

X-ref For other Roundups in this issue that cross-reference with *Trauma* see: [Research Roundup 1](#); [Shoulder & Elbow Roundup 3, 5](#); [Foot & Ankle Roundup 4, 7](#); [Spine Roundup 7](#).

Predicting death in femoral shaft fractures **X-ref**

■ The interest in venous lactate as a predictor of morbidity and mortality is continuing to produce more and more useful research. Investigators in **Baltimore (USA)** have revisited the question of early mortality in femoral shaft fractures.¹ Their study aimed to evaluate the predictive value of venous lactate as a risk factor for pulmonary complications following early nailing of the femur. In their retrospective study, the authors included 414 patients with multiple injuries treated in three academic tertiary referral centres. The authors included all adult patients with multiple injuries (ISS >16) with an elevated lactate on admission. All patients underwent a reamed intramedullary nail of the femur. The authors attempted to correlate elevated pre-operative lactate to post-operative pulmonary complications and to relate the pre-operative score to the outcome (measured as duration of mechanical ventilation and recorded pulmonary complications). The lactate was of use in distinguishing those patients who were likely to have pulmonary complications. Patients with an admission lactate of 3.7 mmol/L were likely to undergo mechanical ventilation for > 5 days. Patients who did not have an extended period of post-operative ventilation presented with a median pre-operative lactate of 2.8 mmol/L. This study reinforces the value of serum venous lactate as a marker of peri-operative morbidity and mortality.

Psychiatric illness affects outcomes in polytrauma

■ Researchers in **Cleveland, Ohio (USA)**, have investigated the

outcomes of 332 skeletally mature patients, all of whom were surgically treated for multiple orthopaedic injuries.² The patients were identified from a local trauma registry and a thorough notes review was undertaken, relating to both admission and other pre-existing psychological diagnoses. Their study demonstrates that almost 40% of patients sustaining orthopaedic polytrauma have depression and a further 17% misuse substances. Depression was associated with a threefold increased risk of complications. Orthopaedic surgeons were poor at managing inpatient medication and arranging for post-discharge care. We should remain conscious of these problems in our patients. The authors were also able to establish that post-operative complications were independently predicted by depression, perhaps due to poor compliance – or, equally likely, that the failure to improve following surgery due to complications leads to depression.

Radial head arthroplasty OK? **X-ref**

■ Unreconstructable radial head fractures may defy definition, as the degree of reconstructability is clearly open to a range of opinion, and perhaps not everything that can be fixed should be fixed. There are various theories as to what to do with complex radial head fractures. Proponents of fixation argue that particularly where there is an associated ligament injury, the radial head is required to protect any medial ligament injuries. Others argue that the associated stiffness compromises any advantage the native head may have, and advocate either resection or arthroplasty. We would never advocate resection, here at 360, or excision of the radial head as it can lead to radial shortening, distal radioulnar joint (DRUJ) pain, and medial overload. There is, however, the option of radial head arthroplasty, although results for fracture are

few and far between and long-term follow-up is sadly lacking. Marsh and colleagues in **London, Ontario (Canada)** report their own series at a minimum of five years post-radial head arthroplasty using a modular metal arthroplasty system.³ Their series consisted of 55 patients treated with arthroplasty for an unreconstructable radial head fracture. In common with many series like this, the patients were a mixture of isolated injuries, complex dislocations and combination injuries. The range of motion was, on average, acceptable in the elbow group with a range of flexion from 11° to 137°. The radiograph appearances could only really be described as poor, with 45% of patients having radiolucencies around the stem, and it may be that further longer-term follow-up will

show a deterioration. The main message of this paper is that the authors have shown that early good function following radial head arthroplasty in trauma is sustained beyond five years of follow-up (mean eight years). We would perhaps inject a note of caution in that there was significant reduction in range of movement and strength compared with the uninjured side, but with only two of 55 patients requiring further surgery.

Lisfranc and associated fractures may recover better than commonly thought **X-ref**

■ An injury much focused on with respect to its diagnosis, principally due to the poor outcome associated with missed treatment, fracture dislocations of the tarsometatarsal joints of the midfoot are renowned for their complexity. However, surgeons in **Geneva (Switzerland)** studied

61 patients, all with a diagnosis of tarsometatarsal joint injuries and all treated with operative fixation. The paper reports outcomes followed up to 24 years after fixation.⁴ Much like long-term studies of the distal radius and ankle, radiographic osteoarthritis (OA) was prevalent and present in 72% of cases, but the occurrence of symptomatic OA was lower at 54%. Despite this, all 41 patients on whom employment data were available had returned to their previous employment at a mean of five months, and only three required modified shoes. Although the ‘hard’ endpoints of appearances of osteoarthritis of the foot appear to reflect the commonly held belief that these injuries are associated with poor outcomes, when moving to a patient-reported outcome measure such as the

visual analogue scale (VAS) and American Orthopaedic Foot & Ankle Society (AOFAS) score, the outcomes look very much better. In light of this fresh look at very long-term follow-up, it seems that

outcomes may not be so bleak for patients with a complex midfoot fracture after all.

Complications with clavicle fixation **X-ref**

■ Fixation of the clavicle has become somewhat routine following a number of widely publicised randomised controlled trials over the past few years. Whilst for many patients this improves outcomes, there are still some complications. In a topic study that focuses on the bad rather than the good associated with clavicle fixation, authors from **Melbourne (Australia)** set out to review 138 patients, reporting on their complication rate and profile



associated with surgical fixation of acute midshaft clavicle fracture.⁵ A not insignificant incidence of complications was seen with operative fixation, and around 15% of patients suffered a complication of one kind or another. The series was a mix of plate (n = 110) and intramedullary (n = 28) fixation, and complication rates were significantly higher in the intramedullary fixation subgroup (10% vs 32%). The most common complications were due to inadequate surgical technique (35%), symptomatic metalwork (23%), nonunion (6%) and just 3.6% infection rate. This is an honest paper that frankly reports the notable risk of complications associated with plate fixation of the clavicle. It is important to remember that the only way to avoid complications is to avoid operating, and the rates reported here are acceptable. Nonetheless, the authors make the reasonable point that complications are not infrequent and should be taken into account.

The feasibility of two screw anterior fixation in an Arab population X-ref

■ Management of unstable odontoid peg fractures has moved a little towards operative intervention. Many patients are now treated with anterior screw fixation, a tricky procedure at the best of times. Concerns have been raised in many quarters about the potential safe corridor for placement of the ideal biomechanical construct of two screws. In a very useful cross-sectional study aiming purely to assess the feasibility of the placement of screws in the C2 peg

in the Arab population, investigators in **Kuwait City (Kuwait)** present a retrospective review of 156 CT scans of the cervical spine using just adults.⁶ The minimum external and minimum internal transverse diameter, and the minimum external and minimum internal anteroposterior diameter of the odontoid process were measured to evaluate the feasibility of two screw anterior fixation. The male population did have (unsurprisingly) a larger diameter of the canal, however, there was less than 8 mm for screw position in more than 98% of the adult male population, suggesting that two 3.5 mm will not fit, and that the risks of breaching the canal are high in this population. Clearly, screw fixation has some significant advantages over other options, but in certain populations it may not be feasible.

Early weight-bearing and ROM in ankle fractures X-ref

■ Ankle fractures are almost exclusively intra-articular fractures. However, they are often (and indeed, perhaps, usually) treated with open reduction and internal fixation followed by immobilisation in a plaster cast. The rationale for this (as opposed to other intra-articular fractures that are fixed to allow early mobilisation) is due to the concept that the poor soft-tissue envelope may result in higher infection rates if early mobilisation is used – as, in fact, was seen in the early randomised trials on the topic. The study team in **Toronto (Canada)** has published their own randomised controlled trial investigating the

potential benefit of delayed weight-bearing and early mobilisation.⁷ Their study involved 110 patients, all of whom underwent fixation for an unstable ankle fracture and were recruited to either early weight-bearing and range of motion at two weeks, or late weight-bearing and immobilisation for six weeks. The outcomes were assessed using return to work as a primary outcome measure, and then secondary outcome measures of the Molander score, SF-36 and complication rates. The authors were able to report that there were some differences (as one might expect) in the earlier weight-bearing group, with a return to function earlier and no increase in wound complications or infections. The authors advise that, based on their study, patients may do better with early weight-bearing and motion without increasing the risk of complications.

Improving core surgical training in a major trauma centre

■ These authors from **Nottingham (UK)** studied the trauma and orthopaedic (T&O) core surgical training in major trauma centres (MTCs) to determine whether it meets Joint Committee on Surgical Training (JCST) quality indicators.⁸ After an audit cycle assessing the impact of a weekly departmental core surgical trainee rota, they concluded that utilising a ‘problem-based’ model can significantly improve T&O core surgical training in MTCs, and can provide significant improvements in surgical exposure

and successful completion of assessments following their interventions.

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