

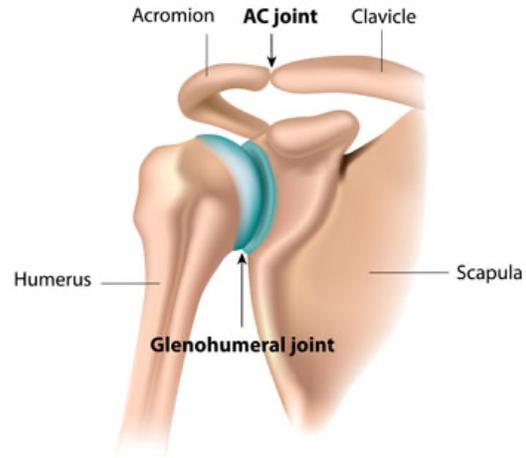
## DR. KAPUR'S SHOULDER REVIEW

The shoulder joint refers to the \_\_\_\_\_(1).  
 However, the \_\_\_\_\_(2) is also part of the shoulder girdle.

- 1)
- 2)

The 2 joints of the shoulder joint are seen.

- The glenohumeral joint represents the articulation between the humeral head and the glenoid. The ends of the bones are covered by articular cartilage.
- The acromioclavicular joint is the connection between the acromion (part of the scapula) and the clavicle. It represents a plane type synovial joint.

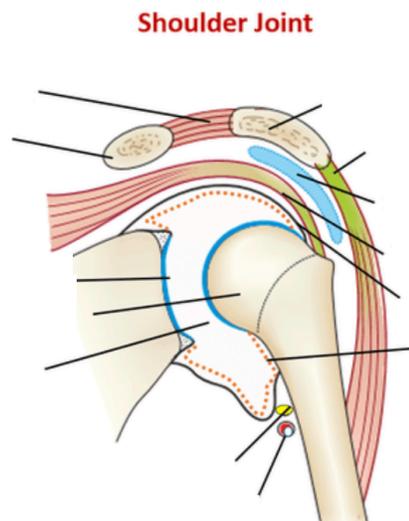
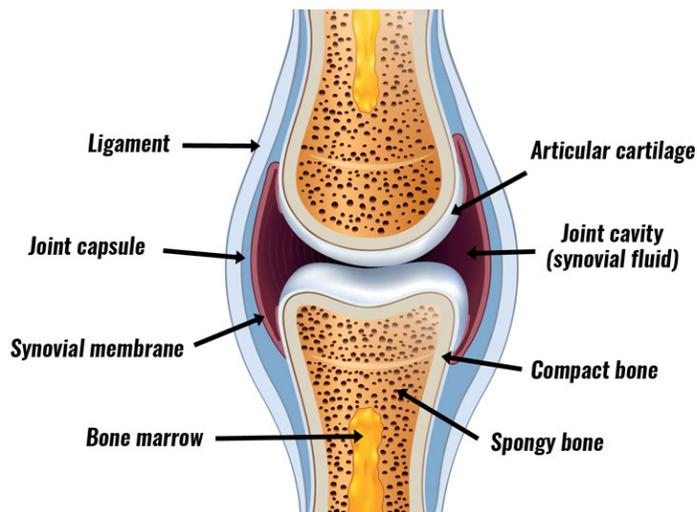


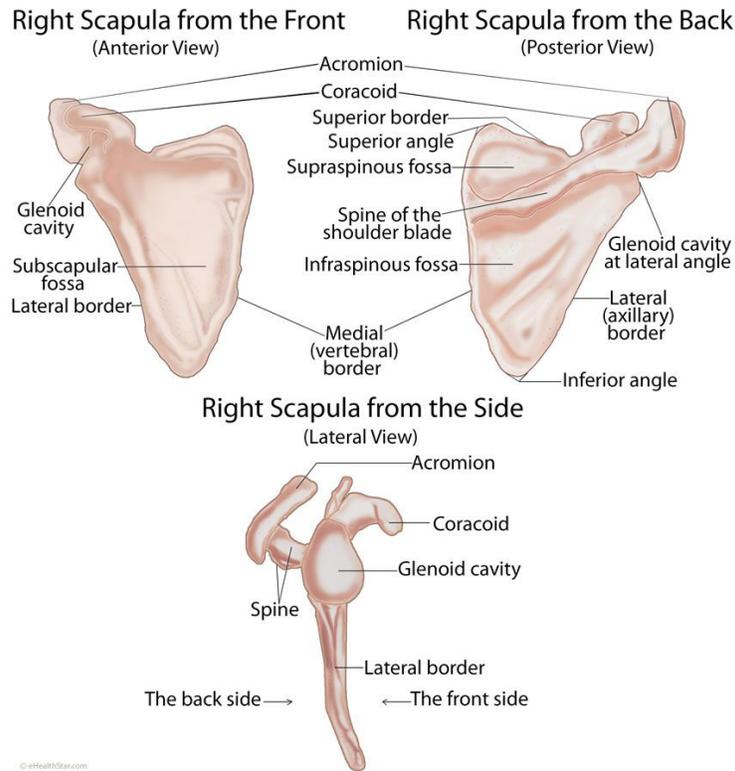
Like most joints in your body that allow motion to occur, the glenohumeral joint is a \_\_\_\_\_(1).  
 This means that the glenoid fossa and the humeral head are invested by a \_\_\_\_\_(2). The inner layer of the capsule represents the \_\_\_\_\_(3).

- 1)
- 2)
- 3)

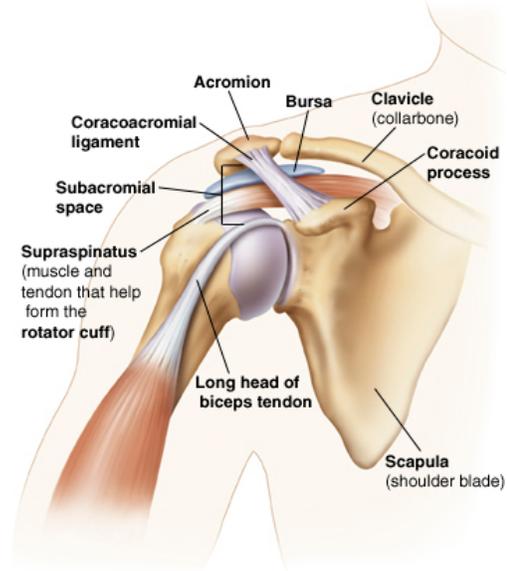
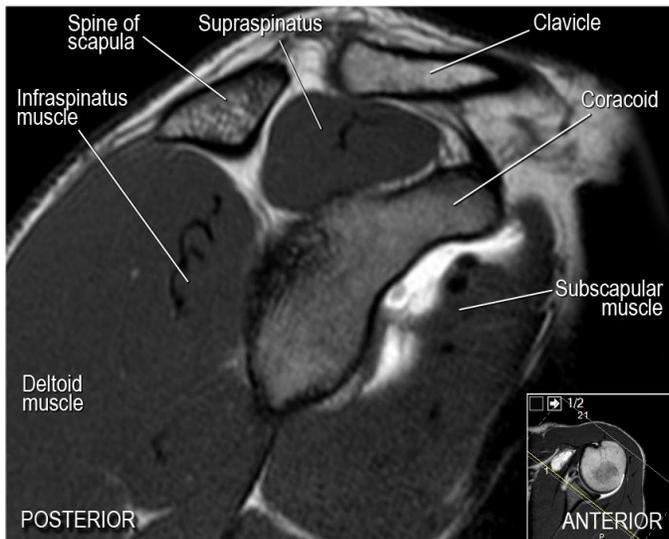
The synovium is a layer of cells that produces \_\_\_\_\_(1) that lubricates the joint.  
 Many inflammatory processes can irritate the synovium resulting in \_\_\_\_\_(2).  
 The inflamed synovium produces increased amounts of fluid resulting in a \_\_\_\_\_(3).

- 1)
- 2)
- 3)

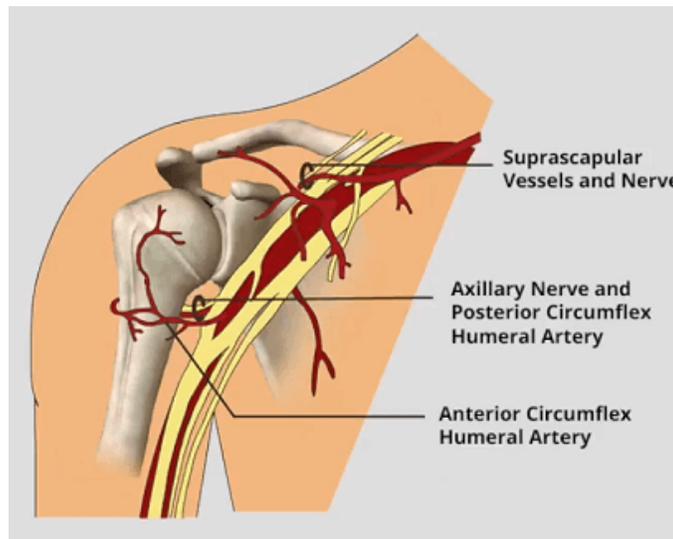




<p>Focal thickening of the joint capsule are called _____(1).</p> <p>These ligaments provide additional _____(2) to the glenohumeral joint.</p>	<p>1)</p> <p>2)</p>
<p>A key ligament involved in rotator cuff abnormalities is called the _____(1).</p> <p>_____ (2) attach the clavicle to the acromion. These ligaments may tear with AC joint separation.</p>	<p>1)</p> <p>2)</p>
<p>The glenohumeral joint allows a wide variety of motion. The motion that is most relevant to the function of the rotator cuff is _____(1) and _____(2).</p>	<p>1)</p> <p>2)</p>
<p>There are 4 muscles of the rotator cuff:</p> <ol style="list-style-type: none"> <li>1. _____</li> <li>2. _____</li> <li>3. _____</li> <li>4. _____</li> </ol> <p>Their tendons attach onto the proximal humerus allowing motion at the level of the glenohumeral joint.</p>	<p>1)</p> <p>2)</p> <p>3)</p> <p>4)</p>



<p>Notice the position of the supraspinatus tendon between the humeral head and acromion/coracoacromial ligament. This space is called the _____(1).</p>	<p>1)</p>
<p>With _____(1) of the shoulder joint, there is narrowing of the acromiohumeral space.</p> <p>This results in _____(2) of the supraspinatus tendon between the humeral head and acromion.</p> <p>Also, degenerative changes of the _____(3) can contribute to narrowing of this space resulting in impingement.</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>Chronic impingement of the supraspinatus tendon results in degeneration of the tendon which predisposes to tendon tear. Patients who are involved in activities that involve repetitive _____(1) (such as house painters or throwing athletes) are at increased risk for tendon degeneration and rotator cuff tears.</p>	<p>1)</p>
<p>Notice the relationship of brachial plexus and the subclavian/axillary artery to the glenohumeral joint. An anterior shoulder dislocation or a displaced fracture of the humerus may result in injury to the _____(1).</p>	<p>1)</p>



<p>The shoulder joint is a _____          _____(1).</p>	<p>1)</p>
<p>Ball and socket joints allow a lot of _____(2). However as          you allow for more motion, you have to give up _____          _____(3).</p>	<p>2) 3)</p>
<p>This means that ball and socket joints are prone to          _____(4).</p>	<p>4)</p>

<p>There are several ways that stability is increased in a ball and          socket joint, thereby decreasing the risk of          _____(1).</p>	<p>1)</p>
<p>A. _____(2) of the socket. If you deepen the          socket that the “ball” has to fit into, then the joint is less          likely to dislocate. However, this also decreases          _____(3).</p>	<p>2) 3)</p>
<p>For example, both the glenohumeral and hip joints are ball in          socket joints.</p> <ul style="list-style-type: none"> <li>• However, the acetabular fossa is much deeper than the              glenoid fossa. Thus, it is harder to dislocate the hip joint.</li> <li>• However by deepening the socket, you also lose range of              motion. This is why you can’t move your hip joint to the              same degree as you can your shoulder joint.</li> </ul>	

**How can your body deepen the socket?**

**LABRUM:**

- Represents \_\_\_\_\_(1) that is present circumferentially around the glenoid and acetabulum.
- Its purpose is to deepen the socket where the ball would fit into and thus provide static stability.
- Because this structure is fibrocartilage (not bone), it \_\_\_\_\_(2) be seen with radiographs. It is best seen with \_\_\_\_\_(3).

1)  
2)  
3)

Normally, the labrum is closely attached to the underlying bone/cartilage. Tearing of the labrum results in separation of the labrum from the bone/cartilage.

Tears of the labrum result in \_\_\_\_\_(1) of the joint. Labral tears can also be \_\_\_\_\_(2).

1)  
2)

Labral tears can occur due to chronic repetitive injuries (baseball pitchers) or due to an acute traumatic event. \_\_\_\_\_(1) is the test of choice for the diagnosis of a labral tear.

1)

An arthrogram refers to injection of a contrast agent into the joint space. This allows optimal visualization of the labrum.

The integrity of the structures that live within the joint or are closely associated with the joint is best studied with an MRI arthrogram.

An MRI arthrogram is performed by placing contrast material into the joint. A needle is inserted into the joint and contrast material is injected. It is a relatively painless and well tolerated procedure.

An MRI arthrogram lets us evaluate the

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

1)  
2)  
3)

**Are there other structures that contribute to joint stability?**

**JOINT CAPSULE:**

- Represents fibrous tissue that encases the joint.
- Focal thickening of the joint capsule are called \_\_\_\_\_(1)
- Like the labrum, these ligaments provide additional stability to the glenohumeral joint.
- Tearing of these ligaments results in shoulder instability. A shoulder dislocation may result in disruption of the ligaments.

1)

<p>A joint capsule can be just right; or it can be too tight or too loose.          If the capsule/ligaments are too tight, it results in a loss of motion. This is called _____(1).</p> <p>Patients with adhesive capsulitis will complain of _____(2).</p> <p>On physical examination, there will be decreased _____(3).</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>If the joint capsule is too loose, it results in loss of stability and increased incidence of dislocation.          This is called _____(1).</p> <p>It can be seen in patients with generalized hypermobility or connective tissue disorders like Ehlers Danlos syndrome. These patients often experience frequent shoulder subluxations and even dislocations.</p>	<p>1)</p>
<p>The labrum and ligaments provide static stability (stability when the glenohumeral joint is not in motion). <b>Are there structures that provide dynamic stability?</b></p> <p><b>MUSCLES:</b></p> <ul style="list-style-type: none"> <li>• The muscles about the shoulder joint provide _____(1).</li> <li>• This means that as you move your arm in different directions, these muscles are actively contracting to keep the humeral head within the glenoid cavity.</li> </ul>	<p>1)</p>
<p>The tendons of the muscles of the rotator cuff insert onto the humeral head and keep the humeral head within the glenoid fossa.          These tendons can undergo degeneration and tearing resulting in _____(1) at the lateral shoulder that is worsened with _____(2).</p> <p>Patients with rotator cuff tears also complain of _____(3).</p>	<p>1)</p> <p>2)</p> <p>3)</p>

<p>Patients with a rotator cuff tear complain of inability to _____(1) as they are unable to raise their arm above their shoulder level.</p> <p>_____ (2) is less common unless associated with injury to the bone and/or labroligamentous structures.</p> <p>A patient with a rotator cuff tear may show the _____(3).</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>The major function of the rotator cuff is _____(1) and _____(2) of the humerus.</p> <p>With rotator cuff pathology, the patient will complain of _____(3) with these motions.</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>Rotator cuff tears can be partial thickness (meaning that there is a partial thickness tear involving a certain percentage of the tendon) or full thickness (meaning that there is a hole in the tendon).</p> <p>Rotator cuff tears are more common in _____(1).</p> <p>Labral tears are more common in _____(2).</p>	<p>1)</p> <p>2)</p>
<p>When there is a complete tear, the muscle becomes useless as it is not connected to the humeral head. Over time, this muscle will become _____(1).</p> <p>Atrophy of the rotator muscle suggests that the rotator cuff tear is _____(2).</p> <p>Also, there is a poor outcome with rotator cuff surgery if the muscle is atrophic. Therefore, full thickness tears should be repaired early (ideally, within 6 weeks of an injury).</p>	<p>1)</p> <p>2)</p>
<p>A _____(1) refers to complete tears of at least 2 of the 4 tendons. It is usually symptomatic and should be treated with surgery if the patient is a good surgical candidate.</p> <p>Partial thickness tears can progress to full thickness tears. Depending on the patient's symptoms, the partial thickness tear can be debrided and repaired surgically.</p> <p>A rotator cuff tear is a like a torn piece of paper. If there is a small tear, it will likely progress to a larger tear.</p>	<p>1)</p>

<p>A normal tendon does not tear by itself unless there is trauma.</p> <p>Trauma to the shoulder (shoulder dislocation/direct penetrating injury) or fall onto an outstretched hand may result in tearing of a normal tendon.</p> <p>More commonly a tendon tears due to _____(1).</p> <p>Degeneration of a tendon is called _____(2).</p>	<p>1)</p> <p>2)</p>
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<p><b>So, what causes the tendons to undergo tendinosis/ degeneration?</b></p> <p>The pathophysiology can be divided into _____(1) and _____(2) causes.</p> <p><b>Intrinsic mechanism:</b> The distal tendons are _____(3) and thus any injury is unlikely to heal. Aging and other comorbidities such as diabetes mellitus, rheumatoid arthritis, Marfan or Ehlers-Danlos syndromes can lead to early tendon pathology.</p> <p><b>Extrinsic mechanism:</b> The tendons are _____(4) by surrounding structures (such as the acromion, ligaments, and degenerated AC joint).</p>	<p>1)</p> <p>2)</p> <p>3)</p>
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<p>_____ (1) , whether in sports or work, is a major risk factor for rotator cuff injury.</p> <p>Anatomical variants such as lateral downsloping of the acromion, os acromiale, and degenerative changes of the AC joint can predispose the patient for rotator cuff pathology.</p> <p>Any of the rotator cuff tendons may be involved by tendinosis, but the _____ (2) is most frequently involved.</p>	<p>1)</p> <p>2)</p>
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<p><b>NOTE:</b> The term _____(1) is commonly used to describe pathology of the rotator cuff tendons. However, this term was coined before we understood tendon pathology.</p> <p>Most tendon pathology is not related to _____(2). It is due to _____(3). Thus, _____(4) is the more appropriate term.</p>	<p>1)</p> <p>2)</p> <p>3)</p> <p>4)</p>
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**Is tendinosis always symptomatic?**

There is \_\_\_\_\_(1) correlation between tendinosis and clinical symptoms.

1)

Some patients experience considerable pain from tendinosis despite minimal changes on imaging studies, while others experience little or no pain from tendinosis despite significant changes in tendon appearance on imaging.

**How do patients with rotator cuff pathology present?**

Patients with rotator cuff tendinopathy or tear present with gradual, atraumatic shoulder pain at rest that is made worse by \_\_\_\_\_(1) such as putting on a T-shirt or brushing their hair.

1)

Athletes often complain of pain while performing their sport, weakness, or a decline in performance.

2)

Patients may localize the pain to the \_\_\_\_\_(2) deltoid and often describe pain at night, especially when lying on the affected shoulder.

3)

**Is physical examination reliable for excluding rotator cuff pathology?**

Physical examination is \_\_\_\_\_(1) reliable for excluding rotator cuff pathology.

1)

In most cases, you need \_\_\_\_\_(2) to make the diagnosis.

2)

\_\_\_\_\_ (3) is gaining popularity in the diagnosis of rotator cuff pathology; however, it is dependent upon the skill of the person performing the exam. Even in experienced hands, it can be difficult to visualize the entire rotator cuff in some patients, and this may reduce sensitivity and specificity for identifying rotator cuff pathology.

3)

\_\_\_\_\_ (4) has greater sensitivity and specificity.

4)

On MRI tendons are black because they are made of collagen.

If the tendon starts to undergo degeneration it becomes \_\_\_\_\_(5).

5)

**Are plain films helpful in the diagnosis of rotator cuff tendinopathy?**

Routine plain radiographs of the shoulder \_\_\_\_\_(1) signs of rotator cuff tendinopathy and are generally not indicated in patients suspected of having such injuries.

Plain films can be helpful to identify other conditions (e.g., acromioclavicular joint arthritis, glenohumeral joint arthritis, tendon calcification) which may be the cause of the patient's symptoms.

1)

**What will you find on physical exam in a patient with rotator cuff abnormality?**

Overall, examination techniques for rotator cuff pathology are \_\_\_\_\_(1) sensitive, but no single examination finding or provocative maneuver is pathognomonic for rotator cuff tendinopathy.

NOTE: Shoulder pain may be referred from the \_\_\_\_\_(2). Therefore, it is important to examine the neck and perform a screening neurologic examination to rule out cervical spine pathology.

Pain with greater than 90 degrees of \_\_\_\_\_(3) (overhead movements) and \_\_\_\_\_(4) suggests rotator cuff tendinopathy.

With rotator cuff pathology, \_\_\_\_\_(5) range of motion is usually greater than \_\_\_\_\_(6) range of motion.

1)

2)

3)

4)

5)

6)

Active range of motion refers to motion performed by the \_\_\_\_\_(1). Active range of motion can be limited due to \_\_\_\_\_(2) or due to a \_\_\_\_\_(3).

Passive range of motion refers to movement of the patient's shoulder \_\_\_\_\_(4). As there is no structural constraint in patients with rotator cuff abnormalities, passive range of motion is normal.

Thus, patients with rotator cuff abnormalities have \_\_\_\_\_(5) passive range of motion and may have \_\_\_\_\_(6) active range of motion.

Passive range of motion would be limited in patients with \_\_\_\_\_(7) and \_\_\_\_\_(8).

1)

2)

3)

4)

5)

6)

7)

8)

Patients with rotator cuff abnormalities may present with \_\_\_\_\_(1).  
 However, the weakness related to tendinopathy is due to the pain that the patient feels with movement. If their pain is relieved by injection of lidocaine into the subacromial space, there will be no weakness on physical exam. Thus, patients with tendinosis have \_\_\_\_\_(2).  
 However, patients with rotator cuff tears will have persistent weakness even after injection of lidocaine into the subacromial space. Thus, patients with rotator cuff tears will have \_\_\_\_\_(3).

- 1)
- 2)
- 3)

**SPECIAL TESTS:** The Neer and Hawkins-Kennedy tests are commonly used to diagnose shoulder impingement (increased risk of tendinosis and rotator cuff tear)

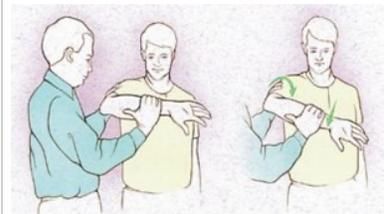
**Neer impingement test:**

- The examiner stabilizes the scapula while forcing the patient's arm into maximal elevation.
- The test is considered positive for impingement if pain is reproduced by this maneuver.
- The maneuver is effective in ruling out impingement if test is negative.



**Hawkins-Kennedy impingement test:**

- The arm is abducted to 90 degrees. The examiner administers a downward pressure on the forearm into internal rotation while stabilizing the humerus.
- The test is considered positive for impingement if pain is reproduced by this maneuver.
- The maneuver is effective in ruling out impingement if test is negative.



With long-standing rotator cuff tendinopathy, \_\_\_\_\_(1) of supraspinatus and infraspinatus muscles may be present.

A \_\_\_\_\_(2) appearance is appreciable in the corresponding scapular fossa.

- 1)
- 2)

**What are the treatment options for patients with symptomatic rotator cuff tendinopathy?**

Initial care generally consists of \_\_\_\_\_  
\_\_\_\_\_(1).  
\_\_\_\_\_(2) is preferred rather than surgery.

1)  
2)

Orthopedic referral is indicated

- when nonoperative care has been ineffective (generally, six months of physical therapy is attempted).
- when shoulder function worsens during the course of appropriate nonsurgical treatment.

**What are some complications of rotator cuff tendinopathy?**

\_\_\_\_\_(1) and \_\_\_\_\_  
\_\_\_\_\_(2) are two important potential complications of rotator cuff tendinopathy.

1)  
2)

Shoulder pain due to underlying tendinosis causes the patient to use the affected arm less frequently. The combination of pain and diminished use can result in adhesive capsulitis.

Patients with adhesive capsulitis present with diminished \_\_\_\_\_(3). Patients complain of stiffness more than pain.

3)

Degeneration of the rotator cuff tendons in patients with chronic tendinopathy increases the risk of tendon tears.

A full thickness tear will present with \_\_\_\_\_(4) in abduction and external rotation.

4)

Rotator cuff tears are generally fixed arthroscopically.

In most cases, the tear is closed with sutures and the torn tendon is re-attached to bone using bone anchors.

On x-ray, only the metallic bone anchors are visualized.



<p>Calcific tendinopathy/tendinitis is characterized by the deposition of _____(1) in one or several of the rotator cuff tendons.</p> <p>The cause is _____(2) but the condition does not appear to be related to trauma or overuse.</p> <p>Calcific tendinopathy is thought to progress through different phases. The severity of symptoms and duration of each phase can vary substantially.</p> <p>Most commonly patients present with _____(3). Unlike tendinosis, calcific tendinopathy/tendinitis is associated with _____(4) within the tendon.</p> <p>In most cases symptoms resolve spontaneously over three to six months.</p>	<p>1)</p> <p>2)</p> <p>3)</p> <p>4)</p>
<p>Patients with symptomatic calcific tendinopathy typically describe shoulder pain similar to that experienced by patients with _____(1).</p> <p>Patients with calcific tendinopathy typically experience pain when the shoulder is moved actively or there may be a pain-related decrease in the range of motion.</p> <p>While x-rays are not helpful in the diagnosis of rotator cuff tendinopathy, calcific tendinitis can be easily appreciated on _____(2).</p> <p>Initial treatments may include oral anti-inflammatory and analgesic medication, glucocorticoid injection, and physical therapy.</p> <p>For patients whose symptoms fail to improve after conservative management for three to six months, either extracorporeal shockwave therapy (ESWT) or US-guided lavage and needling (barbotage) can be performed.</p>	<p>1)</p> <p>2)</p>
<p><b>BICEPS TENDON:</b></p> <ul style="list-style-type: none"> <li>• The biceps muscles has two heads (bi-).</li> <li>• There is a long head and a short head.</li> <li>• The two muscle bellies come together at the level of the mid arm.</li> <li>• There is one distal tendon that inserts onto the _____(1).</li> </ul>	<p>1)</p>

The long head of the biceps tendon attaches to the \_\_\_\_\_(1).

Thus, the proximal portion of the biceps tendon is within the \_\_\_\_\_(2).

The intra-articular portion of the biceps tendon is also prone to degeneration and tearing.

If the proximal tendon were to tear, the muscle would pull the torn tendon end towards the elbow resulting in a bulge in the mid arm.

1)  
2)

Rupture of the long head of the biceps tendon is most commonly associated with \_\_\_\_\_(1).

The biceps tendon can also tear from its \_\_\_\_\_(2). We will discuss this in more detail when we talk about the elbow.

1)  
2)

Pathology of the biceps tendon is limited to the \_\_\_\_\_(1) proximally. The short head of the biceps tendon is rarely involved by pathology.

Proximal biceps tendon injury is due to the \_\_\_\_\_(2) as general shoulder pathology such as impingement or instability.

Rotator cuff pathology and pathology of the LHBT often coexist.

Patients with pathology of the LHBT present with \_\_\_\_\_(3) with radiation distally over the biceps muscle.

1)  
2)  
3)

Rupture of the proximal long head of the biceps tendon is often associated with \_\_\_\_\_(1).

\_\_\_\_\_ (2) of the LHBT can occur when a load is applied during eccentric contraction of the biceps muscle (lowering one's body during the descent phase of a pullup, catching a heavy object that falls unexpectedly, or shoveling heavy snow)

1)  
2)

<p>For most less-active patients or older inactive patients, the decrease in strength that occurs with a proximal LHBT rupture is of _____(1) and _____(2) is appropriate.</p> <p>However, patients with a distal biceps tendon rupture should be referred for surgical consultation _____(3), as most patients will require surgical repair. This will be covered when discussing injuries about the elbow joint.</p>	<p>1) 2)  3)</p>
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<p><b>RADIOGRAPHS OF THE GLENOHUMERAL JOINT:</b></p> <ul style="list-style-type: none"> <li>• First view = anteroposterior (AP) view is standard.</li> <li>• Second view = 90° to this may be axillary view (as if looking from either above or below) or Y view (as if looking from the side).</li> <li>• By identifying the glenoid and the humeral head on both views, it is possible to check if the humeral head is sitting centrally in the glenoid fossa on both views. If this is not the case, then the humeral head is either _____(1) or _____(2).</li> </ul>	<p>1) 2)</p>
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<p><b>POST-TRAUMATIC INJURY OF THE SHOULDER:</b></p> <p>In general any trauma to the musculoskeletal structures may result in injury to the _____(1), _____(2), and/or adjacent _____(3).</p>	<p>1) 2) 3)</p>
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<p><b>OSSEOUS INJURY:</b></p> <p>Bone injury may result in a _____(1) or an _____(2).</p> <p>An osseous contusion is not visualized on x-rays; it can only be seen with MRI. It occurs due to blunt injury to the bone resulting in microfractures which are not seen on radiography.</p>	<p>1) 2)</p>
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<p><b>JOINT INJURY:</b></p> <p>Injury to the joint may result in _____(1) or _____(2).</p>	<p>1) 2)</p>
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<p><b>SOFT TISSUE INJURY:</b></p> <p>Injury to the soft tissues may result in injury to the _____(1), _____(2), _____(3), and/or _____(4).</p>	<p>1) 2) 3) 4)</p>
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**OSSEOUS INJURY OF THE GLENOHUMERAL JOINT:**

Fall onto an outstretched hand (FOOSH) can result in a fracture of the \_\_\_\_\_(1).  
These fractures are more commonly seen in the elderly due to \_\_\_\_\_(2).  
Most of these fractures occur at the \_\_\_\_\_(3) of the humerus; less commonly, they affect the \_\_\_\_\_(4).

- 1)
- 2)
- 3)
- 4)

A combination of osseous and soft tissue injury is more commonly seen with more severe trauma.

- A direct injury to the shoulder joint can result in \_\_\_\_\_(1) of the glenohumeral joint.
- Most dislocations of the shoulder joint result in \_\_\_\_\_(2) dislocation of the humerus relative to the glenoid.

- 1)
- 2)

On the AP image, you will see that the articular surface of the humeral head no longer has normal alignment with the glenoid.

However, it is not possible to see if the head lies in front of or behind the glenoid without a \_\_\_\_\_(1) taken perpendicular to the first.

On the second view, we can determine if the humeral head is anterior or posterior to the glenoid. You can get an \_\_\_\_\_(2) or \_\_\_\_\_(3) view.

**How do you tell what is anterior and what is posterior on these views?**

Look at the coracoid process. The coracoid process of the scapula points \_\_\_\_\_(4).

- 1)
- 2)
- 3)
- 4)

**ANTERIOR SHOULDER DISLOCATION:**

With an anterior shoulder dislocation, the posterior-superior aspect of the humeral head impacts the anterior-inferior aspect of the glenoid.

- This can result in injury at \_\_\_\_\_(1) places. 1)
- The impaction injury that occurs at the posterosuperior aspect of the humeral head is called a \_\_\_\_\_(2). 2)
- The larger the Hill Sachs deformity, the greater the likelihood of \_\_\_\_\_(3). 3)
- The second injury that occurs involves the \_\_\_\_\_(4) and/or the \_\_\_\_\_(5). 4)  
5)
- When the humeral head impacts against the glenoid, it can break a glenoid rim. This is called an \_\_\_\_\_(6). 6)
- Alternatively when the humeral head impacts against the glenoid, it can tear the labrum. This is called a \_\_\_\_\_(7). 7)
- An osseous Bankart lesion \_\_\_\_\_(8) as a piece of bone is broken. 8)
- A soft tissue Bankart lesion \_\_\_\_\_(9) as no bone is broken. 9)
- The labrum is not seen on radiographs. A labral tear is best appreciated on \_\_\_\_\_(10). 10)
- Both osseous and soft tissue Bankart lesions result in \_\_\_\_\_(11). 11)

- The \_\_\_\_\_(1) the Bankart lesion, the greater the likelihood of recurrent shoulder dislocation. So if a patient has dislocated their shoulder once, they are more likely to dislocate their shoulder again. 1)
- Patients with a Hill Sachs deformity and Bankart lesions will complain of a feeling of \_\_\_\_\_(2) and will likely experience \_\_\_\_\_(3) shoulder dislocations. 2)  
3)
- Surgery is required a fix \_\_\_\_\_(4). 4)
- Surgery is also performed for \_\_\_\_\_(5). 5)

With anterior shoulder dislocation, you can injury the _____(1) as the dislocated humeral head impinges upon the nerve running in the axilla.	1)
Injury to the axillary nerve will result in denervation of the _____(2). These muscles assist with abduction and external rotation.	2)

<b>POSTERIOR SHOULDER DISLOCATION:</b>	
• A posterior shoulder dislocation is _____(1) (less than 5% of dislocations).	1)
• It is almost exclusively seen in the setting of a _____(2) or in a patient who has suffered an _____(3).	2) 3)
• Seizures and electric shock result in violent contraction of the rotator cuff muscles resulting in dislocation of the glenohumeral joint.	

In a posterior shoulder dislocation, the humeral head is located _____(1) to the glenoid.	1)
This is very easy to miss on imaging.	
• Look for _____(2) appearance to the humeral head.	2)
• The axillary and Y views are helpful in assessing the location of the humeral head relative to the glenoid.	

<b>GLENOHUMERAL OSTEOARTHRITIS:</b>	
Osteoarthritis of the glenohumeral joint represents _____(1) of the articular cartilage of the glenoid and humeral head.	1.
It is an _____(2) problem that is generally preceded by _____(3), although the injury may have occurred years earlier.	2. 3.

Injuries that are associated with the development of osteoarthritis include:

- Previous dislocation
- Humeral head or neck fracture
- Large rotator cuff tendon tears (loss of musculotendinous support)
- Rheumatoid arthritis
- Crystalline arthritis
- Uncommon (hemochromatosis)

Features of osteoarthritis include:

\_\_\_\_\_ (1), \_\_\_\_\_ (2),  
 \_\_\_\_\_ (3), and \_\_\_\_\_ (4).

- 1)
- 2)
- 3)
- 4)

Symptoms of osteoarthritis are usually \_\_\_\_\_ (1) in onset.

Usually patients will describe \_\_\_\_\_ (2).

Patients also complain of \_\_\_\_\_ (3) over a period of months to years. Both \_\_\_\_\_ (4), particularly abduction and external rotation, become diminished as articular degeneration gets worse.

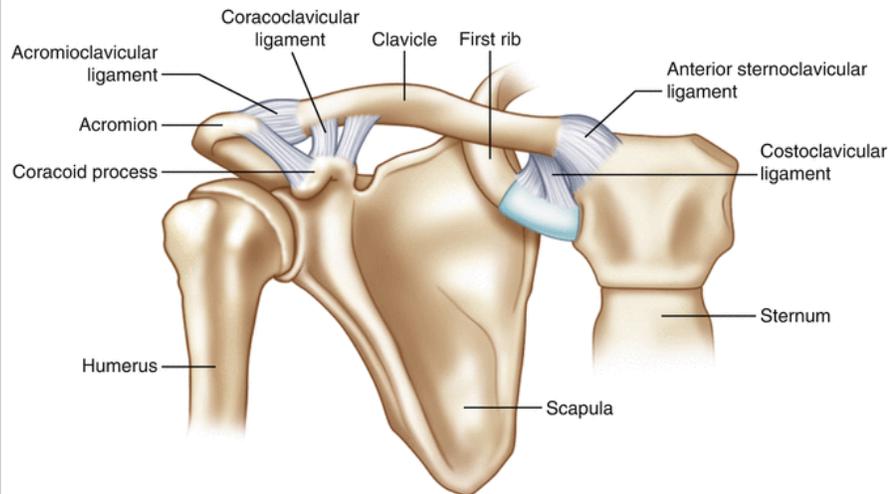
Patient are generally treated symptomatically with \_\_\_\_\_ (5) for pain relief and physical therapy. The last resort is shoulder arthroplasty.

- 1)
- 2)
- 3)
- 4)
- 5)

**AC JOINT:**

Pain related to the AC joint may be due to:

1. Trauma
2. Degenerative changes of the AC joint
3. Repetitive injury (osteolysis)



**1. Trauma:**

- May cause fracture of the clavicle or injury to the joint capsule or surrounding ligaments.

**2. Degenerative changes of the AC joint:**

- Not symptomatic in all patients
- Look for features of osteoarthritis such as joint space narrowing, subchondral sclerosis, and osteophyte formation.
- Patients may respond to conservative management, consisting of anti-inflammatory medication, steroid injection, +/- physical therapy.

**3. Repetitive injury (osteolysis)**

- Occurs in athletes and active patients with a long history of repetitive motion of the shoulder.
- The condition may respond to rest and activity modification.
- Surgery is helpful for the majority of patients with persistent symptoms.

**TRAUMA TO THE AC JOINT:**

The position of the AC joint makes it vulnerable to injury from trauma.

- Injury usually occurs from direct trauma/blow to the superior or lateral aspect of the shoulder while the arm is adducted
- Fall onto the shoulder.

Injuries are classified based on the position of the \_\_\_\_\_(1) with respect to the acromion and coracoid.

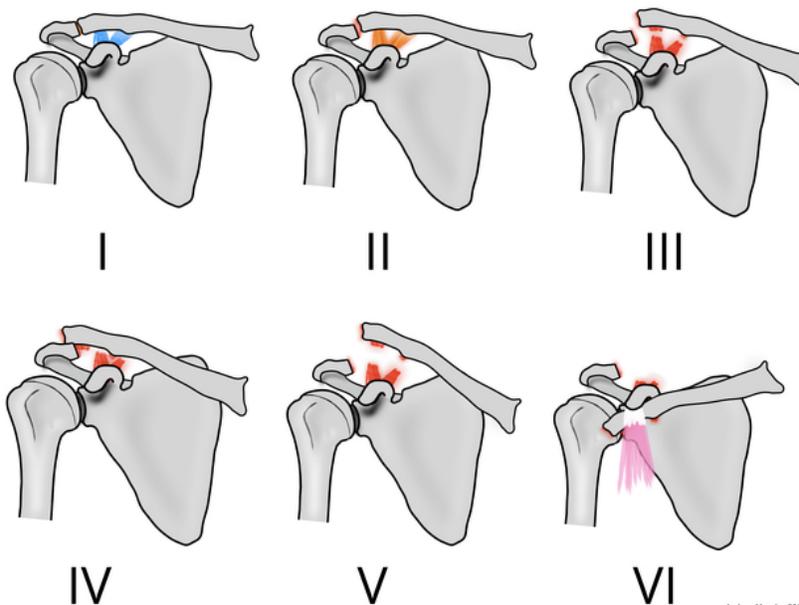
1)

**IMAGING:**

Radiographs will reveal \_\_\_\_\_(1) of the AC joint or \_\_\_\_\_(2) of the AC joint except in mild cases (Type I injury).

1.  
2.

# Rockwood classification of acromioclavicular joint injury



## **Type I:**

- Partial tear or sprain of the AC joint capsule (normal radiograph).

## **Type II:**

- Complete tear of the AC joint capsule with widening of the AC joint.
- The coracoclavicular (CC) ligaments are intact so the clavicle is not elevated with respect to the acromion.

## **Type III:**

- Complete tear of the AC joint capsule with widening of the AC joint.
- The coracoclavicular (CC) ligaments are torn resulting in elevation of the clavicle.

## **Type IV:**

- Type III + the clavicle is displaced posteriorly into the trapezius muscle.

## **Type V:**

- Type III + the clavicle is markedly displaced superiorly and lies within the subcutaneous tissues.

## **Type VI:**

- Type III + the clavicle is displaced inferiorly

<p><b>MANAGEMENT OF AC JOINT INJURY:</b></p> <ul style="list-style-type: none"> <li>Initial management consists of rest, ice, and protection using a sling.</li> <li>Minor injuries (Types I, II, and III) are managed _____(1).</li> <li>Severe injuries (Types IV, V, and VI) should be referred for _____(2).</li> </ul>	<p>1)</p> <p>2)</p>
<p><b>CLAVICULAR FRACTURES:</b></p> <p>Most clavicle fractures are caused by a</p> <ol style="list-style-type: none"> <li>_____</li> <li>_____</li> <li>_____</li> </ol> <p>Patients with clavicular fractures present with pain and immobility of the affected arm. The contralateral hand is classically used to support the weight of the affected arm.</p> <p>The shoulder on the affected side is displaced inferiorly.</p>	<p>1)</p> <p>2)</p> <p>3)</p>
<p>Clavicle fractures are categorized by location:</p> <ul style="list-style-type: none"> <li>- Most fractures involve the middle 1/3 (80%). <ul style="list-style-type: none"> <li>• Non-displaced or minimally displaced fractures are treated with a sling, analgesics, and elbow range of motion exercises.</li> <li>• Displaced fractures are usually treated with open repair.</li> </ul> </li> <li>- 15% of clavicular fractures involve the lateral 1/3. <ul style="list-style-type: none"> <li>• Generally treated with surgery due to high rate of non-union.</li> </ul> </li> <li>- 5% of clavicular fractures involve the medial 1/3. <ul style="list-style-type: none"> <li>• Acute fractures of the medial third of the clavicle often stem from _____(1) and are associated with _____(2).</li> </ul> </li> </ul>	<p>1)</p> <p>2)</p>
<p>A displaced fracture involving the middle 1/3 of the clavicle may injury the nearby _____(1).</p> <p>The presence of such injuries requires immediate orthopedic/vascular surgery intervention.</p> <p>Blunt trauma to the chest may also result in a _____(2).</p>	<p>1)</p> <p>2)</p>