

to have hyperbilirubinaemia ( $p < 0.001$ ). The specificity of hyperbilirubinaemia for perforation or gangrene was 70%.

**Conclusion:** Hyperbilirubinaemia is a valuable marker for acute appendicitis. Patients with hyperbilirubinaemia are also more likely to have appendiceal perforation or gangrene. Bilirubin should be incorporated in the assessment of suspected appendicitis.

ASiT Short Paper Prize 0350 **CAN SURGEONS USE LOCAL ANAESTHETICALLY SAFELY? A SURVEY OF THE NEW AAGBI GUIDELINES**

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**Introduction:** Most surgical specialties use local anaesthetics (LA) in their caseloads, mostly in the theatre setting with an anaesthetist present. However, plastic and orthopaedic surgeons also use these agents independently for day cases. The aim of this study is to assess the use of LA and management of toxicity in accordance with the AAGBI Safety Guidelines in these two surgical specialties.

**Method:** 40 surgeons of training and consultant grade at a teaching hospital participated in a questionnaire to see whether they recognised and were able to manage LA toxicity. Results were treated as parametric, following a normal distribution, and a Pearson correlation was used to quantify association between two variables.

**Results:** An even spread of plastic and orthopaedic surgeons were questioned, predominantly SpR or ST1–3 levels (65%). Most administered LA on a weekly or daily basis (52.5%). A significant number of doctors of all grades failed to calculate the correct mass of LA (42.5%,  $p = < 0.05$ ). Most could recognise the signs of LA toxicity (90%). However less than 10% were aware of the use of lipid emulsion for management.

**Conclusion:** Whilst LA is a commonly used agent by surgeons, there is still lack of understanding for the immediate management of its complications.

ASiT Short Paper Prize 0518 **CEMENTED HEMIARTHROPLASTY IS ASSOCIATED WITH A HIGHER EARLY MORTALITY RATE THAN UNCEMENTED HEMIARTHROPLASTY—FACT OR FICTION?**

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**Introduction:** Cemented hemiarthroplasty for neck of femur fractures has been advocated over uncemented hemiarthroplasty due to better post-operative recovery. However, studies have shown adverse effects of bone cement on the cardio-respiratory system which may lead to higher morbidity and mortality. The aim was to compare early mortality rates for cemented vs. uncemented hemiarthroplasties.

**Method:** Cohort study of hip fractures treated with hemiarthroplasty between 1999–2009 at one institute. 3094 hemiarthroplasties; out of which 1002 (32.4%) were cemented and 2092 (67.6%) were uncemented. 48hour and 30day mortality rates for the two groups were compared and a multivariate Cox regression model used to eliminate confounding factors.

**Results:** The study showed that, after eliminating confounding factors, 48hour mortality in the cemented group was 0.3% compared to 0.5% in the uncemented group ( $p = 0.388$ ). However, the adjusted 30day mortality rate for the cemented group (4%) was shown to be significantly lower than for the uncemented group (10.8%) ( $p < 0.001$ ).

**Conclusion:** The use of cement in hip hemiarthroplasty is not associated with an increased rate of mortality at 48hours or at 30days. Along with emerging evidence of better functional outcome with the use of a cemented prosthesis, we support the use of cement for all patients undergoing hip hemiarthroplasty.

\* ASiT Short Paper Prize 0504 **ULTRASOUND SCANNING OF PLANTAR FASCIA DISEASE – BASIS FOR A NEW CLASSIFICATION**

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**Introduction:** Plantar fasciopathy is a common cause of heel pain, and is usually treated in primary care. Intractable cases are difficult to treat.

Currently plantar fasciopathy is not routinely imaged and treatment is empirical. At the Royal Surrey, intractable cases undergo ultrasound scanning, with targeted therapy, in a dedicated clinic.

**Methods:** Patients referred to the clinic, over 18 months, with symptoms longer than 6 months and failed initial management were prospectively followed. Their ultrasound scans were reviewed, and disease characteristics were examined.

**Results:** 120 patients had plantar fasciopathy exclusively. 64% had typical insertional pathology only. The remaining 36% had atypical findings of distal disease or a combination of insertional and distal disease. These patients have either distal thickening or discrete fibromas.

**Conclusion:** We have demonstrated a high proportion of atypical non-insertional plantar disease in our cohort. Patients with atypical features are more resistant to treatments. Ultrasound scanning is valuable in characterising plantar pathology, which would otherwise not be detected.

We propose a new classification of insertional or non-insertional plantar fasciopathy (in keeping with current classification of Achilles tendinopathy). Empirical treatment is inadequate for recalcitrant plantar fasciopathies. By using our proposed classification, both current and future treatments can be better evaluated.

ASiT Short Paper Prize 0507 **ARE BIGGER HOSPITALS BETTER? THE EDUCATIONAL ENVIRONMENT IN THE OPERATING THEATRE**

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**Aims:** There has been a perception that for surgical trainees the best theatre experience can be gained in the smaller district general hospitals. We aimed to assess whether the theatre educational environment differed between hospitals of different size, different surgical specialties and whether the assessment was influenced by the desire to undertake a surgical career.

**Methods:** The Surgical Theatre Educational Environment Measure (STEEM) questionnaire was distributed to surgical trainees (FY1 to SpR) in the West Midlands to assess their perception of the educational environment in theatre. This assesses 4 areas relating to available opportunities, interaction with the trainer, atmosphere within theatre and supervision and workload.

**Results:** 153 questionnaires were analysed. Higher grade of trainee was significantly associated with higher scores for STEEM overall (mean FY1 score 138/200 and SpR score 155/200  $p = 0.000$ ). No statistical difference was seen between surgical specialties, gender or desire to be a surgeon. Smaller size of hospital was significantly associated with higher STEEM score overall (small DGH 153/200, Large DGH 146/200, University Hospital 138/200  $p = 0.001$ ).

**Conclusions:** Our findings suggest that the educational environment in the operating theatre is better in smaller hospitals and at higher surgical grade but not influenced by gender or surgical speciality.

ASiT Short Paper Prize 0893 **A NEW CLASSIFICATION SYSTEM FOR PERFORATED DIVERTICULITIS**

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**Introduction:** Since its conception in 1978, the Hinchey score has been used to describe bowel perforation secondary to diverticular disease. Hinchey himself declared that Hinchey II and III perforations were closed "most of the time", however his staging system does not account for this.

**Aims:** To categorise Hinchey II and III patients requiring operative intervention according to the presence of a sealed or persistent micro-perforation.

**Methods:** A retrospective review was conducted of all patients admitted with a diagnosis of diverticulitis between January 1999 and July 2010.

**Results:** 1,551 patients were identified and 116 had radiological evidence of perforated diverticulitis. 51 patients had clinical and radiological evidence of generalised peritonitis and underwent emergency surgery. At laparotomy, 21 patients had faeculent peritonitis (Hinchey IV), 25 patients

had purulent peritonitis (Hinchey III) and 12 patients had a contained abscess (Hinchey II). Of the Hinchey II and III patients it was found that 5/12 (42%) and 8/25 (32%) respectively had a persistent perforation on the subsequent histology report.

**Conclusions:** 42% of Hinchey II patients and 32% of Hinchey III patients will have a micro-perforation and are not suitable for non-resectional surgery. This important distinction needs to be recognised in a new classification system.

Medical Student Prize 0042 **SINGLE BUNDLE ANTERIOR CRUCIATE RECONSTRUCTION DOES NOT RESTORE NORMAL KNEE KINEMATICS AT 6 MONTHS: AN UPRIGHT MRI STUDY**

Jamie Nicholson, Alasdair Sutherland, Francis Smith. *University of Aberdeen, Aberdeen, UK*

**Introduction:** Abnormal knee kinematics following ACL reconstruction may exist despite a resolution of tibial laxity and functional benefit. We performed upright, load bearing, MRI scans of both knees in the sagittal plane throughout different angles of knee flexion to determine the kinematics of patients undergoing unilateral reconstruction (n=12).

**Method:** Scans were performed pre-operatively and at three- and six-months post-operatively. Anterior-posterior tibial laxity was determined via arthrometer and patient function by validated questionnaires before and after reconstruction.

**Results:** In all ACL deficient knees, the tibial plateau was anteriorly displaced and internally rotated relative to the femur when compared to the control contralateral knee, particularly in extension and early flexion (lateral compartment displacement: extension 7.9mm, p=0.002 and 30o flexion 5.1mm, p=0.004). Reconstruction restored the subluxation of the lateral tibial plateau at three months, with a resolution of anterior displacement in early flexion, but not in extension (p=0.015). At six months the reconstructed knee again showed anterior subluxation in both the lateral (extension 4.2mm, p=0.021 and 30o flexion 3.2mm, p=0.024) and medial compartments (extension, p=0.049).

**Conclusion:** Knee kinematics actually deteriorate from three to six months after reconstruction, this was despite laxity improvement and functional benefit in our cohort. Persistent abnormal kinematics may cause degeneration to the knee joint.

Medical Student Prize 0093 **ELECTRICAL STIMULATION ENHANCES MIGRATION AND INVASION OF BONE MARROW STEM CELLS: IMPLICATIONS FOR FRACTURE HEALING**

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**Introduction:** Bone marrow mesenchymal stem cells (BMMSCs) are essential in fracture healing. However, the effects of various electrical stimulation (ES) waveforms on BMMSCs cellular activities is unknown.

**Method:** We compared Direct Current (DC), Capacitive Coupling (CC), Pulsed Electromagnetic wave (PEMF) and Degenerate Wave (DW) by stimulating human-BMMSCs for 5-days for 3-hours a day. Cytotoxicity, cell proliferation, apoptosis and cellular-kinetics were evaluated after ES. Migration and invasion were assessed using fluorescence microscopy and affected gene and protein expression were quantified.

**Results:** DW had the greatest proliferative and least apoptotic and cytotoxic effects compared to other waveforms and unstimulated cells (p<0.001). DC, DW and CC resulted in significantly more cells in S- and G2/M-phase (p<0.01) compared to the unstimulated BMMSCs. CC and DW caused more cells to invade collagen and showed increased MMP-2 and MT1-MMP expression (p<0.001) compared to the other waveforms and unstimulated BMMSCs. DC increased cellular migration in a scratch-wound-assay and all ES waveforms increased migration gene expression with DC having the greatest effect (p<0.01).

**Conclusion:** The ES waveform is vital in influencing BMMSCs cellular activities. Migration and invasion were increased by ES, which suggests that the recruitment of BMMSCs to the healing site during a fracture could be increased by ES.

Medical Student Prize 0585 **DO PREVIOUS DEXTERITY SKILLS INFLUENCE PERFORMANCE IN SINGLE INCISION LAPAROSCOPIC SURGERY (SILS)? COMPARING JOINT FORCE HARRIER PILOTS TO MEDICAL STUDENTS**

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**Aims:** To demonstrate whether the higher dexterity levels of Harrier pilots allow the faster acquisition of the innovative and difficult to learn Single Incision Laparoscopic Surgery (SILS) technique compared to medical students.

**Methods:** 8 Harrier pilots and 29 medical students undertook 4 previously validated laparoscopic tasks (bean drop, block move, bile duct cannulation and appendicectomy) on SILS and 3-port laparoscopic simulator.

**Results:** SILS appendicectomy task mean times: Pilots 55sec vs 170sec medical students (p=0.002 CI -184.7, -46). Pilots had smaller mean times and error rates in all other tasks (not statistically significant). Total task times: SILS: Pilots 696sec vs 963sec students. Three port laparoscopy: Pilots 418s vs 497s students.

**Conclusions:** The pilots' high dexterity skills may explain their better performance in both simulator tests. The advantages of laparoscopic surgery over open surgery have been widely published and SILS may provide an even greater advantage than the traditional 3 port laparoscopic surgery but it is known to be very difficult to master. The selection of trainees for their hand eye coordination and special awareness as they do in the selection of military pilots in the UK may lead to faster and higher success in the acquisition of new laparoscopic surgical skills.

Medical Student Prize 0761 **ENDOVASCULAR REPAIR OF ABDOMINAL AORTIC ANEURYSMS (AAA) OUTSIDE MANUFACTURERS INSTRUCTIONS FOR USE: INFRA-RENAL SEALING IS NOT A SAFE OPTION**

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**Introduction:** Current guidelines recommend EVAR use for a neck length of >15mm and angulation of <60. We wished to assess outcome for EVAR inserted outside manufacturers 'instructions for use' (IFU).

**Method:** A large international EVAR registry database (EUROSTAR) was interrogated. Patients undergoing infrarenal EVAR outside IFU (neck<15mm or angulation >60) were compared to those inside IFU. Primary endpoint was proximal type 1 endoleak. Secondary endpoints were all cause mortality, AAA related mortality, and secondary intervention.

**Results:** 11208 patients were reviewed. 2839 were undertaken outside IFU (25.3%); 672 had neck length <15mm and 2356 angulation of > 60'. Patients were older (P=<0.001) and had more comorbidities in the outside IFU group. Mean aneurysm diameter was 57.8mm; mean diameter for short neck aneurysms was 59.9mm and 62.6mm for angulated necks (P=0.003). The incidence of endoleak rate was 5.3% in angulated necks, 7.6% in short necks and 12.7% in aneurysms with both short and angulated necks (P<0.001). All cause mortality (P<0.001) and aneurysm related mortality were higher in the outside IFU group (P=0.008). Time to reintervention was shorter in the outside IFU group (P=0.08).

**Conclusion:** Endovascular repair of abdominal aortic aneurysms outside manufacturer's instructions for use is associated with an unacceptable risk of proximal type 1 endoleak.

Medical Student Prize 0765 **A COMPARISON OF A DIRECT THROMBIN INHIBITOR AGAINST ASPIRIN AS VENOUS THROMBOEMBOLISM PROPHYLAXIS IN PRIMARY TOTAL HIP REPLACEMENT USING WOUND OOOZE AS THE PRIMARY OUTCOME MEASURE**

Alexander Aquilina, Niall Sullivan, Luke Brunton, Ashley Blom. *University of Bristol, Bristol, UK*

**Aim:** New guidance dictates that all primary THR patients should be prescribed a Direct Thrombin Inhibitor for VTE prophylaxis (NICE 2010). Postoperative wound ooze is associated with increased risk of infection. While little evidence suggests Direct Thrombin Inhibitors are superior to Aspirin as a VTE prophylaxis their effects on wound ooze are also