

# ARTHROSCOPIC SHOULDER SURGERY – PART II

JOHN A CASALETTO

## ROTATOR CUFF TEARS

Tears of the supraspinatus tendon occur most commonly in the 5<sup>th</sup> and 6<sup>th</sup> decade, unless in the context of significant shoulder trauma. It is not uncommon for a patient to present with an acute-on-chronic tear progression where an existing asymptomatic tear becomes decompensated as the tear enlarges.<sup>4</sup> Tears are mostly commonly thought of as being an attrition rupture from both age-related tendon degeneration and mechanical impingement.<sup>5</sup>

The anterior edge of the supraspinatus tendon is most commonly involved with the tear gradually extending posteriorly to involve infraspinatus. The patient initially presents



**Figure 4:** Arthroscopic view from within the subacromial space. An arthroscopic rotator cuff tear repair using anchors.

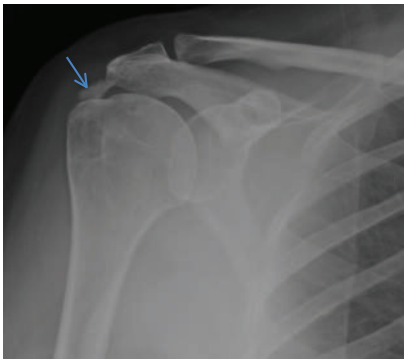
with pain followed by weakness. In more advanced cases the patient presents with ‘pseudoparalysis’ of the shoulder, whereby the initiation of abduction and forward flexion is lost, but the passive range of movement is largely preserved.

Radiologically this situation manifests itself with subtle changes in the tuberosity and proximal humeral migration. In bigger tears, the subacromial space is decreased in dimension as the rotator cuff tendons retract medially. Other than clinically, the tear can be diagnosed on ultrasound or MRI scanning which also has the benefit of showing the degree of muscle atrophy which over time invariably accompanies the tear. Severe muscle atrophy is permanent and is associated with poor outcomes and failure of cuff healing, hence the need to intervene surgically at an early stage.

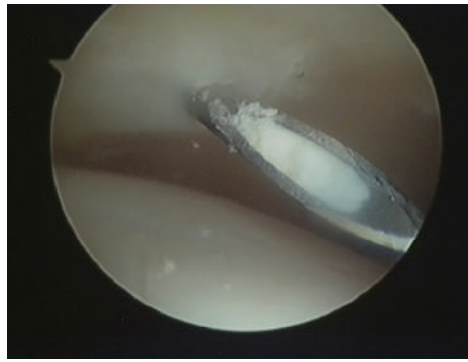
Steroid injections in this situation are not recommended as they can lead to further tear progression and deterioration of the tendon which can impair successful surgical repair.<sup>6</sup>

The treatment is arthroscopic rotator cuff repair (figure 4) with the use of anchors. Arthroscopic surgery avoids the damage to the deltoid muscle from open surgery, decreasing the risk of stiffness and post surgical pain enabling a faster recovery.

The success rate following cuff-repair surgery depends on the quality of the repair, the degree of muscle atrophy, preoperative extent of radiological humeral migration and the age of patient. In advanced cases where a full cuff repair is not technically possible due to retraction and poor tendon quality, a partial repair can be enough to give the patient a compensated more functional shoulder.



**Figure 5:** A large calcific deposit (blue arrow) in supraspinatus.



**Figure 6:** Arthroscopic view from within the glenohumeral joint. The calcific deposit in the cuff has been found with the use of a 16 G needle.



**Figure 7:** Arthroscopic view from the subacromial space. Calcium of toothpaste-like consistency is seen extruding from the cuff tendon.

## ROTATOR CUFF ARTHROPATHY

Larger rotator cuff tears result in the shoulder losing its internal milieu. The accompanying synovial fluid leakage into the subacromial space, loss of control and centralization of the humeral head on the glenoid, leads to arthritis termed cuff arthropathy. The humerus migrates proximally and articulates with the undersurface of the acromion. Symptoms can be alleviated by corticosteroid injections. Pain can be ameliorated by an arthroscopic subacromial decompression and debridement even if the rotator cuff tear is found to be irreparable. In more degenerate shoulders a reverse total shoulder replacement is the ultimate treatment when more conservative measures fail. This prosthesis replaces the glenoid by a glenosphere and turns the humeral side into a socket. It has the biomechanical effect of medialising the centre of rotation, putting the deltoid at a better mechanical advantage to elevate and abduct the shoulder, compensating for the non-functional rotator cuff.

## CALCIFIC TENDONITIS

Calcific tendonitis is one of the most excruciatingly painful shoulder conditions (figure 5). It is most painful during the resorptive phase when the immune system attempts to remove the calcium lesion within the tendon. Corticosteroid injections into the subacromial space often give limited pain relief by decreasing the inflammatory response, but cannot reach the intra-tendinous calcium. In some instances when the calcium is fluid in nature, it can be removed by ultrasound-guided needle barbotage. However, very often, the consistency of the calcium is that of toothpaste or chalk (figures 6 & 7) and in these cases the calcium can only be removed arthroscopically.

## FROZEN SHOULDER

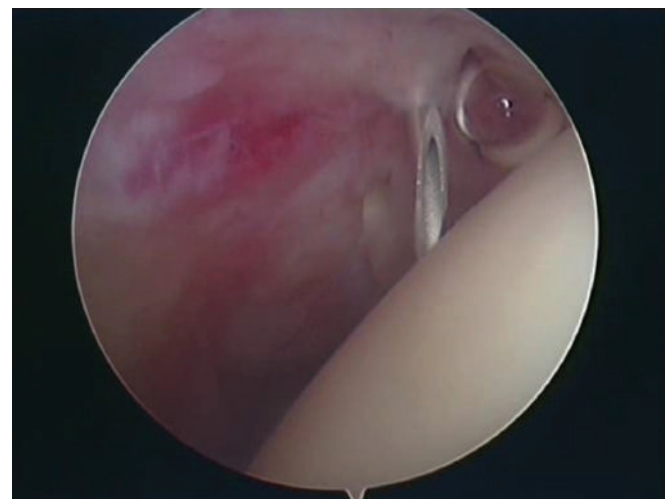
Frozen shoulder, sometimes termed adhesive capsulitis, can affect all age groups and tends to be recalcitrant in patients with diabetes. Despite not being directly linked to glycaemic control, it is more prevalent in Type 1 diabetes.<sup>7</sup> It can also occur after ipsilateral arm trauma and following breast or chest surgery. It is a distinct entity from post-traumatic stiffness and responds very positively to appropriate treatment.

Clinical examination reveals global decreased range of movement which is easily detected when examining external

rotation with the arm by the chest. Forward flexion and abduction can be spuriously preserved if scapulothoracic movement is not blocked during examination. This can be easily done by placing one hand over the shoulder while examining the range of movement.

In suspected cases of frozen shoulder, plain radiography is essential to rule out arthritis, which is the other main cause of severe stiffness in the shoulder. The diagnosis is largely clinical as ultrasound and MRI scans are poorly diagnostic. MR imaging can show non-specific thickening of the capsule and the ligaments around the shoulder in addition to a decreased capsular volume.

The pain from frozen shoulder can respond briefly to intra-glenohumeral joint steroid injections. Physiotherapy, however, was found to have longer term effects.<sup>8</sup> If the condition persists, arthroscopic release of the capsule followed by controlled manipulation restores the range of movement. Shoulder manipulation without arthroscopic release (Figure 8) has the potential of damaging structures in the shoulder.<sup>9</sup> Intensive physiotherapy is required following surgery as the condition can very rapidly recur especially in patients who suffer from diabetes. ❄️



**Figure 8:** Arthroscopic view from within the glenohumeral joint showing the anterior of the shoulder from inside the joint. The rotator interval (penetrated by the needle) is inflamed and thickened.

