

ROUNDUP³⁶⁰

Shoulder & Elbow

Reverse shoulder replacement – leave subscapularis unrepaired

■ Reverse shoulder replacement has been around for more than 20 years and was originally developed to treat rotator cuff arthropathy. However, as time passed, so the indications for its use widened and, as they did, results varied. For this reason, as highlighted by a paper from **Greenville (USA)**, questions still remain about certain technical aspects of the operation. One particular area in question is the effect of subscapularis repair on complication rates, dislocation, pain, and overall range of movement. Some authors suggest that when a deltopectoral approach is used, not repairing the subscapularis leads to a higher complication rate, particularly dislocation. The Greenville authors used a reverse total shoulder replacement database of three surgeons at one institution, and identified 55 patients who had undergone the operation using the deltopectoral approach without subscapularis repair and 65 patients with subscapularis repair. The results were fascinating. Complications were documented in 11 of 55 shoulders (20%) without subscapularis repair and in 13 of 65 shoulders (20%) with subscapularis repair. Meanwhile, dislocation occurred in three shoulders in the non-repair group and in two of the repair group. These data indicate that to leave subscapularis unrepaired had no significant effect on the risk of any complications, be they dislocation,

infection, disassociation, or eventual function and levels of pain relief.¹ Good news, we think at 360. One less surgical step must be good.

Torn rotator cuffs and platelet-rich fibrin

■ You can find what you like about platelet-rich fibrin in the literature, depending on which way you may be inclined. Supporter or opponent, the evidence is there to aid your case, so 360 was interested to see yet another paper on the topic, this time on the effects of platelet-rich fibrin on repair integrity of the torn rotator cuff. This level III study from **Salt Lake City (USA)** looked further into this topic using 37 patients, 16 of whom received platelet-rich fibrin during arthroscopic repair of the rotator cuff. These were stood alongside a historical control group of 21 patients. Selection was based upon rotator cuff tears at risk for re-tear. They were prospectively identified using an algorithm, points being assigned for age, anterior-to-posterior tear size, and fatty atrophy. Enrollment required three points to be awarded. Pre-operative and one-year post-operative MRI and functional outcome scores were obtained. The mean age of patient for the two groups was identical at 65 years. The mean tear size was also similar (3.8 cm for platelet-rich fibrin group, 3.9 cm for controls) and the level of fatty atrophy was not significantly different between the two. The results showed that re-tear rates were significantly higher in the platelet-rich fibrin group (56.2%) compared

with controls (38.1%). Meanwhile, post-operative functional outcome scores were not improved compared with controls. There were two complications, both infections, and both within the platelet-rich fibrin group.² So for the opponents of platelet-rich fibrin, here is some more ammunition for you. The augmentation of at-risk rotator cuff tears with a platelet-rich fibrin matrix made no difference to the end result. If anything, there was a higher chance of re-tearing if the matrix was used.

Rotator cuff repair – double row or suture bridge?

■ In recent times, particularly with the development of specialist instrumentation and better surgical experience, 360 has noticed that the torn rotator cuff is now widely repaired arthroscopically. However, a re-tear is a risk, so surgical techniques have evolved over time to try and prevent this. One such technique is the suture bridge repair, yet how much better is this in reality? Surgeons from **Daejeon (South Korea)** have investigated this with a level II cohort study to compare the functional outcome and repair integrity of arthroscopic double-row and conventional suture-bridge repair in full-thickness rotator cuff tears. The researchers included 52 consecutive full-thickness rotator cuff tears that were between 1 cm and 4 cm in size anteroposteriorly. A double-row technique was used in the first 26 consecutive shoulders, and a conventional suture-bridge technique was used in the remainder. Of the total shoulders included,

50 (96%) underwent an MRI or ultrasonography post-operatively. Clinical outcomes were assessed at a mean of 37.2 months post-operatively using the University of California at Los Angeles (UCLA), American Shoulder and Elbow Surgeons (ASES), and Constant scores. Meanwhile, the post-operative cuff integrity was assessed at a mean of 33.0 months post-operatively. By the final follow-up, the mean UCLA, ASES, and Constant scores had all improved significantly, to 32.3, 90.5, and 80.7, respectively, in the double-row group and to 30.6, 88.5, and 74.0, respectively, in the suture-bridge group. However, there was no significant difference between the two groups. The re-tear rate was 24% in the shoulders that underwent double-row repair and 20% for those that underwent suture-bridge repair; this difference was not statistically significant.³ So choose whichever you prefer, we think at 360, as there seems little difference between the two. But a re-tear rate of 20% or more? Clearly room for improvement, whichever method you employ.

Frozen shoulder – common yet poorly understood

■ Certain conditions occur so frequently that we sometimes take them for granted and do not give them the attention they deserve. In 360's mind, the hugely common frozen shoulder is one such example. Consequently, a review article on the topic from researchers in **Edinburgh (UK)** made excellent reading. The authors remind us that a frozen shoulder may arise spontaneously without an

obvious predisposing cause, or be associated with a variety of local or systemic disorders. After all, the condition is estimated to affect some 2% of the general population, has a peak incidence between the ages of 40 and 60 years and is rare over the age of 70 years. Diagnosis is based upon the recognition of the characteristic features of the pain, and selective limitation of passive external rotation. The macroscopic and histological features of the capsular contracture are well defined, but the underlying pathological processes remain poorly understood. It may cause protracted disability, and imposes a considerable burden on health service resources. Most patients are still managed by physiotherapy in primary care, and only the more refractory cases are referred for specialist intervention. Targeted therapy is not possible and treatment remains predominantly symptomatic. However, over the last ten years, more active interventions that may shorten the clinical course, such as capsular distension arthrography and arthroscopic capsular release have become more popular.⁴ At 360, we particularly liked the suggested treatment protocol offered by the authors, which now hangs on our surgery wall.

Does an arthroscopic rotator cuff repair actually heal?

■ So what about our own rotator cuffs, when we tear them at 360? Shall we opt for repair or leave well alone? A paper from **Boulogne (France)** might guide us, where researchers assessed the clinical and anatomical outcomes of arthroscopic repairs of the torn rotator cuff at a mid-term follow-up, using MR arthrography (MRA) in order to assess tendon-to-bone healing. This was a retrospective study that included 29 patients (31 shoulders) with a small or moderate-sized supraspinatus full-thickness tear with (7/31) or without (24/31) infraspinatus extension. The mean size of tear was 2.64 cm and the Constant score was used for pre- and post-operative assessment. All tendons were repaired arthroscopically and a single row

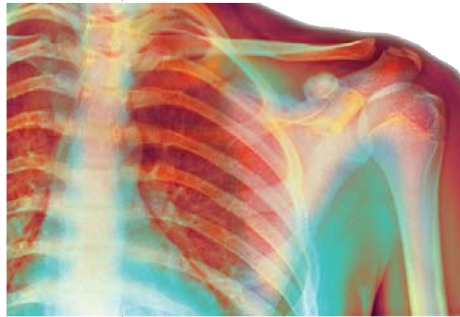
technique was used. Biceps tenotomy and subacromial decompression were also performed. After surgery, the operated arm was immobilised in a sling for four weeks and full activity was allowed at six months. Then, at the final follow-up, a rotator cuff MRA was performed by an independent radiologist who assessed the anatomical status of the repair. The mean follow-up was 49.4 months and 16 patients (17 shoulders)

had a rotator cuff MRA. Although the mean Constant score at last follow-up showed a mean improvement of 24%, 88% (15/17) of repairs showed leakage on the MRA. Importantly, there was no significant correlation between the clinical and anatomical outcomes.⁵ This paper is clearly of value as it shows that what we see on MRA is not necessarily what a patient feels. However, we are concerned that only 17 of the 31 shoulders received an MRA at final follow-up. What if the remaining 14 had shown no leakage at all? Would that not have changed the authors' conclusions? For our own tears at 360, we are tempted to wait a while before surgery, just in case.

The torn rotator cuff and activities of daily living

■ Of course, waiting for surgery may tempt us but, according to a team from **Maebashi (Japan)**, doing so may not be to our advantage as our activities of daily living may be disrupted. Few reports have to date assessed this aspect of a rotator cuff tear, particularly those tears that are asymptomatic. The authors performed medical check-ups on 462 individuals (924 shoulders). All participants completed a questionnaire into their background and medical history. Participant shoulder function was then assessed with the Simple Shoulder Test (SST) and ultrasound examinations of both shoulders were undertaken to diagnose rotator cuff tears. Participants were then divided

into tear and non-tear groups and statistical analysis performed to compare SST scores between them. Exactly the same protocol was used for participants identified as having a



rotator cuff tear but without pain. The results showed those in the tear group to have a significantly lower SST score than those in the non-tear group. When the SST score was broken down into its component parts, a significant difference was observed with the ability to sleep comfortably and to lift a 3.6 kg weight to shoulder level. Even for shoulders without pain, the tear group showed significantly lower SST scores than the non-tear group. However, a significant difference was seen only with the ability to lift a 3.6 kg weight to shoulder level.⁶ This work appears to demonstrate that a patient's activities of daily living are restricted by the presence of a rotator cuff tear, whether or not it is symptomatic. Of course, this now confuses us at 360. Should we, or should we not, wait for our cuff repair? Perhaps a reader will help us out.

Subacromial impingement – avoiding surgery altogether

■ Of course, anything that might remove the need for surgery must be for the good, so a paper from **Linköping (Sweden)** into exercise strategies for subacromial impingement fascinated us. Researchers here investigated a specific exercise strategy that targeted the rotator cuff and scapular stabilisers in subacromial impingement to see if it might improve shoulder function and pain more effectively than nonspecific exercise for this condition. This was a randomised, participant and single

assessor blinded, controlled study. The authors took 102 patients with long-standing (over six months) persistent subacromial impingement syndrome in whom earlier conservative treatment had failed. The specific exercise strategy comprised strengthening eccentric exercises for the rotator cuff and concentric/eccentric exercises for the scapular stabilisers in combination with manual mobilisation. The control exercise programme consisted of non-specific movement exercises for the neck and shoulder. Patients in both groups received five to six individual guided treatment sessions during a 12-week period. In between the supervised sessions the participants performed home exercises once or twice a day for 12 weeks. The primary outcome measure was the Constant–Murley score although a secondary outcome was a patient's global impression of change because of treatment and any decision regarding surgery. Most (97/102, 95%) of the participants completed the 12-week study. However, there was a greater improvement in the specific exercise group than in the controls. Significantly more patients in the specific exercise group reported a successful outcome (defined as a large improvement or recovery) in the patients' global assessment of change because of treatment. As a consequence, a lower proportion of patients in the specific exercise group subsequently chose to undergo surgery (20% (10/51) versus 63% (29/46)). So it appears that a specific exercise strategy does work, a regime that focuses on eccentric strengthening exercises for the rotator cuff and concentric/eccentric exercises for the scapular stabilisers. Pleasingly, this protocol also reduces the need for arthroscopic subacromial decompression within the 12-week timeframe used in the study.⁷

Improving the reliability of the Constant–Murley score

■ The Constant–Murley score is one of the most widely used outcome measures for shoulder dysfunc-

tion. It was one of the first of its kind, appearing at a time when upper limb subspecialisation was just beginning to develop. Yet can its reliability be improved for the modern era? Authors from **Turin (Italy)** have looked at this with a level I diagnostic study. They took two consecutive series of 55 patients with shoulder dysfunction, enrolled them in a test-retest study, with examinations being performed by two orthopaedic surgeons who had different levels of expertise. The following scores were measured: Constant-Murley score, individual relative Constant-Murley score, relative Constant-Murley score, and standardised Constant-Murley score. For each variable, the intra-observer and inter-observer reliability was calculated. Perhaps unsurprisingly, the less experienced observer had worse intra-observer reliability for the Constant-Murley score than the expert. However, the standardised Constant-Murley score showed better intra-observer reliability. Inter-observer reliability also improved when compared with intra-observer reliability when the standardised Constant-Murley score was adopted.⁸ 360's view? This study shows that we should opt for the standardised Constant-Murley score as anything that reduces the chances of human error interfering with outcome measures can only be an improvement.

Failure of the Neer modification of an open Bankart procedure

■ Have you noticed how so many papers appear to publish success and how few advertise their failures? In 360's world that simply does not reflect reality. So it is refreshing when a paper owns up to its failures. Enter a paper from **Nice (France)**, which reported the use of the Neer modification of the open Bankart procedure. Essentially this involved combining a superior capsular shift with labral reattachment. The theoretical advantages of the modification were that it would restore the patient's anatomy and also treat the repeated capsular stretching encountered in anteroinferior instability without limiting external rotation. It would thus reduce the risk of osteoarthritis. To investigate this, the authors determined: (1) the rate of recurrent instability after the modification, (2) patient function, and (3) the incidence and stage of glenohumeral osteoarthritis at more than two years' follow-up in patients with traumatic anteroinferior instability. They did this with a level IV study. This involved retrospectively reviewing 64 patients (mean age 27 years) who had undergone a modified Bankart procedure for recurrent dislocation (n = 39) or subluxation (n = 25) over a six-year period. The labrum was reattached with suture anchors and

a superior capsular shift was added. The authors then determined the rate of recurrent instability, range of movement, and the presence of glenohumeral osteoarthritis. The median follow-up was 40 months. Recurrent instability occurred in seven of the 64 patients (11%) at a mean of 25 months post-operatively. Eight additional patients (13%) presented with persistent shoulder apprehension or discomfort. Although range of movement did improve in many, only 36 of 64 patients (56%) could return to the same sport at the same level. The loss of external rotation was 13° compared with the contralateral side, while the incidence of glenohumeral osteoarthritis increased from 4% pre-operatively to 17% post-operatively. So it seems that the open Bankart procedure modified by Neer, although it provides high function scores, is also associated with a relatively low rate of return to sport and a high rate of recurrent instability.⁹ In 360's view the authors' words are commendable for their honesty. Their rate of recurrent instability, similar to that obtained with arthroscopic Bankart procedures, has prompted them to abandon the open procedure.

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