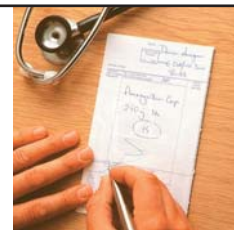




Shoulder stiffness: management



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BACKGROUND

There are several causes of painful, stiff shoulders – each with a different method of treatment.

OBJECTIVE

This article summarises the methods available to treat the various causes of stiff shoulders.

DISCUSSION

Impingement and partial thickness rotator cuff tears can be treated by the general practitioner with a subacromial steroid injection. Calcific tendinitis can be aspirated under ultrasound guidance when the deposit is immature. Acute full thickness tears are best managed surgically. We recommend arthroscopic capsular release with appropriate postoperative rehabilitation program for frozen shoulder. With a well functioning rotator cuff, good results can be expected with shoulder replacement in advanced arthritis.

There have been significant advances in the understanding of conditions that can cause shoulder stiffness and the methods available to treat these conditions. Before any management strategy can be initiated it is very important to make the correct diagnosis (see the article 'Shoulder stiffness: diagnosis' page 143). Once the clinical diagnosis has been made, the appropriate interventions can be initiated.

Impingement

Impingement, or subacromial bursitis, is secondary to dysfunction of the rotator cuff and results in pain with overhead activities and at night time. The first line intervention is an injection in the subacromial space with corticosteroid and local anaesthetic.¹ The local anaesthetic is useful as a diagnostic tool as the pain should be reduced following injection. The corticosteroid reduces discomfort, often only 2–3 weeks after the injection. Once this pain has subsided, a rehabilitation program – often supervised by a physiotherapist – is helpful to strengthen the rotator cuff. The injection technique is straightforward (*Figure 1*) and can easily be performed by the general practitioner. Our experience is that the first injection is the most helpful and repeated injections rarely result in an improved outcome. If the nonoperative

regimen is unsuccessful (or has only temporary success) then arthroscopic acromioplasty – where the impinging portion of the acromion bone is removed (often as a day case under local anaesthetic) – has success rates in the order of 90%.²

Calcific tendonitis

Calcific tendonitis is a very painful condition that presents in a similar fashion to impingement syndrome, but often in a younger age group (30–40 years). If the calcific material is identified on X-ray or ultrasound early enough, the material may be aspirated via a large bore needle and syringe under ultrasound control.³ Our experience is that if the material is removed, the patient will have immediate and dramatic relief. If the material is more mature, there is evidence that lithotripsy (shock wave therapy) is useful treatment providing it removes the material.⁴ A corticosteroid injection in the subacromial space is also often helpful. If the material is outside (above) the tendon it can be removed arthroscopically. However, it is usually embedded within supraspinatus near its insertion. In this situation, it is near impossible to remove the material surgically without disrupting the rotator cuff tendon and hence surgery is not recommended in this situation.

Table 1. Type of treatments for shoulder pain

Diagnosis	Nonoperative treatment	Surgical treatment
Impingement or tendinopathy	Injection of corticosteroid Rotator cuff strengthening	Arthroscopic acromioplasty
Calcific tendinitis	Aspiration under ultrasound guidance Corticosteroid injection Lithotripsy	
Rotator cuff tear	As for management in partial tears	Rotator cuff repair if repairable
Frozen shoulder	Wait and see Hydrodilatation	Arthroscopic capsular release
Glenohumeral joint arthritis	As for arthritis generally including activity modification, regular analgesia (paracetamol), judicious use of nonsteroidal inflammatory agents	Shoulder replacement

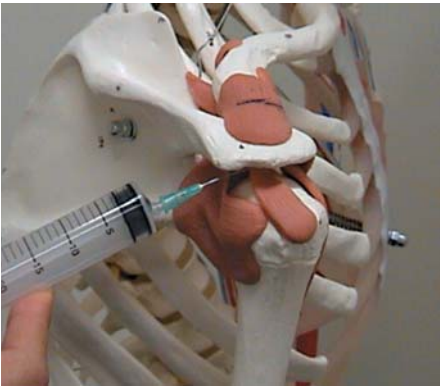


Figure 1. Posterior injection into the subacromial space. The position for needle insertion is 1 cm medial and 1 cm inferior to the postero-lateral corner of the acromion. The needle should be directed upward toward the anterior edge of the acromion. Redirect the needle downward if it hits the bone and upward if it hits the tendon. The solution for injection should include a corticosteroid (eg. 1 mL of depo-medrol 40 mg/mL) + 5–10 cc of a local anaesthetic (eg. 1% lidocaine)

Rotator cuff tear

Partial thickness rotator cuff tears and/or tendinopathy are usually managed nonoperatively in a similar format to that outlined for impingement syndrome. If there is a full thickness tear, particularly an acute tear and especially in a younger individual, then surgical repair is recommended. Tears of longstanding duration may result in secondary proximal humeral head migration and loss of any remaining tendon. The current state of technology does not provide for restoration of that lost tendon and the only major surgical solution is a hemiarthroplasty – partial joint replacement. Hemiarthroplasty is often helpful in reducing the pain caused by glenohumeral joint arthritis. Hemiarthroplasty will, however, not address the loss of rotator cuff tendon and hence will not improve overhead function or motion.

Frozen shoulder

The aim of management of frozen shoulder is to reduce the pain and expedite recovery of maximal range of movement.

Post-traumatic stiffness

Post-traumatic stiffness following shoulder trauma or surgery will often resolve. The general rule is to wait at least 12 months following the trauma. If there is residual stiffness,

it can usually be addressed by arthroscopic release, generally with good results.

Idiopathic adhesive capsulitis

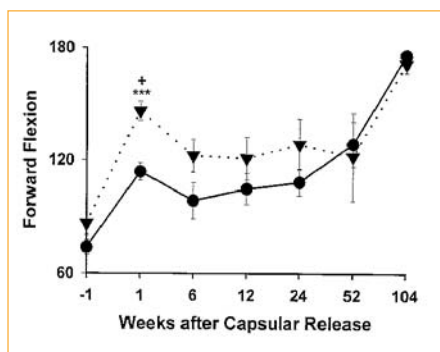
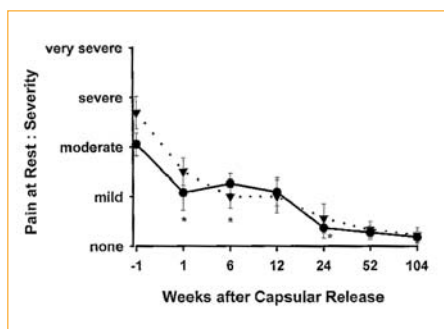
Adhesive capsulitis is not necessarily a self limiting condition. Four independent groups of researchers concluded that between 40–60% of patients with adhesive capsulitis end up having residual objective restriction of movement after maximal recovery.^{5–8}

Nonoperative treatments

There is no level 1, 2, or 3 evidence to support a beneficial role of the physical therapy modalities of short wave diathermy, ultrasonic therapy, gentle traction, pressure over sensitive points, or massage for adhesive capsulitis. In the early stages, analgesics, nonsteroidal anti-inflammatory drugs, heat, and cortisone injections into the glenohumeral joint or the biceps tendon and ice therapy may provide marginal improvement in pain but only little or no improvement in shoulder motion.^{9–11} A higher dose of glenohumeral steroid injection is better in terms of pain relief than a lower dose.¹² Suprascapular and inter-scalene block of the brachial plexus with local anaesthetics have been shown to provide transient pain relief.^{13,14} Joint distension (hydrodilatation) with sterile saline solution and 1% lidocaine with 1 mL of betamethasone sodium phosphate has been shown to significantly lower analgesic usage and improve shoulder movement.^{15,16}

Manipulation under anaesthesia

The outcomes of manipulation under anaesthesia – to restore the range of movement and the pattern of recurrence – are influenced by the technique and protocol of postprocedural physiotherapy.¹⁷ Manipulation with glenohumeral steroid injection and analgesia followed by intensive physiotherapy has been shown to improve range of motion.^{18,19} Complications of manipulation include fractures, dislocations, rotator cuff tears, brachial plexus injury, joint haemorrhage and periarticular soft tissue damage.^{20–22} There is an overall failure rate of 10%, and a 20% chance of residual limitation in the range of motion



flowing manipulation under anaesthesia. Failure rates of manipulation are higher in diabetics.²³ Translational manipulation, involving short amplitude high velocity thrusts at the humeral head with a short lever arm under inter-scalene block, has been reported to be a safer option.²⁴

Arthroscopic capsular release

While manipulation may help, prospective comparative studies with arthroscopic capsular release reveal patients (including diabetics) have significantly better pain relief and range of movement with an arthroscopic capsular release.^{25–29} Arthroscopic capsular release involves a circumferential surgical release of the capsule adjacent to the glenoid and is usually performed as a day procedure under regional anaesthesia.

We have found excellent pain relief and range of motion following arthroscopic capsular release (Figure 2, 3). The results depend on the finer details of the technique of release and the rehabilitation program with better outcomes associated with a more complete circumferential release and supervised early range of motion exercises at the shoulder.

Glenohumeral joint arthritis

The treatment algorithm for glenohumeral joint arthritis is similar to that for hip and knee arthritis. At some point, and particularly if there is good rotator cuff function, the patient may consider a total shoulder replacement. Technology for total shoulder replacement has advanced significantly and good outcomes can be expected, particularly if the rotator cuff is functioning. The recovery from total shoulder replacement is quicker than that for a hip or knee replacement as the patient does not need to ambulate on the shoulder.

Conclusion

Making the correct diagnosis when a patient presents with a stiff, painful shoulder is important as treatment varies according to the cause (Table 1). For impingement syndromes and partial thickness tears, subacromial steroid injections are appropriate. Full thickness rotator cuffs tears usually require surgical repair. The deposits in calcific tendonitis can be aspirated under ultrasound guidance when the deposit is immature. Nonsurgical treatments, with the exception of hydrodilatation, have had limited success in treating adhesive capsulitis. Arthroscopic capsular release can

improve both pain and stiffness.

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