



Easily Missed: Acute Rotator Cuff Tears

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Easily Missed?

Acute Rotator Cuff Tears

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Case History

A 45-year-old woman falls on ice and injures her shoulder. Assessment at her local hospital reveals bruising only and no bony injury on plain radiographs. Despite ongoing reassurance and participation in a physiotherapy programme for three months, she continues to complain of pain, weakness and inability to raise her arm. Eventually she is referred to a specialist shoulder clinic where an ultrasound scan confirms she suffered an acute full thickness tear of her supraspinatus tendon.

What is an acute rotator cuff tear?

The rotator cuff comprises four important muscles (supraspinatus, infraspinatus, teres minor and subscapularis) which attach close to the humeral head via tendons and are critically involved in stability and function of the shoulder. A rotator cuff tear is when one or more of these tendons tears or detaches from the humerus (image 1). They can vary in size and be acute or chronic. Chronic tears are due to tendon degeneration and attrition and as such these patients are not always referred to hospital unless they are having significant problems. However, acute tears are a result of either a significant direct or indirect injury to the shoulder and need to be considered differently to patients with chronic tears.

Box 1: How common is it?

The estimated incidence of acute full thickness cuff tear is reported at 2.5 per 10,000 patients aged 40-75 (1).

In patients with “red flag” features for an acute cuff tear following an injury, with normal radiographs and no pre-existing shoulder problems:

- 60 of 104 patients aged 19 to 75 years had some degree of cuff tear on ultrasound assessment within 6 weeks of injury including 33 of 104 patients with a full thickness tear (2).
- 60 of 259 of patients aged 18 to 75 years had full thickness acute rotator cuff tears, including 15% with involvement of subscapularis. (1).

Acute cuff tear after shoulder dislocation is a particularly common occurrence in older patients. Two studies have identified high rates of acute cuff tears in these patients:

- 47 of 87 patients aged 40 to 87 years (3).
- 33 of 67 patients aged 60 to 89 years (4).

Why is it missed?

The importance of early diagnosis and treatment of acute traumatic rotator cuff tears is easily overlooked at presentation and a clinician’s index of suspicion is often lowered if apparently adequate emergency treatment has taken place elsewhere. The injury is particularly missed after a dislocated shoulder has been reduced in an emergency department and subsequent post reduction radiographs appear normal. Two related studies

have shown that pain limits the assessment for specific clinical features of a rotator cuff tear and clinical examination alone will underdiagnose full thickness rotator cuff tears unless they are very large and so ultrasound or MRI are needed to fully assess (2). In this prospective series of patients with soft tissue injuries followed with ultrasound imaging, 1/3 had a full thickness cuff tear. This patient group will typically receive no formal follow-up in most regions of the UK and, as such, those who fail to improve present much later to general practice when successful treatment options are limited.

Why does this matter?

Patients with symptomatic rotator cuff tears typically suffer from pain and weakness which can have profound, cascading effects into sleep, work, leisure and psychosocial functioning, including depression and anxiety (6). Early diagnosis of acute tears is essential to facilitate prompt surgical treatment and the improved outcome scores and satisfaction seen after early surgical repair (3). In a study of younger patients aged 26 to 49 years with acute cuff tears, 95% of patients returned to their usual occupation after rotator cuff repair (7). Surgical repair of acute rotator cuff tears results in a significant improvement in pain and function. A 2013 systematic review of fifteen studies included a total of 371 patients undergoing surgery <3 months or >3 months after injury showed a trend towards improved outcome scores with an earlier time to surgery (8). While the included studies were predominantly small case series only and high level evidence in this area is limited, surgical repair is difficult if patients are left untreated and often impossible if such acute tears are ignored for many months or years.

How is it diagnosed?

Clinical

The following key clinical features constitute “red flags” for a possible acute rotator cuff tear (9):

- Recent trauma
- Pain from the shoulder and/or lateral aspect of the arm
- Inability to raise arm in abduction above shoulder level, especially if not limited by pain.

The presence of these features mandates urgent assessment and plain radiography to exclude a fracture. If still persistent at two-weeks following injury, the patient should be urgently referred to an appropriate fracture clinic or shoulder clinic with rapid access to soft-tissue imaging.

Whilst a thorough clinical assessment and documentation of power in the individual rotator cuff muscles is desirable, there are many clinical tests for shoulder problems described in the literature, and the clinical utility of each in isolation is limited (10). As a minimum, the function of the axillary nerve should be checked by testing sensation over the “regimental badge patch” and the patient should be checked for any additional associated injuries, particularly of the cervical spine and the affected limb.

Investigations

Plain radiographs of the glenohumeral joint in two planes should be performed on the day of presentation for patients with the above features. This should identify significant fractures, avulsions, or dislocations which may require immediate treatment.

Those patients with persistent symptoms at two-weeks post-injury may be offered an ultrasound scan or MRI to assess for a torn rotator cuff through a specialist shoulder clinic. Due to the high incidence of rotator cuff tear after glenohumeral dislocation in patients aged over 40 years, this group should routinely undergo either urgent ultrasound or MRI imaging to comply with best practice National Guidelines (9). The modality chosen may depend on local availability. MRI and ultrasound are both currently accepted, reliable tests for assessing full thickness tears, with a sensitivity of 98% and 91% respectively and specificity of 79% and 85% (11).

How is it managed?

Shared treatment decisions should be made between the patient and the treating shoulder surgeon. Early surgical repair will likely be recommended to patients with full thickness acute tears causing significant pain and/or disability.

Box 2: What you need to know

- Shoulder pain with an inability to abduct above 90 degrees after trauma is a red flag for referral for a same day plain x-ray assessment.
- Refer the following patients urgently to a specialist clinic for consideration of ultrasound or MRI imaging:
 - o Patients unable to abduct the arm above 90 degrees more than two weeks following a shoulder injury.
 - o Any patient aged >40 years following dislocation of the glenohumeral joint
- Offer patients with a confirmed acute rotator cuff tear urgent referral for a specialist shoulder surgery consultation to discuss potential surgical repair.

Box 3: How patients were involved in the creation of this article

One of our recent patients with an acute traumatic rotator cuff tear has reviewed the article for concept, relevance, content and style.

Box 4: Education into practice

- Be aware of national best practice guidelines for patients with subacromial shoulder pain (12) and traumatic anterior shoulder dislocation (9).
- Engage with your local orthopaedic services and commissioners to understand the approved route to access acute shoulder services for your patients.
- Share decision making with your patient at an early stage including the importance of two weeks as threshold for re-evaluation and onward referral.

Image 1:

Illustration showing a full thickness tear of the supraspinatus and subscapularis tendons. Extension of the tear and further retraction of the torn ends occurs over time (© Jordan Fletcher, permission granted to reproduce under Creative Commons Licence).

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- C) Contributors: RC performed the literature search and planned, drafted and revised the manuscript. TH revised the draft manuscript. JR devised the article concept, planned and revised the draft manuscript and is guarantor. All authors agreed the final manuscript.
- D) Patient consent: The case history is hypothetical.

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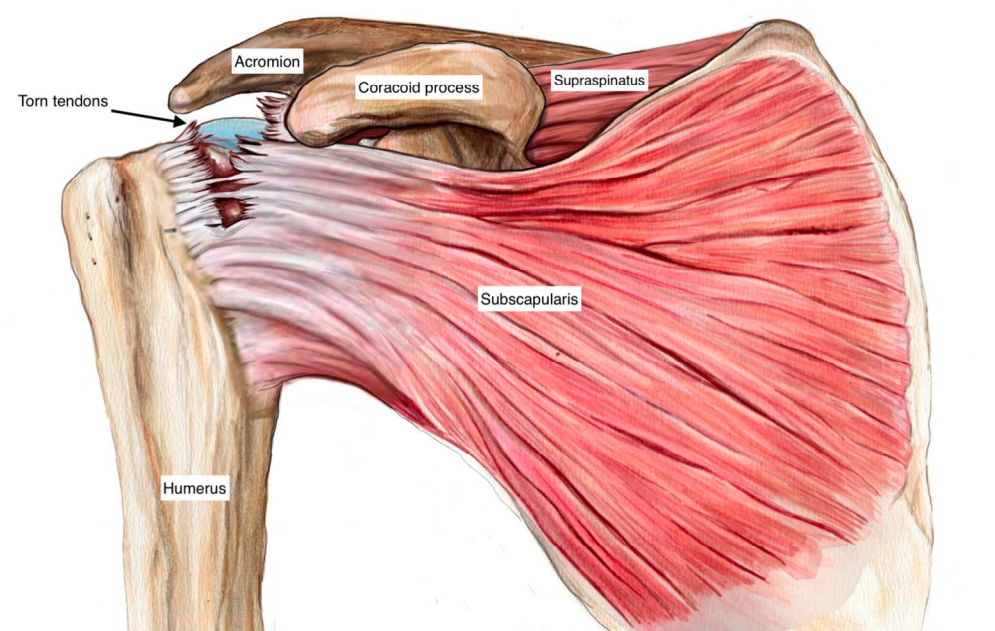


Illustration showing a full thickness tear of the supraspinatus and subscapularis tendons. Extension of the tear and further retraction of the torn ends occurs over time (□ Jordan Fletcher, permission granted to reproduce under Creative Commons Licence).

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