ROUNDUP360

Shoulder & Elbow

x-ref *For other roundups in this issue that cross-reference with Shoulder & Elbow see: Trauma roundups 3, 6; Research roundup 1.*

Suprascapular nerve and rotator cuff pathology

The intimate relationship between rotator cuff pathology and the suprascapular nerve is one of those 'chicken and egg' problems. Does the failure of the cuff result in suprascapular neuropathy, or is it the suprascapular neuropathy that leads to the cuff tear? Surgeons in **Chicago (USA)** took another look at this long-standing debate.[1] They aimed to establish if retracted cuff tears lead to suprascapular neuropathy (SSN) and whether it is the SSN or retraction that in turn causes muscle fatty degeneration. The authors assembled a cohort of 87 patients who were clinically suspected of having a SSN from their history and symptoms. Diagnosis was confirmed one way or the other with EMG studies and MRI of the shoulders. Of the 87 patients, 32 had confirmed SSN on EMG and 55 presented with an intact suprascapular nerve. MRI confirmed fatty degeneration in 28 supraspinatus tendons, whilst 46 had MRI proven tendon tears. While tendon pathology and fatty degeneration were related, there was no link found between fatty degeneration and SSN palsy. However, there was clearly an association between SSN and rotator cuff pathology, with SSN correlated to tendon tear size. The plot, as they say, continues to thicken, and there certainly isn't enough here to say which came first: tear or SSN. What is clear is that there is a relationship, but it is a complex one.

Anchors in Bankart repair: it's not what you've got, but how you use it

Arthroscopic Bankart repair is now the standard of care in the majority of centres treating patients regularly with dislocated shoulders requiring surgery. The procedure is well documented to be safe and efficacious, but there is still some debate about the best technique. The 'tightening' effect of the capsular and labral repair is known to be key to obtaining a stable joint, and in many centres the use of multiple anchors is thought to be fundamental to achieving good outcomes. Clinicians in **Halifax (UK)** argue that it isn't the number of anchors that is important, but the efficiency with which the capsulo-labral tissue is reduced and held towards the glenoid. They report their own series of 114 consecutive patients treated for anterior instability and a Bankart lesion.[2] Follow-up was achieved to four years, and outcomes assessed with clinical scoring (Oxford Instability Score) and recurrence rates. The series consisted of a typical mix of patient and injury demographics (87% male, 76% Hill-Sachs lesions, 13% bony Bankart lesions, 13% glenoid defects, and 10% SLAP lesions). The surgical technique involved the use of bone anchors as necessary, and a purse string suture with the aim of reducing the capsulo-labral tissue towards the glenoid. This could be achieved in the majority of patients with a single anchor (62%), with the remainder receiving two (35%) or three (3%) anchors. The headline result is a 6.1% failure rate which is similar to all other published series and an excellent reduction in the instability index (44.3 to 17.3). While some might argue that there is little advantage to the use of just a single anchor in series like this, there are good arguments on both cost grounds and also for preservation of revision options. Given that 6% of patients will require revision surgery and second time arthroscopic procedures are becoming ever more common, it would seem sensible to preserve future options as much as possible.

Not all shoulder PROMs are equal x-ref

The assessment of outcomes has become 'big business' in orthopaedic academic circles, with much evidence produced to support a range of patient- and clinician-administered scores. Making sense of the increasing sea of evidence supporting scores can be a tricky business, and researchers in **Barcelona (Spain)** have leapt to the aid of any researcher aiming to assess shoulder outcomes. They have conducted a systematic evaluation of the evidence to support the range of shoulder-specific outcome scores available.[3] Their review encompasses research surrounding development, metric properties and administration of shoulder-specific PROMS. The evidence amassed was then evaluated by two independent experts using the EMPRO (Evaluating Measures of Patient Reported Outcomes) tool which assesses the quality of score attributes. Amazingly, the researchers identified 112 articles concerning 11 PROM instruments (between two and 30 articles per instrument). The best rated outcome scores were American Shoulder and Elbow Surgeons shoulder assessment (77.4 points), Simple Shoulder Test (77.4 points), and Oxford Shoulder Score (69.7 points). All of these scores were felt by the reviewers to be valid, reliable and responsive to change. It is heartening to read reviews like this and see how far we have come in orthopaedics in producing and validating outcome measures that are not only appropriate but also able to accurately and effectively evaluate outcomes for the majority of diagnoses.

Reverse shoulder arthroplasty OK in trauma x-ref

The treatment of displaced four-part proximal humeral fractures is not getting any easier. With the recent reporting of the PROPHER study, describing no difference between operative stabilisation and conservative management along with numerous other RCTs failing to show any real term differences between two interventions, it is difficult to know if patients have been doing universally well or universally badly with traditional treatments. One area where fixation, conservative treatment and conventional arthroplasty are unlikely to yield good results is in the displaced four-part proximal humeral fracture in the elderly where a combination of cuff arthropathy

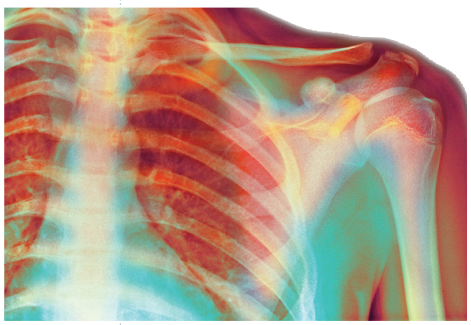
and the technical challenge of the surgery makes many outcomes poor. An emerging option that offers the tantalising prospect of re-functioning the rotator cuff (which in many cases may be the cause of poor outcomes) while treating the proximal humeral fracture, may offer the answer to this complex problem. The difficulty of course is that like many tantalising options in trauma and orthopaedic surgery, the evidence base does not match the enthusiasm with which surgeons are embracing the new technology. Although randomised trials are ongoing, they will not report for a number of years and, as such, case series can be helpful in judging safety and providing some evidence base for treatment. Researchers in **Chicago (USA)** have established a prospective case series of patients, all treated with a reverse total shoulder arthroplasty for three- and four-part proximal humeral fractures.[4] The research team then age- and sex-matched these to a control group undergoing hemiarthroplasty and ORIF procedures. Outcomes were assessed with clinical outcome scores (American Shoulder and Elbow Surgeons (ASES), Short-Form 12-item (SF-12), and Simple Shoulder Test (SST)), range of movement and treatment cost evaluation. Sadly, despite an excellent methodology, this is really a rather small study consisting of just nine patients in each group (27 in total) with a minimum follow-up of a year. Unsurprisingly, given the small numbers of patients, there were no real significant differences between any outcome scores although there was a significant improvement in range of movement in the frontal plane in the reverse TSA group. Quite clearly, better and more robust data are required here. Although we applaud the authors for providing some data, there really isn't enough here to draw any more meaningful a conclusion than that reverse arthroplasty may be used in the treatment of proximal humeral fractures. We await with baited breath a more robust (and larger!) study.

Not all in the mind: frozen shoulder personality debunked

The causes of certain disorders, particularly round the shoulder girdle and upper limb, are occasionally cited to include personality type. Where perhaps with some conditions (such as habitual shoulder dislocation) there may be some evidence, it is far from clear that this is the case, with frozen shoulder several clear biological mechanisms and genetic tendencies have already been identified. Despite this, the concept of a 'frozen shoulder personality' persists. Keen to set the record straight, a study team in **Pellenberg (Belgium)** set out to establish if certain personality traits were indeed associated with the development of frozen shoulder.[5] The team studied a group of 118 patients, of whom 48 had an idiopathic frozen shoulder and 70 a secondary frozen shoulder. Personality typing was undertaken with the NEO-FFI (five factor inventory) personality traits test which was normalised to 2415 controls. The research team were unable to identify any clinically relevant significant differences between the primary, secondary and control groups' personality traits. While the primary frozen shoulder group scored higher on the "Openness to Experience" traits than their secondary counterparts who were in turn more highly "Conscientious and Extroverted" than the control group, these differences do not reflect the perceived personality types. Interestingly, there were no differences in scores for neuroticism between all the personality types. This interesting paper goes a long way to debunk the perceived wisdom surrounding personality types most likely to develop a frozen shoulder. While it is clear that having a symptomatic frozen shoulder may be maddening for the patient, there is no evidence to support the occasionally held perception that the patient may in fact be "mad".

Open and arthroscopic repair equivalent in shoulder instability

Despite widespread adoption of arthroscopic instability surgery and widespread reports of high patient and surgeon satisfaction levels, there is surprisingly little comparative research in the literature. A study team in **Calgary (Canada)** designed a prospective randomised controlled trial to evaluate the surgical outcomes from open *versus* arthroscopic glenohumeral instability surgery.[6] Outcome indicators assessed in the study were quality of life scores, clinical outcome measures



(Western Ontario Shoulder Instability Index (WOSI) and the American Shoulder and Elbow Surgeons (ASES)) and recurrence rates. The research team identified 196 patients and recruited them into their randomised controlled trial. Randomisation was performed in a block allocation method and stratified by surgical experience in an attempt to reduce the learning curve confounder. The groups were found to be well matched with no differences in outcome scores at baseline, although there was a moderate loss to follow-up rate with 79 open and 83 arthroscopic repair patients available at two years of follow-up. There were no differences in the primary outcome measure WOSI score (85 open vs 82 arthroscopic). While there was similarly no significant differences in ASES scores (91 open vs 88 arthroscopic), there was a significant difference in recurrence rates. Patients in the open group had just an 11% chance of recurrence, whereas in the arthroscopic group this rose to 23%. The authors conclude that in their hands at least, open instability surgery results in a significantly lower recurrence rate but no difference in functional outcome. This raises two very important questions for us here at 360. With recurrence rates over double in one intervention group, it is interesting that the clinical outcome scores did not detect a difference in outcomes. Are these tools sensitive enough to measure outcomes in this area? With a 1:10 adverse event rate in one group and a 1:5 in the other, there would be an expected difference in the PROMs if indeed they are appropriate outcome measures for this diagnosis. The counter argument may be that recurrent instability doesn't really affect shoulder function in the longer term as further treatments are available. The second interesting observation is the difference that event rates make to this kind of study. Our previously reported study from the UK suggested recurrence rates of around 6% in a similar population size with a different arthroscopic technique.

Natural history of olecranon fractures not so bleak?

The natural history of olecranon fractures is important to understand when making decisions concerning operative intervention in elderly patients. Elbow injuries in octogenarian patients with a poor soft-tissue envelope, and often dementia, is not always a benign condition, leading to many fractures in patients with active extension being managed conservatively. There is surprisingly very little literature to support this practice. Researchers in **Buenos Aries (Argentina)** set out to establish exactly what the likely prognosis and outcomes are for patients presenting with a displaced olecranon fracture in the elderly lower demand patients.[7] They assembled a retrospective series of patients over the age of 70 years with displaced fractures of the olecranon. The authors were able to report on a cohort of 28 patients all treated non-operatively with early range of

movement. Patients were all treated with temporary immobilisation for around five days followed by sling management with no formal rehabilitation regime. By the final follow-up (14 months), the patients had a range of movement from 15˚ to 140˚ and a mean VAS pain score of 1. While the majority (n = 20/28) of patients did not heal, there were no long-term sequelae. It does appear that in these low demand patients, conservative treatment of olecranon fractures is a suitable management strategy, giving acceptable results in terms of pain and function.

Resurfacing of the shoulder: a Danish perspective

Shoulder resurfacing is a bit of an enthusiast's operation. Those won over by the arguments of Copeland and colleagues consider resurfacing an excellent option for almost any shoulder indication, with ease of revision and comparable functional results cited as reason enough for choosing shoulder resurfacing when indicated. Like many 'enthusiast' operations, the majority of the scientific literature emerges from just a few centres, and so we were delighted to see an independent paper from **Harlev (Denmark)** which not only reported the longer-term results of shoulder resurfacing arthroplasty (SRA) but also the clinical outcomes.[8] The study team identified a population of 772 patients (837 SRA), all of whom had their details entered onto the Danish Arthroplasty Register over a four-year period. Clinical outcomes were reported at 12 months using the Western Ontario Osteoarthritis of the Shoulder (WOOS) index. Revision rates and patient survival were established using the national statistics office and revision data. Within the observation period of the study, just 7.5% (n = 63) required revision, with a cumulative five-year survival of just over 90%. Younger patients performed particularly badly in terms of clinical outcomes (mean 14.2 WOOS points poorer) but had no increased risk of revision. There appeared to be no differences between outcomes by model of arthroplasty. This paper supports a middle view, that SRA are moderately successful, managing outcomes of 90% survival at five years. The preservation of bone stock and relatively low revision rate makes this a potentially attractive option for many patients.

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