X-ref ***For other Roundups in this issue that cross-reference with Trauma see:*** *Hip Roundups 2, 3; Foot & Ankle Roundups 3, 4, 6; Wrist & Hand Roundups 7, 8; Shoulder & Elbow Roundups 2, 3, 5, 6; Oncology Roundup 6; Children's Orthopaedics Roundups 1, 4, 6.*

Percutaneous plating in hip fracture? X-ref

■ Despite the complexity of the patients, variation in injury patterns and broad array of surgical techniques and implants available to treat fractures of the femoral neck, we have been essentially unable to demonstrate that one approach is superior to another for the majority of hip fractures. Even the thresholds for which patients should have a total hip arthroplasty are rather shades of grey, if one looks too carefully at the literature. A review team from **Southwest Hospital, Chongqing (China)** have undertaken their own meta-analysis of the literature, comparing intramedullary nail *versus* percutaneous compression plate (PCCP) fixation for intertrochanteric hip fractures, presumably hoping that with a minimally invasive approach to plate fixation, the pendulum might swing decisively in the favour of the plate.[1] The review team's methodology was fairly standard, relying on the tools provided by the Cochrane Collaboration. Following a thorough literature review, there were six trials of varying design that were suitable for inclusion in this meta-analysis, reporting the outcomes of 908 fractures treated with either intervention. A pooled analysis was undertaken for all 908 patients, with 412 receiving intramedullary fixation *versus* 496 being treated with PCCP. Reading the paper and authors' commentary on the results, one gets the impression that they were hoping to find in favour of PCCP. However, although PCCP resulted in slightly lower blood transfusion rates, shorter length of stay, and a reduced likelihood of implant-related complications in the studies reviewed, there were no differences found in the main outcome measures. There was no advantage of one approach over another for the duration of surgery, systemic complications, mortality rates, likelihood of re-operation, Harris hip score or rate of recovery of walking ability. In recent times, intramedullary nail fixation has perhaps gained popularity in the management of proximal femoral fractures, and the data presented here do not support one treatment modality over another. Even when percutaneous approaches are utilised for the plate insertion, there does not appear to be any advantage of one method over another.

Hip fracture under the spotlight X-ref

■ The management of patients with displaced fractures of the femoral neck has been the subject of much controversy, and probably will be for some time to come. With an ageing population, best management of this problem is becoming not just a clinical priority, but also an economic one. With increasing numbers of procedures being performed, the pressures on healthcare services continue to rise. However, the aim remains simple: to restore the patient as closely as possible to their pre-morbid condition. The stakes are high, with many frail and elderly patients unable to adequately withstand a secondary procedure. Adding to the mix the increasing evidence that time to theatre has a direct impact on morbidity and mortality, surgery must be an urgent priority, with the most effective techniques employed readily available in every orthopaedic department. The authors of this important review from **Lund (Sweden)** have done a sterling job of collating all the relevant papers on the management of displaced hip fractures, to produce guidelines based on the best evidence in the current orthopaedic literature.[2] We would thoroughly recommend this paper to all *360* readers involved in the management of this frail patient group. The specific emphasis of the review is to attempt to establish which implants and surgical techniques were advantageous in displaced intracapsular neck of femur fractures, in addition to reviewing the evidence informing management of patients with severe cognitive impairment. Within the usual limitations of study design, such as the inability to pool results for direct comparisons and heterogeneity of the data presented, the authors were able to come to some valid conclusions. The current literature does support younger patients (< 65 years) being treated with internal fixation as opposed to arthroplasty when used in conjunction with robust follow-up and an understanding from both the patient and the surgeon that a THA may be required at a later date. Those patients with a functional or cognitive impairment with additional comorbidities are likely to benefit most from a cemented, modular, unipolar hemiarthroplasty and there is strong evidence to support the use of the direct lateral approach rather than the posterior approach for hemiarthroplasty. Seven randomised trials report results in the active older patient (> 65 years) who were living independently prior to their fall. The evidence base from four of these suggested a better quality of life after THA, while three showed no functional difference. In one study there was a rate of revision of 2.5% in the THA group, compared with 20% in the hemiarthroplasty group, with acetabular erosion remaining the concern in an otherwise active patient. The authors report that the risks of dislocation were not clear, pointing to a recent meta-analysis that did not find any difference in dislocation rate between THA and hemiarthroplasty. The authors concluded from their review that in this patient group, THA is the management of choice, however, the quality of data supporting this conclusion is not necessarily generalisable to many orthopaedic departments. Is it acceptable to delay a patient with a hip fracture until a hip surgeon is available to perform a total hip arthroplasty? Would it be better to instead perform a modular hemiarthroplasty, thus avoiding any unnecessary delay? We are seeing increasing numbers of THAs performed for hip fractures, and this is likely to continue. We need the best possible evidence upon which to base our decisions, which could have considerable repercussions not only for the patient but also for those who are responsible for planning the future healthcare needs of our patient population. Here at *360* we are very much hoping that the multinational, randomised study based in Ontario, Canada, comparing hemiarthroplasty with THA in displaced hip fractures will provide us with some concrete answers.

Managing the soft-tissue envelope in closed, high-energy complex foot and ankle fractures: a novel technique X-ref

■ As every surgeon managing bony trauma will attest, the higher the energy, the more difficult the fracture – mostly because of the associated soft-tissue injury. The state of the soft-tissue envelope is both a rate-limiting step to the timing of interventions, and a key factor in recovery when attempting to manage high-energy extremity injuries. This is particularly relevant in the foot where the available soft-tissue coverage is both thin and highly specialised. Avoiding full thickness necrosis and wound breakdown while reducing and holding fractures are the goals in surgical planning. This paper from the **Royal Centre for Defence**

Medicine, Birmingham (UK) outlines a novel technique to speed the recovery of the soft-tissue envelope in which severe swelling and blistering occurs.[3] Negative pressure dressings have been a revolution in the management of soft-tissue trauma in open and closed wounds. Taking the next 'natural step' from the closed wound dressing, surgeons describe an approach to reduce wound dehiscence by evacuating tissue fluid as it collects between the dermal and epidermal layers. This is achieved by making multiple small fenestrations over the traumatised skin and then applying a sealed negative pressure wound therapy system to evacuate the resultant oedematous fluid. This technique has the potential to be beneficial in salvaging traumatised specialist tissues such as the sole of the foot. Salvage here is imperative, as free tissue transfer often leads to a poor result due to the shear forces on the graft and its insensibility in a weight-bearing region of the foot. It may also facilitate earlier reduction and internal fixation of underlying fractures, which is itself beneficial to the soft-tissue envelope by reducing the deformity, internal bleeding from raw surfaces and the resultant inflammation within the foot. We look forward to a well conducted clinical study to support this approach.

Changing practice one PRCT at a time X-ref

■ The healthcare costs associated with running a large, randomised controlled trial run into the millions. With large numbers of randomised controlled trials answering questions as diverse as splintage for Achilles tendons, or type of hip arthroplasty, one does wonder: does the outcome make any difference? Or are these trials just a big waste of time? We were really interested to read a secondary analysis as a result of DRAFFT, a health technology appraisal study. A large multicentre randomised controlled trial designed to evaluate the health economic differences between K-wires and volar locking plates in reducible closed distal radius fractures, the study came down in favour of the K-wire fixation, as there were no real differences between the groups in terms of outcomes. However, there were lower implant costs and resource utilisation in the K-wire group. In a very interesting secondary analysis, the group in **Oxford (UK)** set out to establish if there were any measurable changes in orthopaedic practice as a direct result of this well publicised trial.[4] The answer is, emphatically, yes there were. The use of K-wires rose from 12% of fractures in the UK prior to the study, to 48% following publication. It certainly appears that these studies are able to drive change. What has, perhaps, been particularly notable about the DRAFFT study is the high level of post-publication exposure it has had, and the engagement of the orthopaedic community.

Non-invasive Hb monitoring X-ref

■ Accurate and effective measurement of patients' haemoglobin (Hb) is an essential aspect of patient monitoring both pre-, intra- and post-operatively. The innovation of the HemoCue (Ängelholm, Sweden) has allowed for bedside testing and improved intra-operative patient care. We were intrigued to see this report from the **Mayo Clinic, Rochester (USA)** investigating the utility of a novel, non-invasive haemoglobin monitor.[5] The investigators have undertaken a comparative evaluation of non-invasive and invasive Hb monitoring in the intensive care setting. Their prospective analysis compares reliability, cost and patient preferences between the two systems. The authors undertook analysis on 100 consecutive patients undergoing day one post-operative blood tests. Haemoglobin measurements from both the traditional invasive blood drawing approach, and the non-invasive measurement, were compared with two samples within 30 minutes of each other. There were no significant differences between means on paired testing and concordance testing. However, there were savings in terms of cost ($26 *vs* $2 per patient) and a strong patient preference for the non-invasive approach. The non-invasive approach appears to win hands down for isolated Hb measurements. The authors have comprehensively demonstrated this to be more efficient, less expensive, and preferred by patients when compared with serum haemoglobin measurements.

Distal radius again? X-ref

■ How much research resource needs to be expended to establish the same outcome before clinicians will change their practice? If the paper by Costa et al[4] is to be believed, then practice in the UK at least has dramatically changed as a result of the DRAFFT study. This randomised controlled trial (this time in the older patient population) reported from the **Karolinska Institute, Stockholm (Sweden)** takes a slight variation on the theme and compares external fixation (ex-fix) with or without K-wires to volar plates (either with or without ex-fix augmentation) in the distal radius.[6] None of the reported studies have found any differences in efficacy between treatment modalities in the distal radius, and therefore favoured the K-wires on cost-effectiveness grounds. In this particular study, 140 patients presenting with a dorsally displaced distal radius fracture were randomised to fixation with a volar locking plate (n = 70) or external fixation with the optional addition of K-wires (n = 70). Outcomes were assessed regularly, and at 12 months of final follow-up using the EQ-5D, PRWE and DASH scores. Secondary outcome measures including range of motion and grip strength were also reported. While there were significant differences in radiographic outcomes between the two groups, with the volar plate group achieving a better reduction and maintaining this difference in secondary outcomes, this did not translate into differences in functional scores, range of motion or changes in any patient-reported outcome score. The authors concluded that both techniques are equally suitable treatment options after low-energy trauma in a population aged 50 to 74 years. This study underlines for us the importance of co-ordination in the design and conduct of randomised controlled trials, both nationally and internationally. The outcome of this study could realistically have been predicted reliably from the many similar studies that have come before. However, there are many questions surrounding the management of distal radial fractures that could very usefully have been studied by the study team. As national networks are starting to emerge in trauma research, we wonder here at *360* if it will be long before there is some international co-ordination of research questions.

Rotational control in sliding hip screws X-ref

■ The biomechanical stability of constructs surrounding the proximal femur continues to dominate the basic science literature. Although many studies are not worth commenting upon, this cadaveric study from **Tampa (USA)** is certainly worthy of a mention. Although the jury is still somewhat undecided about the relative benefits of nails *versus* plates in the stabilisation of pertrochanteric fractures of the proximal femur, there are some clear patterns emerging in the literature. What is still far from clear, however, is how the different

designs of the devices affect their biomechanical properties. In a well designed cadaveric study, the venerable Gamma 3 nail was tested against the much newer InterTAN nail in a study designed to establish if the two screw designs had an effect on rotational stability.[7] The tests were conducted in 11 pairs of hemipelvises, with the intention of establishing the effects of stability on a biaxial walking simulation in patients with an unstable intertrochanteric fracture. In an impressive show of cadaveric modeling, the cadavers were subjected to three months of testing, and then testing to failure. In what is a *tour de force* of biomechanical testing, the authors clearly conclude that the femoral head rotation is significantly lower in the InterTAN group, as indeed is the maximal femoral head collapse. On all of the measures, the more modern dual screw design provided better biomechanical stability. Despite the relatively clear conclusions, it is important to note that Tampa is one of the originating centres for the InterTAN device, and this will doubtless have influenced the interpretation at least of these results.

Salvage of femoral neck fixation – how well does it actually work? X-ref

As the incidence and prevalence of hip fractures continues to rise in the setting of an ageing and increasingly healthy older population, it is perhaps to be expected that the need for salvage after failed fixation, nonunion or implant fracture is also likely to increase. For most patients, the 'universal solution' to difficult proximal femoral fracture complications is a total hip arthroplasty, and we all tend to be reassuring with our patients as to the likely outcome. Here at *360* HQ, we were delighted to read a systematic review from **London (UK)** aimed at quantifying just how well patients do with total hip arthroplasty for trauma following failed internal fixation.[8] The review team performed systematic review and meta-analysis with the 'preferred reporting items for systematic reviews and meta-analysis' (PRISMA) guidelines, using the PubMed, EMBASE and Cochrane library databases. They were able to report composite outcome measures for complication rates (deep infection, peri-prosthetic fracture) and functional assessments with the EQ-5D as compared with the total hip population. Perhaps reassuringly, the functional outcomes were not significantly different to those patients undergoing primary THR for hip fracture, however, there were significantly more complications in the revision group. This underlines to us the importance of these procedures being performed by experienced revision hip surgeons, with the necessary skills and experience to achieve an excellent result in what are very complex and frail patients.

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