type.[7] The rest were intra-articular fractures. All were treated with a simple modified Suzuki external fixator (overall forming a similar arrangement but with tensioned wire loops rather than rubber bands). The fixator was left *in situ* for 33 days, and mean follow-up was achieved to 12 months. In terms of longer-term functional outcomes, the surgical team reported a mean range of movement of 90° at the PIPJ at one year. Most series of external fixators around the PIPJ are for a mixed bag of injuries and it is not always clear what the fracture pattern is. In this paper the source data are clear. These results, in themselves, are very good although, slightly confusingly, the authors report 11 patients with pain in cold weather. We thought it was warm in Kuwait!

A different approach to the dorsal fracture subluxation

■ Following directly on from the last report is a case series originating in **Villeurbanne (France)** of 19 patients with similar injuries.[8] These patients were all treated with a vastly more complex operation. All of the patients who had more than 40% articular surface involvement underwent hemi hamate osteochondral autografts. Here, though, there are acute (within six weeks, nine patients) and chronic (i.e. delayed treatment > six weeks, ten patients) treatment groups, in contrast to the previous series of all acute fractures. The authors report a follow-up of 24 months, with patients achieving a range of motion of 17° FFD to 86° in the acute fixations, and a remarkably similar result in the chronic group (18° FFD to 81°). The comparison of these two papers is enlightening, with the hemi hamates and its associated big surgical dissection leading to poorer range of movement. In so many areas of orthopaedic trauma surgery, the assumption is that complex and new is better than old – this here seems to be another example that this is not necessarily the case. These are rare injuries so a study with sufficient numbers randomising to techniques is much harder to achieve, however, inferences can be drawn from simple case comparisons such as this one.

Fragment-specific fixation?

■ It is somewhat curious to read this study from **Lund (Sweden)**.[9] In light of recent studies from various sources demonstrating that there is no appreciable difference between open reduction and internal fixation and closed k-wires, it is difficult to conceive how a trial with the aim of comparing 'Fragment-specific fixation *versus* volar locking plates in primarily non-reducible or secondarily redisplaced distal radius fractures' would expect to find any form of reasonable difference. Perhaps more confusingly, the authors selected a sample size of just 50 patients randomised to either a volar locking plate or fragment-specific fixation. In both groups, a TriMed plate was used to achieve either volar plating or fragment-specific fixation. Outcomes were assessed at one year with the QuickDASH patient-reported outcome measure (PROM) and a rather basic assessment of ROM/grip. Perhaps unsurprisingly, given the effect size that would be required with this small study in order to find a significant difference, the authors report no outcome measure differences but a small and significantly higher complication rate in the fragment-specific group (which had up to three incisions – dorsally over first and fourth extensor compartments +/- Henry volar approach). This study really is rather a case of putting the cart before the horse. It is to prevent 'pet questions' being half-heartedly answered in single-centre studies that the majority of large funders have moved towards a priority setting approach. There is little to gain from these kinds of small underpowered 'pet studies' unless they are properly labelled as feasibility or pilot studies from which to power a definitive study.

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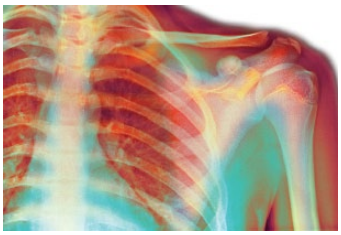
Shoulder & Elbow

X-ref ***For other Roundups in this issue that cross-reference with Shoulder & Elbow see: Trauma Roundups 1 and 4; Children's orthopaedics Roundup 4; Research Roundup 5.***

Pectoralis major transfer for irreparable anterosuperior rotator cuff tears

■ It is well known that a large tear of the rotator cuff is hard to repair. Although there are excellent reported outcomes from anterior deltoid retraining in some patients, this isn't enough and large cuff tears in particular need treating before the patient progresses to an advanced cuff tear arthropathy. The problem, of course, is that treatment is easier said than done. When combined with the retraction of the cuff and degeneration of the tissues seen both pre- and post-cuff tear, it can sometimes feel as if there are no reconstructive options. Surgical device companies have attempted to solve the problem with cuff augments to attach to the cuff but these are reported to have mixed levels of success. One potential option, however, is the transfer of the pectoralis major tendon. The authors of this study from **Salzburg (Austria)** and **Berlin (Germany)** report on the long-term outcomes of 27 patients with anterosuperior cuff tears without an established arthropathy treated with a pectoralis major transfer.[1] The surgical procedure was a partial subcoracoid pectoralis major tendon transfer



and the outcomes here are reported at ten years. Outcomes presented included Visual Analogue Scale (VAS) pain score, objective strength and range-of-motion assessments, the Constant-Murley score and the Simple Shoulder Test (SST). The authors also arranged and reported the outcomes of plain radiographs and ultrasound imaging of the shoulders. The procedure itself appears to be a success, with the Constant scores improving from 54% pre-operatively to 87% at the initial follow-up, and maintaining the improvement, for the most part, to the long-term follow-up with a mean score of 83%. In terms of modification of the long-term sequelae of arthropathy, these authors reported the patient cohort roughly split into thirds, with one third reporting no progression, one third progression by a single grade, and one third significant progression of arthropathy over the ten-year period of the study. This shoulder-sparing procedure should perhaps receive more press in the mainstream orthopaedic literature. The inevitable consequence of non-operative management of these kinds of symptoms is ongoing pain, degeneration, and eventually a cuff tear arthropathy and arthroplasty. If a pectoralis major transfer can reduce this incidence, it should be considered.

The deltoid insertion in humeral fractures X-ref

Proximal humeral fractures continue to vex even the most sanguine of shoulder surgeons. We all feel innately that some patients do better with arthroplasty, some with fixation and some with a sling, but it is one of those conditions where the more one knows the less one seems to understand. For those with a propensity to fix proximal humeral fractures, there is a choice of approaches – either the direct lateral approach which offers a better approach for fixation but is poorly extensile and not ideal for any secondary procedures that may be required such as arthroplasty or revision surgery, or the deltopectoral approach. In an experimental study, these authors from **Winterthur (Switzerland)** studied the risks of minimally invasive lateral placement of plates on the humerus.[2] This technique, although becoming more popular, cannot by all accounts be safely performed without the potential for damage to the central parts of the distal deltoid muscle insertion and may also be associated with partial entrapment of the brachial muscle with a higher risk of injuring the radial nerve.

Long-term results of reverse total shoulder arthroplasty

The position of the reverse shoulder arthroplasty as a successful, and in some cases essential, device in shoulder arthroplasty is now beyond doubt. Although there are still some concerns about longevity and the reporting of high complication rates with some implants and in some indications, the literature is reflective of an established and increasing use of reverse total shoulder arthroplasty in both elective and trauma practice.[3] Despite the growing popularity of the implants, the precise indications and the long-term outcomes for these prostheses are yet to be fully defined. This large study from the team in **Lyon (France)** offers one of the few long-term studies evaluating reverse shoulder arthroplasty, and authors report the outcomes and survival at a minimum of ten years following surgery. This work was based on data from their original previously reported study of 186 patients with 191 Grammont-style prostheses implanted for a range of chronic pathologies.[4] The authors were able to update this with their current study including 84 of these patients with 87 prostheses followed-up for a mean of 12.5 years. Within this cohort, radiographic assessment was available in 64 patients with 67 prostheses. The authors report a mean absolute Constant score of 55 and a mean relative Constant score of 86, which not unsurprisingly was significantly decreased when compared with the scores from the previous mid-term study. A total of 73% (49 shoulders) of cases demonstrated evidence of scapular notching and 29% (47) had complications, with dislocation and infection most commonly seen. There were 12% (16) of the original patients who had undergone revision surgery, with the overall ten-year survival at 93% when using revision as the endpoint. These results are consistent with shorter-term studies documenting a survival rate of 89% to 95%. This study adds important information regarding the long-term outcome of these implants, but without doubt more data are needed. As the technology matures, the long-term outcomes of these prostheses will become more and more important. We can't help thinking that there may be more failures than the reported 12%, but given the difficulties of revising a reverse shoulder arthroplasty, many more may be poorly performing but still *in situ* due to the lack of a reasonable alternative.

Depression influences outcome following total shoulder replacement... but it is still worth doing?

Psychological factors such as depression, anxiety and inadequate coping mechanisms are known to influence both surgeon- and patient-reported outcomes for a variety of pathological conditions of the upper extremity.[5,6] Nonetheless, there is certainly more work to do in determining whether such patients still benefit from surgery and whether anything can be done to influence or optimise these psychological factors in order to improve outcome. In this retrospective case-control study, the team from the Hospital for Special Surgery, **New York, New York (USA)** examined the outcomes of 264 patients, all of whom underwent primary total shoulder arthroplasty (TSA) for osteoarthritis of the shoulder with a minimum of two years of follow-up. Outcomes were assessed using the American Shoulder and Elbow Surgeons (ASES) Score, and a subgroup of 88 patients with a pre-operative diagnosis of depression were compared with a control group of 176 patients. Cases were matched according to age and gender in a 2:1 ratio. As perhaps is to be expected, the only difference in baseline characteristics were the Short Form-12 (SF-12) Mental Component scores. There was a significant improvement seen in the ASES scores across the board, both for the patients with depression and the control group. However, the patients with depression reported final ASES scores that were significantly lower, and improved to a significantly lesser degree, than those of the comparative patients in the control group. This was echoed with significantly lower SF-12 Physical Component scores reported as well. The authors attempted to unpick the aetiology with multivariate analysis, and pre-operative depression was an independent predictor associated with a reduced improvement in the ASES score. The authors' comment was that this is not a clinically relevant difference and should perhaps not discourage patients with a pre-operative depression diagnosis from undergoing TSA. However, there is clearly a take home message for surgeons that counselling patients prior to surgery as to what to expect may have a positive benefit. This message, although sometimes seemingly a standard conclusion of all outcome factor papers, is starting to accumulate evidence for its efficacy, and we would also draw the attention of *360* readers to the recent prospective randomised clinical trials already supporting the positive effects of pre-operative

priming and patient-reported outcome scores.[7]

Predicting revision surgery for lateral epicondylitis of the elbow

Lateral epicondylitis of the elbow, otherwise known as 'tennis elbow', continues to be not only one of the most common presentations in elbow clinics, but one of the most disheartening to treat. Patients complain bitterly of pain, and although clinicians have no trouble making the diagnosis there are few excellent options for treatment. Previously, the mainstay of treatment was corticosteroid injections, with a subsequent escalation to surgical release offered by most surgeons. However, with some data finding that corticosteroid injections are associated with an increased rate of surgery for the condition,[8,9] and randomised studies far from convincing on the potential benefits of pretty much every available treatment, the orthopaedic community finds itself yet again evaluating the efficacy of an established treatment. In this large national database study from the US, the authors explore the outcomes of 3863 patients who underwent surgery for lateral epicondylitis of the elbow. The primary outcome measure was the need for revision surgery within two years of the original procedure, and, in common with all studies of this type, little is known about the patients themselves, just their treatment outcomes. Patient and pre-surgery management factors (such as number of steroid injections) were analysed, and these authors were in a unique position, given the numbers of patients, in that they were able to undertake a proper multivariate binomial logistic regression analysis with the aim of determining the risk factors for revision surgery. The authors reported a very low overall rate of revision (1.5%), with risk factors for revision including age <65 years, male gender, morbid obesity, smoking, inflammatory arthritis and three or more pre-operative ipsilateral corticosteroid injections. The latter was the most significant risk factor for revision surgery. However, as the authors comprehensively point out, the overall revision rate following surgery for tennis elbow is low and this would support existing evidence that tennis elbow release is appropriate in certain patients. Those with an increased risk of revision surgery can now be counselled regarding the potential for requiring further intervention. Although two steroid injections were not a risk factor for revision surgery in this study, the role of corticosteroid injections for this condition appears of doubtful benefit, and perhaps delaying surgery for repeated injections would not really be advocated in this case.

Hemiarthroplasty of the elbow a promising start X-ref

A recurring theme in the pages of *360* is the difficulty of dealing with the rising incidence of elderly trauma. One particularly complex area is that of osteoporotic distal humeral fractures, with the increasing role of total elbow arthroplasty (TEA) discussed.[10,11] Elderly patients, however, are often high demand, and the constrained nature (even in the so-called 'sloppy hinge' designs) of total joint replacements leads to dispersion of high torque forces at the cement bone, cement prosthesis, and polyethylene interfaces. These high torque forces are part of the reason that elbow arthroplasty in general has a relatively defined life expectancy. However, it is clear that there is an increasing need to be addressed, with large numbers of these patients requiring treatment, and that the rise in joint replacement for these injuries is associated with a rise in the number of osteoporotic distal humeral fractures. The use of the hemiarthroplasty for the distal humerus does potentially provide an attractive solution to these complex fractures as the implant is not subject to loosening as a result of torque forces, and maintains the ulnar component. This paper from **Los Angeles, California (USA),**[12] is just a small single-surgeon and single-centre retrospective series of ten patients operated over a four-year period. All patients in the series underwent distal humeral hemiarthroplasty for a fracture of the distal humerus and were followed up for a mean of six years (minimum three years). The mean age at the time of surgery was 72 years (56 to 81), with two patients deceased and one lost to follow-up. When compared with the previously reported short-term results from this group,[13] patients maintained good Mayo Elbow Scores, Disabilities of the Arm, Shoulder and Hand (DASH) scores and range of movement. There was one case of periprosthetic fracture and one case of prominent metalwork but no cases of heterotopic ossification or elbow instability. Although distal humeral hemiarthroplasty appears to be a promising technique that is potentially comparable with open reduction internal fixation and TEA with larger studies reported in the literature,[14] it is clear that much more data are required before a decision can be made regarding the indications and outcome for trauma.

No evidence for the use of stem cell therapy for tendon disorders

Stem cell therapy is another attractive option that has yet to find real traction with either widespread clinical opinion or research papers to support its use in any specific indication. However, the promising concept, combined with some difficult problems to solve, has continued to push the orthopaedic community towards the potential applications of stem cell therapies for conditions where healing is either through scarring or difficult, such as cartilage defects and tendinopathies. A review team from **Amsterdam (The Netherlands)** have put the evidence for the use of stem cell therapies in tendinopathies through the rigour of the systematic review process.[15] The study team perfomed an exhaustive search and identified seven published and unpublished trials that reported the outcomes of stem cell therapies in tendinopathies. As perhaps would be expected, these were a heterogeneous group reporting applications in rotator cuff disease (two trials), epicondylar tendinopathy (a single trial) and patellar tendinopathy, but, overall, the outcomes of just 79 patients were available for inclusion in this review. The authors report that although there were some positive results reported in the trials they reviewed, all were level IV evidence at best and there were high risks of bias associated with every study included in the review. At present, therefore, the authors conclude that there is little to no evidence to support the use of bone marrow-derived stem cells in any tendinopathy-related condition and, with some adverse events reported, their use cannot be supported.

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Spine

Do you need to send that text?

Smartphones are a necessary accoutrement to modern life. Walk down a typical street or stand waiting for a bus and you are more likely to see people texting, status updating or swiping left and right than chatting or even looking where they are going! The consequences of the typical posture assumed by the smartphone user may be more significant than one might think. A group from **Los Angeles, California (USA)** have investigated the potential deleterious effects and consequently achieved the surgical dream by naming a condition: Text Neck.[1] An increase in the number of young patients presenting with cervical pathology, including disc herniation and painful kyphosis prompted the investigation. They describe heavy smartphone usage associated with a typically flexed posture when sending text messages, and the more that patients flexed, the more symptoms they apparently show. Those assuming a neutral cervical position had minimal symptoms, whereas symptomatic patients typically flexed greater than 45°, where the weight of the head is increased by a factor of up to six. This is supported by other work quoted by the authors, which shows that persistent texting is associated with increasing neck, back and shoulder pain and a higher incidence of numbness and tingling in the hands. What isn't known is how these symptoms translate into clinically relevant and treatable disc pathology, though studies in the kyphosed lumbar spine would suggest that increased anterior loading of the discs increases the chance of disc pathology. This is of particular concern in the developing spine, especially as smartphone use starts at an early age. How should we overcome this impending avalanche of spinal pain-related status updates? The authors suggest ergonomic solutions, using phones at eye level with two hands, adjusting a work environment to elevate the tablet, performing stretches of anterior cervical tissue and strengthening upper thoracic muscles. Just need the right celeb to pop this advice on their wall.

Was Waddell a winner?

Waddell's signs (WS) are well established in the assessment of spinal pain, and are used by even the most inexperienced as evidence of inorganic back pain. In spinal clinics, the WS are often used to decide whether a patient's symptoms require investigation. However, we don't actually know how these signs correlate to surgically amenable pathology on MRI scanning. In an attempt to rectify this, a group from **Portland, Oregon (USA)** have correlated WS with MRI findings in a cohort of 30 patients with an Oswestry Disability Index (ODI) score greater than 50 using a retrospective cohort methodology.[2] Each patient was assessed for the presence of WS at their clinical visit. This was followed by a spine MRI to evaluate for surgically treatable pathology. These scans were then reviewed by three spinal surgeons, each blinded to the symptoms, clinical findings and WS of the patient. Each surgeon classified the MRI by the presence, type and severity of pathology. The authors found that every patient without any WS showed at least one pathological lesion within the spine, whereas only 70% of those with at least one WS had identifiable pathology ($p = 0.02$). There was no difference in the severity of pathology between the two groups and, similarly, disc herniations, stenosis and spondylolisthesis were equally severe between the groups. More than one WS does not increase the likelihood of more pathology, however, there is statistical relevance when comparing the presence of one WS with none. The authors admit, however, that there are some significant limitations to the study. The retrospective nature and the request for the MRI scan in the first instance suggests that the treating teams felt the patients were likely to have surgically amenable pathology. Traumatic, oncological and infectious spinal pathologies were specifically excluded and the dynamic nature of some pathology is not visible using MRI, which could influence the findings of the blinded assessors. Also, the young age group investigated (35 to 55 years) limits the external validity. We all use WS to help filter through the huge numbers of patients presenting to spine services. However, this evidence suggests that they may not be as powerful a discriminator as we were led to believe at medical school, and they should be interpreted with caution. The psychosocial element of back pain is well described and this work lends some evidence to their role in spinal pain. What is needed now is a clinical study, showing whether those with WS show a better or worse recovery than those without, and a better understanding of the psychological management of pain would be a positive step in dealing with these difficult symptoms.

Dural tears: a sticky situation

Inadvertent intra-operative dural tear is usually associated with a sinking feeling on behalf of the surgical team and is a potentially devastating complication. At the very least, it's likely to lead to a re-evaluation of surgical tactic and, at worst, the patient could suffer catastrophic infection, neurological injury or haemorrhage. Identifying the dural tear and performing its subsequent repair is critical to prevent these problems. Traditionally, the dura was