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Lower Limb Surface Pressures Generated By Different Types of Immobilization Casts	
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OBJECTIVES	This study aimed to address whether different types of complete and split lower limb casts made of plaster of Paris (POP) and fiberglass generate differences in subjective pain and higher surface contact pressures, and ultimately the risk of compartment syndrome, compared to backslabs.
METHODS	Increased swelling within casts was modelled by a closed water system attached to an expandable bag placed under different types of casts applied to a healthy leg (complete fiberglass and POP casts, split casts and backslabs). Saline aliquots were injected into the system and the surface cast pressures were measured. Pain was evaluated using the Visual Analogue Score.
RESULTS	Complete fiberglass casts generated significantly higher surface pressures than complete POP casts or backslabs ($p=0.018$) and the highest pain levels above pressures of 75mmHg ($p=0.001$). There was no difference in pain generated by complete POP and backslabs at pressures of 200mmHg and lower. Surface pressures were significantly reduced when these casts were split ($p=0.003$). Split POP and fiberglass casts produced the lowest cast surface pressures, even compared to backslabs ($p=0.009$). Splitting the fiberglass casts significantly reduced pain levels ($p=0.001$). However, splitting a complete POP cast did not reduce pain at pressures between 25–150mmHg.
CONCLUSIONS	Fiberglass casts generated significantly higher surface pressures than POP. Splitting the casts resulted in lower surface contact pressures than backslabs and significantly alleviated pain. Fiberglass casts produced the greatest pain. Judicious use of both complete casts, particularly fiberglass and backslabs is advisable for lower limb injuries with a risk of swelling and compartment syndrome.

Outcomes and Survival of Reverse Total Shoulder Replacement for Fractures of the Proximal Humerus	
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ABSTRACT TITLE	Reverse Total Shoulder Replacement for Proximal Humerus Fractures
OBJECTIVES	To report survivorship and outcomes of reverse total shoulder replacement when used to treat fractures of the proximal humerus at a level one trauma centre.
METHODS	According to our joint registry 24 patients received a reverse total shoulder replacement over a three-year period, of which 13 were eligible for our study. Each case analysed to assess patient characteristics, injury pattern and outcomes. We performed a retrospective case note review, peri-operative radiological assessment and Oxford Shoulder Scores (OSS). Implant failure and survival also analysed.
RESULTS	13 primary Arthroplasty procedures were carried out in 13 patients, of which 9 were in females, mean age 74.6 years (42-86) and 92.3% classified as fragility fractures. The mean time from injury to surgery was 13.9 weeks. Often patients failed conservative management due to pain or poor function. There were no intra-operative complications. During mean follow-up of 34 weeks (range 12 to 68) we report no dislocations or revisions. In fact only 1 patient had complications, which was a urinary tract infection. At follow-up mean oxford shoulders scores were 40 at a mean of 48.5 weeks.
CONCLUSIONS	Our findings support the use of reverse total shoulder replacement in treatment of proximal humerus fractures, with a low complication and revision rate. Delaying surgery to trial conservative management did not impair outcomes or survival.

Junior Doctor Hand Examination – Is it good enough?	
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OBJECTIVES	<ol style="list-style-type: none"> 1. To assess the adequacy of junior doctor hand examination 2. To assess whether further junior doctor training and education is required regarding hand examination
METHODS	<p>Anonymous survey assessing hand examination was completed by all Senior House Officer grade doctors working in Trauma and Orthopaedics or Accident and Emergency at a District General Hospital. This population group was selected given their “front-line” exposure to hand injuries.</p> <p>The survey covered examination of:</p> <ul style="list-style-type: none"> Flexor tendons Extensor tendons Nerves of the hand (motor and sensory) Vascular status of the hand <p>A blinded Registrar then marked the survey against answers pre-agreed with a Consultant hand surgeon.</p>
RESULTS	<p>16 junior doctors completed the survey.</p> <p>Tendons: 50% were able to accurately examine extensor digitorum, 31.3% extensor pollicis longus, 31.3% flexor digitorum profundus and 25% flexor digitorum superficialis.</p> <p>Nerves – Motor: 37.5% were able to accurately examine the radial nerve, 18.7% the ulnar nerve, 6.3% the median nerve and 0% the anterior interosseous nerve.</p> <p>Nerves – Sensory. 56.3% were able to accurately examine the radial nerve, 62.5% the ulnar nerve, 68.8% the median nerve and 18.8% digital nerves.</p> <p>Vascular: 31.3% could describe >3 methods of assessing vascularity</p>
CONCLUSIONS	<p>All aspects of clinical hand examination were poorly executed at SHO level in this survey. Given on-call responsibilities this pragmatic survey highlights that SHO's are being failed regarding hand examination training and needs addressing for accurate assessment and patient safety. Recommendations include dedicated hand examination teaching early in Orthopaedic/A&E placements and introduction of a Hand Trauma Examination Proforma for reference.</p>

Epidemic of fractures during a period of snow and ice – Has anything changed 33 years on?	
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PRESENTER	Waheeb Al Azzani
OBJECTIVES	We reproduced a frequently cited study performed at our University Hospital that was published in the British Medical Journal in 1981 assessing the extent of "snow and ice" fractures during the winter period.
METHODS	As per the original study, four days of snow and ice were identified as well as two control periods when snow and ice wasn't recorded; four days within the same year, with a similar amount of sunshine hours, and four days one calendar year later. The distribution of fractures according to age and sex in addition to the anatomical location were examined in relation to the presence of snow and ice as well as comparisons with the index study 33 years ago.
RESULTS	A total of 293 patients with fractures were identified. Whilst the relative risk was not of the magnitude 33 years ago, we found a significant overall increase in fractures on snow and ice days (>40%) in the age groups over 30 years old compared with both control periods (P>0.05). In addition, and consistent with the study 33 years ago, there was more than twice the number of forearm and wrist fractures than during the control periods. Conclusion
CONCLUSIONS	A significant increase and similar distribution of fractures in relation to the presence of snow and ice continue to be identified. This appears to be despite preventative recommendations made 33 years ago.

Complex elbow fracture-dislocations: learning from failure	
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PRESENTER	Onur Berber
OBJECTIVES	The aim was to review the management of complex elbow fracture-dislocations, especially investigating aetiology of failed treatment.
METHODS	Operative logbooks were searched for complex elbow injuries between 2004-2013. Early surgery (≤ 2 weeks) was compared to late (> 2 weeks). Patients with failed primary surgery were compared to patients with single definitive surgery. Outcomes were measured using the Mayo Elbow Performance score (MEPS).
RESULTS	34 cases were identified with an average age of 37 years. Mechanism of injury was high energy in 28 and low in 6 cases. Average follow-up was 16 months (Range: 3-120m). We identified four separate patterns of fracture-dislocation including the classical "terrible-triad" (n=14), an "ulnohumeral" group (n=10), a "condylar group" (n=6) and a "combined" group (n=4). Patients whose surgery was delayed beyond 2 weeks had a worse outcome (MEPS early 90.0 vs late 80.8; p=0.1675). Patients whose initial operation had failed requiring revision surgery had a significantly worse outcome (MEPS single surgery 90.0 vs failed surgery 80.0; p=0.031). Failure to address the soft tissue injury component was the most common reason for failure. Fracture groups were also analysed individually and the condylar group had the best outcome (MEPS: condylar-96; terrible triad-92.3; combined-90.0; ulnohumeral-78). A conversion to a total elbow replacement occurred in 3 patients (Average time 364 days post-injury).
CONCLUSIONS	Complex elbow injury management can be improved with early and single definitive surgery including adequate soft tissue assessment and repair. A treatment algorithm has been created from the lessons learnt in this study to guide management.

	'ROCK, PAPER, SCISSORS, OK': INTRODUCTION OF A SIMPLE GUIDELINE TO IMPROVE NEUROLOGICAL ASSESSMENT IN PAEDIATRIC PATIENTS PRESENTING WITH UPPER LIMB FRACTURES
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PRESENTER	Andrew G. Marsh

OBJECTIVES	We aimed to assess whether the quality of documented neurological examination in children presenting with upper limb fractures could be improved following introduction of a simple guideline for paediatric neurological assessment.
METHODS	We reviewed the clinical notes of all children presenting to the emergency department with upper limb fractures over a three month period. Documentation of initial neurological assessment and clinical suspicion of any nerve injury were noted. Subsequently, we introduced a guideline for paediatric upper limb neurological examination ('Rock, Paper, Scissors, OK') to our own hospital and performed a further 3 month clinical review to detect any resulting change in practice.
RESULTS	In the initial study period, 121 patients presented with upper limb fractures. 10 children (8%) had a nerve injury. Neurological examination was documented in 107 (88%) of patients, however, none of the nerve injuries were detected on initial assessment. In patients with nerve injuries, 5 (50%) were documented as being 'neurovascularly intact' and 2 (20%) had no documented examination. Following introduction of the guideline, 97 patients presented with upper limb fractures of which 8 children (8%) had a nerve injury. Documentation of neurological examination increased to 98% for patients presenting directly to our own hospital (p=0.02). Within this cohort all nerve injuries with objective motor or sensory deficits were detected on initial examination.
CONCLUSIONS	Our study shows that introduction of a simple guideline for neurological examination in children with upper limb fractures can significantly improve the quality of documented neurological assessment and also improve nerve injury detection.

Outcome of Pyrocarbon Arthroplasty for Post Traumatic Arthritis of Proximal Interphalangeal Joint	
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OBJECTIVES	To evaluate the clinical and radiological outcome of patients who underwent Pyrolytic carbon proximal interphalangeal joint (PIPJ) replacement for post-traumatic arthritis.
METHODS	Five PIPJ Pyrocarbon replacements in 5 patients (3 female and 2 male, average age 40) were performed, with an average follow-up period of 3.5 years, in patients who had sustained intra articular PIPJ fractures and developed post traumatic arthritis at a minimum of one year after the injury. The clinical outcome was assessed by range of motion (ROM), DASH, Likert and visual analogue pain score (VAS). Subsidence and migration was assessed radiologically.
RESULTS	VAS significantly improved from pre (Avg 8) to post op status (Avg 3) ($p < 0.05$). There was no statistically significant change in range of movement postoperatively ($p = 0.45$). However DASH and Likert score did not show any statistically significant improvement. Only 40% of patients had improved quality of life at the final follow-up. None recommended the procedure. Average subsidence was 0.5mm for the entire cohort with no cases of radiological loosening. One case underwent revision and amputation for persistent stiffness. Two cases underwent fusion for persistent pain and stiffness. There were no cases of deep infection.
CONCLUSIONS	Outcomes in all patients who underwent PIPJ Pyrocarbon replacement for posttraumatic arthritis were disappointing. Although there was significant pain relief, ROM was unchanged, patients did not experience improved quality of life, and none recommended the procedure. Hence, we no longer use and do not recommend Pyrocarbon PIPJ replacement in posttraumatic cases.

Venous Thromboembolism Prevention for Patients Immobilised in Lower Limb Casts: Development of a New Risk Assessment Tool	
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OBJECTIVES	<p>There is increasing concern about the risk of venous thromboembolism (VTE) in trauma patients immobilised in lower limb casts. Recently published national guidelines have recommended routine chemical prophylaxis but this may result in over treatment of low risk patients.</p> <p>The aims of this study were to develop and audit a risk assessment tool for trauma patients immobilized in lower limb casts in the out patient setting.</p>
METHODS	<p>We developed a VTE risk assessment tool based on our experience with in-patient prophylaxis. Patients were scored on specific criteria including age, body mass index, mobility, hormonal risk, medical risk and trauma risk. Only high risk patients were prescribed extended chemical prophylaxis for the duration of the cast immobilization.</p> <p>Audit of the risk assessment tool was subsequently performed to assess its effectiveness in preventing VTE. Patients with lower limb injuries, immobilized in lower limb casts over a three month period were identified and case notes were analyzed.</p>
RESULTS	<p>The most common injuries responsible for lower limb immobilization were ankle and metatarsal fractures, accounting for 52% and 40% of cases respectively. Of the patients immobilized, 72% were risk assessed for VTE. Only 26% of patients however, were prescribed prophylaxis in the form of low molecular weight heparin injections. Low risk patients were advised hydration and mobilization only.</p> <p>There were no recorded cases of deep vein thrombosis or pulmonary embolism in the audit and no serious complications related to prophylactic therapy.</p>
CONCLUSIONS	<p>The VTE risk assessment tool rationalizes the need and use of prophylaxis by robustly targeting high risk patient, therefore avoiding needless anticoagulation in low risk patients, whilst ensuring risks are routinely discussed with all trauma patients.</p> <p>Further improvements include ensuring all trauma patients are risk assessed as well as root cause analysis of all VTE cases to monitor the effectiveness of the process in future.</p>

Mortality Review of Trauma Patients at a Major Trauma Centre: Are Elderly Patients at Increased Risk?	
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OBJECTIVES	Trauma networks and major trauma centres were recently introduced in the United Kingdom in an attempt to improve outcomes of seriously injured trauma patients. This re-organisation followed criticism of trauma outcomes in the United Kingdom compared to other developed countries. Trauma centres and networks have been demonstrated to improve mortality and morbidity associated with trauma. The purpose of this study was to perform a mortality review at a major trauma centre to assess the quality of trauma care since the introduction trauma networks.
METHODS	The major trauma database at our institution was reviewed to identify all mortality cases of major trauma patients since the trust was designated a major trauma centre in April 2012. Patient case notes were then reviewed and analysed according to the findings of the NCEPOD report on trauma in 2007. Specific aspects of care investigated included: pre-hospital care, emergency care, surgical care, intensive care, specialty care and cause of death.
RESULTS	There were 39 mortality cases identified in the trauma database of which 14 appropriate trauma cases could be obtained. Three of these were severely injured patients and the remainder had milder injuries. Patients with less severe injuries were older and had more comorbidities. The most frequent injury in this cohort was head injury with subsequent intracranial haemorrhage. Patients with severe injuries were always assessed by hospital trauma team led by an emergency department consultant. Patients with mild injuries were usually associated by a junior doctor in the emergency department in isolation. Over half of these patients were not reviewed by a hospital consultant within 12 hours of admission with further delays in obtaining essential imaging.
CONCLUSIONS	This mortality review of trauma patients at a major trauma centre has demonstrated that there are two clear cohorts of trauma patients. One cohort consists of young patients with severe injuries, who receive maximal trauma services. The other cohort consists of elderly, frail patients with low energy injuries who are assessed by junior doctors with frequent delays in management and investigation. The review demonstrates significant improvements in management of severely injured patients since the introduction of major trauma status to our trust but further improvement remain to be made, particularly in the less severely injured elderly patient cohort.

	FROM CAPE TOWN TO CAMBRIDGE: ORTHOPAEDIC TRAUMA ON TWO CONTINENTS
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PRESENTER	John Lawrence
OBJECTIVES	To compare the trauma experience gained at a UK major trauma centre and a secondary level hospital in South Africa.
METHODS	A profile of inpatient trauma cases during five week periods in Addenbrooke's Hospital, Cambridge and Somerset Hospital, Cape Town was created. This was achieved by recording various parameters for each patient admitted including age, gender, injury, mechanism of injury and postal/area code. This, together with details of the departments themselves, allows a comparison of the amount and variety of orthopaedic trauma cases experienced by an individual trainee.
RESULTS	The trauma profiles differed significantly. Patients at Somerset were younger and more likely to be male. In the young, injury in Cape Town was more likely to occur due to assault or being struck by a vehicle, whilst patients in Cambridge were more likely to be injured whilst in a vehicle or in high energy falls. In older patients, trauma at both centres was almost exclusively due to mechanical falls. In a given age group, injuries at the two centres were similar, however the majority of patients admitted to Addenbrooke's were elderly, resulting in less variation in the overall injury profile. The geographical distributions of patients admitted to the centres were comparable.
CONCLUSIONS	The trauma profile in a major trauma centre in the UK is less varied than a South African secondary centre, with significantly fewer cases per surgeon. This suggests a more varied training experience in the developing world with a greater caseload.

RESULTS OF SURGILIG STABILISATION IN THE MANAGEMENT OF ACROMIOCLAVICULAR JOINT DISRUPTION	
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OBJECTIVES	The aim of this study was to review outcomes in patients with symptomatic acromio-clavicular joint (ACJ) injuries (Rockwood Classification Type 2, 3, 4, 5) managed with ACJ reconstruction using Surgilig
METHODS	A retrospective audit of 39 patients who underwent ACJ reconstruction using Surgilig over 5 years was performed on prospectively collected data. 10 were lost to follow up. Patients were followed up clinically and radiologically. Outcome was assessed by use of the Oxford Shoulder Score (OSS), Nottingham Clavicle Score (NCS) and patient satisfaction
RESULTS	29 patients underwent 30 procedures using Surgilig (1 bilateral). 25 were male and 4 female with a mean age of 41.1 years (range 18-66). The type 3 ACJ injuries were most common (19) followed by type 4 (8) type 5 (2), and type 2 (1). Average follow up was 26 months (10-49) with median OSS of 43.2 (range 22-48), median NCS of 84.4 (range 46-100) and mean patient satisfaction of 7.8 (range 1-10). 1 case required revision for persisting instability
CONCLUSIONS	This is the largest study reporting mid-term results of patients undergoing ACJ reconstruction using the Surgilig technique assessed using a validated clavicle score (NCS) from an independent centre. A high level of patient satisfaction and functional outcome, with few complications confirms Surgilig as a successful treatment for patients with symptomatic ACJ injuries

Does the low energy polytrauma, a predictor for blood transfusion in elderly patient? A case control study.	
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OBJECTIVES	The aim of our study was to assess the increased need for blood transfusion in postoperative management of elderly patients with multiple fragility fractures, comparison to isolated hip fractures.
METHODS	In our study, 26 patients (Group A) who had multiple fragility fractures along with hip fractures, treated operatively from 2011 to 2013 were included. The need for blood transfusion was assessed and compared with age and sex matched patients (Group B – 26 patients) with isolated hip fracture, treated surgically during the same period. The fall in blood haemoglobin postoperatively was assessed. The number of patients needed blood transfusion and the outcome was compared among the groups.
RESULTS	The post – operative drop in the blood haemoglobin was 2.0g/l (mean) in Group B compared to 3.2g/l in Group A. Nine patient in Group B needed postoperative blood transfusion compared to 15 patients in Group A. Relative risk of 2.56 for multiple fragility fracture patients to have blood transfusion. The mortality rate within 1 month for Group A is lower than Group B
CONCLUSIONS	The elderly patients with multiple fragility fractures need blood transfusion more often than patients with isolated fracture but the outcome is better with blood transfused patients.

The Epidemiology of Orthopaedic Civilian Trauma in Northern Afghanistan	
MAIN AUTHOR	Juan de Dios Robinson John Radcliffe Hospital
PRESENTER	Juan de Dios Robinson
OBJECTIVES	To elicit the causes of civilian orthopaedic trauma in a low resource conflict area
METHODS	A prospective database was maintained by the operating orthopaedic trauma surgeon at the MSF Trauma Centre in Kunduz, Northern Afghanistan. All patient episodes and surgical interventions recorded between November 2011 and April 2012 were analysed.
RESULTS	233 patients were analysed during the study period. There were 203 patients managed for fractures (87%) of which 82% were male and 18% female. 37% of fractures managed were open fractures, including open femora (19% of femoral fractures) and open tibia fractures (72.5% of tibial fractures). 36% of injuries affected the upper limb and 59% involved the lower limb. There were 8 amputations (3.4%). The mechanism of injury included blasts 2.6%, firearms 7%, Axes 2%, falls 25%, traffic related 35%, Industrial and work related accidents 5%, and other causes including dog bites, sports, natural disasters, traditional bone setters and malnutrition related 9%. Common presentations included delayed presentation of paediatric supracondylar fractures, long bone mal unions and non unions, and gangrenous limbs secondary to traditional healing practices. Despite the austere conditions, the rate of infection was 1%. There was one fasciotomy of a patient with a tibia/fibula fracture for suspected compartment syndrome. Complex orthopaedic trauma examples included late presentation acetabular fractures with hip dislocation, Lisfranc fracture dislocations, pathological fractures secondary to malnutrition and highly comminuted fractures from blast and firearm injuries among others.
CONCLUSIONS	Defining the epidemiology of civilian orthopaedic trauma is an essential first step in planning prevention and response programs, as well as in the rational procurement of facilities and equipment necessary for the care of the orthopaedic patient. All trauma studies in Afghanistan have focused on armed services personnel. This review represents the first attempt at documenting the epidemiology of civilian orthopaedic trauma in Northern Afghanistan

Bisphosphonate Associated Periprosthetic Fractures	
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PRESENTER	Juan de Dios Robinson

OBJECTIVES	To define the characteristics of periprosthetic fractures in patients on long term bisphosphonate treatment. Methods of treatment and management are discussed.
METHODS	Retrospective review of patients presenting with femoral fractures to five centres in Canada and the USA. Hospital records from January 1st 1999 to March 1, 2012 were reviewed. Patients with a periprosthetic femoral fracture and a history of bisphosphonate (BAPPF) use were included. Patients with a history of metastasis, less than six months follow up, open fractures and patients under the age of 18 were excluded. Data was recorded including age, gender, BMI, prior history of fracture, prodromal pain, history of co-morbidities, frequent falls, dementia, pre-injury function, and history of smoking. Detailed medical records including bisphosphonate use, route of administration, other medications such as steroids, was made.
RESULTS	<p>The study included 193 patients. 175 patients with atypical fractures and 18 patients on bisphosphonates with periprosthetic fractures. The mean age of the atypical femoral fracture (AFF) was 73 whilst the periprosthetic fracture group on bisphosphonates was 80. The gender ratio was similar. The BMI of the AFF group was higher in average. The AFF group had a higher incidence of history of fragility fracture (18% vs 10%).</p> <p>There was a higher incidence of transverse lucencies in the AFF group. However, up to 80% of the fractures in the PP group were either oblique or transverse. Time to radiographic union in the AFF group was 5 months, while in the PP group was 8 months. Bone Scans are an effective early test to detect this stress induced fracture. Complications were similar in both groups. However, mortality was higher in the BAPPF group (9% vs 2%).</p>
CONCLUSIONS	Patients with periprosthetic fractures on long term bisphosphonates share the same characteristics as patients who present with atypical femoral fractures. Locked plates plus a cortical strut graft and allograft provides the best fixation in this slow healing fracture. This is the largest series of periprosthetic fractures in patients on bisphosphonates reported to date.

Predicting Mortality in Neck of Femur Fracture patients in a District General Hospital – Is the Nottingham Hip Fracture Score relevant?	
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OBJECTIVES	<p>The aim of this study was to assess if it is possible to predict 30 day mortality in patients admitted with neck of femur fractures to the Wrexham Maelor Hospital, a district general hospital in North Wales. This aim was pursued through the following objectives;</p> <ol style="list-style-type: none"> 1. Calculate the predicted mortality of patients with neck of femur fractures utilising the Nottingham Hip Fracture score. 2. Compare actual mortality at 30 days with the mortality predicted by the Nottingham Hip Fracture Score. 3. Assess whether the accuracy of the predictions made by the NHFS varies according to patient age group. 4. Assess whether the accuracy of the predictions made by the NHFS varies according to gender.
METHODS	<p>The study used Health Service Review methodology. Data was recorded prospectively. On admission, the patients were clerked as normal. All Information from the NHFS form was entered into a spreadsheet using Excel (Appendix 3). A record was made of date of age, sex, date of fracture, date of admission, date of surgery, co-morbidities, haemoglobin level, whether or not living at an institution, history of malignancy, mental state test score, NHFS score and deceased or alive as well as days to death from fracture.</p> <p>The main outcome measure was the mortality rate (%) at 30 days post fracture. The secondary outcome measure was mortality up to one year post fracture. Statistical methods used include Kaplan–Meier survival analysis, mortality rates with corresponding 95% confidence intervals (overall and separately for male and female patients and for patients in different age groups) and descriptive statistics, including numbers and percent of cases, means, standard deviations, medians and ranges, where appropriate, to summarise factors such as the patients' age, sex, and risk levels as per the NHFS. A NHFS score of 5 was selected to divide the cohort into high risk and lower risk patients, as has been used previously (Wiles et al, 2011). Statistical significance was measured at the conventional 5% level. The data were analysed using Microsoft Excel version and the statistical package SPSS 20</p>
RESULTS	<p>The study was conducted for a total of 12 months from October 1st 2009 to September 30th 2010. 238 patients were included. One patient had two hip fractures. The cohort included 162 female patients (68%) and 76 male patients (32%). Mortality at 30 days was strongly linked to the patients' age: most of the 23 deaths occurred patients aged 85+ years, all but one of whom were classified as high risk using the NHFS (Table 4). Mortality at 30 days was significantly higher.</p>
CONCLUSIONS	<p>The Nottingham Hip Fracture Score appears to be quite a useful tool to predict a patient specific risk of 30 day mortality in neck of femur fracture patients in the context of the Wrexham Maelor hospital, a district general hospital in North Wales. The score was most useful in predicting 30 day mortality in the males.</p>

	Healing time and Complications in Operatively Treated Atypical Femur Fractures associated with Bisphosphonate use: A multicentre series
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CO AUTHORS	Multicentre study in USA and Canada
PRESENTER	Juan de Dios Robinson
OBJECTIVES	To characterize the demographics, rate of union, healing time and complications of operatively treated atypical bisphosphonate femur fractures.
METHODS	All bisphosphonate related fractures as defined by the ASBMR task force document from 15 centers were reviewed in detail. Inclusion; bisphosphonates for at least 12 months, fractures operatively treated, 6 months follow up minimum or to union/revision. Data collected included demographics, medication history, prodromal history, injury and surgery characteristics, complications, revision surgery, and time to union.
RESULTS	196 patients, 178 women/18 men, average age 73 (32-96) and average BMI 27.5. 34% had prodromal pain in the extremity. Patients averaged 79 (12-192) months of bisphosphonate use prior to injury and 51% of patients discontinued bisphosphonates at the time of surgery. Twenty-seven percent had radiographic changes suggesting stress reaction prior to injury. There were 23 complications. The average union time was 5.2 months. Twenty-two percent of patients took >6 months to heal. For the patients who had revision surgery, union occurred at an average of 10 months after secondary intervention, although 5 were lost to follow up. Continuation or discontinuation of bisphosphonates did not have an effect on time to union ($P = .85$) or the need for revision surgery ($P = .51$). After fracture fixation patients achieved full ambulation at an average of 4 months, and 92% were living in their homes at the time of final follow up (25% with help). Nine percent had a non-femur fragility fracture during follow up. Twenty percent of patients sustained a contralateral femur fracture, 23 months on average after their index procedure; 45% of these had discontinued bisphosphonate treatment at the time of their index procedure.
CONCLUSIONS	Atypical bisphosphonate femur fractures occurred primarily in an independently living and ambulatory population. This patient population is distinctly different than osteoporotic hip fracture patients.

Oral thromboprophylaxis for ankle fracture in ambulatory trauma patients managed non operatively in plaster cast	
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OBJECTIVES	<p>Lower limb immobilisation accounts for 1.5 to 3% of all VTE events in United Kingdom. Depending on the patient's profile and type of immobilisation the incidence of DVT inpatients with lower limb immobilisation ranges between 5 to 39 %. When compared to an annual VTE incidence of 0.12-0.18% in a normal undifferentiated population, these figures serve as a stark reminder of risk.</p> <p>Thromboprophylaxis in ambulatory trauma patients with lower limb immobilisation is still a debatable subject. Most of current literatures as well as NICE and SIGN guidelines thromboprophylaxis with injectable LMWH for these patients.</p> <p>Oral anticoagulants have been used as thromboprophylactic agents in hip and knee arthroplasty where the risk of VTE is similar if not higher to plaster associated thrombosis. There are studies which suggest that these oral anticoagulants are as efficacious as LMWH in reducing the incidence of VTE in hip and knee arthroplasty. However there is not enough literature supporting their use as thromboprophylactic agent in ambulatory trauma patients with lower limb injury managed non operatively as out patients.</p>
METHODS	<p>This is a retrospective study in which a total of 200 consecutive patients who presented to the fracture clinic with ankle fracture which was managed non operatively in plaster cast were included in this study</p>
RESULTS	<p>Only one case of plaster associated isolated distal deep vein thrombosis was reported in this patient subgroup. There was no incidence of proximal deep vein thrombosis or pulmonary embolism. No significant bleeding event was reported.</p>
CONCLUSIONS	<p>Majority of ankle fractures are stable and can be treated without an operation, most commonly with cast immobilisation. These patients are usually managed as out patients with regular visits to fracture clinic. Depending on the fracture pattern and local guidelines they mobilise either full weight bearing (FWB) or non-weight bearing (NWB).</p> <p>Although there is debate regarding incidence rate, most of the studies suggest an increase incidence of DVT among patients with lower limb casts immobilisation. Vast majority of guidelines suggest giving injectable LMWH.</p> <p>Injectable LMWH therapy has certain inherent problem. First of all as this is an injection it is painful. It causes significant temporary bruising at injectable site which is both unsightly and tender. There are some patients who cannot self-administer and hence it has to be given by health care professionals which increase the cost of therapy. All these factors can lead to poor compliance for the therapy.</p> <p>This study shows that oral anticoagulants are good and safe alternative to injectable LMWH as a thromboprophylactic agent for ambulatory trauma patients requiring temporary lower limb immobilisation for management of ankle fracture.</p>

TOTAL HIP REPLACEMENT FOR THE MANAGEMENT OF COMBINED INTRACAPSULAR AND EXTRACAPSULAR FRACTURE OF NECK OF FEMUR.	
MAIN AUTHOR	Rhodri Williams University Hospital Wales
CO AUTHORS	Sanjeev Agarwal
PRESENTER	Rhodri Williams
OBJECTIVES	Concomitant ipsilateral intracapsular and extracapsular fractures of the femoral neck are rare injuries. The sixteen cases reported in the literature have been managed in a heterogeneous fashion. Dynamic hip screw was the most common method of fixation, with other cases being managed with bipolar hemiarthroplasty and cerclage wires.
METHODS	We present three cases that were successfully and uniquely treated by un-cemented hip arthroplasties. Two patients received primary stems and the third a modular tapered titanium fluted stem. The level of bearing constraint varied between implants; a primary acetabular shell; a bipolar hemarthroplasty head and a constrained liner system. The degree of constraint required was determined via a strategy of risk stratification that included consideration of displacement of the trochanteric component of the segmental fracture.
RESULTS	Our three cases demonstrated union of the lower segmental fractures at three months and we did not have any associated complications including instability.
CONCLUSIONS	Intracapsular fractures are sufficient to jeopardise the main three sources of blood supply to the femoral head. Given this, we conclude that arthroplasty is the best surgical management in order to prevent avascular necrosis of the femoral head. We advocate the use of un-cemented implants, without potential cement interposition at the fracture site to ensure union. Careful attention needs to be given to reduction and stabilisation of the trochanteric fragment and its consideration part of multivariate risk stratification for bearing constraint selection to avoid the serious complication of instability.

TOTAL TALUS DISLOCATION WITH EXTRUSION.

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OBJECTIVES

To present 4 years follow up of traumatic total talus dislocation with extrusion. The case was assessed for the development of avascular necrosis, osteoarthritis and functional outcome.

METHODS

We present a 62-year-old male taxi driver who sustained an isolated compound postero medial total dislocation of his right talus with complete medial extrusion after falling from a ladder and landing on an everted foot. The case was also complicated by complete severing of the posterior tibial artery, which is an important artery from which the talus derives its nutrient vessels. Radiographs confirmed a posteromedial total dislocation of the talus, with a 'missing talus' sign on lateral projection. An open reduction through dorsal and medial incisions was performed under GA and stabilised with two hindfoot 2.5mm Kirschner wires.

RESULTS

Follow up at 12 months and 24 months did not show any radiological signs of avascular necrosis, and the patient has managed to go back to near full time taxi driving. At 36 months follow up; there were radiographic signs of osteoarthritis of subtalar joint, which did not interfere with patient's job.

CONCLUSIONS

CONCLUSION: This is a rare case of a complete talar dislocation with extrusion, which was treated with early open reduction and stabilization followed by early rehabilitation. We recommend an open reduction and stabilisation in these cases followed by early rehabilitation to optimise functional outcome and may delay avascular necrosis.

ANALYSIS OF TRAUMA MANAGEMENT AND SUGGESTIONS FOR OPTIMISING TRAUMA SERVICE AT A MAJOR TRAUMA CENTRE	
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PRESENTER	Abigail Clark-Morgan
OBJECTIVES	Re-configuration of trauma services combined with a population of escalating demands has effected adaptation to meet these concerns. We established an elective day-surgery trauma service for non-major trauma. Our aim was to analyse current demands to the unit and through the principles of segmentation provide an improved method of managing our patients.
METHODS	Assessment was made of our quarterly trauma demands. All cases were reviewed by 2-blinded surgeons for feasibility re day-surgery. Further retrospective review of submitted trauma lists and actual recorded theatre activity was performed. A similar analysis of our day-surgery trauma was completed. The data was subjected to list modelling and cost analysis regarding tariff income. Patients were asked to report their satisfaction regarding day-surgery versus in-patient trauma services.
RESULTS	Total trauma demand was 533 cases. Of these only 57% were performed on the day they were first listed. On assessment of all trauma performed, including that not on submitted lists, a total of 394 cases were completed (average of 4.3, range 1-8). In day-surgery 66 cases were performed over the same timeframe (average of 2.6 cases/list). Approximately 59% of all our trauma cases would be suitable for day-surgery but only 12% were performed in this setting. Patients demonstrated a significant preference for day case trauma surgery.
CONCLUSIONS	Doubling our current day-surgery trauma quotient to 24% would deliver obvious efficiencies and improvements. This includes bed management, training opportunities and tariff generation. We calculated potentially an extra £330,000 per annum could be generated, independent of the extra bed capacity it would provide.

	24 hour Perioperative mortality in hip hemiarthroplasty. Cemented versus un-cemented
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PRESENTER	Ashok Lal Ramavath
OBJECTIVES	In the literature there have been a number of cases with haemodynamic instability and deaths following cemented hemiarthroplasty. We compare immediate 24-hour perioperative mortality in cemented and un-cemented hip hemiarthroplasty patients treated in district general hospital.
METHODS	Mortality data of all hip hemiarthroplasty collected from the period of Jan 2007 to Dec 2012 and reviewed the case records of all patients who died with in 24 hours of surgery. We recorded patient demographics.
RESULTS	Total of 11 patients were identified with 24hour perioperative death (PoD) over a 72-month period. 24 hr overall PoD was 2.3% (11/474). 64% (7) patients died following cemented and 36% (4) were after un-cemented. There were two cases of intra-operative deaths following cemented hemiarthroplasty. All cemented hemiarthroplasty patients (PoD-1.47%) had a significant drop of blood pressure (BP) after cementation and no significant drop in un-cemented group during surgery. There was no association with surgeon or anaesthetic seniority with mortality in either group. Average surgical time for cemented was 68 minutes and for un-cemented was 33 minutes. All patients had significant cardio pulmonary co-morbidities. 82% (9/11) of patients who died had Myocardial Infarction and rest each died of fat embolism (PE) and 1/11 bronchopneumonia.
CONCLUSIONS	There is 2.3% risk of 24-hour perioperative death after hip hemiarthroplasty in our hospital. There was a higher risk of PoD in cemented group compared to un-cemented group. We recommend careful consideration of use of cement followed by good surgical technique in patients with multiple Comorbidities or consider other options.

The Role of CT in the investigation and operative planning of malleolar ankle fractures.	
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PRESENTER	Euan Harris
OBJECTIVES	The indication for performing preoperative CT scanning following a malleolar ankle fracture is not clearly defined. This study aims to identify factors influencing the decision to perform a CT scan prior to the fixation of malleolar ankle fractures, and to establish if differences in operative management consequently occur. Specifically the presence of a posterior malleolus fracture was examined.
METHODS	142 patients presenting consecutively with a malleolar ankle fracture and treated surgically were identified retrospectively. Fracture pattern was classified into uni, bi, or tri-malleolar injuries through review of patient radiographs with lateral and posterior malleolar fractures further sub-classified. Post-operative imaging enabled classification of operative fixation performed. Patients who had received a CT scan preoperatively were identified.
RESULTS	Of 142 cases, 35 received a CT scan, whilst 107 progressed to fixation without. The strongest indication for performing a CT scan were a tri-malleolar fracture configuration (80%), posterior malleolus involvement (86%) and ankle dislocation at presentation (63%). All 30 posterior malleolar fractures identified on CT were fixed operatively using buttress plating (93%) or cortical screws (7%). 41 patients of the 107 who did not undergo a CT scan also had posterior malleolus involvement on initial radiographs. Only 9 of these patients had an operative fixation of the posterior malleolar fracture performed. The majority of posterior malleolus fractures were posterolateral in nature.
CONCLUSIONS	The identification of a posterior malleolar fracture at presentation is a strong indication for the performance of a preoperative CT scan and does influence the operative management of these patients.

	EXPERIENCE OF 106 HOOK PLATE FIXATIONS FOR ACUTE ACROMIOCLAVICULAR JOINT DISLOCATIONS
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PRESENTER	Daniel Bye

OBJECTIVES	To evaluate factors affecting radiographic acromioclavicular joint (ACJ) re-subluxation after Hook plate treatment including the initial degree of dislocation, delay to fixation and timing of re-imaging following Hook plate removal.
METHODS	Case notes and x-rays for 106 cases of Hook plate fixations for acute ACJ dislocations between 1999-2014 were reviewed. 41 cases had complete data including post-removal imaging/follow-up. The degree of subluxation was evaluated based on the percentage of displacement on coronal x-rays. Statistical analysis was undertaken to identify variables impacting re-subluxation.
RESULTS	<p>Based on the 41 cases, mean initial subluxation was 133% (75-212%). Mean post-removal subluxation was 33.7% (0-166%). There exists a significant relationship between the degree of initial displacement and re-subluxation ($p=0.0148$).</p> <p>Average time from injury to Hook plate insertion was 6 days (1-19). Mean duration of Hook plate insertion was 132 days (52-220). Average age was 40. The final degree of re-subluxation was not significantly influenced by operative delay, duration of plate insertion or age.</p> <p>Median interval between hook plate removal and re-imaging was 190 days (0-2189days post-removal). While there was no overall significant linear relationship between timing of post-removal imaging and degree of re-subluxation, there was significant re-subluxation variance (Fisher's test $p=0.0173$) when comparing early imaging (<14days post-op) to late imaging (28-606days post-op).</p>
CONCLUSIONS	There is a direct correlation between the initial ACJ displacement and the final degree of ACJ re-subluxation. Delay of up to 19 days does not impact the degree of final re-subluxation. Early post-removal imaging is not a reliable indicator of the final degree of re-subluxation.

	Do we need a consultant led specialist clinic for proximal humerus fractures?
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PRESENTER	5 Ufcb'FccbYm
OBJECTIVES	Early operations in those requiring internal fixation of proximal humerus fractures are associated with shorter rehabilitation times and are surgically favourable. This study seeks to investigate if patients undergoing operative fixation were seen by a consultant in a timely fashion, and to find out at which point post-injury those patients received their operations.
METHODS	Over a 3 year period (2011-2013) all patients attending a major teaching hospital were evaluated, and of these 56 patients underwent internal fixation of a proximal humerus fracture. All patients identified had their electronic and paper records reviewed.
RESULTS	There were 38 female and 18 male patients; their average age was 55 years (16-84). The median time from injury to first consultant review was 1 day (0-69); this was slightly raised to 3 days (0-69) for those first seen by a consultant shoulder surgeon. The median time from first consultant review to operation was 3 days (0-195). This was also 3 days (0-20) for those seen initially by a shoulder surgeon; however, none of these patients underwent a trial of non-operative management. Three patients underwent unsuccessful trials of non-operative management and were operated on at 54, 105, and 195 days post-initial consultation.
CONCLUSIONS	Those patients requiring fixation of their fractures are generally seen in a timely fashion by an orthopaedic consultant, and most receive their operation within a few days of their first consultation. However, in order to provide a comprehensive service and limit unsuccessful trials of non-operative management a specialist clinic for displaced proximal humerus fractures may help.

	Two incision Locked plate fixation of combined diaphyseal and proximal metaphyseal fractures of the humerus
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PRESENTER	Daud TS Chou
OBJECTIVES	Combined diaphyseal and proximal metaphyseal fractures of the humerus are uncommon. Traditional open reduction internal plating techniques usually require long incisions, extensive soft tissue stripping and detachment of muscle insertions. We present results of a cohort of patients treated with a two-incision open reduction internal fixation technique using a long fixed angle locking plate.
METHODS	Between September'08 and October'13, 10 patients underwent open reduction internal fixation for combined diaphyseal and metaphyseal fractures of the humerus using a long anatomic locking plate. Two separate skin incisions were utilised: a proximal longitudinal superior-lateral incision and a distal longitudinal lateral incision. A Synthes long Philos plate was then used to fix the metaphyseal fracture and bridge the diaphyseal fracture. Patients were evaluated in clinic at the 6-week stage for clinical review. Oxford shoulder score and radiographic assessments were performed at 3-months post surgery.
RESULTS	There were no cases of neurovascular injury or deep infection. Seven out of the ten fractures went on to unite in an average time of just over 4-months. There was one case of delayed union, which eventually healed at 17-months without revision surgery. Also, there were two cases of non-union, which required revision surgery. The mean post-operative Oxford Shoulder score was 40.6.
CONCLUSIONS	Open reduction internal fixation of these uncommon combined humeral head and shaft fractures through a percutaneous approach with the use of a long locking plate appears to offer satisfactory results. However, these are difficult fractures to treat and further studies evaluating different treatment methods are required.

Shear Plane Nonunions; Clinical Solutions with Biomechanical background.	
MAIN AUTHOR	Arshad Khaleel
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CO AUTHORS	Yaser Jabbar
PRESENTER	Ashwin Unnithan
OBJECTIVES	A Biomechanical study to identify the optimum Ilizarov frame design to treat shear plane non-unions of the tibia and transfer this into clinical practice
METHODS	Plastic tibiae with a 60 degree osteotomy were stabilised using four different Ilizarov frame configurations. Models were loaded and shear displacement measured at the fracture site. The optimum frame design was identified and used in clinical practice.
RESULTS	The transfracture locked olive wire frame model showed the least displacement in the experimental model. This frame model was used in three patients with shear plane non unions after 4 months with a standard frame configuration. All fractures united by 2.5 months. One patient with an acute open fracture was also treated with this frame configuration which united after 4 months.
CONCLUSIONS	Transfracture locked olive wire frame design is useful in the treatment of tibial non unions with shear plane Discussion These are fractures which had previously failed to unite with standard frame constructs. A screw instead of the wires would not work because there is still some residual strain and the screws would break. The self tensioning properties of tensioned wires therefore are ideal for this situation. Furthermore, we have increased the ability to pass these oblique wires by using intra operative USS guidance to avoid neurovascular bundles.

The use of Hydroxyapatite coated wires in non union surgery using the Ilizarov frame	
MAIN AUTHOR	Arshad Khaleel
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PRESENTER	Joshua Jacob
OBJECTIVES	To assess time to union and progress to union using adjunct HA wires incorporated in the Ilizarov frame
METHODS	12 patients (12 M: 2F; average age 44 years) who had a tibial non-union between March 2009 and August 2012 were treated with the Ilizarov frames. Additional intervention included the incorporation of a HA wire after making an initial path by a standard wire. Outcome measures were determined by functional (American Orthopaedic Foot and Ankle score AOFAS) and radiological assessments (Association for the Study and Application of Methods of Ilizarov (ASAMI) criteria.
RESULTS	All 12 patients united. None required amputation. Mean time to union was 20 weeks (range 16 - 30/median 22). The average follow up time was 32 weeks (12-48/ median 24. According to the ASAMI score bone/radiological results 10 were classed as excellent with the remainder being good. Functionally six were graded as excellent, five as good and one as poor. The average AOFAS score was 82/100 (68 - 90).
CONCLUSIONS	Our results in terms of outcome scores are comparable with the published literature. Furthermore, we are not aware of any published material in the English literature using our technique. We posit that this is an easily reproducible and empirically verifiable method of expediting consolidation in non-union surgery. There is no indication to use autologous bone graft to facilitate union.

10 years' experience treating Pilon fractures with Ilizarov frames	
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OBJECTIVES	The aim of this study was to review the surgical complications and clinical outcomes of patients with Pilon fractures treated with Ilizarov frames.
METHODS	All patients who underwent Ilizarov frame fixation for a Pilon fracture were identified. Clinical notes were reviewed to collect data regarding surgical complications. Pre- and post-operative radiographs were reviewed by two senior orthopaedic trainees to classify the grade of initial injury using the Ruedi-Allgower classification and the quality of reduction according to the scoring criteria of Teeny and Wiss. Outcome scores were collected retrospectively via telephonic interview using the Foot and Ankle Disability Index (FADI).
RESULTS	<p>A total of 97 consecutive patients (67 male, 30 female average age 42 years) were identified. All patients were treated with indirect reduction by capsuloligamentotaxis and stabilisation using an ankle-spanning Ilizarov external fixator an average of 9 days after their injury (0 - 40 days). The mean time to union was 6 months (2 - 14 months).</p> <p>Data on surgical outcome was available for 70 patients. 35 patients developed a pin site infection which was superficial in 30 patients, deep in 3 patients and superficial and deep in 2 patients. Superficial infections were classified as those needing oral antibiotics and deep infections as those requiring intravenous antibiotics. There were no cases of osteomyelitis. 4 patients developed a DVT and 1 patient a PE, 4 patients required ankle fusions. 1 patient required an amputation after developing a Charcot's arthropathy secondary to Type 1 diabetes 18 months after his initial treatment.</p> <p>Quality of reduction according to the criteria of Teeny and Wiss was anatomic in 40 patients, good in 23 patients, fair in 6 patients, poor in 3 patients had no archived follow up images and 1 patient had no lateral view.</p>
CONCLUSIONS	This is one of the larger series of Pilon fractures on literature review. Ilizarov frame fixation achieves stable reduction of the fractured fragments without additional trauma to soft tissues with minimal complications and good functional results.

	TECHNICAL NOTE: TREATMENT OF EARLY VARUS DISPLACEMENT OF PROXIMAL HUMERUS FRACTURES BY DELAYED OSTEOSYNTHESIS WITH A SHORT INTRAMEDULLARY NAIL
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PRESENTER	Benjamin Wetherell
OBJECTIVES	The literature on the treatment of post traumatic varus malunion is sparse. As a result, the objective is to present our experience in the treatment of early varus malunion of two and three part proximal humerus fractures with osteotomy and short intramedullary nailing.
METHODS	Five patients considered to have unacceptable varus collapse after non-operative treatment of two and three part proximal humerus fractures. All were closed fractures with no neurovascular deficits. The mean age was 65 (range 54 to 75 years). There were two males and three females. The delay from the time of injury until surgery was on average 33 days. All patients underwent a simple open osteoclasia, anatomical reduction, and internal fixation with a short intramedullary nail. They were later assessed 7-11 months post-operatively.
RESULTS	All five fractures healed and patients were discharged on average 156 days following surgery (range 134 to 197 days). Post-operative neck-shaft angles were 130°, 123°, 118°, 117° and 110° (mean: 119°). Mean post-operative Constant score (affected side only) was 72 (51-84), DASH score was 32 (24-50), SPADI score was 5.4 (1.5-15.4) and the Oxford score was 45 (38-48). One patient opted not to have his post-operative scores calculated. There was one reoperation for a loose proximal screw, but no other complications from surgery.
CONCLUSIONS	Although the study is limited by the number of patients involved, the results have been encouraging for wider use. Intramedullary nailing of early varus collapse and malunion of the proximal humerus fracture is a relatively simple procedure with a short operative time.

THE USE OF A DOUBLE COMPRESSION SCREW TECHNIQUE FOR TREATMENT OF SCAPHOID FRACTURES	
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PRESENTER	Nicholas Frew
OBJECTIVES	In 2009 the senior author developed an original technique for fixation of scaphoid fracture non-unions using two headless compression screws. We have reviewed the clinical and radiographic outcomes of this novel technique.
METHODS	Between 2009 and 2013, 15 patients (all male, mean age 26 years) were treated with two headless compression screws for either a non-union (n=14) or an acute displaced scaphoid fracture (n=1). Nine patients had double screws as a primary procedure at a mean of 20 weeks post injury. Six patients underwent a revision procedure with two screws inserted on average 45 weeks following previous unsuccessful fixation. Fractures occurred at the waist (n=9) and proximal pole (n=6). Volar open (n=9) and percutaneous (n=6) surgical approaches were used.
RESULTS	Patients were followed up for a mean of 8.5 months before discharge. Fourteen fractures showed evidence of radiological and/or clinical union at a mean of 5.3 months postoperatively. Only one patient failed to heal and had persistent symptoms following use of the double screw technique and underwent a further revision procedure after 19 months. No other complications occurred and no salvage procedures have been necessary.
CONCLUSIONS	These findings suggest the use of two scaphoid compression screws is safe and effective. This technique may provide improved biomechanical stability and improve outcomes of scaphoid fractures in difficult cases.

DELAY IN SURGERY INCREASES COMPLICATION RATES AFTER INTERNAL FIXATION OF DISPLACED MID-SHAFT CLAVICLE FRACTURES.	
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PRESENTER	Simon Craxford
OBJECTIVES	The purpose of this study is to present our experience with internal fixation of displaced mid-shaft clavicle fractures using a pre-contoured anatomical plate.
METHODS	We reviewed all clavicle fractures treated between January 2007 and June 2011 in our institution. Data collected included demographics, Robinson fracture classification, degree of displacement, time to surgery, time to union and complications. Union was assessed by means of radiographic assessment. Regression analysis was performed to identify factors associated with union and complications.
RESULTS	109 clavicles in 102 patients underwent fixation during the study period. Seventy-five (68.8%) were acute fractures and 34 (31.2%) were either for delayed or non-unions. The median time to surgery for acute fracture was 6 days (Interquartile range 8) and 162 days (IQR 264) for the delayed group. Union was confirmed radiologically in 104 (95.4%) clavicles at a mean of 4.5 months. Complications included deep infection in one (0.9%), implant failure in two (1.8%), re-fracture in one (0.9%), non-union in five (4.6%) and re-operation for metal irritation in three (2.8%). An increase in the time from injury to surgery was significantly associated with the occurrence of complications ($p=0.01$, t test) and multivariate analysis also identified this to be an independent predictor (OR 1.01; $p=0.037$). No independent predictors of union were identified.
CONCLUSIONS	Our results demonstrate good rates of union after fixation of displaced clavicle fractures. However, delayed surgery was associated with a statistically significant increase in complications. We recommend that decisions regarding the management of these fractures should be made early.

Gravity Assisted Vs Anti Gravity fixation method for Traumatic Inter-Trochanteric Femoral Neck Fracture - Nature Assisted Surgery	
MAIN AUTHOR	Karthickeyan Raju Epsom & St. Helier University Hospitals NHS Trust
CO AUTHORS PRESENTER	Talvinder Singh, William Cobb, Andrew Cobb, Karthickeyan Raju
OBJECTIVES	To determine whether Gravity Assisted (lateral) positioning of a patient offered better quality of fracture reduction and lag screw positioning in the femoral head.
METHODS	Retrospective cohort study on 31 consecutive patients with extracapsular proximal femur fractures treated with Dynamic Hip Screw. The first cohort consisted of patients positioned supine (Anti Gravity) and the second cohort consisted of patients positioned lateral (Gravity Assisted). Pre & Post Operative radiological evaluation was done by one blinded experienced observer. Image Intensifier Exposure time (IJET), Post-reduction neck shaft angle (NSA), Parker's Index Ratio (PIR) and Tip Apex Distance (TAD) were calculated.
RESULTS	There were 3 males and 14 females in the supine group and 5 males and 9 females in the lateral group. The mean age was 82.9 and 77.2 years. IJET was 54.2 seconds and 67.7 seconds. Mean NSA on anterior-posterior (AP) view was 138.9 and 139.1 degrees. Mean NSA on lateral view was -17 and -6.6 degrees. The mean TAD was 17.8 and 17.6.
CONCLUSIONS	Radiographic analysis confirm similar findings in both groups except for the mean Lateral NSA, which was significantly less in the lateral group (P=0.01). The Gravity Assisted Lateral position aids in the elimination of the posterior sag which could compromise; fracture reduction, fixation construct and obliterates the need for special devices in controlling posterior sagging. Good compression at the fracture site could be achieved by adjusting the perineal post in simple two part fractures in this position. The surgeon felt more comfortable performing (without assistant) this procedure in Lateral position.

	Damage limiting approach towards reconstruction of unreconstructable elbow anatomy & function following trauma – Extensor Mechanism & Ulnar Nerve Friendly surgical approach
MAIN AUTHOR	Karthickeyan Raju Epsom & St. Helier University Hospitals NHS Trust
CO AUTHORS PRESENTER	Samik Banerjee, Vijayraj Ramasamy, Nicholas J Little, Vipul R Patel, Karthickeyan Raju
OBJECTIVES	To describe a modified “Triceps On” surgical approach and to evaluate the early clinical, radiographic and functional outcomes of elbow hemiarthroplasty in the treatment of acute distal humeral fractures in elderly patients.
METHODS	Prospective Case Series of seven patients with acute intra-articular distal humeral fractures, that were deemed unreconstructable with open reduction and internal fixation, were treated with a primary elbow hemiarthroplasty using an anatomical convertible distal humeral prosthesis. All procedures were performed through a modified “triceps-on” approach. There were 5 women and 2 men with mean age of 80 years. Clinical and functional outcomes were assessed with the Mayo Elbow Performance Score (MEPS) and Quick Disabilities of the Arm, Shoulder and Hand (DASH) score, Oxford Elbow Score (OES) and complications were recorded.
RESULTS	All patients in the series had an excellent or good outcome with a mean MEPS score of 91 points (range, 85 to 95 points) and a Quick DASH score of 16 points (range, 5 to 23 points). At a mean follow-up period of 24 months (range, 6 to 60 months). The mean range of motion in flexion was 120 degrees with an average extension deficit of 10 degrees. There was no evidence of infection, ulnar nerve symptoms, heterotopic ossification, triceps weakness, loosening, osteolysis, or reoperations at latest follow-up.
CONCLUSIONS	Hemiarthroplasty of the elbow using a modified “triceps-on” approach (Extensor Mechanism & Ulnar Nerve Friendly approach) is a safe viable treatment option for traumatic intra-articular unreconstructable distal humeral fractures in the elderly, allowing early return to function with minimal risk of complications.

Probiotic Preventive Prophylaxis for Clostridium Difficile associated diarrhoea in traumatic Fracture Neck of Femur Patients – Does it work?	
MAIN AUTHOR	Ravi Mallina Epsom & St. Helier University Hospitals NHS Trust
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PRESENTER	Karthickeyan Raju
OBJECTIVES	To ascertain whether Probiotic Actimel prevents Clostridium Difficile associated diarrhoea in traumatic Fracture Neck of Femur (NOF) Patients receiving Antimicrobials.
METHODS	Incidence of Clostridium Difficile associated diarrhoea in 133 fracture neck of femur patients who received antimicrobials in 2011-2012 was retrospectively studied as apart of first arm of our audit. Probiotic Actimel was suggested as a preventive measure in this group of patients in 2013 as apart of our audit recommendation based on the available literature. Since then prospective data from 493 NOF patients were collected regarding incidence of Clostridium Difficile associated diarrhoea as a part of closing loop of this audit. Of the 493 patients, 105 patients who received antimicrobial treatment more than 4 days were included.
RESULTS	During the initial arm of the study in 2011-2012 the incidence of Clostridium Difficile associated diarrhoea was 5.2%. During the second half of the study i.e. closing loop, the incidence of Clostridium Difficile associated diarrhoea is 3.8% despite probiotic prophylaxis.
CONCLUSIONS	Preventive Prophylaxis with Probiotics in traumatic Fracture Neck of Femur Patients doesn't reduce the incidence of Clostridium Difficile associated diarrhoea significantly.

PROVISION OF TOTAL HIP REPLACEMENT FOR DISPLACED INTRACAPSULAR NECK OF FEMUR FRACTURE: A REGIONAL AUDIT	
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PRESENTER	Kohila Sigamoney
OBJECTIVES	It is widely known that the provision of total hip replacement (THR) in hip fractures does not reflect the recommendation by NICE. We aim to identify the reasons for this 'non-compliance'. We audited the types of surgery provided for patients with displaced intracapsular neck of femur (ICNOF) fracture according to the NICE CG 124 criteria.
METHODS	A prospective audit was performed between October 2013 and March 2014 in eight hospitals. Data from 110 consecutive patients admitted with hip fracture were collected using a standard proforma. We collected qualitative surgeons' decision on arthroplasty other than THR when a patient fit the NICE eligibility criteria for a THR.
RESULTS	Data from 879 patients (607 female) were available for analysis. Median age was 82 (range 18 – 102 years old). There were 547 (463 displaced) intracapsular and 332 extracapsular fractures. 170 (37%) of the displaced ICNOF fractures fit the NICE criteria for THR. THR was performed in 49 (29%) patients who fit the criteria. The 'compliance' in the eight hospitals varied from 0-50% (0, 14%, 15%, 33%, 36%, 38%, 47% and 50%). Fixations of the displaced ICNOF fractures were performed in younger patients (n=28, age range 18-77yo). Thompson hemiarthroplasty was performed in 66 patients who fit the NICE criteria. Chronological age (n=27, age range 77-94), co-morbidities (n=11, ASA 2 and 3) and surgeon preference (n=9) were the most common stated reasons for not performing THR. No reason was given in 27 cases. Three patients underwent hemiarthroplasty instead of THR due to absence of an arthroplasty surgeon.
CONCLUSIONS	There is huge variation in hip fracture practice across the eight hospitals. Identification of this variation will help determine quality indicators beneficial for regional research or service delivery planning.

	DOCUMENTED SECONDARY & TERTIARY SURVEY – MYTH OR REALITY IN THE ERA OF THE MAJOR TRAUMA
MAIN AUTHOR	Andrew Stevenson CORNET
CO AUTHORS	Kohila Sigamoney, Caroline Cheesman, Sorcha Clapham, Mehool Acharya, William Eardley
PRESENTER	Kohila Sigamoney
OBJECTIVES	<p>Following the advent of the Major Trauma Centres with their feeding trauma network and units, improved opportunities exist to assess care of the seriously injured casualty due to concentration of caseload.</p> <p>For Major Trauma Patients admitted to MTC's across Bristol & Middlesborough, is a complete secondary and tertiary survey being performed and documented?</p>
METHODS	Between 1 st May 2014 and 31 st July 2014, prospectively, data was collected from notes for all major trauma patients seen. The work was done by volunteers from each hospital.
RESULTS	For the majority of patients, there were no documented secondary or tertiary survey. Very few had one or both done.
CONCLUSIONS	<p>It is important to notice that despite protocols that clearly state that patients have to have secondary and tertiary surveys done and documented, there is a very low rate of actually carrying them out. This can cause missed injuries and delayed presentations of injuries.</p> <p>Education and enforcement plays a vital role here.</p>

Oral Presentations – Friday 7th November

LOCKED POSTERIOR SHOULDER FRACTURE DISLOCATION – A REVIEW OF 12 CASES	
MAIN AUTHOR	Kohila Sigamoney Darlington Memorial Hospital
CO AUTHORS	David Burton
PRESENTER	Dr Kohila Sigamoney
OBJECTIVES	Posterior fracture dislocation of the glenohumeral joint is an uncommon injury. It is quoted as accounting for less than 2 % of all shoulder dislocations. There is a very high incidence of misdiagnosis (50 – 79%) most commonly due to atypical presentation in comparison to anterior shoulder dislocation, lack of clinical assessment, inadequate radiological exposure and lack of experience of the clinician involved in reading the radiographs. We aim to look at our patients and the impact the condition and treatment has on their lives.
METHODS	All the patients under the consultant's care who have had an acute locked posterior fracture dislocation of the shoulder. Their notes were reviewed retrospectively looking at demographics and details of the injury. With regards to the surgery, we looked at the type of surgery and implants used, any complications, further procedures, follow – up and the time it took to go back to work. Questionnaires which were the Oxford Shoulder Score were sent out and traced all patients.
RESULTS	<p>12 patients had injuries followed by surgery from May 2008 to July 2013. There were 9 males and 3 females. They were aged 30 – 79. 9 had the injury on the dominant side. All the patients medical records were available. 1 patient died from other cause. 1 patient could not be contacted. Therefore only 10 questionnaires were returned. Only 1 patient had previous disease to his shoulder, bilateral frozen shoulders.</p> <p>For 6 patients, the injury was caused by a seizure. For the other 6 patients, it was caused by trauma. 50% (6 patients) had a misdiagnosis or were not diagnosed when seen in the Emergency Department.</p> <p>All patients had a CT scan prior to surgery. Surgery was done within an average of 16 days (this included one patient who had surgery 78 days after injury due to misdiagnosis and delay in referral). There were 3 broad groups of procedures done; hemiarthroplasty (3 patients), open reduction and internal fixation (5 patients) and The McLaughlin Technique (4 patients). For those who worked (5); the average time back to work 4.3 months. 4.5 months in ORIF, 4 months for hemiarthroplasty.</p> <p>In terms of ROM:</p> <ul style="list-style-type: none"> • Hemiarthroplasty: (Mean) forward flexion of 102 degrees, external rotation of 47 degrees and abduction of 77 degrees. • Near full ROM (170 deg abd, ff) with McLaughlin • ORIF: (Mean) forward flexion of 163 degrees, 56 degrees of external rotation and 163 degrees of abduction. <p>For the OSS scores, the average OSS was 32.8. For those who had the McLaughlin procedure, the score was 31, ORIF, 42.8 (pain) and hemiarthroplasty it was, 25.5.</p>
CONCLUSIONS	There was a high rate of misdiagnosis, 50%, of posterior fracture dislocation. The injury significantly impacts on patients lives. There was an average of 4 months off from work. Open reduction and internal fixation showed a better Oxford Shoulder Results Score. Clinically the McLaughlin gave better range of movement. The Limitation here however, is that there is an unequal amount of patients, small amount of patients and procedures varied according to the fracture pattern.