BOA ABSTRACTS

BOA1 THE USE OF ENHANCED RECOVERY PROGRAMMES FOR LOWER LIMB JOINT REPLACEMENT AT A TERTIARY REFERRAL CENTRE

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Introduction: Enhanced Recovery Programmes (ERPs) in lower limb arthroplasty have shown to improve patient outcomes and reduce inpatient stay. There is currently no national agreement on a standardised ERP for arthroplasty surgery. This study aimed to evaluate the compliance of a major UK hospital to its own ERP for total knee replacement (TKR) and total hip replacement (THR) surgery.
Method: As part of a large study initiated by the BONE collaborative, a retrospective audit was performed analysing compliance to the local ERP for 15 consecutive TKR and THR patients at a tertiary referral centre for orthopaedics. The data was recorded and analysed using Microsoft Excel®.
Result: There was good compliance to the ERP regarding thromboprophylaxis and antibiotic prophylaxis (TKR 93.3%, THR 100%). One third of TKR and THR patients were given carbohydrate pre-loading drinks pre-operatively. The majority of patients were given spinal anaesthesia (TKR 93.3%, 73.3% THR). Local anaesthetic use was greater in TKR than THR patients (80% vs 33.3%). Early joint mobilisation by physiotherapists within 24 hours was poor (TKR 20%, 13.3% THR). Discussion ERP compliance was good during this audit period. Poor documentation accounted for much of the pre-operative fasting and carbohydrate preloading results. Early mobilisation has been shown to improve outcomes; the low compliance here is concerning. Better communication between the multidisciplinary team after patients' return from theatre is essential to ensure patients are mobilised promptly. Further development of a standardised national ERP for lower limb arthroplasty will serve to improve patient care and outcomes.
Take-home message:
The development of a national standardised Enhanced Recovery Programme for all lower limb arthroplasty is key to improving patient outcomes after surgery. Extra focus on early mobilisation post-operatively is needed to improve recovery rate.

BOA2 A REGIONAL CROSS SECTIONAL STUDY ON THE PROVISION OF TOTAL HIP REPLACEMENT FOR DISPLACED INTRACAPSULAR HIP FRACTURES

THRIFT (Total Hip Replacement for Intracapsular Fracture Treatment) audit group on behalf of
Collaborative Orthopaedic Research NETwork (CORNET) www.cornetresearch.co.uk

Introduction: The National Insitute for Health and Care Excellence (NICE) currently recommends the use of total hip replacement (THR) for displaced intracapsular hip fractures in cognitively competent patients and who were independently mobile with the maximum use of one stick prior to the injury.
Method: We conducted a prospective cross sectional study of the management of hip fractures within a defined geographic region in the North East of England to assess current practice and variation in provision of THR for displaced intracapsular hip fracture.
Results: A total of 879 patients with hip fracture, admitted to eight acute trauma units were included in this study. 169 of 462 patients with displaced intracapsular hip fractures fulfilled the NICE criteria for THR. THR was performed for only 49 of the eligible patients (29%). There was significant variation in THR provision between the eight units (0% THR usage to 50% usage) ($p<0.001$). In the patients with a displaced intracapsular fracture, there were statistically significant differences in the age, ASA grade, AMTS and pre-injury walking ability between patients who underwent fixation, THR or hemiarthroplasty (all $p\leq0.05$). There was an increased chance of undergoing THR if a patient was 77 years (the median age for the THR eligible cohort) or younger compared to older than 77 years (RR=7.9, 95%CI 2.8-22.0, $p<0.001$) and if the patients were either ASA grade 1 or 2 compared to ASA grade 3 (RR=2.7, 95%CI 1.0-7.3, $p=0.06$). The reasons given by the treating surgeon for not performing THR in eligible patients were multifactorial.
Conclusion: There is significant variation in the provision of THR for eligible hip fracture patients which is influenced by both patient demographics and also by the unit to which the patient is admitted.
Implication: Identification of variation in practice helps to develop and standardise best practice in surgery for displaced intracapsular hip fractures.

BOA3 MANAGEMENT OF SUSPECTED CLINICAL SCAPHOID FRACTURE IN WRIGHTINGTON, WIGAN AND LEIGH

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Wrightington, Wigan and Leigh

Introduction: Suspected scaphoid fractures are defined as the presence of clinical signs of scaphoid fracture with a normal plain radiograph. We had a protocol to manage these fractures within the trust since 2009. In May 2013, a new protocol was introduced. All patients are seen in A & E with combined clinical tests & scaphoid series X-rays. If a scaphoid fracture is suspected, the patient is referred to hand clinic within 1 week. At that point if a fracture is still suspected, the patient is referred for limited sequence scaphoid MRI scan. This is then treated accordingly.
Method: All patients with a suspected scaphoid fracture from August 2013 to March 2014 were reviewed retrospectively

Result: There were 55 patients. Age range was 12 to 79 (average 34) years old. 34 were seen within a week in fracture clinic from being seen in A&E (61.8%). The average total pathway time was 1.9 weeks. 6 had scaphoid fractures (10.9%) and there was no reported missed scaphoid fractures. 2 patients (No MRI initially) had persistent symptoms and had repeat MRI scans showing no fractures. Total compliance to the whole pathway was 60% as compared to 20% in the previous audit. There was also a significant reduction in cost compared to that seen in the previous audit.
Conclusion: There was a significant reduction in treatment time for patients with no fractures as compared to the previous audit in 2010. We recommend this protocol for the management of suspected scaphoid fractures. It is beneficial to the patient, clinician and also cost effective.
Take-home message:
The method of management of suspected scaphoid fractures that we propose appears to be beneficial to both patients and the treating hospital as it speeds up time to diagnosis, reduces number of hospital visits and reduces cost of management of these patients

BOA4 MEDIAL HEEL LATERAL PUSH TEST: THE FIRST CLINICAL EXAMINATION OF SPRING LIGAMENT INTEGRITY ARTICLE

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Introduction: The Spring (calcaneonavicular) ligament is an intricate multiligament complex whose primary role is to stabilise the medial longitudinal arch and head of talus. Clinical suspicion of a spring ligament injury in isolation is roused when persistent medial midfoot pain is present with associated pes planus following trauma.
Method: We undertook a cadaveric study on 21 specimens to assess the use of a medial heel lateral push test to assess the Spring ligament in a standardised procedure, measuring lateral translation with graduated antegrade and retrograde defunctioning of surrounding structures and the Spring ligament.
Result: In all specimens, a significant displacement occurred on incision of the Spring ligament regardless of order of dissection. The degree of displacement increased an insignificant amount as surrounding structures were incised at each incremental force applied.
Conclusion: The medial heel push test is the first clinical examination to be described to determine integrity of the spring ligament complex. Our study objectively demonstrates that lateral displacement in relation to the mid and hind-foot is influenced most significantly by the integrity of the spring ligament and to a lesser extent tibialis posterior and flexor digitorum longus.
Implication: Our findings question existing literature regarding the role of the Spring ligament and pathology involved in tibialis posterior dysfunction. Perhaps it is time to update the existing Johnson and Stroms 1989 classification based upon our findings, which will inevitably influence management options for pes planovalgus deformity.

BOA5 COMPARING PATIENT TOLERANCE OF LOWER LIMB INTERMITTENT COMPRESSION DEVICES FOLLOWING MAJOR ORTHOPAEDIC SURGERY.

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Introduction: Deep vein thrombosis is a common post-operative complication, causing substantial morbidity and mortality. Studies show the substantial risk of DVT following major orthopaedic surgery. Post-operative protocol includes a combination of medical and compression prophylaxis. Studies have shown Pneumatic Foot Pump and Sequential Compression stockings to be comparable in DVT prophylaxis. The aim of our study was to compare patient tolerance of both devices.
Method: Compression devices were applied to all hip and knee replacement patients post operatively. 32 patients met the criteria. Pneumatic foot pumps were applied for 43 post operative limb nights, with sequential compression applied for 62 post operative limb nights. The times of pump use were recorded by the night nursing staff. All pumps commenced at 20:30 and if fully tolerated removed at 07:30. Simple descriptive statistics and paired T- Test was used to investigate statistical significance.
Result: Of the 43 limb nights pneumatic foot pumps were applied they were not tolerated on 11 occasions, with a mean tolerance length 622.1 minutes per night. Sequential compression pumps were applied on 58 post-operative limb nights, they were not tolerated on only one occasion, with a mean tolerance length of 655.5 minutes per night. T-Test revealed a result of 0.177.
Conclusion: We found pneumatic foot pumps to be poorly tolerated compared to sequential compression pumps following major orthopaedic surgery. We conclude that compression pumps may be more appropriate in this cohort of patients, considering the devices equal DVT prevention. Larger patient numbers may establish a statistically significant result.

Take-home message:
There is greater patient tolerance for sequential compression pumps compared with pneumatic foot pumps following major lower limb orthopaedic surgery

BOA6 IMPLEMENTATION OF FORMAL DOCUMENTATION OF TERTIARY TRAUMA SURVEY FOR TRANSFERRED POLYTRAUMA PATIENTS (TERTIARY PELVIC REFERRAL)

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Introduction: ATLS and Major Trauma Network protocols state that patients should have primary survey on admission, secondary survey as soon as the patient is stabilised and tertiary survey within 36 hours of admission. Royal Albert Edward Infirmary (RAEI) is a tertiary centre for pelvic trauma and receives such patients. Although these patients have been admitted in the referring hospital for a few days, it appeared that most of the time, tertiary surveys were not carried out and some patients had missed injuries.

Method: In RAEI, we implemented the formal documentation of all pelvic trauma patients that have been referred. A modified tertiary survey profoma is filled on admission. This allows us to keep track of all injuries and procedures done as well as follow-up appointments. This proforma is filled out again prior to discharge.

Result: 15 pelvic referrals over a period of 3 months (Jan 2015 – Mar 2015). From the referring hospital 100% had primary surveys, 80% had secondary surveys and 0% had tertiary surveys despite being admitted for more than 36 hours. 86.7% had the proformas filled on admission to RAEI and 80% had repeat proformas filled prior to discharge. Fortunately in this cohort of patients, there were no missed injuries.

Conclusion: Very low completion rate of tertiary surveys from regional hospitals. Our compliance to performing tertiary surveys for these patients are quite high and can be improved. Even though there is was no missed injury here, this can always happen and therefore we should always perform a complete tertiary survey on polytrauma patients.

Take-home message:
All poly trauma patients should have secondary and tertiary surveys performed. Tertiary surveys should be performed serially and any receiving hospital should repeat this and not take for granted that it had been performed in the primary hospital

BOA7 INDEPENDENT ASSESSMENT AND OUTCOMES OF 198 SHORT TAPERED STEMS WITH 72 MONTH FOLLOW UP

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Introduction: Short tapered femoral stems for cementless total hip arthroplasty are now having longer-term outcome data becoming more readily available. The shorter stem has a metaphyseal fit, loading the bone in this area, leading to physiological bone remodelling[1]. Some quote the stem as bone preserving, as it is 35mm shorter, and thus gives greater bone stock distally if revision is required[2]. Due to the nature of the short stem, it may be easier to insert through a smaller incision and potentially reduce complication rates[3]. We present a prospective single surgeon case series of 197 patients (mean follow up 36 months). All patients had the cementless 'Microplasty Taperloc' (Biomet). Primary outcome measures were femoral component revision rates. Secondary outcome measures included complications, patient reported outcome measures (Oxford Hip Score) and radiographic evidence of loosening (radiolucency/osteolysis, cortical hypertrophy, subsidence, stability/stress shielding – Engh's criteria[4]).

Method: Patients were identified using electronic software and all were routinely followed up and assessed in clinic since the introduction of the implant in 2009. Oxford hip scores were routinely obtained. A surgeon who had not carried out the procedure independently assessed radiographs.

Result: 196 patients were identified. The revision rate was 1% due to an intraoperative peri-prosthetic fracture of the femur identified on postoperative radiograph, and a significant leg length discrepancy. Complication rate was 2%, attributable to: subsidence of the prosthesis (1 hip), postoperative dislocation (2 hips). Oxford hip score increased on average from 21 to 45 (pre to post operatively). There were no signs of radiographic loosening in any of the implants.

Conclusion: The results show that using the short tapered stem is proving so far to be a reliable and safe alternative to its longer counterpart and operative complication rates are lower.

Take-home message:
Microplasty is a safe choice.

PRIZE WINNING PRESENTATION

BOA8 ENZMATIC BIOFILM PREVENTION USING A MARINE ENDONUCLEASE – A NEW PARADIGM IN THE TREATMENT OF PERIPROSTHETIC JOINT INFECTIONS

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Background: Prosthetic joint associated infection (PJI) is commonly associated with biofilm formation. Prevention of biofilm attachment as well as disruption of established biofilms may therefore allow more effective treatment. NucB is a novel marine bacterial endonuclease which degrades extracellular DNA, a structural component of biofilms. Our team is pioneering the use of NucB in clinical applications. The aim was to demonstrate the prevention of formation and dispersal of biofilms of clinical isolates of *Staphylococcus aureus* and *S. epidermidis*, and to quantify enzyme activity against biofilms attached to surfaces such as glass, and surgically relevant metals such as stainless steel.
Methods: Biofilms were grown in microtitre plates and quantified using crystal violet staining as well as confocal microscopy. High purity NucB (>95%) was used in biofilm prevention and dispersal assays.
Results: In the presence of low concentrations of NucB we observed significant reduction in biofilm formation (< 72%). NucB could also effectively disperse up to 90% biofilms attached to cobalt chrome, polyethylene and titanium surfaces. We also observed a significant increase in the ability of antibiotics to kill bacterial cells in the presence of NucB compared to controls.
Conclusion(s): NucB can successfully prevent the formation of, and can disperse biofilms of clinical isolates of *Staphylococcus aureus* and *S. epidermidis*. This enzyme is also well adapted to dispersing biofilms on polyethylene and metal surfaces.
Implications: This is a new approach to biofilm prevention and dispersal, and is currently being developed into a therapeutic protein which can hopefully reduce problems associated with PJI in the future