



Abstracts from the 2018 Meeting of the British Trauma Society, 7th–8th November 2018

The following abstracts, presented during the 2018 Annual Meeting of the British Trauma Society, were the winners of the Injury Journal Awards.

1st Prize Clinical Presentation

Tibial Shaft Fractures and the Montgomerie principles: what constitutes reasonable treatment?



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Introduction: Following the Montgomerie case there has been debate about interpretation of the principles in day-to-day practice. One of the recommendations is that patients are offered all reasonable treatments. Tibial shaft fractures could arguably be treated with cast, intramedullary nailing, open reduction internal fixation (ORIF), or external frame fixation. We examine whether tibial fracture patients are offered all treatment modalities, in particular external frame fixation.

Methods: Notes for adult patients suffering tibial shaft fractures (2016–17) were examined. The management options that were documented as being discussed were recorded to ascertain the proportion of patients offered external ring fixation.

Results: Twelve patients were identified. Nine patients were treated with IM nail, 2 with a circular ring fixator, and 1 in cast. No patients had documentation of a discussion of all 4 treatments. Of the patients treated with IM nail, 7 also had ORIF discussed, none were offered external ring fixator. The patient treated in cast also had IM nail explained, but conservative treatment was considered the best option.

Discussion: Montgomerie case recommends that patients should be offered all reasonable treatments and be facilitated to make an informed decision. Arguably, all 4 treatment modalities could be considered reasonable treatment. Are we, therefore, opening the door to legal action by not routinely discussing all 4 treatments for tibial fractures?

External ring fixators are generally only provided at specialist centres with limited resources regionally, potentially making it unfeasible to offer this treatment too all these patients. Without an expansion of frame services we are unlikely to be able to match the potential demand, making external ring fixator an unreasonable option to offer all these patients.

Conclusions: Of 12 patients only 2 were offered external ring fixator, and none had all options discussed. This potentially opens DGH trauma surgeons to legal risk if patients are not happy with the treatment delivered. In order to meet Montgomerie principles, however, facilities for external ring fixator will need significant expansion to make this a realistically feasible option to offer all patients. Further clarification is required on what is required to be routinely offered to these patients.

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2nd Prize Clinical Presentation

Evaluation of Costings in the Orthoplastic Management of Open Lower Limb Fractures



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Objectives: To perform a cost-analysis of the management of open lower limb patients within a regional OrthoPlastic surgery unit.

Methods: 37 and 35 patients suffering from Type-IIIB Gustillo-Anderson fractures that were treated at the Manchester University Foundation Trust (Wythenshawe) Orthoplastic Surgery Unit were identified in 2016 and 2017 respectively. Each patient was carefully assessed based on medical notes, imaging, lab results, and other investigations to ensure that medical documentation was complete. Costing was determined based on 2 different levels:

1. True remuneration: Real income received for service provision as determined per HRG remuneration.
2. Patient level costing: cost of treating patients based on Patient-Level Information Costing Systems (PLICS) data.

PLICS data was derived from the direct, indirect and overhead costs related to a patient admission spell including theatre, ward, equipment and staffing costs. Coding accuracy was assessed by clinician involvement with a senior coder in an audit of 2016 patients and continued for 2017 patients. The impact of HRG4+ introduction in April 2017 was determined by simulation of 2016 patients through the HRG4+ 2017/18 Local Payment Grouper.

Results: The cost of managing open lower limb fractures was £13,959/patient in 2016 and £12,005/patient in 2017. Remuneration in 2016 was £5,196/patient; whilst remuneration in 2017 was £10,707/patient. The clinically dominant procedure determined by HRG4+ was in orthopaedic surgery 70.3% in 2016 and 44.1% in 2017; yet, they received 40.5% of the income in 2016 and 44.2% in 2017. Simulation revealed that income under new HRG4+ tariffs increased by 25.1%, where improving coding accuracy yielded a further increase of 29.1% in income.

Conclusions: Providing complex lower limb reconstruction for open fractures in a multidisciplinary unit is resource intensive and associated with high costs. Current hospital remuneration for providing orthoplastic services is insufficient and inadequate. To ensure that orthoplastic units across NHS England can operate efficiently and to improve patient care, more accurate coding and an increase in national tariffs are essential. Remuneration goes to a single clinical specialty despite a multidisciplinary service provision and local assessment of parity is required.

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Best Poster Presentation

Increasing capture of patient-reported outcomes in trauma research

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Background: In order to understand how peoples' quality of life is affected following major trauma and the effects of that injury on their health and wellbeing, it is important to capture patients' perspectives of their own health. Patient Reported Outcome Measures (PROMs) can capture patients' own experience of their health such as symptoms, mobility, mental health and social function.

The aim of this research is to establish the impact of trauma on quality of life/symptoms and to explore views on using PROMs to support clinical care and research.

Methods: One-to-one, semi-structured interviews will be conducted with: (i) people who have experienced a major trauma, (ii) their family members/carers; (iii) healthcare professionals working in trauma related clinical areas; (iv) trauma researchers; and (v) staff members/volunteers from third sector organisations who support trauma patients and their families/carers.

Results: This is an ongoing study based at the Centre for Patient Reported Outcomes Research (CPROR) funded by the National Institute for Health Research Surgical Reconstruction and Microbiology Research Centre (NIHR SRMRC).

Findings will be used to inform the development of a pathway for the electronic capture of PROMs for inclusion within routine clinical care of trauma patients and trauma research. Future research will test the feasibility and acceptability of this ePROM system.

The research programme is being delivered in close collaboration with key stakeholders, including patient partners, trauma clinicians, trauma researchers and the ministry of defence.

Conclusion: The rising number of major trauma survivors has driven the need for improvements in rehabilitation to enable patients to return to functional activities, work and education after complex re-enablement and reconstructive surgery. PROMs

are essential to deliver patient-centred healthcare and research which is informed by patient-focused priorities/outcomes. The programme will also increase capacity for trauma-specific knowledge and expertise in relation to PROMs.

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Best Student Presentation

Analysis of the relationship between Vitamin D levels and Infection in Orthopaedic patients

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Background: One in four of the United Kingdom population suffers from low Vitamin D levels. Vitamin D has immunomodulatory properties, but its precise role in Orthopaedic infection is unclear. This study aimed to quantify average Vitamin D levels among Orthopaedic patients and elucidate the relationship between Vitamin D levels and incidence of infection.

Methods: A convenience sample of 187 Orthopaedic patients was taken in our institution, which is a tertiary referral centre for Orthopaedic infection. 25OHD concentration and infection status were recorded, and a Mann-Whitney *U* test for non-parametric data was performed on the means. The relationship was then validated through a bivariate correlation analysis (Spearman's rho).

Results: 104 patients had infection. Mean ages were 64.8 years in patients with infection and 63.0 years in patients without infection. Gender split was approximately equal in both groups. There was no significant difference in age or gender between both groups. Mean 25OHD concentration was 39.8 nmol/L for patients with infection and 59.6 nmol/L for patients without infection ($p < 0.00$). Overall mean 25OHD concentration for Orthopaedic patients was 48.6 nmol/L. The correlation coefficient between 25OHD levels and infection incidence was -0.3 ($p < 0.00$).

Conclusion: There was a negative correlation between 25OHD concentration and infection, suggesting that Vitamin D could have a protective effect against infection. Furthermore, patients without infection had a mean of 19.8 nmol/L higher concentration of 25OHD than patients with infection. Patients with infection had 25OHD insufficiency, whilst patients without infection had normal 25OHD levels. Future RCTs are needed to determine whether Vitamin D supplementation reduces incidence of infection and leads to improved outcomes in Orthopaedic patients.

Implications: These findings suggest a potential future role for prophylactic Vitamin D supplementation to help combat the Vitamin D insufficiency prevalent in Orthopaedic patients, as well as in the prevention of infection during the hospital stay.

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Best Scientific Presentation

Intra-medullary Nail Insertion Accuracy: A comparison of the Infra-patellar and Supra-patellar approach

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Aims: The anatomical safe zone for intra-medullary nail insertion through the tibial plateau is small, insertion outside of this area

