introduction: Partial weight bearing is part of treatment schemes in orthopedic surgery and traumatology. The aim of the present study was to explore the extent to which partial weight bearing reduces tibia deformation, and also the effect of rear foot and forefoot loading.
Material and methods: Tibia deformation (torsion, medio-lateral and anterio-posterior bending) was measured for rear foot and forefoot loading, 10 kg, 20 kg and half body weight instructions compared to full loading in five healthy male subjects using the "Optical Segment Tracking" approach, a motion-capturing based method that uses mono-cortically affixed screws.
Results: 1. GRF was a good indicator of tibia deformation. 2. Participants significantly under-loaded during half-body weight instructions ($P < 0.001$) while they overloaded when loading the forefoot only. 3. Partial-loading instructions led to highly significant and systematic reduction in all three types of tibia deformation with substantial variation between measurements (all $P < 0.001$). 4. Forefoot usage was associated with significant, albeit moderate increases in GRFpk ($P = 0.0031$), in AP-bending ($P = 0.0027$) and in torsion ($P < 0.001$), compared to rear foot loading.
Conclusion: 1. GRF is a good reflection of loading-induced deformation of the tibia. 2. GRFs are difficult to control for subjects. 3. When aiming at a reduction in tibia deformation, rear-foot loading is likely more preferable than forefoot loading.
References:
Disclosure: No significant relationships.

O276

PRINCIPLE AND RESULTS OF EXTRAMEDULLARY NAIL APPLICATION IN DIAPHYSEAL FEMORAL FRACTURES TREATMENT

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Introduction: According to the literature, dynamization in the long axis of the femur is very important in about 25 % of patients treated for femoral diaphyseal fractures. However, we could still don't know in advance which case will be necessary to be performed dynamization or if fracture can heal without the need for dynamization performance. The aim of this study is to present results of using of extramedullary nail, one new selfdynamizable method and device.
Material and methods: We analyzed series of 30 patients with diaphyseal femoral fractures treated by the use of extramedullary nail - selfdynamizable internal device. That selfdynamizable device known also as "Intelligent implant" has feature to become spontaneously dynamic in the long axis of the femur 4-6 weeks after the operation, if union is slower or absent.
Results: The average operative time was 43 minutes (29-61) average fluoroscopy time was 11 seconds (6-33) while average blood loss was 60 milliliters (30 to 180 milliliters) when used minimally invasive approach with two incisions. None of the patients developed complications during the intraoperative period. Healing time was 3.7 months (2.5-6). Healing was achieved in all (100 %) of patients. Complications as infection, nonunion, refracture, joint stiffness, neurovascular injures not occurred. Spontaneous axial dynamization was observed in 9 patients (26.7 %). Amount of dynamization was 1 and 5 millimeters.
Conclusion: Extramedullary nail is one effective method and device for the treatment of diaphyseal femoral fractures. This method and device is suitable minimally invasive application.
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Disclosure: No significant relationships.

O277

DIFFERENTIAL VELOCITY CALCULATION FOR RAPID DETECTION OF OCCULT HYPERFIBRINOLYTIC COAGULOPATHY BY TPA-CHALLENGED THROMBELASTOGRAPHY

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Introduction: Hyperfibrinolysis (HF), as exhibited by an elevated lysis at 30 minutes (LY30) on thrombelastography (TEG) is a specific predictor of hemorrhage in trauma. Unfortunately, the LY30 is insensitive and patients with normal LY30s frequently bleed. Also, the LY30 is slow, reporting 30 minutes after the maximum amplitude (MA). We hypothesized that the differential velocity plot between a native and a tPA-challenged TEG would revealing occult HF at a much earlier time point.
Material and methods: We designed a software tool to analyze the tracings of simultaneous native and tPA-challenged TEG channels. Blood from 203 consecutive trauma activations was analyzed. The differential in the velocity of the two tracings was evaluated up to the MA. Receiver operating characteristics were plotted to compare this parameter (the "delta-V-@-MA") and the LY30 of a Rapid TEG for prediction of massive coagulopathic hemorrhage (MCH, $\geq$10 units of PRBCs in 6 hours or death from clinical coagulopathy).
Results: Sensitivity for MCH prediction was optimized at 100 % for the delta-V-@-MA methodology at 78 % specificity. For LY30 sensitivity was only 56 % at 89 % specificity. Traditional LY30 "missed" 9 of 23 MCH patients with occult coagulopathy. Delta-V-@-MA missed
Conclusion: The delta-V-@-MA of a two-channel tPA-challenged TEG is 100 % sensitive for predicting MCH and is available 30 minutes faster than Rapid TEG LY30, which is only 56 % sensitive. The early divergence of the velocity of the native from the tPA-challenged TEG curve may represent an early biomarker for depletion of physiologic reserves and a useful clinical tool for triggering massive transfusion.
References:
Disclosure: We receive research support in from TEM, Haemonetics and Barkey.

Posters

MANGLED EXTREMITY

P001

COMBINED FIXATION WITH LAG SCREW AND POSTEROLATERAL PLATE FOR DISTAL HUMERAL SHAFT FRACTURE

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Introduction: Double plates (medial and lateral) are common for distal end fracture of humerus, whereas Narrow Plate or Intramedullary Nail is common for central shaft fracture of humerus. However, which implant is appropriate for a fracture between distal end and central shaft? We operated with lag screw and one posterolateral plate for distal shaft fracture of humerus.
Material and methods: Two 70's women sustained the distal humeral shaft fracture (AO classification, 12-A1 and 12-B2). Radial nerve palsy was found in both cases. Via posterolateral approach, triceps muscle was reflected toward medial side, revealing posterolateral aspect of the humerus. After fracture reduction, one or three cortex screws were inserted as lag screw. Then anatomical locking plate for distal posterolateral humerus was applied as protection plate. Rehabilitation started without a splint or any ROM restriction.
Results: Bone union was obtained and no pain is complained of in both cases. Final elbow flexion was 130 and 135 degrees, while extension loss was 5 and 10. Elbow performance index was excellent in both cases.
Conclusion: Although a recent biomechanical data indicate that 2 plates can create a stiffer construct than a single posterolateral plate for an extra-articular distal humerus fracture, lag screw helps to stabilise more. A single plate fixation has advantages, including less periosteal stripping and less muscle dissection. These can contribute to early bone union and functional recovery; therefore, combined fixation with lag screw and posterolateral plate is better treatment for distal humeral shaft fracture.
References:
Disclosure: No significant relationships.

P002

AXILLARY BRACHIAL PLEXUS BLOCK IN UPPER EXTREMITY SURGERY: COMPARISON OF DIFFERENT CONCENTRATION OF ROPIVACAINE

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Introduction: Nerve block is becoming more common in surgery. However, appropriate concentration of anaesthetic is undetermined. We used two different concentrations of ropivacaine for axillary brachial plexus block in upper extremity surgery and compared the effects.
Material and methods: Sixty two patients undergoing upper extremity surgery was divided to two groups. All patients had axillary brachial plexus block under ultrasonography without general or intravenous anaesthesia before the surgery. Group A (31 patients) received 20 ml of 0.75 % (low volume and high concentration) ropivacaine, while Group B (31 patients) received 30 ml of 0.5 % (high volume and low concentration) ropivacaine. Expression of the nerve block was examined when the surgery started 20 minutes after the anaesthetic injection. When patients felt no pain, the effect was considered expressed. Continuity of anaesthetic was also investigated. We measured at how many minutes after the nerve block patients needed a painkiller.
Results: When the surgery started, expression of the block was confirmed in 17 cases (54.8 %) of Group A and in 21 cases (67.7 %) of Group B. The difference was not significant ($P = 0.43$). The mean continuity of anaesthetic was 703 minutes (range, 302-960) and 789 minutes (range, 514-1065) in Group A and B, respectively. It was not significantly different ($P = 0.24$).
Conclusion: It is believed that higher concentration of local anaesthetic can make expression of the nerve block shorter; however, appropriate kind, volume or concentration of anaesthetic is still unclear. High volume and low concentration ropivacaine showed expression of the nerve block earlier and continued the anaesthetic effect longer, although both differences were not significant.
References:
Disclosure: No significant relationships.

P003

CHOPART AND LISFRANC DISLOCATED FRACTURES - A RARE AND FREQUENTLY MISSED ENTITY?

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Introduction: When regarding Lisfranc and Chopart dislocated fractures, literature speaks of rare but severe diagnoses that are often initially missed due to either polytraumatised patients or heterogenic clinical appearance. In modern emergency room technology, are these issues still valid today or a thing of the past?
Material and methods: All dislocated fractures of the back- and midfoot in 15 years were analyzed regarding type and mechanism of injury, additional injuries, soft-tissue damage, time and type of diagnosis and therapy and complication-rate.
Results: 68 patients presented with dislocated fractures of the mid- or backfoot. Most suffered from multiple injuries (21), with 12 life-threatening. Contradicting previous literature, no patient presenting primarily to our hospital wasn't diagnosed and operated promptly. Operative techniques for fracture fixation were K-wiring (29), screw-fixation (20) and external fixation (8). In some cases soft tissue damage called for fasciotomy (5), or amputation (3). 8 were treated non-operatively with cast immobilization. Combinations of techniques were common to obtain stable fixation and minimal soft-tissue damage. All patients received CT-scans of the foot before operation. Complication rate was low with 3 cases of arthroses and 2 necessary revision surgeries.
Conclusion: Inconsistent with medical literature we found no case of delayed diagnosis of dislocated fractures of the mid- or backfoot, most likely due to easy available CT scans and clinical examination of extremities in all traumatized patients. Almost every patient could be brought to the OR for reduction and fixation the same day, resulting in a low complication rate. Unfortunately data about long-term complications is missing.
References:
Disclosure: No significant relationships.

P004

ABSOLUTE OR RELATIVE STABILITY IN MINIMAL INVASIVE PLATE OSTEOSYNTHESIS OF DISTAL TIBIA AND SHAFT FRACTURES?

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Introduction: Minimal invasive plate osteosynthesis in distal tibia and shaft fractures can be executed using absolute (lag screw and neutralisation plate; LSN) or relative stability (bridge plate; BP). We compared time to radiological union, time to weight bearing and the number of complications and reoperations in the two groups (LSN vs. BP).
Material and methods: Retrospective single centre review of patients with a shaft or distal tibia fracture operated with a LCP (2009 – 2014). Postoperative radiographs were assessed in a standardised manner. Time to full weight bearing and to radiologic fracture healing were measured as well as postoperative complications of both groups.
Results: 47 patients with a minimum follow-up of 6 months were analysed. Five patients had a shaft and 42 a distal tibia fracture. 32 patients were treated with LSN and 15 patients with BP. Time to radiologic fracture healing was 43 weeks in the LSN and 57 weeks in the BP group. Time to full weight bearing was in both groups 11 weeks. A total of 46 revisions (including implant removal) were performed. Wound healing disorders were 6 % in LSN and 20 % in BP.
Conclusion: Absolute stability osteosynthesis of the tibia shaft and distal tibia leads to faster radiologic fracture healing without an increase in complications or number of revisions compared to relative-stability bridge plating. If absolute stability could not be achieved percutaneously, a mini open approach did neither increase time to union nor the complication rate.
References:
Disclosure: No significant relationships.

P005

WHEN SHOULD SURGICAL TREATMENT OF GARTLAND TYPE III SUPRACONDYLAR HUMERUS FRACTURES TAKE PLACE?

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Introduction: Closed reposition and percutaneous pinning are the primary methods in its surgical treatment of supracondylar huerus fractures. We evaluated the effects of surgery time (night, day) on clinical and radiological outcomes among Gartland type III supracondylar humerus fracture patients treated with closed reposition and percutaneous pinning.
Material and methods: We retrospectively examined 120 patients treated in our clinic for Gartland type III supracondylar fractures. Patients' age, gender, surgery times, surgery durations, and complications during follow-up were assessed. The radiological measurements of patients who were called for follow-up were assessed in comparison to the other elbow by using Baumann's and capitellohumeral angles.
Results: While 51 of the patients admitted to the study were operated on night shift, 69 were operated on regular daytime. Mean surgery duration was 61 minutes for all patients, with mean night time value being 72 minutes and mean daytime value 51 minutes. ($p < 0.05$). Mean Baumann's angle was 72 ± 6.75 degrees on the operated side, and 70 ± 3.93 degrees on the other side ($p < 0.05$). While a significant difference existed among the Bauman's angles of night time patients, no such difference was found among daytime patients. The mean carrying angle obtained was 10.3 ± 5.3 degrees on the operated side, and 12.02 ± 3.6 on the other side ($p > 0.05$). Mean capitellohumeral angle was 46.8 ± 9.17 for patients operated during night time, and 42.2 ± 3.8 for those operated during daytime ($p > 0.05$). Statistically, an increased complication rate was seen among night surgery cases.
Conclusion: Delayed Gartland type III supracondylar humerus fracture treatment in ideal circumstances results in fewer complications and better functional outcomes than immediate surgery under sub-optimal conditions.
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Disclosure: No significant relationships.

P006

TREATMENT OF POST-TRAUMATIC LARGE BONE DEFECT OF USING NON-VASCULARIZED FIBULAR GRAFTS WITH PRESERVATION OF THE PERIOSTEUM

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Introduction: Treatment of post-traumatic large bone defect can be very challenging, so we often suffer from treatment especially when it is chronic. We report 4 cases successfully treated large bone defect of lower extremity, by the application of free non-vascularized fibular bone grafts with preservation of the periosteum.
Material and methods: We operated on 4 patients by the application of free non-vascularized fibular bone grafts with preservation of the periosteum. They consisted of 3 men and 1 women with a mean age of 28.7 years. Two cases occurred after sequestrectomy of osteomyelitis in the femur and tibia each, one occurred after incompletion of bone transport for lengthening in the femur, and one occurred after severe open fracture in the femur. Time to bone healing and complication were studied in these cases.
Results: All cases achieved bone union, and the mean bone union period was 5.6 months (range, 4-8). We didn't have adverse medical event.
Conclusion: For the bone defect occurred after infection or the large bone defect, the bone transport or vascularized bone graft are desired, however, the procedure is not simple, and patients bear great burden. We transplanted free non-vascularized fibular bone graft and were able to achieve good bone union in all cases. This treatment is simple and easy, and it is thought that biological activity is higher than normal free non-periosteum bone graft. This technique, compared to microvascular reconstruction and Ilizarov techniques, is a simple and successful procedure that is still valid option for some cases to bridge a large chronic bone defect.

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Disclosure: No significant relationships.

P007

A RARE DISLOCATION OF THE FOOT AFTER LOW-ENERGY TRAUMA

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Introduction: Talonavicular and talocalcaneal dislocations are rare injuries. These dislocations often occur after high-energy trauma. Dislocations after low-energy trauma are very rare. We present three cases in which a talonavicular or talocalcaneal dislocation occurs after low-energy trauma.
Material and methods: A 70 years-old female fell from her wheel chair and was diagnosed with a talonavicular dislocation of the left foot. Closed reduction was performed in the operating theatre. A 64 years-old male suffered from a talocalcaneal dislocation, which was threatened by closed reduction in the emergency department. A 79 years-old female fell from the stairs and was diagnosed with a talonavicular dislocation. She was threatened by closed reduction in the emergency department. All patients were threatened by cast immobilisation after the closed reduction was performed.
Results: Results After three months follow-up, all patients were able to bear weight on their injured foot. After six months follow-up all patients returned to their normal activities of daily living. Dislocations in the foot are very rare. The trauma mechanism is often a 'swivel' movement in which the foot is hyperabducted leading to ligamentous rupture. The injury can be threatened by closed reduction. If closed reduction is unsuccessful, open reduction should be performed. Internal or external fixation should be performed if the reduction is not stable. The combination of obesity and old age could have contributed to the dislocation in the described patients.
Conclusion: Conclusions Dislocations in the foot are rare injuries. They can safely be threatened by closed reduction followed by cast immobilisation.

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Disclosure: No significant relationships.

P008

COMPLICATED SUBTALAR JOINT DISLOCATION – A CASE REPORT

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Introduction: Subtalar joint dislocations are rare which are often accompanied by fractures of the adjacent tarsal and metatarsal bones and severe soft tissue injuries. We describe the case of a 31 year old male patient who was presented in the ER with an isolated open (Gustillo grade 2) subtalar joint dislocation fracture of the right ankle after eversion trauma while jumping on a trampoline. No other injuries were detected.

Material and methods: Surgical treatment consisted of immediate open reduction in the OR using a surgical spoon and a femoral head impactor. Wound debridement was done with irrigation and transcutaneous wound closure over a subcutaneous low vacuum drain was performed. A joint bridging external fixator was placed with additional k-wires for fracture reduction and temporary fixation.
Results: A postoperative CT scan demonstrated multiple small fracture fragments of the talar bone with a congruent ankle and subtalar joint. The medial wound healed without any problems. External fixator and k-wires were removed in the outpatient clinic 8 weeks after surgery. Patient started with guided physiotherapy and was allowed for weight bearing. Five months after injury patient is walking around without pain, using a crutch for longer distance. Conventional x-rays still do not demonstrate signs of talar necrosis at this time.
Conclusion: Isolated open subtalar joint dislocation is a rare and severe injury, which can be accompanied by severe soft tissue damage. In case of an open dislocated subtalar joint, immediate reduction, wound debridement and external fixation is critical.
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Disclosure: No significant relationships.

P009

COMPARTMENT SYNDROME OF MANGLED UPPER LIMB

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Introduction: Serious injuries of extremities are often followed by acute compartment syndrome. Well-timed treatment of this typical complication is very important for outcome. Upper limb injuries are not the exception. 9.8 % of all compartment syndromes relate to forearm shaft fractures and 7.9 % to fractures of distal radius. Exact diagnostic and correct treatment of upper limb compartment syndrome using fasciotomy are crucial for the results of the mangled extremities healing.
Material and methods: We describe case of 42 years old man with injury of left upper limb caused by compression of 2000 kg. The fractures of both forearm bones were initially solve by external fixation. Correct fasciotomies of forearm and hand were performed immediately. Negative pressure wound therapy (NPWT) with dynamic suture were used in treatment of fasctiotomies. The conversion of external fixation into internal fixation using LCP plates was performed after three weeks together with closure of fasciotomies. These procedures were followed by compartment syndrome relapse. Fascitotomies were opened again and NPWT used.
Results: All wounds were completely healed 53 days after injury and function of the hand was fully restored almost in the same time. The healing of forearm bones was without complications.
Conclusion: Diagnostic and treatment of compartment syndrome is part of serious extremity trauma therapy. In case of phased therapy and reoperations we have pay attention to possibility of compartment syndrome relapse.
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Disclosure: No significant relationships.

P010

DEVELOPMENT OF ULNOHUMERAL OSTEOARTHRITIS AFTER MONTEGGIA LESIONS DEPENDING ON THE TREATMENT OF THE RADIAL HEAD

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Introduction: The treatment of radial head fractures in Monteggia lesions can occur through the radial head resection, the radial head preservation or arthroplasty. The ulnohumeral osteoarthritis as complication of Monteggia lesions may worsen the result. The aim of this study was to analyze the development of a ulnohumeral osteoarthritis depending on the treatment of the radial head.
Material and methods: This retrospective study relates to patient data from 01.01.2005 to 31.10.2014. Thereby surgically treated Monteggia fractures and Monteggia equivalent lesions were observed. The evaluation included the following parameters: age, sex, fracture classification, radial head resection vs. preservation vs. prosthesis, primary vs. secondary restoration, ulnohumeral osteoarthritis in the 1st postoperative and last documented X-ray, functional scores.
Results: of 51 patients (age 51 yr (20-71), M: F 28:23, Bado type II 84.8 %) had 14 (28 %) a Monteggia fracture and 37 (72 %) a Monteggia equivalent lesion. The permanent restoration of fractures was performed in 43/51 (86 %) cases primarily and 8/51 (14 %) secondarily. It occurred in 16/51 cases radial head resection, in 31/51 cases conserving therapy (repositioning with or without osteosynthesis 9: 21) and 4/51 were treated with radial head arthroplasty. The average radiological follow-up examination occured 32 months after the injury. There was no statistical difference of the progression of osteoarthritis in comparison of radial head preservation, -resection or replacement ($p > 0.05$). But there was trend to better outcomes following radial head preservation.
Conclusion: Usually post-traumatic osteoarthritis occurs after Monteggia lesions, so initial ulnohumeral cartilage damage has to be attributes a greater importance.
References:
Disclosure: No significant relationships.

P011

INFECTED CLOSED FEMORAL FRACTURE AFTER HIGH ENERGY TRAUMA-CASE PRESENTATION

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Introduction: Crushing trauma of the extremities, involving both bones and soft tissues, are frequently complicated with infection, which threatens not only the functional outcome, but also the vitality of the injured limb, and of the patient.
Material and methods: We present a clinical case reflecting the difficulties in treating infected fractures in mangled extremity. The patient, patient, male, 45 years old, was admitted in the Orthopedics and Trauma Clinic of Clinical Emergency Hospital Bucharest 4 days after a traffic accident, with a femoral fracture after a crushing injury, with a tensioned suture on the thigh, blisters and a partially stable external fixator. Initial thorough debridement was performed, lavage and opening the tensioned suture, with a considerable residual skin defect; muscular debris, oedema of the soft tissue and modified aspect of the haematoma raised the suspicion of infection, later confirmed by cultures (St.aureus).
Results: The ExFix was repositioned, then repeated debridements were necessary so to assure the vitality of the fracture site. General broad spectrum antibiotics were started then followed by specific treatment, according to the bacteriological results. After sustained local and general treatment, secretion disappeared, skin graft was used to cover the defect and sequential method was used, external fixation being followed by intramedullary nail after all the signs of inflammation disappeared
Conclusion: Infected fractures complicate complex high energy trauma; they require a prolonged, complex treatment, both local (optimal stabilization of the fracture and repeated and thorough debridements in the operating theatre) and general (antibiotics and supportive treatment) and a well trained interdisciplinary team
References: S12.2 RISK FACTORS OF THE DEVELOPMENT OF A POSTTRAUMATIC OSTEITIS OF THE TIBIA DEPENDING ON THE FRACTURE LOCATION U. J. Spiegl, R. Pätzold, M. Militz, P. Augat and V. Bühren J Bone Joint Surg Br 2011 vol. 93-B no. SUPP III 335.
Disclosure: No significant relationships.

P012

THE SIGNIFICANCE OF INFLAMMATORY MARKERS FOR THE OUTCOME OF THE PATIENTS WITH MANGLED EXTREMITIES

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Introduction: Mangled extremities are severe injuries threatening not only the damaged extremity, but also the patient's life, so their treatment must be carefully monitored as to assure maximum of efficacy.
Material and methods: The authors retrospectively evaluate 21 patients with mangled extremity operated between 01.01.2013-01.01. 2015 from the point of view of demography, traumatic mechanism and injury severity. Local scoring systems were used to describe the anatomy of the injured zone, while general parameters (especially the inflammatory ones) are evaluated as potential bio-chemical markers.
Results: From the tests, hemoglobin level, CRP, ESR, fibrinogen, as well as IL (1 or/an 6) are to be thoroughly evaluated in polytrauma patients. This study, although limited, demonstrate that all these factors are influence by the pathology of polytrauma, There is a direct correlation between ECR and hemoglobin level and the incidence of septic complications, as well as between CK and the outcome of the patients. Renal function was also influenced by the CK and ECR levels.
Conclusion: When crushing is responsible for the trauma, due to the systemic effects of rhabdomyolysis, several biochemical markers can be used as predictive elements for the outcome of the patients. Wether they can be used in guiding the treatment or not, itg is still necessary to be studied.
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Disclosure: No significant relationships.

P013

AXILLARY PENETRATING TRAUMA - CASE REPORT

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Introduction: Trauma is the fourth leading cause of death in Europe. Accidents and trauma are the leading cause of death in children, adolescents and young adults. The leading causes of injury-related death are, in decreasing order, motor crashes, penetrating trauma, falls and burns. Penetrating trauma involves the transfer of energy to a relatively small tissue area and injury can be predicted by tracing the pathway of the weapon within the body. Knowing the type of weapon and whether it moved inside the body is important, because it can indicate a superior damage besides the entrance appearance.
Material and methods: The authors present a case report of penetrating trauma.
Results: A 50 year old woman, entered the emergency room, with left arm pain and a tumefaction on the external side of it, which corresponded to a foreign body with point of entrance in the left armpit. Although questioned, the patient did not give details of the accident. At the physical exam the patient had a wound in the left armpit with controlled bleeding, palpable humeral and radial pulses, preserved mobility and sensitivity and was hemodynamically stable. The foreign body was surgically removed, corresponding to a wood fragment of a bed. There was no need for vascular or nervous repair. During the hospital stay until discharge, the patient had a favorable evolution.
Conclusion: Given the high incidence, morbidity and mortality of the penetrating trauma, we should give special attention to the lesion mechanism and the best therapeutical option. In situations like the above mentioned, it is fundamental not to remove the foreign body. This one, should be surgically removed in a controlled environment, like the operative room.
References: Greenfield's Surgery: Scientific Principles and Practice, Mulholland, Lillemoe, et al, 5th edition, 2010 CURRENT Diagnosis and Treatment Surgery, Gerard M. Doherty, MD, 13th Edition, 2009, McGraw.
Disclosure: No significant relationships.

BLEEDING

P014

FUNDAMENTAL EXPERIENCE OF DEVELOPING TEMPORARY PACKING MATERIAL USING POLYMER GEL TO CONTROL SOLID ORGAN HEMORRHAGE

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Introduction: Towel or gauze packing is usually carried out for temporary hemostat in damage control surgery, however, "repacking" is unwillingly imposed at the planned reoperation because of re-bleeding after towel or gauze removing when these materials adhere strongly to the injured surface. This study aimed to develop a new material using polymer gel for safety removing from the damaged organ after hemostatic packing.
Material and methods: Two types of polyacrylamide-based hydrogels containing *N,N'*-metylenebisacrylamide (BIS) and cyclodextrin (CD gel) or azobenzene (AZ gel) were used for this experiment. To search a feasible and appropriate composition of polymer gels for hemostatic packing materials, various trial gels were applied for lacerated liver of male Wistar rat carried out through laparotomy under general anesthesia. A hardness, fragmentability, affinity and removability of the hydrogel were macroscopically evaluated.
Results: The ratio of CD or AZ to total hydrogel weight and the degree of crosslinking (DCL; calculated by BIS weight/total weight) were investigated. The CD gel was too hard in all tested ratios of samples to attach to the crushed surface of the liver. The AZ gel of AZ 1.0 % with DCL 2.0 % was good hardness and well attached to the injured liver because of the good fragmentability of the gel.
Conclusion: This fundamental experiment suggests a possibility that polymer gel may be use as the packing materials which enables to avoid re-bleeding at the removal instead of conventional gauze or towel packing. In the near future, trauma surgeon might gain a revolutionary tool of hemostatic materials for abdominal organ injury.
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Disclosure: No significant relationships.

P015

DELAYED MASSIVE HEMOTHORAX REQUIRING A SURGERY AFTER BLUNT THORACIC TRAUMA OVER FIVE-YEAR PERIOD: COMPLICATING RIB FRACTURE WITH SHARP EDGE ASSOCIATED WITH DIAPHRAGM INJURY

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Introduction: Delayed massive hemothorax requiring a surgery is relatively uncommon, but can be a potentially life threatening. The purpose of this study is to describe the nature of delayed massive hemothorax requiring a surgery and to identify the major cause.
Material and methods: From February 2011 through January 2015, 1278 consecutive patients after blunt thoracic trauma were admitted. Delayed hemothorax was defined as the normal upright chest radiograph or no effusion on chest computed tomography at admission or immediately after trauma, and followup radiograph and CT showed an effusion. and massive hemothorax was defined as a blood drainage more than 1500 mL after closed thoracostomy and ongoing bleeding with 200 mL/h for at least 4 hours. As the results, 5 patients with delayed massive hemothorax were performed the surgery and enrolled. The Injury Severity Score (ISS), cause, location of injury, tube drainage and clinical outcome were analyzed.
Results: The ISS was 22 ± 7.1. Delayed massive hemothorax presented at 63.6 ± 21.3 hours after blunt chest trauma. Prior to closed thoracostomy, all patients had a prodrome of pleuritic chest pain after cough spell, and the mean amount of preoperative chest tube drainage were 3126 ± 463 mL. All patients had a superficial diaphragmatic laceration caused by the sharp edge of the broken rib.
Conclusion: A broken rib with sharp edge as a results of blunt chest trauma can cause a delayed massive hemothorax. Therefore, it should be informed to patients, and admission should be considered for close observation. Additionally, if the patient has a prodrome of pleuritic chest pain, delayed hemothorax should be considered.
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Disclosure: No significant relationships.

P016

SPONTANEOUS RUPTURE OF INTERCOSTAL ARTERY-A CASE REPORT

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Introduction: Spontaneous rupture of intercostal artery (SRIA) is life-threatening although extremely rare, compared with the one resulting from trauma or specific illness such as neurofibromatosis type1. We present a case of idiopathic SRIA with extra-pleural hemorrhage treated with arterial embolization followed by removal of the hematoma.
Material and methods: Case An 86-year-old woman with sudden pain in her left breast was transported to our ER. She had no history of trauma or specific illness, such as neurofibromatosis except hypertension and took no anticoagulant. On arrival she had normal consciousness, hypotension (BP 50/16 mmHg) and normal Hb level (9.7 g/dl). CT scan revealed an extravasation in the large extra-pleural hematoma at the left apex. Urgent angiography was performed and revealed active extravasation at left 3th intercostal artery, which we enabled the arrest of bleeding by embolization using 33 % N-butyl cyanoacrylate mixed with Lipiodol Ultrafluide. Repeated CT showed

no size-up of the hematoma nor extravasation. Although hemodynamics and blood test was satisfactory, the surgical removal of hematoma was performed on 8 days after IVR because the size of the hematoma had increased for 8 days. The patient recovered well and was discharged after 14 days hospital stay.
Results: To our knowledge the only six reports about SRIA without associated illness or injury were reported before. Idiopathic SRIA is extremely rare and optimal strategy of treatment is not established. We need to be aware of SRIA that would be categorized as the disease needed emergent intervene.
Conclusion: A case of SRIA treated by IVR with operation was reported.
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Disclosure: No significant relationships.

P017

INITIAL HEMATOCRIT AS A PREDICTOR OF URGENT HEMOSTASIS NEEDED IN TRAUMA PATIENTS

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Introduction: The initial hematocrit (Hct) as a predictor of urgent hemostasis when trauma patients arrive at the emergency department. Trauma patients in our institute do not receive pre-hospital intravenous fluid. It may be able to predict the need for hemostatic procedures.
Material and methods: The patients who met the institutional trauma activation criteria were retrospectively reviewed from our prospectively collected trauma database. Demographic data, initial Hct, vital signs on admission, injury severity score(ISS) and initial laboratory data were collected. The primary outcome was the need for hemostatic procedure which included laparotomy, thoracotomy, or angioembolization within 4 hours after admission. Logistic regression was used to measure the predictors of the primary outcome.
Results: Out of 183 patients who met the trauma activation criteria between January to December 2014, 99 patients met the inclusion criteria. The median age was 34 years old. Seventy-five percent of patients were injured by blunt mechanism. Univariate analysis showed that the need for hemostatic procedures was related to the initial FAST ($p = 0.017$), INR ($p = 0.001$), and ISS ($p = 0.001$) and that the initial Hct results were not related to the need for hemostatic procedures ($p = 0.46$). Multivariate analysis showed prolonged INR, higher ISS, and increased base excess were related to the need for hemostatic procedures while older age and a negative FAST were protective factors for the need of hemostatic procedures.
Conclusion: The Hct was not a predictor for the need of hemostatic procedures for trauma patients. Patients who had more severe injuries, prolonged INR, and higher base excess were likely to need hemostatic procedures.
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Disclosure: No significant relationships.

P018

DEVELOPMENT OF A LAPAROSCOPIC OVINE MODEL OF ACUTE OCCLUSIVE ARTERIAL INJURY

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Introduction: The aim of this study is to describe a laparoscopic method of generating a traumatic occlusive iliac lesion for use in future endovascular translational research.
Material and methods: Four male sheep (30-38 kg) underwent general anaesthesia. In addition to standard monitoring, the carotid artery was cannulated with a 5 Fr sheath to facilitate digital substraction angiography of the lower extremities. Two 10-mm and two 5-mm laparoscopic ports were placed into the peritoneal cavity, which was insufflated with carbon dioxide to maintain access. A proximal portion of the left external iliac artery (EIA) was exposed using diathermy and a dissector. A 3 cm section was identified and controlled, which was repeatedly clamped using a dissector in order to induce a thrombosis. Control was released after 30 minutes. Doppler ultrasound and angiography were used to evaluate arterial patency and measure blood flow velocities, comparing the injured left side against the un-injured right side.
Results: of 4 animals enrolled, 3 occluding lesions were created successfully. Angiography demonstrated a sharp cut-off in all cases. In one animal the left EIA was inadvertently perforated, requiring ligation. Post-injury, there was a significant reduction in the median (interquartile range) systolic velocity (cm/sec), left versus right, (0 (0) vs. 22.0 (12.5–52.0); $p < 0.001$). This pattern was also observed when measuring pulsatility index (0 (0) vs. 2.32 (1.61–3.20); $p < 0.001$).
Conclusion: Laparoscopic techniques can be used to produce an occlusive lesion of the ovine EIA that may be suitable for evaluating future endovascular trauma interventions.
References:
Disclosure: This experimental study was funded by a research grant MK-3439-2014-7 of the President of The Russian Federation.

P019

HEMODYNAMIC, METABOLIC AND END-ORGAN EFFECTS OF ENDOVASCULAR THORACIC AORTIC BALLOON OCCLUSION AND REPERFUSION IN PIGS

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Introduction: Endovascular Aortic Balloon Occlusion (ABO) can be used to stop severe traumatic bleeding as a bridge to surgery. ABO also causes ischemia and reperfusion injuries to visceral organs. The

aim of this study were to investigate circulatory, metabolic and end-organ functional outcomes and relation to occlusion time in a non-haemorrhagic pig model.
Material and methods: High thoracic ABO introduced in randomised pigs (25-35 kg) (N = 6/group) during 15 min (ABO15), 30 min (ABO30), 60 min (ABO60) and control, followed by 3 h of reperfusion. Haemodynamic parameters, blood flow in superior mesenteric artery (SMA) and common iliac artery (CIA) and arterial blood gas were measured during occlusion and reperfusion. Markers of end-organ damage such as creatinine, CK, AST, ALT, lipase, intraperitoneal (i.p) concentrations of lactate, pyruvate and glycerol by microdialysis, were analyzed during occlusion and reperfusion.
Results: During aortic occlusion, systemic blood pressure (SBP) increased while blood flows in SMA and CIA decreased. During reperfusion, SBP dropped but normalized as well as blood flows in SMA and CIA. Arterial pH decreased during reperfusion in parallel with increased lactate and potassium concentrations in all ABO-groups. Intraperitoneal lactate/pyruvate ratio remained increased during reperfusion in ABO30/60 while plasma creatinine, AST, CK and lipase concentrations increased. Glycerol i.p increased in all groups during reperfusion and did not normalize in ABO 30/60.
Conclusion: Thoracic ABO and reperfusion causes metabolic acidosis, hyperlactatemia, hyperkalemia as well as damage to visceral end-organs. The severity of these end-organ effects is highly dependent on occlusion time.
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Disclosure: No significant relationships.

P021

BLUNT TRAUMA ED THORACOTOMY AND THE MIRACLE MAN WHO SURVIVED IT

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Introduction: The reported survival after an emergency thoracotomy for blunt trauma is very low in the vast majority of studies, and it is more difficult to find survivors without neurologic sequelae.
Material and methods: An unrestrained male driver in his sixties presented after a blunt motor vehicle crash. He arrived in sinus tachycardia and transitioned to PEA upon arrival. ACLS was initiated and a right chest tube was placed, with minimal blood return. Left-sided ED thoracotomy (EDT) was performed revealing mild hemothorax with no hemopericardium. The heart filled with manual cardiac massage and the patient was taken to surgery for an exploratory laparotomy. He was found to have moderate hemoperitoneum secondary to hepatic and splenic lacerations, and mesenteric hematomas. A comminuted left femur fracture was diagnosed and treated with an external fixator. CT imaging revealed bilateral rib fractures, sternal fracture, T10 -11 fractures. Further laparotomies were performed on post-operative days (POD) 1 and 4. On POD 3, he was weaned off vasopressor agents and had ORIF of the L hip. Tracheostomy and gastrostomy were performed on POD 4.
Results: Patient was discharged on hospital day 24 and returned to pre-injury level of function at 9-month.
Conclusion: EDT after blunt trauma has an extremely poor survivability. When patients survive, the neurologic deficits are extremely burdensome. The role of EDT has been called into question in blunt trauma. Although a larger, well-designed series will be required to reach a consensus, this may cause us to reconsider an EDT for a blunt trauma patient.
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Disclosure: No significant relationships.

P022

CORRELATION BETWEEN PELVIC BONE FRACTURE SITE AND ARTERIAL EMBOLIZATION IN SEVERE TRAUMA PATIENTS IN SINGLE INSTITUTE OF KOREA

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Introduction: Immediate identification of vascular injury requiring embolization in patients with pelvic bone isn't an easy task. There have been many trials of indicators of embolization in patients with pelvic bone fracture. Although Young and Burgess classification is useful in decision making of treatment, it is reported to have little value as indicator of embolization in major trauma patients. The aim of this study is to find out fracture patterns on predicting vessel injury by analyzing pelvic radiograph taken from major trauma patients with pelvic bone fracture.
Material and methods: Among major trauma patients with injury severity scores (ISS) higher than 15 who visited our emergency room from January 2011 to June 2014, 170 patients were found with pelvic bone fracture in trauma series and thus pelvic CT angiography was taken. Setting aside patients with exclusion criteria, 126 patients were enrolled in this study for analysis of length of anterior pelvic ring displacement, fracture involving greater sciatic notch, iliac bone fracture involving sacroiliac joint, and sacral fracture.
Results: Anterior pelvic ring displacement in Group I was shorter (3.8 mm) than that (18.0 mm) of Group II, but without statistical significance ($p > 0.05$). Although fracture involving SI joint didn't prove statistical significance ($p > 0.05$), fracture involving sciatic notch or sacrum did ($p < 0.05$).
Conclusion: Analyzing fracture site involving sciatic notch and sacrum may help predict the need of embolization for arterial injury concomitant with pelvic fracture.
References:
Disclosure: No significant relationships.

P023

IATROGENIC CARDIAC INJURY

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Introduction: Iatrogenic cardiac injury, which requires urgent or emergent operation, is rare but is always a clinically significant situation. In this study, we report our experience of iatrogenic hemopericardium.
Material and methods: We retrospectively reviewed 9 patients with iatrogenic hemopericardium who underwent emergent surgery from January 2010 to February 2014.
Results: There were 6 male and 3 female patients, with median age of 65 (range: 56 - 80). Six patients (67 %) were injured by pericardiocentesis, and one patient (11 %) was injured by coronary intervention. One patient (11 %) was injured by closed thoracostomy, and one patient (11 %) was injured during cardiopulmonary resuscitation. The most common injured site was right ventricle (n = 5, 56 %), and other sites were coronary artery (n = 1), right atrium (n = 1), left ventricle (n = 1), and unknown origin (n = 1). Occurrence of preoperative tamponade in these patients was 6 cases. Surgical treatment was carried out in all patients. Eight patients (88.9 %) underwent the cardiac repair through the sternotomy. of these patients, 3 patients (22 %) underwent the operation with cardiopulmonary bypass support. One patient (11.1 %) underwent only pericardiostomy. The overall mortality rate was 33 % (3 out of 9 patients). Cardiogenic shock associated with delayed diagnosis was the cause of death in all cases.
Conclusion: The mortality rate from iatrogenic cardiac injury is very high. We believe that the clinical results survival rate can be improved by a high index of suspicion and early diagnosis.
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Disclosure: No significant relationships.

P024

EMERGENCY MANAGEMENT OF ACUTE LOWER GI BLEEDS IN A UK TEACHING HOSPITAL

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Introduction: Bleeding from the lower gastrointestinal tract (LGIB) represents up to 3 % of all emergency surgical referrals and has <4 % mortality. While most bleeding originates from benign pathology, e.g. haemorrhoids or diverticular disease, it may also reveal colorectal malignancy. Each year at our large central London teaching hospital, >150 cases are managed by emergency general surgeons. On-site 24/7 interventional radiology allows rapid access to mesenteric angiography and super-selective embolisation, and accepts tertiary referrals.
Aims: To develop an integrated care pathway (ICP) for acute LGIB to improve triage, diagnosis and patient outcomes.
Material and methods: Data were collected from new emergency admissions with LGIB over 12 months. Acute bleeding was defined as a history <3 days and bleeds proximal to the ligament of Treitz were excluded. Major haemorrhage was defined according to the UK National Audit on Lower GI Bleeding. Factors analysed included demographic and co-morbidity data, cardiovascular status, haematological parameters, transfusion requirements, time to imaging and/or intervention, type of intervention (if any), length of stay, and primary diagnoses. Only anonymised, routinely-collected pre-existing data were analysed so formal ethical approval was not required.
Results: Over 80 % patients with acute LGIB were managed conservatively. Access to lower GI endoscopy was often delayed beyond 24 hours. Most CT angiograms were negative, but interventional radiology was performed promptly when required. Our local ICP for acute LGIB will be presented and compared with national and international guidance.
Conclusion: We hope that a local ICP will improve emergency treatment of LGIB, ensure rapid access to endoscopy, and stimulate ongoing audit.
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Disclosure: No significant relationships.

P025

PLATELET FUNCTION IN EXPERIMENTAL TRAUMATIC HEMORRHAGE MODEL

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Introduction: Platelets strongly influence hemostasis and a low platelet count predicts mortality in trauma. The role of platelet dysfunction in severe traumatic hemorrhage and coagulopathy needs to be further defined. The aim of this study was to evaluate the platelet function in a new experimental traumatic hemorrhage model.
Material and methods: New Zealand white rabbits (3100-3800 grams; n = 10) were subjected after tracheostomy to trauma laparotomy, bilateral femur fractures, and 40 % hemorrhage of their estimated blood volume. Arterial blood gases, standard coagulation tests (platelets, INR, aPTT, fibrinogen), mean platelet volume, platelet aggregation using impedance aggregometry (Multiplate®) with agonists collagen, arachidonic acid, and adenosine diphosphate (ADP), rotational thromboelastometry (*ROTEM®*)/ROTEM platelets, and fibrinogen binding of platelet were analyzed.

Results: There was a significant rise in lactate, and a significant decrease in base excess and temperature after traumatic hemorrhage. Platelet count decreased from a median of 251 $\times$ 10^9/L to 100 $\times$ 10^9/L ($P = 0.004$) and the mean platelet volume increased from 5.1 fL to 6.1 fL ($P = 0.0022$). Impedance aggregometry with agonists collagen, arachidonic acid, and adenosine diphosphate (ADP) was all significantly decreased after traumatic hemorrhage ($P = 0.007$). There was a non-significant trend of increased fibrinogen binding of platelets after traumatic hemorrhage. However, the fibrinogen bindings of platelets were activated at a lower dose of ADP (1uM) ($P = 0.0001$).
Conclusion: In this traumatic hemorrhage model, there was a significant decrease in platelet count and platelet aggregation using impedance aggregometry. At the same time larger and more reactive platelets were detected after severe traumatic hemorrhage.
References:
Disclosure: No significant relationships.

P026

THE CONSUMPTIVE DECREASE IN FIBRINOGEN DUE TO PELVIC FRACTURE

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Introduction: Active arterial bleeding is a fatal complication in the acute phase of pelvic fracture. Early recognition of coagulopathy that is associated with bleeding in severe traumatic injury is important and treatment of coagulopathy is thought to lead to successful hemostatic management. The purpose of this study was to investigate whether patients with pelvic fracture and active arterial bleeding experience an early decrease in fibrinogen and the ratio of cases that require fresh frozen plasma.
Material and methods: We reviewed medical records of pelvic fracture patients who were transferred to the emergency department of Gunma University Hospital between December 2009 and September 2015. Patients were divided into two groups: those with arterial bleeding (Bleed (+) group), and those without arterial bleeding (Bleed (−) group). The level of fibrinogen measured on arrival were compared between the two groups. The ratio of those in the Bleed (+) group that needed fresh frozen plasma within 24 hours of injury was also calculated.
Results: Thirty-six patients were analyzed. There was no difference in the time from injury to blood sampling and in the level of fibrinogen on arrival between the two groups ($P = 0.170$). However, after about 8 hours of injury the level of fibrinogen is significantly ($P = 0.000$) lower in the Bleed(+) group than in the Bleed(−) group. There were 11 of 17 (64.7 %) with arterial bleeding who needed fresh frozen plasma within 24 hours of injury.
Conclusion: Pelvic fracture patients with arterial bleeding experienced decrease in fibrinogen, however, the level of fibrinogen was gradually decreasing and should be rechecked in acute phase
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Disclosure: No significant relationships.

P027

OCCULT GASTROINTESTINAL BLEEDING

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Introduction: Gastrointestinal bleeding is an usual cause of Emergency Room admission. In most instances upper endoscopy or colonoscopy can identify the source. However in 5 % of cases no bleeding cause is identified, known as occult GI bleeding, whose diagnosis and therapeutic approach can be a true challenge.
Material and methods: Authors present the case of an 80-year-old lady with type 1 neurofibromatosis, brought to the ER in haemorrhagic shock with melaena. After initial resuscitation, upper endoscopy and colonoscopy were performed, showing no signs of recent bleed. CT scan revealed multiple expansive lesions throughout the small bowel, the biggest ones in the fourth portion of the duodenum, probable location of haemorrhage.
Results: As bleeding persisted, a laparotomy was performed with resection of the fourth portion of the duodenum as well as the first jejunal loop. The post-operative course was uneventful. Patient discharged on the seventh day. Pathology reports low grade GIST tumours.
Conclusion: Type 1 neurofibromatosis is a genetic disease that increases the risk of multiple benign and malignant tumor development. More than 25 % of this patients develop intestinal manifestations like GIST with numerous lesions in the small bowel being the main clinical manifestation GI bleeding. Therefore, the presence of a GI bleeding in a patient with NF1 should alert to an eventual presence of GIST to facilitate prompt diagnosis and timely surgical intervention.
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Disclosure: No significant relationships.

P028

OBSCURE GASTROINTESTINAL BLEEDING WITH HAEMODYNAMIC INSTABILITY: CASE REPORT

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Introduction: Obscure gastrointestinal bleeding is defined as an haemorrhage that persists or recurs after a negative endoscopy. In patients who present with bleeding, the etiology may not be evident on initial evaluation in 10-20 % of cases. Recurrent or persistent bleeding can pose a challenge to diagnosis and management.
Material and methods: We present the case of a 67 year-old woman who came to the urgency with complaints of epigastric pain, vomits and one episode of lipothymia. She presented hypotension, tachycardia and melena, and had an haemoglobin level of 7.4 g/dL, so we decided to admit her, after initial stabilization. Both first and second-look endoscopy and colonoscopy were negative. Within 48 hours of admission she maintained haemodynamic instability and the need for a total of 6 RBC units. In face of this clinical picture we decided a surgical approach.
Results: During laparotomy we identified a mass lesion in the transition between the 4th part of the duodenum and the jejunum, and performed an enterectomy with manual anastomosis. Post-operative period without complications, and she was released in the 7th day post-surgery. The pathological examination reports a complete resection of a 5.5 centimeters gastrointestinal stromal tumor (GIST), positive for vimentine and CD117.
Conclusion: GISTs are uncommon abdominal soft tissue malignancies. Most are found in the stomach (40-60 %) and intestine (30-40 %). Duodenal GISTs represent 3-5 % of these tumors. They tend to present with vague symptoms of anaemia, abdominal pain or occult abdominal bleeding. Occasionally they can cause more severe symptoms, like obstruction, perforation, and, more rarely persistent significant bleeding.
References:
Disclosure: No significant relationships.

P029

SPONTANEOUS THROMBOSIS OF A PSEUDOANEURYSM OF THE HEPATIC ARTERY AFTER A CEPHALIC DUODENOPANCREATECTOMY

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Introduction: The aim of this work is to present the case of a pseudoaneurysm of the hepatic artery after a cephalic duodenopancreatectomy with a spontaneous favorable outcome.
Material and methods: 68 year old woman who underwent a cephalic duodenopancreatectomy due to an intraductal papillary mucinous neoplasm of the head of the pancreas. 5 months after surgery, she was admitted to the emergency room for melena. An urgent esophagogastroscopy was performed without noticing any alteration. A computed tomography angiography (CTA) showed a pseudonodular lesion, possibly a partially thrombosed pseudoaneurysm of the hepatic artery. The Department of Vascular Interventional Radiology decides to observe the patient since the pseudoaneurysm is partially thrombosed and the bleeding has stopped. A CTA performed 1 moth later showed a complete occlusion and the spontaneous resolution of the pseudoaneurysm.
Results: The pseudoaneurysm of the hepatic artery is a rare postoperative complication, most commonly caused by traumatisms, iatrogenic vascular injuries or infections. Considering the iatrogenic causes after biliary tree surgery, there are different hyprothesis: direct vascular injury at clipping, electrocautery erosions, bile leakage or postoperative infection. Pseudoaneurysms can cause abdominal pain or jaundice, but their most frequent clinical manifestation is bleeding. The diagnosis is made with CTA. Embolization is the recommended treatment. However, the spontaneous thrombosis of the pseudoaneurysm can be solving, although some authors advise against this expectant attitude given the risk of bleeding.
Conclusion: The pseudoaneurysm of the hepatic artery is a rare postoperative complication, usually associated to the performance of cholecystectomy. The recommended treatment is embolization.
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Disclosure: No significant relationships.

P030

MULTIDISCIPLINARY MANAGEMENT OF THE POLYTRAUMATIZED PATIENT. THE ROLE OF THORACIC PACKING

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Introduction: Damage control surgery involves an abbreviated operation followed by resuscitation with planed re-exploration. Our goal is to describe our experience with damage control techniques in treating thoracic trauma.
Material and methods: We report a case of thoracic packing in a 21 years old male who suffered a fall from twelve meters high, with severe brain, chest and pelvic trauma.
Results: Upon arrival, the patient was hemodynamically unstable despite of the pelvic binder application and a massive transfusion protocol was started. In plain x rays, a right hemo/pneumothorax was suspected, as well as a high-energy pelvic fracture. A right chest tube was inserted, and the patient was transferred to the angiography, where an embolization of both hypogastric arteries was performed. During the procedure, a hemorrhagic drainage >200 cc/h through the chest tube was recognized, so he was transferred to the OR where a right hemiclamshell approach was performed. Due to the impossibility of bleeding control, we decided to perform a chest packing, followed by external pelvic fixation, with the posterior stabilization of the patient. During the following days, the patient remained hemodynamically stable, but he experienced an increase of ICP which required a partial right frontal lobectomy, and ARDS with no complications. His subsequent evolution was favorable so he was discharged to a rehabilitation center 57 days later.
Conclusion: Thoracic packing is a sound alternative when uncontrollable intrathoracic bleeding compromises the survival of a patient. Packing as a component of thoracic damage-control in the practice of trauma surgery has become a an alternative strategy for controlling hemorrhage.

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Disclosure: No significant relationships.

P031

TRANSFUSION OF RED BLOOD CELL WITHIN FIRST 4 HOURS INCREASE THE INFECTION RISK IN SEVERE TRAUMA PATIENTS

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Introduction: It is well known that packed red blood cell (pRBC) transfusion may increase the risk of infection in trauma patients. We describe the relation between timing of pRBC transfusion and incidence of infection after trauma.
Material and methods: A total of 469 trauma patients with an Injury Severity Score greater than 15 were admitted during a 1-year period of 2014. Outcome assessment included nosocomial infection (bacteremia and pneumonia) rates between 2 groups: the early transfusion group (<4 hours of admission) and the control group (4-24 hours of admission). We used multivariable logistic regression to estimate the relative odds of bacteremia and pneumonia associated with the timing of pRBC transfusion.
Results: A total of 26 (60.4 %) of 43 patients developed bacteremia, and 23 patients (56.1 %) who developed pneumonia received pRBC transfusion. Transfusion was associated with the increased rate of nosocomial infection, compared with non-transfusion patients ($p < 0.05$). Patients receiving RBC within 4 hours had an increased odd of developing bacteremia (odd ratio, 1.9; $p < 0.001$) and pneumonia (odd ratio 1. 5; $p < 0.001$).
Conclusion: Transfusion of red blood cells increases the risk of developing pneumonia and bacteremia. Avoiding the unnecessary use of packed red blood cell transfusions in emergency room may decrease the occurrence of nosocomial infection.
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Disclosure: No significant relationships.

P032

THE USE OF VACUUM-ASSISTED CLOSURE SYSTEM FOR THERAPY OF EXTENSIVE RETROPERITONEAL HEMATOMA IN POLYTRAUMATIZED PATIENT

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Introduction: V.A.C therapy is usually use for the wound treatment.
Material and methods: Case report.
Results: Thirty five years old woman has suffered polytrauma as a result of the jump from 4th floor. She was transported to operation theatre for the abdominal exploration, which revealed significant hemoperitoneum and retroperitoneal hematoma. Suture of the bladder rupture and drainage of the rectouterine pouch was performed during primary surgery. Fracture of the right femur was reduced and internally fixed with a nail during subsequent procedure. Due to the bleeding under cover of the open abdomen and circulatory instability was performed CT angiography and surgical revision approximately 10 hours after primary surgery. There was no significant intra-abdominal source of bleeding, but retroperitoneal hematoma has increased. Tamponade of lower left retroperitoneum was performed during this procedure. Another surgical revision was performed due to the continuing blood leakage from retroperitoneum in the following period. Tamponade has been extracted and drain and Vacuum-assisted closure system (VAC) has been applied. Complete suture and extraction of VAC was performed after two more days. She remained stabilized in following time and peroral intake was fully restored. Control CT revealed complete regression of the retroperitoneal hematoma.
Conclusion: Retroperitoneal hematoma may be the obstacle to the early closure of laparotomy due to the risk of compartment syndrome. It causes prolongation of the therapy and may request repeated surgery. It is also risk factor of paralytic ileus. This case report highlights the successful use of VAC for management of retroperitoneal hematoma.
References:
Disclosure: No significant relationships.

P033

AORTODUODENAL FISTULA - CASE REPORT

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Introduction: The objective of this study is to underline the difficulties of diagnostic and treatment in upper gastrointestinal bleeding.
Material and methods: Material and Method: Case report.
Results: A 59-year-old patient is referred from the local hospital with upper gastrointestinal bleeding, revealed by hematemesis and melena.

The upper gastrointestinal endoscopies did not show relevant pathological lesions. The abdominal ultrasonography showed an infrarenal aortic aneurysm. The Computed Tomography proved a 45/35 mm aortic aneurysm, in contact with a small bowel loop, and an aortoenteric fistula. On emergency laparotomy was confirmed the infrarenal aortic aneurysm, with aortoduodenal fistula. A duodenorrhaphy and suture of the aortic aneurysm rupture with a Teflon patch was performed. The postoperative course was favorable, the patient being discharged after 12 days.
Conclusion: Upper gastrointestinal bleeding may present multiple diagnostic challenges. Only a multidisciplinary team approach can decrease their morbidity and mortality.
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Disclosure: No significant relationships.

P034

TEG - ANOTHER MODALITY FOR MONITORING OF TREATMENT AT SURGICAL ICU?

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Introduction: Trombelastography is widely used at the emergency departments for patients with bleeding for correction of treatment. This method offers more modalities than basic examination used standardly.
Material and methods: Authors present one case report of young lady with diverticulosis with developing of MODF and show using TEG during her 55 days stay at ICU like another toll for monitoring and optimization of treatment. During presentation is shown correlation and no correlation between standard laboratory results and TEG curve as well like correlation of progress of MODF and changes in curves
Results: This case shows trombelastography can be used for management of bleeding even for monitoring of MODS.
Conclusion: It is clear that that trombelastography should be one of possibility of monitoring critical condition of surgical patients.
References: Johansson, Treatment of massively bleeding patients. Introducing real-time monitoring, transfusion packages and trombelastography.
Disclosure: No significant relationships.

P035

MANAGEMENT OF COLONIC DIVERTICULAR BLEEDING IN EMERGENCY SETTING

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Introduction: The recent progress in medical devices has facilitated an easier, less invasive treatment of colonic diverticular bleeding. Hemorrhage is a serious complication of diverticular disease representing 40 % of the lower gastrointestinal bleedings. For about 5 % of patients with colonic diverticular disease, a severe bleeding may occur. The treatment is mainly conservative but it may often require endoscopic hemostasis, embolization or even partial colectomies.
Material and methods: Retrospective study including patients admitted to Bucharest Emergency Hospital between January 2012 – June 2014, for colonic diverticular bleeding.
Results: 31 patients had lower gastrointestinal bleeding caused by diverticular hemorrhage. The mean age of patients was 78.1 years with a ratio M/F = 1.38. Mean hemoglobin level on admission: 9.6 g/dL. For 26 cases colonoscopy was performed in emergency settings and revealed active bleeding or recent bleeding stigmata for 22 patients. 7 patients benefited successful endoscopic hemostasis and 3 patients required angiographic with embolization in order to control the bleeding source. Two patients required emergency colectomy to stop the hemorrhage. Average length of stay was 5.7 days. No mortality for the study group.
Conclusion: Colonoscopy plays an important role in the diagnosis and management of the diverticular lower digestive hemorrhage. Conservative treatment is elective, surgery is preferred for recurrence or complications.
References:
Disclosure: No significant relationships.

POLYTRAUMA AND AMPUTATION, EMERGENCIES

P036

LAPAROSCOPIC SURGERY AND TRAUMA: APPROACH IN TWO CASES OF PENETRATING AND BLUNT TRAUMA

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Introduction: The use of laparoscopy has been integrated in surgical practice, and emergency surgery isn't an exception. However, its inclusion in the management of trauma patients has been slow.
Material and methods: Case 1: 48 years old man brought to the emergency room after gunshot wound in the chest. An initial treatment was performed following the ATLS protocol. In the physical exam it was a hole of 1 cm of the bullet near the left nipple. In the auscultation was not hypoventilation. A portable chest X-ray confirmed the absence of pneumothorax or hemotothorax. An EcoFAST confirmed the absence of fluid. In the rest of the examination the outlet opening of the projectile was not evidenced. The Thoraco-abdominal-pelvic TC showed the projectile into the subcutaneous tissue of the back. After placing left chest tube, laparoscopy was performed, which showed diaphragm injury. It was repaired with running nonabsorbable suture. Finally the projectile was removed

with an incision in the back. Case 2: 21 year old female who came to the hospital after aggression. Since the patient was hemodynamically normal, CT was performed, which showed abdominal free fluid, without pneumoperitoneum associated with bladder lesion. A laparoscopy exploration was performed, and an injury of intraperitoneal bladder was evident with urine in the peritoneal cavity, which was sutured using this approach in two layers with running sutures. Complete revision of the abdominal cavity was performed without evidence other injuries.
Results: Both patients evolved satisfactorily.
Conclusion: In selected cases, laparoscopy has some advantages over the open one, and should be considered as a trauma surgeon tool.
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Disclosure: No significant relationships.

P037

HORSE RELATED INJURIES: CHARACTERISTICS, MANAGEMENT AND OUTCOME

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Introduction: Horse riding has become a popular recreational activity. Injuries related to this activity are increasing.
Material and methods: We conducted a retrospective study of medical records of all patients admitted to Rambam Medical Center due to horse-related injury between January 2010 and December 2013
Results: 125 patients were admitted due to horse related injuries. 17 patients were excluded due to lack of data. 67 adult (A) patients (age $\geq$ 15 years) and 41 pediatrics (P) (age 1-14 years). There were 91 male patients (85 % adults, 83 % pediatric) and 17 Female (15 % A, 17 % P). injuries occurred while riding in 84 % (A 88 %, P 78 %) Head injury was most common injury(58 %) followed by maxillary fracture (37 %), upper extremity injury(36 %), lower extremity injury (33 %) and abdominal injury in (26 %) 51 % of the head injury patients had GCS = 15-13, 1 % had 12-9, and /5 % had GCS of $\leq$8. 30 % of the patients presented with complex injuries (iss > 16). 45 % needed operation. Fourteen (8 %) were admitted to ICU. Mean Length of Hospital Stay was 7.14 days. No mortality was recorded in this cohort of patient.
Conclusion: Horse related injuries may result in complex injuries. Safety educational programs should be initiated prior to engaging in horse related recreational activity.
References:
Disclosure: No significant relationships.

P038

TREATMENT EXPERIENCE OF FEMORAL SHAFT FRACTURE WITH A PROXIMAL FEMORAL FRACTURE

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Introduction: Regarding femoral shaft fractures with an ipsilateral proximal femoral fracture, there is a need to treat with paying attention to both fractures. We investigated the clinical outcomes of the combined fractures retrospectively, and were discussed the assessment and the treatment strategy.
Material and methods: 6 patients were included in this study. The average age at the injury was 48 years old, the average follow-up period was 7 months. In the proximal femoral fractures, there were two femoral neck fractures and four intertrochanteric fractures. We investigated the initial treatment, the fixation method of the definitive treatment, the radiological evaluation including postoperative alignment and the period of bone healing, and complications related to the fracture treatment.
Results: All femoral shaft fractures were underwent external fixation as an emergent stabilization. The fixation method of the definitive treatment of both fractures was performed with one implant in four cases, two implants in two cases. Postoperative malalignment was occurred in one case. All proximal femoral fractures obtained bone union, but one femoral shaft fracture was needed re-operation because of the delayed union.
Conclusion: It is necessary to pay attention to the existence of the combination fracture pattern between the proximal femur and the shaft. Careful assessment using CT scan is mandatory. Our treatment strategy is to think much of anatomical reduction and stable fixation for the fractures of the proximal femur. The union of the shaft fractures tended to be delayed in some cases. Appropriate additional treatment for delayed/non-unions should be considered.
References:
Disclosure: No significant relationships.

P039

ROLE OF IN-HOUSE TRAUMA SURGEON IN THE INITIAL RESUSCITATION OF SEVERE MAJOR TRAUMA PATIENTS

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Introduction: This study will evaluate the effect of in house trauma surgeon (IHTS) on time for decision making (TD), time for hospitalization (TH) and time to operation (TO) in patients with major trauma.
Material and methods: This is a retrospective cohort study using trauma database. According to our hospital system, IHTS takes on trauma patients for three days on a week. On the other four days, trauma patients were managed by on-call surgeon. Between January, 2011 and December, 2011, 272 of major trauma patients were consecutively enrolled in this study.
Results: In patients who were admitted to the department of trauma surgery, TD and TH with IHTS took significantly less than those without IHTS (TD: 137 minute vs. 283 minute, $p = 0.002$; TH: 302 minute vs. 635 minute, $p < 0.001$). TO with IHTS took shorter than that without IHTS (200 minute vs. 256 minute, $p = 0.202$). In patients who were admitted to the other department of surgery (neurosurgery, etc) TD and TH with IHTS took 173, 331 minute ($p = 0.001$). They were lower than those without IHTS (289, 642

minute, $p = 0.001$) TO showed no significant difference (238 minute vs. 283 minute, $p = 0.497$). In patients with TTA, TD and TH took statistically less time than those without TTA (TD: 168 min vs. 320 min, $p < 0.001$; TH: 329 minute vs. 773 minute, $p < 0.001$). However, TO showed no statistical difference between two group (216 minute vs. 271 minute, $p = 0.200$).
Conclusion: IHTS proved it important role by reducing TD and TH in initial trauma resuscitation.
References:
Disclosure: No significant relationships.

P040

PENETRATING LIVER AND INFERIOR VENA CAVA INJURY: CASE REPORT

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Introduction: Inferior vena cava injuries are relatively uncommon however are associated with high mortality due to major blood loss and haemorrhagic shock. We present a case of a young man with a penetrating inferior vena cava (IVC) injury, cardiopulmonary reanimation (CPR) and successful survival after cohesive teamwork.
Material and methods: Case report.
Results: A 31-year old male patient was delivered to the emergency room in acritical condition after falling from a height of 6 meters. Endotracheal intubation was performed at the place of accident because of haemodynamic instability and shock. Primary assessment revealed two 2-cm widewounds penetrating the abdominal wall anda large amount of free fluid in the peritoneal cavity was detected by FAST. Successful cardiopulmonary resuscitation was done immediately after the patient was delivered to the operation theatre and at the time of damage control laparotomy. Penetrating liver V segment injury and IVC marginal injury were sutured and massive bleeding stopped. Lumbar vertebra injury, right kidney injury and large retroperitoneal hematoma with diffuse bleeding were also found and packed. Relaparotomy was done and packs removed on day 8 after the stabilisation of the general condition.
Conclusion: Immediate laparotomy and haemostasis is the only chance of survival in patients with a penetrating liver and IVC injury.
References:
Disclosure: No significant relationships.

P041

SEQUENTIALLY USE OF TRAUMA SCORES MORE PRECISELY DOWN SEVERITY OF TRAUMA

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Introduction: Trauma is the leading cause of death in young patient group. Injury severity assessment is one of the main priority at the admission strongly determining treatment strategy.
Material and methods: Retrospective data analysis and assessment of the results obtained with different trauma scoring systems (ISS, RTS, TRISS, AIS and GCS) at the Riga East University Hospital admission during the year 2014.
Results: In total 190 polytrauma patients (ISS >16 points) were included. ISS less than 25 points were found in 99 patients and defined as moderate injury, however 91 patients with ISS more than 25 points were defined as life threatening injury group with increased risk of mortality ($p < 0.001$). Statistically significant correlation were found between ISS and mortality ($r = 0{,}423$, $p < 0.001$). Higher GCS provides a better prognosis and in our series mean GCS points were 12.26 (SD $\pm$ 4.45). Increasing mortality ($p < 0.001$) and lower probability of survival (Ps = 33.91 %) were in 39 patients with GCS less than 8 points. RTS is the best early predictor of patient's physiological condition immediately after injury. RTS less than 10 points were strongly associated with increased mortality ($p < 0.001$), and significantly reduced chances of survival (Ps = 35.42 %) ($p < 0.001$). TRISS is combined score and the result is highly dependent on the patient's age, therefore in young patients with high-energy trauma and low RTS score TRISS is not effective.
Conclusion: Combination of physiologic and anatomic parameters with mechanism of injury could provide better prognosis for severity of injury and treating patient as a whole.
References:
Disclosure: No significant relationships.

P042

MANAGEMENT OF PNEUMOTHORAX DETECTED IN THE CT SCAN OF BLUNT TRAUMA PATIENTS EXPERIENCE FROM A COMMUNITY-BASED HOSPITAL

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Introduction: With the near-routine use of CT scan for imaging trauma patients, the diagnosis of pneumothorax has increased (1). The need for chest tube insertion remains controversial (2). Our aim was to study the management of CT scan detected pneumothorax in blunt trauma patients in a community-based hospital including the decision to insert a chest tube.
Material and methods: All chest CT scans of blunt trauma patients who were treated at Al Rahba Hospital during a 4-year-period (October 2010 till October 2014) were retrospectively studied. The studied data included demography, mechanism of injury, endotracheal intubation, pneumothorax volume, chest tube insertion, Injury Severity Score, hospital stay, and mortality
Results: Chest CT scans were performed in 703 blunt trauma patients. 74 (10.5 %) patients were found to have pneumothorax on CT scan. 65 patients had pneumothorax detected on the CT scan before chest tube insertion. In those patients, 25 (38.5 %) needed chest tube insertion while 40 did not. Backward stepwise likelihood regression model has shown that independent factors that significantly predicted chest tube insertion were endotracheal intubation ($p = 0.01$), non UAE nationality ($p = 0.01$), and the pneumothorax volume ($p = 0.03$). The Receiver Operating Characteristic curve

showed that the best pneumothorax volume that predicted chest tube insertion was 30 milliliters.
Conclusion: Chest tube was inserted in less than half of blunt trauma patients having pneumothorax detected by CT scan. Pneumothorax volume should be included in the decision-making regarding chest tube insertion. Observation of pneumothorax of volume less than 30 milliliters appears safe.
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Disclosure: No significant relationships.

P043

MODIFIED POSTERIOR APPROACH AND EXTRA-ARTICULAR PLATE FIXATION IN EXTRA-ARTICULAR DISTAL HUMERUS FRACTURES: OUR EXPERIENCE

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Introduction: The modified posterior approach minimize the iatrogenic nerve injury and provides more visualization of the proximal humerus, while an anatomically precontoured plate on the posterolateral surface of the humerus provides stable fixation of these injuries.
Material and methods: We performed a retrospective study of these fractures surgically treated in our centre between 2013 and 2015. Twenty-three patients underwent surgery. Patients characteristics, etiology and type of fractures were recorded. The surgery was carried out using a modified posterior approach, and the fracture was fixed with a posterolateral distal humerus plate. Average follow-up was 18.4 months (12-27). The results were evaluated clinically using the Quick DASH score, the MEPS, and the VAS for pain; and radiologically, using the conventional radiology to study bone consolidation. Complications associated with treatment and radial nerve palsy incidence were recorded as well.
Results: Twenty-three patients went on to union (100 %). After one year, the average QD score was 5,73, the average VAS score was 0,33, and the average MEPS was 90,33. There were 15 excellent results, 5 good, and 3 fair, with no poor results. The incidence of radial nerve palsy prior to surgery was 39,1 %, whereas the incidence after surgery was 4,34 %. There was no failure of internal fixation. There were two superficial infections. Not extractions of material up to the date.
Conclusion: Surgical fixation of these fractures through a modified posterior approach with a posterolateral plate results in high union rates and overall excellent functional results. Modified posterior approach provides excellent exposure to the humerus and minimize the iatrogenic nerve injury.
References:
Disclosure: No significant relationships.

P044

SURVIVAL/MORTALITY RATES FOLLOWING POLYTRAUMA DEVELOPMENT OVER LAST FEW DECADES

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Introduction: Polytrauma is most common cause of death in people under 40 years of age. Management of polytrauma patients has gone through a lot of changes in the last century. The trauma care is more organised which leads to better outcome of the patients.
Material and methods: Data were obtained from the WHO Mortality database, European Trauma Registry and Pub Med covering data from 1979 to 2014. The target population for this study were patients 18 years of age or older with injuries rated via an injury severity score (ISS) equal to or greater than 16. These data were analyse according to country of origin and development of survival/mortality rates in time.
Results: There is significant improvement in survival/mortality rate worldwide over last 35 years. The trauma network has better results in western European countries and USA in relative numbers. The numbers of survival/mortality rate is in plato phase for last few years. In terms of mortality, polytrauma with abdominal injury has the highest rate across countries.
Conclusion: Over last 35 years we have noticed significant development in trauma care. This leads to major improvement of survival/mortality rate following polytrauma. Unfortunately there is stagnation in the last few years. Are we at the edge of what medicine can do for polytrauma patient? There is increase in total number of trauma over last decades. The trauma care is well levelled and patients receive high standard of care but the survival/mortality rates are not decreasing as before. Therefore prevention and awareness remains the key in trauma.
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Disclosure: No significant relationships.

P045

USING COMPUTED TOMOGRAPHY IN TRAUMATIC STERNAL FRACTURES EFFECTIVELY BY INFORMATION FROM INITIAL ASSESSMENT

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Introduction: Sternal fractures (SF) were rare but potentially devastating event if unrecognized in the treatment course of trauma patients. A sternal lateral plain film was sufficient to diagnose isolated sternal fracture, however, because of frequent association with major injuries, SF should be evaluated more carefully. Computed tomography (CT) was often required for detailed survey. By using the information of initial assessment, we tried to determine which patients had higher potential risk and needed subsequent CT scans for chest trauma.
Material and methods: We conducted a retrospective review in a Level I trauma center in Taiwan. This study enrolled all of the patients admitted for traumatic SF from July 2008 to December 2014. We retrieved and analyzed the patient demographic data, diagnostic methods, associated injuries, and clinical outcome.
Results: A total of 86 patients were included. The mean age was 50.3, and 80.2 % were males. Overall in-hospital mortality was 4.7 %. Most patients (91.9 %) combined multiple organ injuries. Mediastinal widening (MW) ($p = 0.012$), hemodynamic unstability (UH) ($p = 0.024$), and Glasgow Coma Scale (GCS) ≤ 14 ($p < 0.001$) were significant predictors for cardiac and great vessel trauma. MW ($p = 0.032$) and UH ($p = 0.030$) both correlated with higher intervention rate. MW was the only factor to predict mortality ($p = 0.016$).
Conclusion: It's worthy for patients with sternal fractures to receive chest CT scans if they had MW and UH, not only because they had higher risk of associated heart and great vessel injuries but also were more likely needed to take intervention for those injuries.
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Disclosure: No significant relationships.

P046

FLOATING SHOULDER OR FLOATING SHOULDER GIRDLE

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Introduction: For a period of 6 years 20 patients with diagnosis "floating shoulder" were operated and followed. Apart from disruption of the classic Goss ring, injuries to two additional rings: the scapula - proximal humerus and the sternal end clavicle - scapula.
Material and methods: The retrospective analysis showed that five were women with average age 45 years and 15 – men with average age 35 years. The fractures of the scapula were as follows: the glenoid and the body - 2; the scapular neck - 2; the scapular body - 17; the scapular spine (acromion) – 5, the coracoid – 3. The injuries of the clavicle were as follows: acromioclavicular dislocation - 3, fractures of the acromial part - 3, the diaphysis – 10, fractures of the sternal end - 2, sternoclavicular dislocation – 1. Fractures of the humerus were as follows: Five of the proximal part and 1 of the metadiaphysis. Seven of the cases presented as multiple injuries, unclassifiable as floating shoulder, but as floating shoulder girdle; 2 of the patients had brachial plexus injury.
Results: We had no cases of non-union or jatrogenic vascular and neurologic trauma. All patients with floating shoulder (13) regained full range of motion – mean Constant score (CS) 92; of the patients with floating shoulder girdle 2 had acceptable, 3 good and 2 – excellent results.
Conclusion: A new classification of these polystructural injuries is necessary. We think that intraarticular gap or step-off over 2 mm and the Anavian criteria for the scapular fractures mandate ORIF.
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Disclosure: No significant relationships.

P047

POLITRAUMATIZED PATIENT WITH COMBINED PELVIC RING AND IPSILATERAL FEMORAL NECK, SHAFT AND SUPRA-INTERCONDYLAR FRACTURES AFTER A TRAFFIC ACCIDENT: A CASE REPORT

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Introduction: Management in our centre of a polytraumatized patient who suffered an open pelvic fracture and femoral neck, shaft and supra-intercondylar fractures associated with thoracic and abdominal trauma as a result of a traffic accident.
Material and methods: 28-year-old man was admitted to the intensive care unit of our centre after a traffic accident. On arrival he was hemodynamically unstable. On physical examination the patient had and open pelvic fracture, wound located in the perineum, and deformity of the left limb. X-rays and whole body CT showed hemopneumothorax, hepatic and splenic laceration, type 61-C2 open pelvic fracture, 31-B1 femoral neck, 32-A3 femoral shaft and 33-B2 supra-intercondylar fractures (AO). ISS = 32, NISS = 41. At first, the hemopneumothorax was drained, an external fixator was placed in the pelvis, a colostomy and an abdominal packing was performed. 48 hours later, when he hemodynamically improved, he underwent retrograde intramedullary nailing for the shaft fracture and screw fixation for the ipsilateral supra-intercondylar fracture. Then, he was placed on a traction table and underwent screw fixation for the neck fracture.
Results: 8-weeks after surgery, partial weight bearing was allowed. 3-weeks later, the patient was walking with complete weight bearing, with complete recovery of all his injuries. 3-months after surgery, radiographs showed consolidation of all fractures.

Conclusion: In politraumatized patients with this fractures is mandatory to prioritize vital injuries, but without forgetting that a quick surgery of these fractures is also vital for the patient. During surgery is important to avoid the consequences of unnoticed injuries when having the patient placed in the traction table.
References:
Disclosure: No significant relationships.

P048

POLYTRAUMATIZED PATIENT WITH BILATERAL ACETABULUM FRACTURE AND MORBID OBESITY: A MAJOR OBSTACLE TO A SUCCESSFUL SURGERY

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Introduction: Polytrauma and morbid obesity are two difficult diseases to treat. Surgical difficulties and complications increases, and it is not only an obstacle when it comes to surgically, but also in their postoperative courses.
Material and methods: A twenty-six year old patient, and 260 kg weight (570 lbs.), with morbid obesity (BMI 70.12), was transferred to our center with bilateral complex acetabulum fracture and bilateral calcaneal, right ankle and spinal fractures after a traffic accident. CT imaging was not performed as our patient́s weight exceeded the maximum supported, and it was necessary extraordinary measures during surgery. Fourteen and twenty two days after, two Kocher Langenbeck approaches were used in lateral position, to identify and repair both posterior walls and posterior columns fractures, with huge difficulties in accessing the fracture because of the large size of soft tissues. Intraoperative bleeding from the left gluteal artery was solved by controlled hemostasis. The rest of the fractures were treated orthopedically. He also presented a sciatic left palsy, fully recovered in three months, superficial infection of the surgical wound on the left side treated with vacuum therapy, among others. He was disclosed from our hospital seventy days later.
Results: Our patient remained in discharge during three months. He started making partial load with crutches, and nowadays, eight months from last surgery he is walking unaided and consolidation of both fractures.
Conclusion: Complex acetabulum fractures are very challenging. Obesity makes even harder our aim to perform a proper osteosynthesis. Multidisciplinary equipment is necessary to increase our chances of a successful outcome.
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Disclosure: No significant relationships.

P049

CHYLOTHORAX IN BLUNT CHEST TRAUMA

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Introduction: Chylothorax is uncommon in blunt chest trauma. We present a 44 year-old man who suffered from multiple trauma including right rib fracture and T12 fracture with massive pleural effusion. For the poor blood pressure with suspected massive hemothorax, we performed video-assisted thoracic surgery for exploration and hemostasis. However, blood effusion with whitish appearance was noted and thoracic duct rupture was found during the operation.
Material and methods: a case report with review.
Results: Traumatic chylothorax was found during operation and thoracic duct ligation with clips were performed. No more chyle leakage was noticed from chest tube drainage and the patient was in adequate nutrition support.
Conclusion: Chylothorax can be treated by conservative or surgery. Surgery is an effective method to keep adequate nutrition support for recovery in trauma patient.
References:
Disclosure: No significant relationships.

P050

THREE-YEAR EXPERIENCE OF PEDIATRIC TRAUMA PATIENTS IN THE REGIONAL TRAUMA CENTER BETWEEN 2012 AND 2014

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Introduction: Trauma remains the leading cause of death in children aged 1 to 14 years. We analyzed the characteristics of pediatric trauma patients in tertiary trauma center in Southwestern region of Korea.
Material and methods: We retrospectively reviewed 185 traumatic patients under 15 year-old of age from 2012 Jan to 2014 Dec. We collected following data: visiting route, the length of hospital stay, the injury mechanism, the injury severity score (ISS), the department that managed the surgery and the cause of death.
Results: The mean age of the patients was 7.0±4.4 years (115 male and 70 female patients). A total of 43 patients directly visited our center whereas 142 were transferred from the primary or secondary center. Causes of trauma were traffic accident (n = 94, 50.8 %), fall down (n = 31, 16.8 %), slip down (n = 21, 11.4 %) and others (burn,

blunt injury, drowning, hanging). The leading etiology of TA patients was pedestrian TA (n = 48). Department of neurosurgery comprised the majority of admitted patients (n = 84, 55.2 %). The mean ISS was 15.0±11.9, and 58 patients (31.4 %) had an ISS of >15. Eighteen patients died, and the mean value of TRISS was 56.4 %. Main causes of death were brain injury (n = 12) and sepsis (n = 3).
Conclusion: In our experience, TA, pedestrian TA comprised the majority of injury mechanisms and main cause of death was head trauma.
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Disclosure: No significant relationships.

P051

RETROSPECTIVE ANALYSIS OF PULMONARY COMPLICATIONS IN POLYTRAUMATIZED PATIENTS

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Introduction: The presence of a thoracic trauma significantly influences outcome of polytraumatized patients and is associated with higher mortality. One reason for the worse prognosis in the presence of thoracic trauma is the higher probability of developing pulmonary complications. One common pulmonary complication after multiple traumata is the acute respiratory distress syndrome (ARDS) with mortality rates of up to 45 %. Delayed diagnosis and treatment of pulmonary complications after multiple traumata further complicates the course in many cases. The aim of this study was to identify potential factors influencing the development of pulmonary complications in polytraumatized patients.
Material and methods: We therefore retrospectively analysed patients admitted to our level I trauma centre between 2009 and 2011 with an ISS (Injury Severity Score) $\geq$16 and 18 years of age or older.
Results: In total, 288 patients met our inclusion criteria, of which 158 (54.86 %) presented with thoracic trauma. Thoracic trauma was associated with a significant higher probability of developing pulmonary complications (50 vs. 34.6 %, $p < 0.05$), mainly ARDS. Onset of ARDS manifested earlier in patients with thoracic trauma compared to patients without thoracic trauma ($p < 0.01$).
Conclusion: Injury mechanisms causing thoracic trauma were associated with a higher chance of developing pulmonary complications in our study population. This study shows that the absence of thoracic trauma does not protect from pulmonary complications. After multiple traumata this critical form of complication needs to be considered in the management and treatment of these patients.
References:
Disclosure: No significant relationships.

P052

CASE OF OPEN LATERAL SUBTALAR DISLOCATION ASSOCIATED WITH OPPOSITE FEMORAL SHAFT FRACTURE: OPERATIVE TREATMENT AND 18 MONTHS FOLLOW-UP

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Introduction: Subtalar dislocation is a rare and severe injury, caused by high-energy trauma such as fall from a height or traffic accident. Infection and avascular necrosis are not rare sequelae of open subtalar dislocation, and the outcome may be poor. The acute subtalar dislocation represents less than 1-2 % of all large joint dislocations and approximately 15 % of all talar injuries. The incidence of injury is 3-10 times more likely to occur in men than women. Subtalar dislocations may be presented as closed (75 %) or open (25 %), medial (up to 85 %) or lateral (15 to 20 %), with (up to 44 %) or without associated fractures of foot bones. 80 % subtalar dislocations display restriction in motion after healing, and 50-80 % have radiographic evidence of post traumatic subtalar arthritis.
Material and methods: 26-year old women presented in Emergency department after car accident. Clinical examination revealed deformation of left ankle with open dislocation and deformation of right thigh. The dorsalis pedis and the posterior tibial pulses were palpable on both legs. X-ray examination shown right femoral shaft fracture and left subtalar lateral dislocation associated with sustencatulum tali fracture. Operative treatment -immediate open reduction and K-wire fixation of left ankle under general anesthesia was performed. Right femoral shaft is menaged with intramedullary fixation.
Results: The follow-up period was 18 months. The final functional results were excellent, with no infection or avascular necrosis of the talus. Pain after a longer period of walking or standing was not reported.
Conclusion: Immediate open reduction and K-wire fixation of open subtalar dislocation may prevent infection and avascular necrosis of the talus.
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Disclosure: No significant relationships.

P053

DIAPHRAGMATIC RUPTURE AFTER BLUNT INJURY – A CASE REPORT

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Introduction: Diaphragmatic rupture occurs in 1 % to 6 % of major thoracoabdominal trauma, often after high-velocity blunt trauma. The diagnosis is difficult, frequently missed, leading to potential life-threatening complications if not repaired. The aim of this work is to present a case of a diaphragmatic rupture after blunt trauma.
Material and methods: The authors report a case of blunt diaphragmatic rupture.
Results: A 53 years-old female was admitted in the emergency room with a left-sided thoracoabdominal impact after a car crash. She presented left thoracic and abdominal pain, decreased breath sounds on the left side, abdominal tenderness and hypotension responsive to fluid resuscitation. The chest X-ray revealed pleural effusion and fracture of multiple ribs on the left side. A CT scan was performed and identified a 7 cm diaphragmatic rupture, with herniation of the stomach, splenic flexure of the colon and small bowel into the thorax, fracture of multiple ribs, pulmonary concussion, pneumothorax and a stable fracture of the pelvic ring. A chest tube on the left side was inserted and a laparotomy was performed. After reduction of the herniated abdominal contents, the diaphragmatic defect was sutured with continuous non-absorbable suture. The pelvic ring fracture was treated conservatively. The patient had a favourable evolution and was discharged home.
Conclusion: Diaphragmatic rupture is a rare and often overlooked complication of blunt trauma. Once diagnosis is established, surgical treatment is mandatory. A high level of suspicion is important to allow a quick diagnosis and an immediate surgical treatment.
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Disclosure: No significant relationships.

P054

TRAUMATIC THORACIC AORTIC INJURY FOLLOWING MOTOR VEHICLE CRASH IN A TWINE PREGNANT MOTHER

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Introduction: Traumatic aortic injury is the second main cause of death from blunt injury. Motor vehicle crash (MVC) victims are likely to die at the scene due to rupture and exsanguinations to the chest.
Material and methods: A 20-year-old woman driver at 16 weeks of gestation with twin pregnancy. She was involved in MVC and presented with chest and abdominal pain. Computed tomography (CT) scan revealed head injury with subarachnoid bleed, second-degree liver injury and grade three traumatic thoracic aortic injury (TTAI). Arch aortography showed an aortic disruption 1.5 cm distal to the left subclavian artery with pseudoaneurysm measuring 3.5 cm. Mapping of the aortic arch was done, endovascular stent deployed partial proximal to the left subclavian artery and then adjusted the stent distal to the left subclavian artery and the graft fully deployed. Flush arch aortography showed the pseudoaneurysm totally covered with no endoleak and the left subclavian artery was patent. Full hepranization was avoided during the stenting due to the risk of bleed from the head and liver injuries.
Results: The patient was doing well at discharge. Ultrasound examination in the first month after discharge showed normal fetal growth. Transthoracic echocardiography in two months showed normal finding. At 37 weeks of gestation, she underwent ower segment caesarean section and delivered 2 healthy babies. Patients and babies were regularly followed-up at the out-patient clinic.
Conclusion: To the best of our knowledge, this is the first reported successful thoracic aortic endovascular repair in a twin pregnant post MVC. Follow-up at the 7th month revealed healthy babies and mother.
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Disclosure: No significant relationships.

P055

DESCRIPTIVE ANALYSIS OF LEFT- AND RIGHT-SIDED TRAUMATIC DIAPHRAGMATIC INJURY

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Introduction: Diaphragmatic injuries are infrequent and difficult to report due to significant number of missed or delayed diagnoses and pre-hospital deaths. We analyzed the frequency, presentation, management and outcomes of left - and right-sided traumatic diaphragmatic injury in a single small level 1 trauma center.
Material and methods: Data were collected retrospectively for all the DIs cases from December 2008 to 2014. Data were analyzed for patients groups with left (LDIs) and right (RDIs).
Results: A total of 50 DIs cases (72 % LDIs and 28 % RDIs) were admitted to our trauma center with a mean age of 31 $\pm$ 11 and 93 % were males. The main cause of injury was motor vehicle crashes (54 %) followed by stabbing (26 %). When compared with RDIs, Injury severity scores (ISS) were higher in patients with LDIs (24 $\pm$ 14 vs 21 $\pm$ 9). Organ injury scaling grade >3 was greater in

LDIs, whereas grade <3 was comparable in the 2 groups. Surgical repair was performed for 84 % LDIs vs 63 % RDIs cases. Damage control management was carried on in 30 % LDIs vs 10 % RDIs. Recurrent DIs was reported only in LDIs (5.3 %). Abdominal herniation was associated with 100 % RDIs and 49 % LDIs. There were 12 deaths (9 LDIs and 3 RDIs), of them 5 had associated head injury (2 in RDIs and 3 in LDIs). All deaths had ISS >15.
Conclusion: MVCs are the main cause of traumatic DIs in young Qataris. There is no significant difference in mortality between right and left DIs, however, study sample size is a limitation. The mortality is mainly related to polytrauma and head injury.
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Disclosure: No significant relationships.

P056

PREDICTORS OF MORTALITY FOR NECROTIZING FASCIITIS: A 14 YEAR SINGLE CENTER ANAYSIS

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Introduction: Necrotizing Fasciitis (NF) is a highly fatal infection. We analyzed a single center's data on patient risk factors predictive of mortality in patients with NF.
Material and methods: This was a retrospective study of all NF patients admitted in Qatar (2000-2013). Patients were categorized into 2 groups (survivors versus non-survivors).
Results: Across the study period, 331 NF admissions were recorded, of them 85 (25.7 %) dies, 74 % were males and a mean age of 50.8±15.4 years. Non-survivors were 14.5 years older and had a significantly lower frequency of pain ($p = 0.01$) and fever ($p = 0.001$) than survivors. Diabetes mellitus, hypertension, and renal impairment were significantly higher among non-survivors ($p = 0.001$). The primary site of infection that was significantly predictive of mortality was the sacral region ($p = 0.005$). Non-survivors had significantly lower hemoglobin ($p = 0.001$), platelet count ($p = 0.02$), blood glucose levels ($p = 0.02$) and had higher serum creatinine ($p = 0.001$). In addition, non-survivors had significantly higher median laboratory risk indicator for necrotizing fasciitis (LRINEC) scores ($p = 0.001$) and sequential organ failure assessment (SOFA) scores ($p = 0.001$) with a higher frequency of polybacterial and monobacterial gram-negative infections. While monobacterial gram-positive organisms were commonly identified among survivors ($p = 0.02$ for all). Monobacterial infections with Pseudomonas ($p = 0.003$) and Proteus ($p = 0.006$) were more commonly associated with death. Septic shock and multi-organ failure were the most common cause of death. Age ($p = 0.001$) and SOFA score ($p = 0.02$) were independent predictors of mortality.
Conclusion: This study augments the data on factors predictive of mortality for NF. It reinforces the role of some identified predictors while highlighting the utility of the SOFA score.
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Disclosure: No significant relationships.

P057

PREVALENCE OF ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS) IN TRAUMA PATIENTS – A SYSTEMATIC REVIEW AND META-ANALYSIS (SINCE 1980)

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Introduction: Acute respiratory distress syndrome (ARDS) is a critical condition that is associated with high mortality and morbidity. The main aim of this study was to assess the prevalence of ARDS over a period of 3 decades. In addition, we compared the prevalence of ARDS in the general trauma population to orthopedic trauma patients.
Material and methods: We identified (RCTs) and observational studies from PubMed, Medline, etc. Search terms used: ARDS, orthopedic trauma, incidence, polytrauma, systemic complications. Studies published between 1980-2014, English or German language. Stratification of studies (1980-1990, 1990-2000 or 2000-2010), geographic location (Europe or North America), and trauma population (general or orthopedic). Meta-regression was used to analyze differences between decades of recruitment, geographic locations, trauma populations and treatment strategies. All statistical analyses were carried out in R (version 3.1.2, metafor package).
Results: We included 61 subsamples. The median ARDS prevalence was estimated by 7.4 % (95 % CI 5.6 % to 9.8 %). Median ARDS prevalence between 1990 and 1990 was estimated by 7.6 % (95 % CI 4.0 % to 14.0 %) resulting from 13 subsamples, between 1990 and 2000 the median prevalence was 7.7 % (95 % CI 4.8 % to 12.1 %) resulting from 21 subsamples. Median prevalence of ARDS in the decade 2000-2010 was 7.2 % (95 % CI 4.6 % to 11.0 %) resulting from 27 subsamples. Decade does not influence ARDS prevalence ($p = 0.9843$). Meta-regression comparing the two subgroups (orthopedic versus surgical trauma patients) revealed a statistical significant difference in ARDS prevalence ($p = 0.0279$).
Conclusion: Our data do not confirm a decrease of ARDS prevalence over the last decades as well as geographic differences.
References:
Disclosure: No significant relationships.

P058

TACTICS OF STAGED SURGICAL TREATMENT FOR PATIENTS WITH SPINAL CORD AND THORACIC INJURIES

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Introduction: A closed chest injury is an immediate cause of death in 25-50 % of cases among died patients with polytrauma with spinal cord and thoracic injuries.
Material and methods: 29 patients with polytrauma were included into the study within 1998-2015. The concurrent injuries were thoracic and spine-spinal cord injuries. ISS was 21-48 (on average, 27). 20 patients were included into the comparison group and received only conservative treatment for thoracic injuries. The main group included 9 patients. Within 2 days after the injuries they received surgical reconstruction of chest framework by means of open reposition, fixation of floating fractures (under endovideothoracoscopy control) with the original fixators (angle stability plates) and staged surgical treatment for spine and spinal cord injuries.
Results: Measures the following values have decreased: mortality – from 55 % to 33 %, the mean duration of artificial lung ventilation – from 14 ± 3.13 to 9.44 ± 3.15 bed-days, the rate of respiratory complications – from 85 % to 35 %, with 20 % decrease for severe bilateral polysegmental pneumonia. The patients with early surgical restoration of chest framework had lower ICU stay (by 2.3 bed-days) and lower hospital stay (by 5.6 days) in comparison with the comparison group. One month after the injuries the normal lung capacity and bronchial patency were identified more often (by 45 %) in the main group.
Conclusion: The offered treatment technique for patients with polytrauma, concurrent thoracic and spinal injuries, who received surgical restoration of chest framework, allows improving lung function.
References:

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- Flail chest injuries: a review of outcomes and treatment practices from the National Trauma Data Bank / N. Dehghan [et al.] // J. Trauma. - 2014. – Vol. 76. – P. 462-468.

Disclosure: No significant relationships.

P059

A CASE OF SEVERE POLYTRAUMA PATIENT WITH ABDOMINAL COMPARTMENT SYNDROME (ACS) AND ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS), SUCCESSFULLY TREATED BY VENO-VENOUS EXTRACORPOREAL MEMBRANE OXYGENATION (V-V ECMO) UNDERLYING OPEN ABDOMINAL MANAGEMENT

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Introduction: Providing ECMO care for severe blunt trauma patients is challenging.
Material and methods: Case presentation.
Results: 53-year-old male attacked by cattle was resuscitated by flight doctor and transported to our emergency department. Grade V hepatic injury, Grade III right renal injury, bilateral massive pulmonary contusion, pneumothorax and frail chest, and right massive hemothorax were diagnosed. Resuscitation with massive transfusion was provided for his severe hemorrhagic shock status and angioembolization for hepatic injury and open chest lobectomy and rib fixation were performed successfully. On the day 3, ventilation associated pneumonia was diagnosed and that was successfully treated by antibiotics. However, on the day 9, ventilation failure and acute kidney injury were developed and his intra-abdominal pressure represented 20 mmHg or more. ACS was diagnosed, and the cause of ACS was non-occlusive mesenteric ischemia. Urgent ileectomy was performed and open abdominal management was selected for the management for ACS and ACS-induced multiple organ failure. On the day 10, severe ARDS was diagnosed because of the overlap of the severe chest injuries and ACS-induced multiple organ failure. Ventilation failure was re-occurred and V-V ECMO was provided. The circuit was successfully management without anticoagulant and V-V ECMO was free on the day 14. His abdomen was completely closed on the day 16. He was discharged from ICU on the day 24.
Conclusion: We presented the case of severe polytrauma patient with ACS and ARDS who was successfully treated by V-V ECMO underlying open abdominal management. V-V ECMO may not be contraindication for severe polytrauma patients who undertake the open abdominal management.
References: 1. Muellenbach RM, Kredel M, Kunze E, et al. Prolonged heparin-free extracorporeal membrane oxygenation in multiple injured acute respiratory distress syndrome patients with traumatic brain injury.J Trauma Acute Care Surg 2012; 72: 1444-7.
Disclosure: No significant relationships.

P060

DAMAGE CONTROL RESUSCITATION STRATEGY IN A 12-YEAR OLD GIRL WITH SEVERE MULTIPLE TRAUMA (INJURY SEVERITY SCORE: 48)

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Introduction: Traffic accidents and falls are the most common cause of death in childhood. The correct primary assessment and resuscitation strategy are of highest importance in order to reduce mortality. The damage control resuscitation (DCR) strategy targets on the "lethal triad" of acute coagulopathy, hypothermia, and acidosis seen in exsanguinating trauma patients to restore and preserve the vital physiology.
Material and methods: Case We report a case of a 12-year old girl sustained severe multiple trauma (Injury Severity Score: 48) by a 20 m fall from a castle wall successfully treated with DCR strategy.
Results: The girl returned to school and retained her former sports levels after 6 months.
Conclusion: The DCR strategy with permissive hypotension, control of hypothermia, prevention of acidosis, minimization of crystalloid resuscitation and early use of blood products offers a rewarding treatment option in children who sustained severe multiple trauma. However, a general recommendation for standard application of this strategy cannot be made since predictive characteristics of the "exsanguinating syndrome" in children in which DCR strategy would be appropriate are not clearly identified yet. Generally, pediatric multiple trauma patients should be treated in approved trauma centers with proven expertise in pediatrics.
References:
Disclosure: No significant relationships.

P061

FROZEN ALLOGRAFT IN IIIB OPEN FRACTURE OF DISTAL FOREARM

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Introduction: The aim of this report is to share our experience with the appliance of the fibular frozen allograft at a primary trauma defect of the distal radius included the radio-carpal joint too.
Material and methods: The method was used in young patients at the age of 21 and 23. One of them was injured in a high energetic trauma – an accident with a motorcycle and the other one had gunshot injury. In the clinical practice this method is used in cases of giant cell tumor. The aim is a reconstruction of the defect to be done using a frozen allograft of the radial bone. At the beginning it is necessary to fix the fracture of the ulna bone with a DCP place and an external fixation is put on radio-carpal joint. Treatment of soft tissue injuries. Frozen graft must be fixation with DCP place to the rest radius bone. Wrist ligament reconstruction and fixation of the head of fibula with carpal bones using K-wires.
Results: The follow up ranges from 1-4 years (mean 2,5 years) At last follow up, the average combined range of motion was 110° with range varying from 60-125°. The average grip strength was 39 % in comparison to the contra- lateral side (range 21-78 %). The average union time was 3 months. We have not registered non-unions, graft fracture or infection.
Conclusion: Reconstruction with fibular frozen-allograft, fixation with DCP and transfixation of the fibular head and wrist ligament reconstruction minimizes the problem and gives satisfactory functional results.
References:
Disclosure: No significant relationships.

P062

THE DANGEROUS LIFE IN THE COUNTRYSIDE

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Introduction: Cervical trauma is one of the most challenging situations that a surgeon may face given the multiple organ systems (respiratory, vascular, neurological, gastrointestinal tract) at this location. A clear understanding of the anatomical relationships within the neck and injury mechanisms is the key to development of a appropriate diagnosis strategy and therapy.
Material and methods: Case report
Results: Case report Female patient, 88 years old. Admitted to the ER with a penetrating neck trauma (Zone II) after falling while carrying a sickle (cause of injury). The patient underwent urgent surgical exploration and was found an esophageal laceration which was sutured. The postoperative period was uneventful.
Conclusion: Knowledge of anatomy is critical to the success of an eventual intervention. The esophageal lesions, if simple, can be corrected with a suture (as it was done), but if there is a delay in diagnosis or significant loss of tissue, an esophagostomy may be the option.
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Disclosure: No significant relationships.

P063

A SUCCESS STORY IN A COMPLEX PELVIC TRAUMA

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Introduction: Pelvic trauma may be associated with several and different injuries at the same time, such as osteoarticular, neurovascular, gastrointestinal, genitourinary and others. That makes the need for a multi-disciplinary approach. Pelvic fractures are usually caused by high energy mechanisms of injury, being a prognostic indicator of multiple trauma.
Material and methods: Description of a patient with complex pelvic trauma.
Results: L.F.C., male, 19 years old, admitted to the ER after a motorcycle accident, with severe pelvic penetrating trauma: complex fracture and partial destruction of the anus and rectum. The patient was initially submitted to colostomy with mucous fistula, parcial suture and drainage of lacerations of the perineum and thigh, placement of fecal drainage device as a tutor and osteotaxis with pelvic external fixation. During hospitalization, several imaging exams were done, which confirmed a serious extent of the injury. It was also performed the definitive orthopedic surgery later on and he was discharged after 63 days of hospitalization, with the process of perineal healing taking place. Sixteen months after the accident, the patient was submitted to reconstruction of intestinal transit, with good clinical outcome, and finally fully recovered sphincter continence with pelvic physiotherapy.
Conclusion: The authors present a case report of a serious pelvic injury, which involved from the initial approach multiple specialties. The early treatment of perineal and anorectal injuries is essential for the contamination control, avoiding morbidity and late mortality, often requiring multiple interventions.
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Disclosure: No significant relationships.

P065

MINIMALLY INVASIVE FIXATION FOR VERTICALLY UNSTABLE PELVIC RING FRACTURES USING PRE-BENT M-SHAPED TRANS-ILIAC PLATES

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Introduction: The M-shaped trans-iliac plate is an anatomically designed pre-bent plate for posterior pelvic ring fixation and developed by Prof. Shirahama et al. Clinical results were reviewed with minimally invasive method using this implant for unstable pelvic ring fractures and the functional outcome was evaluated.
Material and methods: Between 2008 and September 2013, 11 patients with vertically unstable pelvic ring fractures were treated using an M-Shaped transiliac plate. 4 males and 7 females. The mean age: 40.8 (range, 17～63). 10 cases: fall, 1 case: traffic accident. 9 cases: psychiatric illness. AO classification, Dennis classification, and ISS were assessed. Fracture healing and functional outcome were evaluated by radiography and Majeed score.
Results: Bone union was achieved in all cases. AO classification; C1-3: 9 cases, C2-3: 1 case, C3-2: 1 case. Denis classification; Zone1: 5 cases, Zone2: 6 cases. No infection and wound trouble postoperatively. Average ISS: 42.2 (29-50) points. External fixation preoperatively: 8 cases. Motor deficits: 2 cases, and paresthesia only: 3 cases. The neuropathy was observed in 3/6 cases in Zone 2 of Denis classification. The average of Majeed score: 85.4 points in 7 traceable cases. Clinical grade: Excellent 5, Good 1, Fair 1. The Lumber burst fractures: 4 cases.
Conclusion: M-Shaped transiliac plate can provide rigid fixation with minimal invasion for vertically unstable pelvic fractures. The cases with Good and Poor in clinical grades were Denis 2 combined with lumber burst fracture and this combination might be the reason for the lower score of outcomes and these results were not correlated with ISS.
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Disclosure: No significant relationships.

P066

SECOND TIME TRANS-ARTERIAL EMBOLIZATION FOLLOWING SECOND TIME PELVIC PACKING FINALLY CONTROLLED THE HEMODYNAMIC STATUS OF UNSTABLE PELVIC FRACTURE OF POLYTRAUMA PATIENT. A CASE REPORT

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Introduction: We present a successfully recovered case of unstable pelvic fracture with polytrauma treated by repeated angiography and pelvic packing for the stability of hemodynamics.
Material and methods: A 50 year old female fell from the height of 10 m. She was in shock in spite of fluid and blood transfusion treatment. Unstable pelvic ring fracture was revealed and angiography was started immediately after the placement of a chest drain for the left hemo-pneumothorax. Arterial embolization could not control the bleeding and pelvic packing was performed with supra-acetabular external fixation and it subsided the shock status. Final diagnosis: unstable pelvic ring fracture with suicidal jumper's fracture, lumber spinal burst fractures, left proximal femur fracture, left olecranon fracture, right occipital lobe hematoma.
Results: Next day, gauzes were removed. However arterial bleeding was still noted and pelvic packing was tried again. Angiography was performed and bilateral internal iliac arteries were embolized. Gauzes were removed carefully again 48 hours after prior packing and active bleeding was not observed. At day 21, unstable pelvic ring fracture was fixed by spinal instrumentation. At day 31, the proximal femur fracture was fixed with cephalomedullary nail and the olecranon was stabilized by a LCP. She recovered without any major complications except left hemiplegia, which is still getting better and could do walking rehabilitation.
Conclusion: The timing of arteriography and embolization is controversial. The cautious, case by case approach is recommended including arteriography after the initial stabilization, pelvic packing, or both. A skilled radiologist is critically important and the surgical window should be carefully considered.
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Disclosure: No significant relationships.

P067

BILATERAL FLAIL CHEST: COMPARATIVE STUDY OF DIFFERENT OSTEOSYNTHESIS ON THE ANTERIOR CHEST WALL OF FRESH FROZEN CADAVERS

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Introduction: Bilateral flail chest injuries are challenging in treatment and comparatively often require an operative stabilization of the anterior chest wall to re-establish normal physiological conditions of the chest wall in shape and statics. Various procedures have been described which are technically sophisticated for the surgeon. Consequently there is an increasing interest in potentials of operative care and their effectiveness on the anterolateral chest wall.
Material and methods: 12 human cadavers were prepared and the natural Sternum Position (NP) was marked. A digital probe was fixed to the sternum at the height of the 4th intercostal space in order to measure and compare the stability of the thorax. Readings were taken in starting conditions and from every material combination of sternal displacement at 1, 2, 3, 4 and 5 cm sagittal distance from NP. Serial osteotomies were performed on 2 locations on ribs 2 - 8 to induce bilateral flail chest Afterwards the stabilization was achieved with different implants: - Transsternal metalstrut - Several combinations of locking plate fixation.
Results: The osteotomies lead to a subsidence of the sternum occurred to almost 75 mm from NP which corresponds to a maximal unstable situation. The unstable chest wall showed substantially more stabilization through the use of locking plates. Our material combinations showed a stability of up to 60 % of normal. The more ribs were treated osteosynthetically, the higher the stability of the chest wall.
Conclusion: Locking plate fixation offers anatomically realignment of the ribs whereas metal strut support only lifts up the chest wall, but could not provide realignment of the dislocated ribs.
References:

Disclosure: The Senior author has Consultant Agreement with DePuySynthes. He also joins the Thoracic expert Group of the AO Foundation. The other authors are not involved in any COI.

P068

ABDOMINAL SEPTIC SHOCK MORTALITY RATE DECREASES WITH THE USE OF DAMAGE CONTROL SURGERY

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Introduction: AIM. To compare the theoretical mortality rate of abdominal septic shock patients with the results obtained after the use of damage control surgery.
Material and methods: Material and methods. We present a prospective study from February 2013 to March 2015. 10 patients were included with the abdominal septic shock definition. We measured the following items: age, sex, smoker and drinker, abdominal septic shock etiology. The mortality rate before surgery was analyzed with the P-possum and index peritonitis Manheim scores. Which type of damage control surgery was performed and whether open abdomen was used or not was studied. We already analyzed if, after damage control surgery, vasoactive drugs dosage went down and the figures of early closure of abdominal Wall(less than 7 days) and mortality after 30 days of surgery.
Results: Results. The average age was 63.1(43-77). 50 % of patients suffered from obesity. And 0 % of patients had a abdominal septic shock due to an anastomosis leakage. The vasoactive drugs dosage went down and we performed a new anastomosis in 80 % of the patients. In 60 % of cases we closed the abdominal Wall early. Theoretical mortality rate of P-possum was 60.72 (30-86) and Index peritonitis Manheim was 27.9 (16-38). Our Mortality rate after 30 days was 20 %.
Conclusion: Conclusion. Damage control surgery in patients suffering from abdominal septic shock gets down mortality rate under 50 % of the theoretical mortality rate.
References:
Disclosure: No significant relationships.

P069

HANDLING OF THE ABDOMINAL WALL CLOSURE IN COMPLEX WOUNDS USING VACUUM THERAPY

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Introduction: Describe the handling of complex abdominal wounds using the vacuum therapy.
Material and methods: We describe 4 cases of final handling of abdominal wall closure using the vacuum system VAC. The studied parameters are as follows: sex, age, associated pathologies, clinic situation and present survival, kind of VAC therapy used, total time, latency period in between changes, added difficulties related to VAC therapy, hospital and intensive care stay, later monitoring and costs among others.
Results: Case #1. Female. 53 years old, septic symptoms due to a intestinal perforation after an eventroplasty Intraabdominal vacuum system VAC and later handling with abdominal wall VAC. Added difficulties:enteroatmospheric fistula. Case #2: Male. 59 years old. Septic symptoms alter leakage of small bowel anastomosis after Bricker procedure. Open abdomen and consecutive intraabdominal vacuum systems VAC. Later handling with abdominal wall VAC. Case #3: Male. 65 years old. Intestinal enteroatmospheric fistula with months of evolution. Handling of the infected soft tissues using vacuum system VAC with a good evolution of it. Case #4: Female. 63 years old . severe necrosis of epidermic and dermic tisúes alter eventroplasty. Handling of the infected soft tissues using vacuum system VAC with a good evolution of it.
Conclusion: The vacuum system can contribute in the handling of complex rounds, it supplies a lower number of cures, shorter and softer hospital stays for the patient. Iconography of the handling of the procedure.
Disclosure: No significant relationships.

P070

DAMAGE CONTROL ORTHOPAEDICS - CURRENT CONCEPT

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Introduction: DCO is a currently widely accepted concept for the early management of polytrauma patients. It aids in determining the therapeutic path of the multiply injured patients based on their classification as stable, borderline, unstable or "in extremis", focusing on the advantages of decreasing operative trauma and therefore the physiological consequences of a second hit on the injured body by means of swift temporary skeletal stabilization and shortened operative time, even when not all damages have been addressed, in patients at high risk for the systemic complications of trauma such as pulmonary thrombosis, ARDS and multiorgan failure.
Material and methods: For the past 3 years were treated 51 patients with severe polytrauma in border state. Methods of investigation are diagnostic - imaging, laboratory - actively monitored, not hemodynamic status, functional evaluation of respiratory function assessment deficit musculoskeletal systems.
Results: By definitive stabilization in these patients achieve a stable hemodynamic, stable saturation, without abnormal coagulation, normal body temperature without the need for a catecholamine maintenance, control bleeding, inhibition of the pathological inflammatory responses, non-vital excision of tissue, prevention of ischemia-reperfusion injury, analgesia.
Conclusion: Despite the achievements of modern medicine, mortality polytraumatic illness in intensive therapy wards in recent years

reduced a large percentage of the victims remain disabled. It is therefore necessary to conduct early rehabilitation to prevent complications, as the effects of severe combined injuries are serious and socially significant problem they often disabling sick for a long time, sometimes until the end of his life.

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Disclosure: No significant relationships.

P071

INTERVENTIONAL RADIOLOGICAL PROCEDURES FOR TRAUMA PATIENTS

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Introduction: In trauma patients, angio-embolisation can achieve haemostasis and salvage organs without the morbidity of surgery. Development of embolisation techniques has widened the indications for NOM. We present a current perspective on angiography and embolisation in trauma patients with blunt and/or penetrating trauma.
Material and methods: 160 patients, who applied due to trauma Depatment of Trauma and Emergency Surgery between January 2010 and August 2015, were enrolled into the study.Patients were evaluated with computed tomography angiography after first examination in emergency room.Patients were analyzed in terms of age,gender,mechanism of trauma,injured organ,degree of injury and therapy approach.
Results: 122 of the 160 patients (76 %) were male and 38 were female. The mean age of the patients was 23 years.122 patients (76 %) had a blunt and 38 (34 %) patients had a penetrating injury.16 patients (10 %) underwent surgery and 10 of these patients received an angiogram.During angiogram 2 patients had not interventional pathology and eight patients underwent embolization.140 patients were followed without any intervention.3 patients with grade 4 liver injury had an embolization to the segmental branches of hepatic artery,1 patient with grade 4 spleen injury had an embolization to the splenic artery,2 patients had an embolization to branches of renal artery,1 patients had an embolization to the 11th intercostal artery,1 patient had an embolization to the branches of the superior mesenteric artery and 1 patients with development of an arterioportal shunt had a shunt embolization.
Conclusion: Advances in computed tomography technology allow faster scanning times with improved image quality.These improvements mean that the indications for NOM are expanding.
Disclosure: No significant relationships.

P072

DAMAGE CONTROL FOR PELVIC FRACTURES IN POLYTRAUMA PATIENTS

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Introduction: Due to the complexity of the pelvic fractures, many therapeutic methods and implants have been used for stabilising the injuries. Unlike isolated fractures, in polytrauma, the type of the implant depends on the stability of the fracture as well as of the patient.
Material and methods: The authors retrospectively analyse 28 polytrauma patients with unstable pelvic fractures admitted between 01.01.2012- 01.01.2015 for pelvic fractures. The criteria were: demography, the stability of the fracture, the anatomical description of the fracture, the hemodinamical stability of the patients, the associated injuries and the main characteristics of the treatment: time from trauma to the hospital, time form admission to surgery, type of bony stabilisation (external, internal), local and general outcome.
Results: Unstable fractures were diagnosed either by CT (stable patients) or by intra-operative X ray followed by CT (unstable patients). When surgery was required, external fixation was used in 78 % of the patients within the first 8 hours, while internal stabilisation was usually delayed until the patient was stable. Death occurred in 8 cases, 6 due to associated injury, two due to pulmonary embolism.
Conclusion: Pelvic fractures stabilisation in polytrauma aims both mechanical and haemodinamical stability, thus requiring personalised decisions and implants, as well as a multidisciplinary team to asses and treat the patient.
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Disclosure: No significant relationships.

P073

DAMAGE CONTROL LAPAROTOMY (DCL) IN THE TREATMENT OF ABDOMINAL HEMORRHAGIC TRAUMA. IS IT STILL JUSTIFIED IN TIMES OF DAMAGE CONTROL RESUSCITATION (DCR)

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Introduction: Evolution in resuscitation protocols in polytrauma patients induces questioning on indications for Damage Control Laparotomy (DCL). Damage control resuscitation (DCR) is based on

early hemorraghe management and massive blood transfusion. The objective of this study is to evaluate consequences of DCR on indication for DCL, in patients sustaining abdominal hemorrhagic trauma.
Material and methods: A systematic review of international medical literature was performed from 2010 to 2015. Keywords we used were "DCR" AND "DCS" AND/OR "DCL".
Results: 5 main articles concerning the influence of DCR on DCL were considered (5/182).The ratio of performed DCL decreased from 39 to 8 % to the benefit of one shot surgery in certain retrospective studies, some having included more than 2500 patients. In contradiction, Cotton reported in 2011 an increase in the number of DCL in a series of 1317 laparotomies. In 2015, Srestha reported a series of 1412 blunt hepatic trauma patients. With the use of DCR, recourse to surgery was noticed from 46 to 26 % and survival improved from 73 to 94 %.
Conclusion: Some studies trend to show that DCR diminishes the recourse to DCL. This tendency is due to new protocols in DCR, that reduce iatrogenic coagulopathy, by introducing early pro hemostasis resuscitation. Indications and benefit of DCL remains however unchanged.
References:
Disclosure: No significant relationships.

P074

CONSERVATIVE TREATMENT OF COMBINED FLAIL CHEST INJURIES AND CLAVICULA FRACTURE – CHALLENGES AND PITFALLS IN COSTOCLAVICULAR INJURIES

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Introduction: Combinations of unstable chest wall injuries and ipsilateral fractures of the clavicle are mostly caused by a direct Impact to the chest wall from a lateral direction. Once the adducted arm is impinged from a lateral direction a typical midshaft fracture of the clavicle may commonly result. In case of severe Impact, the arm may crush the underlying ribs subsequently. Typically the anterior, lateral und posterior chest wall are involved in this injury as the typical regions. Since the chest wall is covered from strong muscles, dislocations of the ribfractures may result and thus lead to a deformity of the chest wall. Undislocated fractures are supposed to heal uneventfully.
Material and methods: Six representative patients were chosen and followed up during conservative Treatment of a costoclavicular injury including chest X-ray (1, 2, 6, 12 weeks). Two suffering from ribfractures anterior and lateral, two posterior and lateral und two involving all of the three regions. Conservative Treatment included analgetic therapy as well as training of the respiratory function while the patients were breathing spontaneously.
Results: All of the patients recieved a chest drain during the first week due to pleural effusions or pneumothorax. Three patients showed only little dislocations of fractures during follow up. With good functional outcome after 12 weeks. The othes showed severe deformity of the chest wall accompanied by a reduction of the chest cavity. Anterior and posterior ribs showed huched deformity whereas the lateral chest wall showed a severe impression. Patients were suffering from pain and restriction of the breathing.
Conclusion: Conservative treatment of costoclavicular injuries may be an option in undislocated fractures with reliable followup.
Disclosure: The first author has Consultant Agreement with DePuySynthes. He also joins the Thoracic expert Group of the AO Foundation. The other authors are not involved in any COI.

P075

SECONDARY OPERATIVE TREATMENT OF POSTTRAUMATIC CHEST WALL DEFORMITY AND CLAVICLE PSEUDARTHROSIS IN COSTOCLAVICULAR INJURY - A CASE REPORT

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Introduction: A 49 year old female fell on her right arm 18 months ago. She suffered from severe painful und dislocated nonunion of a clavicle fracture accompanied from an anterior hunch deformity of the chest wall and a deep lateral impression. Chest wall movement were restricted. The ribs showed dislocation up to a kink of 90 degrees. Conservative Treatment was exhausted.
Material and methods: Operative Treatment was carried out in a supine Position and under General anaesthesia. The deformity could be managed through an modified clavipectoral approach. Planned osteotomies were performed at the second, third and forth ribs followed by reduction to a anatomic shape of the chest wall and locked plate fixation. The clavicle was revised by resection of the pseudarthrosis, Transfer of cortispongious bone from the ribs and locked plate Fixation. The pectoral muscle was temporarily divided with respect to its direction of the Filaments.
Results: The wound healed uneventful. The deformity was no more visible. The chest wall moved without any restrictions. Clavicle and ribs healed uneventfully. The patient suffered from chronic pain for more than 6 months.
Conclusion: posttraumatic deformities of the chest wall can be managed by open surgery with incisions to the ribs and subsequent Fixation. Early operative Treatment of dislocated rib fractures prevents from painful deformities and pseudarthrosis. An Impression of the lateral chest wall leeds to severe dislocation of the clavicle due to a subsidence of the arm.
Disclosure: The first author has consultant agreement with DePuySynthes. He also joins the Thoracic expert Group of the AO Foundation. The other authors are not involved in any COI.

P076

HEMODYNAMICALLY UNSTABLE PELVIC TRAUMA: FIVE YEAR EXPERIENCE IN THE ERA OF PREPERITONEAL PELVIC PACKING

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Introduction: Hemodynamically unstable pelvic trauma is challenging even for Level I Trauma Centers. Papa Giovanni XXIII Hospital is a 1000 bed facility with all specialities. In 2011 Trauma

Team and preperitoneal pelvic packing (PPP) were introduced in our Hospital. This is a retrospective review of our experience.
Material and methods: Retrospective review of our database from 9/2011 to 09/2015. Values are expressed in median and interquartile range.
Results: From 9/2011 to 9/2015 we treated 24 patients. Median age was 51 years (42-64) with an Injury Severity Score of 34 (26-41). At the arrival in the Emergency Room systolic blood pressure was 94 (70-100), heart rate was 115 (90-129), base excess -7.5 (-10.7 - -4.5), pH 7.24 (7.20-7.28). Resuscitation was accomplished with 1250 ml (1000-2375) of crystalloids in the first 6 hours, 11 U (7-17) of packed red blood cell, 9 U (4-12) of fresh frozen plasma and 2 U (1-2.5) of platelets in the first 24 hours. PPP was done in 20 patients, while in 2 external fixation was sufficient to control bleeding and in other 2 patients angio was the only procedure. Time to procedure was 71 (53-187) minutes from arrival. Time to emergent PPP was 63 (58-101). Mortality was 29.2 %, mainly for traumatic coagulopathy, severe brain injury and multitrauma. Local control of bleeding was good.
Conclusion: Hemodynamically unstable pelvic trauma remains a big challenge for trauma centers. We believe that Trauma Team and PPP produced a huge contribution to better management of these patients.
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Disclosure: No significant relationships.

P077

THE PATTERN AND MANAGEMENT OF DEGLOVING INJURIES: A SINGLE INSTITUTE EXPERIENCE

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Introduction: Degloving injuries (DIs) are serious injuries resulting from detachment of the skin and subcutaneous tissue from the underlying muscle and fascia. We aimed to evaluate the frequency, pattern, management and outcome of DIs in a single institute in Qatar.
Material and methods: A retrospective review of trauma registry data was performed for all patients diagnosed with DIs between 2011 and 2013.
Results: A total of 178 DIs patients were identified with mean age of 30.5±13 years (males = 162). Motor vehicle crash (MVC) was the main mechanism of injury (54.5 %) followed by falls (12.9 %). Around 80 % in had open DIs. Lower limbs were more frequently affected (44 %) followed by head and neck region (37.3 %). Traumatic brain and spinal injuries were found in 23.0 % and 14.2 % cases, respectively. Myoglobin was consistently elevated with an average serum level of 846 ng/ml. Early debridement was performed in 2 thirds of cases. Intermediate closed drainage was done under ultrasound guidance for 7 patients out of whom recurrence occurred in 4 patients who had to undergo closed serial drainage for recollection. The definitive treatment for these patients was finally a proper debridement with or without vacuum-assisted closure. One patient had to undergo serial drainages over 3 months before final resolution. Infection (n = 7, 4.0 %), hematoma (n = 4,2.3 %) and skin necrosis (n = 2,1.1 %) were rare. Mortality (overall;9 %) was higher in closed DIs (19.4 % vs. 6.3 %, p = 0.02).
Conclusion: DIs are mostly underestimated, with the closed ones usually missed at the initial presentation. Treatment guidelines are not well established and therefore further studies are warranted.
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Disclosure: No significant relationships.

P078

SURGERY IN EMERGENCY FOR TRAUMA PATIENTS: EPIDEMIOLOGICAL CONSIDERATION FROM A FIRST LEVEL ITALIAN TRAUMA CENTER

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Introduction: Management of polytrauma patients requires multidisciplinary skills. Trauma is a surgical pathology but a trauma patient not always requires surgical intervention. The purpose of this work is to raise the incidence of emergency surgeries in trauma patients of a first level trauma center and to highlight the role of the trauma surgeon.
Material and methods: Results were extrapolated from the prospective register of trauma, analyzing data about patients >18 y.o. during a 15 months period. Surgery was recorded as in emergency if patients went directly in OR from the shock room.
Results: During the period were recorded 868 adult patients with multiple trauma evaluated by the trauma team; of these 496 (57 %) were hospitalized. In 64 (7.3 %) was placed a chest tube in shock room. 91 pazienti (10 %) required surgery in emergency. In these patients, the mean age was 53.07 years, 75 % male. 67 % of patients had a CT scan before surgery. The mean ISS was 24.8. Were recorded 37(40.6 %) laparotomy, 20(21.9 %) angiography, 16(17:58 %) craniotomies, 6(6:59 %) pelvic packing, 4(4.39 %) limb revascularization, 4(4.39 %) hemostasis head and neck, 3(3.29 %) placements transducer PIC, 2(2.19 %) thoracotomy and 2(2.19 %) external pelvic-fixation; in 8 patients they were performed two or more emergency interventions. The mortality was of 20.8 %, after an average time of 1.88 days.
Conclusion: Only 10 % of trauma patients require surgery in emergency. It's clear the need for the trauma tem and the surgeon to have not only surgical skills but also non technical skill to coordinate the multidisciplinary team composed of many specialists.
References:
Disclosure: No significant relationships.

P079

COMPUTED TOMOGRAPHY IN TRAUMA – DO SCOOP STRETCHERS INCREASE RADIATION EXPOSURE

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Introduction: A major advancement of trauma care has been the rapid access to trauma series CT scanning, to support primary survey assessment of major trauma patients. To facilitate patient transfer and practice principles of minimal patient handling, pre-hospital and emergency medicine services frequently use spinal immobilisation or transfer devices. However, concerns exist regarding the increased material density of these devices raising the dose of radiation exposure to patients.
Material and methods: A retrospective cohort study was conducted for a 2 year period, from 2013 – 2015, evaluating trauma series CT scans for the effect of the FERNO 65-EXL-R Scoop Stretcher on scan radiation dosage. Quantitative analysis was performed using data from electronic hospital records. Statistical comparison was made between patients scanned with and without the scoop stretcher in situ.
Results: Over 300 scans were analysed having satisfied study entry criteria. The scoop stretcher was found to produce only an overall 1 % increase in dose requirement when compared to trauma patients scanned without. This was true even when corrected for patient BMI. Radiation dose differences are shown not to be statistically significant. When specifically assessing the neck to pelvis region, a 5 % dose increase was seen, likely to be due to the aluminium rods of the scoop stretcher.
Conclusion: Current design scoop stretchers are safe for use in trauma patients undergoing trauma series CT scans, especially given the clinical advantage to be gained from minimal patient handling following poly-trauma. Future designs should seek to eliminate the use of metal components, in order to minimise excessive radiation exposure.
References:
Disclosure: No significant relationships.

P080

ACUTE FOOT PAIN CLINICAL PRESENTATION OF INVASIVE STREPTOCOCCUS IN A CHILD WITH CHICKEN POX

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Introduction: Clinical case of 4 yrs old female child brought by her mum with left foot pain and background history of clinical manifestation of chicken pox. clinical examination were normal, and X-ray of the foot was performed to exclude soft tissue or bone infection due to lack of clinical feature patient was discharged home less than16 hrs of hospital discharge, patient developed fatal outcome. Post mortem revealed varicella and invasive streptococcus in the body.
Material and methods: Clinical case report
Results: Case fatality is discussed in clinically well child.
Conclusion: Varicella and invasive streptoccccus infection in preschool children rare, but recognised complication. Case fatality are known a high index of suspicion is necessary to diagnosed this condition. This case highlight the complexity surrounding streptococcus infection in a healthy child. A clinically well child may die with sudden toxic shock syndrome following and invasive infection.
References:
Disclosure: No significant relationships.

P081

COLON DEGLOVING RESULTING FROM SEAT BELT SYNDROME - A POTENTIALLY LIFE-THREATENING INJURY.

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Introduction: Blunt abdominal trauma represents 5 % of colon injuries, most frequently in the mobile segments of the colon. These injuries may compromise the bowel wall and/or mesentery. Of these, colonic deglovement associated with seat belt sign are quite rare. Mucosal ischemia and perforation may occur if not promptly identified.
Material and methods: We report two cases of degloving colonic injuries as a result of blunt trauma to the abdomen after motor vehicle accidents, one being a child. Both patients had the seat belt sign. Moreover, bothe were treated surgically with resection and primary anastomosis.
Results: A 5-year-old female patient was involved in a lateral vehicel collision. She had a two-point seat belt. She arrived both hemodinamically and neurologically intact. Whole body CT showed free fluid. At diagnostic laparoscopy, a colonic degloving was found. Diagnostic laparoscopy was carried on. The second patient was a 45-year-old male involved in a car accident, arriving with tachicardia and pallor. After stabilization, whole body CT showed ribs and sternum fractures, left pneumothorax and free fluid. Upon surgery, a 25 cm long segment wa degloved. Both patients were finally managed with laparotomy, resection of the injured colonic segment, and primary anastomosis. There were no post-operative complications.
Conclusion: Colonic deglovement injuries as a result of blunt trauma are rare, specially in children. The diagnosis and management of these situations may be delayed if the clinician does not have a high index of suspicion. The presence of the seat belt sign warrants further evaluation. Prompt identification of such scenarios can improve both morbidity and moratlity.
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Disclosure: No significant relationships.

P082

CLASSIFICATION, DIAGNOSIS AND TREATMENT OF FACIAL FRACTURES IN SEVERELY INJURED PATIENTS

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Introduction: Preclinical as well as in the emergency room the management of severely injured patients with complex facial fractures may be more difficult by compromising of the respiratory path. Besides, it is very important to figure out associated injuries of the eye and its nerval structures like the optic nerve. The aim of this study is to assess the frequency of injuries and to highlight potential difficulties in the management of these injuries.
Material and methods: In a period of 2011- 2013 we included 623 patients with a ISS $\geq$9 in our database of severely injured patients which were analyzed in retrospect. 18,8 % of these showed facial fractures. These were split into central, lateral and centrolateral midfacial fractures as well as in isolated fractures. The radiological diagnosis was carried out using thin-slice CT.
Results: The average age, the severity of injury and mortality among patients with facial fractures did not differ compared to the overall population (47,3 $\pm$ 23,3 vs. 46,8 $\pm$ 22,0 years; 24,6 $\pm$ 13,1 vs. 23,0 $\pm$ 12,8; 11,1 % vs. 13,8 %). The rate of intubation in the emergency room by patients with facial fractures were 17,6 % as opposed to a lower rate in the overall population at 10 %. No difference was seen in the hemoglobin values and arterial oxygen saturation. An optic nerve lesion was presented in 3.4 %.
Conclusion: There are 20 % facial fractures in severely injured patients. The relatively high intubation in difficult airway situation requires adequate preparation in the emergency why a close interdisciplinary cooperation with colleagues of the oral and maxillofacial surgery must be guaranteed.
References:
Disclosure: No significant relationships.

P083

INCIDENCE, CHARACTERISTICS AND THERAPY OF A PROLONGED AIR LEAK AFTER BLUNT THORACIC TRAUMA IN PATIENTS WITH POLYTRAUMA

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Introduction: Precise diagnostics and an adequate therapeutic approach are mandatory in the treatment of a prolonged air leak in polytrauma patients with a blunt thoracic trauma. The study aimed to evaluate the incidence, characteristics and management of a prolonged air leak following this injury.
Material and methods: Data of 110 polytraumatized patients were elaborated retrospectively. Fifty-four patients with a pneumothorax and initial treatment by chest tube placement were assigned into two groups. Group A: air leak cessation within 5 days. Group B: air leak cessation on the sixth day or later. A detailed data evaluation on injury pattern, chest wall injuries, duration of air leak, and reason for drainage maintenance in place hospital length of stay, ICU stay, ventilator days, type and treatment as well as the delay of an operative intervention were analyzed.
Results: In 7 cases a prolonged air leak occurred. We observed spontaneous air leak cessation in all these patients after 7.7 days in average. A shorter length of stay in absence of a prolonged air leak was statistically significant ($p = 0.03$). Operative intervention was indicated in 9 patients (8 %). Surgery was performed after 1.8 days in average when severe pulmonal lacerations were suspected and the patient's condition was suitable for a thoracic surgical procedure.
Conclusion: Early recognition of a severe parenchymatous laceration and consecutive operative intervention leads to shorter hospital stays. Spontaneous cessation of an air leak can be expected within 12 days when optimal chest tube management is applied.
References:
Disclosure: No significant relationships.

P084

BIOCHEMICAL CORRELATIONS IN POLYTRAUMA PATIENTS WITH FEMORAL FRACTURES

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Introduction: Femoral fractures in polytrauma patients are challenging since both the fractures and their treatment have impact upon the patients. Early stabilization is an absolute indication, but the type of stabilization (Early Total Care ETC or Damage Control Surgery DCS) is to be carefully chosen. The purpose of this study is to evaluate weather biochemical markers can be associated with the outcome of the patients after a method or the other.
Material and methods: This prospective study evaluates 26 polytrauma patients with femoral fractures, treated between 1.01.2015-1.06.2015, 14 by intramedullary nailing (IMN), 12 by DCOS. Hemoglobin value and inflammatory markers (leucocytes, ESR, fibrinogen, CRP) together with IL1 and IL 6 are analysed in order to evaluate weather there is any correlation between them and the incidence of hospital stay and general complications (death, MSOF, ARDS).
Results: The results show that the most reliable informations are given by CRP, IL1 and IL6; statistic analysis also revealed a significant correlation between the incidence of complications and that of initial anemia and its resistance to treatment. The rates of MSOF and that of ARDS were comparable for the ETC and DCS groups but they were significantly influenced by anemia and persistent inflammation.
Conclusion: Clinical and biochemical criteria has been proven to be useful in polytrauma patients with femoral fractures. Our results suggest that biochemical markers are useful for establishing different steps of treatment.

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Disclosure: No significant relationships.

P085

SUPRACONDYLAR FRACTURES: COMPLIANCE WITH BOAST GUIDELINES; EXPERIENCE OF A DISTRICT GENERAL HOSPITAL

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Introduction: Supracondylar fractures are the most common paediatric elbow fracture and the most problematic because of the potential for neurovascular compremise. The British Orthopaedic Association, Standards for Trauma guidelines set out recommendations for diagnosis, management and follow up of these patients. We have looked at how management in our district general hospital compares to these recommendations.
Material and methods: Data was collected over twelve months retrospectively, for all paediatric, displaced supracondylar fractures. Notes were reviewed, looking at pre-operative assessment, operative documentation and post-operative plans. These were compared to the current BOAST 11 guidelines.
Results: 26 paediatric patients were included, 13 males and 13 females. Pre-operative neurovascular status was documented in 92 % of patients. Surgical stabilisation was performed in 20 patients. Crossed, 1.6 mm K-wires were the preferred choice of fixation. 73 % of patients had post operative neurovascular status documented, and 54 % had post-operative radiographs within the recommended time period. Only one patient had the K-wires removed within the recommended period, but only four patients required more than two follow ups.
Conclusion: Appropriate documentation is one of the most significant barriers to compliance with the BOAST 11 guidelines. The nature of surgical stabilisation is heavily influence by surgeon preference. Post operative care and follow-up was delayed in the majority of patients, althought all patients were followed up correctly. Education and re-evaluation is required to improve compliance in all areas of peri-operative care.
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Disclosure: No significant relationships.

P086

LIFE-SAVING PROCEDURES IN TRAUMA : WHAT DOES EVERY TRAUMA SURGEON NEED TO KNOW?

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Introduction: Early hospital management of severe trauma must be protocolised to reduce the mortality. In unstable patients, the hemostasis should occur as early as possible to reduce the morbid consequences of post-traumatic shock.
Material and methods: In case of ventilatory, circulatory or neurological distress, some surgical procedures can save life and should be performed without delay by the trauma surgeon or any surgeon under exceptional condition if necessary. We describe here the few life-saving surgical procedures that are necessary to deal with these difficult situations.
Results: Some of them are very basic, others are much more complex : invasive access of upper airway, decompressive thoracostomy, resuscitative or hemostatic thoracotomy, damage control laparotomy, preperitoneal pelvic packing and C-clamp exofixation pelvic, vascular shunt, decompressive craniotomy. All of these procedures are feasible for a general surgeon, but require versatile experience and prior training.
Conclusion: Early management of severe trauma requires anticipation and experience. In unstable patients, some life-saving surgical procedures are needed and must be learned by any trauma surgeon.
References:
Disclosure: No significant relationships.

P087

INTERNAL ILIAC ARTERY LIGATION AND PREPERITONEAL PELVIC PACKING AS A DAMAGE CONTROL ADJUNCT IN MANAGEMENT OF PATIENTS WITH HEMODYNAMICALLY UNSTABLE PELVIC FRACTURES

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Introduction: The optimal management strategy for hemodynamically unstable pelvic fractures remains controversial. Herein, we report an early experience of internal iliac artery ligation and preperitoneal pelvic packing as a damage control adjunct in patients with hemodynamically unstable pelvic fractures.
Material and methods: We reviewed the medical records of four patients with hemodynamically unstable pelvic fractures underwent internal iliac artery ligation with preperitoneal pelvic packing. Internal iliac artery ligation was performed via hockey-stick shaped flank incision just as in kidney transplantation. Another infra-umbilical low mid-line incision was made for packing and the pelvis was directly packed with pads and hemostatic agents compactly.
Results: Lowest systolic blood pressure and hemoglobin level before operation was 60 (50-70) mmHg and 7.65 (7.1-8.5) g/dl. Mean time to operation and operation time was 105 (85-120) minutes and 95 (75-130) minutes. There were no procedure related complications. Among them, three patients were survived after operation and one patient died in ICU because of sudden cardiac arrest during the first 24 hours

from operation. However, there was no evidence of hypovolemia before arrest in that patient who died.
Conclusion: Our experience illustrates the potential role of internal iliac artery ligation and preperitoneal pelvic packing for the treatment of exsanguinating pelvic hemorrhage. This approach can be used rapidly and effectively as a damage control technique to hinder arterial pelvic inflow and reduce venous bleeding in an effort to control massive pelvic hemorrhage. Further study with more patients and long-term follow-up is required to determine the appropriate selection criteria for this potentially life-saving maneuver.
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Disclosure: No significant relationships.

P088

PRINCIPLES OF SURGERY IN NBC MASS CASUALTIES, CONTAMINATED PATIENTS AND ENVIRONMENT

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Introduction: The demonstration of the necessary principles of surgical procedures and operations and management of NBC contaminated patients in order to preserve their lives and protect the medical personnel from contamination.
Material and methods: Review of the literature and study of the experience taken during the last military and NBC operations that took place in Afghanistan, Libya and Syria. Analysis of the plan of Hellenic Armed Forces for the treatment of NBC incidents and cases during medical crises.
Results: Decontamination of patients is of the most vital importance before proceeding in surgical treatment. Special measures regarding the contaminated disposables, routes and hospitalization of these patients should be taken. The effects of NBC factors on vessels should be serious taken in consideration during the decision making for treatment.
Conclusion: NBC threats and environment can cause problems during treating surgical diseases. The knowledge of the essential principles for the treatment of such cases can help and enhance vitality of patients who suffer such problems.
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Disclosure: No significant relationships.

P089

DEVELOPING A TIERED TRAUMA CALL SYSTEM AT A UK MAJOR TRAUMA CENTRE

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Introduction: Increased numbers of patients at Major Trauma Centres puts pressure on speciality teams attending trauma calls in the Emergency Department (ED). The aim of this study was to develop and evaluate a tiered trauma call system that reduces the impact of these patients on specialities by providing response by the major trauma service to low acuity patients whilst Consultant delivered level of care for the most seriously injured patients.
Material and methods: Retrospective data from the East Midlands Major Trauma Centre (EMMTC) database was used to define criteria for three trauma levels, code Green, Amber and Red, with code red activating the highest level of response. The tiered system was rolled out in January 2015 and prospective data collected for trauma called patients to August 2015.
Results: Of 1082 of trauma calls, 7 %, 67 % and 26 % were Code Red, Amber and Green respectively. 2.8 % were escalated and 3.4 % de-escalated from the initial trauma call level. Code Red criteria showed 66 % sensitivity, 84 % specificity and 83 % overall accuracy at triaging patients to this level. The number of trauma calls attended by the acute specialities was reduced by 26 %, with an estimated 293 hours saved per month.
Conclusion: The tiered trauma call system reduced the impact of trauma calls on speciality teams whilst providing an enhanced level of patient care for seriously injured patients and minimal impact on ED. Whilst the Code Red criteria showed high overall accuracy, further data and evaluation is required to refine these criteria.
References:
Disclosure: No significant relationships.

P090

TREATMENT STRATEGY FOR BLUNT CEREBROVASCULAR INJURY: INDICATION AND EFFECTIVENESS OF ENDOVASCULAR TREATMENT

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Introduction: Blunt cerebrovascular injuries (BCVIs) are rare but potentially devastating events. Recent reports have suggested that BCVI occurs in approximately 1 % of all blunt trauma patients with a resultant neurologic morbidity of up to 80 % and associated mortality of up to 40 %. The optimal management strategy for patients with these lesions is not yet established.

Material and methods: From April 2011 through March 2015, patients were screened for BCVI if they met any one or more of the institutional screening criteria and underwent multi-detector computed tomography angiography (MDCTA) or magnetic resonance angiography (MRA). The types of injuries were morphologically categorized according to the Denver grading scale. Endovascular treatment was performed in patients with the need for cervical realignment in the acute phase or in those with multiple injuries. The mechanism of injuries, demographics, clinical findings, management of BCVI, and prognoses were evaluated retrospectively.
Results: Fourteen patients with BCVI were identified from a total of 632 blunt trauma admissions (2.2 % incidence). Ten patients (71.4 %) underwent endovascular treatment for their BCVI without complications. Among these 10 patients, there were seven grade IV vertebral artery injuries (VAI), one grade II VAI, one grade III carotid artery injury (CAI), and one grade V CAI. Ischemic stroke was observed in one patient (7.1 %) suffering from bilateral grade IIs CAI.
Conclusion: Although antithrombotic therapy with heparin or antiplatelets is the standard treatment for BCVI, application of endovascular treatment may be effective for preventing secondary stroke in patients who require cervical realignment or in whom antithrombotic therapy is prohibited because of hemorrhagic complications.
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Disclosure: No significant relationships.

P091

MANAGEMENT OF A MASS CASUALTIES INCIDENT FROM A ROLE 3 GENERAL HOSPITAL

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Introduction: The presentation of the experience of the 1st Surgery Clinic of Aristotle University of Thessaloniki held in Thessaloniki General Hospital "Papageorgiou" in the management of a mass casualties incident that took place in January 7th, 2014.
Material and methods: It is a road accident between a track and a bus with 26 injured people and 2 dead who died immediately on scene. All injured were medevaced in the Emergency Department of "Papageorgiou" General Hospital of Thessaloniki and managed/treated from the medical personnel of 1st Surgery Clinic AUTH who were on duty that day.
Results: In one injured emergency right knee amputation was essential as damage control surgery and took place in the ED room due to the injured unstability. 8 patients had to be hospitalized and 4 of them underwent a surgical operation up to 24 hours after entering the clinic, through exploration laparotomy. All patients survived and were discharged up to the 7th post operational day.
Conclusion: The management and handling of a mass casualties incident from a Role 3 civilian Hospital is a challenging issue. Readiness, knowledge of the procedures, roles and duties, the correct use of triage criteria, the early understanding of life threatening situations, efficiency of means and personnel, cooperation between all involved staff are of crucial importance for the successful outcome of these situations. Continuous training and realistic simulation exercises can reduce the stress level of medical staff when practicing in real procedures and maintain readiness level in high quality standards.
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Disclosure: No significant relationships.

P092

BETTER SURVIVAL IN PREMENOPAUSAL WOMEN AFTER POLYTRAUMA

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Introduction: Over the years several clinical studies showed inconclusive outcome regarding gender based survival after polytrauma. Experimental animal studies showed a protective role of female hormones. The objective of this study was to examine the influence of age, gender, comorbidity and trauma scores on survival in polytrauma patients.
Material and methods: Polytrauma is defined by the presence of two or more injuries that are potentially life threatening. This retrospective study included a total of 317 polytrauma patients over the period of 2008 till 2012. The primary endpoint was mortality within 30 days. Secondary endpoints were demographics, comorbidity and trauma scores at the time of the trauma.
Results: The median age was 47(OQR 28-64). Mortality was 16.4 %, equally over man and women. Univariate analysis showed no significant effect of gender on the outcome ($p = 0.126$) in the overall group as well as after stratification for age with a cut-off at 50 years ($p = 0.230$ at <50 yr and $p = 0.356$ at >50 yrs). Multivariate analysis showed an overall effect of comorbidity ($p = 0.018$), the trauma and injury severity score (TRISS) correlated with outcome ($p = 0.001$). After stratification for age (50 yrs) gender showed to have a significant effect ($p = 0.02$), which was lost above 50 ($p = 0.0869$). Comorbidity is only a significant factor above 50 years ($p = 0.034$).
Conclusion: Females under 50 have a significant better survival compared to males. This effect is lost above 50 years. This might indicate a role of the female hormones. Comorbidity has a significant effect above 50 years.
References:
Disclosure: No significant relationships.

P093

AXILAR BLUNT TRAUMA

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Introduction: Trauma related axillary vascular injuries is generally associated with high morbidity and mortality rates. Although most of patients who are admitted to trauma centers sustain a blunt mechanism of injury, blunt vascular trauma is an uncommon diagnosis. In the early period after blunt trauma of the upper limb, progressive signs of vascular compromise may disappear because of collateral circulation even if the distal pulses are absent. Arteriography has assumed increasing importance in defining the site and extent of arterial injuries.
Material and methods: Case report.
Results: We report a case of a 59 year-old male admitted at emergency department after a tree fall on him presenting multiple traumatic injuries including right upper limb blunt trauma with clavicle, scapula and humeral fractures. He presented a palor and pulseless extremity with parestesis and paralysis indicating concomitant vascular and neurological impairment. Computed tomographic angiogram revealed complete occlusion of the axillary artery. Urgent surgical intervention was performed with exploration and repair of axillary artery and fracture fixation. Repair of the axillary artery was successfully done with interposition grafting. Postprocedure pulsations were present in the upper limb and subsequent angiography demonstrated no injure of distal extremity arteries.
Conclusion: Failure to early diagnose arterial injuries can lead to irreversible ischemic changes or death. The most effective treatment for such injuries is early exploration and re-establishment of arterial continuity. Nevertheless, long-term outcome of upper limb injury not only depends on the vascular injury which can be successfully managed, but upon the outcome of the associated nerve injuries.
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Disclosure: No significant relationships.

P094

ASSESSMENT OF SAFE DEFINITIVE SURGERY FOR MULTIPLY INJURED PATIENTS – WHY ONE PARAMETER IS NOT ENOUGH

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Introduction: Among the conventional parameters for the assessment of polytrauma patients, those associated with the triad of death appear to be widely used. We assessed whether other parameters might be of use as well for identification of patients at risk of developing complications.
Material and methods: Population based trauma registry. Inclusion criteria were: age >16 years, and Abbreviated Injury Score (AIS) >3 points) and treated in the intensive care unit (or Injury Severity Score (ISS) >16 points. The primary endpoint was hospital mortality. Patients were graded according their risk of death (stable patients: low risk of death (5-14 % mortality), intermediate risk patients (15-39 % mortality) and high risk (>40 %). Conventional clinical parameters on admission were assessed to assess their relevance to classify patients into these categories. Statistical analysis included univariate analysis.
Results: 11.436 patients were included, the mean ISS was 22.7 ± 11.2 points, 73 % male, 95.6 % blunt injuries. Parameters associated with a mortality rate of 15-39 % were; systolic blood pressure on admission (range 76-90 mmHg), INR (range 1.4-2.0), base deficit (range 8-10), NISS (range 35-49 points) and packed red blood cells administered (range 3-14). Two or more intermediate risk pathological changes were associated with a borderline condition and more than one high risk pathological change was associated with an unstable condition.
Conclusion: The best conventional parameters to assess polytraumatized patients in borderline and unstable conditions are admission systolic blood pressure, base deficit, INR, NISS and numbers of transfused units of red blood cells administered.
References:
Disclosure: No significant relationships.

P095

MANAGEMENT OF ANO-RECTAL INJURIES IN POLYTRAUMA PATIENTS

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Introduction: Traumatic lesions of the rectum, perineum and anus are rare but difficult to treat, requiring experience in terms of trauma and colorectal surgery.
Material and methods: Case report of two patients admitted in Emergency Hospital of Bucharest.
Results: We present two cases managed differently with and without colostomy. First case a male patient, 27 years old, bicyclist victim of a car accident, admitted to our hospital in emergency setting for right inguinal open wound with extension to ano-rectal region and pelvi-subperitoneal space, complex pelvic trauma and lower limb fractures (ISS = 29). The patient was transported directly to the operating room. Perineal packing was performed with external pelvic fixation and lower limb fractures reduction along with external fixation in the same time. The clinical evolution was favourable, the patient being referred to a lower level local medical centre for continuation of the therapy. Second case also a male patient 35 years old, crushed by a tree, transferred to Emergency Hospital with a pelvic fracture and deep gap, about 20 × 10 cm, in the perineum, with the anus and

rectum displaced from their original site. Anal re-implantation was performed, suturing the median raphe, with pelvic packing and then inserting two pelvic drainage tubes, left colostomy and pelvic stabilization with a pelvic binding for bleeding control. The patient is going on recovery time.
Conclusion: The assessment and management of pelvic trauma with ano-rectal injuries requires a multifaceted approach involving orthopedics and the trauma surgeon.
References:
Disclosure: No significant relationships.

P096

THE ROLE OF CONTRAST-ENHANCED SPIRAL CT IMAGING IN THORACIC TRAUMA ASSOCIATED WITH AORTIC ANEURYSM

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Introduction: Traumatic aortic rupture is a pathological entity with a high mortality. Blunt chest trauma accounts for 90 % of chest trauma in the civilian population in Europe and the United States and causes 20 % of trauma-related deaths. Missed aortic injuries can rupture and lead to subsequent death of the patient.
Material and methods: Retrospective study of the patients admitted in a Level I Trauma Centre, diagnosed with aortic aneurysm identified with contrast-enhanced spiral CT imaging.
Results: Between 2012 and 2015, 10 patients were detected with thoracic trauma and aortic lesions. Most of the patients were younger, median age 40 years old. For all these patients, a whole body CT scan was performed, and it was founded a saccular aneurysm of the ascending aorta closed to the aortic arch without leaking of contrast substance. Only for two patients we found the seat belt sign on the anterior thoracic wall - after primary preserving-life measures, the patients were referred to the cardiothoracic surgeons to repair the lesion.
Conclusion: The helical CT evaluation of the mediastinum should be performed in all patients who undergo blunt thoracic trauma, irrespective of chest radiographic findings. Chest CT scan in all patients with a history of motor vehicle accident is highly recommended on the admittance.
References:
Disclosure: No significant relationships.

JOINT REPLACEMENT IN FRACTURE CARE

P097

COMPARISON OF OCM AND POSTEROLATERAL APPROACH IN THE BHA

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Introduction: Anterolateral approach is less invasive to the muscle and advantageous to getting early gain-function, the pain after surgery and the dislocation prevention as compared to the Posterolateral approach in the BHA for the femoral neck fractures. We compare OCM (anterolateral muscle sparing approach in the lateral position) with the posterolateral approach in the BHA for the femoral neck fracture.
Material and methods: BHA operated with OCM 40 (below OCM group) and PL 40 (below PL group) are compared for surgery time, bleeding during surgery, Hb before and after surgery, CK and LDH after surgery, time for starting walker and T-cane walking, length of hospital stay and complications.
Results: OCM group is significantly better results in bleeding during surgery, Hb before and after surgery, CK after surgery, time for starting walker and length of hospital stay as compared to PL group. No significant difference in the operative time and complications between two groups was observed. As for complications, each group has one proximal femoral fracture and PL group has a cerebral infarction after surgery.
Conclusion: OCM is a good approach meets resent aging society and medical economics as compared to PL approach, because OCM, muscle sparing approach in the lateral position is minimally invasive, can make early ADL recovery and needs no strict instruction for dislocation limb position for elderly dementia patients.
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Disclosure: No significant relationships.

P098

MINIMAL INVASIVE INTRAMEDULLARY K-WIRE FIXATION FOR DISPLACED METACARPAL BONE FRACTURES; RESULTS OF 79 CASES

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Introduction: Metacarpal bone fractures are commonly seen in the emergency department. Current treatment still remains controversial. Different surgical techniques have been described. This study describes a minimal invasive technique with intramedullary use of k-wires for both subcapital and shaft fractures of the second to fifth metacarpal bone.
Material and methods: A restrospective observational cohort study was performed. Patients who underwent surgery with this specific technique were identified over a time frame of 5 years. Patient characteristics, operative parameters and postoperative results were collected. Radiographic parameters, complication rates and associations between parameters were analyzed.
Results: Seventy-nine cases were identified with displaced fractures of the second to fifth metacarpal bone. Nearly all fractures were located in the head (63 %) or in the shaft (33 %). Mean follow up period was 7,8 weeks. Average surgery time was 26 minutes. Most fractures (73 %) were fixed with only one intramedullary k-wire. Postoperative plaster immobilization was done in most cases (78 %). Radiographic fracture union was achieved in all patients. 78 % of the patients underwent hardware removal which was done in outpatient clinic under local anesthesia when planned (>70 %). Functional

results at the end of follow-up showed an impaired function with a mean of 15 degrees in 13 % of the patients. Impaired sensibility was found in less than 4 % of the cases.
Conclusion: This minimal invasive surgical technique appears to be a quick and safe procedure for a wide variety of metacarpal bone fractures. Intramedullary k-wire fixation of these fractures leads to excellent bone healing and good functional results.
References: The references include the following: Open reduction and internal fixation versus percutaneous transverse Kirschner wire fixation for single, closed second to fifth metacarpal shaft fractures: a systematic review. *Greeven et al. Eur J Trauma Emerg Surg 2015Mar14* Metacarpal shaft fractures: A review.*McCarthy et al. OA Orthopaedics 2014June11;2(2):12* Elastic titanium nails for minimally invasive intramedullary splinting of metacarpal fractures, *Müller et al. Z Orthop Unfall. 2013Oct;151(5):525-31* Isolated, extra-articular neck and shaft fractures of the 4th and 5th metacarpals: a comparison of transverse and bouquet (intra-medullary) pinning in 67 patients, *Sletten et al. J Hand Surg Eur Vol.2012Jun;37(5):387-95.*
Disclosure: No significant relationships.

P099

LARGE POSTTRAUMATIC KNEE DEFECTS TREATED WITH FRESH-FROZEN MASSIVE OSTEOCHONDRAL ALLOGRAFTS. CASE REPORTS

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Introduction: Treatment of large and deep knee defects still remains controversial. Massive osteochondral allografts have a long clinical history and represent one of treatment options with success rate greater than 75 %. Freezing has the advantage of decreasing the antigenity of the allograft. Moreover, the chondrocyte surface cell antigens are isolated from the host immunologic cells. Chondrocyte survival is only partially diminished after fresh freezing. The transplant can be unipolar (one surface is transplanted) or bipolar (two reciprocal articulating surfaces are transplanted). Objectives: To evaluate long-term results of such reconstruction cases in the knee.
Material and methods:
Femoral condyle transplantation
a) large lateral femoral defect after trauma in young female with the follow-up of 13 years after surgery b) large lateral femoral defect after trauma in middle-aged male with the follow-up of 10 years after surgery.
Tibial condyle transplantation
c) large medial tibial defect after trauma in young male with the follow-up of 9 years after surgery.
Bipolar patellofemoral transplantation
d) lateral femoral trochlear and patellar defect after trauma with chronic patellar instability and arthrosis in young female with the follow-up of 10 years after surgery.
Results: All patients satisfied with no degenerative changes in X-rays
Conclusion: Fresh-frozen massive osteochondral allografting is a salvage operation aimed at young, active patients with isolated large and deep knee defects to prevent or postpone the joint replacement.
References:
Disclosure: No significant relationships.

P100

TOTAL ANKLE ARTHROPLASTY IN POSTTRAUMATIC CONDITIONS

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Introduction: Aim of the study is to show how complex the surgery during total ankle arthroplasty (TAA) has to be to restore anatomy in posttraumatic cases.
Material and methods: 39 TAAs were implanted in severe posttraumatic conditions in 37 patients between 2000 and 2011. TAAs used were AES (Biomet) (23 cases) and STAR (Link) (16 cases). Except the joint degeneration, many other pathologic conditions had to be simultaneously addressed, such as limited range of motion (ROM), distal tibial and/or hindfoot malalignment, subtalar osteoarthrosis, ligament imbalance, talomaleolar imingement etc. Thaís why many surgeries were added: dorsal release (capsulectomy and resection of heterotopic ossifications), Achilles tendon prolongation, ligament balancing – release, resection and/or reconstruction, fibular prolongation osteotomy, medial malleolar intraarticular sliding osteotomy, distal tibial osteotomy, corrective talo-calcaneal arthrodesis, corrective calcaneal osteotomy etc. To plan the surgery, Meary a/p standing view was used in all cases.
Results: Some complications occured: 1 early deep infection; 1 late osteonecrosis of the talus (7 years post-op.) with talar component subsidence; 1 aseptic talar component loosening (10 years post-op.); 2 cases of asymptomatic large focal osteolyses; 1 breakage of distal tibial plate after simultaneous distal tibial osteotomy, and development of dorsal heterotopic ossifications limiting ROM in 2 cases. Other patients are satisfied this the TAA.
Conclusion: Knowledge of anatomy and kinematics of the ankle are necessary prerequisites for the surgical technique to insert TAA. When the anatomy is distorted, it must be restored at least to near a normal condition during TAA surgery. Such operations should be reserved for experienced surgeons.
References:
Disclosure: No significant relationships.

P101

COMBINATION OF BONE TRANSPLANTATION AND OSTEOCHONDRAL AUTOGRAFT TRANSFER FOR SURGICAL REPAIR OF LARGE TRAUMATIC OSTEOCHONDRAL DEFECTS OF THE KNEE JOINT

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Introduction: Osteochondral autograft transfer (OAT) is claimed to be successful for the treatment of defects of the articular cartilage of the knee. But large traumatic osteochondral defect is difficult indication for the OAT. I present two cases of large traumatic osteochondral defect of the knee treated with combination of bone transplantation and osteochondral autograft transfer.

Material and methods: Case 1; 61 year old male injured open lateral condyle fracture of femur by to be bitten by a pig. After 5 months from initial debridement, I confirmed the size of bone defect was 3 cm(2) × 3 cm in depth. The same size of bone was harvested from iliac crest and transplanted in the bone defect area of lateral condyle. After seven months from bone transplantation, I confirmed bone union and two 6.5 mm diameter osteochondral grafts and 4.5 mm diameter osteochondral graft were transplanted for the chondral defect lesion. Case 2; seventy year old male injured open lateral condyle fracture of femur by traffic accident. After 3 months from first debridement, I confirmed the bone defect (size 7 cm(2) × 3 cm in depth) and the same size of bone was harvested from iliac crest and transplanted. And simultaneously two 10 mm diameter osteochondral grafts were transplanted for the chondral defect lesion.
Results: In both case, Lysholm knee scoring scale were good. And 6 months after osteochondral autograft transplantation, second-look arthroscopy found cartilage repair.
Conclusion: combination of bone transplantation and osteochondral autograft transfer is useful strategy for the large traumatic osteochondral defects of the knee joint.
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Disclosure: No significant relationships.

P102

OUTCOMES OF OPERATIVE AND NON-OPERATIVE TREATMENT OF THREE- AND FOUR-PART HUMERAL FRACTURES IN ELDERLY: A 10-YEAR RETROSPECTIVE COHORT STUDY

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Introduction: Many uncertainties dominate the field of proximal humeral fractures and yet no clear difference between the outcomes of operative versus nonoperative treatment has been found (1).
The aim of this study is to evaluate the health related quality of life (HRQoL), functional outcome and social participation in elderly patients after displaced three- and four-part proximal humeral fractures. The study design is a 10-year retrospective cohort study with a minimum follow-up of 1 year.
Material and methods: We approached 150 patients, aged ≥65, treated for a three- or four-part proximal humeral fracture in the University Medical Centre of Groningen between 2004 and 2014. Of the 91 respondents, 84 % were women, 75 % suffered from a three-part fracture and 25 % from a four-part fracture. 59 patients had received non-operative treatment and 32 patients received operative treatment. Main outcome measures where the mean differences in EQ-5D, DASH, VAS for pain and WHODAS domain 6, between the non-operative and operative treatment group.
Results: No significant difference was found between the two treatment groups in mean EQ-5D index score ($p = 0.43$), DASH score ($p = 0.78$), VAS score ($p = 0.19$) and WHODAS 2.0 domain 6 score ($p = 0.09$). The complication rate was significantly higher in the operatively treated group ($p = 0.002$).
Conclusion: There is no evidence of a difference in health related quality of life (HRQoL) and functional outcome 1 to 10 years after operative versus non-operative treatment in elderly patients with a three- or four-part humeral fracture. Social participation shows a trend towards operative treatment. Complications occur significantly more in the operatively treated group.
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Disclosure: No significant relationships.

P103

APPLICATION OF THE ILIZAROV APPARATUS IN KNEE ARTHRODESIS AS A TREATMENT OPTION AFTER SEPTIC TOTAL KNEE ARTHROPLASTY

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Introduction: A chronic periprosthetic infection with attendant failure of the knee extensor mechanism is one of the most disastrous outcome following total knee arthroplasty and knee arthrodesis may be the last possible option treatment with the exception lover limb amputated. The aim of this study is to represent the results to achieve knee arthrodesis in patients with chronically septic total knee arthroplasty.
Material and methods: In our retrospective study we reviewed the clinical record of 27 patients who were treated with Ilizarov circular external fixator for this condition. Male to female ratio was 13 : 14. Main age of the patients was 62,3 years. We used Cierny - Mader classification for the clinical and pathoanatomical assessment. For the assessment of the bone defect we used Engh classification. Based on Paley's description, we classified all our complications as problem, obstacles and complications.
Results: Complete union we had in 22 (81,4 %) patients. Mean time for healing was 5,7 months, range (3-15). Mean residual limb shortness was 4,7 cm and mean follow-up was 21 months. We also had a five nonunion (18,6 %) complications: three with septic intra articular nonunion, two had intolerance to the Ilizarov apparatus, so we removed earlier.
Conclusion: The Ilizarov circular external fixator provides us a high rate of bone healing and low risk of septic dissemination in patients with infected total knee arthroplasty.
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Disclosure: No significant relationships.

P104

COMMINUTED PROXIMAL HUMERUS FRACTURE COMPLICATED BY A. AXILARIS LAESION AND REPERFUSION SYNDROME AFTER VASCULAR SURGERY RECONSTRUCTION, TREATED BY HEMIARTHROPLASTY

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Introduction: This poster presents some of the less common, but severe complications of humeral head fractures.
Material and methods: This case describes a skiing accident that caused a comminuted proximal humerus fracture and typical luxation of the largest fragment. Considering the fracture character and the large head fragment, she underwent a surgery revision that was aimed at reconstruction of the proximal humerus. Peroperatively there was found an arteria axillary stenosis, caused by the pressure of the luxated fragment. After discision of the stenotic part of arteria, there was seen an intimal laesion with complete lumen occlusion.
Results: Vascular reconstruction was made, using vena saphena magna graft. Because of the comminuted fracture and vascular complication, we decided to remove all fragments except for rotator cuff bone insertions and following humeral head hemiarthroplasty. Eventually, compartment syndrome occurred. Acute forearm and distal arm fasciotomy was made, as well as axillary bypass revision. Fasciotomy was treated using NPWT and early fully reconstructed. After the soft tissues were healed, the humeral head hemiarthroplasty was made cooperatively with orthopedic departement.
Conclusion: Luxation and humerus fractures belong to everyday experience of any surgical or traumatological workplace. There is no problem with the diagnosis and it also supports a wide range of surgical treatments. But as shown in the poster, there is a possibility of some severe complications, so it is important not only to watch out for this, but most importantly to react swiftly. Cooperation of traumatology, vascular surgeon, orthopedist and finally an experienced rehabilitation facility should provide the optimal conditions.
References:
Disclosure: No significant relationships.

P105

TREATMENT FOR CORONAL SHEARING FRACTURES OF THE PROXIMAL FEMUR

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Introduction: Coronal shearing fractures are proximal femoral fractures that exhibit coronal shearing in which the fracture line extends from the anteromedial part of the neck to the posterior intertrochanteric fossa. These fractures are highly unstable. We investigated the course of treatment of coronal shearing fractures and identified factors causing poor results.
Material and methods: Between April 2011 and March 2014, 1131 adult proximal femoral fractures classified as AO/OTA 31 type were treated at our trauma center. Ten (0.88 %) patients had coronal shearing fractures. Of these, two patients who did not undergo a complete follow-up examination at 3 months were excluded. The operative procedures, type of implant, quality of reduction, positions of lag screw or blade and clinical courses were investigated in the remaining eight patients.
Results: All included patients underwent osteosynthesis, and none underwent femoral head replacement. Six patients were treated with an intramedullary nail and two were treated with a compression hip screw type implant. The quality of reduction was good in seven patients and acceptable in one. With regard to the clinical courses, five patients achieved union, one exhibited delayed union, and two required cut out. Although there was no avascular necrosis of the femoral head, the cut out rate was high (25 %).
Conclusion: Coronal shearing fractures could be treated using osteosynthesis from the aspect of femoral head circulation. However, strict operative procedures, particularly to achieve good quality of reduction and implant position, are required in these patients because of rotatory instability and shearing force.
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Disclosure: No significant relationships.

P106

MID TERM RESULTS OF ELBOW ARTHROPLASTY

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Introduction: The purpose of our study was to evaluate the objective and subjective outcomes, as well as the radiographic results after elbow arthoplasty.
Material and methods: In the years between 2004 and 2011 32 elbow arthroplasties were performed. These were 24 female and 8 men patients with a mean age of 65,8 years. By the means of regular follow-up examinations we were able to recruit 14 patients for the study purpose. There were 11 women and 3 men included. The mean follow-up period was 40 months. In 13 patients a Tornier Latitude and in one case a Coonrad-Morrey implants were used. All patients were examined and evaluated using the Mayo Elbow Performance Score (MEPS) and the Disabilities of the Arm, Shoulder, and Hand score (DASH). Radiographic postoperative outcomes were assessed performing anteroposterior and lateral radiographs of the injured elbow.
Results: According to the MEPS, 12 patients achieved "good" to "excellent results" and two patients revealed a "fair" clinical outcome. The mean DASH was 29 (range, 0–68). The flexion of the affected elbow was 100° (range, 55–160°), the extension deficit was 17° (range, 0–45°), the pronation was 75° (range, 20–90°), and the supination was 77° (range, 45–90°). The following postoperative complications were seen: one elbow instability, one ulna-plus and one wound infection. The last patient needed a replacement of the prosthesis.
Conclusion: Elderly patients are suitable for treatment with elbow arthroplasty due to trauma. Better results showed patients who received the arthroplasty secondarily. Further follow-up for long time results is needed.
References:
Disclosure: No significant relationships.

P107

OPEN REDUCTION AND INTERNAL FIXATION OF ACETABULAR FRACTURES IN PATIENTS OLDER THAN 65 YEARS

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Introduction: Few data exist regarding outcomes of operative treatment of acetabular fractures in patients older than 65 years. With the population living longer, and activity levels rising, acetabular fractures at that age group are becoming more frequent. No consensus about the optimal management of acetabular fractures in elderly patients has been established. Treatment alternatives include open reduction and internal fixation, nonsurgical treatment, percutaneous fixation and acute or delayed total hip arthroplasty.
Material and methods: Retrospective study. Analysis of operatively treated patients older than 65 years with acetabular fractures in the years 2012 and 2013 was done.
Results: 13 operatively treated patients older than 65 years in this group sustained acetabular fracture. 11 patients had an acetabular fracture with central dislocation and two sustained posterior wall fracture. Patients with central acetabular fracture dislocation were operated with ilio-medial approach and patients with posterior wall fracture were treated with Kocher-Langenbeck approach. In two cases of acetabular fractures with central dislocation good reduction was not possible. Due to secondary arthrosis and increasing pain, two patients were later operated with total hip endoprosthesis. One patient died postoperatively because of the hearth failure. Others returned to the same level of activity they had prior to the fracture.
Conclusion: Our data shows that open reduction with internal fixation even in elderly patients shows good results with low level of complications. It has a low conversion rate to total hip endoprosthesis at short and midterm follow up.
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Disclosure: No significant relationships.

P108

SURGICAL DEATH FOLLOWING MODERN CEMENTING TECHNIQUE IN HEMIARTHROPLASTY – LESSON LEARNT FROM CONONER'S INQUEST IN UK

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Introduction: Data concerning the fatalities of BCIS is sporadic and rare. Bone cement implantation syndrome (BCIS) is characterized by hypoxia, hypotension or both and/or unexpected loss of consciousness occurring around the time of cementation, prosthesis insertion, reduction of the joint in a patient undergoing cemented bone surgery. Our case studies describes a cardiac arrest in two patients undergoing a cemented hemiarthroplasty. This report provides further clinical evidence of the risks and consequences of fat embolization during hip arthroplasty surgery, and outlined family's expectation from these incidence.
Material and methods: We studied prospectively the events of BCIS in these two patients between 2010 to 2015 over 5 years period. Embolization happened during the intraoperative procedures, due to high intramedullary pressures developing between cement and prosthesis insertion. Coroner post mortem examination confirmed death due to cement embolisation.
Results: These case studies confirmed that numerous patient-related risk factors might have been implicated in the genesis of BCIS including old age, poor preexisting physical reserve, impaired cardiopulmonary function, osteoporosis. Although to reduce surgical risk, for BCIS we performed medullary lavage, good hemostasis before cement insertion, minimizing length of prosthesis, and venting the medullary canal. The patients developed fatal consequences.
Conclusion: Conclusion While using bone cement in patients with co-morbid diseases, modern cementing technique may alter the patient's hemodynamic status during and after use of bone cement. It may lead to unexpected fatalities. Lack of knowledge among the patient or family member's education about death following cemented hip arthrosplasty surgery was highlighted in coroner inquest of surgical death.
References:
Disclosure: No significant relationships.

INNOVATIONS / ADVANCED TECHNOLOGIES

P109

AN ANATOMICAL STUDY OF THE MEDIAL KNEE FOR MINIMAL INVASIVE PLATE OSTEOSYNTHESIS (MIPO) IN MEDIAL FEMORAL CONDYLAR FRACTURE

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Introduction: Displaced femoral condylar fractures can require combined medial and lateral plating. To minimize soft tissue stripping and nonunion, smaller incisions are preferred. Our goal was to determine the average distance of the distal medial neurovascular structures identifying a medial safe zone for MIPO.
Material and methods: Eleven uninjured lower-half torsos were dissected on the bilateral medial lower thigh. A 20 cm incision was done from the mid-point of the medial femoral condyle and 1 cm above the knee joint. Superficial and deep neurovascular structures were dissected. The distances to the medial vastus and adductor compartment were measured. Statistical analysis with median and weighted mean values with standard deviation was performed.
Results: Average distances from adductor tubercle to Hunter's canal and adductor hiatus were 159.95 $\pm$ 31.4 mm and 94 $\pm$ 18.31 mm, respectively. The average distance of these to the femoral shaft was 31.81 $\pm$ 9.21 mm and 31.72 $\pm$ 7.77 mm, respectively. All specimens had a descending genicular artery (DGA) and femoral nerve branch to vastus medialis with a distance to adductor tubercle of 98.4 $\pm$ 16 mm. The muscular branch of DGA crossed the femoral

shaft at about 53.02 mm from adductor tubercle, while the osteoarticular branch ran along with the adductor magnus tendon. The nerve to vastus medialis was at the posterior border of this entering at an average of 142.63 ± 62.96 mm from adductor tubercle.
Conclusion: Minor neurovascular braches of DGA appear to be at risk during medial femoral condyle plating. Careful blunt dissection with proper MIPO instrumentation, while maintaining plate length within 159 mm to Hunter's canal, can prevent injuries to these structures.
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Disclosure: No significant relationships.

P110

TREATMENT OF FRAGILITY FRACTURE OF PELVIS

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Introduction: Recently the number of Fragility fracture of pelvis (FFP) is increasing in Japan. And we treat FFP with conservative treatment usually. But sometimes surgical treatment is necessary. So we investigated progress of FFP 120 cases in our hospital.
Material and methods: We experienced 120 cases of FFP from 2012 to 2015, and we had surgical treatment 6 cases. All Females and mean age is 79 years old (63-92 y) According to Rommens FFP classification, FFP type III a 5 cases, and IV 1 case. We selected ORIF treatment 4 cases, and Ex-Fix 2 cases.
Results: All cases acquired bone union. The amount of bleeding of ORIF surgical treatment cases mean 405 ml. Ex-Fix cases had a tendency of delayed union. All ORIF cases recovered to cane gait level.
Conclusion: 5 % (6/120 cases) of FFP cases needed surgical treatment. And In our cases 5/6 cases of ORIF group are FFP type IIIa. In the cases of FFP type IIIa, fracture line exists Iliac most thin part, so bone contact is very few. We suppose FFP type IIIa has a tendency of displacement of fracture site during conservative treatment.
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Disclosure: No significant relationships.

P111

A COMBINED POSTERIOR REVERSED L-SHAPED AND ANTEROLATERAL APPROACH FOR TWO COLUMN TIBIAL PLATEAU FRACTURES IN CAUCASIANS: A TECHNICAL NOTE

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Introduction: Open reduction and internal fixation of two column posterior and lateral tibial plateau fractures through a combined posterior reversed L-shaped and anterolateral approach in floating position in Caucasians.
Indications: Two column posterior and lateral tibial plateau fractures.
Contraindications: Tibial plateau fractures that do not involve the posterior and lateral column.
Material and methods: Surgical Technique: Patient is positioned in floating position, reversed L-shaped skin incision is made, exposure of the posterior column after lateral retraction of the medial head of the gastrocnemius muscle, reduction and fixation of the posterior fragments. Subsequently, flexion and varus stress on the knee, anterolateral skin incision, exposure of the lateral column, reduction and fixation of the lateral fragments.
Results: No results section is included in the article.
Conclusion: Despite a different physique as Asians, a combined posterior reversed L-shaped and anterolateral approach in a floating position for the surgical treatment of two column posterior and lateral tibial plateau fractures is technically possible in Caucasians. In our experience, this combined approach is an excellent strategy in most patients for surgical treatment of two column posterior and lateral column fractures.
References:
Disclosure: No significant relationships.

P112

AN ALTERNATIVE SURGICAL TECHNIQUE FOR MANAGEMENT OF SUPRACONDYLAR HUMERUS FRACTURES USING ELASTIC STABLE INTRAMEDULLARY NAILING

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Introduction: Supracondylar humerus fractures are the most common elbow fracture in pediatrics. Displaced supracondylar fractures require operative intervention. Percutaneous pinning is the most frequently used surgical method for fixation of supracondylar humerus fractures. We propose an alternative method for management of displaced supracondylar humerus fractures using two elastic stable intramedullary nails (ESIN).
Material and methods: Three skeletally immature patients with elbow fractures presented to our institution between October and November 2014. Two patients sustained Gartland Type 3 Extension

supracondylar fractures, and one sustained a transverse metadiaphyseal distal humerus fracture. All patients were placed in a splint and taken to the operating room. Each patient was treated surgically by one attending surgeon. Surgical technique of closed reduction and insertion of two elastic stable intramedullary nails was replicated in each case.

Results: All three patients in the case series achieved osseous union. Two patients achieved full range of motion post-operatively. One patient retained a 5 degree extension lag and a pre-mature physeal closure. All patients underwent planned hardware removal. No patient developed nonunion, pseudoarthrosis, iatrogenic nerve or vascular injury.

Conclusion: This case series validates ESIN as a successful option for management of displaced Gartland Type 3 supracondylar humerus fractures. ESIN are inherently stable, negating the need for prolonged immobilization. There is less risk for iatrogenic ulnar nerve injury with ESIN. Post-operatively, patients can begin early elbow range of motion, reducing the risk of arthrofibrosis. ESIN is a treatment method for management of supracondylar humerus fractures with benefits as compared to standard operative techniques.

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Disclosure: No significant relationships.

P113

A REVISED 3-COLUMN CLASSIFICATION APPROACH FOR THE SURGICAL PLANNING OF POSTEROLATERAL TIBIAL PLATEAU FRACTURES

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Introduction: With the introduction of the VA-LCP, improvement is possible in the preoperative planning of posterolateral tibial plateau fractures using the 3-column classification approach. Our aim was to establish and validate the revised 3-column classification approach to guide the surgical planning of these fractures, including the PLC fractures better.

Material and methods: According to the revised three-column classification, the PLC is defined the anterior and posterior border of the fibular head, and the artificial axle of the 3 columns. CT-images of 36 patients were reviewed and classified twice online according to Schatzker and revised 3-column classification approach by 5 observers. The intraobserver reliability was calculated using the Cohen's kappa and the interobserver reliability using the Fleiss' kappa.

Results: The intraobserver reliability showed substantial agreement according to Landis and Koch for both Schatzker and the revised 3-column classification approach (0.746 *vs*. 0.782 $p = 0.37$, Schatzker *vs*. revised 3-column, respectively). However, the interobserver reliability of the revised 3-column classification approach was significantly higher as compared to the Schatzker classification (0.531 *vs*. 0.669 $p < 0.01$, Schatzker *vs*. revised 3-column, respectively). The Schatzker classification is rated as a moderate agreement and the revised 3-column classification as a substantial agreement.

Conclusion: The revised 3-column classification is not inferior to the Schatzker classification, but rather superior with significantly higher interobserver reliability, most likely due to its more simple nature. In contrast to the Schatzker classification, the revised 3-column classification approach is a helpful tool in the preoperative surgical planning of tibial plateau fractures, particularly fractures of the PLC.

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Disclosure: No significant relationships.

P114

A SUCCESSFUL RESCUE OF A TRAUMATIC LEFT MAIN BRONCHIAL LACERATION BY ROBOTIC SLEEVE RESECTION AND ANASTOMOSIS

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Introduction: Tracheobronchial injuries occur up to 10 % in patients with blunt chest and neck injuries. The diagnosis of such injury may often be delayed due to masking by other debilitating injuries. Literature reports of delayed repairs of tracheobronchial injuries up to 15 years with successful recovery. We report a case of a delayed diagnosed left main bronchial laceration with an initial presentation of bilateral pneumothorax and pneumomediastinum that eventually progressed to left total lung atelectasis and consolidation seen in a 23 year old man which was successfully rescued using robotic sleeve resection and anastomosis.

Material and methods: Sleeve resection and anastomosis was completed under the Da Vinci surgical system via a 2 arm approach and an assistant using 4 ports. The obstructive lesion of the left main bronchus was resected, and end-to-end anastomosis was performed with 4-0 PDS interrupted sutures. Follow-up of the patient was done at 2 weeks, 1 month, and 2 months post-operatively.

Results: The patient was successfully extubated on post-operative day 1. Bronchoscopic examination done at 9 days post-operatively showed healing of the anastomosis with luminal patency. Serial post-operative chest radiographic films showed full and equal expansion of bilateral lungs.

Conclusion: The left lung was still salvageable because the vasculature was not compromised from the initial injury. Thus, even though the diagnosis was delayed, and the initial left main bronchial laceration eventually resulted in total lung atelectasis and consolidation,

successful surgical treatment can still be accomplished with return of the lung function after initial resuscitation and stabilization of the patient's general condition.
References:
Disclosure: No significant relationships.

P115

SURGICAL STABILISATION OF FLAIL CHEST WITH JUDET PLATES- INNOVATION OF TECHNICS

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Introduction: Complications of chest trauma develop secondary to rib fractures as a consequence of significant pain and inadequate ventilation. Early mechanical ventilation with internal pneumatic splinting is the basis of conservative treatment for flail chest in patients with respiratory insufficiency. The surgical stabilisation of flail chest is recently accepted as valid method of treatment.
Material and methods: Twenty nine consecutive injured patients who underwent surgical stabilisation of flail chest were retrospectively evaluated. This included patient dermographics, chest injury extent, surgical stabilisation technics with Judet plates, and postoperative outcome. On the basis of the experience with rib osteosynthesis with Judet plates was performed innovation of rib plates in cooperation of developing department of Medin company in Nové Město na Moravě. The goal of innovation were changes of technical parameters.
Results: Surgical stabilisation was carried out using 3 to 8 Judet plates for flail segment fixation involving 3 to 4 ribs. The duration of post-operative mechanical ventilation was 5 days on the average. No death was recorded in the follow-up period. Innovating plates were testing on laboratory model of the ribs and in cadaver with using of new instruments. New technics parameters including smaller mass of plate, larger stability, new fixating clips, locked screws and instruments for osteosynthesis are priorities of innovating plates.
Conclusion: Surgical stabilisation of the flail chest segment is considered an effective procedure in selected patients. Leading to improvement of respiratory function and shortens duration of ventilatory support. Innovating plates are important step in extending of surgical treatment of the flail chest.
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Disclosure: This project of innovation of plates for rib osteosynthesis is part of official scientific programme of 3. Faculty of Medicine, Charles University, Prague.Cooperation in this project is between Department of Surgery 3. Faculty of Medicine, Charles University, Prague.

P116

SURGICAL STABILISATION OF FLAIL CHEST WITH JUDET PLATES-INNOVATION OF TECHNICS

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Results: Surgical stabilisation was carried out using 3 to 8 plates for flail segment fixation involving 3 to 4 ribs. The duration of post-operative mechanical ventilation was 5 days on the average. No death was recorded in the follow-up period .Innovating plates were tested on laboratory model of the rib and in the cadaver with using of new instruments. New technics parameters including smaller mass of the plate, larger stability, new fixating clips, locked screws and instruments for osteosynthesis are priorities of innovation.
Conclusion: Surgical stabilisation of the flail chest segment is considered an effective procedure in selected patients, leading to improvement of respiratory function and shortens duration of ventilatory support. Innovating plates are important step in extending of surgical treatment of the flail chest.
References: MARASCO, S.F., DAVIES, A.R., COOPER, P., VARMA, D., BENETT, V., NEVIL, R.: Prospective randomized controlled trial of operative rib fixation in traumatic flail chest. J Am Coll Surg . 2013;216: 302-311 VYHNÁNEK, F., JIRAVA, D., OČADLÍK, M., ŠKRABALOVÁ, D.: Surgical stabilisation of the flail chest : indications, technics and results,. Acta Chir Orthop Traum Čech. 2015; 82: 303-307 / in Czech /.
Disclosure: I have no conflict of interest/ relationships. This topic - innovation of Judet plate is part of scientific programme of 3. Faculty of Medicine, Charles University in Prague. Part of this scientific program is official cooperation in developing of new.

P117

NONOPERATIVE MANAGEMENT OF HEMODYNAMICALLY UNSTABLE ABDOMINAL TRAUMA; COMPLETE RESUSCITATION IN ER WITH ECHO-GUIDED REBOA AND SUCCESSFUL TREATMENT WITH ANGIOEMBOLIZATION

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Introduction: Non-operative management of hemodynamically unstable patients with blunt abdominal solid organ injuries is challenging. REBOA is effective in subdiaphragmatic hemorrhagic trauma patients. However, REBOA needs transfer to radiology

department and is performed with fluoroscopy for safety and adequate balloon positioning, but that can become a cause of delayed resuscitation. We perform echo-guided REBOA in ER, and have achieved safety catheter insertion and adequate balloon positioning. In this study, we reviewed a series of hemodynamically unstable patients with abdominal solid organ injuries managed non-operatively, resuscitated in ER with echo-guided REBOA, and treated with angioembolization.

Material and methods: The catheter was inserted using the seldinger technique and following protocol. 1st; Puncture the femoral artery and insert the guide-wire. 2nd; Check by sonography that the guide-wire is in the abdominal aorta. 3rd; Insert the sheath and balloon catheter through the guide-wire. 4th; Check that the position of the tip of the catheter is surely above the diaphragm by sonography. 5th; Inflate the balloon until the waveform of the blood pressure measured from femoral artery is disappeared. All reviewed patients were appropriately resuscitated with transfusions, and angiography was performed after CT scan. All REBOA was performed before CT scan.

Results: Seven patients underwent REBOA in ER following severe blunt abdominal trauma. The 28-day survival rate was 86 % (6 of 7). There were no complications related to the procedure.

Conclusion: Clinical series of hemodynamically unstable patients with abdominal solid organ injury resuscitated in ER with echo-guided REBOA and treated with angioembolization were described and their survival rate was 86 %.

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Disclosure: No significant relationships.

P118

MODIFIED PLATE OSTEOSYNTHESIS THROUGH AN EXTENDED DELTOID SPLIT APPROACH AS A TREATMENT FOR DIAPHYSEAL HUMERAL FRACTURES WITH A PROXIMAL COMPONENT

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Introduction: This retrospective monocentric study analysed the outcomes of a modified direct reduction technique for diaphyseal humeral fractures with a proximal component. Plate osteosynthesis with a neutralisation plate, moulded peroperatively, was performed through an extended deltoid split approach.

Material and methods: Since December 2013 eleven patients have been treated for a diaphyseal humeral fracture with a proximal component. A specific modified open reduction technique was used to treat this particular fracture type. Mobilisation was started immediately postoperatively. All patients were treated by the same surgeon and regularly procedure. Post-operative evaluation was performed every month up to six months with clinical and radiological assessment.

Results: Our study population consist of eleven patients with an average age at surgery of 66 years. All injuries were the result of a simple fall or trauma. All fractures were of AO-classification type 12-C1. Our final results after six months follow-up showed no cases of wound infection, intra-articular screw penetration or avascular necrosis of the humeral head. There were no patients with permanent palsy of the radial or axillary nerve. Average postoperative shoulder active range of motion was good to excellent.

Conclusion: Surgical treatment of diaphyseal fractures of the humerus with a proximal component is a difficult entity. Our goal was to improve reduction and enhance fixation while making the surgical procedure technically more manageable. This technique provides appropriate reduction and allows for early post-operative mobilisation. Furthermore this technique provides a more safe removal of hardware by reducing the risk of nerve damage.

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Disclosure: No significant relationships.

P119

BIOMECHANICAL COMPARISON OF TWO FIXATION TECHNIQUES IN PERIPROSTHETIC FRACTURE SURGERY – LONGER PLATE OR BICORTICAL LOCKING?

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Introduction: Periprosthetic femur fracture fixation on the level of the prosthesis stem remains problematic. Plate extension to the greater trochanter provides a longer lever arm with less screw loading. The stability of two Vancouver type B1 constructs, a hook plate anchoring in the greater trochanter (H) and a subtrochanterically placed locking attachment plate (L) with bicortical embracing screw configuration lateral to the prosthesis shaft were compared in a biomechanical test.

Material and methods: After bone mineral density evaluation, paired human femora with cemented Charnley hip endoprostheses were transversely osteotomized. Each pair ($n = 6$ per group) was instrumented with either a hook plate or a locking attachment plate using a plate tensioner and subsequently cyclically (2 Hz) tested up to failure applying a monotonically increasing load with Bergmann profile. The bending stiffness of the plates was evaluated in a four point bending test. Statistical evaluation was performed with t-test for paired comparisons.

Results: Hook plate fixation exhibited a significantly lower number of cycles and corresponding load to failure (H: 26177 cycles $\pm$ 2777, 3118 N $\pm$ 778; L: 37423 cycles $\pm$ 5299, 4242 N $\pm$ 1030,

p = 0,015). Plate stiffness was in a comparable range (H: (468 N/mm ± 7), broad LCP (445 N/mm ± 6). Mean bone mineral density was 250 mgHA/ccm ± 47.
Conclusion: Additional plate fixation in the greater trochanter at periprosthetic fractures did not increase fixation stability compared to a subtrochanterically placed locking attachment plate providing a bicortical fixation lateral to the prosthesis shaft in an embracement configuration.
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Disclosure: No significant relationships.

P120

MONITORING WEIGHT BEARING IN AN AMBULANT SETTING: THE SENSISTEP

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Introduction: Until now there is a lack of insight in weight bearing after lower extremity fractures. An innovative ambulant monitoring device, SensiStep, enables weight bearing measurements during gait. Moreover, SensiStep provides real-time feedback about weight bearing to patient and healthcare professional.
Material and methods: Four consecutive patients who underwent surgical fixation or conservative treatment of lower extremity fractures with non-weight bearing and three additional patients with full weight bearing were monitored using the SensiStep. Following standard instructions and at least one conventional training session, patients were asked to walk 20 meters in a straight line. First, feedback was provided according to standard protocol and SensiStep was only used to register the amount of weight bearing. Secondly, SensiStep was also used to provide real-time insight and feedback about weight bearing and same measurements were repeated.
Results: In the non-weight bearing group, average loading was 9.17 kg (SEM ± 2.48 kg). Real-time feedback by SensiStep caused a decrease to 8.41 kg (SEM ±1.75, $P > 0.05$). In full weight bearing patients, SensiStep feedback resulted in an increase of peak pressure from 34.44 % bodyweight (SEM ± 11.3 %) to 51.36 % bodyweight (SEM ± 7.95 %, $P > 0.05$).
Conclusion: Patients are able to implement prescribed non-weight bearing advices, but improved results have been observed when real-time feedback is provided by SensiStep. In full weight bearing real-time feedback results in a direct increase in peak pressure. More patients (target: 10 vs. 10) will be included to evaluate the effect of real-time feedback on weight bearing therapy compliance. Our results indicate that SensiStep offers opportunities to develop evidence-based rehabilitation programs after lower extremity fractures.
References:
Disclosure: No significant relationships.

P121

REPAIR OF THE PRONATOR QUADRATUS AFTER VOLAR PLATE FIXATION IN DISTAL RADIUS FRACTURES: A SYSTEMATIC REVIEW

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Introduction: An increase in open reduction and internal volar plate fixation for distal radius fractures has been observed. Although the conventional approach involves repair of the pronator quadratus after volar plate fixation, controversy surrounds the merits of this repair. The purpose of this study was to compare the functional outcomes of patients with distal radius fractures treated with pronator quadratus repair after volar plate fixation versus no pronator quadratus repair.
Material and methods: A systematic search was conducted in Medline, EMBASE and the Cochrane Central Register of Controlled Trials. All studies comparing pronator quadratus repair with no pronator quadratus repair in adult patients undergoing volar plate fixation for distal radius fractures, with a minimum follow-up of 12 months, were included. The primary outcome was functional outcome, measured with the Disability of the Arm, Shoulder and Hand questionnaire at 12 months follow-up. Secondary outcomes included range of motion, grip strength, post-operative pain and complications.
Results: A total of 169 patients were included, of which 95 underwent pronator quadratus repair, while 74 patients underwent no pronator quadratus repair. After 12 months follow-up no statistically significant differences in DASH-scores and range of motion, especially in pronation and supination, were observed between the repair and the no repair group. Moreover, post-operative pain and complication rates were similar between both groups.
Conclusion: In this systematic review we found no statistically significant differences between repair of the pronator quadratus muscle after volar plate fixation and no repair. Therefore, we do not recommend pronator quadratus repair after volar plate fixation in the distal radius.
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Disclosure: No significant relationships.

P122

NEW PROXIMAL RETROGRADE HUMERAL NAILS FOR PROXIMAL HUMERAL FRACTURES

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Introduction: The system of the new proximal retrograde humeral nail for the proximal humeral fracture should include the possibility of prevention of the humeral head, minor invasive operative procedure and protection of the rotator cuff.
Material and methods: Entry of this nail occurs laterally underneath the onset of the deltoid muscle. Thread appendage in the nail assures angle and glide stability of the screws. The waschers can be used for increased incursion safety due to osteoporosis.
Results: Ten proximal humeral fractures were applied by these new nails. We found that all fractures were achieved bone union and any complications were not occurred during surgery and after surgery.
Conclusion: This new proximal retrograde humeral nail complies with the accustomed principle: this is an innovative product, of the high quality.
References: Dietz SO et al: Retrograde nailing versus licking plate osteosynthesis of proximal humeral fractures: a biomechanical study. J Shoulder Elbow Surg 2012: 21; 618-624.
Disclosure: No significant relationships.

P123

SPLITTING WITHOUT THE NEED OF AN ANAESTHESIOLOGIST

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Introduction: Split skin grafting is done when there is tissue loss from the skin. There may be several reasons for this operation, like an infection, burns, open wounds and non-healing ulcers. Typically, this procedure is performed in the operating theatre under general or locoregional anaesthesia.
Material and methods: A new technique makes it possible to do a split skin graft procedure without the interference of an anaesthesiologist. With the use of a vacuum system (CelluTome by KCI) epidermal micro grafts are won on a donor site. These micro grafts are directly suitable for transplantation to the acceptor site. The procedure is available in the outpatient treatment and does not require any form of anaesthesia.
Results: We would like to present this new technique by showing a number of cases using this technique and show the first results of it. Besides the fact that there is no need for an anaesthesiologist, this technique has several other advantages. The procedure can be performed on an outpatient basis, there are fewer costs involved and in high-risk patients it is also an option.
Conclusion: Split skin grafting without the intervention of an anaesthesiologist is possible and seems to be a good alternative to the conventional techniques.
References:
Disclosure: No significant relationships.

P124

A TREATMENT MODALITY FOR PATHOLOGIC FRACTURES: INTRAMEDULLARY PHOTODYNAMIC STABILIZATION

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Introduction: We report two cases of pathological fractures treated with intramedullary photodynamic fixation with the IlluminOss® system.
Material and methods: The technique uses light cured polymers filled into Dacron balloon catheters. After closed reduction, the balloon catheter is inserted in the previously reamed medullary canal in Seldinger-technique. The balloon is filled with the liquid monomer which is then hardened by light application. The first patient had a pathologic fracture in the left radius shaft caused by multiple myeloma. The fracture was stabilized with a photodynamic standalone implant. The second patient had a nonunion of a pathological femur fracture due to metastatic prostate cancer. The initial nailing and two attempts of compound plate osteosynthesis had failed. Here, two photodynamic implants and a VA-LCP were used.
Results: The postoperative treatment of the first patient comprised immediate functional exercising of the left forearm with full fracture healing after one year and a good functional result. For the second patient, the osteosynthesis dramatically reduced the pain and allowed immediate partial weight bearing. The construct was stable enough to prevent further dislocations, and to allow fracture healing to slowly occur.
Conclusion: Photodynamic implants adapt to the morphology of the medullary canal, providing a tight fit. The entry point is not as strictly defined as for rigid nails. The implants do not inhibit endosteal remodelling and angiogenesis and can also be used as augmentation material for screws. Implant removal of the implant is probably very difficult The indications these implants should be placed carefully.
References:
Disclosure: No significant relationships.

P125

MINIMALLY INVASIVE STABILIZATION OF THE DISTAL RADIOULNAR JOINT; A CADAVERIC STUDY

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Introduction: Distal radioulnar joint (DRUJ) instability may progress to osteoarthritis of the distal radioulnar joint, causing chronic wrist pain and dysfunction. Restoration of stability of the DRUJ and a full, painless arc of motion are the goals of surgical treatment. The ideal reconstruction technique would provide the stability of the Adams procedure while limiting surgical exposure. This study describes a minimally invasive procedure for stabilization of the distal radioulnar joint (DRUJ), using a suture-button construct placed percutaneously in the course of the distal oblique bundle in the distal interosseous membrane.
Material and methods: Five fresh-frozen cadaveric specimens were used for this study. Dorsal translation of the radius relative to the ulna was measured in neutral position, 45 degrees of pronation and 45 degrees of supination. The DRUJ was then disrupted and translational measurements were repeated. Next, the TightRope was

percutaneously inserted through ulna and radius at an angle of 45 degrees to the radial insertion point, following the direction of the distal oblique bundle. After this procedure, translational measurements were repeated again.
Results: Dorsal translation of the radius increased considerably after disruption of the DRUJ. This difference was statistically significant in neutral and supinated position ($p = 0.043$ and $p = 0.043$, respectively), though not in pronated position. After restoration using the TightRope system, translation returned to baseline values. The surgical procedure was easy to perform and took on average 10-15 minutes.
Conclusion: In this experimental setup, the minimally invasive TightRope technique significantly reduced posttraumatic DRUJ instability. Further studies are needed to verify these results in a clinical setting.
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Disclosure: No significant relationships.

P126

ANTEROLATERAL DOUBLE PLATING OR LOCKING ATTACHMENT PLATE? A BIOMECHANICAL STUDY ON PERIPROSTHETIC FRACTURE FIXATION

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Introduction: Double plate osteosyntheses offer an increased stability in periprosthetic femur fracture fixation. Another option are locking attachment plates (LAP), providing a bicortical screw fixation lateral to the prosthesis shaft. These two options, a lateral plate osteosynthesis with two locking attachment plates and an anterolateral double plate osteosynthesis were compared in a biomechanical test.
Material and methods: Methods: Paired human femora with cemented Charnley hip endoprostheses were transversely osteotomized distal to the prosthesis stem. Each pair ($n = 6$ per group) was instrumented with either an anterolateral LCP double plate osteosynthesis or an lateral LCP with two LAP using a plate tensioner and cyclically (2 Hz) tested up to failure applying the Bergmann profile and a monotonically increasing load up to failure. The stiffness of both constructs was evaluated in a non-destructive four point bending and a torsional test. Statistical evaluation was performed with student t test for paired comparisons and Wilcoxon signed rang test ($p < 0.05$).
Results: The double plate construct showed a significantly higher number of cycles and corresponding load to failure (D: 39627 cycles±4056, 4463 N±906; V: 32927 cycles±3487, 3793 N±849, $p = 0{,}004$) and a significantly higher bending stiffness (D: 1610 N/mm±249; V: 1077 N/mm±189, $p = 0{,}03$) and torsional stiffness (D: 16.9Nm/mm±6.3; V: 12.1Nm/mm±3.9, $p = 0{,}03$)
Conclusion: Anterolateral double plating is another option in periprosthetic fracture fixation and provides additional stability compared to a single lateral plating construct with two LAP.
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Disclosure: No significant relationships.

P127

THE USE OF ULTRASOUND-GUIDED DRY NEEDLING AND INJECTION OF DEEP LAYER IN TREATING PLANTAR FASCIITIS. AN ASSESSMENT OF OUR PATIENT SAMPLE AND LITERATURE REVIEW

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Introduction: Plantar fasciitis is a condition not yet completely understood. It occurs at the site where a ligament inserts into bone. There is wear and tear of the ligament and collagen. It causes pain in the heel and bottom of the foot. Previous research has attempted to explain the causes of plantar fasciitis, these include obesity, exercise and long periods of standing. The most common mode of treatment includes Extracorporeal Shockwave Therapy (ESWT), dry needling (+/−injection).
Material and methods: Our study assessed the success rates of percutaneous dry needling and injection for plantar fasciitis. The sample consisted of thirty-two patients that had plantar fasciitis confirmed on Ultrasound imaging. The degree of fasciitis was assessed by looking at the thickness of the fascia and neurovascularity. Patients were symptomatic for over four months and had already received conservative treatments that were unsuccessful, including NSAIDS, foot wear with gel pads and physiotherapy. The procedure was performed by two consultant musculoskeletal radiologists. After the procedure patients were given a questionnaire to complete. This looked at pain score just before and upto a month after the procedure.
Results: The outcome was promising. Over 85 % (22/27) of the patients were happy with the treatment. They report the pain had significantly improved after the procedure.
Conclusion: Percutaneous dry needling and injection of the deep layer with ultrasound guidance is a successful non invasive treatment for plantar fasciitis. It allows faster recovery and reduces the rate of complications compared to more invasive procedures.
References:
Disclosure: No significant relationships.

P128

EFFECTIVENESS OF REGIONAL NERVE BLOCK ON CLAVICLE AND SHOULDER SURGERY

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Introduction: Shoulder and clavicle operations have often been performed under general anesthesia, but it requires more human resources and time than regional anesthesia. We adopted these operation under only regional anesthesia since 2014. The aim of this study was to consider the utility of regional anesthesia operation by comparing brachial plexus block and general anesthesia.
Material and methods: 62 patients who underwent a clavicle and shoulder operation (ORIF and removing implant) were chosen in retrospective from January 1, 2013 to January 1, 2015. They were allocated in two groups: brachial plexus block group (BG, n = 31) and general anesthesia group (GG, n = 31). Brachial plexus block was performed using nerve stimulator and ultrasound. We evaluated the waiting days of ORIF, In-operation room time excluding operation time, complication and the annual number of general anesthesia cases.
Results: In-operation room time for brachial plexus block was shorter than general anesthesia (mean BG-59.5 min versus GG-79.0 min). The annual number of these operations under general anesthesia could be decreased (26/26 case, in 2013 versus 5/31 case, in 2014). There were 4 complications of brachial plexus block cases (2- bradycardia, 1-Horner syndrome, 1-nausea). General anesthesia were 4 cases (all of low blood pressure). There were a few differences between the two groups for the waiting days of ORIF operation (BG-2.5 days versus GG-4.2 days).
Conclusion: we found these operations under regional anesthesia to be effective. But nerve block has a learning curve for each operator, particular complications must be performed carefully.
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Disclosure: No significant relationships.

P129

LOCKING PLATE FIXATION - IS IT RELIABLE ENOUGH FOR PATIENTS OF ADVANCED AGE WITH PROXIMAL HUMERUS FRACTURES

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Introduction: PHF still have a high complication rate and unsatisfactory results in spite of routine fixation with angulary stable plates. To present our early results from augmentation with allo- and autografts for 3- and 4-part fractures of the proximal humerus, stabilized with locking plates.
Material and methods: 63 patients (47 female and 16 male mean age 69 years) were operated with angulary stable plates. According to the Hertel criteria, 30 % of the patients were eligible for primary arthroplasty. PHF were distributed as follows: 30 patients (12 with 3-part and 18 with 4-part fractures, 10 of them with varus dislocation and medial metadiaphyseal comminution) were stabilised with additional supplementation with 3-cortical ABG. Of the rest 33 (15 with 3-part and 18 with 4-part fractures; 25 in varus and 22 with medial comminution) 20 were stabilized with additional supplementation with fibular cryoallografts, 13 – with tibial strut allografts; 40 PHF were operated with MIPO LTD, and 23 – with DP approach.
Results: 62 fractures healed. Secondary varus deformation was found in 5 patients, cut-out – in 2, screw penetration in 2, impingement in 7, malreduction in 4, fixation failure in 1 and infection in 1 patient. The mean CS 82 : 3 patients had poor, 5 had acceptable, 30 had good and 25 had excellent results.
Conclusion: The additional augmentation with autologius and allografts decreases secondary varus dislocation, especially in patients with metadiaphyseal comminution. The filling of the metaphyseal defect also has beneficial effect and decreases the risk for secondary collapse of the head of the humerus.
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Disclosure: No significant relationships.

P130

OSTEOPOROTIC DISTAL FOREARM FRACTURES - STABILIZATION WITH AN ANGLE STABLE MINIMAL INVASIVE INTRAMEDULLARY POLYMER

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Introduction: In progressed osteoporotic disease conventional operative treatment of fractures often leads, especially in presence of long segment comminuted fractures to unsatisfactory results.
Material and methods: Through a small incision a Dacron-balloon-catheter is inserted into the medullary canal after reaming with a flexible cannulated drill. The balloon is filled with a liquid plastic-monomer. Curing of the monomer using blue light (wavelength 436 nm) is achieved creating a customized intramedullary rod. The balloon adapts to their regular shape of the medullary cavity. After the curing process an angle-stable locking screw or a plate may be used in combination with the implant to increase stability.

Results: Nine female patients with distal forearm fractures with an average age of 77,6 years were treated from 09/2011-06/2014. 3/9 distal radial fractures were treated with the Polymer in a retrograde fashion in combination with a locking screw. 1/9 patients was operated with a Hybrid-Osteosynthesis consisting out of the polymer and an angle stable palmar plate. 3/9 radial fractures obtained an extraarticular external fixator without the polymer. 2/9 patients were treated with palmar plate in combination with an external fixator. Mean follow up was 150,6 days. In all fractures bone healing was documented radiologically.
Conclusion: Treatment of osteoporotic distal forearm fractures using an intramedullary polymer implant is suitable to manage long segment fractures. The radiolucent polymer allows radiological visualization of the entire bone and facilitates radiation therapy in select cases. Stability may be increased either with locking screws placed at any position of the implant as determined by anatomical safe zones or with plates.
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Disclosure: Consultant for Implant Development IlluminOss Medical

P131

MINI-INVASIVE CERCLAGE

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Introduction: The reduction of cortical bones mechanical resistance resulting from under pressure contact of any peripheral system device is well known to the orthopedic surgeons and it is ascertained in daily trauma practice. Some influential authors have deepened the biological aspects and consequently have inferred the possible clinical complications of a reduced periosteal blood supply and also of a damage of periosteal mechanoceptors. We have therefore decided to introduce a new cerclage system, consisting of a wire with some pure titanium spacers to reduce the contact zone to only 6 points.
Material and methods: The low contact cerclage was applied to 30 patients with different femural fracture with patterns that were easily reduced by cerclage In all these patients the cerclage was associated with other osteosynthesis systems. The Xrays were taken every 30 days until the fusion was reached
Results: In all the patients we observed a fast bone recovery and no case of implant failure. All these patients showed no creeping substitution near the cerclage and all reached rapid e complete recovery. The follow up was for all the 30 patients carried on until the radiographic evidence of bone repair with a mean of 4 months (from 3 to 6 months).
Conclusion: This cerclage system, thanks to the spacers, reduces the perimetral extension of the pressure applied to the cortical bone and consequently prevent periosteal blood supply damage. Authors review first cases treated with the above mentioned system and open the discussion on this topic.
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Disclosure: No significant relationships.

P132

THE ANTERIOR INTRAPELVIC APPROACH FOR ACETABULUM FRACTURES

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Introduction: The anterior intrapelvic approach is a new advance in the operative treatment of acetabulum fractures. It has its origins in the Stoppa approach for inguinal hernia.
Material and methods: Schematic diagrams, photographs from dissections, and clinical xrays will be used to illustrate this technique and the special instruments for facilitating the exposure.
Results: The Anterior Intrapelvic approach is an innovative new method for achieving a good reposition of a complex transverse or anterior column fracture of the acetabulum.
Conclusion: Indications, advantages and pitfalls of this approach to the pelvic ring are to be illustrated for this poster.
References:
Disclosure: No significant relationships.

P133

TREATMENT OF SUB-ACUTE AND CHRONIC WOUNDS WITH EXTRACORPOREAL SHOCKWAVE THERAPY

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Introduction: There is accumulating evidence showing clinical efficacy of extracorporeal shockwave therapy (ESWT) in the management of delayed wound healing or chronic wounds. In August 2004 a clinical study was initiated in the AUVA trauma center with the intent of treating patients with non-healing wounds of different etiologies.
Material and methods: Between 2004 and 2014, 824 patients with soft tissue wounds of different etiologies persistent longer than one month (mean: 74.7 days ± SD: 182) were included. The primary outcome measure was rate of wound closure. A subgroup analysis comparing patients with and without diabetes mellitus was performed.
Results: 824 Patients were treated with unfocused ESWT. Mean age was 57.58 years ± 20.05 (SD). 79,9 % of wounds were located on the lower extremity. The majority of treated wounds were posttraumatic (81 %). We achieved complete healing in 72 %, irrespective of etiology, of the wounds treated with defocused ESWT (0.1 mJ/mm^2, 3 to 5 Hz). On average complete healing was seen after 47 days (.± 45 SD) following the first ESWT receiving 3 ± 2 treatments (mean ± SD; min-1 and max-11). In comparison of 54 patients with diabetes to 152 patients without diabetes (diabetes 41-91 years; non diabetes. 39-90 years) no significant difference in wound healing could be found (non diabetes 74 % vs. diabetes 70 %).
Conclusion: During the last 10 years of treating chronic and subacute wounds of different etiologies with ESWT we could show excellent consistent results. Patients suffering from non-healing wounds with diabetes in the medical history respond as well as patients without diabetes.

References:
Disclosure: No significant relationships.

P134

RADIOLOGICAL CHARACTERIZATION OF FULL-SIZE BIORESORBABLE ELASTIC STABLE INTRAMEDULLARY NAILING IMPLANTS IN A GROWING SHEEP MODEL

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Introduction: Paediatric ESIN osteosynthesis enables early weight bearing without a cast. (1) However, a second removal operation is needed for common implants. Magnesium implants render a second surgical intervention. Rare-earth (RE) elements are frequently used for alloying to decrease degradation speed. Nonetheless, they are considered to be noxious. Aim of this pilot study was to evaluate the degradation of RE-free Zn-poor Mg-Zn-Ca ESIN implants in an in vivo sheep model to enable the use of ESIN implants in paediatric trauma.
Material and methods: 7 sheep tibiae were implanted with two RE-free magnesium alloys: alloy ZX10 (Mg–1Zn–0.3Ca, $N = 3$) and alloy ZX00 (Mg–0.3Zn–0.4Ca, $N = 4$). The materials were extruded to rods with a diameter of 3 mm and cut to a length of 25 cm, according to a preoperative length measurement of the sheep tibia. A standard implantation according to paediatric trauma osteosynthesis was performed using 2 ESINs (of diameter 3 mm) in the sheep tibia. All surgical interventions were performed under sterile clinical conditions. Continuous clinical CT imaging (Siemens Sensatom 64) was performed at 2, 6, 12, 24 and 52 weeks after implantation. Volume, surface and gas evolution were quantified with Materialise MIMICS, ver. 17.
Results: No adverse effects could be noticed. A faster degradation and increased hydrogen gas production was seen in the alloy ZX00, visible degradation started after 2 weeks in vivo.
Conclusion: Our investigations in a sheep model show that the degradation characteristics of RE free Mg alloys achieve the prerequisites for the use in paediatric orthopedics.
References: *1 N. E.* Bishop, M. van Rhijn, I. Tami, R. Corveleijn, E. Schneider, K. Ito, Shear does not necessarily inhibit bone healing, Clinical Orthopaedics and Related Research 443.
Disclosure: No significant relationships.

P135

SURGICAL REPAIR OF TRAUMATIC RUPTURE OF QUADRICEPS TENDON WITH AUGMENTATION WITH ALLOGRAFT ACELLULAR HUMAN DERMAL MATRIX – CLINICAL RESULT

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Introduction: Traumatic rupture of quadriceps tendon is a debilitating condition. This can result in intractable pain, limp, and instability of the knee. There have been various methods described for repairing or reconstruction of this quadriceps muscle complex including direct trans-osseous repair, muscle transfers, muscle and tendon sling, bone tendon allograft reconstruction and endoscopic repair techniques.
Material and methods: Evaluation of results included pain scoring, gait evaluation, single leg stance and squatting. There was a significant improvement in pain (VAS mean values 7.9+/− 1.4 to 2.8+/−0.8), limp and gait along with quadriceps strength. The deep squatting at 6 months post surgical repair became possible in all but one.
Conclusion: Overall this procedure appears to be safe and associated with high patient satisfaction, without the morbidity of any tendon or muscle transfers. These augmention material did not fail when subjected to excessive loading during the rehabilitation period.
Results: Evaluation of results included pain scoring, gait evaluation, single leg stance and squatting. There was a significant improvement in pain (VAS mean values 7.9+/− 1.4 to 2.8+/−0.8), limp and gait along with quadriceps strength. The deep squatting at 6 months post surgical repair became possible in all but one.
Conclusion: Overall this procedure appears to be safe and associated with high patient satisfaction, without the morbidity of any tendon or muscle transfers. These augmention material did not fail when subjected to excessive loading during the rehabilitation period.
References:
Disclosure: No significant relationships.

P136

NOVEL OLECRANON TENSION PLATE COMPARED TO A TENSION BAND WIRING IN A COMPLEX FRACTURE MODEL – A BIOMECHANICAL CADAVER STUDY

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Introduction: The golden standard method of a tension band wiring (TBW) used for the internal fixation of olecranon fractures still have a high rate of complications and recent studies questioned the paradigm of converting posterior tensile forces into compression during active elbow extension. The aim of this study was to compare the stability of the TBW versus an alternative, novel olecranon tension plate (OTP) in a simulated complex fracture model.
Material and methods: We tested 8 fresh frozen-pairs of cadaver proximal ulnae osteotomized oblique with an additional wedge fragment. The TBW and OTP were implanted pairwise. The elbow motion ranged from full extension to 90 degrees of flexion, and the pulling force of the triceps tendon ranged from 50 N to 250 N. The displacement of the fracture fragments was continuously measured with a video motion analysis system over 304 cycles. Data were assessed statistically using the Wilcoxon signed-rank test. $P < 0.05$ was considered as statistically significant.
Results: The cyclic loading tests showed displacements of the fracture fragments of 0,37 mm using TBW and 0,14 mm for OTP. Statistical analysis showed the difference to be ($p = 0{,}31$) not statistically significant. No plate breakage or screw loosening occurred.
Conclusion: The concept of replacing prominent K-wires at the proximal end of the ulna using an low-profile plate with lag and

angle-stable screws demonstrated no statistically relevant advantages over TBW in a tested fracture model. Nevertheless, the higher stability offered by this new implant along with screw system that reduces the backing out of screws may find clinical usage.
References:
Disclosure: The biomechanical laboratory of the Department of Trauma Surgery is supported by a yearly grants from Medartis AG, Basel, Switzerland.

P137

THE USE OF MRI IN DETECTING OCCULT FEMORAL NECK FRACTURES: ILLUSTRATION OF INCIDENTAL IMITATING CONDITIONS THAT CONTRIBUTE TO THE PATHOLOGY

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Introduction: MR imaging is the first line imaging used in patients presenting to the emergency department with acute hip pain to detect occult fracture neck of femur. We are going to look at causes that imitate occult hip fracture in patients presenting with acute hip pain in patients with normal X-rays and explore their MR imaging findings.
Material and methods: We use MRI during working hours to detecting occult femoral features whilst CT is used out of hours. We illustrate MRI features of numerous causes of acute hip pain leading to bone marrow oedema. These include; inflammatory conditions such as (sacroiliitis, arthropathy), trauma (pelvic fractures), degenerative (osteoarthritis), adductor bursitis, tumour (osteoid osteoma, metastases, primary), avascular necrosis (AVN) and miscellaneous causes such as transient osteoporosis. In each case soft tissue damage will be explored. For example; in patients with peri-articular involvement soft tissue injury involves myositis, necrotizing fasciitis and joint effusion.
Results: It is vital that radiologists assess for bone and soft tissue injuries that imitate femoral neck fractures. This should be combined with thorough clinical assessment of the joint.
Conclusion: It is important to be able to recognise soft tissue and bony abnormalities on MRI that may occur solitary or as a result of partial fractures in patients with clinically suspected occult femoral facture. This will have an impact on diagnosis and consequent management.
References:
Disclosure: No significant relationships.

P138

NOVEL USES OF MRI AND ULTRASOUND IN EVALUATING PERIPHERAL NERVE DISORDERS

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Introduction: Current methods of diagnosing peripheral nerve injury include clinical assessment and electrophysiological examinations. In the past MR imaging and ultrasound have only played a role in detecting mass lesions that compress a nerve however, we propose a wider use of these modalities. They provide high quality images to detect nerve injury and its associated soft tissue abnormalities.
Material and methods: We illustrate three things in this article: the basic anatomy of extremities, specialised MRI and US techniques and image finding of nerve lesions and associated soft tissue damage. These modalities provide high quality images that give a more in depth knowledge of the distribution of nerves and their pathological classification, e.g. demyelinate vs axonal. They provide intrinsic and extrinsic information on peripheral nerve damage that may not be detectable on electrophyiopsological tests. We demonstrate the use of MRI and Ultrasound in diagnosing peripheral nerve lesions. We will provide images to explain advantages of using these modalities over others.
Results: We demonstrate optimal Ultrasound and MRI techniques to assess nerve lesions. We use individual case examples to demonstrate the range of image findings in peripheral nerve lesions. We have had positive feedback from our clinicians in reaching diagnosis. In our institution we have a One Stop Clinic Model for an instant US in Fracture and Orthopaedic clinics.
Conclusion: As well as clinicians, radiologists play a major role in assessing peripheral nerve lesions. Optimal radiological techniques to demonstrate nerve lesions and high quality images to illustrate a range of findings in nerve disorders will improve patient management.
References:
Disclosure: No significant relationships.

P139

REMOTE SURGICAL EDUCATION - CAN SURGICAL SKILLS BE TAUGHT REMOTELY?

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Introduction: Virtual medics is a not for profit organisation that is a world leader in the field of innovating medical and surgical education. We have developed a programme - ROSE - remote online surgical education. As a preliminary study we taught a group of students how to tie and hand reef knot using either face to face or virtual teaching and then assessed them.
Material and methods: 20 first year medical students with no previous exposure/experience in suturing were enrolled. They were randomly allocated to one of two group - Pott or Blizzard. The virtual teaching was a high quality teaching video of the stitch. The Pott group received only face-to-face teaching for 15 minutes. The Blizzard group received only virtual teaching for 15 minutes. Both groups were then assessed immediately after, at one week, two weeks and one month. The Blizzard group had access to the online teaching materials for the follow up period while the Pott group did not.
Results: The Pott group (face-to-face) all 10 received 100 % on initial assessment. The Blizzard group (virtual) 2/10 got 50 % and 1/10 got 25 %, 7/10 got 100 % on initial assessment. Follow up assessment is still pending but we expect a high rate of retention for those with access to online videos compared to just face-to-face teaching.
Conclusion: Remote teaching of surgical skills leads to a good appreciation of technique with good assessment results. We expect

those with access to online resources to have greater retention of skills comapred to face-to-face teaching. More studies are needed.
Disclosure: No significant relationships.

P140

TIBIAL PLATEAU FRACTURES-COMPLEX INJURIES, COMPLEX TREATMENT

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Introduction: Tibial plateau fractures remain one of the most challenging problems in modern traumatology, due not only to their functional impact upon the limb, but also due to their diversity, which require, sometimes, several therapeutic means. The purpose of this paper is to illustrate the complexity of the algorithm for treating these fractures.
Material and methods: This prospective study evaluates 68 patients operated between 1.06.2009 si 1.06.2013 for closed tibial plateau fractures - 39 men, medium age 46 yrs (20-66). Fractures were classified following the AO classification; the implants used were : L/T plates (10 cases), angular stability implants in 10 cases, CREF (10 cases). The patients were evaluated regarding the functional scores, local and general complications. A mulitnodal multi-steps algorithm was finalized and the patients were analysed regarding the result compared to the compliance to this algorithm.
Results: A 24 months follow-up showed excellent results in 38 cases, good in 12 cases, satisfactory in 10 cases and unsatisfactory in 8 cases . The complications were septic (2 cases) and 4 malunions. The results were significantly better after A and B type fractures than after C type. The critical points of the algorithm were: pre-operative planning, optimal treatment of depression, stable restoration of metaphyseal angle.
Conclusion: Restoration of functional anatomy is mandatory in order to obtain an optimal result after tibial plateau fractures. A pre-operative " check-list" with key-points can prevent failures in reduction and fixation, with important functional consequences.
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Disclosure: No significant relationships.

P141

DOUBLE PLATING FOR UNSTABLE SUPRACONDYLAR FEMORAL FRACTURES

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Introduction: The management of supracondylar femoral fractures remains a challenging issue. Traditionally these fractures are treated with an open reduction and internal fixation using of an anatomical distal lateral femoral locking plate. However, with this technique non-union rates of up to 20 % have been reported. One possible explanation for the suboptimal outcome could be instability and varus collapse at the medial cortex. A way to counteract this problem could be a second locking plate to the medial cortex.
Material and methods: The observed population consists of 17 patients who were all treated for supracondylar femoral fractures, 7 of these were periprosthetic, by a double extra-medullary locked plating consisting of both the classical lateral locked plate combined with an additional medial angle stable plate. All patients with a minimum of 6 months of follow up were included. Three patients died due to unrelated causes. Two more patients got lost to follow up. The 12 remaining participants were evaluated for union, clinical outcome and complications. In this monocentric study, all patients were treated by the same surgeon.
Results: At the time of submission all of the patients showed union of the fracture. Clinical outcome was generally excellent to satisfactory except for two patients who were good initially but required revision surgery at a later time. Two patients with complications were observed consisting of one infection, and one hardware failure.
Conclusion: The preliminary results of this study indicate good union rates and clinical outcome in most patients treated with both a medial and lateral distal locking plate. Remarkably patients benefited from early weight bearing for short transfers. None of the patients has a flexion deficit. Demonstrating a possible further benefit of the procedure. Although this study is only based on a small set of patients it shows this might be a valuable alternative to managing supracondylar femoral fractures. Further research to determine the effect and the place of this technique, is warranted.
References:
Disclosure: No significant relationships.

P142

THE USE OF GENTAMICIN-COATED NAILS IN COMPLEX OPEN TIBIA FRACTURE AND REVISION CASES: A RETROSPECTIVE ANALYSIS

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Introduction: Despite modern advances in fracture care, implant-related infection remains a problem in the treatment of tibia fractures. In the following study we describe our results using a gentamicin-coated intramedullary tibia nail (Expert Tibia Nail (ETN) PROtect^{TM}) for the surgical treatment of complex open tibia fracture and revision cases.
Material and methods: We describe the outcome of patients treated between January 2012 and September 2013, using a gentamicin-coated intramedullary tibia nail. Treatment indications included acute, Gustilo grade II-III, open tibia fractures or closed tibia fractures with long-term external fixation prior to intramedullary nailing and complex tibia fracture revision cases with a mean of three prior surgical interventions. Outcome parameters in this study were deep infection and nonunion.
Results: In total, 16 consecutive patients with 16 tibia fractures were treated with a gentamicin-coated intramedullary nail. The patient population was subdivided into two groups. The first group consisted of 11 patients (68.8 %) with acute fractures who were treated with a gentamicin-coated intramedullary nail. The second group consisted of 5 complex revision cases (31.2 %). In our patient population no deep

infections could be noted after the treatment with a gentamicin-coated tibia nail. Nonunion was diagnosed in 4 patients (25.0 %), 1 of these was a revision case.
Conclusion: The purpose of the study was to evaluate a gentamicin-coated tibia nail in the prevention of implant-related infection. In our patient population no deep infections occurred after placement of the gentamicin-coated nail. Following this study and literature data, antibiotic-coated implants seem a potential option for prevention of deep infection in trauma patients.
References:
Disclosure: The department of Trauma Surgery of the University Hospitals Leuven receives an unrestricted research grant from DepuySynthes and is a training centre for DepuySynthes.

EMERGENCY SERVICE/PREHOSPITAL/ INHOSPITAL

P143

TRAINING IN TRAUMA and EMERGENCY SURGERY IN SOUTH AFRICA: AN OPPORTUNITY WITH AHP

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Introduction: To describe opportunities in trauma surgery and personal development during a year abroad in South Africa, organised through Africa Healthcare Placements.
Material and methods: A retrospective review of my logbook and picture review of trauma cases to demonstrate the scope and volume of trauma exposure. Reflection on my knowledge, judgement, skills and professionalism developed during time in South Africa. A description of the extra-curricular opportunities also available due to full salary while abroad. High quality images to fully illustrate the above.
Results: Review of caseload and exposure My logbook for trauma included extensive experience including stab hearts, VATS thoracoscopy, trauma laparotomies, liver packing, splenectomy, pelvic packing, visceral rotation for retroperitoneal bleeding. My logbook for emergency general surgery included multiple laparotomies (>50), amputations, debridement for necrotising fasciitis. Academic opportunities (2 international presentations) and inexpensive trauma courses such as DSTC (run by Prof Boffard), ATLS were also available. Extracurricular activities included South African food and wine, sport (mountain climbing, rowing, sailing), travel, all within budget due to South African government salary.
Conclusion: Spending a year in trauma surgery in South Africa on a full salary through AHP can be a once-in-a-lifetime experience professionally and personally. It is important to be aware of the drawbacks to a year abroad, and time your experience carefully.
References:
Disclosure: No significant relationships.

P144

MANAGEMENT OF ACCIDENTAL HYPOTHERMIA BY CPB/ECMO AT OSLO UNIVERSITY HOSPITAL

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Introduction: Accidental hypothermia (AH) may lead to cardiac arrhythmias and cardiac arrest. The use of cardiopulmonary bypass (CPB) or extracorporeal membrane oxygenation (ECMO) may be warranted in patients with AH (core temperature <28 °C and/or cardiac arrhythmia/asystole). Selection criteria are needed for optimal treatment and a successful outcome.
Material and methods: A retrospective analysis was carried out. Based on the literature and our hospital's emergency protocol, we reviewed the patients' histories to identify prognostic factors that may affect the clinical outcome.
Results: Nineteen adults and five children with AH were treated with CPB/ECMO from January 2007 till September 2015. Eight survived, sixteen died. The mechanisms of AH were environmental exposure (n = 10), drowning (n = 11) and avalanche burial (n = 3). None of the patients that drowned or were buried survived. Only two patients died following AH due to environmental exposure. Median potassium and lactate levels were significantly lower in the survival group compared to the non-survival group. Conversely, time to CPB/ECMO was significantly higher in the survival group, suggesting that response time is secondary to the mechanism responsible for AH. All survivors had cardiac electrical activity. None of the non-survivors did.
Conclusion: Accidental hypothermia may result in death. Transport to an institution that can provide CPB/ECMO is crucial. The mechanism of hypothermia seems to be the most predictive factor as to the clinical outcome. Accidental hypothermia in the setting of drowning or asphyxia has a dismal prognosis and restraint from active treatment should be considered. CPB/ECMO should be administered in all patients with AH and circulatory collapse due to environmental exposure.
References:
Disclosure: No significant relationships.

P145

IMPALEMENT INJURY TO THE LEFT THIGH: A CASE REPORT

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Introduction: Impalement injury is a type of trauma defined as a penetrating wound caused by an object with a blunt tip. It's mostly related to falls and sexual activity. Usually, impalement injury is associated with wound contamination and possible injury to deep organs and blood vessels. The foreign body may be providing tamponade if a major vascular structure is injured; hence, there is a possible benefit to leaving the foreign body in place until radiologic evaluations are performed. Surgeons should obtain as much information as possible about the impaled object and mechanism of the injury.
Material and methods: We report the successful management of impalement trauma to the left thigh.

Results: A 32-year-old man fell approximately two meters and landed on tree branches. He impaled his left thigh on a branch that was 2 cm in diameter. The patient was transported to our emergency department. Antibiotics, analgesics and tetanus vaccination were administered. The patient was hemodynamically stable and XR showed a foreign body with approximately 10 cm in length. A computed tomographic angiogram showed the foreign body in the soft tissues of the left thigh closely to the femoral vessels but without extravasation of contrast. In the operating room, the foreign body was removed carefully, and the wound was explored, irrigated, drained and closed. The patient had an uneventful postoperative course.
Conclusion: In hemodynamically stable patients the preoperative studies are of great importance. In our case computed tomographic angiogram confirmed the anatomic location of the tree branch and the absence of contrast extravasation, simplifying surgical approach.
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Disclosure: No significant relationships.

P146

THE EFFICACY OF THE TEAM BUILDING TRAINING FOR NURSES IN OPERATION ROOM AGAINST URGENT TRAUMA SURGICAL CARE

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Introduction: Time management is precious to save life for severe traumatic patients. Once a patient occurred nonresponsive shock status, we usually performed thoracotomy and/or laparotomy in emergency room (ER). Unfortunately we experienced time consumption resulted in losing opportunities to transfer patients from ER to the operation room (OR). One of the reason of time consumption was delay to preparation of ready to use the OR. In order to resolve this problem we conducted team building training for our medical staff, especially OR nurses.
Material and methods: OR nurses took lectures of team building approach and off-the-job training including assistance of operation in living animal. OR nurses discussed and changed the strategy of care for severe trauma patient who needed to urgent surgery. We surveyed the improvement of preparation for OR including surgical instrument and equipment for urgent surgery for trauma.
Results: The survey showed 38.5 % (5/13) was prepared for OR in time before changes of strategy. In contrast 69.2 % (9/13) was successfully prepared in time after changes and they just spent 17.5 ± 9.4 minutes after the request to use OR by trauma surgeon. OR nurses acquired knowledge, assistance skills, consideration and confidence of strategy for severe trauma patients. They also modified preparation for operative equipment and surgical instrum.
Conclusion: The team building training for OR nurses dramatically improve time consumption and the quality.
References:
Disclosure: No significant relationships.

P147

THE EUROPEAN TRAUMA COURSE DEVELOPMENT FROM 2006-2015

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Introduction: The European trauma course was developed in the pilot phase between 2006 and 2008. It was designed by a group of experts from all Europe as it was necessary to create a flexible course on trauma management that can be used in all the different systems in Europe. Additionally working in a team has not been reflected in the traditional courses that were available. The goal was to create a course that this focused on a team approach and flexible to adaptation to local protocols. Based on up-to-date adult learning models 85 % is practical simulation based team training.
Material and methods: A database search of the ERC course data base (courses.erc.edu). Data were displayed according to country and month of the course.
Results: The courses started in 2006 with an inaugural course in Malta followed by 3 pilot courses. After that there were courses in 2008 (3), 2009 (11), 2010 (17), 2011 (18), 2012 (34), 2013 (41) and 2014 (62) in 3 (2008), 8 (2009), 10 (2010, 2011), 11 (2012) 13(2013), 17(2014) and 19 countries in 2015. The most courses were done in Germany (51), followed by Austria(37) and UK (236), Egypt (28), Italy(21), Croatia (11), Malta (10), Poland (8), Slovenia (7), Portugal(6), Belgium, Finland, Denmark (5), Hungary(4), Saudi Arabia, Sudan, Sweden, Switzerland and Romania (3), Jordan (2) and Norway, Netherland, Ireland and Greece(1).
Conclusion: The project "European Trauma Course" was piloted with four courses and started in 2008. The courses already available in 24 countries made a quick development from 2008 to 2015.
References: The European Trauma Course: trauma teaching goes European.Thies KC et al., Eur J Anaesthesiol. 2014.
Disclosure: Organisers of the ETC.

P148

PROTOCOL FOR PATIENT PERSPECTIVE VIDEO EVALUATION DURING MAJOR INCIDENT EXERCISES

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Introduction: Exercises and their evaluation are an important element of preparedness for major incidents and disasters. Most

evaluation techniques rely on reports from observers overviewing elements of the exercise. Data from registration systems and observational cameras can also be reviewed to judge the functioning of a hospital during the response to a major incident. However, these observation techniques only show a part of the process the patients actually goes through and most data can't be reproduced.
Material and methods: To develop a new, more interactive, modality of evaluation a compact action camera was positioned on head of patients during two major incident exercises. After the first exercise a protocol was designed to evaluate the patient perspective video, this protocol was used to evaluate the second exercise images. The camera recorded from the arrival at the hospital until admittance to one of the wards. The videos were evaluated and compared to the data gained from evaluations of observers, registration systems and the patient self.
Results: We expect to present different insights through this technique. Results will follow shortly.
Conclusion: The aim of this protocol is to develop a prospective, standardized method to evaluate a hospitals major incident response with the use of video images shot from the patients' perspective.
References:
Disclosure: No significant relationships.

P149

DEVELOPMENT AND FIRST TEST OF APPLICABILITY OF A NEW EMERGENCY MEDICINE SPINAL IMMOBILIZATION PROTOCOL (E.M.S. IMMO PROTOCOL) FOR ADULT TRAUMA PATIENTS

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Introduction: Cervical spine protection is performed at the very first step in the ABCDE principles to prevent secondary damage to the spinal cord. Thus, spinal immobilization has been a standard procedure in prehospital trauma care for many decades. In view of increasing reports of disadvantages and complications of immobilization, guidelines recommend thoughtfully provided indications for spinal immobilization and using a decision-support tool to facilitate rapid and valid on scene decision. The goal of this study was (1) to develop a new protocol providing indication for spinal immobilization in trauma patients and (2) to carry out the first applicability tests by emergency medical personnel via a questionnaire.
Material and methods: Based on the current literature and guidelines, the E.M.S. IMMO Protocol for adult trauma patients was developed and graphically transfigured following a first (21 participants) and a second (50 participants) applicability test by a questionnaire.
Results: The first survey was stopped after intermediate evaluation (21 participants) because 3 questions that verifies applicability of the protocol were frequently answered incorrectly. The protocol was therefore redesigned graphically to its current version. The applicability of the new version was confirmed in a second survey of a different set of 50 participants. However, responses to all questions regarding immobilization of trauma patients were now improved.
Conclusion: The E.M.S. IMMO protocol provides a support tool for decision on spinal immobilization in adult trauma patients that permits variable decision-making depending on the current condition of the trauma patient and the pattern of injuries for immobilization in general and for immobilization method in particular.
References:
Disclosure: No significant relationships.

P150

DOES THE MOVEMENT OF THEATRE TRAFFIC INCREASE INFECTION IN ELECTIVE THEATRES?

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Introduction: Infection is a major problem in orthopaedic surgery and is a major burden on the patient, surgeon and trust. Theatre doors, which are constantly opening and closing during theatre cases, interrupt laminar flow with wound contamination being a direct result from disruption in the laminar airflow system. Evans demonstrated the effectiveness of laminar flow systems in theatres in 2011.
Material and methods: Data was collected over one day with five theatres including trauma and elective theatres being examined. There were six different consultant lists. The numbers of times the main theatre door and anaesthetic door were opened and closed were monitored respectively throughout the day. Doctor and nurse data was collected separately.
Results: There were four theatres analysed over one day with six different consultant lists. Overall, doors were opened 663 times across 4 theatres in one day. Overall results showed that more nurses went in and out of theatre compared to doctors. One case in a trauma theatre had more nurses entering during trauma hip surgery compared to an elective theatre for a total hip replacement. General observations showed many staff were not aware of infection control and did not use the appropriate precautions. There was multiple staff with scrubs untucked and surgical masks being worn outside theatre.
Conclusion: It is clear from the results collected that theatre staffs need further education on infection control within theatres and surrounding areas. Most importantly measures should be taken to reduce theatre traffic to in turn reduce the chance of prosthetic infections.
References:
Disclosure: No significant relationships.

P151

HOSPITAL EVACUATION: EXERCISE VERSUS REALITY

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Introduction: The Major Incident Hospital (MIH) has a longstanding experience training for various major incident scenarios. In 1995 the MIH had experience with overtaking an evacuated hospital. In November 2014 an exercise was performed to transfer an evacuating

hospital to the MIH. The scenario again became reality when a neighbouring hospital had to evacuate in September 2015. This article evaluates and compares the exercise to the real events to further optimize future training.
Material and methods: The events are analysed using the Protocol for Reports from Major accidents and Disasters, a standardised protocol to evaluate major incident medical response.
Results: During the exercise 72 patients were received, 143 and 70 respectively during the 1995 and 2015 events. Personnel from the evacuating hospitals accompanied their patients and continued working in the MIH. Patient surge differed on all occasions. IT systems proved to be more prone to fail during real events. Legal implications to have staff from another hospital work in the MIH were protocolled during the deployment. The acute phase was comparable in all events and performance was good, however the exercises duration was too short to analyse the possible implications on multiday care.
Conclusion: Large-scale major incident exercises are a great benchmark for the medical response in the acute phase of relief. The MIH has shown to be highly prepared for evacuation events, guaranteed by experiences from the past combined with regular training. Key differences between a true deployment and exercise are mainly found in the inability to train multiple days and operation of IT systems.
References:
Disclosure: No significant relationships.

P152

MODELING OF PATIENT ADMISSIONS AND EPIDEMIOLOGY OF UPPER GASTROINTESTINAL BLEEDINGS: A SINGLE-CENTER EXPERIENCE

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Introduction: A clinical audit of patients with upper gastrointestinal bleedings gives a possibility to plan medical resources needed for a dedicated surgical unit. **The aim** was to analyze a workload (etiology, references, intensity, and prognosis) for gastrointestinal bleedings in a specialized unit.
Material and methods: A total of 112 patients with upper gastrointestinal bleedings were included in the study. They were hospitalized from 2.2014 to 07.2014 at Sumy Regional Clinical Hospital. Exclusion criteria were a gastric stenosis ($n = 5$) and an ulcer disease without bleeding ($n = 18$). In a final analysis we compared two groups with bleedings: ulcer ($n = 69$) vs. nonulcer ($n = 43$). The statistical report was realized with risk and odds estimations, U- and z-tests, and calculations in AtteStat 2013.
Results: The hospitalizations with ulcer bleedings were significantly more frequent comparing to nonulcer bleedings ($U = 2{,}045$). The patients with ulcers presented a majority (62 %) in the etiological structure of bleedings. The ambulance service of patient reference was dominant, especially for ulcers, among all others (self-reference, transport from public or private hospitals) ($z = -3.7$; $p = 0.0001$). One patient admission a day was observed in 77 % ($p = 0.05$). The workload for all bleedings was higher in a workday than in a weekend (OR 0,93; CI 95 %[0,3;2,1]). The most expected event was «an ulcer bleeding in a workday», the most unexpected event was «a nonulcer bleeding in a weekend».
Conclusion: The bleedings of ulcer nature remain epidemiologically the most common for the Sumy Region of Ukraine. Organizational risks persist in a patient reference modality (ambulance service) and in hospitalization during a workday at a dedicated unit.
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Disclosure: No significant relationships.

P153

APPLICATION OF CERVICAL COLLARS BY EMERGENCY CARE PROFESSIONALS – AN ANALYSIS OF PRACTICAL SKILLS

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Introduction: Application of cervical collars by emergency care professionals is a standard procedure in trauma patients. It is often observed that application of cervical collars is performed incorrectly. The objective of this study was to analyze the practical skills of professional rescue personnel concerning the application of cervical collars.
Material and methods: Emergency care professionals ($n = 104$) were asked to apply a cervical collar Perfit ACE, Ambu) to a training doll (Airway Management Trainer, Laerdal) wherein each step that was performed received an evaluation. Furthermore, personal and occupational data of all study participants were collected using a questionnaire. Statistics was done with the software SPSS Statistics 22.0 (IBM, Ehningen).
Results: Study participants included professional rescue personnel (80.8 %) and emergency physicians (12.5 %). Average occupational experience of all study participants in out-of-hospital emergency care was 11.1 ± 8.9 years. Most participants had already attended a training on trauma care (61 %) and felt "very confident" in handling a cervical collar (84 %). Application of the cervical collar was performed correctly in 11 %. Most common error consisted of incorrect size adjustment of the cervical collar (66 %). No association was found between the correct application of the cervical collar and the occupational group of the test subjects (trained rescue personnel vs. emergency physicians) or the participation in trauma courses.
Conclusion: Despite pronounced subjective confidence regarding the application of cervical collars, this study allows the conclusion that there are general deficits in practical skills applying cervical collars.

A critical assessment of the current training contents on the subject of trauma care must, therefore, be demanded.
References:
Disclosure: No significant relationships.

P154

UNSTABLE DISTAL RADIUS FRACTURE CLOSED REDUCTION AND CAST VS EXTERNAL FIXATOR

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Introduction: Authors analyzed the treatment of choice in unstable distal radial fracture that is often dealt with in traumatology. Until now there is no consensus about treatment, though at first glance it could be considered a routine and simple pathology to handle regardless the instability, the uncertainties about treatment outcome are quite stable.
Material and methods: In two years (2011.-2013.) 136 patients (group A) were treated with a plaster cast after reduction in general aenesthesia, while 73 patients (group B) were treated with an external fixator also in general aenesthesia.
Results: In group A; 10 undergone ORIF after secondary dislocation and instability, only 31 needed physiotherapy, no significant neurovascular complications noted, summer patients had subjective difficulties in being casted. In group B; 4 were reoperated, 2 casted after external fixator removal for up to ten days, 34 needed physiotherapy and three refused the recommended, 11 had pin track infection in 2-7 weeks from application, 10 had contractures in scar area/limited ROM/arthrosis, 4 needed corrections within 2-4 weeks, 2 Sudecks syndrome, one had no follow up.
Conclusion: Favouring the casting method could simplify the treatment for practical reasons, as for the external fixator it could seem less convenient for patient and surgeon with many defined complications, yet they long term desolve. Concluding would be resolving the persistent dilemma that probably resolves with strictly individual patient personality and fracture personality approach.
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Disclosure: No significant relationships.

P155

TREATMENT OF ACUTE ELBOW INSTABILITY - EARLY RESULTS

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Introduction: Ligament injuries to the elbow are relatively common and often underdiagnosed, with either insufficient treatment or prolonged cast immobilization as a consequence.
Material and methods: We conduct a prospective study of operative and non-operative treatment of acute elbow instability. For the first 4 months we have treated 17 patients – 9 operatively and 8 – non-operatively. The patients are stratified after O'Driscoll's classification, excluding the ones with stage 1 and 2 trauma, as they rarely present with acute trauma and are typically, if ever, seen with chronic pain; patients with stage 3A are eligible for non-operative treatment with early mobilization, the ones with 3B and 3C trauma – for operative treatment and early mobilization. The results are evaluated with the Mayo Elbow Performance Score (MEPS) and the Patient Rated Elbow Evaluation (PREE) at 1 month, 3 months and 6 months after the trauma.
Results: At day 30 the non-operatively treated (7 with stage 3A, 1 with stage 3C trauma) had mean MEPS 80 and mean PREE 26. The operatively treated (1 with 3A, 3 with 3B, 5 with 3C trauma) had mean MEPS 77 and mean PREE 28.
Conclusion: The early staging of the patients – by day 7, allows for early mobilization of the non-operatively treated 3A patients with good and excellent results at day 30, as well as accurate selection of the patients for operative treatment, shortening of the period of immobilization and good results at day 30.
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Disclosure: No significant relationships.

P156

GASTRO-DUODENO-JEJUNAL INTUSSUSCEPTION DUE TO AN INFLAMMATORY FIBROID POLYP – VANEK'S TUMOR

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Introduction: Intussusception is rare in adults, being responsible for 1-3 % of all cases of gastrointestinal obstruction. We present the case of a gastro-duodeno-jejunal intussusception due to an inflammatory fibroid polyp (IFP).
Material and methods: 60 year old man who was being assessed for epigastric pain and vomiting of 3 months duration. An esophagogastroscopy showed a pedunculated lesion in the gastric antrum prolapsing through the pylorus to the duodenal bulb. The patient was referred to General Surgery for epigastric pain, uncontrollable vomiting and melena for the last 7 days. At surgery a gastro-duodeno-jejunal intussusception was confirmed due to a polyp stuck at the angle of Treitz, with a great pedicle originated at the prepyloric antrum. The duodenum and first jejunal loop were very dilated. An additional 1.5 cm lesion was found in the subserosa of the gastric body. An antral gastrotomy and a pyloromyotomy were performed, as

well as a laborious reduction of the intussusception and a hemigastrectomy. The pathology report revealed an IFP -Vanek's tumor.
Results: IFPs are rare, benign, solitary lesions, most commonly found at the gastric antrum. They can present with chronic abdominal pain, melena, anemia and rarely small bowel obstruction due to intussusception. Computerized tomography is the most accurate diagnostic tool. The management of adult intussusceptions remains controversial, as there are 3 options: primary resection, initial reduction followed by more limited resection, or reduction of the invagination without resection.
Conclusion: Intussusception is rare in adults and it can be due to IFP. Treatment consists of reduction or resection of the affected gastrointestinal tract.
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Disclosure: No significant relationships.

P157

HEMATOMA BLOCK FOR MANAGEMENT OF COLLES FRACTURE AN ALTERNATIVE TO GENERAL ANAESTHESIA

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Introduction: There are practical problems in managing colles fracture even one has friendly anaesthesia department. studies shows that 66 % patients needs admission after G. A. Colles fracture is a common fracture of old age associated with osteoporosis and has a substational lose of working hours in form of attendants with patients and economic burden. The pre anaesthesia requirements with increasing age and in presence of co morbid diseases are complex and time consuming like NPO, a long list of investigations and consultation with medical and cardiology department in case of uncontrolled co morbid disease and difficult to full fill these requirements in accident and emergency department and patient require admission to orthopaedic floor. Local hematoma block is a good alternative to general anaesthesia in terms of early management and discharge of patient from hospital reducing the cost.
Material and methods: All the patients presenting with colles fracture after trauma in emergency department above the age of 60 are included and given local haematoma block with Inj. Xylocaine 1 % as haematoma block, closed reduction attempted. Patient assessed for pain on visual analouge scale and apprehension questionnaire. Total number of 100 patients included from 2010 to 2014.
Results: The data was analysed using the chi- square test and severity of the pain by visual analogue scale and as well as a direct questionnaire about the severity of pain and about the procedure.
Conclusion: Local hematoma block is a good alternative to general anaesthesia in terms of early management and discharge of patient from hospital reducing the cost.
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Disclosure: No significant relationships.

P158

BOERHAAVE'S SYNDROME

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Introduction: Herman Boerhaave first described spontaneous rupture of the esophagus after the autopsy of Baron van Wassenaer, who died 18 hours after sudden onset of left chest pain subsequent to vomit. The most common precipitating factor is barotrauma from the postemetic rise in esophageal pressure. There is often a significant delay between rupture and treatment, leading to chemical mediastinitis, bacterial contamination with sepsis and multiple organ failure. It is a rare condition that requires early diagnosis, as delay is cause of high mortality.
Material and methods: Authors present a case of a 60-year-old male patient admitted to the emergency department for left chest pain, dyspnea and vomiting. No history of trauma. Prior Nissen fundoplication and former smoker. No relevant laboratorial changes. Chest radiography showed left pneumothorax. CT chest corroborated the existence of left hydropneumothorax and pneumomediastinum. Intercostal drainage showed food fibers.
Results: The patient underwent exploratory thoracotomy for suspected esophageal perforation. Rupture of the distal esophagus was identified, with profuse soiling of the pleural cavity and mediastinum. A damage control strategy was chosen, with placement of a T tube into the hole and pleural drainage. Placement of esophageal prosthesis was attempted without success. Final repair was done after resolution of the septic status. Postoperative period was uneventful.
Conclusion: Boerhaave's syndrome is hampered by unspecified associated symptoms. Some imaging findings, such as pneumomediastinum and hydropneumothorax, may be the only initial findings. Early clinical suspicion leads to a timely diagnosis and maximizes the possibility of survival.
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Disclosure: No significant relationships.

P159

IONIZED CALCIUM VALUE VARIATION IN TRAUMA PATIENTS SHOULD BE MANAGED IN LESS THAN 10 %

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Introduction: Calcium plays a key role in the coagulation and neuromuscular transmission and muscle contraction. Hypocalcemia is common among critically ill patients and is associated with increased mortality. We aimed to investigate the relationship between the rate of change of ionized calcium (iCa) and life prognosis in trauma patients who received MT.
Material and methods: We assessed trauma patients who received MT and were admitted to our hospital between April 2008 and March 2014. MT was classified as receiving $\geqq$10 units of red blood cells within 24 hours of admission. Patients were stratified into two groups: survival and non-survival group. The relationship between patient background and iCa and iCa value variation after 3 or 6 hours was examined. The survival factors at the time of 24 hours from injury were analyzed by logistic regression.
Results: A total of 138 patients were included in the study (Survival:102, non-survival:36) . RBC transfusion ($p = 0.04$) and iCa after 6 hours ($p = 0.04$) and ionized calcium value variation within 10 % after 6 hours ($p = 0.01$) were significant differences between two group. Using logistic regression analysis, ionized calcium value variation within 10 % after 6 hours was independently associated with the survival factors at the time of 24 hours from injury (odds ratio = 3.73, 95 % confidence interval 1.36–10.24, $p = 0.01$).
Conclusion: To manage ionized calcium value variation within 10 % after 6 hours may improve the prognosis of trauma patients requiring MT.
References:
Disclosure: No significant relationships.

P160

LENGTH OF STAY OF HIP FRACTURES IN HUMANITAS RESEARCH HOSPITAL EMERGENCY DEPARTMENT

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Introduction: Our work is a retrospective cross sectional observational study focused on the length of stay (LOS) in the emergency department (ED) of the Humanitas Research Hospital of the patients with hip and femur fracture. The aim of the study is also to verify the quality of the LOS in the ED and the timing of access to ward and operating theatre.
Material and methods: We have analyzed the access in the ED in a period of two years (september 2013 – september 2015) and we have extracted the access for hip and femur fracture. Humanitas ED, in the observation period, had 103.487 total access 11.413 of which for trauma. Within the access for trauma we extracted the hip and femur fracture which are a total of 453 patients.
Results: Only the 31,34 % of the total access are male (142) and the remaining are female. The length of stay of the patient in ED were, for the 95,60 % of the total, under 24 hours. The average time of wait on a stretcher for the patient was of 8 hours and 41 minutes. Door to operating theatre time for the total was of 2,5 days.
Conclusion: 125 patients were operated after 48 hours from the access in the ward, 40 patients weren't operated for clinical reasons and 288 patients were operated before 48 hours the access in the ward. The majority of the patients are elderly which benefit from the precocity of surgery to avoid pain and all the risks of a long stay on a stretcher in ED.
References:
Disclosure: No significant relationships.

P161

THE ROLE OF DELAYED CT IMAGING IN THE ANTICOAGULATED ELDERLY SUFFERING BLUNT HEAD INJURIES

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Introduction: Increasing active longevity has created a new generation of elderly trauma patients. The majority of these patients suffer blunt trauma and many are anticoagulated. The literature is mixed regarding the utility of routine repeat head CT in anticoagulated patients with a GCS of 15 and initial negative head CT. We hypothesized that delayed CT-head (D-CTH) in elderly blunt trauma victims would not identify clinically significant new hemorrhages.
Material and methods: A retrospective chart review using our institutional trauma registry of patients $\geq$65 years sustaining blunt head injuries from 2010-2012 was performed. Patients on anticoagulation who received D-CTH were included. Demographics, injuries, medications, laboratory values, LOS, mental status and management were analyzed.
Results: Of the 233 patients meeting inclusion criteria, 3.0 % (7/233, $p < 0.01$) had new ICH discovered on D-CTH, 3 % (2/64) of warfarin and 3.41 % (6/176) of patients on aspirin had new ICH on D-CTH ($p = 0.91$). Of patients on clopidogrel, 2.63 % suffered a delayed bleed (1/38, $p < 0.01$), and this patient was also on aspirin. Only two patients taking a direct thrombin inhibitor (dabigatran) met inclusion criteria and neither endured a bleed. Further analysis revealed no cases ($p < 0.01$) with surgical intervention for new ICH on delayed imaging.
Conclusion: D-CTH in anticoagulated elderly trauma patients shows no statistically significant clinical benefit for diagnosing delayed intracranial hemorrhage. In those with delayed imaging showing new ICH, management was not significantly altered.
References:
Disclosure: No significant relationships.

P162

TRANSVERSAL ABDOMINAL IMPALEMENT – A CASE REPORT

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Introduction: Penetrating abdominal trauma from transversal impalement is associated with multiple visceral and vascular lesions with high morbidity and mortality.
Material and methods: Case report.
Results: We present a case of a healthy 45 year old male victim of an accidental abdominal transversal impalement with an industrial compressed air gun and hose. He was awake, breathing spontaneously and eupneic, with hemodynamic stability and a Glasgow Coma Scale 15. The compressed air gun was *in situ*, through the left abdominal quadrants in an anteroposterior direction with an entry point left of the umbilicus and exit point in the left flank. After initial assessment and resuscitation, the patient was taken up for emergent laparotomy. Intraoperatively, the patient had a hemoperitoneum of 1L. We removed the foreign body, without major vascular lesions. There was a jejunal and sigmoid lacerations (AAST grade III and II, respectively). We performed segmental enterectomy with primary anastomosis and a Hartmann procedure. The patient received four red blood cell (RBC) and 4 fresh frozen plasma units during surgery. He was admitted in the intensive care unit. Recovery was complicated by superficial surgical site infection but was otherwise uneventfull. He was transferred to the surgical ward on the POD 10 and was discharged on the POD 16.
Conclusion: Diagnosis and decision in major penetrating abdominal trauma remains a challenge. Trauma caused by a penetrating mechanism is associated with multiple organ injury and surgical exploration is mandatory. If possibly any *in situ* foreign body should be removed under direct visualization on laparotomy to prevent massive hemorrhage.
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Disclosure: No significant relationships.

P163

HIGH FIDELITY SIMULATION AND TRAUMA TEAM. PROJECTING AND CREATING A NEW ONSITE COURSE TO INTRODUCE TRAUMATEAM: DISTANCE IMPACT ASSESSMENT

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Introduction: In setting of major trauma treatment, a delayed, missed or wrong diagnosis, could severely impact prognosis. A multidisciplinary approach seems to reduce time-to-diagnosis, time-to-treatment and increase accuracy (1). However optimal teamwork can be difficult, as different specialists are involved, communications often overlapped and a great synergy between team leader and members is required. High fidelity simulation can help in training non-technical-skills, in a team approach (2-3).Turin CTO's ER is planned to provide a multidisciplinary trauma team treatment for major trauma.
Material and methods: A simulation room was built in the hospital, reproducing the ER ward. Scenarios were designed in order to train NTS, such as communication, team leadership, team membership followed by structured discussion and debriefing. Furthermore theoretical session was prepared, including CRM approach and methodical real time clinical data collection. A clinical and behavioural audit was performed, from August to November 2015, including all trauma team activations. Noise levels were measured. Both objectivable data (time to Ctscan eg) and observable (communication efficacy) were collected in a 21 points sheet. A further audit is scheduled in order to asses impact.
Results: Data collection is not yet complete. Intermediate analysis of pre-course behaviours suggests a good adherence to protocol, as primary survey is concerned; anyway debriefing is often unattended, as well as anticipation is often neglected. Noise analysis is still under investigation.
Conclusion: A trauma team training course, using an high fidelity approach, could improve non technical skills and increase the team membership, as well as team leadership, levelling out individual approaches to major trauma.
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Disclosure: No significant relationships.

P164

THE USE OF STANDARDIZED GUIDELINES FOR ESSENTIAL EMERGENCY AND TRAUMA CARE ASSESSMENT IN ALBANIA: A CROSS-SECTIONAL DESCRIPTIVE STUDY OF FORTY-TWO PUBLIC HOSPITALS

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Introduction: Injury-related death is a major contributor to global mortality, with a disproportionate number of injury-related fatalities occurring in Low- and Middle-Income Countries (LMICs). To reduce disparities between developed and emerging countries, the World Health Organization (WHO) and the International Association for Trauma and Surgical Intensive Care (IATSIC) developed the Guidelines for Essential Trauma Care (EsTC). This study aimed to utilize the EsTC guidelines to assess emergency medical systems in Albania.
Material and methods: Based upon EsTC Guidelines, we conducted a cross-sectional descriptive study of hospitals in Albania between September 5, 2014 and December 29, 2014. Assessment subcategories included: 1) characteristics of emergency services provided; 2) resources available in the emergency rooms; and 3) manner in which patients arrived at the facilities.
Results: There were 11.2 ± 15.4 doctors present in the emergency rooms in primary, 9.0 ± 7.8 in secondary, and 4.0 ± 4.5 in tertiary

hospitals. Less than half of the hospital ERs had a ventilator available (34.8 % primary, 33.4 % secondary and 42.9 % tertiary). Blood products to treat severe trauma patients were available in less than half of all ERs (30.4 % primary, 41.7 % secondary, and 42.9 % tertiary). Approximately 50 % of all primary hospitals reported not having an operating room attached to ERs perform surgeries. Only 9.3 % of patients arrived at tertiary hospitals by ambulance.

Conclusion: The emergency services in Albania need major reform in organization, education, and equipment. As the demand for healthcare in Albania continues to grow, results from this assessment indicate that hospitals are poorly equipped to handle increasing demand for emergency services.

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Disclosure: No significant relationships.

P165

PELVIC PRESSURE CHANGES AFTER A FRACTURE: A PILOT CADAVERIC STUDY ASSESSING THE EFFECT OF PELVIC BINDERS AND LIMB BANDAGING

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Introduction: Pelvic binders are a life-saving intervention for hypovolemic shock following displaced pelvic fractures.[1] This cadaveric study assesses intra-pelvic pressure changes with different binders, augmented by bandaging the thighs to aid effect. Access to femoral vessels via an in-situ binder was also assessed.

Material and methods: Unstable pelvic injuries were created in two embalmed cadavers through disrupting the pelvic ring. A supra-pubic catheter connected to a water manometer measured intra-vesical pressure, which reflects intra-pelvic pressure. The femoral vessels were dissected in the left groin for each specimen prior to any intervention to allow inspection following binder application. Different binder designs were used for each cadaver, with each applied following lower limb bandaging with the knees slightly flexed. Inspection of the groins then determined if the femoral vessels were visible. A paired samples t-test in SPSS assessed any differences between the initial and final pelvic pressures.

Results: Bandaging the lower limbs alone significantly increased steady mean intra-pelvic pressure (12.38 cmH_2O) compared to the baseline, (8.73 cmH_2O, $p = 0.001$). Additional binder application further increased steady mean intra-pelvic pressure compared to the baseline (15.13 cmH_2O, $p = 0.003$). Steady mean pressures between bandaging alone and bandaging with the binder applied were not significantly different ($p = 0.09$). The improvised binder and trauma pelvic orthotic device both required cutting to access the femoral vessels, which reduced efficacy.

Conclusion: Intra-pelvic pressure was significantly increased through bandaging the lower limbs alone, and this represents a simple measure to increase intra-pelvic pressure. Access to the femoral vessels varied with binder type and represents an important consideration in polytrauma patients.

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Disclosure: No significant relationships.

P166

CASE REPORT: TRAUMATIC INJURY OF SPHENOID SINUS WITH A FIREARM BULLET

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Introduction: Numerous studies in recent decades demonstrate the growth of violence in Brazil. According to records of the Ministry of Health of this country between 1980 and 2010 grew by 346.5 % in the number of people killed by firearms shooting (approximately 800,000 victims in this period). Based on this estimate, we report the care in the emergency room of a trauma victim with a firearm projectile in orbit, causing sphenoid sinus injury without neurological damage during initial care.

Material and methods: Analysis of images obtained by CT without intravenous contrast, and patient data from the initial care until his transfer to hospital with neurosurgery service. Data were obtained from the medical records of the patient in the emergency room where she received initial care.

Results: CT view posterior wall injury in orbit, integrity of the eyeball, damaged roof of the nasopharynx, and bullet lodged in the sphenoid sinus. Pneumoencephalus was suggestive but has not been clearly identified. The lesions are confined to the left side of the skull and there were no neurological deficits.

Conclusion: Clinical manifestations of the disease depends upon the impacted foreign body in relation to surrounding structure and trauma energy. Diagnosis was made by history, physical examination and Ct scan. Clinical manifestations of the disease depends upon the impacted foreign body in relation to surrounding structure and trauma energy. Diagnosis was made by history, physical examination and CT scan.

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Disclosure: No significant relationships.

P167

ACUTE LOWER LIMB ISCHAEMIA CAN BE A SIGNAL OF AORTIC DISSECTION?

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Introduction: The literature estimates the incidence of acute lower-limb ischemia between 13 and 17 cases per 100,000 people per year, with a mortality rate as high as 18 %. Isolated lower limb ischaemia is an unusual presenting symptom of aortic dissection, although the totality of peripheral vascular complications in aortic dissection involving de arch and/or the thoracoabdominal segment is as high as 30 % to 50 %.
Material and methods: Clinical case.
Results: Clinical case: A 39 years old patient, female, admitted to the ER with a lower left limb ischemia, due to a complete iliac occlusion. She was immediately sent to the operating room were an embolectomy was successfully performed. Etiological investigation reveals, in a trans-esophageal echocardiography, a Stanford type B/DeBakey type IIIa aortic dissection. The patient was submitted to a thoracic endovascular aortic repair (TEVAR) with a tubular endograft 26 × 100 mm. She was discharged at the 8th postoperative day, without complications.
Conclusion: The differential diagnosis of acute limb ischaemia is very extensive, and it's important to have in mind aortic dissection in young adults, even without the usual symptoms. Management of thoracic aortic dissection can be conservative or surgical (open or endovascular), but TEVAR has the lowest morbi-mortality in patients with complicated type B dissection, in comparison with open surgery or medical therapy. Aortic dissection should be included in the differential diagnosis of patients with acute limb ischaemia without chest pain and with normal blood pressure. TEVAR is the gold standard treatment of patients with aortic dissection.
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Disclosure: No significant relationships.

P168

CLASSIFICATION AND TREATMENT OF DISTAL RADIUS FRACTURES: A SURVEY AMONG ORTHOPAEDIC TRAUMA SURGEONS AND RESIDENTS

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Introduction: Classification, the definition of an acceptable reduction and indications for surgery in distal radius fracture management are still subject of debate. The purpose of this study was to characterise current distal radius fracture management in Europe.
Material and methods: During the European Congress of Trauma and Emergency Surgery (ECTES) 2015 a 20-question multiple-choice survey was conducted among the attending surgeons and residents of the Hand and Wrist session. Consensus was defined as more than 50 % identical answers (moderate consensus 50 % to 75 % and high consensus more than 75 %).
Results: A total of 46 surgeons and residents participated in the survey. High consensus was found among both surgeons and residents for defining the AO/OTA classification as the preferred classification system. For the definition of an acceptable reduction, a moderate to high consensus could be determined. Overall, high consensus was found for non-operative treatment instead of operative treatment in dislocated extra- and intra-articular distal radius fractures with an acceptable closed reduction, regardless of age. We found high (surgeons) and moderate (residents) consensus on the statement that an intra-articular gap or step-off $\geq$2 mm, in patients younger than 65 years, is an absolute indication for ORIF. The same applied for ORIF in dislocated fractures without an acceptable closed reduction in patients younger than 75 years of age.
Conclusion: Current distal radius fracture management in Europe is characterised by a moderate to high consensus on the majority of aspects of fracture management.
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Disclosure: No significant relationships.

P169

PRE-HOSPITAL IMMOBILIZATION OF CERVICAL SPINE WITH COLLAR: USEFUL OR DANGEROUS?

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Introduction: Traumatic cervical spine injury (CSI) may lead to a secondary devastating spinal cord damage. The existing management in the acute setting as taught from ATLS, suggests the implementation of a rigid collar in every patient with suspected CSI. Although this is widely practiced by the medical community, there is no level I evidence to support it, and many researchers indicate that they have to be renewed. The commonly accepted idea is that immobilization in penetrating trauma is not mandatory and although immobilization in blunt spinal trauma is a must, the optimal method for that remains to be evaluated.
Material and methods: We conducted a search in the following electronic databases: MEDLINE, PubMed and Cochrane Library. Searching criteria: English, adult, cervical spine trauma, acute management, immobilization, collar, publication after 1999.
Results: We found more than 200 publications with relevant titles. No randomized clinical trial was found. We selected nine reviews, based on relativity and reliability, as the main core of our study, which were classified according to levels of evidence. Only one

article supports the use of collars. The other eight suggest their limitation because of adverse effects, or question their effectiveness.
Conclusion: Collars in current practice are used to prevent spinal cord damage, after unstable spinal fracture. They have adverse effects, and there is no level I evidence to support their use. Alternative methods to immobilize the spine rise as proposals to be evaluated. A prospective control randomized trial is pending.
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Disclosure: No significant relationships.

P170

SURGICAL EMERGENCIES OCCURED WHEN PERFORMING DIAGNOSTIC COLONOSCOPY

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Introduction: Colonoscopy as a method of investigation and treatment of colorectal diseases is routinely performed by surgeons and gastroenterologists worldwide for its benefits widely recognized. However the method is not without risks and possible complications among the strongest being bleeding and perforation. In case of diagnostic colonoscopy perforation rate is between 0.03-0,3 %, powerful and potentially fatal complication that requires immediate therapeutic approach.
Material and methods: Between June 2012-October 2015 a team of two surgeons have performed in Surgery Hospital Dr Carol Davila a total of 798 colonoscopies, all with sedation. In this way we achieved a 98 % complete investigation . Investigations were performed for diagnostic purposes, and have taken 187 biopsies.
Results: The complications were: local bleeding that required no treatment and 2 colonic perforations (0.25 %). The two perforations were located in the sigmoid in a case being barotrauma with diverticular perforation and one case of mechanical perforation. Diagnosis was quickly established in both cases, within 6 hours, by clinical, laboratory and imagistic means (abdominal ultrasound, ultrasound and X-Ray). We practiced surgical treatment which consisted in suturing the perforation with subsequent favorable development.
Conclusion: Although colonoscopy major risks and potentially fatal, yet it is indispensable in making the diagnosis and treatment of colorectal diseases. It also has the effect of preventing colorectal cancer and establishing diagnosis in early curable forms.
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Disclosure: No significant relationships.

P171

EARLY VERSUS DELAYED APPLICATION OF THOMAS SPLINTS IN PATIENTS WITH ISOLATED FEMUR SHAFT FRACTURES: THE BENEFITS QUANTIFIED

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Introduction: To investigate and quantify the clinical benefits of early versus delayed application of Thomas splints in patients with isolated femur shaft fractures.
Material and methods: Level IV retrospective clinical and radiological analysis of patients presenting from January to December 2012 at a Level 1 Trauma Unit. All skeletally mature patients with isolated femur shaft fractures independently of their mechanism of injury were included. Exclusion criteria were: ipsilateral fracture of the lower limb, neck and supracondylar femur fractures, periprosthetic and incomplete fractures. Their clinical records were analysed for blood transfusion requirements, pulmonary complications, surgery time, duration of hospital stay and analgesic requirements.
Results: A total of 106 patients met our inclusion criteria. There were 74 males and 32 females. Fifty seven (54 %) patients were in the 'early splinted' group and 49 patients (46 %) were in the 'delayed splinted' group ($p > 0.05$). The need for blood transfusion was significantly reduced in the 'early splinted' group ($P = 0.04$). There was a significantly higher rate of pulmonary complications in the 'delayed splinted' group ($P = 0.008$). All other parameters were similar between the two groups.
Conclusion: The early application of Thomas splints for isolated femur fractures in non-polytraumatized patients has a clinically and statistically significant benefit of reducing the need for blood transfusions and the incidence of pulmonary complications.
References:
Disclosure: No significant relationships.

P172

OUR EXPERIENCE OF TREATMENT SEVERE TRAUMATIC BRAIN INJURY IN CHILDREN

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Introduction: To date the recommendations and standards for the organization of neurotraumatological management are based on the principles of evidence-based medicine.

Most of them are not dedicated for children. It is not allowed to develop standards approaches both for intensive care and surgery as well as rehabilitation.
Material and methods: The aim of our research is to evaluate the efficiency of treatment for children with combined and isolated sTBI. We studied 129 children with sTBI (GCS $\leq$ 8). They were hospitalized between 2005 and 2010. 58 % of them had combined trauma. Statistical analysis of 230 parameters revealed significant factors for prognosis of severe TBI outcomes.
Results: There are: mydriasis ($p = 0.0019$), GCS level ($p < 0.05$), hypoxia (pO2 <60 mmHg) ($p < 0.05$), hypotension (cystolic BP <90) ($p < 0.05$), intracranial pressure >26 mm Hg. for more than 30 minutes Marshal scale 3, 4 and 6 ($p < 0.05$), ISS 45 $\pm$ 4 in groups with GCS = 6-8 score. There was not significant influence of ISS on outcomes in the groups of combined injuries with GCS = 3-5 score.
Conclusion: Prospects for improving outcomes for children with severe combined or isolated TBI we associate with early restoration and maintenance of vital functions, early identification and elimination of damage which complicate general vital functions, followed by early restoration of anatomical arrangements. Under these conditions, the fundamental importance is the maintenance of "physiological corridor" (vital functions) under the multi-modal monitoring control. The monitoring of intracranial pressure must be used as a important criterion for determining for the method of treatment.
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Disclosure: No significant relationships.

P173

EARLY SURGERY - THE FIRST STEP TOWARDS 'ENHANCED RECOVERY'? RELATIONSHIP BETWEEN TIME TO SURGERY AND LENGTH OF STAY.

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Introduction: Over the last decade 'enhanced recovery' has changed the management of patients undergoing major surgical procedures, including the abdominal surgeries. The reports on the practice of 'enhanced recovery' on the emergency laparotomy is sparse. A study was designed specifically to assess the correlation between 'Time to operate' (TTO) from admission and the 'length of stay' (LOS) in the patients undergoing emergency laparotomies
Material and methods: A single centre retrospective study of prospectively collected data from 01/01/2014 to 30/05/2015. Data was collected using MS Excel. All of the primary laparotomies were included, whereas the redo laparotomies, trauma surgeries and deaths were excluded. LOS was the primary outcome studied. Statistical significance was ascertained using 'Pearson's correlation co efficient test for continuous variables and 'Z test' ($p < 0.5$ as significant) for categorical variables.
Results: Some 133 patients were included from 282. Commonest indication of the laparotomies was intra-abdominal sepsis, with a median age of 66 (17 to 90), including 65(48.8 %) females and 68(51.2 %) males. No significance difference ($p = 0.71$) in between the male and the female. Positive correlation was noted between the LOS and TTS ($R2 = 0.01$), age and TTS ($R2 = 0.02$) and LOS and age ($R2 = 0.01$) as well.
Conclusion: The study was helpful in recognising the correlation between TTS and LOS, which would need further evaluation. However, it helps in identifying a weak link in implementing 'enhanced recovery' in emergency operations. Limitation of the study is fewer numbers and unavailable data.
Disclosure: No significant relationships.

P174

OPEN PILON FRACTURES- OUR EXPERIENCE WITH " ONE-STAGE" EXTERNAL FIXATION AND MINIMAL OSTEOSYNTHESIS

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Introduction: Open distal tibial pilon fractures are considered as hard injuries, caused by high-energy axial load. Different treatment methods of these injuries are described in the literature. Authors of this paper are presenting own experience and results in the method of „one-stage" external fixation with or without limited internal fixation of the fracture.
Material and methods: All the patients had emergent surgical treatment in 4 to 8 hours after the hospitalisation. Surgical protocol included wound irrigation, debridement, fracture reduction and external fixation in type A fractures. Type B and type C fractures were treated by „bridging" external fixation with limited internal fixation. In the cases where wound had not been possible to close primarily additional surgical procedures (soft tissue defects coverage) were performed.
Results: Final functional outcome was excelent in 5 patients, good in 6 patients, moderate in 3 patients and bad in 2 patients (according to Karlsson Score). Final anatomical and functional results were in correlation with the type of primary injury. One case of septic pseudoarthrosis and two cases of ankle arthrosis were found as a major complication.
Conclusion: High-energy open distal tibial pilon fractures are still considered as a challenge and significant surgical problem. The method of external fixation with or without limited internal fixation, as an „one-stage" method, was approved in clinical practice to give excellent and good final functional and anatomical results. Though final functional results were in correlation with degree of the injury, described method gives good outcome results and further clinical application will surely approve its clinical significance.
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Disclosure: No significant relationships.

P175

INCIDENTAL FINDINGS ON WHOLE BODY CT SCANNING IN A TERTIARY TRAUMA CENTRE.

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Introduction: Whole body CT has become a frequent tool in the assessment of major trauma [1.2.3]. This will inevitably also show significant incidental findings in a proportion of patients. Previous reviews have show an incidence of significant incidental findings of up to 7 % [4], however there has not been a review of this kind in a UK major trauma population.
Material and methods: Trauma scans were reviewed from a UK major trauma centre for a 6 month period between Sept 2014 to Feb 2015 and incidental findings grouped into 3 categories. 1. Benign findings of no clinical significance 2. Findings of minor clinical significance which may require future investigations dependant on symptoms or clinically significant findings that were already known; 3. Previously unknown clinically significant findings that require further investigations. The prevalence of incidental finding in these categories was then compared with patient age. All patients with Category 3 findings discharge summaries were assessed to see if follow up had been arranged or they had been investigated.
Results: 67 % of patients had an incidental finding (65/97).
Age < 40 1 category 3 finding . 40-65 6 category 3 finding. 65-100 10 category 3 findings (26 %).

In 41 % of cases, no documentation of any follow up was made.
Conclusion: We found a significantly higher rate of incidental findings particularly in the older population which may be explained by the trauma population profile in the UK. The majority of incidental findings may prove benign but there needs to be improved systems to ensure appropriate follow up.
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Disclosure: No significant relationships.

P176

HIGH MISSED INJURY RATE AFTER INTERHOSPITAL TRANSFER OF POLYTRAUMA PATIENTS: RESULTS OF A COHORT STUDY INCLUDING 251 PATIENTS

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Introduction: Missed injuries are reported to occur in 10-15 % of all admitted trauma patients.[1] For the population of polytrauma patients that are referred to a higher level of care the triad of primary, secondary and tertiary survey is often compromised due to the acute nature of the transfer. This carries the risk of loss of vital information and a subsequent increase in missed injuries. The aim of this study is to establish the incidence and clinical relevance of missed injuries in polytrauma patients who require interhospital transfer to a level 1 trauma centre.
Material and methods: All patients with an ISS $\geq$ 16 transferred to the UMCG between January 2010 and July 2015 were included. Data was obtained from a prospective trauma database and supplemented with information from the patient records. Clinical relevance of missed diagnoses was evaluated by two experienced trauma surgeons.
Results: 251 trauma patients met the inclusion criteria and were all included. A total of 88 patients (35 %) were found to have 1$\geq$ new diagnosis with a total of 144 additional injuries. For 47 of the 88 patients (53 %) the new diagnosis required a change of therapy. The initial Glasgow Coma Scale was an independent predictor for missed injuries in this patient population.
Conclusion: The incidence of missed injuries in the population of transferred polytrauma patients (ISS $>$16) is twice as high compared to the reported incidence for trauma patients who do not require a interhospital transfer. For 47 patients (53 %) these injuries required a change of therapy.
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Disclosure: No significant relationships.

P177

A SNAPSHOT ON EMERGENCY SURGICAL PROCEDURES IN SPAIN

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Introduction: Population characteristics, criminality, firearm legislation and access to health system are probably amongst the most important factors to determine the type of emergency procedure

performed in a given Country. Emergency Surgeon accordingly, may have different expertise related to their personal caseload. Spain has low criminality, restrictive firearm legislations and an optimum access to public health system. We did an e-survey on the Members of the Emergency Surgery Section of the Spanish College of Surgeon to better describe this aspect.
Material and methods: The e-survey was sent via e-mail on the 29/04/2015. We received 57 responses in 1 month.
Results: The majority of the responding surgeons had total (scheduled and emergency) yearly caseload of more than 100 procedure (67.2 %) but only 34.3 % performed more than 100 emergency procedure per year. Laparoscopic Cholecystectomy was commonly performed with 73.8 % doing more than 16 cases per year. Conversely 78.7 % performed less than 10 open cholecystectomy per year. Similarly 75,6 % declared to have done less than 5 intraoperative cholangiograms per year. Interestingly the majority of the surgeons had a very little experience with resuscitative thoracotomy (100 % did less than 5 in 5 years), cardiac repairs (70.5 % did no one in 5 years), Pelvic Packing (91.8 % less than 5 in 5 years), and fasciotomy (83.6 % less than 5 in 5 years).
Conclusion: Spanish emergency Surgeons have little experience in dealing with emergency thoracic surgery, lower limb fasciotomy and pelvic packing, reflecting basically the Country low rate of penetrating traumas.
References:
Disclosure: No significant relationships.

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THE NEED FOR COMPUTED TOMOGRAPHY IN PATIENTS WITH MINOR CRANIOENCEPHALIC TRAUMA

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Introduction: To identify the profile of patients with minor cranioencephalic trauma admitted to a level 1 trauma center and verify that the routine use of CT (computed tomography) benefits these patients, 45 CT reports were analyzed.
Material and methods: The data collected were transcribed onto a form, which contained patient evaluation using the Glasgow Coma Scale (GCS), all of whom were classified as mild trauma patients (14 or 15), CT findings and CT indications. Of these patients, twelve were 14 on the GCS and thirty-three were 15.
Results: Among those patients requiring CT, thirty one (68.9 %) had lost consciousness, three (6.7 %) were less than 15 on the GCS and were admitted for less than two hours, one (2.2 %) had suspected skull damage, seven (15.5 %) were vomiting, five (11.1 %) were aged over 65 years, fourteen (31.1 %) suffered from amnesia of events prior to trauma and thirty one (68.9 %) presented dangerous traumas. Amongst the five patients presenting intracranial injuries, the most prevalent CT indications were the loss of consciousness in four of them (80 %) and signs of dangerous trauma in three (60 %). On the patients with minor head trauma undergoing CT, on twelve patients with a GCS 14, one (8.3 %) have intracranial injuries, and of the thirty-three patients with a GCS 15, we found four (12.1 %) with injuries.
Conclusion: We thus believe that patients with a minor head trauma, presenting at least one sign or symptom of an injury, should undergo a cranial CT scan.

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Disclosure: No significant relationships.

P179

PRACTISE OF ORTHOPAEDIC IN AUSTERE ENVIRONMENT OF DEVELOPING COUNTRIES

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Introduction: Introduction The burden of trauma is large and neglected in low income developing countries as compare to discussion about communicable diseases. The socioeconomic impact of injury related disability is magnified in low income countries, where there are often poorly developed trauma care and rehabilitation centers. Injuries contribute to poverty and economic, social costs have an impact on individuals and society. Sometimes simple fractures like colles fracture are not treated with standard recommendations. Non availability of fluoroscope and portable radiographic machines at many hospitals of developing countries leads to difficult situation in managing simple fractures. The orthopaedic surgeons are left with choice of clinical judgment after reduction of colles fracture and later on radiographs done in radiology department.
Material and methods: Material and methods Study conducted at Fazle Omar Hospital Chenab Nagar on 50 patients with non intra articular colles fractures and reduction was done without using the fluoroscope. The reduction was assessed by clinical assessment like shape of the wrist and clinical palpitation of radial styloid and POP back slab applied and later on post reduction check radiographs in radiology department.
Results: Results The post reduction radiographs were assessed for reduction if meets acceptable criteria, patients were discharged otherwise again attempt is made. Thirty patients post reduction radiographs meet acceptable criteria.
Conclusion: Conclusion. Orthopaedic surgeons should have good clinical skills to work in bizarre conditions.
References: Clin Orthop Relat Res. 2008 Oct; 466(10): 2443–2450 Injuries in Developing Countries How Can We Help the Role of Orthopaedic Surgeons Lewis G. Zirkle, Jr,.
Disclosure: No significant relationships.

P180

PRACTISE OF ORTHOPAEDIC IN AUSTERE ENVIRONMENT OF DEVELOPING COUNTRIES

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Introduction: Introduction The burden of trauma is large and neglected in low income developing countries as compare to discussion about communicable diseases. The socioeconomic impact of injury related disability is magnified in low income countries, where there are often poorly developed trauma care and rehabilitation centers. Injuries contribute to poverty and economic, social costs have an impact on individuals and society. Sometimes simple fractures like colles fracture are not treated with standard recommendations. Non availability of fluoroscope and portable radiographic machines at many hospitals of developing countries leads to difficult situation in managing simple fractures. The orthopaedic surgeons are left with choice of clinical judgment after reduction of colles fracture and later on radiographs done in radiology department.
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Disclosure: No significant relationships.

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HEMATOMA BLOCK FOR MANAGEMENT OF COLLES FRACTURE AN ALTERNATIVE TO GENERAL ANAESTHESIA

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Introduction: There are practical problems in managing colles fracture even one has friendly anaesthesia department. studies shows that 66 % patients needs admission after G. A. Colles fracture is a common fracture of old age .The pre anaesthesia requirements with the increasing age and in presence of co morbid diseases are complex and time consuming like NPO, a long list of investigations and consultation with medical and cardiology department in case of uncontrolled co morbid disease and difficult to full fill these requirements in accident and emergency department and patient require admission to orthopaedic floor. Local hematoma block is a good alternative to general anaesthesia in terms of early management and discharge of patient from hospital reducing the cost.
Material and methods: All the patients presenting with colles fracture after trauma in emergency department above the age of 60 are included and given local haematoma block with Inj. Xylocaine 1 % as haematoma block, closed reduction attempted. Patient assessed for pain on visual analogue scale and apprehension question era. Total number of 100 patients included from 2010 to 2014.
Results: The data was analysed using the chi- square test and severity of the pain by visual analogue scale and as well as a direct questionnaire about the severity of pain and about the procedure.
Conclusion: .Local hematoma block is a good alternative to general anaesthesia of early management and discharge of patient from hospital.
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Disclosure: No significant relationships.

P182

IS THE EMERGENCY OPIATE WITHDRAWAL?

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Introduction: Opioid narcotic withdrawal has many symptoms in common with other Emergency conditions. The clinical opioid withdrawal scale (COWS) is a method for determining the presence and severity of withdrawal from narcotics.
Material and methods: COWS criteria include pulse, sweating, restlessness, pupil size, bone and joint aches, running nose, tearing, gastrointestinal upset, tremor, yawning, anxiety and goose bumps
Results: By looking for drug paraphernalia, needle tracks, empty drug bottles and having high sense of suspicion the emergency health team can reach the correct diagnosis which could be confirmed by drug testing and a trial of opiates. The patient can then be referred for treatment.
Conclusion: Opioid withdrawal has symptoms in common with other Emergency conditions. COWS is a way to reach the correct diagnosis and prevent serious morbidity.
References:
Disclosure: No significant relationships.

P183

STRUCTURAL VALIDITY OF THE PATIENT RATED WRIST EVALUATION (PRWE) IN PATIENTS WITH HAND AND WRIST INJURIES

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Introduction: Hand and wrist injuries are one of the most common injuries seen in adults. The Patient Rated Wrist Evaluation (PRWE) questionnaire has been developed as a patient-reported outcome measure of pain and disability to evaluate the outcome after hand and wrist injuries. The aim of this study was to evaluate the structural validity of the existing Dutch version of the PRWE (PRWE-NL) in patients with hand or wrist injuries, and to investigate the appropriateness of reporting subscale scores.
Material and methods: In a retrospective study, all patients aged 18-65 years treated either surgically or conservatively for an isolated

hand or wrist injury were recruited. Patients were excluded if they were unable to speak or read Dutch. Confirmatory factor analyses were used to investigate the structural validity and Cronbach alpha's and coefficients omega are used to investigate internal consistency.
Results: A series of confirmatory factor analyses revealed that all models (i.e. a single factor model, a 2- and 3-correlated factor, and 2 bifactor models) were associated with adequate model fit. However, inspection of the factor loadings, the explained common variance (ECV) and the different coefficient omega values revealed that the PRWE-NL should be considered an unidimensional trait. In addition, PRWE-NL subscales were associated with unacceptably low levels of reliability independently of the global PRWE-NL factor.
Conclusion: This study suggests that the PRWE-NL measures an unidimensional trait. A single score should be used for the PRWE-NL, without subscale scores.
References:
Disclosure: No significant relationships.

P184

TRAUMA PATTERN IN A LEVEL I EAST-EUROPEAN TRAUMA CENTRE – RESULTS FROM THE ROMANIAN TRAUMA REGISTRY

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Introduction: To analyze trauma epidemiology, pattern of lesions or death profile in a Level I East-European Trauma Centre.
Material and methods: A prospective observational study of patients admitted to a Level I East-European Trauma Centre and enrolled in our trauma registry, between January 2012 to January 2013, was conducted, with the inclusion criteria: (1) trauma lesions, (2) New Injury Severity Score (NISS) higher than 15.
Results: There were 141 patients admitted during the study time interval, 102 males (72.3 %), mean age 43.52 ± 19.00 years, and NISS of 27.58 ± 11.32. The trauma aetiology was traffic-related injuries 101 (71.6 %), falls 28 (19.9 %) and crushing injuries 7 (5.0 %). Only one case of gunshot wound was encountered in our study. Out of traffic-related injuries, the automobiles were involved in 56 (55.4 %) and motorcycles in 9 (8.9 %) patients. The bicyclists accounted for 2 (2.0 %) of patients and pedestrians hit by vehicles were in 33 (32.7 %) cases. High-velocity falls were found in 7 (25.0 %) patients, whereas low-velocity falls accounted for 21 (75.0 %) of cases. The overall mortality was 30.00 %, and the dead patients had a NISS of 37.63
Conclusion: Our trauma pattern profile is similar to the one found in West-European countries, with a predominance of traffic-related injuries and falls. The severity and anatomical puzzle for trauma lesions were more complex secondary to motorcycle or bicycle-to-auto vehicles collisions. A trauma registry, with prospective enrolment of patients, is a very effective tool for constant improvements in trauma care.
References:
Disclosure: No significant relationships.

P185

TIME TO SCAN - FACTORS THAT AFFECT TIME TO CT SCAN IN MAJOR TRAUMA

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Introduction: The Royal London Hospital is a major trauma centre in London and is home to London's Air Ambulance. As part of an annual audit of time to CT in major trauma we examined whether type of trauma (blunt/penetrating), seniority of team leader (consultant/non-consultant) or code red activation affected the time to CT scan. Trauma is a major cause of death and CT scanning is an invaluable tool in detecting major injuries in the severly injured patient. Guidelines suggest that CT scans should be performed within 60 minutes of arrival and ideally within 30 minutes.
Material and methods: We reviewed all major trauma patients that attended the Royal London Hospital between September 2014 and September 2015 using the trauma database that the hospital employs - electronic health record and PACS imaging.
Results: In total there were 3418 trauma attendances to the Royal London Hospital in the time period that we examined (12 months). We are currently examining the data and are calculating time to CT in all trauma, blunt, penetrating, code red (pre-hospital or hospital activated) and seniority of team leader. Early analysis appears to demonstrate an increase in time to CT if not led by a consultant.
Conclusion: Consultant led trauma likely leads to fewer delays. Other results are pending but we expect code red trauma to get to CT faster than other trauma. There is still work to do to improve time to CT in trauma.
Disclosure: No significant relationships.

SPORTS INJURIES

P186

HIGH UNION RATES FOLLOWING POST-TRAUMATIC SUBTALAR ARTHRODESIS

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Introduction: Subtalar arthrodesis can be used either as a primary procedure or as a secondary salvage procedure following a trauma of the hindfoot. Both the primary and the secondary arthrodesis are technically demanding procedures and even in experienced hands high complication rates have been reported. The aim of the current study was twofold: 1) to assess the union- and complication rate following post-traumatic arthrodesis and 2) to determine predictors of non-union and postoperative wound infections (POWI).
Material and methods: All consecutive adult patients with subtalar arthrodesis following traumatic injuries between 2000 and 2014 from a level 1 Traumacenter were retrospectively analyzed. Patient, injury and surgery characteristics were collected. Outcome measures were (non-)union and POWI.
Results: A total of 88 patients met the inclusion criteria. Primary arthrodesis was performed in 33 patients and secondary arthrodesis in

55 patients (37 in situ arthrodesis, 18 correction arthrodesis). Union was observed in 86 % of all patients. For primary, secondary in situ and secondary correction these percentages were 93 %, 83 % and 94 % respectively (NS). None of the collected characteristics were significantly associated with non-union. In 12 patients (14 %) a POWI was observed, the POWI rate did not differ between the groups. Patients with an open fracture or an infection following primary osteosynthesis had an increased risk of developing a POWI ($p = 0.031$, $p = 0.046$ respectively).
Conclusion: The union rate following posttraumatic subtalar arthrodesis is 86 % in our center. Patients with an open fracture or an infection following primary osteosynthesis are at risk of postoperative wound infections.
References:
Disclosure: No significant relationships.

P187

PROXIMAL TIBIOFIBULAR JOINT DISLOCATION ASSOCIATED WITH TIBIA SHAFT FRACTURES - 7 CASES

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Introduction: Proximal tibiofibular joint (PTFJ) dislocations are very rare injuries that can occur together with tibia shaft fractures. PTFJ instability can lead to chronic pain of the proximal fibula with snapping of the fibular head and even peroneal nerve palsy (1). Furthermore in complex tibial fractures correct length and rotation only can be restored after referencing with the fibula.
Material and methods: From 2001 until 2014 we diagnosed 7 out of 663 patients with tibia shaft fractures having PTFJ dislocation. In most cases, the tibia fracture was nailed in a closed technique. The proximal fibula was exposed by a lateral approach exposing and preserving the peroneal nerve. After anatomical reduction the fibula was transfixed to the tibia with a positioning screw (3). This provided correct length and rotation of the tibia. The positioning screw was removed after six weeks prior to full weight bearing.
Results: Most of our seven cases were caused by a high-energy trauma. After 7 months four patients showed excellent results with full range of motion and returning to their sports activities as before the accident. Two patients had an impaired function due to associated injuries. One patient was lost to follow up. None complained of persistent pain or instability of the PTFJ.
Conclusion: PTFJ dislocation can easily be overlooked (2). We recommend a high index of suspicion of this injury with high energy tibia shaft fractures especially in cases where there is an intact fibula. It is important to diagnose and fixate this dislocation anatomically to achieve good results.
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Disclosure: No significant relationships.

P188

TRAUMATIC DUODENUM RUPTUR IN A JUNG MOTORCYCLIST

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Introduction: Traumatic duodenum ruptur it's rare: only 2-5 % of lesion in abdominal trauma, and 33 % of this in close trauma. We present a case report of diagnosis and management of a case of traumatic duodenum ruptur in a jung motorcyclist during a motocross race, in an emergency of a periferic hospital.
Material and methods: Literature review and presentation of a case report
Results: A.B. came in our emergency service the day after a fall with abdominal trauma during a motocross race. The first FAST evaluation in a racetrack side was negative. This patient at the moment of presentation in emergency department ad abdominal pain and vomiting. The abdominal X-ray was normal but US found free fluid. At the blood tests only modest increasing of pancreatic enzymes and a very high PCR. The CT exament was diriment for a diagnosis of lesion of duodenum/jejunum. In operating contest was repaired a lesion of third part duodenal anterior wall. After 5 days from the surgical intervention ad a suture leak and associated pleural effusion. After 3 day was transferred at our DEA were the surgeon decide for conservative therapy.
Conclusion: The duodenum ruptur it's rare but is possible in direct abdominal trauma in epigastrium. Often the diagnosis is late and the lesion is associated of a peritonitis. The surgical therapy is often burdened whit complication of suture because the diagnosis is late and the duodenum wall is bruised.
References:
Disclosure: No significant relationships.

P189

OBTURATOR DISLOCATION OF THE HIP: AN UNUSUAL WRESTLING INJURY

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Introduction: The anterior hip, especially obturator (anteroinferior) dislocation is a rare injury, representing approximately less than 10 % of hip dislocations. The mechanism of anterior dislocation requires excessive joint motion and greater external force induced at trauma or traffic accident. Lower occurrence rate of avascular necrosis of femoral head is reported in obturator dislocation in comparison with posterior dislocation, but prompt reduction seems to be demanded to avoid it.
Material and methods: A 17 years old healthy young man was introduced to our emergency department with severe acute pain which appeared during wrestling match. He was unable to move his left lower limb fixed his hip joint in 80° of flexion and abduction, and external rotated. AP and lateral radiographs showed an obturator

dislocation of hip joint without any evident bone injury, indicating type 2A Epstein dislocation.
Results: Closed reduction after sedation with Thiopental was tried, which was in vain probably because of the insufficiency of relaxation in surrounding muscles of hip joint. Subsequent closed reduction under general anesthesia using Sevoflurane and muscle relaxant succeeded eventually. A Magnet Resonance Imaging examination was performed which revealed the existence of wounded capsule and surrounding muscles of hip joint extensively at the day after reduction.
Conclusion: We report here a rare case of wrestling injury with obturator dislocation, which we managed to reduce by closed method under general anesthesia in combination with muscle relaxant finally. And we also discuss the pathological nature of obturator dislocation based on the previous literatures.
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Disclosure: No significant relationships.

P190

DISPLACED MEDIAL FEMORAL NECK FRACTURE IN A CHILD – A CASE REPORT

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Introduction: A 15-year-old boy presented to the emergency department with a painful right leg after falling off his skateboard, with immediate inability of weight bearing. Conventional radiographs showed a displaced medial femoral neck fracture, Delbet type III, without injury to the epiphysis.
Material and methods: Surgical treatment consisted of closed anatomical reduction and internal fixation by means of three cannulated screws under direct fluoroscopy view, within 24 hours after trauma.
Results: Postoperative radiographs demonstrated anatomical reduction of the fracture and good position of screws in the femoral neck and head. He was not allowed weight bearing during the first 6 weeks and was not allowed to perform sports and other high-risk activities during the first 3 months. After 6 months of follow-up, there is no evidence of complications and the patient regained full function. Oxford Hip Score (OHS) was 48/48 and Hip disability and Osteoarthritis Outcome Score (HOOS) was 100/100.
Conclusion: A true femoral neck fracture is rare in childhood (< 1 % of all pediatric fractures), and reported complication risks are high, e.g. avascular necrosis (6.7-28.6 %), premature physeal closure (5.5-33.3 %), non-union (5.5-8.3 %), coxa vara (8.3 %), and early arthritic changes (8.3 %).[1–3, 5–6] Anatomical reduction results in superior functional outcome; and therefore, open reduction and internal fixation (ORIF) is preferred over CRIF by some authors.[3–4] Thus, regarding the high complication risk for inacceptable fracture reduction in this very young population, when anatomical reduction cannot be achieved with CRIF, one should not hesitate to convert to ORIF.
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Disclosure: No significant relationships.

P191

DISPLACED EPIPHYSEAL FRACTURES OF THE PROXIMAL PHALANX OF THE HALLUX IN YOUNG HIGH-LEVEL GYMNASTS – A CASE SERIES

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Introduction: Two high-level gymnasts, 13-year old (patient A) and 14-year old (patient B), presented to the emergency department with a painful forefoot and hallux after hyperextension trauma. Conventional radiographs showed displaced fractures of the proximal phalanx of the hallux, Salter Harris type III.
Material and methods: Surgical treatment consisted of open reduction and internal fixation, by means of one 1.5 mm screw under direct fluoroscopy view, to achieve anatomical reduction and to avoid chronic instability.
Results: Postoperative radiographs demonstrated anatomical fracture reduction. Further treatment consisted of a non-weight bearing plaster cast during two weeks, full weight bearing with exception of the first metatarsal joint during the following four weeks, and no gymnastics during the following three months. Patient A had no evidence of complications three months after surgery. She returned to pre-injury level of gymnastics; Foot and Ankle Outcome Score (FAOS) and Foot Function Index (FFI) were good. Patient B required reoperation after six months due to re-fracture after new trauma. Three months after reoperation, there were no complications. She discontinued high-level gymnastics, but started a new career in athletics; foot function was good.
Conclusion: Epiphyseal fractures of phalanges are rare, but predominantly seen in adolescent athletes, where hallux valgus is a common predisposing factor.[1–2] Operative management may be required, especially in Salter Harris type III and IV injuries, to prevent angulation, shortening and non-union. As bare foot athletes (e.g. gymnasts, dancers) are likely to undergo repetitive trauma, one must consider a fracture of the hallux after acute and chronic complaints even in children.
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Disclosure: No significant relationships.

P192

HICCUPS AS LATE TRIGGER OF SPLEEN RUPTURE IN A HEMODYNAMICALLY STABLE YOUNG PATIENT

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Introduction: Spleen injury occurs in almost 45 % of blunt abdominal trauma. This is usually the result of motor vehicle accidents, falls and sports accidents.

Recognition of patients with cryptic consequence of blunt trauma may be challenging.

Material and methods: We describe the case of a 17 years-old male, admitted to the emergency department of a small countryside Hospital, for the persistence of left thoracic pain, consequent to a thoracic trauma occurred 8 hours earlier. Light fall on the snow from his snowboard was reported at the presence of his parents.

Results: At preliminary survey, only left chest pain at finger compression, good general health condition and hemodynamically stable (Shock Index, SI = 0.65). Suddenly in the emergency room, patient began to unremittingly hiccough. E- FAST was performed showing free fluid in three quadrant, estimated blood loss of 800 cc no alteration at the thorax. Hemodynamically stable (SI = 0.8) a CT-scan was carried out: significant haemoperitoneum, with a multifocal splenic laceration (grade III-IV at AAST injury scale).

After few minutes the patient became unstable not responding at conservative therapy and at cristalloyds bolus. For those reasons patient underwent an emergency laparotomic splenectomy.

Conclusion: During hospital stay, the patient reported a different dynamic: he fell down during acrobatic jump with the snowboard.

History is fundamental in trauma management. Diagnosis of intra-abdominal injury may be very sneaky in young people. Abdominal examination does not rule out spleen rupture. Persistent hiccups 8 hours later was the trigger sign of spleen rupture in hemodynamically stable patient.

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Disclosure: No significant relationships.

P193

ENDCAP VERSUS NO ENDCAP IN ELASTIC STABLE INTRAMEDULLARY NAILING FOR DISPLACED MIDSHAFT CLAVICLE FRACTURES; INFLUENCE ON IMPLANT RELATED IRRITATION

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Introduction: Implant-related irritation at the entry site is known to be a disadvantage of elastic stable intramedullary nailing for clavicle fractures. The purpose of this study was to compare implant-related irritation rates of intramedullary nailing with or without an end cap for displaced midshaft clavicle fractures.

Material and methods: Two cohorts of patients treated with intramedullary nailing with or without end cap were matched and compared. Primary outcome was patient reported implant-related irritation. Secondary outcome parameters were complications.

Results: A total of 34 patients with end cap were matched to 68 patients without an end cap. There was no difference in implant-related irritation (41 % versus 53 %, P = 0.26). Significantly more minor revisions were observed in the group without end cap (15 % versus 0 %, P = 0.03). For complications requiring major revision surgery, significantly more implant failures were observed in the end cap group (12 % versus 2 %, P = 0.04). Regardless of their treatment, patients with complex fractures (AO/OTA B2 – B3) reported significantly more medial irritation compared to patients with simple fractures (AO/OTA B1)(P = 0.02).

Conclusion: The use of an end cap after intramedullary nailing for displaced midshaft clavicle fractures did not result in lower patient reported irritation rates. Although less minor revisions were observed, more major revisions were reported in the end cap group. Based on the results of this study, no end caps should be used after elastic stable intramedullary nailing for displaced midshaft clavicle fractures. However, careful selection of simple (AO/OTA B1) fractures might be effective in reducing implant-related problems after intramedullary nailing.

References:

Disclosure: No significant relationships.

P194

FUNCTIONAL OUTCOMES AFTER NONOPERATIVE TREATMENT OF DISLOCATED DISTAL RADIUS FRACTURES WITH AN ACCEPTABLE CLOSED REDUCTION

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Introduction: There is no consensus as to whether patients with initially dislocated distal radius fractures and an acceptable closed reduction should receive non-operative or operative treatment. The purpose of this study is to evaluate functional outcomes in non-operatively treated patients with dislocated distal radius fractures with an acceptable closed reduction. The primary outcome is the Disability of the Arm, Shoulder and Hand scores (DASH)-score at 12 months. Secondary outcome is the number of secondary surgeries due to redislocation or symptomatic malunion.

Material and methods: Retrospective study. Between 2007 and 2011, all consecutive adult patients with an unilateral dislocated distal radius fracture with an acceptable closed reduction that were treated non-operatively were included. DASH-scores in that time period were prospectively collected at t = 0, 3, 6 and 12 months. Patients that received secondary surgery were included if the operation was performed within one year after the initial trauma.

Results: One-hundred and sixteen patients were included. The mean age was 58 years and 79 % of the patients were female. Fractures were classified according to the AO/OTA classification as follows: AO/OTA type A (49 %), AO/OTA type B (3 %), AO/OTA type C (48 %). After 12 months the median DASH-score was 11. Forty-six (40 %) patients received secondary surgery. No significant difference in DASH-scores between the patients that were treated non-operatively and patient that received secondary surgery were found.

Conclusion: Nonoperative treatment of dislocated distal radius fractures with an acceptable closed reduction leads to good functional outcomes after 12 months. However, nonoperative treatment leads to a high percentage of secondary surgery (40 %).
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Disclosure: No significant relationships.

P195

ACUTE PISIFORM DISLOCATION WITH DISTAL RADIUS FRACTURE ~A CASE REPORT~

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Introduction: Isolated dislocation of pisiform is rarely reported in the literature. This type of injury could be neglected in acute period. We report a case of an isolated dislocation of the pisiform without carpal bone injuries but combined with ipsilateral distal radius fracture successfully treated by percutaneous fixation of two Kirschner wires.
Material and methods: 47-year-old man suffered an injury to his left hand by falling down from the trees. The radiographs revealed a dislocation of the pisiform and associated injury including an ipsilateral distal radius fracture. Precise mechanism of the injury was unknown.
Results: A closed reduction of the pisiform was attempted under C-arm image intensifier. Direct pressure was applied to relocate the bone with a slightly dorsi-flexed position. However, stable reduction was not maintained. Therefore, the pisiform was reduced into its position and fixed to the triquetrum using two Kirschner wires percutaneously following the open reduction and internal fixation of the distal radius fracture. The wrist was immobilized with a long arm plaster splint for 3 weeks. The plaster splint was off at 3 weeks at which time physiotherapy and active exercise were initiated. The kirschner wires were removed 12 weeks later and the radiographs revealed the pisiform to have relocated to the correct position. At the 9 months follow-up, the patient was clinically well without severe pain or neurological problems.
Conclusion: A high index of suspicion is required to identify this type of injury in traumatic patients. Our technique could be an effective and reliable method for treating a dislocated pisiform without resection.
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Disclosure: No significant relationships.

P196

PATTERN AND OUTCOME OF WATERCRAFT-RELATED INJURIES

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Introduction: Watercraft- related trauma have increased dramatically in the recent years. Although its popularity is increasing, there is a paucity of published data on personal watercraft (PWC) related injuries in Qatar. We aimed to evaluate Jet Ski and motorboat- related injuries in Qatar using a nationally representative sample.
Material and methods: A retrospective review of trauma registry data of all patients who suffered PWC associated injuries and treated at the level 1 trauma center of Hamad General Hospital (HGH) between 2008 and 2014. Distribution of patient demographics, mechanism of injury, injuries sustained, mode of transportation, severity scores and outcomes by Jet Ski and motorboat- related injuries were compared.
Results: A total of 39 patients were identified with PWC-related injuries, majority of them were young adults (72 %) aged between 21 and 40 years. Twenty-six were injured in Jet ski accidents and thirteen sustained motorboat-related injuries. Patients injured in Jet ski accidents were younger than those involved in motorboat accidents. Chest injury was the most common type of injury. However, the severity of injury was highest in patients sustained head trauma as compared to other body regions. There were no significant differences in injured anatomical regions, severity, or outcomes between Jet ski and motorboat-related injuries. Two mortalities were reported; one in jet ski-related accident which occurred due to severe head injury and the other patient died due to drowning following motorboat accident
Conclusion: PWC-related injuries are not uncommon and possess a potential severe injuries and disabilities among young. Strict regulation with public awareness is needed for efficient safety.
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Disclosure: No significant relationships.

P197

SINGLE ANCHOR SUTURE AUGMENTATION OF CORACOCLAVICULAR LIGAMENT REPAIR WITH TEMPORARY K-WIRE ACROMIOCLAVICULAR FIXATION IN ROCKWOOD TYPE IV AND V ACROMIOCLAVICULAR DISLOCATION

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Introduction: Rockwood types IV,V surgical stabilization of the AC joint has been recommended. Anchor suture had the advantages of

decreasing the risk of complications. Our objective was to evaluate the effectiveness of the use of one suture anchors to augment the repair of CC ligament with temporary AC fixation with two K-wires.
Material and methods: Between June 2012 and February 2015, sixteen patients with Rockwood type IV and V AC dislocation were treated at Zagazig university hospital. Transverse incision based just superior to the coracoid process and extending laterally towards the AC joint. Coracoid process is exposed to clear out the origin of CC ligament remnants and stay sutures were taken into these remnants. Two drill holes were placed on the superior surface of the clavicle. Anchor suture into the base of the coracoid, then passed through the drill holes in the clavicle. Accurate reduction of the AC joint is done then fixed with 2 smooth K-wires. Repair of the AC ligaments, tightening the 4 strands of the anchor and lastly tightening the stay sutures of the CC ligament.
Results: excellent results are obtained according to constant Murley score (92.6). Postoperative radiographs confirmed anatomic reduction in all patients. Residual subluxation occurred in two patient. All patients except one were satisfied with the results in terms of functional performance and cosmetic appearance.
Conclusion: single anchor with repair of the CC ligament appear to be good procedure for manging type IV and V AC dislocation.
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Disclosure: No significant relationships.

P198

OSTEOARTHRITIS DEVELOPMENT AFTER MEDIAL MENISCECTOMY IN LONG-TERM FOLLOW-UP (25 YEARS AT LEAST)

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Introduction: The menisci play an important role in load transmission and shock absorption of the knee. The purpose of this study was to determine radiological and clinical long-term results after medial meniscectomy.
Material and methods: Between 1985 and 1989, 66 patients underwent isolated total or subtotal medial meniscectomy. Cases with other injury (ACL, cartilage, lateral meniscus etc.) of both knees before, at the time of surgery or afterwards were excluded from the study. 51 patients visited the last follow-up control. The minimum follow-up was 25 years.
Results: Considerable osteoarthritic changes (grade II or more) in the medial compartment of the operated knee were evident in 12 % of cases (6 patients), 2 patients already underwent high tibial osteotomy (HTO), and in 1 knee, the medial unicompartmental arthroplasty (UCA) was already implanted. In all but one case, there was no marked degeneration of the medial compartment of the contralateral knee (grade II or more). The significant tibiofemoral axis difference (varus deformity 2° or more) between operated and normal knees was apparent in 45 % of cases (23 patients; cases after HTO or UCA were not included in this group). The results after the surgery according to Lysholm was excellent in 24, good in 14, moderate in 5 and bad in 5 cases; 3 patients who already underwent HTO or UCA were not evaluated.
Conclusion: Osteoarthritis after the medial meniscectomy developed "only" in approximately 1/6 of cases but the tibiofemoral axis changed in 1/2 of evaluated knees.
References:
Disclosure: No significant relationships.

P199

TRENDS IN INCIDENCE, HEALTH CARE CONSUMPTION, AND COSTS FOR PATIENTS WITH A TIBIA SHAFT FRACTURE ADMITTED TO A HOSPITAL IN THE NETHERLANDS SINCE 1986

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Introduction: The aim was to assess trends in incidence rates, health care use and productivity loss of patients admitted with a tibial shaft fracture in the Netherlands since 1986.
Material and methods: Data of all patients admitted with a tibial shaft fracture between 1986-2012 were extracted from the National Medical Registration.
Results: Between 1986-2012 80,222 patients were admitted with a tibial shaft fracture. The crude incidence decreased with 13 % to 13.8/100,000 person years (py) for men, for women the incidence remained unchanged (7.2/100,000 py). An incidence peak is seen in men aged 15-19 years, and in women aged 10-14 years. In both genders incidence increases after >75 years. In 2012 >50 % of patients between 20-80 years were operated. The mean hospital length of stay (5 days/patient) increased with age for men and women. Since 1993 the HLOS has reduced by half. In 2012, total health care costs for all patients were €13.6 million. Mean costs per patient were higher for women (€10,700) than men (€7,100) and increased with age. Main cost determinants were hospital costs in younger patients and rehabilitation and nursing care in the elderly. In addition, costs for lost productivity were €23 million (€18 million spent for males). Costs per absentee were higher for men (€16,500) than for women (€9,300).
Conclusion: The incidence of tibial shaft fractures is bimodally distributed. Hospital length of stay has decreased, but healthcare costs rise, especially in older women. In 2012 the total costs for health care use and lost productivity were €63.6 million.
References:
Disclosure: No significant relationships.

P200

A CASE REPORT OF A HIGH SCHOOL SOCCER PLAYER WHO WAS PERFORMED WITH HYBRID TECHNIQUE OF TWO SYNDESMOTIC SCREWS AND A SUTURE-BUTTON FOR A SYNDESMOSIS INJURY

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Introduction: Disruption of the tibiofibular syndesmosis require adequate stabilization of the ankle mortise to ensure satisfactory healing of the syndesmotic ligaments. Numerous internal fixation techniques for stabilization of the syndesmosis have been used. The suture button device appears to have advantages over screws with improved reduction, maintenance of reduction, sufficient biomechanical strength. However, reoperation for device removal due to the button irritation is more common than anticipated. Osteolysis of the bone near the implant and subsidence of the device may occur. Therefore, it is possible that hybrid technique of the temporal syndesmotic screw fixation and the eternal suture button fixation may reduce the complication and have better clinical results.
Material and methods: We performed hybrid technique of two syndesmotic screws and a suture-button for a syndesmosis injury in a 17-year-old male high school soccer player. Syndesmotic screws were removed 7 weeks after surgery and the suture-button was maintained.
Results: He resumed soccer completely 5 months after surgery and could show good performance in the last game of his high school soccer career. He can also play soccer without any symptoms after graduation from the high school. The Japanese Society for Surgery of the Foot Ankle-Hindfoot (JSSF) score improved from 36 points to 100 points two years after surgery.
Conclusion: This hybrid technique is expected to reduce the risk of screw breakage, screw tunnel enlargement, re-widening of syndesmosis, irritation pain of the button and button migration. This is a good alternative procedure for patients who want to resume sports activity without risk of re-widening of the syndesmosis.
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Disclosure: No significant relationships.

P201

ANATOMICAL ARTHROSCOPIC ATFL AND CFL RECONSTRUCTION USING AN ACHILLES TENDON ALLOGRAFT; A CASE REPORT OF BALLERINA

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Introduction: Anatomical attachment site of anterior talofibular ligament (ATFL) and calcaneofibular ligament (CFL) is located just below the antero-inferior tip of the fibula which can be arthroscopically mis-identified as the distal end of the fibula. We report a new technique for arthroscopic ATFL and CFL reconstruction using an allograft Achilles tendon with safe creation of an anatomical fibular tunnel.
Material and methods: The patient was a 20-year-old professional ballerina. The clinical results were evaluated using the Japanese Society for Surgery of the Foot Ankle-Hindfoot scale (JSSF) score. She underwent anatomical arthroscopic ATFL/CFL reconstruction using an allograft Achilles tendon. The tendon was designed to reverse-Y-shaped construct. A talar tunnel was drilled through the accessory anterolateral portal. A guidewire was inserted into the fibular footprint in the direction of the long axis of the fibula through the subtalar portal under radiographic guidance. A 6-mm-diameter fibular tunnel was over-drilled. The tendon was introduced to the tunnels with a aid of the passing pin and fixed with 15-mm-long 5.5-mm-diameter tenodesis screws. ROM exercise was started on the second day after the surgery. Full weight bearing was allowed on the third postoperative day.
Results: She attained good ankle stability. She returned to the stage at 3.5 months after surgery. JSSF score improved from 69 points to 100 points. The follow-up period was 14 months.
Conclusion: This new technique provides not only cosmetic benefits but also less invasion, full range of motion, strong stability, and early recovery.
Disclosure: No significant relationships.

P202

MISSED ADOLESCENT ACETABULAR APOPHYSEAL AVULSION WITH LATE HIP DISLOCATION

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Introduction: Chronic hip dislocation associated with acetabular apophyseal avulsion in adolescence is rare. Whilst superior acetabular rim fractures have a documented theoretical risk of hip instability, we have not found a case of chronic dislocation resulting from this.
Material and methods: We report a case of a 12-year-old healthy boy who initially sustained a missed right acetabular apophyseal avulsion after falling from a quad bike. This was missed on the initial radiograph and a subsequent radiograph following weight bearing a few days later showed a hip dislocation that was also missed. Upon diagnosis at 6 weeks he underwent open reduction but also required acetabuloplasty to stabilise the hip.
Results: At 2 years follow up, he was enjoying pain free swimming, cycling and walking. His Harris hip score was 87.
Conclusion: This case reinforces the need for recognition, that in the patient presenting with knee or thigh pain exclusion of hip pathology is required. It also explores the pitfalls of diagnosis associated with rare patterns of injury and the need for adequate investigations such as examination under anaesthetic, arthrography and MRI. The use of acetabuloplasty is shown to be a useful strategy for the unstable hip resulting from irreparable acetabular rim fracture.
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N, Connor S, Marsh E, Thompson GH, Cooperman DR, Blakemore LC. Pelvic fractures in a pediatric level I trauma center. J Orthop Trauma. 2002 Aug;16(7):45845800 - Garvan JD. Delayed presentation of posterior fracture dislocation of the hip in a child. Aust N Z J Surg. 1983 Oct;53(5):493493 g - Herrera-Soto JA, Price CT. Traumatic hip dislocations in children and adolescents: pitfalls and complications. J Am Acad Orthop Surg. 2009 Jan;17(1):15:150.
Disclosure: No significant relationships.

P203

HUMERAL SHAFT NONUNION SUCCESSFULLY TREATED BY A MANDIBLE LOCKING PLATE IN PATIENT WITH OSTEOGENESIS IMPERFECTA

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Introduction: Osteogenesis imperfecta (OI) is a heritable disorders of connective tissue characterized by narrow and deformed diaphyses. Because of poor bone quality, patients with OI experience high rates of bone fracture and often develop non-unions. We report on a case of humeral shaft nonunion successfully treated by a locking plate for mandibular bone in patient with OI.
Material and methods: A 23-year-old male with type III OI who has a history of corrective osteotomy of his right humerus at the age of 8 felt gradually increasing pain in his humerus. He was sustained a humeral shaft pseudoarthrosis with a broken K-wire used in the previous operation. He referred to our hospital and underwent internal fixation using Ender nail with iliac bone graft. However, at 2 years after operation, bony union wasn't achieved with Ender nail breakage and he complained of a pain and activity limitation.
Results: He underwent reoperation for his humeral nonunion using a locking plate to achieve rigid fixation. As his humerus shaft was extremely narrow with severe deformity, we used a locking plate for mandibular bone which was contoured to fit the anterior surface of the humerus. One year after, bony union was achieved and he is free from pain and has returned to his preinjury activity with no symptoms.
Conclusion: Humerus nonunion with OI was successfully treated by a mandible locking plate. Although the optimal fixation device for fractures or non-unions with OI hasn't yet been established, this plate could be a good treatment option for narrow and severely deformed bone.
Disclosure: No significant relationships.

P204

EQUESTRIAN SPORTS RELATED INJURIES - MYTHS AND TRUTHS

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Introduction: Horseback-riding is considered to have to the highest mortality of all sports, but equestrian sports are associated with a multitude of injuries, ranging from minor to fatal. We undertook this study to review serious and life-threatening injuries related to equestrian sport activities.
Material and methods: After obtaining review board approval (TR-DGU-ID 2013-50), we screened the German Trauma Registry (n = 122.000; 2002-2012) for major equestrian injuries (ISS $\geq$9). Parameters: demographics, types/severity of injuries (AIS/ISS), early physiology, rescue modality, (emergency) surgical care, methods of resuscitation, length of stay and major complications (hemorrhagic shock, coagulopathy, mortality). SPSS statistics was utilized for analysis (IBM, Version21).
Results: A total of 679 athletes were included and four major injury mechanisms were identified: Falls (n = 427), Horse-kicks (n = 188), Horse roll-overs (n = 34), and the carriage related accidents (n = 30). Individuals with a horse roll-over had a two-fold risk for pelvic ring (32.4 %) and abdominal injuries (35.2 %). Horse kicks often resulted in facial injuries (29.3 %). Especially females (75.5 %) sustained falls during horse-back riding, leading to head (n = 204, 47.8 %) and spinal injuries (n = 109, 25.5 %). In contrast, carriage accidents involved older males (57$\pm$13yrs), causing severe chest (63.3 %) and extremity injuries, resulting in significant injury severity (ISS 20.7 $\pm$ 10.6 pts). In the carriage group, 16 % were in hemorrhagic shock on scene, 24 % were coagulopathic at ER admission, and a 16.7 % in-hospital mortality was observed.
Conclusion: Young female riders are especially at risk from falling, horse-kicks or horse roll-overs. However, the highest injury severity and most fatalities affect older males in carriage-related accidents. Male horseman and carriage drivers must also be targeted by prevention initiatives.
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Disclosure: No significant relationships.

P205

COMPUTER MODELLING OF LUMBAR SPINE FRACTURE PATTERN IN RALLY DRIVERS

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Introduction: Simple isolated thoracic and lumbar spine fractures occur during frontal crashes of rally drivers. Primary aim of study was to create computer model of rally driver during frontal crash and to identify the distribution of forces on lumbar spine. Secondary goal was to verify influence of inclination of fixation belt on amount of forces acting on spine.
Material and methods: Driver model was created using MSC.ADAMS-Lifemodeler software. Primarily, load of lumbar spine was

analyzed, secondarily, a parametrical study of influence of inclination of fixation belt on amount of forces acting on lumbar vertebrae was performed. Inclination of belts was modeled in range from +15° to −20°.
Results: Without use of HANS a pressure force of almost 5500 N acted on Th12-L1 region during model crash, distal areas were loaded with descending tendency. With use of HANS maximum computed forces did reach 3000 N. Compression force acting on lumbar vertebrae was highest by highest tested inclination of security belts (20°) – almost 7000 N, by zero inclination the force was solely 3500 N.
Conclusion: All lumbar spine fractures in Th-L region in our rally drivers patient group are of type A 1.1 according to AO classification. These fractures are caused by axial overload. Maximum of force does act on L1 body, distal areas are loaded with descending tendency, therefore majority of fractures occur on L1 body. Inclination of upper part of fixation belts does substantially influence amount of compression forces acting on lumbar spine and in higher inclination can represent significant risk factor of fracture.
References: Fajstavr, V.: Biomechanická analýza systému HANS. Diplomová práce, TUL Liberec, 2013.
Disclosure: No significant relationships.

P206

BILATERAL MIGRATORY SEPTIC ARTHRITIS OF THE KNEE JOINT IN A YOUNG HEALTHY MALE BY LOW VIRULENCE STREPTOCOCCUS – CHALLENGES IN CLINICAL MANAGEMENT

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Introduction: Septic arthritis in a young healthy individual is a rare but serious complication after knee injury. This case report presents a non virulent organism led to bilateral migratory septic arthritis of the knee joint and resultant activity limitations and participation restrictions. The purpose of this case report is to highlight a rare and unique pathology, the serious effects that a joint infection can have on musculoskeletal function, and the challenges encountered during the clinical management
Material and methods: The subject was a 41 year-old young male patient who injured his right knee while playing. Within 3 days, the subject developed a right sided knee joint infection that spread into left knee joint after 3 days of arthroscopic intervention of the right knee. The infection was surgically debrided five times during a 7-week inpatient hospital stay. Outpatient physical therapy was initiated after 10 wks in order to restore musculoskeletal function and made significant improvements on the Knee Outcome Survey and the Lower Extremity Functional Scale. Success in physical therapy and completion of additional strength training exercise allowed to normal life style.
Results: After musculoskeletal injury, joint infection can happen in young healthy individual. Repeated arthroscopic irrigation may prevent soft tissue damage, partial or complete degradation of articular cartilage, and arthrofibrosis causing significant disability. Physical therapists must incorporate evidence-based treatment principles including eccentric exercise, core stability, and lower extremity strength training.
Conclusion: Poly microbial and arthroscopic irrigation and physical therapy and completion of additional strength training exercise allowed patient to normal life style.
References:
Disclosure: No significant relationships.

ORTHOGERIATRIC CO-MANAGEMENT

P207

COMPARISON OF 1- AND 2-LAG SCREW NAILING SYSTEMS FOR INTERTROCHANTERIC FEMORAL FRACTURES –RADIOLOGICAL EVALUATION OF FRACTURE CLASSIFICATION AND INSTABILITY-

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Introduction: Postoperative excessive fracture collapse in intertrochanteric fracture is a problem that needs to be addressed. The purpose of this study is to predict the amount of postoperative collapse by preoperative 3D-CT and to compare 1-and 2-lag screw nailing systems about postoperative collapse in each fracture type.
Material and methods: The radiographs of 220 consecutive patients of Jensen III, IV, V intertrochanteric fracture treated with short femoral nail at our institution were analyzed. We classified these cases into two groups by 3D-CT. Group A that has fracture line proximal to anterolateral bony eminence of intertrochanteric line was 80 cases and group B that has fracture line distal to this bony eminence was 140 cases. A single-screw system(Gamma 3 Locking Nail; Stryker) was used for 90 cases and 2-screw system(Intertan; Smith and Nephew) was used for 130 cases. The systems were compared according to the amount of postoperative fracture collapse in each fracture type.
Results: Group A showed significant large amount of fracture collapse compared to group B ($P = 0.01$). In group A, the cases treated with 1-lag screw system showed significant large amount of fracture collapse compared to the cases treated with 2-lag screw system($P < 0.05$), while there is no significant difference between 1- and 2-lag screw systems in group B.
Conclusion: Group A is likely to have fracture line proximal to the attachment portion of the iliofemoral ligament, and it is considered very unstable fracture type. 2-lag screw nailing system used in this series has a high rotation stability, and it is useful in the treatment of unstable intertrochanteric fractures.
References: Nüchtern JV, Ruecker AH, Sellenschloh K, et al. Malpositioning of the lag screws by 1- or 2-screw nailing systems for pertrochanteric femoral fractures: a biomechanical comparison of Gamma 3 and Intertan. J Orthop trauma 2014;28:276-282.
Disclosure: No significant relationships.

P208

SUBCUTANEOUS PLATE OSTEOSYNTHESIS FOR ANTERIOR PELVIC RING FRACTURES

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Introduction: The supraacetabular external fixator (SAEF) is frequently performed for anterior pelvic ring fractures. However, it is

associated with impairments, such as septic-aseptic loosening, problems with hygiene and mobilisation. The complication rate sums up to 60 %. In the view of these drawbacks the subcutaneous fixation techniques have been described. We enhanced this technique towards a subcutaneous plate osteosynthesis. The objective of the non-randomized study was to evaluate feasibility and potential complications.
Material and methods: An incision lateral to the anterior iliac spine is digitally tunnelled with a suprapubic incision in a plain between the subcutis and the fascia. A prebent 3.5 mm reconstruction plate is positioned accordingly. Both ends are fixed with cortical screws; symphyseal screws can be directed divergent and augmented with cement.
Results: Between 2013 and 2015 we operated 21 consecutive patients. The mean age was 70 years (30 to 93). A bilateral anterior stabilisation was performed in 7/21, a posterior sacroiliac screw fixation in 13/21. The latter procedure predominantly in the geriatric population. Neurovascular complications, superficial or deep infections were not observed. Depending on age and co-morbidities the Merle D'Aubigné score averaged 12. Implant removal was performed in 3/21 patients after consolidation.
Conclusion: The iliopubic plate does not bridge the symphysis and preserves a physiologic joint mobility. At the same time the unilateral stabilisation prevents an early implant loosening. The placement of 2 or more divergent screws in the ilium and pubis provides higher pullout-forces and stability. Preliminary results demonstrate a clinical and radiological result superior to the SAEF.
References: Mason 2005 Injury 36:599-604 Rommens 2012 Official publication of the European Trauma Society 38:499-509.
Disclosure: No significant relationships.

P209

IMPLICATIONS OF NEW ORAL ANTICOAGULANTS ON HIP FRACTURE SURGERY

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Introduction: Proximal femoral fractures are common fractures of the elderly. According to their comorbidities, patients are often treated with anticoagulants and recently new oral anticoagulants (NOAC) are increasingly administered. Those patients are a big challenge in the perioperative management, because surgery should be performed as soon as possible, but until now there are no antagonists for NOACs available. Also, proper tests for the quantification of the anticoagulatory activity of NOACs are still not available.
Material and methods: A retrospective database of patients requiring surgery due to proximal femoral fractures was generated. Patients treated with NOACs at the time of the fracture were compared to patients under VKA-therapy, Patients without anticoagulation formed the control group. Primary endpoint of the study was the time to surgery. Secondary endpoints were the length of hospitalization and the incidence of complications during and after surgery.
Results: Patients with proximal femoral fractures, which were operated by osteosynthesis (28.02 vs. 78.43 hours, $p = .047$) or prosthesis (42.29 vs. 96.68 hours, $p = .029$) and received NOACs at the time of their fracture, had a significantly shorter preoperative waiting time, compared to patients that were anticoagulated by VKA and treated with vitamin-K. Patients on NOACs with intracapsular proximal femoral fractures, who were treated by osteosyntheses had also a significantly shorter preoperative waiting time than VKA patients treated with vitamin-K alone (5.1 vs. 74.5 hours, $p < .001$).
Conclusion: Surgery for proximal femoral fractures can be performed earlier in patients receiving NOACs than in patients receiving VKA, who receive only vitamin-K for VKA reversal.
Disclosure: No significant relationships.

P210

THE CHARACTER OF THE OPEN FRACTURE IN ELDERLY

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Introduction: As the populations are gradually ageing, the proportion of the elderly who sustain the open fracture is increasing. But in Japan, there are no epidemiological researches about the open fractures in old people.
Material and methods: We retrospectively investigated the character of the open fracture in the elderly treated in our hospital. The twenty-one patients who were 65 years-old and older were investigated. The research period was from October 2011 to March 2015.
Results: About seventy percent cases are female. There were 17 cases of upper extremity fracture including 12 cases of distal forearm fractures and 7 cases of lower extremity fracture including 3 cases of tibial shaft fracture. Injury mechanisms are 13 cases of low energy trauma and 11 cases of high energy trauma. According to Gustilo-Anderson classification, about a half of the series are type 2 injury. Twelve cases were treated by the provisional external fixations which were converted to the internal fixation. All fracture healed except for one non-union case of proximal tibial fracture in which the bone graft was necessary.
Conclusion: In general, open fractures happened to young male by the high energy trauma. But in old generation, open fracture occurs to the female in low energy mechanism. Physicians must know that old female are at risk of open fracture even in the low energy trauma.
References:
Disclosure: No significant relationships.

P211

PREDICTING THE LENGTH OF LAG AND LOCKING SCREWS FROM THE LENGTH OF GAMMA NAILS: A RETROSPECTIVE CASE SERIES STUDY

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Introduction: Gamma nails are widely used in extracapsular femoral neck fractures. Component parts include the nail, lag screw and locking screws. These are packaged separately and retrieved intraoperatively following measurements. However, this increases theatre traffic, and therefore infection risk.[1] This study assesses whether nail length can help predict component part lengths.
Material and methods: Trauma theatre logbook records for a teaching hospital were reviewed for a one year period. Following exclusion, cases to be included in the study were evaluated for

demographic details and lengths of the gamma nail component parts. Correlation between the component parts was assessed in SPSS, and its strength determined.
Results: In total 126 femoral nails were placed and, following exclusion criteria, 104 patient records with 105 gamma nails were reviewed. There were 64 females and 40 males with 58 nails on the left and 47 on the right. The mean ratio of nail length to lag screw length was 4.11:1, and nail length to locking screw length ratio was 8.14:1. Spearman's rank correlation co-efficient (r) for the nail length to lag screw correlation $r = 0.417$, and for nail length to locking screw length $r = 0.580$ ($p < 0.05$ for each of these correlations).
Conclusion: This study confirms a significant correlation between lengths of the component parts of a gamma nail and the lag and locking screw lengths, which can be reliably estimated by dividing nail length by 4 and 8 respectively. This can help surgeons predict lengths of screw used with the gamma nail system, thereby reducing theatre traffic.
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Disclosure: No significant relationships.

P212

EVALUATION OF THE ATYPICAL FEMORAL FRACTURE

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Introduction: In recent years, atypical femoral fractures in patients on long-term oral bisphosphonates (BPs) for osteoporosis have been reported. We report on patients with atypical femoral fracture who underwent invasive treatment at our hospital.
Material and methods: Between November 2011 and December 2014, operative treatment was administered in 6 cases (7 limbs) of atypical femoral fractures. The mean age of the patients was 65.7 years and all of the patients were female. All patients underwent osteosynthesis using antegrade intramedullary nails. A history of BP administration, premonitory symptoms, mechanism of injury, fracture sites, type of fracture, lateral bowing of the femur, and time to bone healing were studied in these cases.
Results: BPs had been used in all cases, but were discontinued after surgery and teriparatide was administered. Premonitory symptoms were observed in 3 cases. All cases resulted from minor injuries. Six limbs had subtrochanteric fractures and one had a shaft fracture. All limbs had transverse fractures. Two limbs exhibited deformation, with lateral bowing of the femur. The mean time to bone healing was 27.6 weeks; delay in fracture healing was observed, but all cases achieved bone healing.
Conclusion: The relevance of atypical femoral fractures to severely suppressed bone turnover (SSBT) caused by long-term administration of BPs was reported by Odvina et al. In this study, all patients received BPs, suggesting their relevance to atypical femoral fractures. Following the administration of teriparatide and long femoral nailing, bone healing was achieved in all cases despite delayed healing.
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Disclosure: No significant relationships.

P213

CLINICAL OUTCOME OF PERCUTANEOUS TRANS-SACRAL SCREW FIXATION FOR FRAGILITY FRACTURES OF THE PELVIC RING

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Introduction: Fragility fractures of the pelvic ring (FFP) are increasing in frequency[1]. These fractures are usually treated by bed rest, administration of pain killers followed by mobilization with walking aids. Therefore, new concepts for surgical treatment have to be developed to address the functional needs of the elderly patients. The purpose of this case series is to evaluate the efficacy of percutaneous trans-sacral screw (TTS) fixation for FFPs using fluoroscopy-based navigation.
Material and methods: From January 2014, Seven patients (all female, mean age: 79.7 y) with FFPs were operated with navigated percutaneous fixation. According to AO/OTA system, there were 4 cases of B3 type and each 1 case of B1, B2 and C1 type. In these patients, 3 patients were treated with TTS fixation; 4 patients were treated with TTS fixation, screw or plate fixation for pubic fractures. The entry point on the skin was determined by 2D-fluoroscopic images using a passive optoelectronic navigation system.
Postoperative CT scans were performed for postoperative evaluation of screw placement. The intra-operative blood losing, operating time, complications were observed. Pain orientated full weight bearing was allowed immediately for all patients.
Results: The average operating time was 101 min. The blood loss ranged from 10 to 20 ml. There were no wound infections, neurovascular injuries and other organ injuries. The postoperative pelvic X-ray and three-dimensional CT showed that all the screws had good position.
Conclusion: Percutaneous TTS fixation of FFPs with fluoroscopy-based navigation have advantages such as little trauma, less blood loss, little complication.
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Disclosure: No significant relationships.

P214

RADIOLOGICAL EVALUATION OF FEMORAL NECK FRACTURES TREATED WITH HEMIARTHROPLASTY USING TAPER WEDGE STEM

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Introduction: The application of taper wedge stem in elderly is controversial because of their bone vulnerability and relatively wide medullary cavity. This time, radiological evaluation of femoral neck fractures in elderly treated with hemiarthroplasty using taper wedge stem were performed.
Material and methods: 36 consecutive patients of femoral neck fracture were treated with hemiarthroplasty using taper wedge stem(Ovation hip system; Japan MDM) from April 2014 to March 2015 in our hospital. In these patients, 33 patients that had no trauma and no surgical intervention of contralateral hip joint in the past were analyzed. 6 men and 27 women, and the mean age was 82.5 years old. For these patients, Canal Flair Index(CFI), stem fixed position in the Gruen's zone classification, varus-valgus stem insertion, and post-operative stem subsidence were measured.
Results: There were 12 patients with CFI less than 3.0. In these patients, stem fixed position was II, VII in 9 patients(75 %) and III, VII in 3 patients(25 %) and varus stem insertion was seen in 2 patients(17 %) and stem subsidence of more than 1 mm was seen in 4 patients(33.3 %) at the final survey. There were 21 patients with CFI more than 3.0. Fixed position was II,VI,VII in 17 patients(81 %) and varus insertion was not seen and subsidence of more than 1 mm was seen in 2 patients(9.5 %).
Conclusion: It is concern that malposition of hip prosthesis cause periprosthetic fracture in elderly. It was suggested in this study that it is necessary to pay attention to the occurrence of varus insertion and subsidence.
References: Distal fixation of proximally coated tapered stems may predispose to a failure of osteointegration (HJ cooper, AP Jacob, JA Rodriguez The Journal of arthroplasty 26(6), 78-83, 2011)
Disclosure: No significant relationships.

P215

FINE ELEMENT ANALYSIS AND CLINICAL CONSIDERATION OF FRAGILITY FRACTURE OF THE PELVIC RING RELATED WITH PELVIC TILT

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Introduction: With the progress of aging society, fragility fractures of the pelvic ring (FFP) are increased. In this study, it is to find the relationship between the tilting angle of anterior pelvic plane (APP) obtained from patients and the study using a finite elemental method (FEM). In this study, it is to find the relationship between the tilting angle of anterior pelvic plane (APP) obtained from patients and the study using a finite elemental method (FEM).
Material and methods: In the FFP using a pelvic model of the 75-year-old woman who is subjected to operative treatment, it is studied by FEM. The stress concentration from new bone model to reduce fracture and implants based on the CT data is checked using FEM. The APP tilting angles of anterior +10°, natural 0°, posterior −10°, −20°, −30° and posterior −40° were used. On the other hand, 12 cases with postoperative FFP, are examined the standing APP tilt using the standing X-p.Post-operative standing APP tilt, measured by using a 2D3D matched technique, are compared with the results of FEM.
Results: The stress concentration of the pelvis was changed by the pelvic tilt. When the APP tilt became posterior, the stress of the S1 and S2 has clearly increased. Also, average standing APP tilt is −32.3 ° (21-43 °), that data is support the results of FEM.
Conclusion: Than that the data from FEM and clinical data matches, pelvic posterior tilt appears to be one of the development factors of FFP.
Disclosure: No significant relationships.

P216

3D-CT EVALUATION OF FEMORAL TROCHANTERIC FRACTURES IN ELDERLY PATIENTS

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Introduction: Diagnosis of fracture pattern of femoral trochanteric fracture by plain X-ray is more difficult in elderly patients because it is often poor quality due to osteoporosis. In this study, relationship between 3D-CT classification proposed by our previous paper and X-ray classification were investigated.
Material and methods: 234 femoral trochanteric fractures over 65 year-old (44 males, 190 female) were investigated. Fracture was classified to **2part**, **3part**, and **4part** with combination of 4 fragments; Head (H), Greater trochanter (G), Lesser trochanter (L), and Shaft (S) in 3D-CT. Five subgroups of 3 part were **3 part G(S)**: (small fragment of G), **3 part G(B)**: (big fragment), **3 part G-L** (large fragment including lesser trochanter) **3 part G(W)**: (whole fragment), and **3 part L**. AO/OTA, Evans, Jensen classification were used in X-ray classification.
Results: Numbers of each group were as follows; **2 part:** 47, **3 part G(S)**: 30, **3 part G(B)**: 37, **3 part G-L**: 80, **3 part G(W)**: 16, **3 part L** : 8, **4 part** : 16 cases. 120 fractures were classified as unstable in 3D-CT. However, 50 cases in AO/OTA, 85 cases in Evans, and 47 cases in Jensen classification of these 120 fractures were classified as stable. **3 part G-L** type was recognized as unstable in 3D-CT classification, but was often classified as stable in each X-ray classification.
Conclusion: This result shows that it is difficult to evaluate the fracture patterns, especially **3 part G-L**, using plain X-ray. 3D-CT shows the fracture line very clearly, making it easy to classify the fracture pattern.
References:
Disclosure: The authors declare no conflicts of interest. This study was supported by AOTAP Research Seed Grants 2010.

P217

ON THE PREVENTION AND TREATMENT OF OSTEOPOROTIC FRACTURE

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Introduction: Osteoporosis is a common and *potentially* devastating disorder with a US prevalence of 3 % to 9 %. We report on 10 patients who presented to our service over a 12-month period. We also review the current literature on prevention and treatment, and describe the specific management of each admission.
Material and methods: Radiology exported all *Dexa Scan* ordered over a 6/12 timeframe on patients admitted into Trauma & Orthopaedic Surgery with fracture of suspected osteoporotic nature. Each patient course was reviewed from admission to discharge, and subsequent follow-up in outpatient department.
Results: Atraumatic fracture of vertebra, neck of femur (NOF) or distal radius are often associated with osteoporosis. While often prevalent in elderly patients, our patient cohort consists of 30 % in their 40 s and 40 % in their 50 s: only 1/10 is over 70 years of age. In each case XR and CT were used to assess the degree of fracture, possible retropulsion and management. Conservative management with a hyperextension brace is preferred in isolated vertebral compression fractures without retropulsion. Dexa scan was requested on all patients who were deemed to be at risk of osteoporosis. Key measures for prevention include: diet; exercise; non-smoking; falls risk; and medications (including glucocorticoids, anticoagulants and antiepileptics). Bisphosponates slow bone resorption, however they require careful restrictions. Other medical treatment includes: Oestrogen: Calcitonin; Denosumab; and Parathyroid (PTH) hormone.
Conclusion: We report on a series of 10 patients who presented with atraumatic fractures consistent with an underlying diagnosis of osteoporosis. We discuss their investigation and management in the light of recent guidelines.
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Disclosure: No significant relationships.

ABDOMEN

P218

CONSERVATIVE TREATMENT USING AN ENDOSCOPIC PANCREATIC STENT IN A PATIENT WITH DELAYED DIAGNOSIS OF PANCREATIC INJURY AFTER TRAUMA: A CASE REPORT

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Introduction: The diagnostic evaluation of pancreatic injuries has improved dramatically in recent years. However, it is sometimes difficult to diagnose pancreatic injuries because there are no specific signs, symptoms, or laboratory findings associated with the condition. Advanced inflammation and autodigestion are found surrounding the sites of pancreatic injury if diagnosis is delayed. Therefore, surgical treatment after delayed diagnosis increases the risk of mortality and morbidity.
Material and methods: A 47-year-old man was referred to our emergency department having experienced blunt abdominal trauma caused by a fall with associated pancreatic injury 5 days prior. His vital signs were stable status. Laboratory tests revealed a white blood cell count of 21,310 /mm^3, a mild increase in serum amylase/lipase levels (471/688 U/L), and a C-reactive protein level of 25.71 mg/dL. An abdominal computed tomography (CT) scan revealed discontinuity between the pancreas head and neck with peripancreatic fluid collection.
Results: ERCP was performed. ERCP demonstrated disruption of the pancreatic duct with leakage at the neck portion of the pancreas. A 5-Fr 9-cm endoscopic pancreatic stent was inserted. Next, percutaneous catheter drainage (PCD) was performed at the site of peripancreatic fluid collection. A follow-up CT scan revealed no exacerbation of the pancreatic injury and decreasing volumes of peripancreatic collection. The patient's symptoms improved and the patient was discharged on hospital day 26. ERCP was performed 7 months after initial admission, and revealed mild stricture of the leakage site without leakage. The stent was removed.
Conclusion: Use of endoscopic pancreatic stents can improve the clinical condition in cases of late-diagnosed pancreas injury.
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Disclosure: No significant relationships.

P219

DAMAGE CONTROL SURGERY FOR LIVER LACERATION WITH MAJOR VESSEL INJURY: VASCULAR CONTROL FOLLOWED BY DELAYED HEPATECTOMY

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Introduction: Grade V liver laceration with major hepatic vein injury and hemodynamic instability requires an immediate surgery. Herein, we report a case of severe liver laceration with major hepatic vein and portal vein injury successfully managed by the portal pedicle and hepatic vein ligation, followed by delayed hepatectomy.
Material and methods: A 10-year-old boy referred to our hospital with an abdominal distension and hemodynamic instability after traffic accident. Blood pressure was 70/40 mmHg. On laboratory findings, hemoglobin was 8.3 g/dL, platelet count was 85,000/mm3, prothrombin time international normalized ratio (PT INR) was 2.13. An abdominal computed tomography (CT) showed an active bleeding from right hepatic vein, right portal vein, and right inferior hepatic vein with extensive liver laceration of right hepatic lobe and large amount hemoperitoneum.
Results: An immediate laparotomy was performed. After ligation and division of gallbladder neck, the right portal pedicle was secured using Glissonean approach. The coronary ligament and the right

triangular ligament were dissected, and the root of right hepatic vein was ligated. After locating the liver to left side, injured inferior vena cava; the root of right inferior hepatic vein, was sutured. However, parenchymal resection could not be performed because of diffuse oozing from disseminated intravascular coagulopathy (DIC). Perihepatic pad packing was performed and the abdominal wall was closed temporarily. After 2 days from the initial operation, completion right hemihepatectomy was performed without massive uncontrollable bleeding tendency.
Conclusion: Severe liver injury in hemodynamically unstable patient was could be successfully managed with an immediate vascular control and delayed hepatic parenchymal resection.
References:
Disclosure: No significant relationships.

P220

DAMAGE CONTROL LAPAROTOMY: MORTALITY AND IMPLICATION OF EARLY FASCIAL CLOSURE FOR MORBIDITIES

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Introduction: Damage control laparotomy (DCL) is a lifesaving technique to minimize the lethal triad of coagulopathy, hypothermia, and acidosis. We investigated if DCL is appropriate technique for severe trauma patients.
Material and methods: This is a retrospective review of all patients undergoing immediate laparotomy at Chonnam National University Hospital Trauma Center between 2009 and 2014. DCL was defined as temporary abdominal closure at the initial surgery. Early closure was defined as primary fascial closure at initial take back laparotomy.
Results: Thirty nine patients underwent DCL. Mortality rate was 48.7 % and morbidity rate was 66.3 %. Glasgow Coma Scale(15 vs. 11, $p = 0.03$) was high and Injury Severity Score(19 vs. 29, $p = 0.007$) was low in survival group. Primary fascial closure was achieved in 28(71.8 %) patients. Of these 28 patients, 18 patients underwent primary fascial closure at first take back laparotomy after DCL while 10 patients did not. Both groups were similar in dermographics, Intensive care unit stay, hospital stay, Glasgow Coma Scale, Injury Severity Score. Ventilator days in early fascial closure group was significant shorter than other group(11.2 vs. 17.9, $p = 0.49$). But surgical site infection, Intra-abdominal abscess, Ileus, pulmonary complications, mortality were similar in both groups.
Conclusion: Mortality and morbidity were high in DCL patients. Injury Severity Score were high in non-survival group. Ventilator days was shorten in early fascial closure group But early fascial closure did not show other benefit for other complications.
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Disclosure: No significant relationships.

P221

AN UNCOMMON CAUSE OF LIVER ABSCESS

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Introduction: Liver abscess is a relatively rare condition, in developed countries; etiology is most often pyogenic (with the biliary tract being the most common source of infection). It can present with typical fever, right upper quadrant pain and jaundice but often the presentation is nonspecific. We present a case of septic shock due to a liver abscess caused by gastric and hepatic perforation by a fishbone.
Material and methods: Case Report: An 87 year old female patient was admitted to the emergency department for hypotension, malaise and chills. A CT scan was performed and showed an heterogeneous nodular lesion in the left hepatic lobe and a linear hyperdense image, measuring 3.2 cm, stretching from the gastric lumen, across the gastric wall, to the hepatic lesion. These aspects were suggestive of a foreign body (likely a fishbone) perforating the gastric wall and causing an hepatic abscess. The patient was submitted to an exploratory laparotomy that revealed a left hepatic lobe abscess and a fishbone piercing the liver. The abscess was drained, the fishbone was removed and an epiploplasty was performed. The patient was admitted to the ICU for severe septic shock, she was discharged to the ward 3 days later and completed a 12 day course of antibiotics.
Results: Foreign body migration from the gastrointestinal tract to organs such as the liver, spleen and bladder is exceedingly rare but possible.
Conclusion: Liver abscess due to foreign body migration is an elusive but potentially life threatening condition. CT is crucial for diagnosis and surgery is the cornerstone treatment.
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Disclosure: No significant relationships.

P222

THE INNOVATIVE DUAL APPROACH HERNIOPLASTY (DAH) FIRST APPLICATION ON IRREDUCIBLE INGUINAL HERNIA; WIDENS THE SCOPE OF EMERGENCY ENDOSCOPIC SURGERY

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Introduction: The author solely has recently invented the "dual approach hernioplasty" technique (DAH). (Published ahead of print in the Surgical Endoscopy Journal, 3 June 2015, DOI

10.1007/s00464-015-4308-5). Initially the procedure was applied on uncomplicated inguinal hernias and proved potentially safe in addition of being time and effort saving. As a more advanced stage in the application of DAH technique, the author has tried in this study on irreducible indirect inguinal hernias.
Material and methods: This is a multicentre study applied between September 2013 and March 2014. The study recruited sixty five patients with irreducible indirect inguinal hernia within the first eight hours from irreducibility. In all cases hernia has to be reduced smoothly with minimal to moderate pressure under general anesthesia prior to start of the surgical procedure in fifty three patients. Persistently irreducible hernias were reduced during the procedure by combined intra-peritoneal sac traction and external pressure prior to extra-peritoneal gas insufflation. This later method of hernia reduction was applied on the remaining twelve patients. Follow up duration ranged between 24 and 17 months.
Results: All 65 patients underwent the DAH procedure that was completed without deviation from the original technique nor conversion to open surgery. All results' data is tabulated. No observed complication related to technique nor recurrence in any of the operated patients over the follow up duration.
Conclusion: The DAH technique has proved excellent early results when applied on irreducible indirect inguinal hernia. The procedure needs to be verified on wider scale studies.
References: (8) references
Disclosure: No significant relationships.

P223

VASCULAR PEDICLE CONTROL IN ANY ANATOMICAL TYPE STRANGULATED HERNIA REPAIR: A NOVEL TECHNIQUE MINIMIZING INCIDENCE OF SYSTEMIC INFLAMMATION RESPONSE ACTIVATION

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Introduction: The cut blood supply from herniating tissues at the level of the neck of the hernia sac would induce distal gangrene. In the traditional surgical approach, exploration starts from the herniation side and cutting through the neck of the sac would cause mass reduction of the hernia content. This method would release all ischemic tissue metabolites and toxins back to systemic circulation. Systemic inflammatory response would be irreversibly elicited and organ failure cascade might be initiated. Applying a new concept of exploration and tissue manipulation that avoids such a situation has been tried in this study.
Material and methods: This is a multicentre study that recruited thirty one cases between January 2012 and March 2015. Hernias were of paraumbilical and indirect inguinal types with proved resected gangrenous tissue histologically. All strangulated hernias proved gangrenous herniated tissues without revealing manifestations of systemic inflammatory response. The concept applied mandates vascular pedicle control prior to hernia reduction. Ischemic tissues are resected and bowel continuity is regained. No ischemic tissue perfusion trial was given. Hernioplasty technique is applied as usual.
Results: Patients' physiological and biochemical data through all stages were recorded and tabulated. No organ failure was precipitated in any of the cases. Hernioplasty techniques and results showed unremarkable complications.
Conclusion: Non of the patients showed any of the systemic inflammatory response criteria nor organ failure. The proposed concept insures safe recovery after repair of any anatomical type strangulated hernia. The new concept is recommended to follow in strangulated hernias of any anatomical type. Application on wider scale is invited.
References: (12) references
Disclosure: No significant relationships.

P224

UNUSUAL HERNIA SAC CONTENTS PRESENTING AS COMPLICATED INGUINAL HERNIA IN IMMUNOCOMPROMISED PATIENTS – REPORT OF TWO CASES

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Introduction: Painful groin mass is a common complaint among patients presenting to the emergency department. Although quite rare, the hernia sac can contain colonic diverticulae and the appendix, which can also complicate with inflammation and perforation. We present two cases of acute diverticulitis and acute appendicitis, both complicated with perforation and mimicking a strangulated inguinal hernia.
Material and methods: Both patients were male and admitted to the emergency department complaining of a painful irreducible groin mass. Patient A was 47 years old with a history of immunosuppressive therapy for an autoimmune hepatitis, diabetes, and a right inguinal hernia. Patient B was 66 years old with a history of HIV, diabetes, congestive heart failure, and a right inguinal herniorraphy thirty years ago. Upon presentation, both were hemodynamically stable, with a palpable and irreducible groin mass, reddish and warm. Initial treatment with fluids and analgesia was followed by surgical management.
Results: Both patients were initially submitted to exploration via inguinotomy revealing pus upon hernia sac opening, a perforated appendicitis in patient A, and a perforated diverticulitis in patient B. The first was treated with a Parker-Kerr and a Lichtenstein techniques. The latter had an exploratory laparotomy by a low midline incision, showing an inflamed sigmoid colon and the perforation at its distal portion, with no fecal spillage, treated with a Hartmanńs procedure. Both patients had uneventful postoperative recovery.
Conclusion: Although rare, acute diverticulitis and acute appendicitis should be part of the differential diagnosis of complicates inguinal hernia presentations. Both can be life-threatening, specially in selected immunosuppressed patients.
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Disclosure: No significant relationships.

P225

SELECTIVE LIGATION OF HEPATIC ARTERY FOR LIVER INJURY

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Introduction: The treatment of severe hepatic trauma with hemodynamic instability is indeed a challenge for the trauma surgeon. Most of them are treated in two stage surgery fashion. The first operation focuses on hemorrhage control and the second one on the definitive repair. Although rare, bleeding control with perihepatic packing method is impossible to be carried out and can be achieved with selective ligation of hepatic artery.
Material and methods: We present a case of severe hepatic trauma in hemodynamic instability status which is treated successfully with selective ligation of hepatic artery.
Results: A 27-year-old man was admitted in our hospital with a hemodynamic instability status. Physical examination revealed a 2 cm wound above the right costal arch, caused by a sharp tool. The patient underwent immediate laparotomy; we found a penetrating liver laceration of segment V with active arterial bleeding. Our attempt to control bleeding with perihepatic packing resulted unsuccessful, meanwhile Pringle maneuver resulted successful. In these circumstances we performed ligation of right hepatic artery, T-tube in the common duct and multiple drains about the liver were placed. Red blood cells, fresh frozen plasma and broad-spectrum antibiotic therapy was given. Liver function tests were altered and returned to normal within two weeks. The patient was discharged on the fourteenth postoperative day uneventful. The follow-up showed no abnormality of liver function.
Conclusion: In cases of severe hepatic trauma with hemodynamic instability when the control of bleeding with perihepatic packing method fails and portal vein remains intact, selective ligation of hepatic artery is the chosen option.
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Disclosure: No significant relationships.

P226

SURGICAL CONTROL OF HEMORRHAGE IN LIVER TRAUMA

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Introduction: Control of hemorrhage in major injuries of the liver remains a challenge for surgery even nowadays. Surgeons often face difficult situations in its management. The aim of this study was to evaluate our experience in controlling hemorrhage in severe liver trauma.
Material and methods: The study was conducted prospectively, in the time frame of January 2009 to December 2012. We analyzed 173 patients with hepatic trauma.
Results: Temporary hemostatic maneuvers in urgent laparotomy were: bimanual compression in 13 cases (15.3 %), Pringle maneuver in 23 cases (27 %), perihepatic packing in 10 cases (11.8 %), tamponade into the injury tract in 4 cases (4.7 %), and Foley balloon catheter in 2 cases (2.4 %). While, definitive hemostatic methods in urgent laparotomy included: electrocautery coagulation in 12 cases (14.1 %), hemostasis and bile-duct ligation with hepatic closure in 41 cases (48.2 %), hemostasis and bile-duct ligation without hepatic closure in 6 cases (7.1 %), tamponade with vascularized omental flap in 7 cases (8.2 %), anatomical hepatic resection in 1 case (1.2 %) atypical hepatic resection in 7 cases (8.2 %), and ligation of the right hepatic artery in 1 case (1.2 %). Surgical techniques performed in planned relaparotomy were: left hepatectomy in 1 case (16.6 %), right hepatectomy in 1 case (16.6 %) and atypical hepatic resection in 4 cases (66.7 %). The success of treatment has a statistically significant relationship with grade of liver injury ($z = 5.2912$, $p = < 0.00001$), associated intra-abdominal injuries ($z = 4.0743$, $p = 0.00005$), the quantity of blood transfusion ($p = 0.03207$) and age ($p = 0.04944$).
Conclusion: Perihepatic packing and the application of two-stage surgery has significantly increased the survival rate in severe liver trauma.
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Disclosure: No significant relationships.

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ARTERIOVENOUS FISTULA AFTER BLUNT LIVER TRAUMA

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Introduction: The liver is very often injured in blunt abdominal trauma but hepatic artery pseudoaneurysm is a rare complication. (1)
Material and methods: Case report.
Results: A 21-year-old female, with no remarkable past illness, was brought to our Emergency Department after have fallen from a height of 5 meters. Primary assessment revealed the patient to be pale and tachycardic, with thoracalgia and right arm pain. A computed tomographic (CT) scan displays free abdominal fluid and hepatic laceration. Surgical exploration revealed large volume hemoperitoneum and 3 liver lacerations of the VI and VIII segments, controlled by packing. Postoperative CT scan revealed large volume liver haematoma of the VII segment and a 6 mm right segmentar hepatic artery pseudoaneurysm with hepato-portal arteriovenous fistula. The fistula obliteration by catheter embolization was ineffective because

of the collateral circulation and a partial hepatectomy was performed (VI and VII segments).
Conclusion: Despite the growth of minimally invasive therapeutic options for the treatment of such lesions many patients still need anatomical resection of the liver.
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Disclosure: No significant relationships.

P228

MILD ACUTE BILIARY PANCREATITIS: THE DEADLINE FOR EARLY CHOLECYSTECTOMY SHOULD NOT OVERSTEP THE INDEX ADMISSION

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Introduction: It is recommended that laparoscopic cholecystectomy (LC) during the index admission should be the best strategy for patients with mild biliary acute pancreatitis (MBAP). However, the optimal surgical timing is controversial considering the uneven patients' stratification for pancreatitis severity in previous studies and that patients are often discharged from hospital and readmitted for elective cholecystectomy. The aim of this study was to determine the outcome of patients homogenously categorised for MBAP according to the newest pancreatitis classifications, undergoing cholecystectomy with different timing.
Material and methods: We retrospectively identified patients undergoing cholecystectomy from 2006 to 2013 for MBAP, according to the 2012 Revision of the Atlanta Classification and the Determinant-Based classification of acute pancreatitis, and stratified them in two groups: index cholecystectomy (IC) and interval-delayed cholecystectomy (IDC, after at least 4 weeks).
Results: 103 patients were analyzed in this study. IC was performed in 40 patients (38.8 %) while IDC in 63 patients (61.2 %). The two groups were similar in comorbidities and pancreatitis severity at admission. There were no differences for conversion rate, operation length, total length of hospitalization and overall complication rates. However, IDC patients had a 33.3 % rate of re-hospitalization for recurrent biliary events while waiting for the elective procedure and showed a higher rate of acute cholecystitis at histological diagnosis than IC (11.1 % vs 0 %, $p = 0.041$).
Conclusion: Among MBAP patients, classified following the new pancreatitis severity scores, cholecystectomy during the index admission is the best treatment option in order to avoid further undesired hospitalizations for recurrent pancreatic and biliary disease while waiting for surgery.
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Disclosure: No significant relationships.

P229

PANCREATIC TRAUMA: A RARE CAUSE OF HEMOPERITONEUM

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Introduction: Pancreatic injury is a rare complication of abdominal blunt trauma but it can pose a great challenge to manage.
Material and methods: A 69-year-old male, previously healthy, was brought to our emergency department (ED) after falling down a well and staying partially submerged. At the arrival the patient presented a Glasgow Come Scale of 15 and referred intense left abdominal pain. His body temperature was 30,5 °C, arterial blood pressure of 84/46 mmHg and an heart rate of 122 bpm. The FAST scan performed in the ED revealed massive hemoperitoneum and the patient was promptly transferred to the OR.
Results: Exploratory laparotomy revealed a massive hemoperitoneum secondary to a near-complete section of the pancreatic body associated with minor splenic laceration. Therefore, distal pancreatectomy with total splenectomy and abdominal drainage was performed. The patient was kept under massive blood transfusion protocol, slowly rewarmed and remained under close surveillance during the first 48 hours in our surgical intermediate care unit. A type A (International Study Group on Pancreatic Fistula) pancreatic fistula developed but the patient was discharged on day 11. The fistula was managed by a slow removal of the operatively placed drains.
Conclusion: Although rare, pancreatic trauma can be a cause of massive hemoperitoneum and poses a challenge to the surgeon. In case of main pancreatic duct injury, surgery with distal pancreatectomy remains the most performed treatment.
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Disclosure: No significant relationships.

P230

ASSESSMENT, TREATMENT AND RESULTS IN PENETRATING ABDOMINAL TRAUMA. A RETROSPECTIVE STUDY OF 102 CASES

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Introduction: Penetrating abdominal trauma (PAT) continues to be the most frequent cause of death in the first four decades of life and is

the leading cause of trauma admission to the World [1]. Today, trauma is a major problem for public health in some countries [2, 3].
Material and methods: In our study are included, demographic data, parameters hemodynamic in admission, the severity of the injuries (AIS, ISS, RTS, TRISS), PATI index, presence of shock on emergency department (ED), the number of injuries organs, the timing of the operation, complications, length of stay in hospital, morbidity and mortality.
Results: We have recorded 102 patients (Pt) [93(91 %) male & 9(9 %) female] with PAT in this study. Of 102 Pt, 47 (46 %) were coming from Tirana and 55 (54 %) from another hospitals. The mean age was 34.6 (10-80) years. The distribution of data based on mechanism of injury was; 2 (2 %) of Pt was after BI, 34(33 %) of Pt was after GSW, 55 (54 %) of Pt was after SW, 11(11 %) of Pt was after STW, were included in our study
Conclusion: In PAT male are a mainly affected and general in the third decade of life. Compared with previous studies, SW are the leading cause of PAT, followed by GSW, rate of negative laparotomy is 15 % in our study … a result of management depends on the presence of shock on admission, PATI index and gravity of injuries…
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Disclosure: No significant relationships.

P231

THERAPEUTIC OPTIONS IN PATIENTS WITH TRAUMATIC SPLENIC INJURY

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Introduction: The management of splenic injuries has shifted from operation to non-operative treatment to preserve spleen because of the postoperative risks of overwhelming post splenectomy infection (OPSI). The objective of this study is to investigate the therapeutic options of splenic injuries using medical records of Chonnam National University Hospital.
Material and methods: From January 2009 to December 2013, we retrospectively reviewed the medical records of 123 consecutive patients with traumatic splenic injuries. Demographic characteristics, therapeutic options such as conservative treatment, angiographic embolization and emergency operation and clinical parameters were analyzed in this study.
Results: 33 patients and 90 patients underwent operative and non-operative treatment, respectively. A significant difference in preoperative systolic blood pressure was found between operative and non-operative treatments (93.0 vs. 105.9, $P = 0.023$). However, there have been no significant differences in hematocrit ($P = 0.706$), blood transfusion ($p = 0.552$), contrast blush ($p = 0.351$), age ($P = 0.897$), angiographic embolization ($p = 0.348$), morbidity ($p = 0.162$), mortality ($p = 0.573$) and Injury severity scale ($p = 0.197$) between both treatments.
Conclusion: This study demonstrated that emergency splenectomy was a preferred option in patients with unstable hemodynamic state. In addition, non-operative treatment may be a possible therapeutic option in patients with stable hemodynamic states.
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Disclosure: No significant relationships.

P232

MICROBIOLOGIC STUDY OF PAD USED FOR PACKING IN DAMAGE CONTROL LAPAROTOMY

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Introduction: Damage control laparotomy (DCL) is a technique utilized to care of massively injured trauma patient. We conducted microbiologic analysis of the pad used for packing in DCL and studied its association with morbidity and mortality.
Material and methods: This is a retrospective review of patients undergoing immediate laparotomy at Chonnam National University Hospital Trauma Center between 2011 and 2015. DCL was defined as temporary abdominal closure at the initial surgery. 18 consecutive patients undergoing DCL were analyzed. Microbiologic samples from pad used in DCL were collected.
Results: 15 microorganisms were cultured. Samples from 12 (66.7 %) patients were positive by microbiologic culture and six (33.3 %) patients were negative. Morbidity rate (91.7 % vs. 66.7 %) and mortality rate (41.7 % vs. 16.7 %) were higher in patients with positive culture than patients with negative culture. Infection rates such as surgical site infection (75.0 % vs. 33.3 %) and sepsis (41.7 % vs. 16.7 %) were higher in culture-positive patients. Four patients underwent two or three take back surgeries and all samples from these patients were positive for microorganism(100 %).
Conclusion: There was a high infectious complication rate in patients with positive culture of pad. And two or more frequent take back surgery seems to increase risk of infection in DCL.
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Disclosure: No significant relationships.

P233

THE CURRENT STATUS AND MANAGEMENT OF GREAT VASCULAR TRAUMA

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Introduction: The great vessels composed by aorta and vena cava which maintain the circulatory system of human body. Great vascular trauma (GVT) is a devastating event if unrecognized in the treatment course of trauma patients. Because of its rarity, there is no current algorithm or consensus for GVT. In the present study, we demonstrated the clinical presentation and outcome of GVT and the feasibility and safety of current management in GVT.
Material and methods: We conducted a prospective collection retrospective review in a Level I trauma center in Taiwan. This study enrolled all of the patients suffered from GVT from Jan 2009 to Dec 2013. We retrieved and analyzed the patient demographic data, clinical presentation, injury location, injury severity score (ISS), management, the hospital stay and mortality.
Results: The cohort consisted of 73 patients: 61 aortic trauma and 12 vena caval trauma. The mean age was 41.7 ± 17.8 years. Most patients have multiple trauma with high ISS The management including surgery, stenting, angiography embolization and conservative management. The mortality rate is 26.0 % (19/73) . The unstable hemodynamic status and high injury severity score are independent factors to predict mortality. Furthermore, vena caval injury is another isolated predictor of mortality.
Conclusion: In conclusion, GVT is a rare injury with a dismal prognosis. The mortality of GVT was related to severe associated injuries, furthermore, GVT is an indicator of severe multiple trauma. This aortic injury should be managed either stenting or operation, but the surgical repair is the better procedure for vana caval injury.
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Disclosure: No significant relationships.

P234

HEAVY ABDOMINAL TRAUMA

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Introduction: The incidence of abdominal vascular lesions, after a blunt abdominal trauma is rare, aprox 5-10 %. Car accidents are the most frequent cause of this type of injury. Lesions of the abdominal aorta may present in 3 possible ways: as an intraperitoneal hemorrhage; a contained hematoma; or as thrombosis of the vessel. When the first case happens, hypovolemic shock may appear secondary to the bleeding. Therefore the early recognition of this type of injury is essential for the survival of the patients.
Material and methods: Male, 29 years old, victim of work-accident, fall of fruit pallets (weight of 800 kg) over the anterior surface of the thorax and abdomen. At the initial evaluation (ATLS) the patient presented signals of periferic hypoperfusion and diffuse pain when palpating the abdomen. CT of the thorax-no lesions. Abdominal CT-presence of free fluid in the abdominal cavity of great volume Abdominal aorta: evidence of a posterior injury with image of endoluminal subtraction at the level of L1-L2. CT of vertebral column-Chance fracture, with retrolisthesis of L1 over L2.
Results: The patient was submitted to emergent surgery. Intraoperative findings: -disruption of the inferior mesenteric artery at its origin, and endothelial lesion of the infrarenal aorta. Management-aorto-aortic bypass with interposition graft of Dacron. - retrolisthesis of L1 over L2. Management-reduction of the fracture and percutaneous fixation with Longitude.
Conclusion: No complications developed during the pos-op period. The patient was discharged at D7 of pos-op.
References: ATLS manual. Mattox K., Moore E., et al. Trauma, 7th edition. McGraw Hill 2013. Mattox et al. Sabiston, textbook of Surgery, 19th edition. Elseveir 2012.
Disclosure: No significant relationships.

P235

NEGATIVE PRESSURE THERAPY WITH INTRAPERITONEAL SALINE INSTILLATION IN THE OPEN SEPTIC ABDOMEN

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Introduction: Open abdomen has become a common technique in the management of abdominal sepsis. We present a series of cases of open septic abdomen treated by using intermittent therapy with intra-abdominal irrigation with a modified VAC- Ulta® associated with ABThera® dressing, comparing with ABThera® dressing suction therapy alone.
Material and methods: Retrospective study of 12 patients with temporary abdominal closure for abdominal sepsis. During the initial laparotomy washing of the peritoneal cavity was performed with warm saline. Six patients (Goup 1, between 2013 and 2014) were treated by KCI ABThera® dressing, and keeping constant suction pressure -125 mmHg. For the second group (Group 2, between 2014 and 2015) the mentioned dressing was used, and we performed also intermittent intra-abdominal instillation with modified VAC-Ulta®. By programming the device, intermittent flushing was performed each hour with 250 cc of saline heated inside the abdominal cavity and keeping for 5 minutes.
Results: Primary fascial closure was achieved in 100 % of patients with instillation therapy, 4 of them in the first change after 3 days, and the other 2 patients in the second change (6th day). In the group 1, only 3 of them were closed (at 3th, 6th and 11th day). Two of them remained with the open abdomen and the other one died.
Conclusion: The results obtained by combining the intra-abdominal instillation therapy with suction seem to be promising, regarding the rate of abdominal closure, reducing the time to primary fascial closure and consequently in fewer complications associated with open abdomen.
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Disclosure: No significant relationships.

P236

HEPATIC TRAUMA - A 5 YEAR EXPERIENCE

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Introduction: The liver is the most frequently injured organ in abdominal trauma. Non-operative management and angioembolization are the current mainstays of treatment, irrespective of the grade of the injury. Initial operative management is reserved for those who present hemodynamic instability or with associated lesions that prompt laparotomy. Our objective was to analyze possible variables on admission predictors of surgical management and mortality.
Material and methods: We retrospectively reviewed 22 adult patients with liver injury admitted to our institution, a level III trauma center, from January 2009 to December 2014. Data collection included demographic information, emergency department parameters, injury severity score, management and in-hospital mortality. Descriptive and univariate analyses were performed.
Results: We reviewed 22 patients admitted with hepatic trauma (17 males, 5 females, mean age 46 years), the majority (81 %) caused by blunt trauma, with a mean new injury severity score (NISS) of 20 (minimum 1, maximum 50). Of these, 8 had grade I lesions, 11 grade II, 2 grade III and 1 grade IV, with no higher grade injuries. The most common associated injury was splenic and diaphragm trauma. 12 were managed conservatively while 10 were submitted to surgical intervention.
As expected, systolic blood pressure and hemoglobin levels were predictors for surgical treatment ($p < 0.005$). NISS was the only significant predictor for mortality ($p < 0.005$).
Conclusion: In small trauma centers, there is still a bias towards a more aggressive approach, largely because of suboptimal diagnostic techniques. Probably due to our small sample, we could not find statistical significance on any variable analyzed, other than those previously stated.
References:

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Disclosure: No significant relationships.

P237

ADEQUACY OF ONCOLOGIC RESECTION IN PATIENTS UNDERGOING EMERGENCY COLECTOMY

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Introduction: Patients with tumors of the large bowel that present with obstruction or perforation have a poor long term prognosis, worse when compared to patients with similar staged tumors operated electively. The main objective of this study was to evaluate whether inadequate oncologic resection is a cause leading to worse outcome in patients undergoing emergency colectomy.
Material and methods: Retrospective analysis of colectomies with oncologic intent between 2011 and 2014: emergency colectomies were compared to elective colectomies. Adequacy of oncologic resection was determined by the number of lymph-nodes resected within the colectomy specimen. Subtotal colectomies were excluded.
Results: One hundred sixty one colectomies in 157 patients were analysed. Twenty three (14.3 %) colectomies were performed urgently: 14 for obstruction and 9 for perforation. Males more commonly underwent emergency colectomies, 20.5 % vs. 7.6 % ($p = 0.0225$). Patients undergoing emergency colectomy were older, 77.5 y' $\pm$ 10.6 vs. 70.5 y' $\pm$ 11.5 ($p = 0.0058$) and more commonly diagnosed with metastatic disease perioperatively, 40.9 % vs. 19.9 % ($p = 0.0486$). Following a median follow-up of 16 months, 12 (54.5 %) patients operated urgently were dead. Mean number of lymph-nodes resected within the colectomy specimen was 13.4$\pm$4.1 in emergency colectomies and 13.9 $\pm$ 4.7 in elective cases ($p = 0.5491$). Proportion of colectomies with a minimum of 12 lymph-nodes was 69.6 % in emergency colectomies and 73.9 % in elective colectomies ($p = 0.6215$). Repeat analysis excluding metastatic patients on presentation reveals non-inferior results for emergency colectomies compared to elective colectomies, 85.7 % vs. 85.1 % ($p = 1.0$).
Conclusion: Proportion of adequate colectomies was similar in patients undergoing emergency and elective surgery.
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Disclosure: No significant relationships.

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PATI INDEX and INJURY SEVERITY SCORE, AS PREDICTIVE FACTORS IN MANAGEMENT OF PENETRATING ABDOMINAL TRAUMA.

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Introduction: A number of scoring systems have been developed over the last several decades to evaluate the severity of trauma and predict the mortality and morbidity of the patient. The penetrating abdominal trauma index (PATI) [1] and injury severity score (ISS) [3] are the two most commonly used scoring systems. However, new studies are needed in order to improve the approach and care of the trauma cases and to predict the possible results [2-4].
Material and methods: Parameters analyzed were demographics, presence of shock, etiology of injury, Injury Severity Score (ISS) and

PATI index, number of injured abdominal organs (NIAO), operative procedures, length of hospital stay, complications and mortality. The organ injuries were graded according to Abbreviated Injury Scale (AIS) 1990 revision (AIS-90). ISS and PATI scores were calculated for each patient.
Results: We have recorded 102 patients (Pt)[93(91 %) male & 9(9 %) female] with PAT in this study. The mean age was 34.6 (10-80) years. Pt with intra abdominal organ injury were pure PAT 61(60 %) [GSW 18 (18 %); SW 35 (34 %); STW 8 (8 %)] and concomitant intra- or extra-abdominal organ injury was detected in 51(40 %){ Thoracic injury (ThI) - 41(40 %)[GSW 10(10 %); SW 28(27 %); STW 3(3 %)]; Spine injury (SI)- 9(9 %) [BI 2(2 %); GSW 4(4 %); SW 1(1 %); STW 2(2 %)]}. The Pt were performed in 92(91 %) OM and in 10(10 %) NOM…
Conclusion: The hemodynamic instability, ISS and PATI were found to have a significant effect on morbidity & mortality in this study.
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Disclosure: No significant relationships.

P239

EXTERNAL ESOPHAGEAL TRAUMA - THE DIAGNOSTIC TOOL AND TIMING

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Introduction: The External esophageal trauma is a rare but lethal injury, which account 1 – 2 % of all trauma patients. Limited experience and lethal result let us put this injury aggressively, even overdo. In this study, we tried to figure out the clinical course, incidence and prognosis of this injury.
Material and methods: We conducted a prospective collection retrospective review in a Level I trauma center in Taiwan. This study enrolled all of the patients suffered from external esophageal injury from January 2006 to December 2012. We analyzed the patient demographic data, clinical presentation, trauma mechanism, injury severity score, management, the hospital stay and mortality. Furthermore, we enrolled all patient suffered from isolated pneumomediastinum who have both esophagography, and CT into this study to evaluate the necessity of esophagography.
Results: There were 15 patients suffered from external esophageal injury and the prognosis was dismal. The mortality rate was 26.6 %, and near half of these patients suffered from complication. The CT showed high sensitivity rate to make correct diagnosis. High ISS and deferred diagnosis were the risk factors to predict mortality. Furthermore, 109 patients with isolated pneumomediastinum were enrolled. There were 42 in trauma group; 67 in the non-trauma group. The CT showed high sensitivity 100 % and specificity 82.8 %; otherwise, the esophagography showed moderate sensitivity 68.4 % and high specificity 96.6 %.
Conclusion: The esophageal injury was lethal injury with a dismal result. Early diagnosis was a key factor to prevent infection and reduce mortality. CT provided a high sensitivity and specificity in diagnosing this rare injury.
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Disclosure: No significant relationships.

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DAMAGE CONTROL SURGERY IN ACUTE MESENTERIC ISCHEMIA

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Introduction: Acute mesenteric ischemia (AMI) is still one of the most complex and controversial problems of abdominal surgery. Mortality rate in these patients reaches 60 %-93 %.
Material and methods: Retrospective and prospective analysis of treatment results of 93 consecutive patients with AMI. The prospective group included 51 patients treated according to Damage Control Surgery protocol. The retrospective group included 42 patients with AMI. Median age was 68.8±1.9 (95 CI: 64.99-72.5). Diagnostic work out included routine laboratory tests as well as D-dimer, serum lactate, ischemic modified albumin, 3D-CT angiography and laparoscopy. The prospective group included 43 cases of arterial AMI and 8 cases of venous AMI. Primary intervention consisted of compromised bowel resection: small bowel (n = 30), small bowel + right colon (n = 12), small bowel + subtotal colon necrosis (n = 1), total necrosis (n = 8).
Results: Postoperative mortality in the prospective group was 60.78 % (31/51).
Conclusion: Damage Control Surgery in AMI allows a significant decrease of postoperative mortality rate compared to standard management.
References:
Disclosure: No significant relationships.

P241

AN UNUSUAL CAUSE OF HEMOPERITONEUM

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Introduction: Renal angiomyolipoma is a rare benign tumor with an incidence of 0,3-3 %, occurring as isolated sporadic entity or in association with tuberous sclerosis. Retroperitoneal spontaneous haemorrhage also referred to as Wunderlich syndrome, resulting from the haemorrhage of a lesion, is one of the most life-threatening complications of renal angiomyolipoma. The risk of bleeding increases with angiomyolipoma's size and serial growth.
Material and methods: A 33-year-old female, a case of tuberous sclerosis involving multiple organ systems, including brain, kidneys, lungs, skin, bones and liver, presented to the Emergency Department complaining of abdominal pain. Ultrasonography revealed free fluid in the abdomen. CT scan revealed bilateral renal angiomyolipomas, the one on the right side with 24 cm, with retroperitoneal and intraperitoneal bleeding and an arterial flush. Also, there was evidence of previous angioembolization of the left kidney. On the arrival back to the Emergency Department the patient was in hemorrhagic shock. Exploratory laparotomy with renal packing and temporary abdominal closure were undertaken. Eighteen hours later, as bleeding persisted, an urgent right nephrectomy was performed for haemorrhage control.
Results: Patient recovered uneventfully with normal serum creatinine. She was discharged home on the 23rd postoperative day due to the need of prolonged ventilatory support.
Conclusion: The haemorrhage of renal angiomyolipoma generally presents as Wunderlich syndrome. Hence this case reports an unusual presentation of renal angiomyolipoma bleeding, rarely described in literature. Massive intraabdominal hemorrhage can lead to mortality without accurate and prompt detection. So, an early diagnosis and timely treatment is important in these cases to prevent life threatening complications.
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Disclosure: No significant relationships.

P242

LAPAROSCOPIC COMPARED WITH CONVENTIONAL TREATMENT OF ACUTE SMALL BOWEL OBSTRUCTION

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Introduction: Indications for Laparoscopic approach in the treatment of acute small bowel obstruction (ASBO) still are not defined well and strong evidence is lacking to confirm successful outcomes. The aim of study is to demonstrate the feasibility and advantages of laparoscopic surgery in cases of ASBO.
Material and methods: Medical data of 109 patients who were surgically treated in our institution was analyzed in time period 2011-2014. Initial laparoscopic surgery (LAP group) was performed in 33 patients, median age 52 (67-34) years, open surgery (OPEN group) was performed in 76 patients, median age 61 (75-50) years. Demographic data, clinical presentation of disease, complication rate and outcomes were analyzed and compared.
Results: Complete laparoscopic treatment was performed in 76 % (n = 25) of patients. Laparoscopy diagnosed the site of obstruction in 28 of 33 patients. Both groups were statistically comparable by etiology. Conversion to laparotomy was performed in 8 (24 %) patients. The median procedural time was similar-70 minutes in LAP group and 70 minutes in OPEN group. Postoperative complication rate was 3 % in LAP group and 8 % in OPEN group, median postoperative hospital stay was 4 and 7 days respectively. Early oral intake (24 hours postoperatively) was tolerated well in 88 % of patients in LAP group comparing to 60,5 % in OPEN group.
Conclusion: Shorter hospital stay, reduced complication rate and early oral intake are the main benefits of laparoscopic approach for ASBO. Laparoscopic management of acute SBO is a feasible diagnostic and therapeutic approach in selected patient group.
References:
Disclosure: No significant relationships.

P243

LAPAROSCOPIC TREATMENT OF PERFORATED PEPTIC ULCER

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Introduction: Perforated peptic ulcer is a common abdominal disease that is treated by surgery. Peptic ulcer disease has been associated with many etiological factors. Perforation occurs in approximately 2–10 % of patients with ulcer disease. The "mirror" ulcer of posterior duodenal wall was revealed in 15 % patients with perforated peptic ulcer. Diagnostic of "mirror" ulcer of duodenum during laparoscopic treatment for PPU is not developed.
Material and methods: The objective of the study is to share the results of laparoscopic treatment of perforated ulcer. The analysis covered patients operated on perforated duodenal ulcer. 52 patients who underwent laparoscopic repair of perforated peptic ulcer between 2009 and 2014. During laparoscopy performed videoscopy using 4 mm camera through the perforation hole of duodenal ulcer for inspection posterior duodenal wall to all patients.
Results: Laparoscopic simple closure of perforated ulcer performed for 49 (73,9 per cent) patients. Three patients had ulcer of posterior wall of duodenum from 7 to 12 mm which diagnosed during of transduodenal videoscopy. Laparoscopic ulcerectomy and duodenoplasty combined with suturing ulcer of posterior wall performed for 3 (6,1 per cent) patients.
Conclusion: Laparoscopic simple closure of the perforated duodenal ulcer is a safe method. The potential advantages of the mini-invasive approach are as follows: limited surgical trauma, smaller operating wound, limited intestinal manipulation and earlier recovery to baseline activities. Timely detection and intraoperative correction ulcer of posterior duodenal wall in patient with perforated duodenal ulcer reduced risk of complications in postoperative period.
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Disclosure: No significant relationships.

P244

"HOLD ON TO LIFE"

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Introduction: Road accidents are by far one of the most common forms of trauma in Portugal despite the investment in the safety of roads. The patient was brought to our ER by the pre-hospital team and presents with an acute abdomen after a car accident. She was traveling in the back seat without using a seat belt.
Material and methods: A 77 years-olds woman was admitted to our ER after a car accident with complaint of thoracic and abdominal pain. She also complained of her left forearm. She was hemodynamically stable with a GCS of 15. The lung auscultation showed absent sounds in the left side and the abdomen palpation was consistent with an acute abdomen. She performed a thoracic-abdominal and pelvic CT-scan that showed a diaphragm rupture with herniation of the abdominal fat and bowel in to the left thorax and a moderate haemoperitoneum. The forearm X-ray diagnosed an ulnar fracture. The patient underwent an explorative laparotomy which confirm the diaphragm rupture and a laceration of the mesentery. The laceration was sutured and the abdominal contents was placed back in the abdominal cavity. The diaphragm was then sutured.
Results: The postoperative went well and the patient was discharged three weeks after the initial surgery.
Conclusion: When assessing trauma patients in the ER it is important to have high index of suspicion that multiple injuries are often present. This case reminds us the significance of a systematized evaluation of those patients as well as the prompt treatment.
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Disclosure: No significant relationships.

P245

MULTIPLE ISOLATED SMALL BOWEL PERFORATIONS FOLLOWING BLUNT ABDOMINAL TRAUMA - CASE REPORT

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Introduction: Blunt injuries of the small bowel are frequent, but less common than following penetrating injuries. Isolated perforation of the small bowel after blunt abdominal trauma are infrequent, and the diagnosis can be difficult.
Material and methods: The authors present a case of a 39 year old patient that suffered an abdominal blunt traumatic injury with a wooden plank. This patient had already suffered a previous blunt abdominal trauma with spleen rupture and the need of a splenectomy. Fisical examination showed abdominal pain with tenderness and signs of peritoneal irritation. Abdominal CT scan showed intramural small bowel haemorrhage, with no pneumoperitoneum. Deterioration of the clinical state after 1 hour of surveillance, tachycardia, increasing abdominal pain, pale skin, and sweating raised the suspicion of organ lesion. Explorative laparotomy revealed five Grade I and II small bowel lacerations. It was decided to repair all 5 lacerations with inversion of serosubmucosal stitches using a 4/0 absorbable suture, and placing of human fibrinogen sponge over each laceration. No other lesions were found.
Results: The patient's outcome was very good, and was discharged home after 7 days.
Conclusion: Sufficient vigilance and suspicion of small bowel injury must always be considered following blunt abdominal trauma. Patients with small bowel lacerations must be managed according to the injury scale (I to V). When surgery is taken in a early stage, the outcome is very good with minimum septic contamination and decreased morbidity and mortality.
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Disclosure: No significant relationships.

P246

LIVER ABSCESS SECONDARY TO ACUTE CHOLECYSTITIS

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Introduction: Liver abscess due to acute cholecystitis is an uncommon pathology. Sometimes, this condition could be life-threatening.

The aim of this presentation is to report a case of liver abscess due to intrahepatic gallbladder perforation.
Material and methods: We report a rare case of liver abscess due to acute cholecystitis in a patient with Type 2 diabetes mellitus and its clinical presentation, diagnosis and treatment.
Results: A 64-year-old woman was admitted to our emergency department in sepsis conditions with concomitant type 2 diabetes mellitus. She was somnolent, tachypneic, with fever (38 -39 C°), a pulse rate of 110 beats/min, and a blood pressure of 95/60 mmHg. Laboratory studies upon admission showed slight hyperglycemia (186 mg/dL), leukocytosis (21100/mm3), low hemoglobin levels (8.9 g/dL), hyperbilirubinemia (6 mg/dL), and a moderate increase in C-reactive protein (12 mg/L). The chest X- ray detected right sided pleural fluid. Abdominal ultrasound and computed tomography revealed acute cholecystitis, two hypodense areas that extended in 2,3,4,5 segments of the liver, and communication between the hypodense area of the liver, and the gallbladder. For two weeks, the patient was treated with empirical antibiotics therapy. After two weeks, the patient underwent surgical intervention where communication between acute cholecystitis and liver abscess was observed. In these circumstances, we performed a cholecystectomy, and drained the abscess. Intraoperative culture obtained during operation resulted negative. The patient was discharged without complications on the 11th postoperative day.
Conclusion: In our opinion, open surgical treatment is mandatory in case of liver abscess due to intrahepatic gallbladder perforation.
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Disclosure: No significant relationships.

P247

ONCE UPON A TIME A PATIENT WITH A RARE CAUSE OF ACUTE ABDOMEN… WAIT!! TWICE UPON A TIME…

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Introduction: One of the most uncommon causes of pneumoperitoneum is vaginal rupture and because of the non-specific symptoms and signs of these patients it is important to take into account this hypothesis when assessing young female patients with abdominal pain.
Material and methods: Discussion the two case reports.
Results: CASE REPORT 1 36-year-old woman admitted with complaint of insidious onset of abdominal pain with progressive intensity. She'd had a hysterectomy six months earlier. Facing diffuse and moderate abdominal pain, X-ray showed free air under the diaphragm, suggesting the possibility of bowel perforation. CT-scan confirmed the free air but it did not help with the differential diagnosis. She was observed by a gynaecologist that dismissed gynaecological pathology. A diagnostic laparotomy was decided. It showed a perforation in the vagina suture from the previous hysterectomy, having been repaired with a new suture. CASE REPORT 2 44-year-old woman with hysterectomy two months earlier that had sudden and intense abdominal pain half an hour after sexual intercourse. Our examination showed tenderness and pain on abdominal decompression on the lower abdomen. X-Ray showed a medium volume pneumoperitoneum. The gynecological examination revealed the presence of a small bowel loop in the vagina. The patient was submitted to a laparotomy with a new suture of the vaginal cuff.
Conclusion: When assessing young female patients presenting with acute abdominal pain, it is important to have a high degree of suspicion and consider all etiologies, including coital trauma. A detailed sexual history is an important clue especially in women history of previous hysterectomy.
References:
Disclosure: No significant relationships.

P248

IDIOPATHIC COLONIC PERFORATION ASSUMED TO BE SECONDARY TO SUBSEROSAL BLEEDING

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Introduction: Colonic perforation is common disease which present acute abdomen. Here in, we present a case of idiopathic colonic perforation assumed to be secondary to subserosal bleeding.
Material and methods: Case A 35 year-old man with a history of untreated hypertension, complained of sudden onset abdominal pain, which prompted him to call emergency service. CT scan showed slightly high density mass around hepatic flexure ascending colon. He was admitted with colonic diverticulitis and treated by antibiotics. Admission day 4, laboratory test showed anemia and contrast CT showed enlarged known mass. He was transferred to our hospital. On admission, his vital signs were stable and physical examination showed mild tenderness in right upper quadrant. He was managed with NPO. 4 days after admission, he started to eat.
Results: 6 hrs after eating, he complained of aggravated pain. CT scan showed free air and he underwent emergency operation with diagnosis of colonic perforation. Intraoperatively, massive hematoma was observed posterior to ascending colon. Fecal smell emerged but no apparent feces were observed. We performed right hemi-colectomy. In the specimen, there were subserosal hematoma and ischemic lesion. At the the center of ischemic lesion, pin hole perforation was observed. He was discharged post operative day 14, without any complication. Pathological examination showed no specific findings without subserosal hematoma, ischemic lesion and pin hole perforation.
Conclusion: We showed a case of idiopathic colonic perforation assumed to be secondary to subserosal bleeding.
References:
Disclosure: No significant relationships.

P249

NON-OPERATIVE TREATMENT OF COMPLICATED APPENDICITIS

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Introduction: Operative approach is still the treatment of choice for uncomplicated acute appendicitis. However, when phlegmon or local abscess is noted, the choice of treatment is more debatable. Percutaneous drainage of these lesions allows these patients not to undergo urgent operation benefiting from lower complication rate.
Material and methods: Authors present the case of a 61-year-old man, that refers to the ER with right lower abdominal pain, lasting for three days. Imaging studies reveal appendicular abscess measuring 11 cm. IV antibiotics are started and ultrasound guided abscess drainage is performed.
Results: Patient does well, as percutaneous drain is removed on the 7th day and is discharged on the 10th day. Four months latter, at outpatient clinic, colonoscopy, tumour markers and pelvic CT are normal.
Conclusion: Studies suggest that percutaneous drainage and iv antibiotherapy are the optimal approach to abscess complicated appendicitis. The main controversial issue is whether to perform subsequent elective appendectomy, as complication rate is similar to recurrence rate. Non-operative treatment of complicated appendicitis is on the rise, leading to less complications and faster recovery. There is no evidence as to perform latter elective appendectomy.
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Disclosure: No significant relationships.

P250

LAPAROSCOPIC CAUDAL PANCREATECTOMY FOR NECROTIC PANCREATITIS, WITH SPLENIC PRESERVATION

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Introduction: When resection is performed, a minimally invasive approach even to pancreatic resection is gaining momentum. Laparoscopic surgery has swept through other areas of surgery in recent years. Laparoscopic distal pancreatic resection has increasingly been described as a feasible and safe procedure, although accompanied by a high rate of conversion and morbidity. The aim of of this paper is to describe the clinical characteristics, indications, technical procedures, and outcome of laparoscopic distal pancreatic resections with spleen prezervation.
Material and methods: We present a case of a patient with tumoural formation in spleen hillum, apparently away from pancreatic tail, without characteristic symptomatology.
Results: Laparoscopic evaluation revealed a pseudotumor related to pancreatic tail, and we performed excision of it. Histo-pathologic result shows necrotic pancreatitis. A follow-up of at least 3 months was available for all patients. Splenic vessel preservation was possible. The hospital stay was 6 days.
Conclusion: Laparoscopy proved especially beneficial in patients with postoperative complications as they had a relatively short hospital stay. Solid and cystic tumors of the distal pancreas represent a good indication for laparoscopic resection whenever possible. Resection of the pancreas is complicated by the retroperitoneal location of the pancreas, its intimate relationship to other organs such as the spleen, stomach, duodenum, and its relationship to major vascular structures such as the superior mesenteric vein, splenic vein, portal vein, branches of the celiac axis, and superior mesenteric artery. Distal pancreatectomy with en-bloc splenectomy has been considered the standard technique for management of benign and malignant pancreatic disorders. However, splenic preservation has recently been advocated.
Disclosure: No significant relationships.

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SURGICAL APPROACH OF COLO-RECTAL CANCER – MANAGEMENT OF CRITICAL POINTS

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Introduction: In the last years there has been a repeatedly insisting for the TME, as key to reducing pelvic recurrence. There are still issues still "debatable" that invite for reflection, taking as its starting point the precepts of RJ Heald.
Material and methods: We analyzed consecutive patients admitted and operated in our clinic between years 2012-2014. The interventions were performed laparoscopic. Surgically, there are some aspects of the laparoscopic technique, such as access and visibility of the distal rectum, that are superior to open method.
Results: There were under discussion including some aspects, still subject to controversy, the extirpation scale, critical points of surgery risk, attitude on protection genitourinary innervation. For this purpose the present surgical considerations towards: rectal anatomy and mesorectum; TME and its limits on dissemination aspects of pathology and tumor grading, pelvinc recurrence and adjuvant therapy. Was analyzed the rate of complications, and the patients QOL as subject of TME. Our study did show a non-significant higher positive circumferential resection margin rate in patients undergoing laparoscopic anterior resection compared with open resection.
Conclusion: There are a total of six critical points in rectal surgery that can improve the success rate in colorectal surgery. Laparoscopic TME is feasible in almost all patients with lower rectal cancer regardless of whether they have undergone chemoradiation therapy. It is mandatory to excise lymph station 1 and then, minimum one non-invaded station. In vertical plane the principle is applied, usually 1,2 and 3 stations are excised. In lateral plane TME excise only one lymph node station. WHY?
Disclosure: No significant relationships.

P252

DISADVANTAGEOUS TO SEPARATE SURGERY FOR EMERGENCY COMPLICATIONS OF BARIATRIC SURGERY FROM THE UNIT FOR PRIMARY SURGERY?

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Introduction: Primary gastric bypass (GBP) is not performed at Linkoping University hospital. However, the hospital handle acute complications to GBP. We describe our management of complications.
Material and methods: A retrospective medical record review of patients demanding abdominal surgery for acute complication to GBP during the years 2010-2014. Figures are reported as median and range.
Results: 44 patients (33 women), age 39 (21-78) underwent abdominal surgery for acute first-time complication to GBP. Four underwent diagnostic laparoscopy out of 2 were converted to laparotomy; 40 underwent exploratory laparotomy directly. The diagnoses were internal herniation 19, adhesions/band 10; perforated ulcer, perforated small intestine and obturation, 2 each; anastomotic leakage, incarcerated portalhernia, suspicious pseudo-obstruction of the colon with ischemia 1 each. No pathology was found in 6 patients. No patient with pathology was corrected laparoscopically. Intestinal resection was performed in 4 cases 2 of which as the result of ischemia. The time from arrival to surgery for internal herniation was 7 hours (3-28) and for those demanded resection due to ischemia 14 hours (11-18). Preoperative imaging was made of 43 patients. Five patients underwent surgery a second time and 1 patient underwent surgery due to abdominal GBP complications during the period none of which were done laparoscopically.
Conclusion: Of the 50 acute surgeries for GBP-complication only 2 were done laparoscopic. The time from arrival to surgery was astonishingly long. Coordination of primary GBP surgery and complications to the same unit might increase the proportion of laparoscopy as well as shortening the time to surgery by less extensive diagnostic imaging.
References:
Disclosure: No significant relationships.

P253

THE HEALTHCARE BURDEN OF NEGATIVE APPENDICECTOMY

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Introduction: Appendicectomy is the most common emergency surgical procedure in the UK, with over 40,000 operations performed annually[1]. The national negative appendicectomy rate is 21 %[2]. A negative appendicectomy incurs costs to the local hospital, wider healthcare system. The aim of this study was to assess the burden of negative appendicectomy in our institution's emergency surgery service.
Material and methods: Patients undergoing appendicectomy at Queen Alexandra Hospital between 01/10/2013 and 31/03/2014 were identified retrospectively from electronic theatre records. Length of stay, theatre time and appendix histology were extracted from coding data and electronic patient records. The costs of negative appendicectomy were calculated using published figures for the length of stay and operative time in the UK.
Results: 260 patients had an appendicectomy. NAR was 27 % (69/260). Women had more negative appendicectomies than men; 32 % (41/127) vs 21 % (28/133) $p = 0.04$. Median operative time was longer when the appendix was inflamed (69 minutes (IQR 50-86) vs 49 minutes (IQR 41-72) $p < 0.01$). Median length of stay was the same for both appendicitis and normal appendix groups: 2 days (IQR 2-3) compared 2 days (IQR 1-3) $p = 0.32$. The estimated theatre time (£191,000) and length of stay (£9,000) for negative appendicectomies incurred an approximate cost of £285,000 annually to the hospital.
Conclusion: The negative appendicectomy rate remains unacceptably high. A reduction in this rate will reduce costs to the hospital by freeing up theatre time and beds and most importantly will prevent harm to patients from unnecessary surgery.
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Disclosure: No significant relationships.

P254

OVER THE YEARS CHANGES IN MANAGEMENT OF PANCREATIC TRAUMA

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Introduction: Although the pancreatic trauma is a rare entity who ritch out 0,2 till 6 % from allover abdominal trauma, the therapeutic strategy for this entity was always challenging for surgeons. Beginning with an accurate diagnostic and continuing with a proper therapy pancreatic trauma may be very tricky and difficult to managed
Material and methods: In a 15 years period there were admitted in our General Surgery Department about 4000 trauma patients, 183 of them with pancreatic lesions. Injury severity was assessed by the injury severity score (ISS) and the penetrating abdominal trauma index (PATI). Pancreatic injuries were graded according to the American Association for the Surgery of Trauma (AAST) Organ Injury Scaling (OIS).
Results: Over the years we performed different surgeries from exploratory laparotomy to hemostasis, pancreatography, pancreatic drainage, necrectomy, necrosectomy, partial pancreatectomy, and also duodenopancreatectomy and latety we were a little more conservative in our therapy so that nonoperative management has gain his place in our standards. Morbidity and mortality was higher in penetrating trauma with ductal injury but once the diagnostic was positive a suitable therapy was applied
Conclusion: The key for an optimal management is represented from an accurate and early diagnostic. Morbidity and mortality is determined by main pancreatic duct involvement. Lately nonoperative management became the therapy of choice for proximal ductal injury
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Disclosure: No significant relationships.

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PERCUTANEOUS CHOLECYSTOSTOMY FOR ACUTE CHOLECYSTITIS

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Introduction: Acute cholecystitis is an usual cause of admission at emergency room, the recommended treatment being a cholecystectomy. Nevertheless in elderly patients, with septicaemia, poor general status or multiple associated morbidity the best treatment could be a percutaneous approach.
Material and methods: Retrospective analysis of all cases of percutaneous cholecystostomy (PC) undertaken in Surgery Department 1, between January 2010 and December 2014, by review of clinical files.
Results: During this 5 year period there were twenty ultrasound guided PC. There was a slight predominance of male gender, with median age of 80 years. The entire population was classified with ASA III or ASA IV, the majority taking anticoagulant therapy. The number of days of cholecystostomy and hospital stay was 7 and 15 days respectively. The most frequently identified agent was E. Coli. The mortality rate was 10 % and 20 % of patients were submitted to subsequent cholecystectomy.
Conclusion: In presence of a non fit patient that precludes general anaesthesia, PC is a valid and secure option when exclusive medical treatment is obviously insufficient. Percutaneous approach can be, in this way, a definitive procedure in high-risk patients or a bridging procedure that allows optimization for subsequent cholecystectomy.
References: Clinical outcomes of a percutaneous cholecystostomy for acute cholecystitis: a multicentre analysis Pandanaboyana Sanjay, Devender Mittapalli, Aseel Marioud, Richard D White, Rishi Ram, Afshin Alijani HPB Early Percutaneous Cholecystostomy in Severe Acute Cholecystitis Reduces the Complication Rate and Duration of Hospital Stay Chung-Kai Chou, MD, Kuei-Chuan Lee, MD, PhD, Che-Chang Chan, MD, PhD, Chin-Lin Perng, MD, Chun-Ku Chen, MD, Wen-Liang Fang, MD, PhD, and Han-Chieh Lin, MD
Disclosure: No significant relationships.

P256

SPONTANEOUS RUPTURE OF HEPATOCELLULAR CARCINOMA: A CLINICAL REPORT

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Introduction: Spontaneous rupture of hepatocellular carcinoma (HCC) is a rare event; it occurs in 3-15 % of cases and more than 10 % of those patients dye. The usual presentation is an haemoperitoneum. The disease is usually accompanied by cirrhosis. There is no consensus in the approach of these patients; it depends on functional hepatic reserve and tumor staging, but also the technological means and surgical expertise available in the moment of approach.
Material and methods: We present with iconography, a case reort.
Results: We present a 60 years old male, admitted in the emergency department with a sudden unset abdominal epigastric pain associated with hypovolemia. After hemodynamic stabilization, Computed Tomography scans revealed an haemoperitoneum associated with a liver mass in the segments II/III. We decided an urgent surgical approach and found a 7 cm ruptured tumour that was actively bleeding. The haemostatic control was difficult, so it was performed an incisional biopsy and liver packing which was removed 48 hours later. There wasn't evidence of cirrhosis. In the post-operative period it was identified chronic Hepatitis B virus(HBV) infection. The pathology report confirmed the histology of hepatocellular carcinoma. Proper staging was made and liver resection (left lobectomy) was performed three weeks later.
Conclusion: Chronic HBV infection is the cause of approximately one third of cirrhosis and more than three quarters of HCC. Although there wasn't evidence of cirrhosis, this clinical case shows a rare cause of spontaneous haemoperitoneum. Early approach is essential. In this case, the first surgery was life-saving and the last has curative intent.
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Disclosure: No significant relationships.

P257

ENCAPSULATED PERITONEAL SCLEROSIS – IS HAEMOPERITONEUM A PROGNOSTIC FACTOR FOR SURVIVAL?

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Introduction: Encapsulated peritoneal sclerosis is a clinico-morphological entity that significantly influences survival in patients with chronical kidney disease Even if is not characteristic for these patients is associated with long-term peritoneal dialysis.
Material and methods: The study, retrospective, was conducted in Surgery Hospital "Dr. Carol Davila ", between 2011 and 2015. 30 patients with extraction of peritoneal dialysis catheters were enrolled,5 of them with various stages of EPS.
Results: Surgical treatment of EPS is preponderant in emergency due to haemoperitoneum, perforations or occlusions. We tried ablation of the fibrotic capsule, which was accompanied with bleeding due to rupture of large vessels and intestinal perforations. Other interventions mentioned are limited intestinal resections with anastomosis, multiple incisions of fiber membrane for stress relief and suture of the perforations. EPS represents the wrapping of the entire intestine in a fibrous capsule, characterized by peritoneal hypertrophy, degenerative sclerosis of the capillars and capillary neo-angiogenesis. It usually occurs in more than two years after the initiation of peritoneal dialysis. It is accompanied by the formation of fibrin deposits, focal bleeding of the peritoneum and hemorrhagic ascites.
Conclusion: Hemoperitoneum in EPS represents an aggravating factor in evolution of the patient with peritoneal dialysis, representing both a marker of occurence of sclerosis and a complication of surgical treatment. Mortality is high, both perioperatively and after a long time, by continuing the process of fibrosis despite stopping the peritoneal dialysis and transition to hemodialysis.
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Disclosure: No significant relationships.

P258

DIAPHRAGMATIC HERNIA WITH ACUTE ONSET A DIAGNOSTIC AND THERAPEUTIC CHALLENGE

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Introduction: Diaphragmatic hernia with acute onset is a rare and serious challenge. The mortality and morbidity rate is 20 % and 50 % respectively. This can occur in major trauma patients and rarely in acute onset.
Material and methods: During the last 2 years we have diagnosed and treated (along our trauma register) almost 1500 patients based on ATLS standards.
Results: The onset was due to blunt trauma in 4 cases. All these 6 patients were male, with an mean age of 61 (40-71). Those with major trauma had an average Injury Severity Score (ISS) of 22 (19-26). The 2 patients with acute onset did not have any previous history of trauma or radiological findings during the previous 6 months before the event. In all cases the diaphragm defect was in the left side and they were treated with direct surgical repair and mesh. Three patients were treated with emergency laparotomy, the other 3 with a delayed intervention. Laparoscopic approach was chosen in 2 cases and conversion was necessary in 1 case because of the patient's clinical status. We did not record any surgical complications.
Conclusion: Diaphragmatic rupture case are rare and difficult to diagnose. The high mortality rate is related to delayed intervention and surgical complications. To date the diagnosis is still based on TC scan. The diaphragmatic rupture is an injury which should be taken into consideration in major trauma. The direct surgical repair with emergency repair should be done as soon as possible. The use of biological mesh can be taken into consideration.
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Disclosure: No significant relationships.

P259

RUPTURED ABDOMINAL AORTIC ANEURYSM - IS IT POSSIBLE TO PREDICT SURVIVAL?

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Introduction: The perioperative mortality after rAAA remains high and a reliable risk score for predicting survival would be of interest to surgeons. Several risk scores have been developed. The aim of the present study is to validate the scores and to examine other preoperative variables.
Material and methods: A retrospective, single-center study that includes patients that underwent surgery for rAAA at Stavanger University Hospital in the time period from 2000-2014.
Results: 177 consecutive patients underwent surgery for rAAA[1]. 89 patients (50.3 %) survived. Univariate analyses of some preoperative variables showed significant differences between survivors and non-survivors (lpk $P = 0.026$, trc $P = 0.018$, age $P = 0.001$, Heart disease $P = 0.022$). In receiver operating characteristics (ROC) curve analysis, the area under the curve (AUC) for the four scoring systems were: Edinburgh ruptured aneurysm score (0.586), the Vancouver scoring system (0.684), Hardman index (0.674) and the updated Glasgow aneurysm score (0.680).
Conclusion: Some of the univariate analyses of preoperative variables showed significant differences between survivors and non-survivors. No significant differences were found for most of the variables the existing scoring systems are based on. In a ROC curve analysis an AUC of more than 0.7 is considered reasonably accurate[2], but in our validation of the four scoring systems all had an AUC of less than 0.695. Thus, in our material none of the scores had a high predictive value and would be of little help in a clinical setting.
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Disclosure: No significant relationships.

P260

COMPARISON OF OUTCOMES OF BLUNT HEPATIC INJURY CASES WHO UNDERWENT OPERATIVE MANAGEMENT IN TEN YEARS

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Introduction: Indications for operative management (OM) for hepatic injury remain unclear in some cases. And in OM, damage control is getting preference over more definitive procedures in recent years [1]. However, there are cases, in which survivals with perihepatic packing (PhP) remain uncertain. The purpose of this study is to investigate trends in operative procedures for blunt hepatic injuries in relation to the outcomes, and to clarify the optimal management.
Material and methods: We reviewed the records of 69 cases of blunt hepatic injury, who underwent operations in Saitama Medical Center from 2005 to 2014. We divided the cases into early group (EG: 2005 to 2009) and late group (LG: 2010 to 2014), and compared backgrounds and outcomes.
Results: The number of cases were 27 and 42 for EG and LG. The groups were independent of age and ISS, but males were dominant in LG. The mortalities irrespective of injury grades were 40.7 % (EG) and 23.8 % (LG) with no significant difference, but those of Grade IV and higher were 42.9%(EG) and 21.9%(LG) with significant difference. The incidences of PhP were 40.7 %(EG) and 19.0 %(LG) with obvious decrease. Mortalities of the cases with PhP were 50.0 % (EG) and 71.4 % (LG) with no significant difference, but those without PhP were 36.4 % (EG) and 8.0 % (LG) with significant decrease.
Conclusion: The survival rate of blunt hepatic injury with OM was improved in recent ten years. The improved outcomes may be attributed to changes in our surgical procedures from damage control by PhP to definitive surgery with complete hemostasis.
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Disclosure: No significant relationships.

P261

POST TRAUMATIC DIAPHRAGMATIC HERNIA - A CLINICAL CASE

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Introduction: Approaching a multiple trauma patient requires care and focus while still maintaining some speed of action.
Material and methods: We present the case of a 21-year-old male, who was brought to the emergency department after a traffic collision with multiple injuries including blunt chest and abdominal trauma.
Results: At the time of admission, the patient presented with a GCS of 14, spontaneous breathing with a high-flow oxygen mask at 12L/min, maintaining a peripheral oxygen saturation of 100 %. There was dullness on percussion and absence of breath sounds in the left hemithorax. The abdomen was diffusely tender on palpation. A FAST ultrasound uncovered a splenic injury and a left pulmonary contusion with left hemopneumothorax, with subsequent placement of a chest tube. Because there was still dullness and absence of breath sounds on the bottom two thirds of the left hemi-thorax, the patient had a CT of the thorax and abdomen, which showed the presence of a diaphragmatic rupture, with thoracic herniation of the stomach and partly the spleen. He underwent a laparotomy with reduction of the herniated content, splenectomy and closure of the diaphragmatic tear with suture. After 11 days the patient was discharged. 2 months later he presented with normal X-ray, CBC and free of symptoms.
Conclusion: This case means to illustrate how a serious condition may be masked behind other clinical features of chest and abdominal trauma, and how the FAST ultrasound has difficulty with the identification of a traumatic diaphragmatic hernia in the presence of pulmonary contusion.
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Disclosure: No significant relationships.

P262

LAPAROSCOPY IN THE TREATMENT OF ACUTE APPENDICITIS IN CHILDREN

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Introduction: Aim: to Determine the efficacy of laparoscopic methods of surgery for acute appendicitis in children.
Material and methods: Materials and methods: the study included 8020 children who were operated for the period 1991-2014 about the various forms of acute appendicitis. Appendicular peritonitis was 7.7 %. All children underwent laparoscopic appendectomy.
The drainage of the pelvis seted in case of peritonitis.
Results: Laparoscopic surgery in acute appendicitis was used in 98,5 + 1,5 % cases. Contraindication to use of the laparoscopic technique was appendicular abscess, total peritonitis with abscesses. Intraoperative complications was 0.18 %. The conversion was 0.5 %. Postoperative intra-abdominal complications amounted to 0.28+0.1 % over the last 5 years.
Conclusion: Conclusion: the technique of laparoscopic surgery has greatly improved the results of treatment of acute appendicitis in children. The advantages of the procedure are atraumatic and complete sanation of the abdominal cavity.
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Disclosure: No significant relationships.

P263

SLEEVE GASTRECTOMY FOR EMPHYSEMATOUS GASTRITIS: A CASE REPORT AND REVIEW OF THE LITERATURE

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Introduction: A 42 year old diabetic man developed emphysematous gastritis due to clostridium perfringens after a below knee amputation. The patient was treated with antibiotics and resection of the greater curvature of the stomach in the manner of a sleeve gastrectomy.
Material and methods: A 42 year old diabetic man with chronic osteomyelitis of the foot developed left upper quadrant pain and sepsis nine days after guillotine below-knee amputation. A CT scan showed gastric pneumatosis with portal venous gas. Laparoscopy demonstrated purulent ascites and full thickness necrosis along the greater curvature of the stomach. Esophagogastroduodenoscopy found sloughing of the mucosa along the greater curvature but an otherwise healthy stomach. The necrotic portion of the greater curvature was resected, leaving the lesser curvature and antrum in the manner of a sleeve gastrectomy. The patient had a successful and uneventful recovery.. Gram positive rods were found on pathology exam of the resected portion of stomach.
Results: Emphysematous gastritis is a deadly infection with even the most recent literature showing mortality rates of 60-80 %. The origin of infection are thought to include both local infection due to mucosal disruption and hematogenous spread from distant foci. The initial treatment is fluid resuscitation and antibiotics. Though several dozen case reports have been published, the collective understanding regarding indications and timing of surgical intervention continues to develop.
Conclusion: Prompt diagnostic laparoscopy and limited gastric resection allowed this patient an expedient recovery from this deadly condition, and we advocate that this surgical approach be used whenever the diagnosis of emphysematous gastritis is made.
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Disclosure: No significant relationships.

P264

DUODENAL HAEMATOMA SECONDARY TO BLUNT TRAUMA

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Introduction: The duodenal hematoma is a rare disease that occurs more frequently in children, after a blunt abdominal trauma. The anatomical location of the duodenum near the vertebral column, combined with its rich vasculature contributes to the development of this entity, which is often complicated with a traumatic acute pancreatitis due to duodenal intimate relationship with this organ.
Material and methods: The authors present a clinical case of a patient of 15 years admitted in the E.R with abdominal pain and vomiting after trauma in the right upper quadrant in the previous day, while playing football. Computed Tomography revealed extensive hematoma of the 2nd and 3rd duodenal portion with a significant reduction in its lumen, associated with heterogeneity of pancreatic uncinate process. Hyperamylasemia and hyperlipasemia was also consistent with associated traumatic pancreatitis.
Results: Given the hemodynamic stability and the absence of pneumoperitoneum, the patient underwent conservative treatment with placement of nasogastric tube, hydration, analgesia and parenteral nutrition. The patient progressed favorably and was discharged one month later.
Conclusion: Conservative treatment is currently the first-line approach in the closed duodenal injury, with a great success rate especially when the diagnosis is made early on. When this approach fails, surgery becomes necessary to drain the hematoma.
References:
Disclosure: No significant relationships.

P265

BRITISH SOCIETY OF GASTROENTEROLOGY ACUTE PANCREATITIS GUIDELINES: CAN POOR COMPLIANCE BE ATTRIBUTED TO INADEQUATE CLINICAL ASSESSMENT OR RESOURCE MANAGEMENT

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Introduction: Acute pancreatitis is a common and potentially fatal condition. Studies show that standardisation and optimisation of management protocols can improve morbidity and mortality. In 2005 the British Society of Gastroenterology revised their 1998 pancreatitis management guidelines to provide 11 parameters which could be audited. These guidelines included the use of a scoring system to determine severe pancreatitis within 48 hours, escalation to HDU or ITU in severe pancreatitis, an ultrasound scan within 24 hours and definitive management of gallstone pancreatitis (ERCP or laparoscopic cholecystectomy) within 2 weeks.
Material and methods: At Guy's and St Thomas' Hospitals approximately 100 patients with acute pancreatitis were admitted in the first 6 months of 2015, above the national average. A cohort of 60 of these patients were audited retrospectively to determine compliance to guidelines. Our practice was re-audited following the introduction of a pancreatitis clerking proforma.
Results: The initial results were poor with deficiencies in both the initial assessment and management. A clerking proforma was introduced. Preliminary results from the re-audit does show an improvement in the initial assessment of acute pancreatitis yet continuing difficulties implementing the correct management.
Conclusion: It has become clear that compliance to the BSG guidelines depends not just on the willingness of the clinician to be thorough in their initial assessment but the availability and prioritisation of appropriate radiological, ITU, operative and endoscopic resources.
References: UK Working Party on Acute Pancreatitis. UK guidelines for the management of acute pancreatitis. GUT 2005;54 (suppl 3):1-9 Clinical ReviewAcute pancreatitisBMJ 2014; 349 doi: http://dx.doi.org/10.1136/bmj.g4859 (Published 12 August 2014)Cite this as: BMJ 2014;349:g4859 Cochrane Database Syst Rev 2013 Sep Early vs delayed laparoscopic cholecystectomy for acute gallstone pancreatitis.
Disclosure: No significant relationships.

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ANAL DISRUPTION AFTER TRAUMATIC IMPALEMENT

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Introduction: Male, 58 years old, no previous medical history, was brought to the ER after falling from a ladder over a construction bar. The accident resulted in extensive perianal trauma presenting with perianal hemorrhage and extensive disruption of the anal canal. Under physical examination, multiple lacerations and total disinsertion of anus and rectum were found.
Material and methods: A surgical exploration under general anesthesia was performed finding a complete disruption of the posterior sphincter area and a high rectal lesion. Local surgical debridement with perianal tamponade was performed and diagnostic laparoscopy allowed to rule out any intra-abdominal lesions. A lateral colostomy was made for fecal diversion.
Results: The patient remained in a surgical care unit. A second operation took place two days later with sphincter reconstruction and closure of the rectal laceration. No complications occurred and the patient was discharged home after 10 days of hospital admission, maintaining ambulatory wound care and monthly surgical consultations.
Conclusion: Blunt and penetrating injuries of the anus and rectum are uncommon, with optimal treatment still subject of debate. Care should be individualized and diagnostic laparoscopy can play an important role in excluding intra-abdominal lesions. Extensive injuries often require fecal diversion with a colostomy before definitive treatment is undertaken.
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Disclosure: No significant relationships.

P267

ENDOSCOPIC MANAGEMENT OF COLONIC PERFORATION DUE TO WOODEN TOOTHPICK

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Introduction: Toothpick ingestion is implicated in gut injuries which may cause severe complications, mimicking diseases causing acute abdomen.
Material and methods: A 18-year-old man with a 3 day history of swallowed wooden toothpick. Upper and lower abdominal pain was admitted with acute pain in the left upper quadrant. CT image shoved toothpick impaction at the splenic flexura of the colon.
Results: The foreign body was detected and successfully removed with colonoscopy. The abdominal radiograph showed free air as a sign of perforation after colonoscopy. Along with conservative management patient discharged without surgery.
Conclusion: There is need for a greater awareness about the dangers of a swallowed toothpick. Endoscopic approach should be considered in the first line management for toothpick perforations.
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Disclosure: No significant relationships.

P268

LAPAROSCOPIC MANAGEMENT OF PRIMARY HYDATID CYST OF THE GALLBLADDER: AN UNUSUAL CASE

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Introduction: Primary hydatid cyst of the gallbladder is an unusual and very rare localization of hydatid disease. The pathogenesis of the primary gallbladder hydatid cysts is not well-documented.
Material and methods: A 32-year-old woman was admitted suffering from constant mild pain in the right hypochondrium reflecting to the epigastrium. The ultrasound examination showed that daughter cysts in the lumen of the gallbladder. MRI T2-weighted sequence demonstrating daughter cysts in the lumen of gallbladder with hepatic parenchyma free of cystic lesions.
Results: The diagnosis of primary hydatid cyst of gallbladder was supported and surgery has been decided. A laparoscopic cholecystectomy was performed. It permitted a total removal of the cyst without rupture. The histopathology confirmed the presence of hydatid cyst of the gallbladder. At six month follow up, the patient has had no recurrence of hydatid disease.
Conclusion: Primary hydatid cyst of the gallbladder is a very rare clinical entity. Surgery is always required for the treatment. Laparoscopic approach should be the first option.
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Disclosure: No significant relationships.

P269

TRANSCATHETER ARTERIAL EMBOLIZATION VERSUS OPEN ABDOMINAL SURGERY FOR PATIENTS WITH ISOLATED ABDOMINAL INJURY

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Introduction: Recently, transarterial catheter embolization (TACE) is expected as an alternative to open abdominal surgery (OAS) for hemodynamically stable patients with abdominal solid organ injury. The purpose of this study was to compare TACE versus OAS in patients with isolated abdominal trauma.
Material and methods: We included subjects registered in the Japan Trauma Databank (JTDB) from year of 2004 to 2012. After a multiple imputation for missing values in studied variables, subjects who suffered a severe to critical injury on the definition of the Abbreviated Injury Scale in abdomen but other region and underwent whether TACE or OAS were included. Subjects with out-of-hospital cardiac arrest were excluded. Study outcomes were in-hospital mortality and duration of hospital stay. A propensity score matching estimated from the covariates to predict TACE or OAS and mortality extracted matched pairs of subjects with balanced background characteristics. Intergroup comparison showed the study outcomes in propensity score matched subjects.
Results: Of 123462 subjects registered in JTDB, 241 propensity-score-matched pairs with TACE or OAS were selected. The predicted mortality based on the Trauma Injury Severity Score finely balanced (4.4 % versus 4.1 %, $P = 0.795$). TACE significantly related to lower in-hospital mortality in comparison with OAS (3.3 % versus 9.5 %, $P = 0.009$), however did not significantly affect length of hospital stay (17 days versus 17 days, $P = 0.523$). Subsequent OAS after TACE was 6.6 %.
Conclusion: This retrospective study demonstrated needs for prospective trials to test TAE versus OAS in relatively hemodynamically stable patients with abdominal injuries.
References:
Disclosure: No significant relationships.

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LAPAROSCOPIC SURGERY FOR ABDOMINAL TRAUMA IN JAPAN

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Introduction: Laparoscopic surgery (LS) is not only an accepted procedure for digestive surgery but also an emerging technique in emergency general surgery in Japan, such as cholecystectomy and appendectomy. However little was known about this procedure for patients with abdominal trauma. The purpose of this study was to compare usefulness of LS and open surgery (OS) in patients with abdominal trauma.
Material and methods: Subjects was selected from the Japan Trauma Data Bank (JTDB) from January, 2004 to December, 2014. A propensity score to undergo LS instead of OS was calculated from age, gender, initial vital signs, the Abbreviated Injury Scale (AIS) of each region, the Injury Severity Score (ISS), proportion of undergoing the focused assessment with sonography for trauma. The primary outcome was in-hospital mortality and the secondary outcomes was length of hospital stay in survivors (LOS) and proportion of undergoing blood transfusion (%BT).
Results: Eighty-six subjects with LS and 4,933 subjects with OS were included from JTDB. A propensity score matching selected 66 matched subjects with LS or OS. There was no significant difference in mortality (0.0 % vs. 7.8 %, $p = 0.058$) and LOS (13 days vs. 17 days, $p = 0.129$). LS was associated with significantly infrequent blood transfusion (odds ratio 0.36, 95 % confidence interval 0.15-0.84).
Conclusion: Despite sample size in this study was small, this study showed that LS for hemodynamically stable patients with abdominal trauma might be feasible. Further studies were needed to assess feasibility and efficacy of LS for abdominal trauma.
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Disclosure: No significant relationships.

P271

INTRAPANCREATIC LESION OF BILIARY DUCT FOLLOWING A BLUNT TRAUMA: A RARE ENTITY DIFFICULT TO IDENTIFY WITH CONSERVATIVE MANAGEMENT

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Introduction: Lesions of the biliary duct following a blunt abdominal trauma occurs infrequently, and even more so when it occurs in the intrapancreatic biliary duct. With the increase of conservative treatment in blunt abdominal trauma, the diagnosis of this entity can be difficult and delayed.
Material and methods: A 51-year-old male patient was treated following a bicycle accident. Initial CT scan showed multiple bilateral rib fractures and grade 2 liver injury in segment VII. On the basis of these findings and the stability of the patient, a conservative treatment was adopted. On the 9th day following admission he developed a progressive jaundice. This prompted an MR-cholangiography, which only revealed an increased amount of abdominal fluid without dilatation of the bile duct and without apparent injury of the duct. Upon the onset of fever and general worsening of the patient's condition, an exploratory laparotomy was performed on the 16th day following admission, revealing plenty of intraperitoneal bile fluid, but a visual examination of the bile duct failed to determine the site of injury.
Results: An intraoperative ERCP was performed, revealing a lesion of the intrapancreatic bile duct, after which a biliary stent was inserted. In the early postoperative period the patient developed a leak through the external biliary drains placed during laparotomy. A new ERCP was therefore performed, together with the insertion of a coated metal prosthesis, after which the patient progressed satisfactorily.
Conclusion: MR cholangiography and ERCP play a fundamental role in the diagnosis and actual treatment of these injuries, and this constitutes the best option.
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Disclosure: No significant relationships.

P272

A CASE OF STUMP APPENDICITIS PRESENTED AFTER APPENDECTOMY

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Introduction: It is difficult to diagnose a febrile patients with acute right lower quadrant abdominal pain, with previously undergoing appendectomy, as stump appendicitis.
Material and methods: We presented a case report of stump appendicitis.
Results: A 65-year-old female patient who had previous appendectomy for more than 40 years ago had right upper quadrant abdominal pain, right back pain and hematuria for 3 days. She was diagnosed pyelonephritis and went back to her home after she was prescribed the antibiotics. However, after the pain migrated to right lower quadrant abdomen and exacerbated, she was transferred to an emergency department of the study hospital. Physical examination of abdomen revealed the rebound tenderness in right lower quadrant and her laboratory data revealed increase in white blood cell count of 22,700 / mm^3 and C-reactive protein concentration of 32.09 mg/dL. Abdominal computed tomography (CT) showed a tubular structure extending from the left side of cecum, and a calcification at the ventral of the cecum with inflammation sings. CT scan also showed air density around the liver in peritoneum cavity. She underwent right hemicolectomy. On the operation there was an acute pan-peritonitis and penetration of the stump appendix to the ascending colon. Pathological findings showed an acute necrotic inflammation and perforation of the stump appendicitis. She discharged to home on postoperative day of 19.
Conclusion: We tend to rule out the possibility of acute appendicitis because of their previous appendectomy, however it is infrequent but important to make the diagnosis of stump appendicitis .
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Disclosure: No significant relationships.

P273

A REVIEW OF A BUSY LONDON DISTRICT GENERAL HOSPITAL'S SERVICE PROVISION FOR THE MANAGEMENT OF ACUTE CHOLECYSTITIS

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Introduction: Acute episodes of cholecystitis account for a considerable proportion of acute surgical admissions in the UK today. The traditional management approach has been to treat the acute episode with antibiotics, and eventually discharge with either a follow-up in clinic, or scheduled elective cholecystectomy. However over the last few years, the guidelines have advised offering laparoscopic cholecystectomies during the index acute admission (1), ideally within 7-10 days of diagnosis of acute cholecystitis: - "hot laparoscopic cholecystectomy", providing the biliary pathophysiology allows for a surgical approach (2-3).
Material and methods: Despite the guidelines, it is widely known that NHS trusts rarely offer "hot laparoscopic cholecystectomy". Therefore we audited one month's worth of data from our busy London district general hospital's acute surgical take, in order to assess what the staus quo really is, with relation to the management of patients presenting with acute cholecystitis.
Results: In December 2014, 159 general surgical admissions were made, of which 25/159 were related to gallstones. 15/25 were confirmed on ultrasound (US) to have acute cholecystitis, and 10/15 were found to have "acute cholecystitis with no duct dilation" and would therefore be deemed appropriate for "hot laparoscopic cholecystectomy". However, only 2/10 who were eligible for "hot laparoscopic cholecystectomy" ended up having this. Additionally, although all 25 should have eventually had surgery, only 4 of the remain 23 eventually ended up having surgery.

Conclusion: We have identified several areas which need improvement. These need to be addressed and reaudited in order to strive to provide the appropriate acute surgical treatment and subsequent management.
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Disclosure: No significant relationships.

P274

BILATERAL ADRENAL HEMORRHAGE IN THE ANTIPHOSPHOLIPID SYNDROME: A RARE CAUSE OF ACUTE ABDOMEN

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Introduction: Primary adrenal insufficiency subsequent to bilateral adrenal hemorrhage is a rare and life-threatening complication of the antiphospholipid syndrome. The aim of this study is to report such an uncommon case that presented with clinical manifestation of acute abdominal pain.
Material and methods: A 40 year old, male with a history of primary antiphospholipid syndrome, diagnosed two years ago after the occurrence of pulmonary embolism and popliteal thrombosis, receiving anticoagulant medication that was discontinued for a 3 day time of period in order to undergo a surgical dental excision, was presented with acute abdominal pain of right upper quadrant. Laboratory testing and clinical evaluation revealed signs of ileus and elevation of CRP and amylase in serum and urine. The patient was positive for LA_1, β_2-GPI IgG and β_2-GPI IgM, α CL IgM and αCL IgG ANA, anti-dsDNA antibodies.
Results: The abdominal computed tomography demonstrated a bilateral adrenal hemorrhage. In 21 days after his initial admission to hospital, the patient was re-examined. Further testing revealed hyponatremia, hyperkaliemia indicative of mineralocorticoid deficiency. Therapy with fludrocortisone was initiated in addition to his regular medication.
Conclusion: The development of acute adrenal failure as a result of bilateral adrenal haemorrhage in the context of antiphospholipid syndrome is a life-threatening condition that should be promptly detected. Therefore, patients diagnosed with antiphospholipid syndrome should be assessed and followed thoroughly.
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Disclosure: No significant relationships.

P275

STAGING OF ACUTE PANCREATITIS IN 2015 IS STILL DIFFICULT

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Introduction: Acute pancreatitis remains a challenging disease by its various etiology, multiple clinical aspects and unpredicted evolution. The objective of the current research is to review the current classifications pf the disease, evaluating their predictability value.
Material and methods: Prospective observational study of patients admitted in a tertiary emergency center over 12 months. To evaluate the accuracy of each classification system, AUC (area under the curve) and Somer's D were used.
Results: We included 226 patients, with a mean age of 54 years, 61.9 % being men. The etiology of the disease biliary in 39.4 %, alcohol in 17.7 %, metabolic in 4.4 % and ERCP in 0.9 %. The area under the ROC curve for intensive care admission was 0.973 in Atlanta 2012 versus 0.961 in Determinant Based Classification, while for predicting mortality was 0.986 in Atlanta 2012 versus 0.984 in Determinant Based classification.
Conclusion: The Atlanta 2012 and Determinant Based Classification predict with increase accuracy the clinical prognosis of patients with acute pancreatitis. Determinant Based Classification has a slight advantage over Atlanta 2012 Classification because it has succeed to offer a better prediction for ICU Admission. Although their clinical applicability is similar, there are few aspects that can be improved and a worldwide consensus is necessary for uniformity of scientific research.
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Disclosure: No significant relationships.

P276

UNUSUAL PRESENTATION OF ACUTE RIGHT ILIAC FOSSA PAINFUL SYNDROME: TWO CASE REPORTS

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Introduction: Caecal diverticula represent a rare benign patology in the Western World. Usually congenital they are among the true diverticula of the colon and in most cases asymptomatic. An accurate preoperative diagnosis in case of complications is difficult especially in emergency setting
Material and methods: Case report.
Results: Case 1. A 61 year old caucasian female admitted for pain in the right iliac fossa in the last 72 hours. Clinical examination showed positive Blumberg and Mandel signs, while the ultrasonography showed moderate pericecal liquid, enlarged appendix and pericaecal fat stranding. Blood tests showed $14{,}12 \times 10^3$leukocytes and Hb = 12,5 g/dl. Intraoperative localised purulent peritonitis surrounding a 4 cm ulcerated caecal tumor, and an appendix without signs of inflammation were found. Case 2. A 33 year old caucasian woman admitted for pain in the epigastrum irradiating to right iliac fossa for 48 hours. Clinical examination showed positive Blumberg sign and the abdominal ultrasonography showed only moderate oedema of the pericecal fatty tissue. Leukocytosis and normal Haemoglobin have been noticed. McBurney laparotomy revealed retrocaecal appendix without signs of inflammation along with a 12/10 cm caecal tumor requiring median celiotomy for proper inspection of the abdominal cavity. The impossibility to rule out caecal neoplastic disease (no frozen sections available during night time) required right hemicolectomy for both patients. The HP exam showed perforated caecal diverticulitis in both cases.
Conclusion: Complicated caecal diverticulitis should be considered a differential diagnosis of right iliac fossa pain both in young and old patients. Big pseudotumoral inflammatory masses often require extensive surgeries.
References:
Disclosure: No significant relationships.

P277

RARE CASES OF THORACO-ABDOMINAL INJURIES CAUSED BY IMPROPER USE OF ANGLE GRINDERS

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Introduction: In this study we have analyzed the incidence of critical thoraco-abdominal injuries which required hospitalization and surgical intervention, in patients who have misused the angular grinders.
Material and methods: In the Bucharest Clinical Emergency Hospital there have been registered in the last five years a small number of such cases of trauma. The patients presented penetrating thoraco-abdominal injuries. One of the cases presented posttraumatic evisceration with multiple intestinal injuries and localized peritonitis which needed immediately laparotomy with enterectomy and multiple enteroraphies. Another case presented thoracic injuries associated with the opening of the pleura and the pericardium which needed hemostasis and pleural drainage.
Results: The evolution of the patients was simple, without complications. The immediate transport from the accident site and the surgery being performed in less than one our from the injuries are important factors for the further evolution of this patients.
Conclusion: The thoraco-abdominal injuries produced by broken grinder discs at high speed are associated with impressive parietal injuries which involves the evisceration of the internal organs and retention of foreign bodies (disc fragments). The use of protective shells for this devices reduces the risc of some serious accidents which can be lethal.
References:
Disclosure: No significant relationships.

P278

IMPALEMENT ABDOMINAL TRAUMA WITH A LONG OBJECT

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Introduction: A 45 year old male was brought to the emergency department with a sawing related penetrating injury to the abdomen. An abdominal ultrasound imaging was performed. There was no free fluid visible. Possible injury of ascending colon could not be ruled out. Penetration inside abdominal cavity could not be confirmed.
Material and methods: Due to the dimensions of the penetrating object (lenght over one meter) obtaining a CT scan was not possible. The option of shortening the object was abolished due to fear of inflicting further injuries. Therefore the patient underwent an emergency laparoscopy.
Results: Penetration inside abdominal cavity was excluded. Debridement of the wound was done along with wound irrigation and subcutaneous drainage. Appropriate antibiotic prophylaxis was given. After the procedure the patient was transferred to surgical intensive care unit. First postoperative day the patient was transferred to general ward. All normal bodily functions were restored. Second postoperative day the patient was discharged home.
Conclusion: Three months after the accident the patient has resumed his normal routine. There were no early or late complications.
Although there are guidelines for management of penetrating abdominal injuries sometimes we cannot follow them. Such was this case due to the dimensions of the foreign object. Impalement injuries present special challenges for prehospital and hospital care.
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Disclosure: No significant relationships.

P279

ENDOSCOPE-ASSISTED SURGICAL TREATMENT OF A PATIENT WHO SWALLOWED POLYURETHANE FOAM BY SUICIDAL INTENTION)

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Introduction: A 45 years old male swallowed polyurethane self-expandable foam (commonly used to insulation) by suicidal intention. The patient was transferred to a toxicology department.
Material and methods: Despite the injury the patient was found in good general condition. Radiographical assessments showed that the oesophagus and the cranial part of ventricle was filled with the foam. Thoracic surgeons planned a total oesophagus extirpation.
Results: Thanks to a lucky relationship with a company dealing with laboratory reagents we had opportunity to make an urgent experiment to examine the foam's effect to oesophageal tissues. The polyurethane foam was filled into rat's oesophaguses. The trial demonstrated that the foam does not adhere to mucosal tissues.
Conclusion: According to the experimental results we performed an endoscope assisted gastrotomy. During the intervention the whole consolidated foam was removed without injuring the oesophagus. No secondary intervention was necessary.
References:
Disclosure: No significant relationships.

P280

THE IMPACT OF EXTENSIVE SURGERY IN GASTROINTESTINAL CAUSTIC INJURY

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Introduction: The caustic ingestion results in erosion and necrosis of digestive tract, moreover, induces spillage of intraluminal fluid and spread of bacteria. All of these result in severe sepsis and threaten the life of patients. Because of the advance of endoscopic technique and knowledge of this injury, more authors advised conservative management. On the other hands, the extension surgery was advocated by others. Because of still controversial, we presented our clinical practice and outcome of patients with caustic ingestion and evaluate the feasibility and safety of extensive surgery.
Material and methods: We conducted a retrospective review in a medical center in Taiwan, enrolled all of the patients with caustic ingestion from Jan 2007 to Dec 2013. We retrieved and analyzed the demographic data, clinical presentation, injury location and range, the kinds and amount of ingested caustic agent, management, the surgical timing and procedure, the hospital stay and mortality.
Results: The cohort consisted of 138 patients: 24 of them need emergent operation. The mean age was 52.2 $\pm$ 17.8 years. For patient who need emergent operation had the worse endoscopic severity. The mortality rate is 58.3 % (14/24). Initial shock and perforation of gastrointestinal tract are independent factors to predict mortality. Furthermore, initial extensive surgery showed benefit effect on survival.
Conclusion: In conclusion, caustic injury is a risky injury with a dismal prognosis. The mortality is extremely high and is related to peritoneal contamination and initial hemodynamic condition. Extensive surgery to remove all of the necrotic tissue prevents further progression of sepsis that might reduce the mortality.
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Disclosure: No significant relationships.

COMPLICATIONS

P281

TRAUMATIC PEDIATRIC HIP DISLOCATION - A CASE REPORT WITH COMPREHENSIVE LITERATURE REVIEW

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Introduction: A 3-year old child presented as a Level 1 Trauma with a traumatic posterior hip dislocation and acetabular fracture after being struck by a vehicle on a bicycle. The patient was neurovascularly intact. Imaging revealed a posterior dislocation of the left hip. The patient was taken to the operating room for closed reduction under anesthesia with radiographic guidance. The patient was stabilized and discharged with instructions for partial weight bearing. A review of the literature was performed to discuss the incidence, management, complications and outcome of pediatric traumatic hip dislocation.
Material and methods: Literature review was performed using OvidMD, Cochrane, and Pubmed using the following keywords: "pediatric hip dislocation", "traumatic pediatric hip dislocations," "traumatic hip dislocation," and "hip dislocation."
Results: Literature search revealed 15 relevant articles with 115 patients sustaining hip dislocation. Average age was 9.5 years; 70 % were boys, 103 were posterior dislocations, 8 were anterior dislocations, 3 were central/obturator dislocations, and one was unknown.
Conclusion: The management of traumatic hip dislocation in the pediatric population is divisive. Some advocate for reduction in the emergency room, while others for reduction in the operating room under general anesthesia. Diagnosis is multimodal and related to the patient's age. Initial diagnosis is made by the history and physical examination, followed by radiography. Hip dislocations require emergent reduction due to a number of sequelae. Multiple studies describe treatment options with differences in outcome. Generally, pediatric hip dislocations have a good prognosis. Long-term follow up into adulthood has not been documented. Further studies are needed to investigate long-term sequelae.
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Disclosure: No significant relationships.

P282

COMPARATIVE RESULTS OSTEOSYNTHESIS PERIPROSTHETIC FRACTURES KNEE : RETROGRADE NAILING VS PLATE

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Introduction: The number of Total Knee Arthroplasties(TKA) performed grows annually, and therefore the expected to complications, including periprosthetic fractures (potentially serious), will grow as well This paper aims to describe the epidemiology of periprosthetic knee fractures of the femur at our hospital, and compare the results obtained with an osteosynthesis plate to those with a retrograde nailing(Group 1 vs Group 2).
Material and methods: This is a retrospective study of 20 patients operated at the Universitary Hospital Doce de Octubre (Madrid) between June 2011 and November 2014, and treated with a plate fixation (12 patients, 46 %) or intramedullary nail retrograde (8 patients, 31 %).
Results: The patients had, at the time of the periprosthetic fracture occurred, a mean age of 81.2 years (range 51-96). 90 % were women (18) Based on the classification of Lewis-Rorabeck, 95 % of fractures were classified as type 2, the remaining 5 % were type 3 The mean follow-up time was of 26 months (range 8-47). The average time since the introduction of the ATR to the periprosthetic fracture was of 36.05 months (range 1-120). The average healing time was 5.2 months (range 4-24) and the range of motion (ROM) was 112° (90-120) The clinical and radiological results were used to compared Group 1 to Group 2 resulting in ROM(p0.96), healing time(p0.14) and mal-union of the fracture(p0.49); finding no statistically significant differences in any of them.
Conclusion: There are no differences between the two techniques in terms of clinical and functional outcomes A correct classification, coupled with good planning and execution of the surgical technique is the basis of proper therapeutic management.

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Disclosure: No significant relationships.

P283

THROMBIN-ANTITHROMBIN III COMPLEXES AS A USEFUL PREDICTOR OF VENOUS THROMBOEMBOLISM AFTER FRACTURE SURGERY

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Introduction: Venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary thromboembolism (PTE), is a critical complication after pelvic and lower extremities fractures. In this study, we evaluated thrombin-antithrombin III complexes (TAT) and D-dimer levels after surgery for fractures of the pelvis and/or lower extremities, and evaluated their prognostic accuracy for the development of postoperative VTE.
Material and methods: 96 patients with fractures of the pelvis and/or lower extremities who were surgically treated were analyzed prospectively. The TAT and D-dimer levels were measured on postoperative day 7. The usefulness of TAT and D-dimer for the diagnosis of VTE was examined using Receiver Operating Characteristic (ROC) curve analysis. The optimal cut-off levels were set on the basis of having the highest Youden index.
Results: Postoperative VTE was diagnosed in 23 patients including 7 patients with PTE. The ROC curve analysis indicated that diagnostic accuracy for the TAT test was higher than the D-dimer test. At the optimal TAT cut-off level (3.0 ng/ml), sensitivity was 90.0 % and specificity was 71.2 %. At the optimal D-dimer cut-off level (7.4 μg/ml), sensitivity was 90.9 % and specificity was 57.5 %.
Conclusion: Our results revealed that the TAT tests measured 7 days after surgery had superior diagnostic power for predicting postoperative VTE. Although sensitivity of the TAT test was comparable to that of the D-dimer test, specificity of the TAT test was greater than that of the D-dimer test. TAT can be a useful marker for the diagnosis of postoperative VTE in patients with fractures of the pelvis and/or lower extremities.
References:
Disclosure: No significant relationships.

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POST BARIATRIC SURGERY EMERGENCIES: PROPOSED MANAGEMENT PROTOCOL FOR EMERGENCY UNITS AND NON SPECIALIZED GENERAL SURGEONS

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Introduction: The demand for bariatric surgery is highly increasing and the postoperative complications are seen more frequently. Bariatric emergencies are increasingly seen in the emergency departments

and serious outcomes are reported following non bariatric surgeon intervention.
Such complications are attributed to technical errors, suboptimal clinical evaluation, failure of effective communication with bariatric teams, and delayed either presentation or management of such cases. Reported mortality is around 2 %, increasing to over 6 % in case of surgical revision.
Material and methods: This is a multicenter study on all types of bariatric surgery patients after their discharge home. Between August 2009 and January 2014 patients following any type bariatric surgery were discharged with the proposed "book of instructions". This includes all patients' instructions, possible complains and instructions to patients, postoperative complications, recommended management by emergency and/or general surgery doctor and contact information of the original surgical team.
Results: Bariatric surgery complications are tabulated per type of bariatric surgery, needed investigations, conservative management, surgical intervention and the operating team whether the original operated the first time or any other team and the final outcome. Degree of obedience to the protocol is documented. Finally the overall morbidity and mortality data is recorded and compared to literature.
Conclusion: The awareness of bariatric emergencies and the effective management are the gold standards for best outcomes. The proposed "book of instructions for bariatric patient follow up" proved effective in achieving lower morbidity and mortality results. A universal protocol for such identity is needed as a standard. Further evaluation is invited on larger scale studies.
References: (23)
Disclosure: No significant relationships.

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INCIDENCE AND MANAGEMENT OF OCCULT HEMOTHORAX IN BLUNT CHEST TRAUMA

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Introduction: The increased use of computed thoracic tomography for the evaluation of blunt chest trauma has led to an increase in the identification of occult hemothorax. The natural history of occult hemothorax is unclear. This research aimed to identify the characteristics of patients who had progression of occult hemothorax until finally delayed pleural decompression was performed.
Material and methods: This is a retrospective review of blunt chest injury patients from a prospective institutional trauma registry. The review included patients who had occult hemothorax defined by a negative CXR with presence of hemothorax in CT chest or abdomen verified by a radiologist. Data collected included demographics, injury sustained and characteristics of the hemothoraces from the CT scans such as thickness of the hemothorax and Hounsfield units (HU). The treatments of hemothorax were also recorded.
Results: Of the 244 patients who had blunt chest injury, 30 (12.2 %) had occult hemothorax during the 1-year study period. The mean injury severity score (ISS) was 16. Delayed hemothorax occurred in 19 patients (63.3 %) and pleural decompression was performed in 11 patients (36.6 %). Patients with pleural decompression tended to have higher ISS, associated chest injury and thicker occult hemothorax.
Conclusion: Occult hemothorax occurs in a significant proportion of blunt chest trauma patients. It is important to be aware of delayed hemothorax and pleural decompression should be considered in multiple and severely injured patients.
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Disclosure: No significant relationships.

P286

CHEST WALL DEFORMITY AFTER CONSERVATIVE TREATMENT OF STERNAL FRACTURE

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Introduction: Although sternal fracture is a relatively common injury, the treatment guideline has not yet been established. Herein, we report a patient with sternal fracture and thoracic spinal body fracture who underwent non surgical treatment and developed a severe respiratory distress.
Material and methods: A 59 year-old patients came to emergency room (ER) after falling down. The patient underwent computed tomography (CT) on chest, abdomen, brain, cervical and thoracic spine which revealed sternal fracture and multiple thoracic and lumbar body fracture. We decided to have conservative treatment for the spinal fracture and the sternal fracture as well, because the sternum was not displaced and had no associated injury.
Results: On 38th admission day, he was discharged. However, after 3 months, he complained respiratory difficulty and underwent chest CT which revealed severe kyphosis and posterior displacement of sternal fracture with decreased lung volume. We, cardiothoracic surgeons planned to have surgery for the displaced sternum and spines with neurosurgeons.
Conclusion: Surgery for sternal fracture has not been commonly performed, however, it is simple and is known to have better attachment of fragmented bone compare to conservative treatment. Even though the displacement is not so severe at first time, it can be progressed when sternal fracture is combined with spinal fracture. We suggest for surgical approach in such case rather than conservative treatment.
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Disclosure: No significant relationships.

P287

EXTRAORDINARY FINDING AFTER FALL ON WRIST

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Introduction: A 65-year-old woman brought in at the emergency room was assumed to have a distal radial fracture. The X-ray showed, besides the fracture, a five-centimetre corpus alienum between radius and ulna. It turned out to be a broken K-wire that had migrated from an olecranon tension band placed in 2009 following an olecranon fracture.
Material and methods: A retrospective literature search about K-wire migration was conducted to gain information about the best treatment.
Results: Numerous case reports on K-wire migration show that this phenomenon may occur throughout the body and cause serious local problems.
K-wire migration from the shoulder joint has been described extensively, including eight fatal cases, mostly due to pericardial tamponade. We have traced three case reports about K-wire migration from the upper extremity distal of the shoulder joint. All three cases involved intravasal migration towards the heart, necessitating surgery for removal of the wire. Case reports about K-wire migration from the lower extremity reveal less serious complications. All these case reports described migration of a minor part of the K-wire.
Conclusion: Our case is unique because distal K-wire migration from the elbow has never been described in literature before. Though the potentially serious consequences should not be ignored, we assessed that the risks attached to removal of the K-wire outweighed the minimal risk of the K-wire migrating towards the heart given its size (entire K-wire). Added to the absence of complaints, this was reason for us to adopt a wait-and-see policy and monitor the patient over time.
References:
Disclosure: No significant relationships.

P288

SMALL BOWEL OBSTRUCTION – A LATE COMPLICATION OF BARIATRIC SURGERY

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Introduction: Small bowel obstruction (SBO) due to internal herniation is a well-described complication of laparoscopic gastric bypass (LGBP), predominantly on Petersen's space. However, with its numerous presentations, from mild to severe, an early diagnosis may be problematic. The authors describe a case of small bowel obstruction due to an internal hernia through Petersen's space as a late complication from gastric bypass surgery.
Material and methods: A 40-year old male operated of LGBP for morbid obesity in 2010 presented with abdominal pain and vomits. Epigastric pain aggravated on palpation, no guarding. Plain x-ray showed air-fluid levels, no pneumoperitoneum. Leukocytosis and hypokalemia. CT scan reported diminished caliber of small bowel adjacent to the mesentery root, but no visible obstructive cause. Failure to improve after 48 hours of nonoperative management so we opted for the surgical approach.
Results: After an exploratory laparotomy, an internal hernia through Petersen's space was confirmed and its content distorted and reduced, with no signs of small bowel necrosis. The mesenteric gap was sutured closing Petersen's space. Discharge after 3 days.
Conclusion: As LGBP increases, its complications become more prevalent. In the emergency department, a high level of suspicion should be a concern when in contact with SBO after bariatric surgery.
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P289

POSTOPERATIVE CLOSTRIDIUM DIFFICILE INFECTION IN COLECTOMY PATIENTS

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Introduction: Since the identification as causative agent in pseudomembranous colitis, Clostridium difficile infection is the most common cause of nosocomial diarrhea and has become a major problem of hospital morbidity.
Material and methods: The objective of the present study is: 1) to identify the preoperative risk factors for Clostridium difficile infection (CDI) in a cohort of colectomy patients and 2) to determine if the different prophylactic antibiotics were associated with the risk of CDI. Between 2010-2014, we analyzed retrospectively all patients undergoing colectomy (emergent and non-emergent colectomy) with the following procedural terminology: right hemicolectomy, left hemicolectomy, partial colectomy with anastomosis and Hartmann colectomy. We have collected patient's characteristics, combination of antibiotics given perioperatively and 30-day postoperative outcomes. The CDI identified by laboratory detection of the toxin in the stool. Univariate association between independent variables and incidence of CDI were estimated using Chi-square test.
Results: The final cohort included 158 patients who underwent colectomy and 12 patients (7.6 %) were diagnosed with CDI postoperatively. The significant bivariate associations between the independent variables and patients with CDI are: dialysis ($p < 0.0002$), sepsis ($p = 0.0015$), ventilator dependent > 24 h ($p = 0.014$), low albumin level ($p = 0.0038$). Only 2 antibiotics had a statistically significant association with CDI in univariate analysis (Ceftriaxone and Cefuroxime). Additionally, CDI patient had a higher rate of emergent surgery (34 % vs. 12 %). The bowel preparation was not a significant association with CDI.
Conclusion: The study demonstrated that dialysis, low albumin level, a history of transient ischemic attack and emergent surgery were the strongest independent predictors of CDI.
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Disclosure: No significant relationships.

P290

CT ANALYSIS OF THE SAFE ZONE OF POSTERIOR COLUMN SCREWS IN ACETABULAR FRACTURES SURGERY

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Introduction: Posterior column screws (PCS) play a important role for fixation of the posterior column from anterior approach in acetabular fracture surgery, but it is challenging even for experienced surgeons to insert the screw through the safe zone between anterior and posterior column because of its narrowness and misdirection of the screw. We analyzed the insertion pathway and the safe zone of PCS in order to insert it accurately.
Material and methods: Eleven Japanese adults who was brought into the emergency department at our hospital and taken pelvic CT scan were included in this study. Their pelvic CT scan data were imported into VirtualPlace® (AZE, Ltd., Tokyo, Japan).By using the software, 20 uninjured acetabula were assessed the maximal intramedurally length from inner plate of iliac bone to ischial tuberosity or spine and the cross-sectional area of the safe zone. The cross-sectional area was automatically calculated by tracing the cortical bone around the safe zone on the image superimposed the orthogonal plane to the insertion pathway of PCS.
Results: The mean age was 48.2 (31–71) years old and the mean BMI was 23.3 (20.4-24.9) kg/m^2. The maximal intramedurally length from inner plate of iliac bone to ischial tuberosity was 142.0 ± 11.0 (127.7-158.5) mm and to ischial spine was 93.0 ± 7.9 (87.1-104.4) mm. the cross-sectional area of safe zone toward ischial tuberosity was 303 ± 64 (202-398) mm^2 and ischial spine was 180 ± 21 (141-210) mm^2 .
Conclusion: The area of safe zone to insert the longer PCS was 303 mm^2, but it might be narrower depending on the reduction of posterior column fragment when we actually insert PCS.
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Disclosure: No significant relationships.

P291

COMPLICATIONS IN TWO COLUMNS ACETABULAR FRACTURES. USE OF MATTA'S NOMOGRAM AS PREDICTOR

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Introduction: Acetabulum fractures are fractures often complex and often associated with high-energy trauma in young patients. It has developed a nomogram called Matta, who pretends to be a predictor of complications of these fractures in next 2 years.
Material and methods: For this analysis we used the 12 de Octubre hospital database in which we collected 212 acetabular fractures including a period from 2004 to 2015. We observed early complications (vascular and neurological) and late complications (arthritis, heterotopic ossification, avascular necrosis of the femoral head, others) .
Results: The total number of this fractures was 39 (18.39 %) with average age of 43.97, affecting 19 of them right side and 18 the left. Average follow-up was 266.16 days. 39,4 % were female and 60,6 % male. We use double approach in 14, and ilioinguinal approach in 13 We got two early complications (6 %) (sciatic nerve palsy and a case of vascular complication) and 6 late complications (15.38 %) (3 osteoarthritis, 2 heterotopic ossification and one avascular necrosis) When we apply the Matta's nomogram, we find that only 2 people have a chance of 40 % or more of developing complications in next two years (similar to our study).
Conclusion: Surgical treatment achieved good results. After the study, we observed a rate of poor functional results between 18-20 %, The Matta's nomogram can help to predict the need for total hip replacement in next two years. In our case, we obtained similar results than the nomogram predicted, so we can say that in our working group, the nomogram is a good predictor.
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Disclosure: No significant relationships.

P292

CASE REPORT. HUMERAL SHAFT FRACTURE ON PREVIOUS FOCUS OF NONUNION. MODIFIED POSTERIOR HUMERAL APPROACH (GERWIN APPROACH)

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Introduction: In this case report, we present a patient who had a humeral shaft fracture, previously this patient had a nonunion fracture distal to the new fracture. So we have to treat a fracture of the proximal third of the humeral shaft, plus a focus of nonunion on the distal third.
Material and methods: The requirement, in this case, of an extended approach, with visualization of the radial nerve, made us opt for an extended posterior approach (Gerwin's approach), with detection of the radial nerve and the external brachial cutaneous nerve with exposure of more than 90 % of the humeral shaft, something that we don't achieve with other approaches For that, we use the Gerwin's approach, identifying the radial nerve and the external brachial cutaneous nerve. Refreshing the edges of the fracture and using an autologous iliac crest graft and finally making the osteosynthesis with an extraarticular humeral plate.
Results: After 1 year post-surgery, clinical, functional and radiographic results have been satisfying.
Conclusion: The Gerwin's approach allows wide exposure of the humeral shaft (almost 90-95 %) and can identify the neurovascular structures allowing adequate fracture reduction and synthesis of it preserving intact radial nerve.
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Disclosure: No significant relationships.

P293

FACTORS THAT CONTRIBUTE TO MALREDUCTION OF THE SYNDESMOSIS IN ANKLE FRACTURES

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Introduction: The aim of this study is to show the impact of the positioning of the reduction clamp on the syndesmosis reduction and the contribution of fractures, changing the osseus anatomy of the fibular sulcus. We hypothesized that anatomic reduction of the syndesmosis cannot be reliably achieved without reconstruction of the fibular sulcus of the tibia.
Material and methods: A prospective study of 22 patients with malleolar fracture with lesion of the syndesmosis after ORIF. Standard measurements were made to assess the accuracy of syndesmosis reduction. CT measurements included: The length of the fibular incisura, its anterior and posterior width, depth, translation and rotation of the fibula.
Results: Early results: In 40 % of all cases the syndesmosis was malreduced. In 75 % of them there was fracture of the posterior triangle of the tibia (Volkmann fragment) and/or anterior tuberculum (Tillaux-Chaput fragment). In patients without such fractures the rate of malreduction was much lower - 25 % . In the group of patients with well reducted syndesmosis (60 %), fracture of the sulcus was found in only 33 % of them and 66 % were without fracture.
Conclusion: Reduction of the syndesmosis is more dependent on the clamp position in the cases with fractures that change osseous anatomy of syndesmosis and the risk for malreduction is significantly higher. In order to reduce the risk for syndesmosis malreduction and to improve the prognosis in these patients it is important to restore the anatomy of the fibular sulcus prior to reduction and fixation of the syndesmosis.
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Disclosure: No significant relationships.

P294

VACUUM ASSISTED LOCAL THERAPY IN POSTOPERATIVE DIGESTIVE FISTULAS MANAGEMENT

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Introduction: Proximal postoperative digestive fistulas represent one of the most severe complications and a serious challenge for the surgeons. Regardless the efforts directed for its treatment the mortality rate stays high, and there still exist no promising treatment method.
Material and methods: Authors report a series of 16 patients with postoperative digestive fistulas. M:F ratio – 11:5, median age – 53.3±4.2 years. According to the GI tract level fistulas were as follows: stomach – 1, duodenum – 7, jejunum – 1, duodenum + colon – 1, colon – 4, colon anastomosis – 2. Vacuum assisted local treatment was applied for localization and management of fistulas. The method was applied after relaparotomy for diffuse peritonitis or during staged necrosectomy with isolation of the fistula from the rest of the abdomen and protection of the adjacent viscera. All the patients received enteral feeding through nasointestinal probe distal to fistula in selected cases, compensation of digestive secretions loss (bile, pancreatic juice), and supportive complex treatment.
Results: The median time to fistula closure was 34.2±7.4 days. Median hospital stay – 163±6.5 days, including ICU – 11.5±4.3 days. Mortality rate – 12.5 %.
Conclusion: Topical negative pressure treatment is an opportunity for digestive fistulas therapy, especially for proximal ones. Associated with complex treatment for protein and hydroelectrolyte imbalances correction, including early enteral nutrition this method facilitates the adequate protection of the abdominal wall skin, reduces the hospital stay and mortality rate.
References:
Disclosure: No significant relationships.

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SPLENIC TORSION AFTER SUCCESSFUL ENDOSCOPIC RESTORATION OF SPLENIC FLEXURE VOLVULUS

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Introduction: Splenic flexure volvulus reflects the rarest form of colonic volvulus, approximately 1 %–3 % of cases. We describe the unusual incidence of splenic torsion 24 hours after successful endoscopic management of splenic flexure volvulus.
Material and methods: A 27-years old autistic patient, presented in our hospital with acute abdominal pain and marked abdominal distention for 24 hours. The performed plain abdominal radiograph revealed distension of the large bowel in the splenic flexure from the middle of the transverse colon until the beginning of the sigmoid colon. Initial blood tests showed white cell count of $12.5 \times 10^3/\mu L$, while routine liver, renal function tests and serum amylase level yielded nil abnormal.
Results: The endoscopic restoration of large bowel volvulus was attempted successfully. Twenty four hours later, was detected an abrupt hematocrit fall from 40 % to 29 % while the urgent computing tomography imaging, revealed abundant fluid and clots in the left hypochondriac region. The patient submitted in emergency laparotomy revealed a twisted, congested spleen with multiple ruptures on its surface. A redundant sigmoid colon was also detected. Splenectomy and sigmoidectomy in order to avoid a recurrent volvulus, were performed. The patient was discharged on the 4th postoperative day.
Conclusion: The review of the literature revealed 3 cases with Asperger's syndrome (an autism spectrum disorder) in which ligamentous laxity had been detected, a citation which is in accordance with the findings of our case. We present this case due to the coincidence of two rare entities the splenic flexure volvulus and splenic torsion which are connected with causal relationship.
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Disclosure: No significant relationships.

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ORIF OF HIGH-ENERGY ACETABULAR FRACTURES TREATED VIA THE KOCHER-LANGENBECK APPROACH

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Introduction: The Kocher-Langenbeck approach is the gold standard for posterior access to acetabular fractures treated with open reduction and internal fixation (ORIF). The objective of this study was to evaluate parameters that might be prognostic factors for the surgical outcome that can be expected.
Material and methods: 167 consecutive patients with a mean age of 41.8 years and a mean follow-up period of 10 months were surgically treated by one experienced surgeon at a level I trauma center within 10 years. According to the AO/ASIF classification 65 A1, 34 A2, 51 B1 and 17 B2 fractures were identified. Radiographic findings were quantified according to the Matta, Brooker and Epstein grades. Posttraumatic arthritis and avascular necrosis of the femoral head were evaluated. For each outcome measure and complication subgroup analyses according to fracture type, age and gender were performed.
Results: Of all patients, reduction was rated anatomic in 63.5 %, imperfect in 22.2 % and poor in 14.4 %. Degenerative changes were observed in 49.7 %. 37.9 % were affected by heterotopic ossification, 21.6 % by posttraumatic arthritis and 5.4 % by avascular necrosis of the femoral head. 15.0 % were diagnosed with a nerve damage and 4.8 % sustained an infection. Total hip arthroplasty was performed in 10.2 %. Revision surgery due to secondary loss of reduction seroma/hematoma and wound infection was indicated in 6.0 %.
Conclusion: In conclusion, fracture type, age and gender could be identified as parameters that might influence the surgical outcome after ORIF of high-energy acetabular fractures.
Disclosure: No significant relationships.

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THE PREDICTORS OF SURVIVAL FROM IN-HOSPITAL CARDIAC ARREST FOR TRAUMA [IHCAT] IN QATAR

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Introduction: Much has been studied/recommended for both in and pre hospital non-traumatic arrests but little for in-hospital cardiac arrests in trauma [IHCAT]. Describing the factors that will predict a successful response to resuscitation will inform trauma care providers of the necessary steps to take when faced with IHCAT. This study will analyze the characteristics of IHCAT patients who survived and compare them with the non-survivors.
Material and methods: A retrospective analysis of data on all patients who experienced IHCAT, from 1 January 2010 to 31 December 2013, was conducted from the trauma registry of the Hamad Trauma Center, the national trauma center of Qatar. The epidemiologic characteristics and clinical outcomes of survivors are described and compared with non-survivors.
Results: 205 admitted trauma patients had an IHCAT during the study period. The majority were males with a mean age of 33 years. There were 22 survivors and 183 non-survivors. There were no significant differences between the groups for the following: Age, ISS, ICU LOS, LOS, mechanism of injury, male sex and pre-hospital cardio-pulmonary resuscitation [CPR]. Having only 1 CPR event was a significant predictor of survival [$p < 0.0001$] and survival from 1 CPR event for IHCAT was computed at 26.6 % while that for more than 1 CPR event was 0.79 %.

Conclusion: IHCAT is not a uniformly fatal event but it has a significant reduction in survival rate with every subsequent CPR event. Future research must be conducted on determinants of survival focusing on resuscitation processes, medications administered, decision tools and duration of CPR for IHCAT.

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Disclosure: No significant relationships.

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CAN FAT EMBOLISM SYNDROME BE PREVENTED BY IMMEDIATE FIXATION OF FEMUR FRACTURE? ~THE TREATMENT STRATEGY OF FEMUR SHAFT FRACTURE~

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Introduction: Fat embolism syndrome (FES) is one of the disastrous complications of femur fractures. Since we experienced the case of FES following the skeletal traction, we strictly perform either external fixation or internal fixation for the treatment of femur shaft fractures caused by high energy. In this study, clinical courses were reviewed and the efficacy of our treatment strategy was evaluated.

Material and methods: From 2007 to 2013, the registry data and charts were reviewed retrospectively, including femur shaft fracture cases injured by high-energy trauma. Open fractures, implants for immediate fixations and definitive fixations, and complications were investigated.

Results: 61 cases/ 63 femurs (male: 45, female: 16), average age: 39.9 years old. Open fractures: 18 cases Immediate fixation implants: 57 cases (internal fixation: 29, external fixation: 28) Definitive fixation implants: IM nail-54 femurs, plates-2 femurs, external fixations-5 femurs 2 minor infections. 3 FESs: Case1-a femur fracture combined with ipsilateral hip dislocation. He was diagnosed as FES immediately after the reduction of the dislocation, which took 6 hours from the injury. Case2-18 hour delay for the fixation due to the communication problems with operating room. Case3-the patient was transferred from other hospital following shock and FES without operative fixation and in spite of immediate external fixation, died in 3 weeks. All fractures were healed except case 3.

Conclusion: No complications with FES after immediate femur fixations. A femur fracture with ipsilateral hip dislocation could potentially lead to the worst scenario and thorough care should be taken. The smooth communication with operating room personals is mandatory.

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Disclosure: No significant relationships.

P299

TREATMENT STRATEGY OF POSTOPERATIVE NONUNION OF INFRA-ISTHMAL FEMORAL FRACTURES

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Introduction: Distal femoral shaft fracture, called infra-isthmal fracture, occasionally result in nonunion due to insufficient fixation of the distal fragment. The purpose of this study was to determine the treatment strategy of postoperative nonunion of infra-isthmal femoral fractures.

Material and methods: Seven patients with 8 non-unions of distal femoral shaft fractures resulting after standard intramedullary nailing were treated. They were all male and aged from 25 to 80 years (average 55.7 years). As for the biological activity of nonunion, 5 cases had hypertrophic nonunion type and 3 cases had oligotrophic nonunion type. We evaluated the outcome of these cases.

Results: One case has been treated with exchanging nailing (EN). Four cases have been treated with EN combined with bone graft. One case have been treated with augmentation plating (AP). Two cases have been treated with AP combined with chipping osteotomy. All cases obtained bone union without complication and infection. The mean follow-up was 7 months.

Conclusion: We performed EN combined with bone graft in early cases. However, the young cases with hypertrophic type had obtained bone union with only EN and compression. Therefore, bone graft is not always necessary if the case is hypertrophic and is treated with enough stability. In cases with AP, bone union was shown from the medial side, opposite to the plate and bone graft. This suggest that stability for distal fragment is important even in oligotrophic nonunion. In these fractures, we should keep in mind that obtaining stability of distal fragment with reliable surgical technique and proper implant selection is important.

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Disclosure: No significant relationships.

P300

THE IMPACT OF SPLENECTOMY ON LEUCOCYTE KINETICS IN THE PERIPHERAL BLOOD OF POLYTRAUMA PATIENTS

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Introduction: Dysregulation of the immune response to severe trauma forms the basis for severe complications such as Multiple Organ Dysfunction Syndrome. Literature revealed that a splenectomy in selected severely injured trauma patients is associated with better outcome. We hypothesized that a splenectomy results in a diminished absolute leukocyte number in the peripheral blood of severely injured trauma patients.
Material and methods: All adults with blunt splenic or hepatic injuries with an ISS >15, admitted to our level one trauma center between 2007 and 2015 were included. Patients were grouped according to the injured intra-abdominal organ (spleen vs. liver) and the treatment they received (operative (OM) vs. non-operative (NOM)). The absolute leukocyte count was measured on several time points after trauma.
Results: A total of 129 patients were included, of whom 56 patients sustained splenic injuries and 73 suffered hepatic injuries. Nineteen splenectomies were performed and 12 patients required liver repair surgery. Splenectomized patients had slightly increased leukocyte numbers during the first weeks of observation compared to all other groups. This difference was most prominent after two weeks, where absolute leukocyte counts were significantly increased in splenectomized patients compared to the NOM splenic patients, respectively 20.07 vs. 12.79 (p:0.01).
Conclusion: We are the first to show that a splenectomy results in altered leukocyte kinetics in peripheral blood of trauma patients. These observations contribute to the assumption that the spleen plays a modulatory role in the innate cellular immune response to trauma. Moreover this forms a first explanation for the beneficial effects of a splenectomy on outcome of severely injured trauma patients.
References:
Disclosure: No significant relationships.

P301

A MEDIAL CLAVICLE PSEUDOARTHROSIS SUCCESSFULLY TREATED WITH AN INVERTED DISTAL CLAVICLE LOCKING PLATE

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Introduction: Medial clavicle fractures are rare injuries as accounting for 2-3 % of all clavicle fractures. The symptomatic nonunion rate in medial clavicle fractures with conservative treatment is reported to be 8 %. We present a rare case of medial clavicle nonunion which was successfully treated with an inverted distal clavicle locking plate.
Material and methods: A 53-year-old male working for the construction industry fell from the second floor of a house during his work and sustained a left medial clavicle fracture. The patient was initially treated conservatively at another hospital. He was referred to our hospital 9 months after his initial injury with complaints of abnormal mobility, pain and activity limitation. A hyper-mobile pseudoarthrosis was evident, and a surgery was planned. For preoperative planning, the life-size 3-dimensional model of the mirror image of the contralateral clavicle was created. It was revealed that an inverted ipsilateral locking plate for distal clavicle fitted nicely. We performed open reduction with debridement of the pseudoarthrosis tissue and internal fixation using the locking plate.
Results: The plate selected preoperatively fitted to the medial clavicle without any contouring. Bony union was achieved and he returned to his preinjury activity without any symptom.
Conclusion: Medial clavicle nonunion was successfully treated by an inverted distal clavicle locking plate. Although the optimal fixation device for medial clavicle has not yet been established, this method can be a treatment option.
References:
Disclosure: No significant relationships.

P302

INCIDENCE OF PULMONARY THROMBOEMBOLISM AND DEEP VEIN THROMBOSIS IN PATIENTS WITH PELVIC AND LEG FRACTURES SCREENED BY ROUTINE IMAGING EXAMINATIONS

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Introduction: We have routinely performed venous thromboembolism (VTE) screening by imaging examinations pre- and postoperatively since July 2009. The purpose of this study was to investigate the incidence of VTE in patients with pelvic and/or leg fractures by routine imaging examinations.
Material and methods: Records of the patients with pelvic and/or leg fractures between May 2009 and August 2015 were retrospectively reviewed, and the incidence of VTE by routine imaging examinations was investigated; (1) deep venous thrombosis (DVT) screening by ultrasonography in all patients (2) pulmonary thromboembolism (PTE) screening by contrast-enhanced computed tomography (CECT) in patients with pelvic and/or bilateral leg fractures and patients with proximal DVT detected by ultrasonography.
Results: Of the 300 patients with pelvic and/or leg fractures, 24 patients (8 %) were diagnosed with PTE and 89 patients (30 %) were diagnosed with DVT. One patient had symptomatic PTE. Among 44 patients who received routine CECT, 23 patients (55 %) were diagnosed with asymptomatic PTE; 17 patients were diagnosed by CECT for patients with pelvic and/or bilateral leg fractures and 6 patients were diagnosed by CECT after detection of proximal DVT. PTE was detected preoperatively in 11 patients and postoperatively in 13 patients. The incidence of PTE in patients who received routine CECT was not affected by gender, age, the duration from injury to operation and injury severity score.
Conclusion: The rate of PTE was high in patients who received routine CECT, that is, patients with pelvic and/or bilateral leg

fractures or patients with proximal DVT. Surgeons should pay attention to the high incidence of PTE.
References:
Disclosure: No significant relationships.

P303

CELECOXIB PREVENTS HETEROTOPIC OSSIFICATION AFTER THE POSTERIOR APPROACH OF ACETABULAR FRACTURES EFFECTIVELY AND SAFELY IN JAPANESE PATIENTS

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Introduction: Heterotopic ossification (HO) is a well-recognized complication of acetabular fracture surgery. Incidence of HO is much higher in posterior approach than in anterior approach. Irradiation and the administration of NSAIDs are the most popular prophylaxis of HO. Celecoxib is COX2-inhibiting NSAID and is known to reduce gastrointestinal disorder.
Material and methods: 200 mg celecoxib was administered orally two times a day for 4 weeks to 22 patients who were operated through posterior approach. There were 18 males and 4 females with average age of 54.5 years. The fracture type according to Judet-Letournel classification was; 14 Posterior wall (PW), 3 Transverse(Tr)+PW, and remaining 5 cases were each Tr, T-shaped, PC+PW, ABC, and atypical type. Femoral head fractures were seen in 9 cases, and mean ISS was 13.8. Mean follow-up period was 16.1 months.
Results: According to Brooker's classification, all 22 cases were class 0-2. No class 3 and 4 were observed.
Time to operation was 6.9 days on average. Trochanteric flip osteotomy was performed in 7 cases, and supplemental anterior approach was performed in 4 cases. There were 6 cases of high energy trauma. Brain injury was seen in 3 cases.

No complication such as gastric disorder or cardiovascular event was found in this series.
Conclusion: Celecoxib inhibits severe HO effectively even if there are the factors which may generate HO. Celecoxib is known to associate with cardiovascular event, but there were no event in this series. It supports the recent report that celecoxib does not increase cardiovascular event compared to non-selective NSAID in Japanese patients.
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Disclosure: No significant relationships.

P304

EASY ANTIBIOTIC CEMENT COATING OF INTRAMEDULLARY NAILS FOR TREATMENT OF INFECTED NONUNIONS

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Introduction: Use of antibiotic cement coated intramedullary rods is common practise for treating infected non-unions. The use of antibiotic cement coated intramedular nails is much less common. Different techniques for antibiotic cement coating have been described in the literature. The authors describe a simple modification of an existing technique described by Conway et al. for preparing a round and evenly coated intramedular nail with antibiotic cement. This technique can be easily preformed in the operating theatre.
Material and methods: Almost any commercial available intramedular nail can be coated with antibiotic loaded cement. The cement and antibiotic powder is mixed first and then the monomer is added. The cement, antibiotic and monomer are mixed simultaneously in two commercially available vacuum mixing sets. The cement is then injected in a sterilized high pressure hose from both ends of the hose simultaneously. After the cement has been injected the nail is immediately inserted. After the cement has set the hose is removed. The locking holes of the nail are cleaned of cement and the nail is ready for insertion.
Results: We have used this modification of antibiotic cement intramedular nail coating in one clinical case and encountered no problems with intraoperative nail preparation. The nail preparation time was less then 15 minutes.
Conclusion: Antibiotic cement coated intramedullary nail can be easily prepared intraoperative with minimal preoperative preparations using commercially available intramedular nails and standard, commercially available cement mixing systems.
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Disclosure: No significant relationships.

P305

THE EFFECTIVENESS OF COLLAGEN BASED HEMOSTATIC COLLATAMP G IN TREATING BONE INFECTIONS

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Introduction: Collatamp G is a system performing localized drug-delivery; based on type-1 collagen matrix obtained from bovine Achilles tendon, it consists of a collagen sponge saturated with gentamicin, which creates considerably higher local concentrations, lethal for bacteria, while avoiding the risk of systemic toxicity and associated side effects. Moreover, collagen is a biocompatible material with proven wound-healing and haemostatic properties, thus Collatamp G accelerating hemostasis and wound healing.
Material and methods: The authors present 8 cases where Collatamp G was used as an adjacent method to the treatment of osteitis of long bones following closed or open fractures. Surgical debridement was performed prior to Collatamp usage. The patients were skeletally mature (18- 52 yrs), had no known allergic reaction to collagen; with no significant associated pathology . The patients were evaluated clinically and radiologically.
Results: In all the cases, the collagen matrix enhanced the granulation reaction, thus helped healing while negative subsequent cultures . When the bone defect was small, no bone graft was necessary (3 cases), while in 5 cases, the Papineau method was applied, with secondary bone grafting. In all the cases, the local effect was optimal, and the duration of treatment was considerable less
Conclusion: Collatamp G has certain advantages: the matrix itself is fully resorbable, while it provides carefully controlled, secure for the patient, mathematically modeled both rapid and prolonged release of Gentamicine. The cases we present demonstrate that the product stimulates healing, helps granulation and performs anti-microbial action, thus being a useful tool in treating bone infections.
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Disclosure: No significant relationships.

P306

COVERING LARGE LONG BONE DEFECTS: DECISION MAKING, COMPLICATIONS AND SOLUTIONS EXPLAINED THROUGH A CASE REPORT

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Introduction: Patients with large long bone defects present a challenge. Such was also the case in a motorcycle accident of a young male, where bone fragments (up to 8 cm) were found on the road. After initial necrectomy of the open femoral fracture and external fixation 19 cm of bone defect was left.
Material and methods: Following extensive preoperative planning an intramedullary nail was laid through both fragments and used as a railway for double bone transport with Ilizarov whilst retaining functional reposition. Many complications occured postoperatively, including: ischiadicus palsy, blockage of transport, wire bending due to severe tension, soft tissue problems, diminished ROM in the knee, toe flexion contractures and other. All of this was addressed through several operations. In the end a docking site spongioplasty reinforced with a LCP plate was made followed by quadriceps release with Joudet technique.
Results: A multidisciplinary team consisting of physical therapists, nursing staff, dietitian, psychologist, pain management specialist, neurologist and others prepared a rigurose rehabilitation programme which was modified on the go. It was primarily executed intrahospitaly, secondarily at a rehabilitation institution and tertially at home. 2 years after the injury the patient was fully rehabilitated with no pain and no limitations in daily activities.
Conclusion: Covering large long bone defects is always a marathon. Complications should be expected and their solutions planned and executed with great consideration of basic surgical principles and philosophy, supported by experience of senior surgeons. A well organised multidisciplinary team is a must.
References: As this is a case report we shall not list references. Our wish and goal is to present all of our experiences with long bone defects gained in the past years in University Medical Centre in Ljubljana, Slovenia.
Disclosure: No significant relationships.

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ENDOSCOPIC IATROGENIC PERFORATION OF THE COLON: RESULTS OF A NATIONAL SURVEY

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Introduction: Nowadays, colonoscopy is performed more frequently. Because of that, there are more complications, and colon perforation is one of them. The optimal treatment of colon perforations is still controversial.
Material and methods: The objective is to know the spanish surgeons' opinion about the treatment of endoscopic colon perforation, for which a survey was sent by email to all members of the ACS
Results: 109 surveys were received. Spanish surgeons prefer to operate immediately if the diagnosis of the perforation is during endoscopy (66 % with proper bowel preparation and 79 % with poor preparation) and after that, the decision to operate depends on the signs and symptoms
In colon without pathology, if peritonitis is mild, they prefer laparoscopic suturing (83 %), while if peritonitis is severe, they preferred first laparoscopic suturing (27 %), and laparoscopic resection (24 %) with colostomy. In a pathological colon, in mild peritonitis the preference is the open resection and anastomosis (40 %), followed by laparoscopic resection (31 %), while if the peritonitis is severe, they prefer open resection with colostomy(45 %) followed by laparoscopic resection (33 %).
Conclusion: In the future more and more defects will be repaired endoluminally. However, by the time surgery is recommended for large defects, poor preparation and difficult locations, although it is true that the choice of definitive treatment must be appropriate to the means available.
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Disclosure: No significant relationships.

P308

THE IMMUNOLIGIC ROLE OF PLATELETS IN SEVERELY INJURED TRAUMA PATIENTS

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Introduction: Severely injured trauma patients are at risk for developing infections. Recent studies have shown that platelets play an important role in inflammatory reactions. Platelets are a source of chemokines, cytokines and growth factors. Therefore we aimed to investigate the potential role of blood platelet numbers in the early diagnosis of infectious complications in severely injured trauma patients.
Material and methods: All adults with blunt splenic or hepatic injuries with an ISS >15, admitted to our level one traumacenter between 2007 and 2015 were included. We excluded patients who underwent a splenectomy for their splenic injury as it is known that splenectomy influences blood platelet numbers. We compared platelet and leukocyte counts over time between patients who had infectious complications and those who had an uncomplicated course.
Results: A total of 125 patients were included, of whom 47 patients were diagnosed with infectious complications. During the first week of observation patients who developed infection had significantly lower platelet counts after 7 days (283 vs. 209, p0.038). There were no differences observed in blood leukocyte numbers after one week of observation. The leucocyte count was only significant higher after 24-48 hours after admission in the infection group compared to the non-infectious patients (11.7 vs 9.8, p.0.030).
Conclusion: Infection in severely injured trauma patients is associated with lower platelet counts after one week of hospital stay. Platelets might therefore better predict infection than leukocytes in severe trauma. Furthermore, this observation contributes to the assumption that platelets are involved in the immunologic response to severe trauma.
References:
Disclosure: No significant relationships.

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OPERATIVE TREATMENT FOR SUPRACONDYLAR HUMERAL FRACTURES IN CHILDREN

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Introduction: Supracondylar fracture of the humerus is the most common elbow fracture in children. This fracture may lead to severe functional problems, and therefore, needs correct reduction.
Material and methods: 16 children (11 boys and 5 girls) with Supracondylar humeral fractures. They included 2 open fractures. The mean age was 7.8(4-13) years. 5 cases were Gaartland type II, 11 cases were Gaartland type III. The mean of waiting period until operation 0.3(0-2) days. minimum follow up period was 6 months, with no patients lost to follow up. We performed percutaneous pinning for all cases. The mean follow up period was 4.7(2∼8) months. Outcomes were assessed according to Baumann angle (BA), tilting angle (TA), carrying angle (CA),the Flynn's criteria.
Results: The elbow range of motion was 3°∼135.3°. The complications were 2 cases (ulnar nerve palsy). They finally recovered. Radiographical results were BA 19.1° (unaffected side 21.3°), TA 46.1°(unaffected side 46.8°), CA 10.3° (unaffected side 165°). According to the Flynn's criteria, the cosmetic results in 12 out of 16 patients were excellent, in 3 patients were good and one case was fair. Also, the functional results in 10 patients were excellent and in 5 patients were good and one case was poor.
Conclusion: All cases were almost satisfactory. We removed the wires 8 weeks after the operation in the case of poor functional that may have resulted from limitation of elbow range of motion. A long immobilization period may cause the contracture even in children.
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Disclosure: No significant relationships.

P310

OPERATIVE TREATMENT OF CERVICAL SPINE FRACTURES IN ANKYLOSING SPONDYLITIS (MORBUS BECHTEREW)

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Introduction: The specific problems in diagnosis and treatment strategy in patients with ankylosing spondylitis with cervical spine injury were discussed.
Material and methods: 26 patients suffering from ankylosing spondylitis were treated for cervical spine fractures between 1987 and 2015. The average age of the patients was 60.3 years (40 - 86). On admission 14 patients were neurologically intact, 2 patients presented with a radicular neurologic deficit (C V/C VI), 6 patients showed signs of incomplete paraplegia (C V, C VI) and 4 patient presented complete paraplegia. Three patients developed preoperative progressively neurological deficits. Radiographic examination revealed typical changes of the cervical spine with unstable dislocated fractures. Preoperative management included closed reduction of the fractures and temporary stabilization with Halo-jacket or stiff-collar. In 10 cases operative treatment was performed within the first 24 hours. 12 cases were operated within the first week after injury. In 3 cases operative treatment was performed six months after injury because of pseudarthrosis.
Results: The condition of the patients with intact preoperative neurological findings remained unchanged. The neurological status improved in 6 patients postoperatively.
Conclusion: The clinical outcome of patients with fractures in ankylosed spines, is considerably worse compared to the general trauma population. Bechterew-Patients with suspicious spinal injury should be fully checked up radiological with CT and MRI for spine

fracture even following minor trauma. Multisegmental fracture fixation in combination with cortico- cancellous bone grafting is important for the stabilization of cervical spine fractures in patients with Bechterew-Disease.
References:
Disclosure: No significant relationships.

P311

POSTOPERATIVE MORBIDITY AFTER CONSERVATIVE SURGERY IN LIVER ECHINOCOCCOSIS

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Introduction: Despite a high volume of medical literature regarding liver hydatidosis, the high level evidence coming from Randomized Controlled Trails is lacking. The aim of the current study is to describe the perioperative outcomes of cystic echinococcosis and to systematically review the literature about the subject.
Material and methods: Retrospective study of patients with hydatid disease admitted between Jan 2014 – July 2015 in a Emergency Hospital of Bucharest, a tertiary university affiliated center.
Results: Our 18 month data included 33 patients, 56 % female, 25 (75.8 %) from open group (OG) and 8 (24.2 %) from laparoscopic group (LG). We do not find any statistical significant difference between OG and LG regarding age (OG/LG = 45.6/30.8, P = 0.598), diameter of the cyst (OG/LG = 13.6/10.1, P = 0.246), in-hospital stay (OG/LG = 15.4/9.1, P = 0.106), in-hospital costs (OG/LG = 8558/8507, P = 0.598), intraoperative visualization of a biliary tract communication (P = 0.16), intrahepatic localization of the cyst (P = 0.578), postoperative morbidity according to Clavien-Dindo classification (P = 0.729) and postoperative biliary leakage (P = 0.701).
Conclusion: A minimally invasive non-radical approach for cystic echinococcosis is safe, with a relative contraindication for minimally invasive approach for central cysts, thick walled cysts, and recurrent disease.
References:
Disclosure: No significant relationships.

P312

SURGICAL MANAGEMENT OF SACRAL NON-UNION: DIFFICULTIES AND POSSIBLE SOLUTIONS

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Introduction: Surgical nonunion is a rare complication of vertically unstable sacral fractures. Patients present either after failed conservative treatment or as an overlooked injury in a polytrauma patient.
Material and methods: We report the surgical treatment of 7 patients with sacral non-union. Age ranged from 20 to 52 years. Six patients presented after failed conservative treatment and one after failed iliosacral screw fixation. Shortening (from 10 to 44 mm), pain and inability to walk were the presenting symptoms. Neurological complications were associated in 4 patients. The fracture was Denis type II in 6 patients and Denis type I in one. Open reduction was done in all cases. Bone resorption with significant bone gap was found in 6 patients, for which autogenous iliac bone graft was used to avoid sacral narrowing and sacral root compression. Osteopenia was reported in all cases. Posterior lumbopelvic fixation was done in 4 patients, sacral plating (small LCP) in one, ilio-iliac plate in addition to iliosacral fixation in two. Anterior pelvic ring release and stabilization was done in 4 patients.
Results: Six patients achieved fracture union after the index operation with healing time ranging from 16 to 20 weeks. One patient needed revision with re-fixation and bone grafting.
Conclusion: This is a report of surgical management of sacral non-union showing difficulties and possible solutions in dealing with these patients. Bone grafting as an exceptional indication was used and stable internal fixation was done using either lumbopelvic fixation in cases with significant vertical migration or direct sacral or iliosacral fixation in other cases.
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THE INITIAL CONSCIOUS SCORE IMPACT THE PROGNOSIS OF TRAUMATIC BRAIN INJURY IN PEDIATRICS

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Introduction: Traumatic brain injury (TBI) is a lethal trauma, which not merely impact the patient's life but also results in the neurologic sequela. Pediatric traumatic brain injury (PTBI) was considered to have better outcome than TBI in adults. Because of its rarity and lacking of follow-up, there is no definite answer of the prognosis of PTBI. In this study, we demonstrated the presentation and outcome of PTBI and analyzed the risks of dismal prognosis.
Material and methods: We conducted a prospective collection retrospective review in a Level I trauma center in Taiwan. This study enrolled all of the pediatric patients aged from 0 to 6 suffered from PTBI from Jan 2005 to Dec 2014. We retrieved and analyzed the patient demographic data, clinical presentation, injury mechanism, initial Glasgow Coma scale (GCS), injury severity score (ISS), management, the hospital stay, morbidity and mortality.

Results: The cohort consisted of 360 patients. Among them, 214 were boys and 146 were girls. The main causes of PTBI were fall (63.9 %), followed by abusive head trauma (19.4 %) and motor vehicle crash (16.7 %). Younger age and severe trauma mechanism were associated with higher rate of positive finding in computed tomography. Younger age, motor vehicle crash, abusive head trauma and initial lower GCS have higher risk to develop seizure. Furthermore, initial lower GCS is isolated predictor of neurologic dysfunction.
Conclusion: In conclusion, PTBI is a rare injury with a favorable prognosis. The mortality of PTBI was related to severe associated injuries. The initial lower GCS might be an indicator of long-term neurologic dysfunction.
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POLITICS & SOCIETY

P314

A NATIONAL SURVEY OF DEFENSIVE MEDICINE AMONG ORTHOPAEDIC SURGEONS, TRAUMA SURGEONS AND RADIOLOGISTS IN AUSTRIA: EVALUATION OF PREVALENCE AND COSTS

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Introduction: Defensive medical practice represents an increasing concern in European countries and is reported to account for rising healthcare expenditures. Malpractice liability, current jurisdiction and the increasing claim for accountability result in additional diagnostic requests with marginal clinical benefit. Investigations that evaluate prevalence and expenditures for the health care system in Austria are lacking so far.
Material and methods: Orthopaedic and trauma surgeons and radiologists from public hospitals in Austria were invited to complete a study questionnaire retrieving personal estimation of the quantity of defensive requests and patient contacts in a typical month, working time usage for defensive considerations and prior confrontations with malpractice liability claims. Analysis of expenses was based on the average national gross income for physicians and the average national reimbursement for the provided services.
Results: The prevalence of defensive medicine was found to be 97.7 % and 28 % of all diagnostic examinations are requested for defensive reasons with a correlation between defensive practice and prior confrontation with judicature. The treatment of high-risk patients tempts 81 % of doctors to request additional defensive investigations. Defensive procedures account for annual expenses of 421 million Euro. Labour costs for defensive practice amount to 42 million Euro per year representing the financial resources for 425 full-time employees. Compared to the total annual public expenditures on hospital-based medical care, the defensive share of expenses amount to 3.51 %.
Conclusion: Defensive medical practice represents a serious challenge in Austria. Our results indicate the urgent necessity for confrontation with and solution for the increasing effort of self-protection within the health care system.
References:
Disclosure: No significant relationships.

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EDUCATION IN TRAUMA - HAVE WE FOUND THE BEST WAY YET?

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Introduction: Trauma is recognised major cause of death for people under the age of 40 worldwide. Well equipped trauma centre and trained staff is therefore needed to provide the best possible care and improvement of outcome in patient following trauma.
Material and methods: Materials about educational pathway and trauma system has been collected for 15 countries in the world. The major focus was on length of training, exposure to procedures, courses and other factors.
Results: There are significant differences worldwide in education pathway for trauma. Some countries prefer more critical care involvement while others surgical or military. The level of exposure to critical care/surgery corresponds with trauma network in the same country.
Conclusion: Trauma education is very important for management of trauma/polytrauma patients. There should be huge focus on education in trauma pathway. The level of knowledge and experience usually corresponds well with the same country but there is not much relevance in between nations worldwide. The co-operation of countries in trauma care may therefore become problematic.
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Disclosure: No significant relationships.

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YEARS LIVED WITH DISABILITY DUE TO EXTREMITIES' INJURIES AMONG HOSPITALIZED ROAD TRAFFIC ACCIDENT VICTIMS IN KASHAN, CENTER OF IRAN

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Introduction: Apart from the burden that road traffic injuries impose to society in terms of death, between 20 and 50 million suffer non-fatal injuries annually, mostly causing disability. This study tries to shed new light on the disability aspect of RTIs by applying YLD described by the World Health Organization (WHO).
Material and methods: All RTIs victims with extremities injuries leading to hospitalization from March 2012 to March 2013, registered in Trauma Research Center of Kashan University of Medical Sciences were included in our study. International Classification of Diseases and Causes of Death (ICD 10) codes for orthopedic traffic injury admissions were used for data analysis. Global Burden of disease (GBD) incidence based method was used to calculate Years lived with disability (YLD).
Results: During the study period 995[842 male (84.6 %), male/female sex ratio of 5.5:1] had extremities injuries based on the corresponded codes and enrolled the study. The mean age of casualties was 32.7 ± 17.9 years [31.8 ± 17.3 for males and 37.5 ± 20.2 for females ($P < 0.001$)]. Total calculated YLD for men and women were 1224 and 212 respectively. Approximately 50 % of total calculated YLDs in our study were due to fracture of knee and lower leg. Minimum YLD in men and women were calculated for upper arm (0.7 % of total calculated YLD) and Clavicle (1.8 % of total calculated YLD) respectively.
Conclusion: It can be concluded that the RTIs related disabilities is high in our region and should be considered as a major public health problem, notable for authorities, policy makers and strategic planners.
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Disclosure: No significant relationships.

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QUALITY OF LIFE ANALYSIS AFTER A MAJOR TRAUMA INJURY

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Introduction: In Spain, for every road accident dead there are at least 6 major injured patients and 68 minor injured patients[1–3]. In order to evaluate and improve our trauma care we must know the quality of life outcomes after major trauma.
Material and methods: A prospective cohort study was conducted in which all major trauma patients admitted to the intensive care unit were included. Follow-up assessments were performed at discharge, and after 3, 6 and 12 months. Sociodemographic data was obtained and the EQ-5D-5L[4] questionnaire was used in all the assessments.
Results: The overall response rate was 66 %, 200 patients included: men 72,5 %, mean age 47,8 ± 19,9, mean ISS 15,2 ± 7,9, blunt injury 91,5 %. The overall population EQ-5D-5L (mean) health status score at 12 months was 70,7 (EQ-5D-5L Spanish general population norm: 78,0). Age, female gender, previous disability and low education level were all significant predictors of worst health status at 12 months. Female gender was the strongest predictor of worst health status. Initially the lowest rated dimension was *Usual activities,* however at 12 months the lowest rated dimension was *Pain/Discomfort.* After 12 months 64 % had not yet returned to work, only < 4 % had a working incapacity recognized. After 12 months 42 % referred a moderate to high disability, 9 % had a disability payment.
Conclusion: After 12 months, quality of life of severely injured patients improved but did not return to general population norm. After 12 months, Pain/discomfort was the worst rated dimension; efforts should be done to prevent chronic pain in survivors of major trauma.
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Disclosure: No significant relationships.

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GLOBAL DISPARITIES IN INJURY OUTCOMES

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Introduction: Injury is a global problem but the approach to injury prevention and care varies greatly between countries. US surgical leadership has propagated training and implementation of trauma systems with the goal of setting standards for injury care throughout the world. However, information on global disparities in injury outcomes is sparse. The ultimate aim of this research is to document the benefits of surgical leadership against the global burden of injury. The objectives of this preliminary study were to compare road traffic accident (RTA) mortality rates across high-income countries and identify determinants of observed variations.
Material and methods: Data were extracted from the WHO website and other sources for 34 OECD countries (2010). Associations between mortality rates and determinants were described with Spearman correlation coefficients.
Results: The countries with the highest RTA mortality rate were Korea (14.1 per 100,000), Greece (12.2), and Portugal (11.8). Those with the lowest mortality were Iceland (2.8), Sweden (3.0), and the UK (3.7). Increasing GNI per capita ($r = -0.68$), per capita health expenditure ($r = -0.63$), physicians per habitant (−0.39), speed limit enforcement ($r = -0.36$), and helmet law enforcement ($r = -0.39$) were all associated with a decrease in RTA mortality.
Conclusion: A significant variation in RTA mortality exists, even among high-income countries. Health care investment and legislation enforcement have a positive influence on RTA mortality. This study represents a first step towards evaluating global disparities in injury outcomes with the goal decreasing the burden of injury worldwide. The next step will be to evaluate the influence of trauma system education and implementation.

References:
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AUDIT OF QUALITY OF DISCHARGE LETTERS FROM THE MAJOR TRAUMA WARD

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Introduction: Discharge letters inform general practitioners about inpatient hospitals stays for patients in their care. They are a valuable source of information to ensure continuity of care. The Major trauma ward (MTW) in Aintree hospital has previously performed poorly with discharge letters. AIM: Compare quality of discharge letters from MTW with national standards for trauma.
Material and methods: List of discharges from MTW for April and May 2015 were analysed retrospectively for quality of discharge letters based on 5 parameters. Information was compared with information on handover sheets and scans results. Interventions were put in place to improve the discharge letters in the form of 1. A meeting with the ward doctors, 2. Poster on the MTW, 3. E-discharge guide.
Results: Pre-intervention there were 59 eligible patients and 40 eligible patients post intervention. 100 % had a discharge letter post intervention compared with 96.6 % before; List of injuries: 82.5 % post-intervention, 61 % pre-intervention; full list of operations: 57.5 % post-intervention, 45.8 % pre-intervention, Instructions for next stage of rehabilitation: 62.5 % post-intervention, 49.2 % pre-intervention and follow up information: 87.5 % post-intervention, 81.4 % pre-intervention.
Conclusion: Informing the ward doctors and leaving visual clues has improved the quality of discharge letters on the MTW and brought them closer to national standards.
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CURRENT STATE OF TRAUMA CARE SYSTEM IN SHANGHAI

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Introduction: To investigate the patterns of trauma care in Shanghai.
Material and methods: Data was from a retrospective questionnaires in 14 hospitals (1evel >II) from the downtown, nearby area and suburb of Shanghai. Materials of different modes of emergency cure for the trauma in hospital were gathered from Jan, 2012 to Dec, 2014.
Results: There are two modes of trauma care in Shanghai. The first one is emergency trauma center, the other one is the emergency department first-diagnosis system. The first one is better than the second one in equipment, trauma score and trauma professional team. Low proportion of using of trauma database was a severe problem in the two modes.
Conclusion: Trauma care systems develop unbalance in Shanghai. The pattern of emergency trauma center is superior to traditional one. To improve trauma physician training and establish trauma database in the city level is a matter of great urgency.
References:
Disclosure: No significant relationships.

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