Common shoulder problems presenting to the fracture clinic

We present our approach to some common shoulder problems, which frequently present to general fracture clinic after referral from the Emergency Department for acute treatment.

Clavicle Fractures

Clavicle fractures comprise about 5% of the fractures presenting to hospital, with an incidence of 30/100,000. Midshaft and lateral end fractures tend to behave differently and may require different methods of operative intervention.

Until recently, the majority of midshaft fractures were treated non-operatively, but a multicentre randomised controlled trial from the Canadian Orthopaedic Trauma Society, suggested that patients with displaced fractures would benefit from fixation to avoid the risk of non-union and functionally inferior results with symptomatic malunion. Subsequently, systematic reviews and meta-analyses have been performed. These suggest that the long-term outcome is unaffected by surgical or non-operative treatment. There is a higher rate of non-union in the non-operative groups, but this is amenable to operative correction. The time to union is also longer and there is a later return to function in the non-operative group. These advantages of surgery must be weighed against the risks of wound dehiscence, infection, and the need for secondary surgery due to prominent hardware.

These studies lead us to take a view that midshaft clavicle fractures should be treated on a case-by-case basis, in discussion with the patient. We treat undisplaced fractures non-operatively in a broad arm sling for 4 weeks, unless there is a pressing reason to get early function. Displaced fractures are discussed with the patient. Indications for intervention are: open fractures, skin compromise, shortening greater than 2cm, and wide displacement with high chance of tissue interposition.

The best method of fixation has been investigated, and the alternatives include intramedullary fixation and plate fixation. There are no clinical differences in outcome between the two, but intramedullary fixation is technically demanding, and there is a greater risk of shortening in comminuted fractures when compared to plate fixation. We fix these fractures with a plate, with intrafragmentary compression in simple fractures and in bridging mode for multifragmentary fracture configurations.

Lateral clavicle fractures are thought to have a higher risk of non-union, and there has therefore been more inclination to fix these injuries. The fracture has been classified with respect to the integrity of the coracoclavicular ligaments and whether the medial fragment maintains an attachment to these, to reduce the deforming force of gravity pulling the arm (and lateral fragment) away from the medial fragment.

Fractures with an intact coracoclavicular ligament attachment to the medial fragment can be treated non-operatively, with good results, and simple surgical options in the event of failed conservative treatment. The fractures with medial fragment displacement (coraco-clavicular ligament disruption) have a 30% non-union rate. However, surgery for these fractures has a 22% complication rate. Functionally there is little difference between the groups, and there may be an argument for treating these fractures non-operatively, after discussion with the patients, accepting they may have symptomatic non-union, which could be treated later, although personal experience is that these non-unions can be difficult to treat late due to the size of the distal fragment, and new bone formation blocking reduction. The complication rate varies between surgical modalities. Hook plate and tension band wiring have the highest complication rates of up to 40% and the majority of these patients will require further surgery to remove the implants. Coraco-clavicular stabilisation (to reduce the fracture without fixation between the medial and lateral fragments to allow healing with callus) and interfragmentary fixation have the lowest rates of complication (4-6%). On this basis, we avoid fixing these fractures with devices that cross the ACJ, and aim to apply a lateral plate crossing the fracture with multiple fixed angle locking screws, if necessary augment this with sutures through the CC ligament, or around the coracoid, depending on the quality of the tissue.

Acromioclavicular Joint Injury

There had been a paucity of evidence to lead decision-making in the treatment of AC Joint injuries. The classification of these injuries relates to the integrity of the coracoclavicular ligaments. Rockwood types I and II have intact coracoclavicular ligaments with sprains of the capsule and acromioclavicular ligaments. These are generally treated non-operatively, although the injury to the joint can lead to some long-term problems with pain that may require treatment with AC Joint resection. It is the Type III or greater, that have previously provided controversy in their treatment. One meta-
analysis of studies treating these injuries (based on 6 retrospective case series) concluded that there is not enough evidence to guide treatment\(^{13}\). The surgically treated group had improved cosmesis, but the non-operative group returned to function earlier with less sick-leave. There was no difference in pain, strength or throwing ability. The Canadian Orthopaedic Trauma Society have recently performed a study randomising type III injuries to operative or non-operative management. At all points the non-operative group attained better and quicker function (Data presented at OTA meeting 2012).

On this basis we treat the majority of ACJ dislocations non-operatively with early mobilisation, and review symptoms at three months, although some injuries require earlier reconstruction. Ignoring cosmesis, indications for intervention at three months is pain on activity, particularly above shoulder height, and a feeling of the arm being “not attached to the body”.

There are various ways to reconstruct the AC Joint, and the number of devices being developed for this injury is increasing. There is little evidence for one over the other, although reconstruction using the coraco-acromial ligament has a 12-20% failure rate for late reconstruction\(^{11}\). We choose to excise the lateral clavicle and reconstruct the coraco-clavicular ligament with a loop of synthetic ligament around the coracoid attached to the clavicle with a screw, giving a strong fixation with a good clinical result.

**Anterior dislocation of the shoulder**

Traumatic shoulder dislocation is a very common injury, which is treated with acute reduction in the emergency department under sedation, and often presents in the fracture clinic to non-shoulder traumatologists. The rationale for treatment of these injuries depends on a number of factors, relating to the risk of recurrence, and associated injuries.complications.

The patients can be divided into first time dislocators and those with previous dislocations. For first time dislocators, the risk of recurrence is related to their age (younger patients having a higher risk), and to their functional requirements (those playing contact sports, or loading their arm in abduction and external rotation having a higher risk). The risk for people who play contact sport is in the region of 80-90% - highest in the under 20's, the risk decreasing exponentially with age, and so a discussion with these patients about primary reconstruction should be made, but non-operative treatment with a rehabilitation programme can be pursued in the knowledge that further dislocations would be an indication to undertake the reconstruction at that stage\(^{12}\), and studies have not shown worse outcomes for stabilisation after recurrent dislocations. If after a full programme of rehabilitation aimed at glenohumeral control and cuff strengthening they continue to have symptoms of instability, then discussion about surgical stabilisation is undertaken. There was a vague for treating patients with anterior dislocations with external rotation braces, but studies have not found this to have any improvement over traditional sling, and patients were not compliant with the external rotation brace\(^{13}\).

For older patients with a first time traumatic dislocation, the risk of redislocation is low in the absence of complicating factors, and the main risks are of stiffness and associated injury. They can be treated with early mobilisation, but need physiotherapy input, to maintain their range of movement, as stiffness can often be more of a problem than instability. It is important to exclude associated complications, such as fracture (of both glenoid and greater tuberosity) as this may change management, and to assess the function of the rotator cuff, which can tear as a result of the dislocation. Any suspicion of a cuff tear should be investigated with either ultrasound or MRI depending on availability, and if torn, surgical repair undertaken on an urgent basis, before retraction of the tendon becomes fixed\(^{14}\) dependent on age and other patient factors.

Our practice is for all patients suffering simple dislocations to be seen in our weekly specialist shoulder injury clinic for assessment. Adequate radiographs (AP, Scapula Y-view, axillary) are taken to allow assessment of tuberosity fractures, and any subtle glenoid fracture can be identified. An axial, or modified axial – “Velpeau”, view is required post reduction to confirm reduction. If they are comfortable enough to allow assessment of cuff function and this is normal, they are treated appropriately by specialist physiotherapists. If the cuff cannot be fully assessed, they are seen by physiotherapists and brought back for reassessment after 2-3 weeks, and an urgent ultrasound requested if there is ongoing suspicion at this point.

Recurrent dislocators are counselled about their continued risk of instability. If they decide that they would like surgical intervention they are assessed and undergo an MR arthrogram to identify the soft tissue defect that needs to be addressed, and to assess any damage to the glenoid\(^{15}\), especially if the initial history of the first dislocation is unclear.

There is little evidence to support arthroscopic against open stabilisation in the literature\(^{16}\), and the choice of technique relies on the individual surgeon’s preference, though the trend is towards arthroscopic stabilisation. In our practice, one surgeon prefers open stabilisation and the other arthroscopic stabilisation, although De Beer’s criteria for not performing arthroscopic (anterior) stabilisation are respected (engaging Hill-Sachs deformity, inverted tear drop glenoid, total lack of labral tissue, large bony Bankhart lesion, HAGL lesion, and, previously failed arthroscopic procedure in contact sportsman).

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References can be found online at www.boa.ac.uk/UTO or by scanning the QR Code.
References


