

# Acute Shoulder Pain: Common Causes and Their Management

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**Acute shoulder pain occurs from injury to shoulder tissues or can be a referred pain from the thoracic or cervical area. There are several causes of acute shoulder pain, among them: fracture of the clavicle and scapula, shoulder dislocation, rotator cuff lesions, adhesive capsulitis, and subacromial bursitis. The pain history and physical examination of the shoulder are needed to make the diagnosis. The specific cause and its severity are determined by imaging such as X-rays. Treatment is based on medication and orthopedic management.**



## Definition of Acute Shoulder Pain

Shoulder pain is a common symptom that might originate from an intrinsic or extrinsic shoulder problem. The most common causes of extrinsic referred shoulder pain include myocardial ischemia and neck pathology.

Intrinsic shoulder pain originates from the structures that make up the shoulder joint, which include the humerus, glenoid, scapula, acromion clavicle, and surrounding soft tissues.

## Causes of shoulder pain

According to the duration of pain, the causes of shoulder pain can be classified into acute

and chronic pain, as shown in the following table:

<b>Acute shoulder pain</b>	<b>Chronic shoulder pain</b>
Fracture and dislocation	Osteoarthritis of the shoulder
<ul style="list-style-type: none"><li>Rotator cuff lesions</li><li>• Impingement syndrome<ul style="list-style-type: none"><li>• Rotator cuff tear</li></ul></li><li>• Painful arc syndrome</li></ul>	Rheumatoid arthritis
Adhesive capsulitis (frozen shoulder)	Partial rotator cuff tear
Subacromial bursitis	

## Specific provocative tests for the diagnosis of shoulder pain

**Hawkin's test:** This test involves internal rotation with shoulder/elbow flexion to 90°. Pain indicates rotator cuff pathology.

**Empty can test:** This test involves resistance when the shoulders are abducted to 90° and forward flexed to 30°. Weakness on downward pressure suggests *supraspinatus* tear.

**Lift-off test:** This test involves the arm internally rotated across the patient's lower back. Weakness in lifting the hand straight indicates the pathology of the subscapularis tendon.

**External rotation test:** This test involves the arms at the sides and the elbow flexed to 90°. Weakness of external rotation suggests *infraspinatus* tendon pathology.

**Speed's test:** This test the shoulder flexed to 60° and active resistance to pressing downward on the elbow. Pain or weakness suggests biceps tendonitis or tear.

**Cross-body adduction test:** This test involves adduction of the arm across the patient's chest. Pain indicates possible **acromioclavicular** (AC) joint disease.

## Fracture and dislocation

### Clavicle fracture

A fractured clavicle accounts for 5% of all fractures and it also accounts for more than 50% of injuries around the shoulder joint. It is one of the most common childhood fractures. Most fractures occur in the middle third of the clavicle. The most common cause of clavicular fractures is trauma.

### Examination

Patients with a clavicular fracture present with pain and tenderness over the clavicle. Swelling is another common finding. The patient is unable to abduct his or her shoulder.

There is deformity over the shoulder with the unopposed action of the pectoralis major muscle; the lateral fragment is displaced downward and medially while the proximal segment is displaced upward by the unopposed action of the sternocleidomastoid muscle.

## Diagnosis

Diagnosis is simple in most cases and is based on the following:

- There is a recent history of trauma followed by pain, swelling, deformity, and loss of function at the site of the fracture and involved joint.
- One must look for any evidence of a neurovascular deficit in the distal limb.
- The diagnosis can be confirmed on an X-ray.

## Treatment

Clavicular fractures rarely require rigid fixation because the strong muscles surrounding the bone act to reduce and hold the fractured segments together. In adults, immobilization using a triangular sling suffices in cases with minimum displacement. A figure-8 bandage may be applied to a young adult with a displaced fracture. Immobilization and reduction serve as pain relief in the acute setting and later allow for the formation of callus and healing without deformities.

Open reduction and internal fixation with a plate or a nail are indicated in the following:

- Fractures that are associated with a neurovascular deficit
- In some severely displaced fractures, where it may be more of a cosmetic concern

## Complications

- **Early complications:** injury to the neurovascular bundle, moreso the subclavian vessels or brachial plexus
- **Late complications:** shoulder stiffness, malunion, and nonunion (the latter being very rare)

## Scapular fracture

Fractures of the scapula are less common, and, in most cases, unimportant because patients recover well without much treatment.

**The scapula can break at four sites:**

- Body
- Neck
- Acromion process
- Coracoid process

Most often, the fracture is undisplaced because the fragments are held in position by the surrounding muscles.

## Treatment

The mainstay of treatment is to restore shoulder mobility by active exercises as soon as the pain subsides. A triangular sling for the period of pain and swelling (typically 1 week to 10 days) is usually sufficient.

## Subluxation or dislocation of the AC joint

This is an uncommon injury, caused by a fall on the outer prominence of the shoulder.

### Pathology

The injury may result in a partial or complete rupture of the AC or coracoclavicular ligaments. AC joint injuries are classified according to the six-grade system described by Rockwood, depending upon their severity.

**The following table summarizes the most recent classification of AC joint injuries:**

Type	Clavicle position	AC ligament	Coracoclavicular ligament	Joint capsule	Deltoid muscle	Trapezius muscle
I	Not displaced	Mildly sprained	Intact	Intact	Intact	Intact
II	Elevated, but not above the acromion	Ruptured	Sprained	Ruptured	Slightly detached	Slightly Detached
III	Elevated with a coracoclavicular distance < 25 mm	Ruptured	Ruptured	Ruptured	Detached	Detached
IV	Posterior to the trapezius	Ruptured	Ruptured	Ruptured	Detached	Detached
V	Elevated with a coracoclavicular distance > 25 mm	Ruptured	Ruptured	Ruptured	Detached	Detached
VI	Inferior to the coracoclavicular ligament and biceps tendon	Ruptured	Ruptured	Ruptured	Detached	Detached

### Diagnosis

Diagnosis is depicted by pain and swelling localized to the AC joint. In a grade 3 injury, the lateral end of the clavicle may be unusually prominent.

### Investigations

Investigations include a bilateral shoulder X-ray with the AC joints of both sides exposed for comparison. Subluxation or dislocation of the joint may be seen.

### Treatment

Grade 1 and 2 injuries are treated by rest in a triangular sling and analgesics. A grade 3 injury in young athletic individuals is treated by surgical repair.

## Dislocation of the shoulder

This is the most common joint in the human body to dislocate. It occurs more commonly in adults and is rare in children. Anterior dislocations account for more than 95% of dislocations, with posterior dislocations making up 4% and inferior dislocations (*luxatio erecta*).

Superior and intrathoracic dislocations are extremely rare.

A smaller number of shoulder dislocations have an atraumatic origin and may be related to congenital, acquired, or degenerative conditions.

Shoulder instability refers to the condition where the head of the humerus is not stable in the glenoid. It has a wide spectrum—from minor instability or a ‘loose shoulder’ to frank dislocation. In the former, the patient may present with just pain in the shoulder, more on using the shoulder. Pain occurs due to stretching of the capsule, as the head ‘moves out’ in some direction without dislocating. A patient with frank instability may present with an ‘abnormal’ movement of the head of the humerus. This could be partial movement (subluxation), which gets spontaneously reduced, or a dislocation.

The instability may be in one direction (unidirectional) or more (bidirectional). It may be in multiple directions—anterior, inferior, or posterior—where it is called multidirectional instability (MDI).

## Classification

Dislocations of the shoulder may be of the following types:

**Anterior dislocation:** In this injury, while the arm is held in slight abduction and external rotation, the shoulder is ‘squared off’ (i.e. box-like) with the loss of the deltoid contour compared to the contralateral side. The humeral head is palpable anteriorly (in the subcoracoid region, beneath the clavicle). The patient resists abduction and internal rotation and is thus unable to touch the opposite shoulder. It may be further classified into three subtypes depending on the position of the dislocated head.

1. **Preglenoid:** The head lies anterior to the glenoid.
2. **Subcoracoid:** The head lies inferior to the coracoid process, which is the most common type of dislocation.
3. **Subclavicular:** The head lies below the clavicle.

**Posterior dislocation:** In this injury, the arm is held in adduction and internal rotation. The anterior shoulder is ‘squared off’ and flat with the prominent coracoid process. The head of the humerus comes to lie posteriorly behind the glenoid. The posterior shoulder is filled with the humeral head, palpable beneath the acromion process. The patient resists external rotation and abduction. The shoulders may look identical in bilateral dislocation, making it a commonly missed injury.

**Luxatio erecta (inferior dislocation):** This is a rare type, where the head comes to lie in the subglenoid position.

### Clinical feature and diagnosis:

The patient’s shoulder is held in abduction and the elbow is supported with the opposite hand. There is a history of a fall on an outstretched hand, followed by pain and loss of function at the shoulder. There may be a history of similar episodes in the past.

### On examination:

The patient keeps his arm abducted. There is an obvious deformity with the loss of the normal round contour of the shoulder joint.

On careful inspection, one may notice fullness below the clavicle due to the displaced head. This can be felt by rotating the arm. Tests that indicate anterior dislocation include the following:

- **Dugas' test:** This is the inability to touch the opposite shoulder.
- **Hamilton ruler test:** Because of the flattening of the shoulder, it is possible to place a ruler on the lateral side of the arm. This touches the acromion and lateral condyle of the humerus simultaneously.

The diagnosis is easily confirmed on an anteroposterior X-ray of the shoulder. An axillary view is sometimes required.

## Treatment

Treatment of acute dislocation is reduction under sedation or general anesthesia, followed by immobilization of the shoulder in a chest-arm bandage for 3 weeks. Shoulder reduction is done by the following:

- Kocher's maneuver
- Hippocrates maneuver

**The surgical methods adopted for treatment are as follows:**

- Putti-Platt operation
- Bankert's operation
- Bristow's operation
- Arthroscopic Bankert repair

## Adhesive capsulitis (frozen shoulder)

### Definition

It is defined as a clinical syndrome characterized by painful restriction of movement of both active and passive shoulder movement due to causes within the shoulder joint or remote causes.

### Epidemiology

- The prevalence is 2% of the population.
- In diabetic patients, the prevalence is higher, at 20-30%.
- The female gender is more susceptible.
- It mostly occurs in middle-aged people.
- Ten percent of cases have bilateral distribution.

### Causes

- Idiopathic
- Tendinitis of the rotator cuff, bicipital tendinitis
- Fracture and dislocation of shoulder joints
- Other diseases that increase the risk of frozen shoulder are diabetes, cardiovascular disease, reflex sympathetic dystrophy, Colle's fracture, etc.

### Clinical features

- Pain
- Decreased range of movement (external rotation > abduction > internal rotation)
- Accessory joint movement restriction
- Unable to do a routine daily activity

### Staging

Adhesive capsulitis has three stages, as follows:

- **Stage 1:** stage of pain
- **Stage 2:** stage of stiffness
- **Stage 3:** stage of recovery

### Investigation

An X-ray usually reveals a normal joint appearance, but a few cases show sclerosis around the greater tuberosity.

### Treatment

- Nonsteroidal anti-inflammatory drugs (NSAIDs)
- Intra-articular steroids
- Exercise—both active and passive

## Rotator cuff lesions

### Painful arc syndrome

#### Definition

It is also known as shoulder impingement syndrome or subacromial impingement. It arises from the irritation or inflammation of the rotator cuff muscles and tendons as they pass through the subacromial space. This causes pain in the shoulder and upper arm during the mid-range of glenohumeral abduction.

#### Causes

The subacromial space is a narrow space that is narrowed further during abduction; thus, any lesion that takes up space is likely to cause a painful arc syndrome. This is because, once the space between the upper end of the humerus and the acromion gets compromised, during mid-abduction the tendon of the rotator cuff gets nipped between the greater tuberosity and acromion. Examples of such conditions include the following:

- Minor tears of the *supraspinatus* tendon
- *Supraspinatus* tendinitis
- Calcification of the *supraspinatus* tendon
- Subacromial bursitis
- Fracture of the greater tuberosity

#### Investigations

An X-ray of the shoulder may show a calcific deposit or a fracture of the greater tuberosity or acromion.

#### Treatment

- Ultrasonic to the tender point
- Anti-inflammatory drugs
- Injection of hydrocortisone in the subacromial space

# Rotator cuff lesions

Rotator cuff lesions include the following:

- Rotator cuff impingement syndrome
- Rotator cuff tear

**1) Impingement syndrome** is commonly associated with *supraspinatus* tendons. The following are the causes of impingement syndrome:

- *Supraspinatus* tendonitis
- Calcific deposits
- Subacromial bursitis
- Subdeltoid bursitis
- Periarthritis
- Bicipital tendonitis
- Fracture of a greater trochanter

The most common cause is *supraspinatus* tendonitis. The most vulnerable structures for impingement are between the subacromial space and head of the humerus.

## 2) Rotator cuff tear

It occurs mostly in people over 40 years old. People who have an occupation demanding repetitive overhead movement are most prone. Athletes such as throwers, swimmers, and tennis players are also vulnerable. It is mostly observed in men.

### Classification of rotator cuff tear

- Small (< 1 cm)
- Medium (1-3 cm)
- Large (3-5 cm)

### Clinical features

- Pain
- Swelling
- Limitation of movement
- Muscle atrophy
- Tenderness of the greater tuberosity

### Differential diagnosis

- Frozen shoulder
- Cervical spondylosis
- AC and shoulder joint arthritis
- Bursitis
- Snapping scapula
- Suprascapular neuropathy

### Investigations

- X-ray changes in rotator cuff lesions include decreased subacromial space, anterior spurring of the AC joint, humeral head degeneration, and sclerosis.
- A single contrast arthrogram is considered the gold standard.
- Ultrasonography
- MRI is very accurate but expensive.



## Treatment

Conservative treatment includes: heat massage, NSAIDs, local infiltration of steroids, subacromial steroid injections, exercise, and temporary immobilization.

### Surgical treatment

- Arthroscopic repair of small and partial tears
- Open methods in major tears

## Subacromial bursitis

Bursitis commonly occurs in the shoulder of the subacromial area. Inflammatory bursitis usually results from injuries resulting from repetitive injury to the bursa. The subacromial bursa assists the *supraspinatus* tendon with any overhead movements of the shoulder.

- **Subacromial bursitis symptoms** include tenderness at the tip of the shoulder, pain with passive abduction, and symptoms of shoulder impingement syndrome.
- **Treatment** includes rest, NSAIDs, and orthopedic referral.

## References

Dias, R., Cutts, S., & Massoud, S. (2005). Frozen shoulder. *BMJ*, *331*(7530), 1453-1456.

<http://doi.org/10.1136/bmj.331.7530.1453>

Luime, J., Koes, B., Hendriksen, I., Burdorf, A., Verhagen, A., Miedema, H., & Verhaar, J. (2004). Prevalence and incidence of shoulder pain in the general population: A systematic review. *Scandinavian Journal of Rheumatology*, *33*(2), 73-81.

<http://doi.org/10.1080/03009740310004667>

Maheshwari, J., & Mhaskar, V. A. (2015). *Essential orthopaedics: Including clinical methods* (5th ed.). New Delhi: Jaypee Brothers Medical Publishers.

Mitchell, C., Adebajo, A., Hay, E., & Carr, A. (2005). Shoulder pain: Diagnosis and management in primary care. *BMJ*, *331*(7525), 1124-1128.

<http://doi.org/10.1136/bmj.331.7525.1124>

Ramponi, D. R. (2011). Shoulder pain. *Advanced Emergency Nursing Journal*, *33*(2), 114-126. <http://doi.org/10.1097/tme.0b013e318217c983>

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