

Chronic shoulder pain

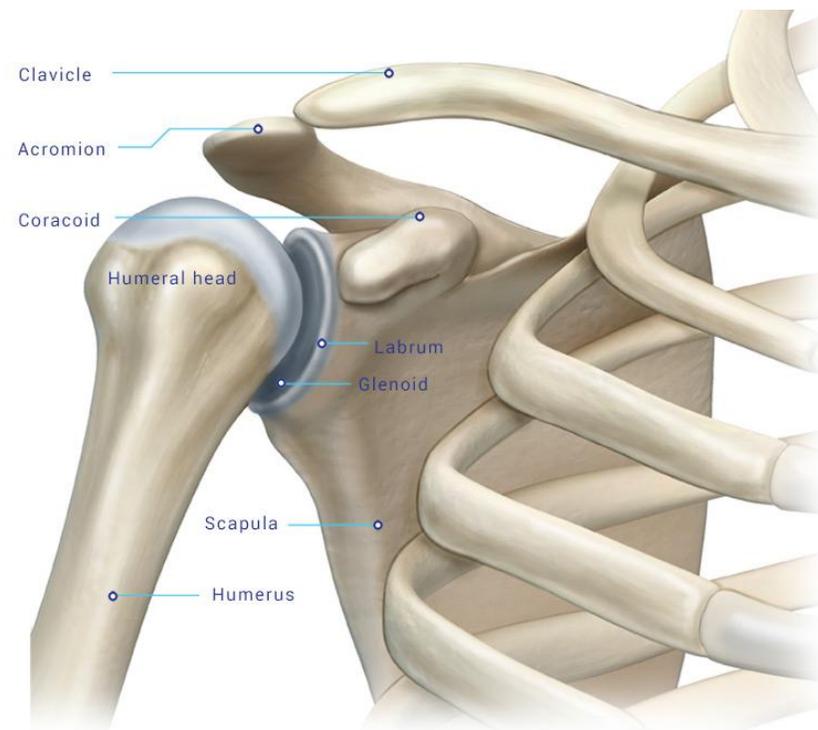


Afshin Samadi , MD
Interventional pain fellowship

ANATOMY OF THE SHOULDER

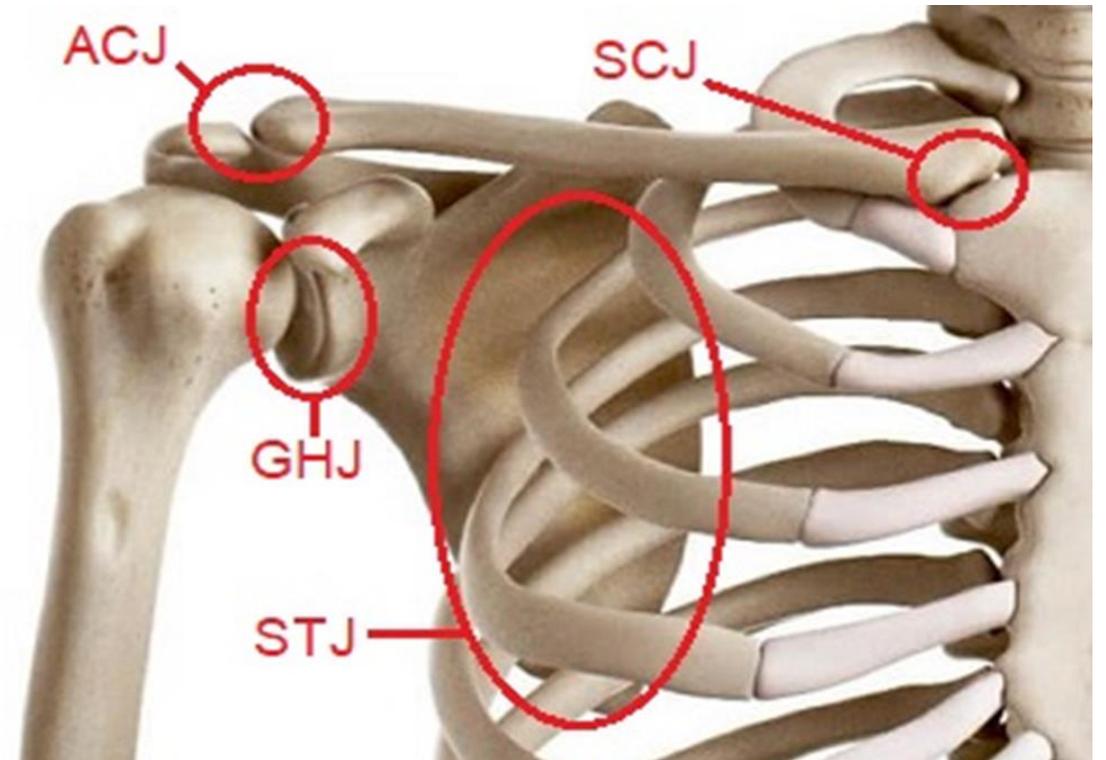
- **Shoulder Bone Anatomy**
- **Shoulder Joint Anatomy**
- **Shoulder Muscle Anatomy**
- **Shoulder Cartilage**
- **Joint Capsule**
- **Shoulder Ligaments**
- **Shoulder Bursa**

SHOULDER BONE ANATOMY



SHOULDER JOINT ANATOMY

- The anatomy of the shoulder comprises of four different joints:
- **Glenohumeral Joint:** the joint between the upper arm bone and the shoulder blade
- **Acromioclavicular Joint:** the joint between the shoulder blade and the collar bone
- **Sternoclavicular Joint:** the joint between the collar bone and the chest bone
- **Scapulothoracic Joint:** the joint between the shoulder blade and the rib cage



SHOULDER MUSCLE ANATOMY

The main muscles in shoulder anatomy are:

- **Rotator Cuff**
- **Scapular Stabilizers**
- **Other Shoulder Muscles**

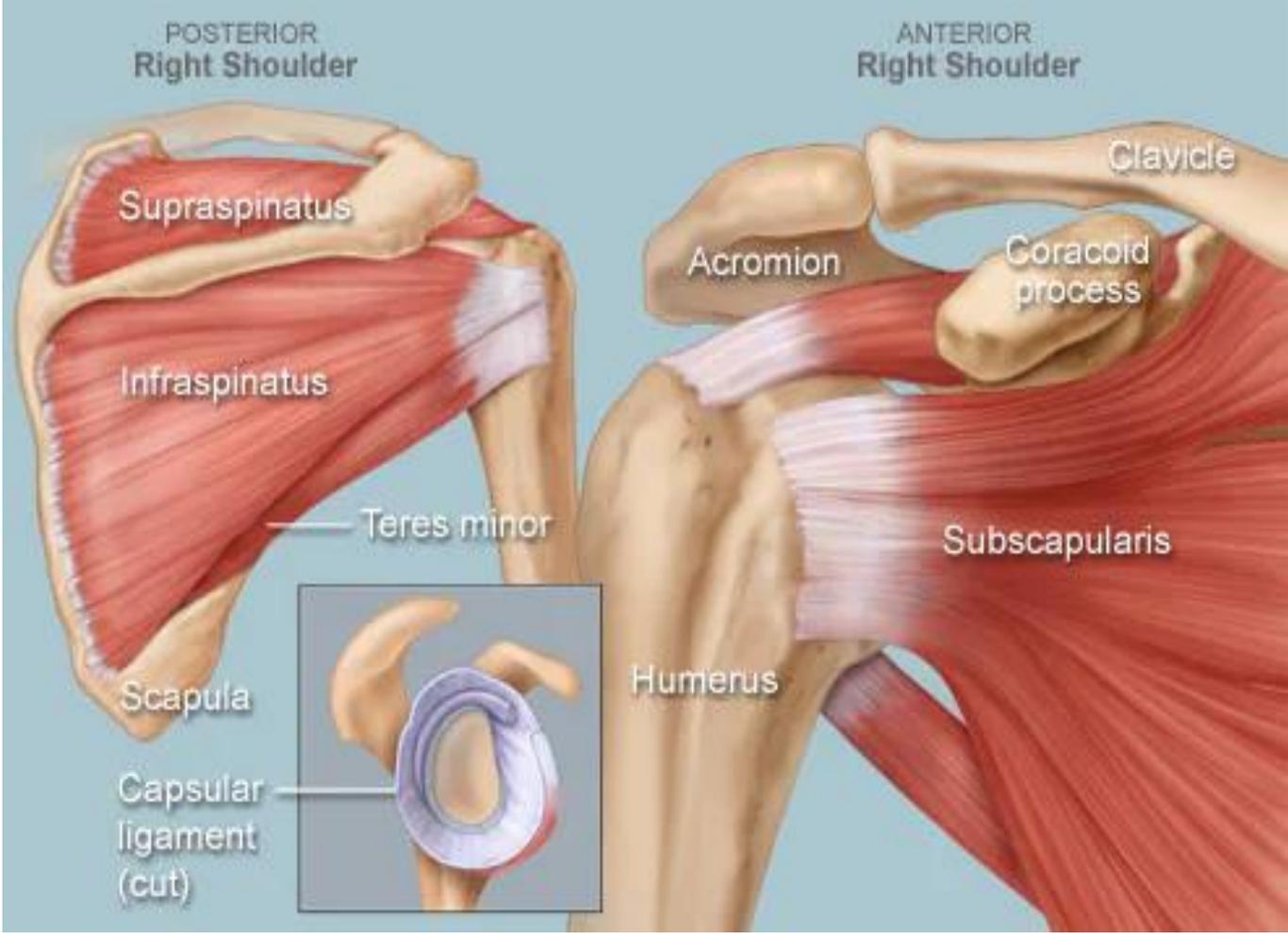
Rotator Cuff

Supraspinatus

Infraspinatus

Teres minor

Subscapularis



Scapular Stabilizers

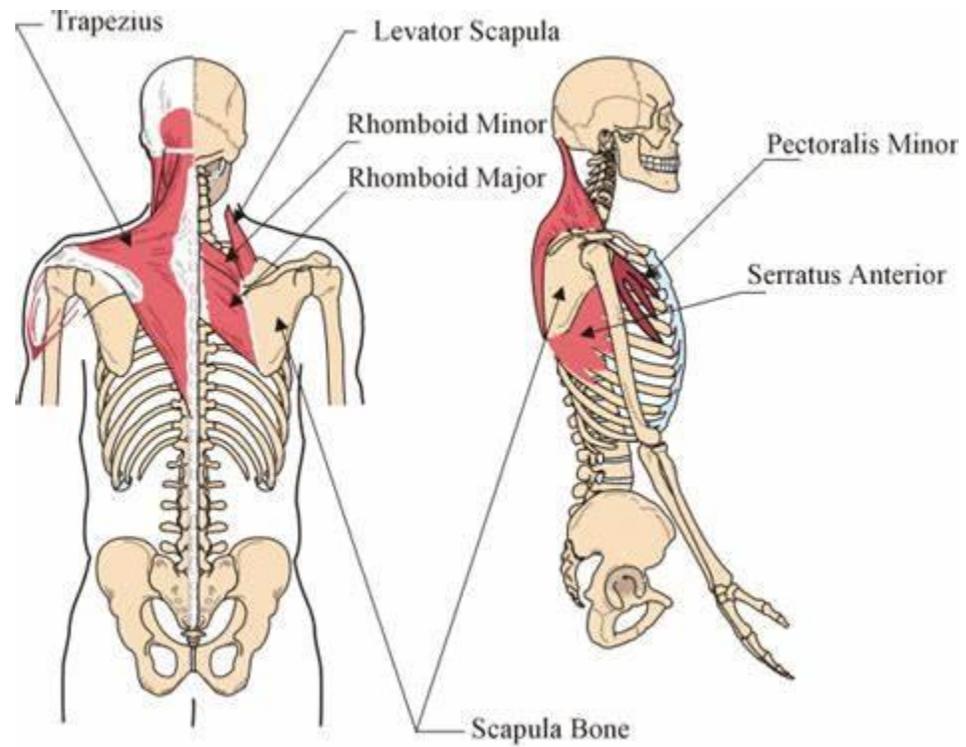
Serratus Anterior

Trapezius muscle

Levator Scapula

Rhomboids

SCAPULAR STABILISERS



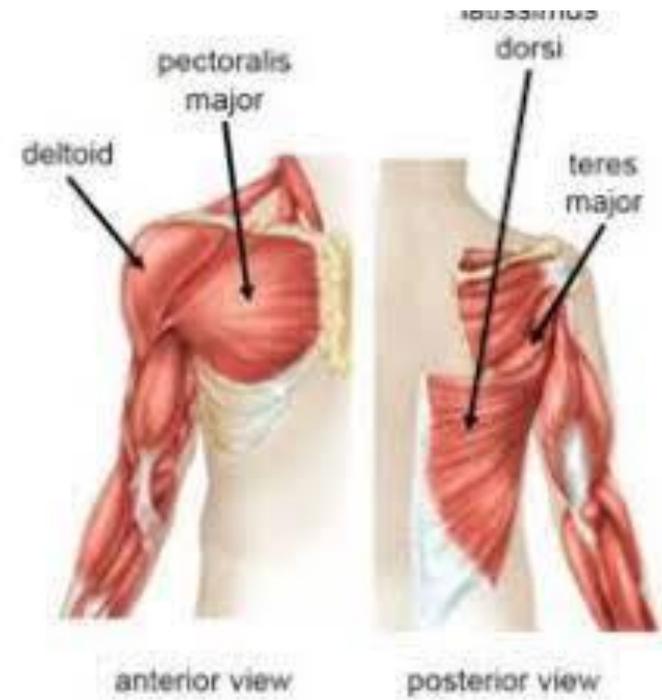
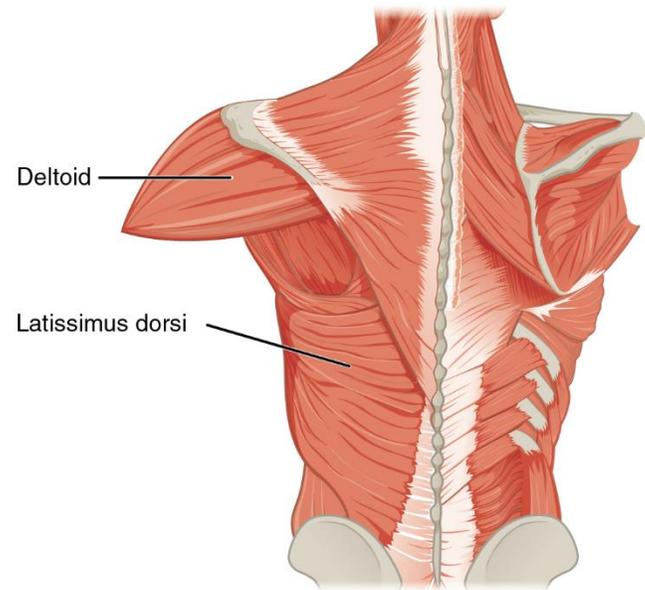
Other Shoulder Muscles

Deltoid

Pectoralis major

Pectoralis minor

latissimus dorsi

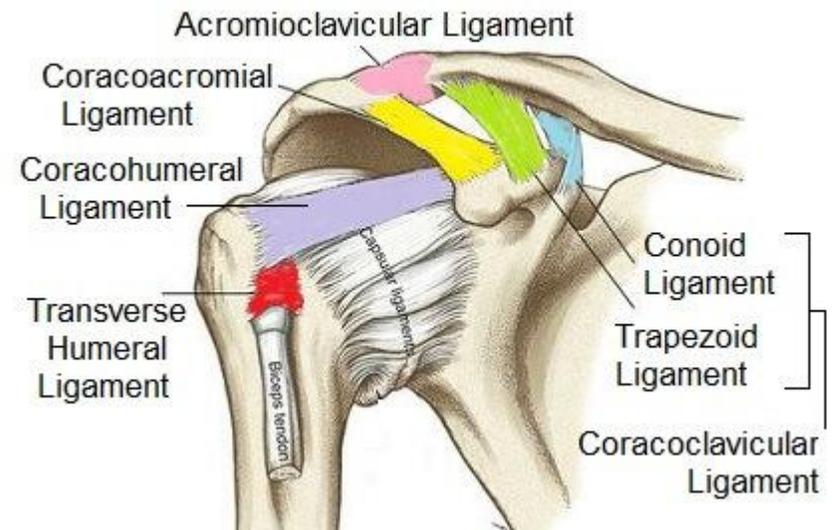


SHOULDER CARTILAGE

- Cartilage is an important part of shoulder anatomy and there are two different types, articular cartilage and the labrum. The glenohumeral joint has both types of cartilage, the acromioclavicular joint and sternoclavicular joint have articular cartilage but the scapulothoracic joint has neither.
- Glenoid Labrum: The shoulder labrum is a special ring of cartilage that runs round the edge of the shoulder socket (glenoid cavity) on the scapula.

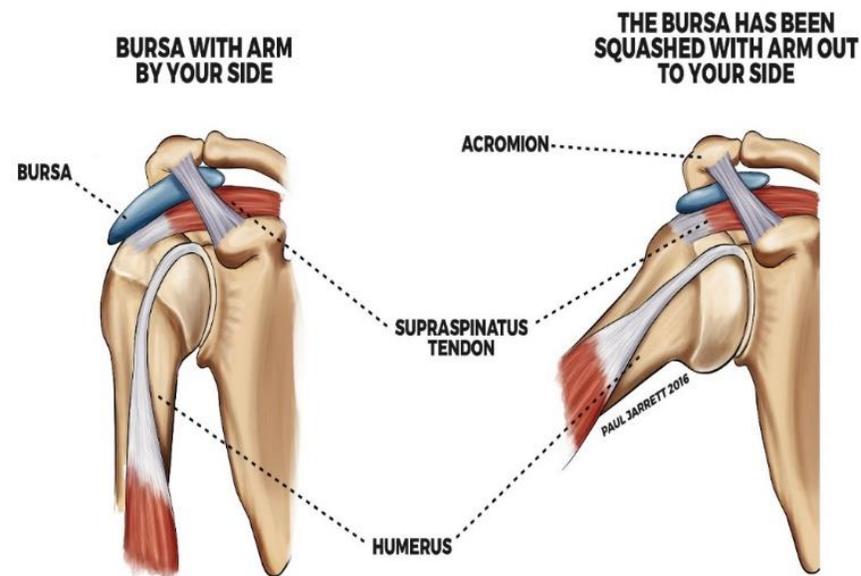
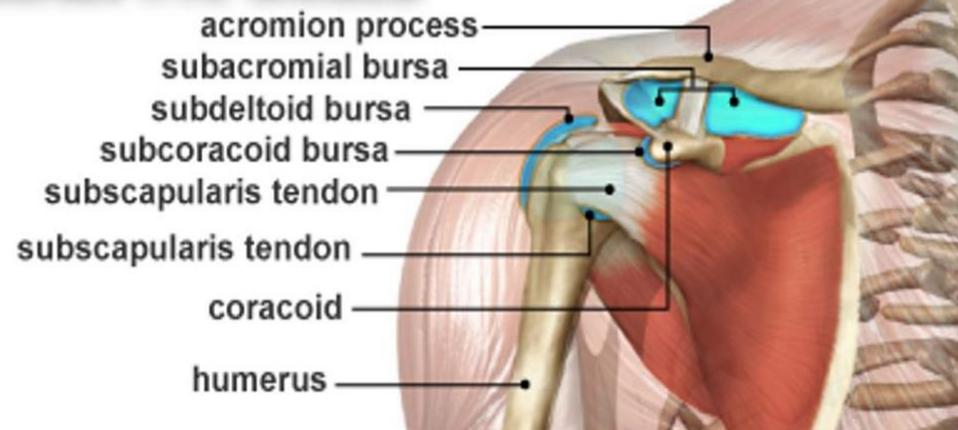
SHOULDER LIGAMENT ANATOMY

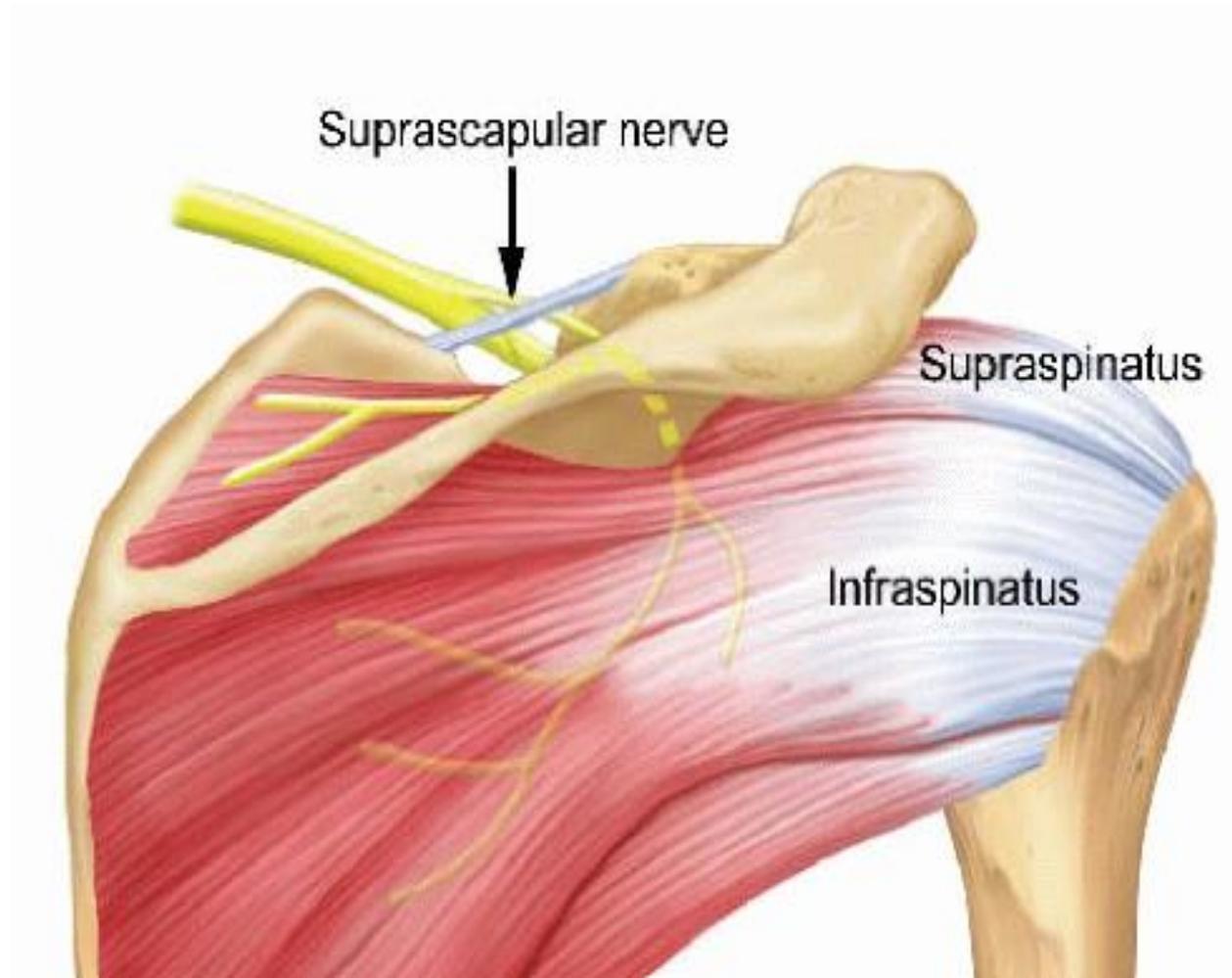
- Glenohumeral Ligament
- Acromioclavicular Ligament
- Coracohumeral Ligament
- Coracoacromial Ligament
- Costoclavicular Ligament
- Sternoclavicular Ligaments
- Interclavicular Ligament



SHOULDER BURSA ANATOMY

Bursae in the Shoulder





GLENOHUMERAL JOINT STABILIZERS

Static:

Glenohumeral ligaments

Negative intraarticular pressure

Labrum

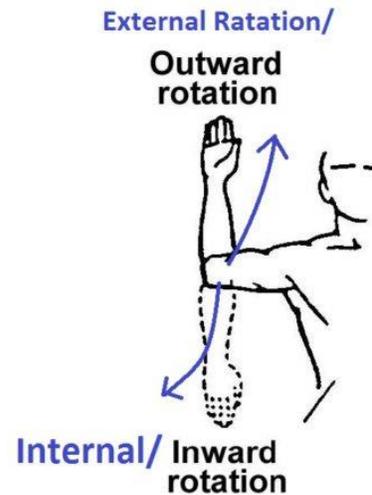
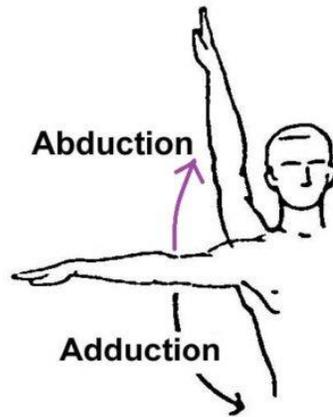
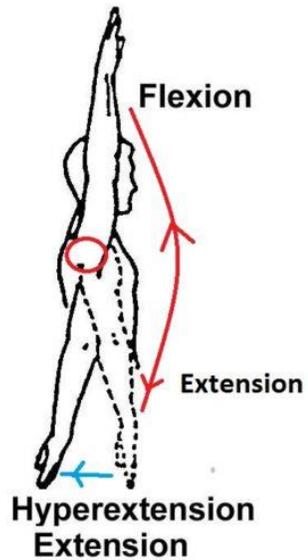
Dynamic:

Rotator cuff muscles

Biceps long head

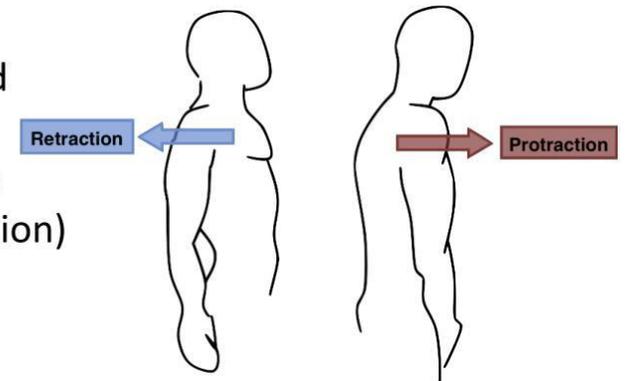
Periscapular muscles

SHOULDER MOVEMENTS



Protraction/Retraction

- Protraction: moving in a forward direction
- Retraction: moving in a backward direction
- Ex: moving shoulders forward (pronation), moving shoulders backward (retraction)



SHOULDER MUSCLES&MOVEMENTS

- ❑ **Extension** : posterior deltoid, latissimus dorsi and teres major.
- ❑ **Flexion** : pectoralis major, anterior deltoid and coracobrachialis.
- ❑ **Abduction:**
 - The first 0-15 degrees of abduction is produced by the supraspinatus.
 - The middle fibres of the deltoid are responsible for the next 15-90 degrees.
 - Past 90 degrees, the scapula needs to be rotated to achieve abduction – that is carried out by the trapezius and serratus anterior.
- ❑ **Adduction:** pectoralis major, latissimus dorsi and teres major.
- ❑ **Internal rotation:** subscapularis, pectoralis major, latissimus dorsi, teres major and anterior deltoid.
- ❑ **External rotation:** infraspinatus and teres minor.

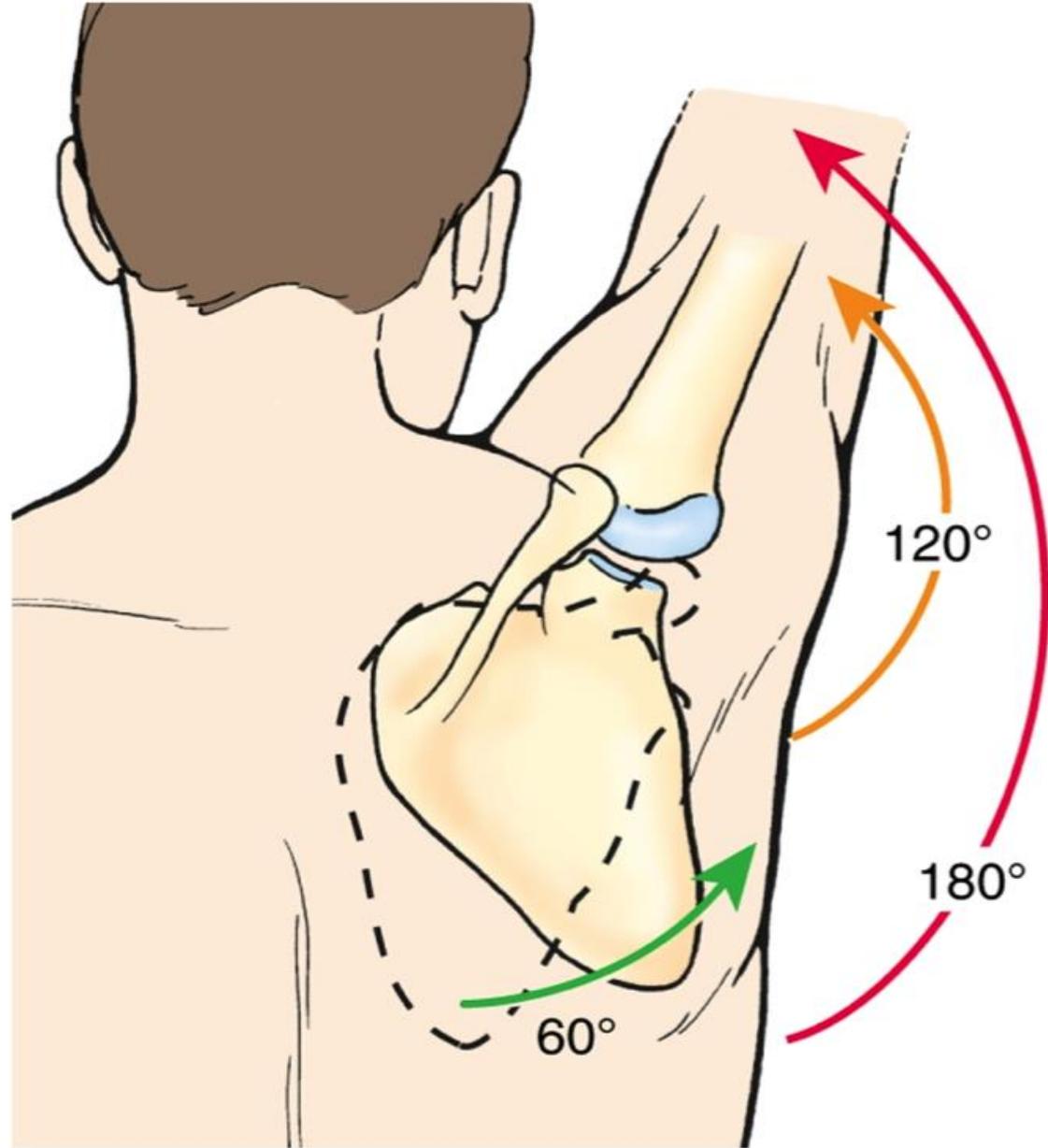
SCAPULAR PROTRACTION & RETRACTION MUSCLES

- **Scapular protractors:**

Serratus anterior, Pectoralis major and minor

- **Scapular retractors:**

Rhomboids major, minor, and trapezius



SCAPULOHUMERAL RHYTHM

- Mechanically, the coordinated coupled motion between the scapula and humerus, often termed **scapulohumeral rhythm**, is needed for efficient arm movement and allows for glenohumeral alignment in order to maximize joint stability.
- Altered scapular motion and position have been termed scapular dyskinesis.
- Weakness of the scapular stabilizers and resultant altered biomechanics could result in: 1) abnormal stresses to the anterior capsular structures of the shoulder, 2) increased possibility of rotator cuff compression, and 3) decreased shoulder complex neuromuscular performance.
- Many people with shoulder pain, weakness, and instability often need to focus on improvements in their scapular function to help improve their shoulder mechanics.

PREVALENCE&INCIDENCE

- Shoulder pain is defined as chronic when it has been present for longer than six months.
- Shoulder pain is responsible for approximately 16 percent of all musculoskeletal complaints, with a yearly incidence of 15 new episodes per 1,000 patients seen in the primary care setting.

ETIOLOGY

It can be divided into six diagnostic categories:

- 1) rotator cuff disorders, including tendinosis, full or partial thickness tears, or calcific tendinitis
- 2) Adhesive capsulitis(Frozen shoulder)
- 3) Glenohumeral osteoarthritis
- 4) Glenohumeral instability
- 5) Acromioclavicular joint pathology
- 6) Other chronic pain, including less common shoulder problems and non-shoulder problems.

Table 1. History Findings and Associated Shoulder Disorders

| <i>History</i> | <i>Associated condition</i> |
|---|--|
| Age ^{5,6,7} | If younger than 40 years: instability, rotator cuff tendinopathy If older than 40 years: rotator cuff tears, adhesive capsulitis, glenohumeral osteoarthritis |
| Diabetes or thyroid disorders ^{8,9} | Adhesive capsulitis |
| History of trauma ¹⁰ | If younger than 40 years: shoulder dislocation/subluxation If older than 40 years: rotator cuff tears |
| Loss of range of motion | Adhesive capsulitis, glenohumeral osteoarthritis |
| Night pain ¹⁰ | Rotator cuff disorders, adhesive capsulitis |
| Numbness, tingling, pain radiating past elbow | Cervical etiology |
| Pain location | Anterior-superior shoulder pain associated with acromioclavicular joint pathology Diffuse shoulder pain in deltoid region associated with rotator cuff disorders, adhesive capsulitis, or glenohumeral osteoarthritis |
| Pain with overhead activity ¹⁰ | Rotator cuff disorders |
| Sports participation ¹¹ | Shoulder instability associated with overhead sports (e.g., baseball, softball, tennis), and collision sports (e.g., football, hockey) Acromioclavicular joint pathology associated with weight lifting |
| Weakness | Rotator cuff disorders, glenohumeral osteoarthritis |

PHYSICAL EXAMINATION

- The preferred order of the examination is: Inspection, Palpation, Range of motion and Strength tests, and Provocative tests.

INSPECTION

- Inspection should involve the entire shoulder, with proper exposure of the anterior, lateral, and posterior shoulder.
- A scar can indicate previous surgery or trauma.
- The presence of deformity, particularly of the acromioclavicular joint, often indicates an old trauma.
- Atrophy of the supraspinatus, and less commonly the infraspinatus, may be present with a chronic rotator cuff tear.

PALPATION

Palpation can identify areas of pathology, especially with the acromioclavicular joint.

- Isolated tenderness that is localized to the acromioclavicular joint is often indicative of acromioclavicular osteoarthritis.
- Subacromial tenderness may suggest rotator cuff pathology.
- Multiple trigger points around the shoulder may indicate non-shoulder pathology such as fibromyalgia.
- It is important to palpate both shoulders because certain structures can be painful (e.g., coracoid process, long head of biceps tendon), even in a healthy shoulder.

RANGE OF MOTION(ROM)

- Range of motion should be evaluated in flexion,abduction, internal rotation, and external rotation.
- If the patient has a full active range of motion, a passive range of motion need not be assessed.
- Loss of active and passive ranges of motion is the hallmark of adhesive capsulitis,but it also can be found with moderate to severe osteoarthritis of the glenohumeral joint.
- Loss of an active range of motion, with a relatively preserved passive range of motion, is often present in patients with rotator cuff pathology.
- Pain with an active range of motion between 60 and 100 degrees of abduction is known as the “painful arc” and is associated with rotator cuff disease.²

Table 2. Selected Tests of the Shoulder

| <i>Examination maneuver</i> | <i>Associated condition</i> | <i>Sensitivity (%)</i> | <i>Specificity (%)</i> | <i>LR+</i> | <i>LR-</i> |
|--|---|------------------------|------------------------|------------|------------|
| Inspection | | | | | |
| Supraspinatus or infraspinatus atrophy ¹⁰ | Chronic rotator cuff tear | 56 | 73 | 2.07 | 0.60 |
| Palpation | | | | | |
| Acromioclavicular tenderness ¹⁶ | Acromioclavicular joint OA or chronic sprain | 96 | 10 | 1.07 | 0.4 |
| Range of motion | | | | | |
| Restrictive active ¹⁰ | Rotator cuff disorder | 30 | 78 | 1.36 | 0.90 |
| Provocative tests | | | | | |
| Hawkins' impingement ¹⁵ | Impingement/rotator cuff disorder | 72 | 66 | 2.1 | 0.42 |
| Drop-arm ¹⁵ | Large rotator cuff tear | 27 | 88 | 2.25 | 0.83 |
| Empty-can supraspinatus ¹⁵ | Rotator cuff disorder involving supraspinatus | 44 | 90 | 4.4 | 0.62 |
| Lift-off subscapularis ¹⁷ | Rotator cuff disorder involving subscapularis | 62 | 100 | > 25 | 0.38 |
| External rotation/infraspinatus strength ¹⁵ | Rotator cuff disorder involving infraspinatus | 42 | 90 | 4.2 | 0.64 |
| Cross-body adduction ¹⁸ | Acromioclavicular joint OA or chronic sprain | 77 | 79 | 3.50 | 0.29 |
| Apprehension ¹⁹ | Glenohumeral instability | 72 | 96 | 20.22 | 0.29 |
| Relocation ¹⁹ | Glenohumeral instability | 81 | 92 | 10.35 | 0.2 |

PROVOCATIVE TESTS

- Hawkins' impingement
- Empty-can supraspinatus
- Drop-arm
- Lift-off subscapularis
- External rotation/infraspinatus strength
- Cross-body adduction
- Apprehension/Relocation



Hawkins' Impingement Test. Forward flex the arm to 90 degrees with the elbow bent to 90 degrees. The arm is then internally rotated. A positive test, noted by pain on internal rotation, may signify subacromial impingement including rotator cuff tendinopathy or tear.



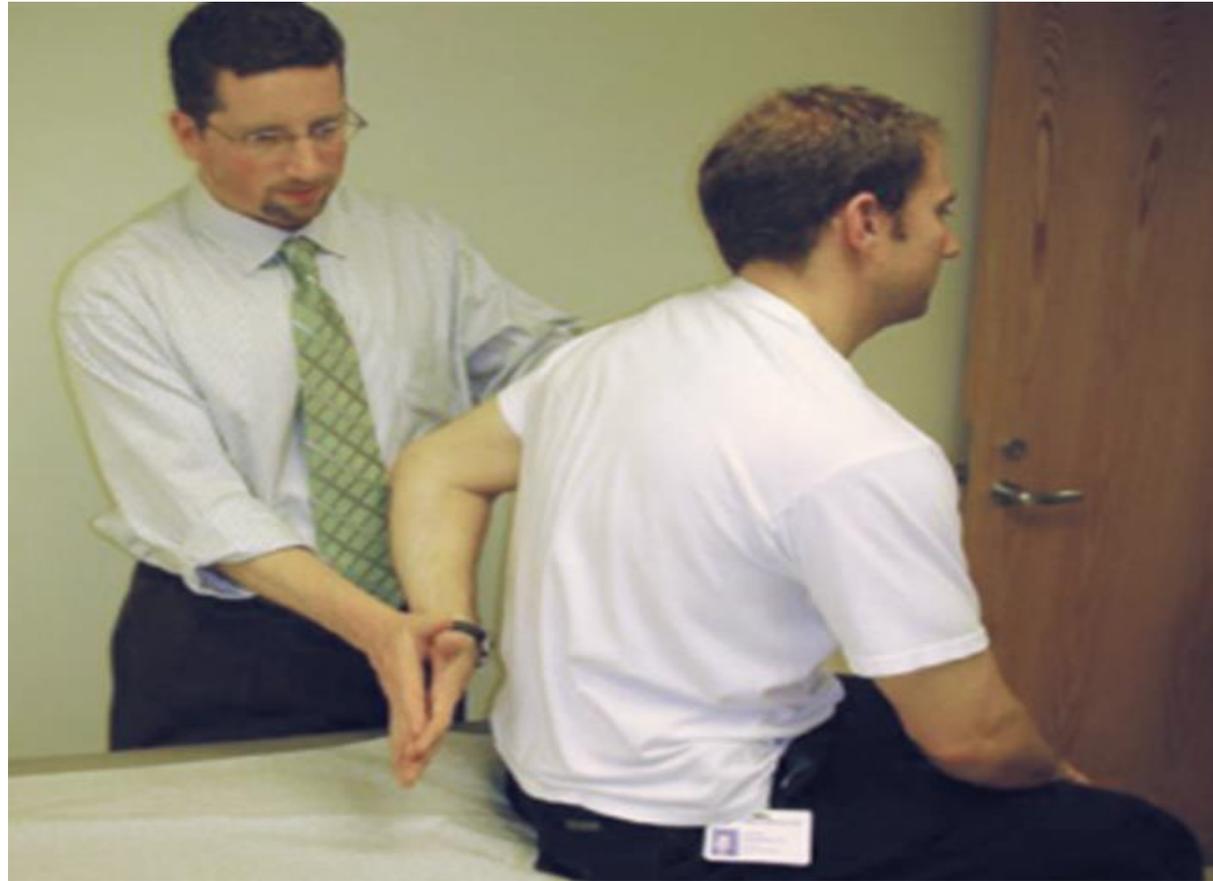
Empty-Can Supraspinatus Test. The arms are abducted to 90 degrees and forward flexed 30 degrees. With the thumbs turned downward, the patient actively resists a downward force applied by the examiner. A positive test is indicated by weakness compared with the contralateral side and may indicate rotator cuff pathology, including supraspinatus tendinopathy or tear.



Drop-Arm Rotator Cuff Test. The arm is passively raised to 160 degrees. The patient is then asked to slowly lower the arm to the side. A positive test, noted by an inability to control the lowering phase and a dropping or giving way of the arm, may indicate a large rotator cuff tear.



External Rotation/Infraspinatus Strength Test. The patient's arms are held at their sides with the elbows flexed to 90 degrees. The patient actively externally rotates against resistance. A positive test is indicated by weakness compared with the contralateral side and may be associated with infraspinatus or teres minor tendinopathy or tear.



Lift-Off Subscapularis Test. With the arm internally rotated behind the patient's lower back, the patient internally rotates against the examiner's hand. A positive test is indicated by the inability to lift the hand off of the back and may indicate subscapularis tendinopathy or tear.



Cross-Body Adduction Test. The arm is passively adducted across the patient's body toward the contralateral shoulder. Pain may indicate acromioclavicular joint pathology, including chronic sprain or osteoarthritis.

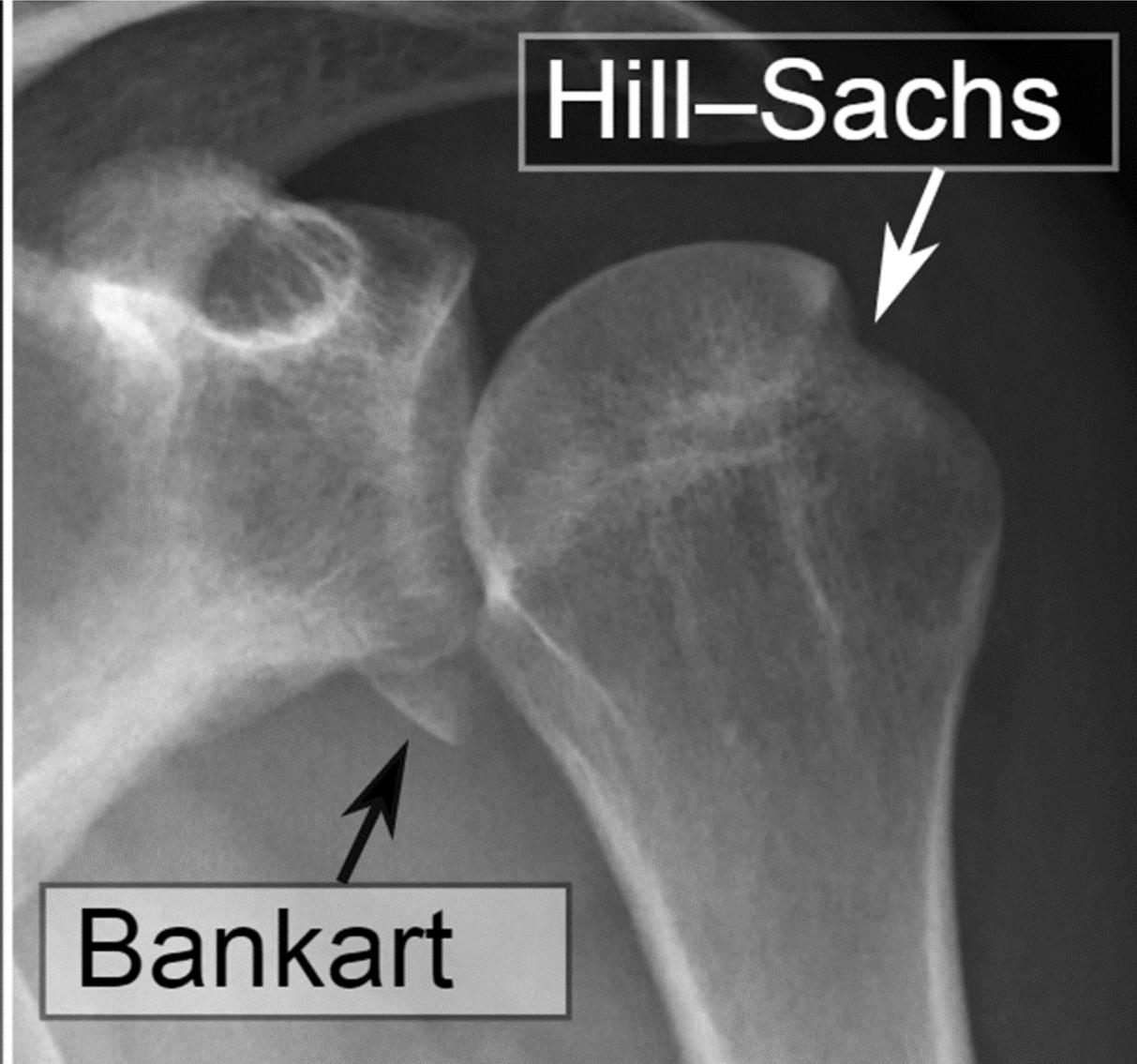


Apprehension and Relocation Tests. With the patient supine, the patient's arm is abducted to 90 degrees and the elbow is flexed to 90 degrees. Pain and a sense of instability with further external rotation may indicate shoulder instability. Relief of these symptoms with a posteriorly directed force on the proximal humerus is a positive relocation test and further supports diagnosis of shoulder instability.

DIAGNOSTIC IMAGING

Plain radiographs are the tests of choice to assess:

- 1) osteoarthritis of the acromioclavicular and glenohumeral joints.
- 2) Secondary signs of a large rotator cuff tear may be observed with superior migration of the humeral head.
- 3) calcific tendinitis
- 4) Hill-Sachs lesion



-
- MRI: The preferred test for diagnosing rotator cuff disorders is MRI, which can assess rotator cuff tendinopathy, partial tears, and complete tears.
 - MRI arthrography has become the preferred test for the imaging of suspected labral pathology that may be found in chronic shoulder instability.
 - Ultrasonography: a cost-effective alternative to MRI.
 - CT scan: the preferred imaging study for bony disorders of the shoulder, including arthritis with significant erosion; instability with significant bone loss of the humeral head or the glenoid; tumors; and occult fractures.
 - CT arthrography may play a role for patients with suspected rotator cuff tears who cannot undergo an MRI.

Table 3. Imaging Tests for Rotator Cuff Tears

| <i>Imaging test</i> | <i>Finding</i> | <i>Sensitivity (%)</i> | <i>Specificity (%)</i> | <i>LR+</i> | <i>LR-</i> |
|---------------------|-------------------------------------|------------------------|------------------------|------------|------------|
| MRI | Any rotator cuff tear | 83 | 86 | 4.85 | 0.22 |
| | Partial thickness rotator cuff tear | 44 | 90 | 3.99 | 0.66 |
| | Full thickness rotator cuff tear | 89 | 93 | 10.63 | 0.16 |
| Ultrasonography | Any rotator cuff tear | 80 | 85 | 5.09 | 0.27 |
| | Partial thickness rotator cuff tear | 67 | 94 | 8.90 | 0.36 |
| | Full thickness rotator cuff tear | 97 | 96 | 13.16 | 0.16 |

ROTATOR CUFF DISORDERS

- Rotator cuff disorders that affect the function of the rotator cuff include a partial or complete tear, tendinitis or tendinosis, and calcific tendinitis.
- Rotator cuff disease, is the most common pathology of the shoulder joint.
- of the four tendons making up the rotator cuff the one at the very top called the supraspinatus is the one most frequently torn. Larger tears can involve 2, 3 or all 4 tendons of the rotator cuff.

SYMPTOMS OF ROTATOR CUFF DISEASE

- Typically, the patients are older than 40 years and complain of pain over the top and front of the shoulder and may travel down the outside of the arm towards the elbow.
- Weakness, a painful arc of motion, night pain, and a positive impingement sign are components of the history and physical examination that are consistent with this diagnosis.
- The severity of pain does not usually correlate with the size of the tear. Merely inflamed tendons or those with a small 'partial thickness' tear may be more painful than those completely torn.
- Clinical symptoms and MRI finding are not concordant.

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- Sher et al investigated MRI obtained from 96 asymptomatic shoulders and demonstrated that a rotator cuff tear was present in 33 shoulders (34%); among these, 14 shoulders had the full-thickness rotator cuff tear and 19 shoulders had the partial tear. In addition, they showed the prevalence of full-thickness and partial-thickness tears increased significantly with subject's age ($p < 0.001$ and 0.05 , respectively).
 - Tempelhof et al assessed 411 asymptomatic shoulders using ultrasound. They found 23% of the patients who had a rotator cuff tear and an age-dependent increase of the prevalence; 13% in 50–59 years, 20% in 60–69 years, 31% in 70–79 years and 51% in >80 years.

TREATMENT

- In about 80 to 85% of patients, nonsurgical treatment relieves pain and improves function in the shoulder.
- Nonsurgical treatment options may include:

1/Activity modification: Avoid any activities that cause shoulder pain.

2/NSAIDs

3/Strengthening exercises and physical therapy

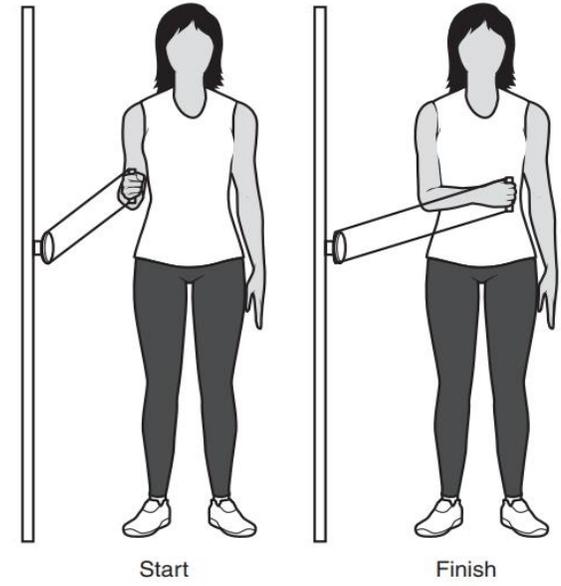
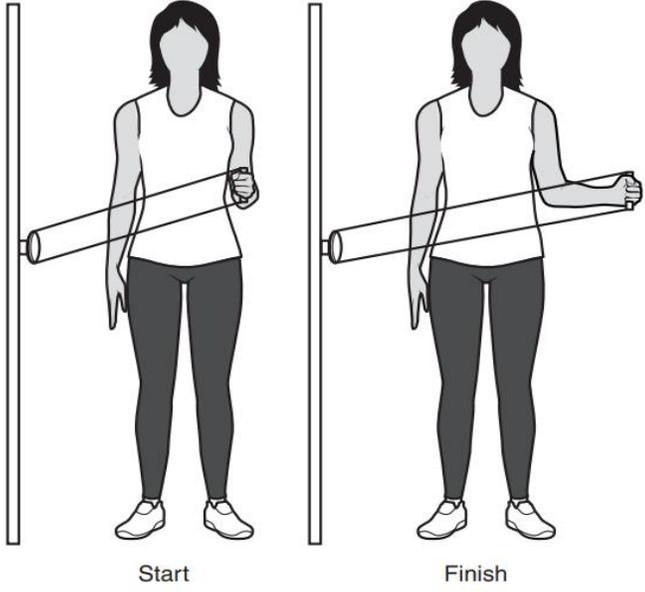
4/Suprascapular nerve block & Subacromial bursa injection

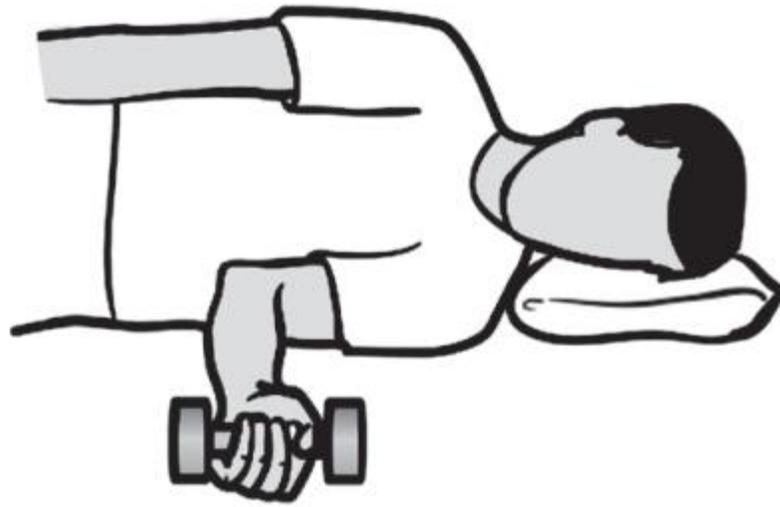
Surgery is indicated when:

1/ Significant weakness, atrophy and loss of function

2/ Full thickness acute injury







Start



Finish

FROZEN SHOULDER(ADHESIVE CAPSULITIS)

Adhesive capsulitis refers to a painful shoulder in which the active and passive ranges of motion are severely limited.It develops in three stages:

- Freezing stage:In the "freezing" stage, shoulder slowly has more and more pain.As the pain worsens, shoulder loses range of motion. Freezing typically lasts from 6 weeks to 9 months.
- Frozen stage:Painful symptoms may actually improve during this stage, but the stiffness remains. During the 4 to 6 months of the "frozen" stage, daily activities may be very difficult.
- Thawing phase:Shoulder motion slowly improves during the "thawing" stage. Complete return to normal or close to normal strength and motion typically takes from 6 months to 2 years.

CAUSES

- Diabetes mellitus
- Thyroid disorders
- Parkinson's disease
- CVA(SHS)
- Immobilization
- After shoulder surgery
- Shoulder injury related to vaccine administration (SIRVA)

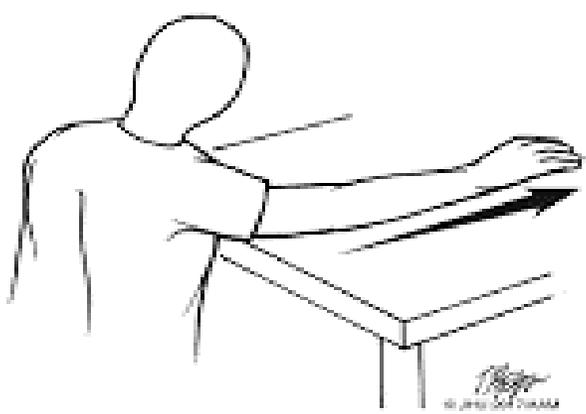
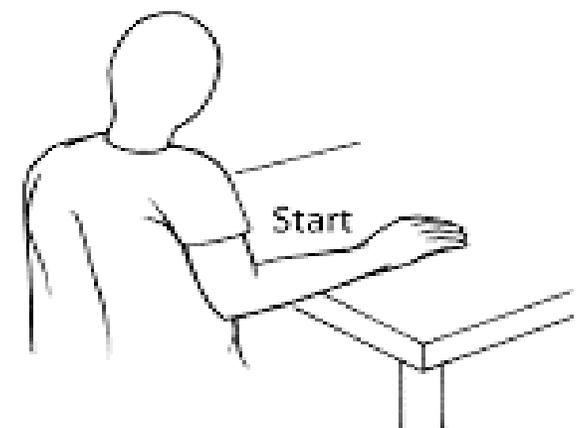
DIAGNOSIS

- Frozen shoulder can usually be diagnosed from signs and symptoms alone.
- Imaging tests — such as X-rays or an MRI — to rule out other problems.

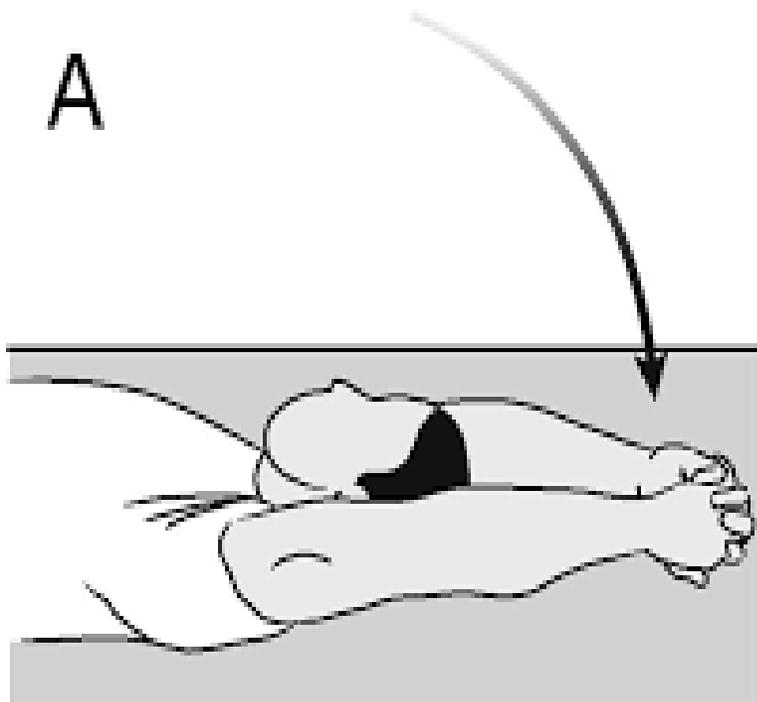
TREATMENT

- NSAIDs
- Suprascapular nerve block/Subacromial bursa injection/intraarticular corticosteroid injection.
- Physical therapy:therapy includes stretching or range of motion exercises for the shoulder.
- Hydrodilatation:injecting a large volume of sterile fluid into the shoulder joint to expand and stretch the shoulder joint capsule.
- Surgery:The most common methods include manipulation under anesthesia and shoulder arthroscopy.("Stage 2: Frozen.")

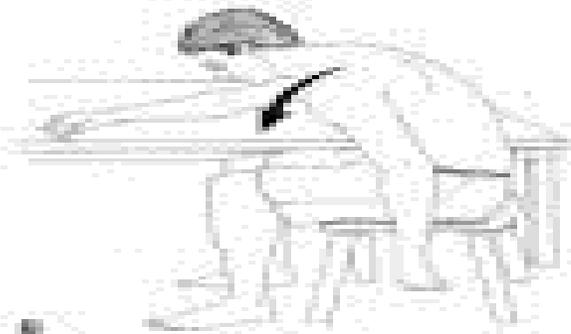


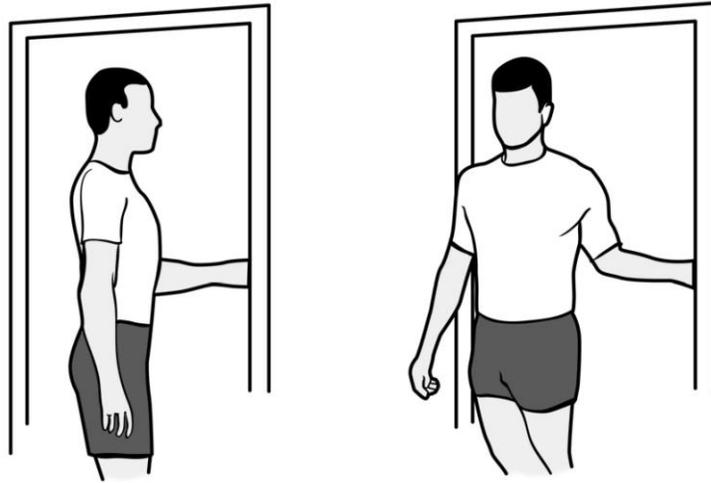


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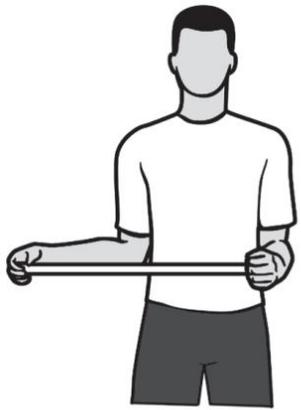




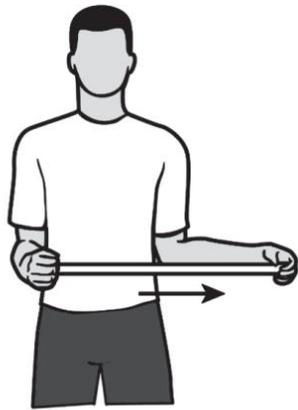




External Rotation - Passive Stretch



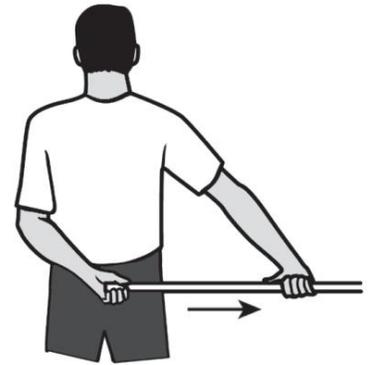
Start



Finish



Start



Finish

GLENOHUMERAL INSTABILITY

- Glenohumeral instability refers to disorders affecting the capsulolabral complex, including dislocation and subluxation.
- The patients are usually younger than 40 years and have a history of dislocation or subluxation (partial dislocation) events, which is often involved with collision or overhead sports.
- Dead arm syndrome: pain or weakness in the upper arm during a throwing movement. It can happen slowly or suddenly, like when your arm speeds up to throw a ball.

SHOULDER LABRUM TEARS

The two most common types of labral injuries are the SLAP tear and Bankart tear.

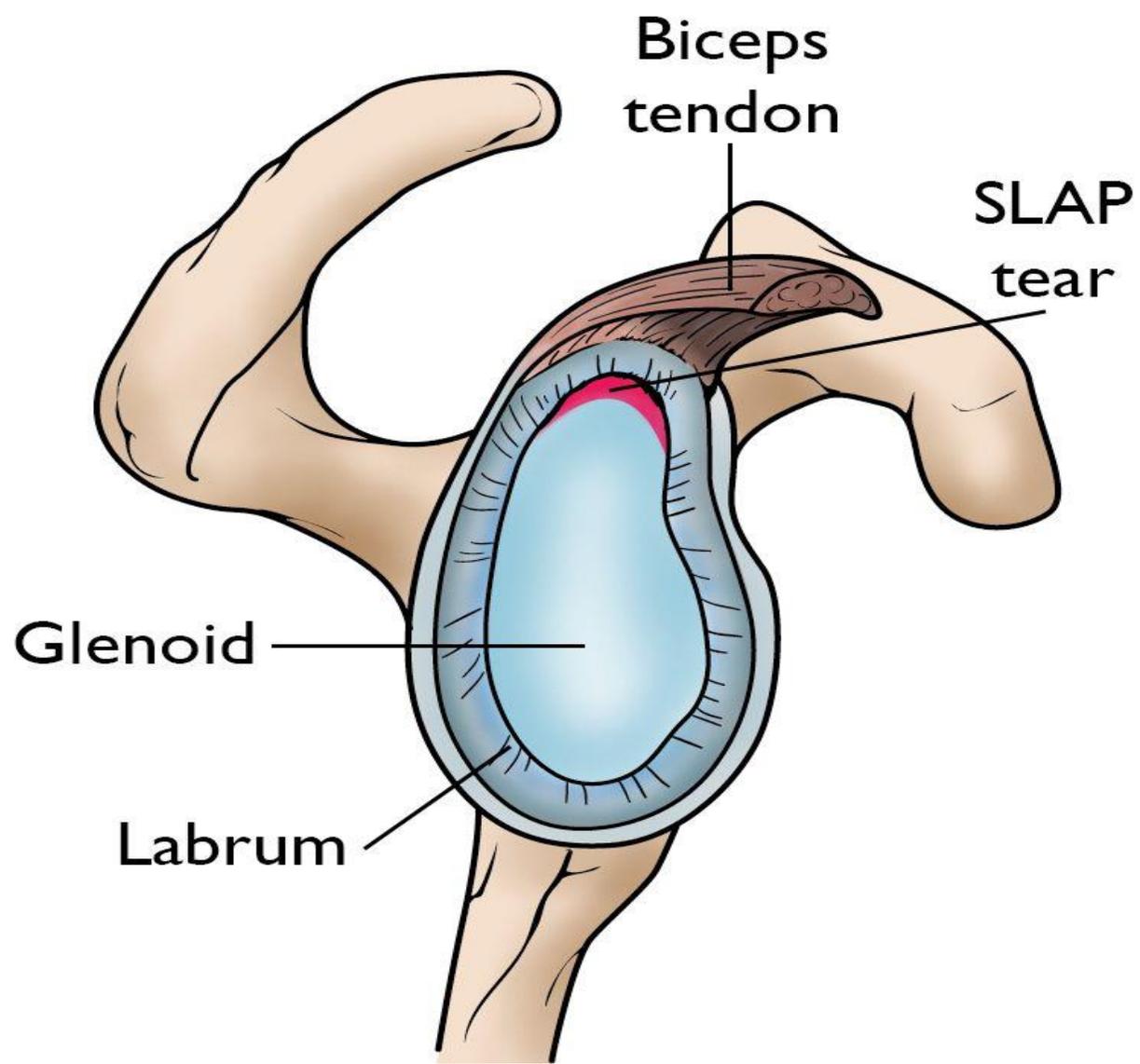
- SLAP tears:

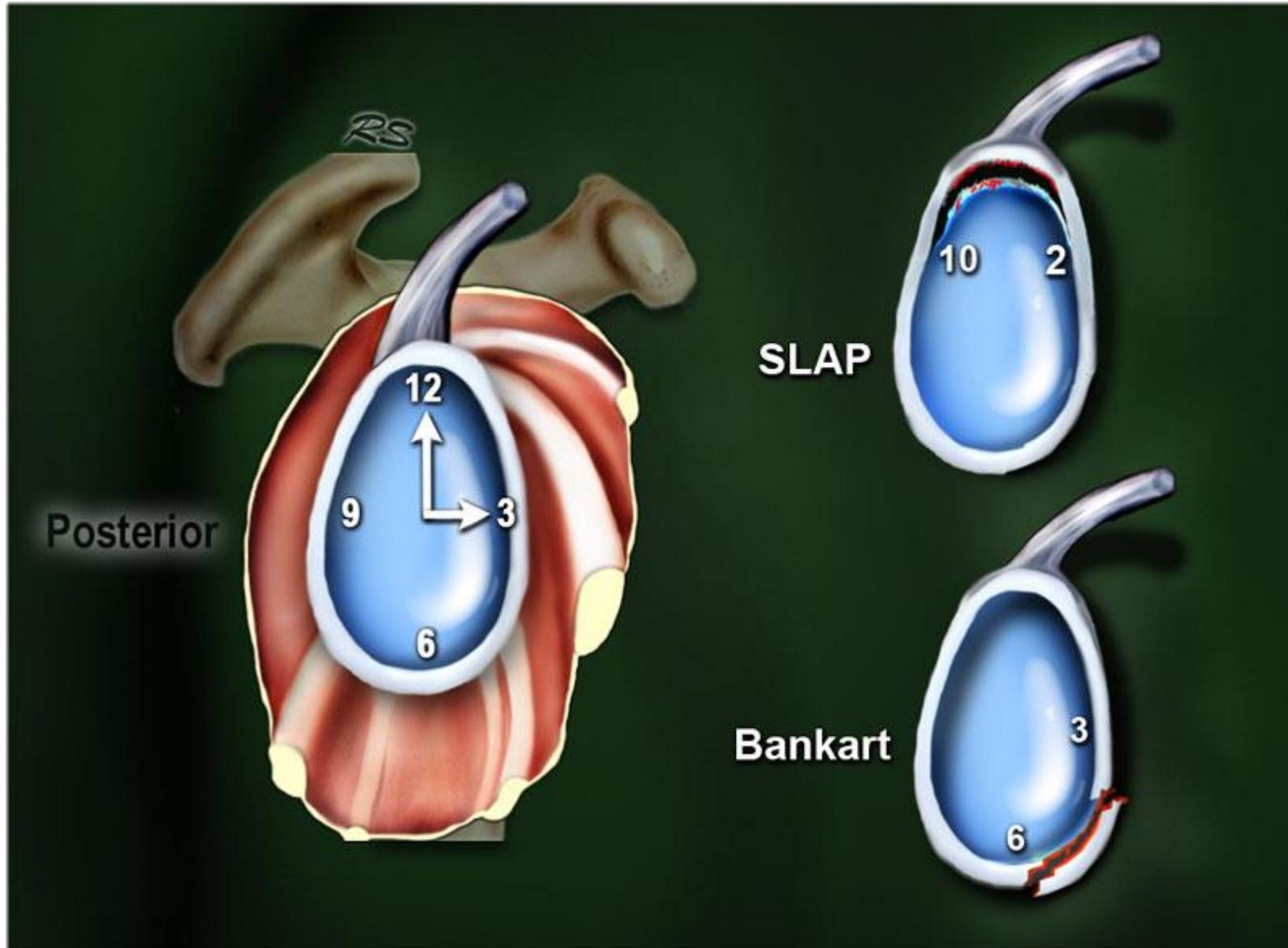
SLAP stands for "superior labrum from anterior to posterior." This type of tear occurs at the front of the upper arm where the biceps tendon connects to the shoulder.

Patients with SLAP tears may experience pain at the front of the shoulder near the biceps tendon.(baseball pitchers and volleyball players)

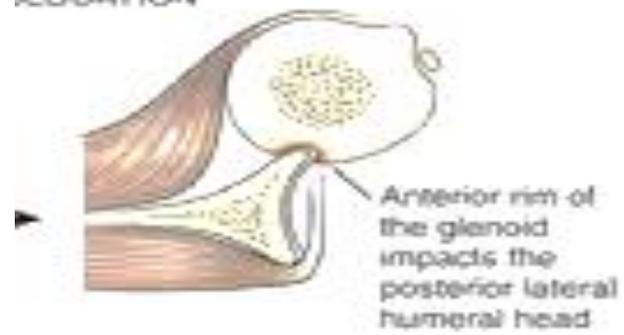
- Bankart tear:

Bankart tears typically occur in younger patients who have dislocated their shoulder.

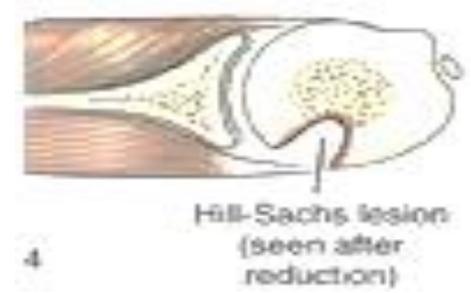




**ANTERIOR
DISLOCATION**



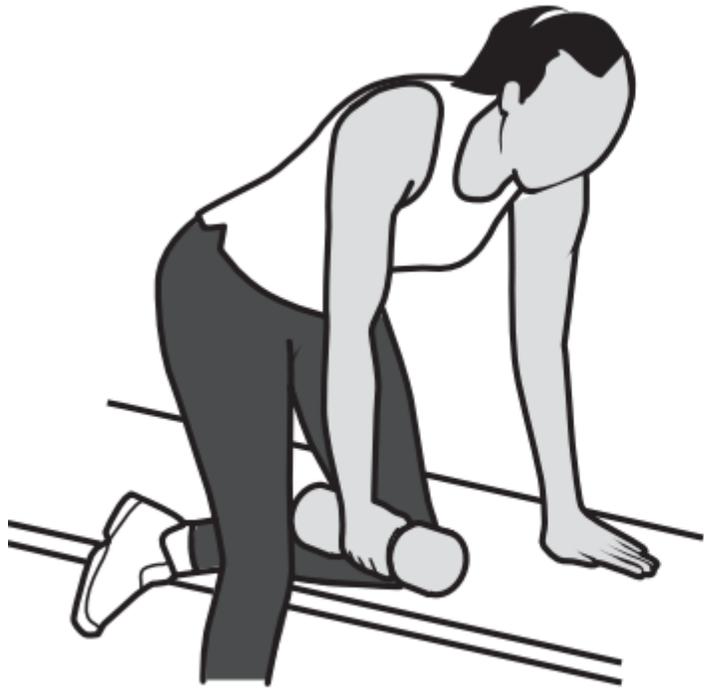
**RESIDUAL
LESION**

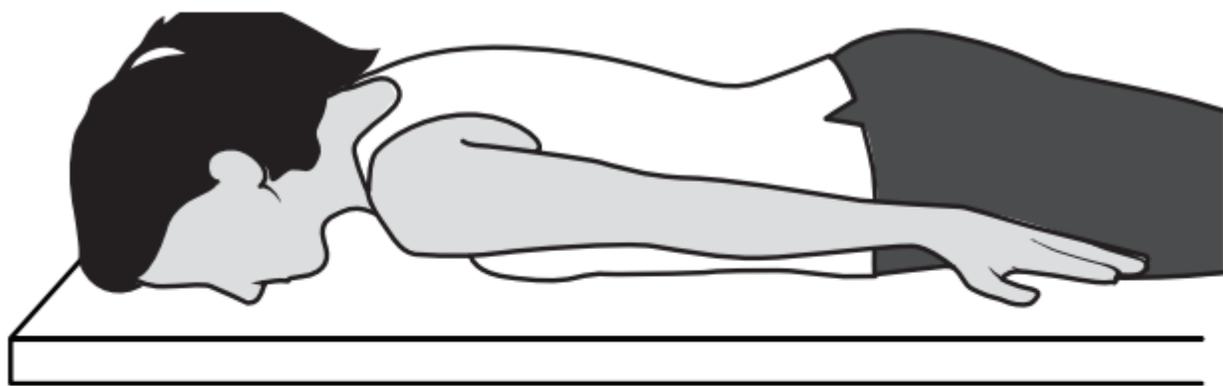


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- MR arthrography (MRA) is commonly used imaging modality to detect a SLAP lesion.
 - Schwartzberg reported MRI documented SLAP lesions can be present in up to 72% of middle-aged, asymptomatic patients.
 - In 2005, an MRI analysis of professional handball players demonstrated abnormalities in 93% of shoulders, with only 37% being symptomatic.

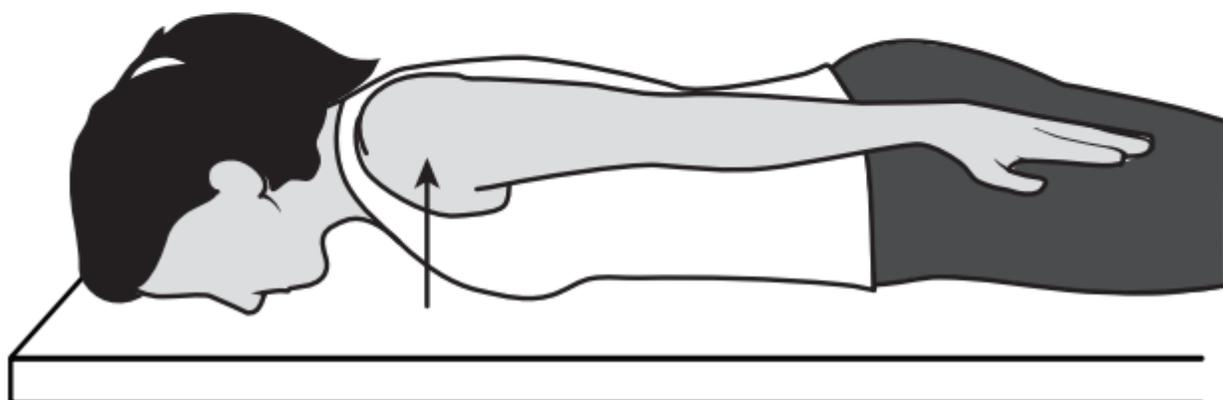
TREATMENT

- 1) Activity modification
- 2) Strengthening of the rotator cuff and scapular stabilizers
- 3) Surgery

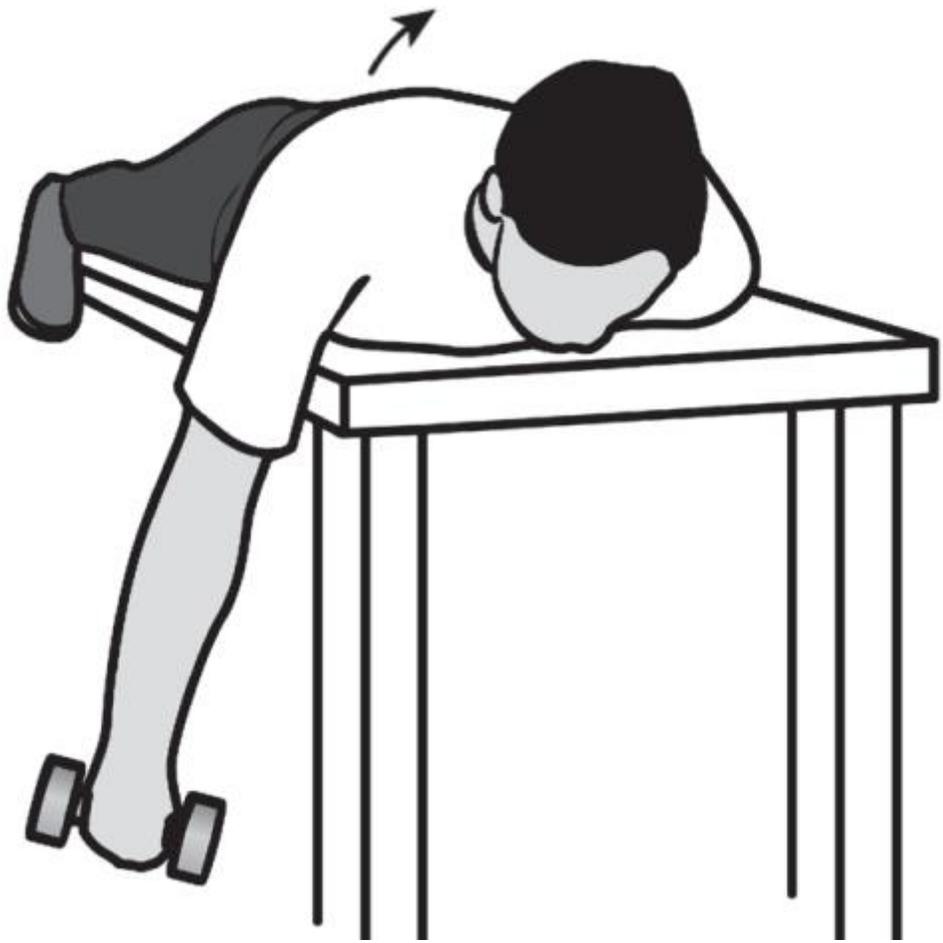


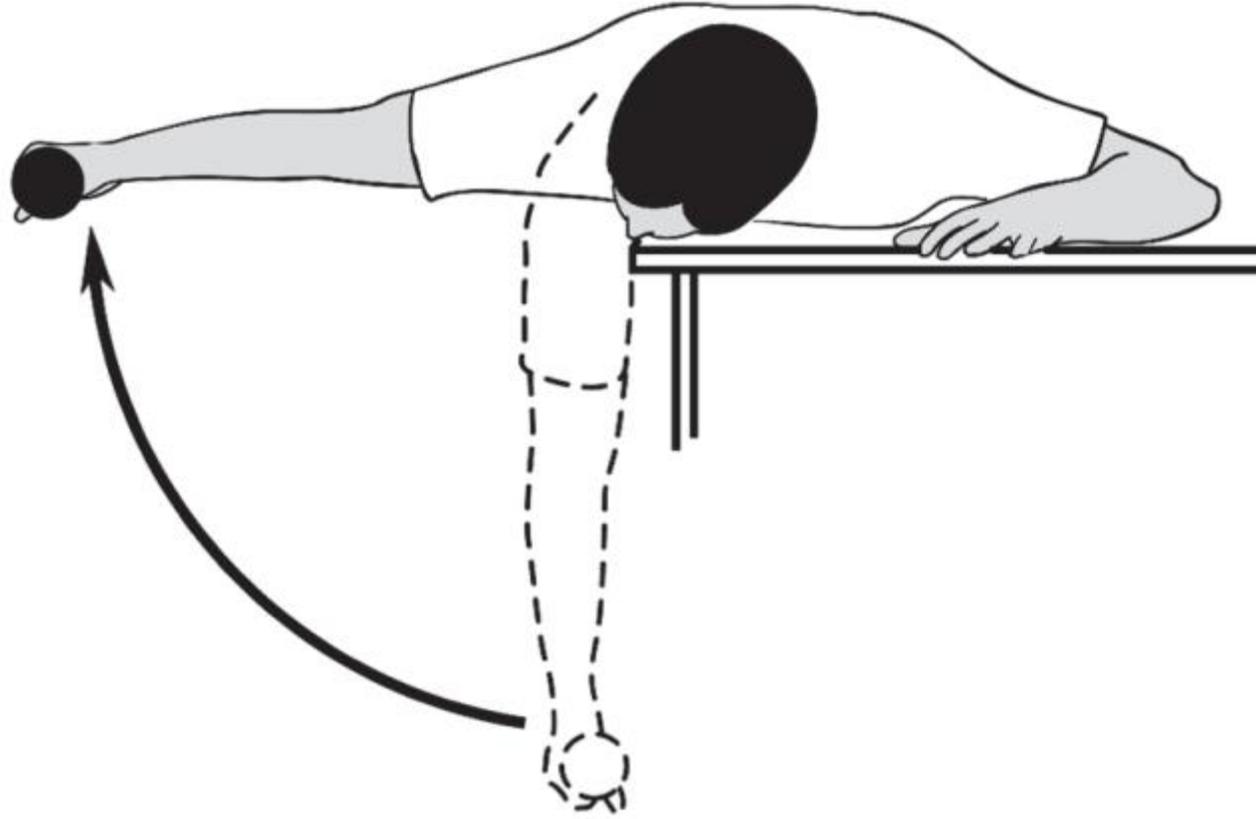


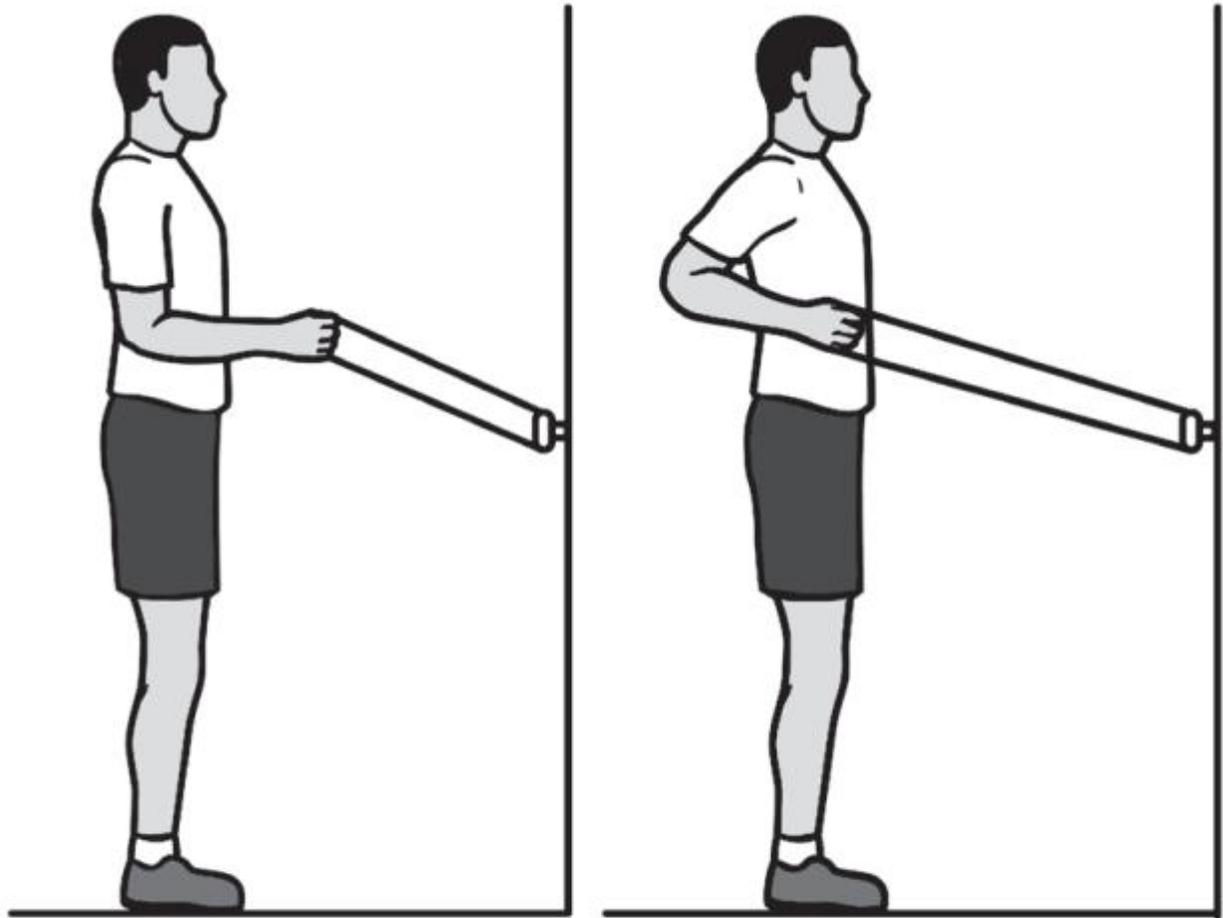
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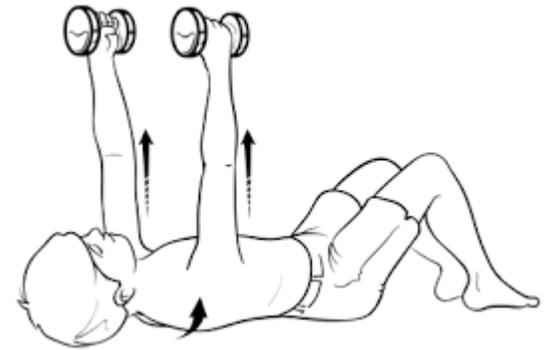
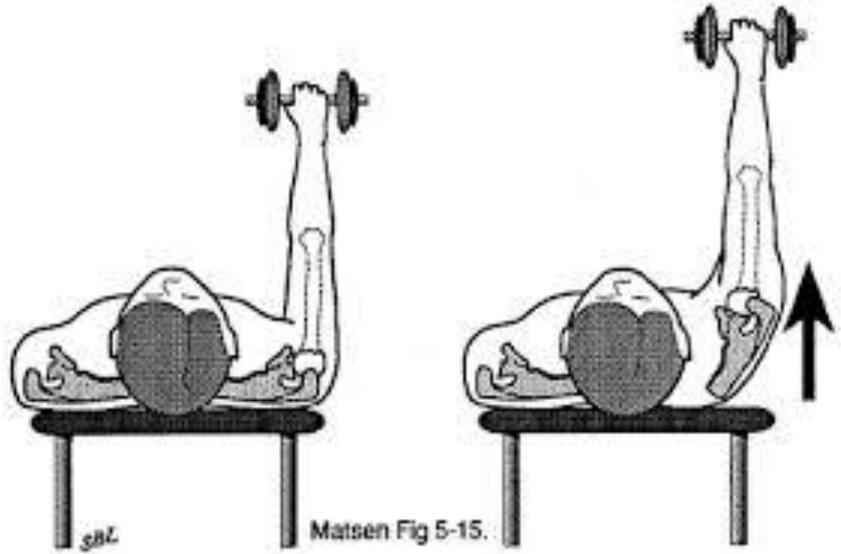


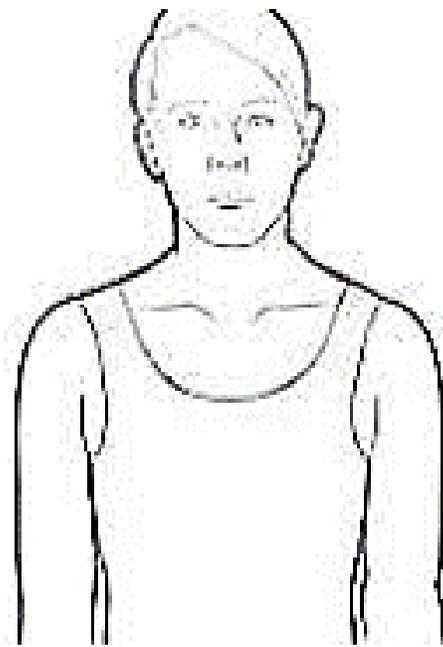




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ACROMIOCLAVICULAR JOINT PATHOLOGY

- Acromioclavicular joint pathology is usually well localized. A history of an injury to the joint, heavy weight lifting, tenderness to palpation at the acromioclavicular joint, pain with cross-body adduction testing, extreme internal rotation, and forward flexion are consistent with the diagnosis.

Treatment:

1) NSAIDS

2) Intra-articular corticosteroid injection

3) surgery

GLENOHUMERAL OSTEOARTHRITIS

- Glenohumeral osteoarthritis usually presents as gradual pain and loss of motion in patients older than 50 years.

A history of arthritis, previous shoulder surgery, pain, crepitus, and decreased motion is consistent with the diagnosis.

- Treatment:

1) NSAIDs

2) Physical therapy

3) Intra-articular corticosteroid injection

4) Shoulder surgery: Arthroscopy, Hemiarthroplasty and total shoulder arthroplasty

OTHER CONDITIONS:

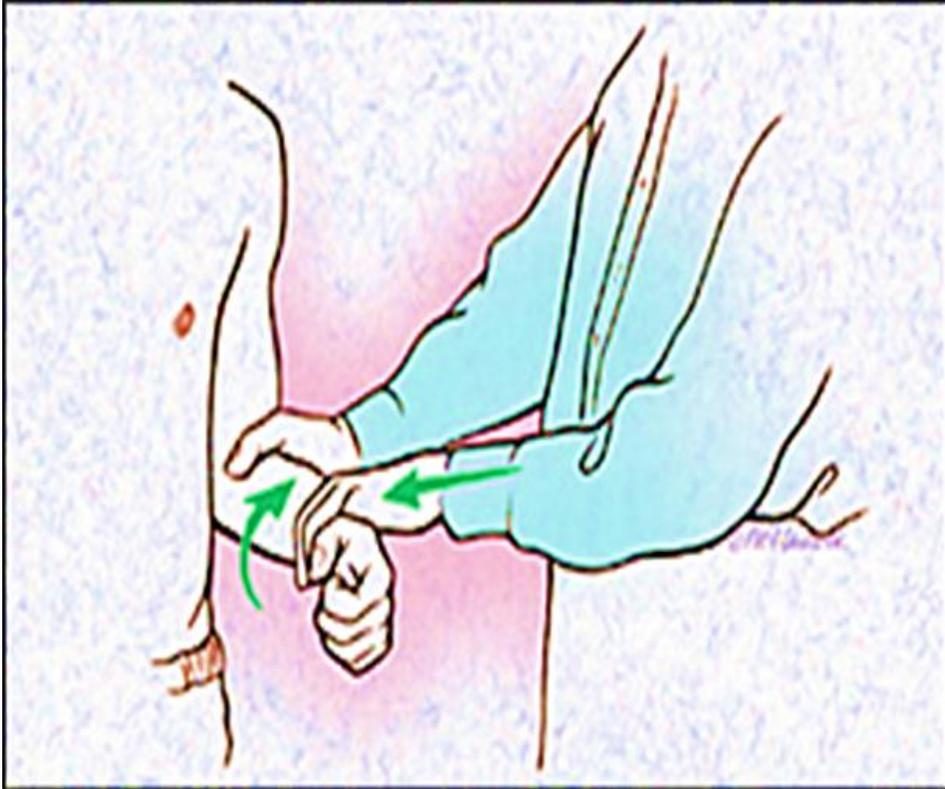
- Biceps pathology
- Cervical radiculopathy
- Winged scapula
- Levator scapulae syndrome
- Shoulder-hand Syndrome
- Parsonage Turner syndrome (brachial plexus neuritis)
- Suprascapular nerve injury
- Fibromyalgia

BICEPSTENDINITIS

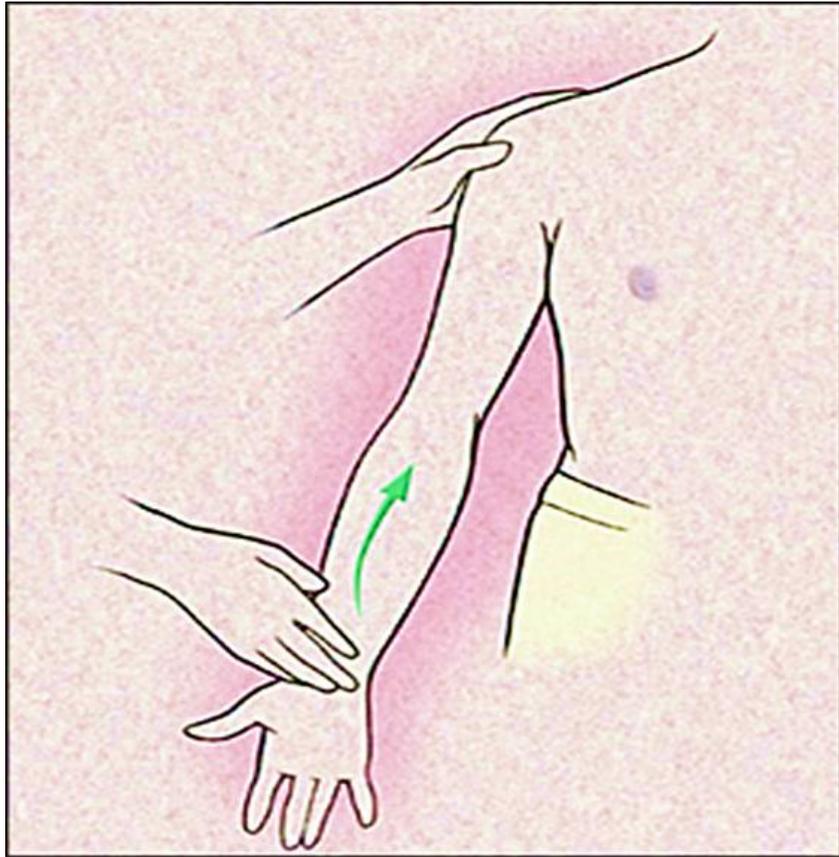
- The long head of the biceps tendon rises from the supraglenoid tubercle and the superior glenoid labrum. The proximal portion of the long head of the biceps tendon is extrasynovial but intra-articular.
- Biceps tendinitis is inflammation of the tendon around the long head of the biceps muscle. Biceps tendinosis is caused by degeneration of the tendon from athletics requiring overhead motion or from the normal aging process.
- primary biceps tendinitis occurs in 5 percent of patients with biceps tendinitis. The 95 percent of patients biceps tendinitis usually have an accompanying rotator cuff tear or a SLAP lesion.

HISTORY AND PHYSICAL EXAMINATION

- Deep, throbbing ache in the anterior shoulder
- Pain worsens at night, especially if the patient sleeps on the affected shoulder
- Repetitive overhead arm motion, pulling, or lifting may also initiate or exacerbate the pain
- The most common finding of biceps tendon injury is bicipital groove point tenderness.
- Provocative tests: Yergason and Speed test



The patient is asked to externally rotate and supinate their arm against the manual resistance of the therapist produced by wrapping the hand around the distal forearm (just above the wrist joint). **Yergason's Test** is considered positive if the pain is reproduced in the bicipital groove.



The examiner places the patient's arm in shoulder flexion, external rotation, full elbow extension, and forearm supination; manual resistance is then applied by the examiner in a downward direction. The test is considered to be positive if pain in the bicipital tendon or bicipital groove is reproduced.

TREATMENT

- 1) NSAIDs
- 2) Corticosteroid injections along the tendon sheath
- 3) Physical Therapy: Isometric training, Stretching, Strengthening...

LEVATOR SCAPULAE SYNDROME

- A historical name for "pain over the upper medial angle of the scapula" that is still used in clinical practice in certain settings round the world.
- The levator scapulae muscle extends from C1-4 to the medial aspect of the scapula, between the superior angle and the root of the scapular spine. Its function is to assist with various neck, arm and shoulder movements such as shoulder elevation and cervical side flexion.
- This muscle often becomes tense and painful leading to reduced motion in the area. The dominant shoulder is most commonly involved (82%) and pain radiates to the neck and shoulder, but rarely to the arm.

Levator Scapulae



CAUSES

- Cervical spine dysfunction.
- Altered shoulder biomechanics or poor posture.
- Repetitive arm motions such as in swimming, throwing, or racquet sports.
- Carrying bags with straps over the shoulder.
- Stress/anxiety. Many individuals who experience the effects of these trigger points also complain of shortness of breath (similar to that associated with panic attacks).

SIGN AND SYMPTOMS

- Neck pain, which may extend to the head causing a headache.
- Pain and restricted range of movement especially reduced cervical flexion and side flexion to the contralateral side.
- Deep, achy pain and/or tightness on the upper back along the top of the shoulder blade or neck.
- Increased muscle tone and trigger points. Active trigger points are more frequent in patients presenting with mechanical neck pain.

TRIGGER POINTS

- The Levator Scapulae can present with two trigger points located in the lower half of the muscle. The lower trigger point lies just above the superior angle of the scapula and the upper trigger point lies 1-3 inches above the lower trigger point.

The Levator Scapulae Trigger Points & Referred Pain

■ Primary Trigger Points



EXAMINATION

- With this presentation of pain and trigger points in the region of the levator scapulae, it is important to complete a full assessment of the cervical spine as pain in this region is often referred from the cervical spine.

TREATMENT

Primary treatment with being aimed at the dysfunction that you hypothesize to be causing the levator scapulae dysfunction i.e. the cervical spine.

- Posture adjustments
- Stretching
- Massage
- Trigger points corticosteroid injection

WINGED SCAPULA

- The term 'winged scapula' is used when the muscles of the scapula are too weak or paralyzed, resulting in a limited ability to stabilize the scapula. As a result, the medial or lateral borders of the scapula protrude from back, like wings. The main reasons for this condition are musculoskeletal- and neurological-related.
- Winging of scapula disturbs scapulohumeral rhythm; contributes to loss of power and limited flexion and abduction of the upper extremity and can be a source of considerable pain.
- Most cases are due to lesions of the long thoracic and spinal accessory nerves that innervate the serratus anterior and trapezius muscles, respectively. Rarely, it may also be due to a lesion to the dorsal scapular nerve that innervates the rhomboid muscles.



Medial winging due to serratus anterior paralysis is accentuated when patients are asked to forward flex their arms to the horizontal and push on a wall in a push-up motion.

In contrast, trapezius paralysis results in exaggerated lateral winging upon active abduction. The lateral winging of rhomboid paralysis is subtle, but may be accentuated by extending the arm from the fully flexed position.



FIGURE 3. In medial scapular winging (A), the medial scapular border displaces from the thoracic cage most prominently when the patient engages in humeral flexion (arrow). In lateral scapular winging (B), the lateral border of the scapula (arrow) is prominent during humeral abduction, and the superior trapezius is flattened (arrowhead).

ETIOLOGY

- Medial winging

Dysfunction of the serratus anterior (long thoracic nerve)

Lateral winging

Dysfunction of the trapezius (cranial nerve XI - spinal accessory nerve) or rhomboid muscles(dorsal scapular nerve)

- Scapular winging may present in a variety of clinical contexts, and may be due to traumatic- or sports-related injury , iatrogenic injury or spontaneous in nature .



Fig. 3 Winging of the right scapula due to serratus anterior palsy accentuated by active flexion of the arms. In addition to the medial border lifting off the posterior thoracic wall, note the medial and superior translation of the right scapula when compared to the normal left side [83, Fig. A]



Fig. 4 A patient with pronounced winging of the left scapula during active external rotation against resistance, typical of trapezius palsy. Note the lateral displacement of the scapula with the superior angle more lateral to the midline than the inferior angle [64, Fig. 4A]

DIAGNOSTIC TESTS

- Electromyographic testing is the only definitive diagnostic test for serratus anterior, trapezius, and rhomboid muscle paralysis, and is essential for determining which muscle is involved and to what degree of denervation. Nerve conduction studies of the long thoracic nerve may also be helpful in determining the severity of the lesion.
- Plain radiographs, CT and MRI are rarely needed, but may be useful to rule out other diagnoses.

TREATMENT

- Isolated serratus anterior palsy responds well to conservative treatment, with most cases functionally resolving within 1–24 months.

SHOULDER-HAND SYNDROME

- Shoulder-hand Syndrome (SHS) is a multifactorial disorder characterized by edema and swelling of the hand, hyperalgesia, severe pain and loss of function in the shoulder joint with changes in the skin color and temperature.
- Also known as Post-stroke complex regional pain syndrome or reflex sympathetic dystrophy of upper limb.
- Treatment:

Medication: NSAID, Oral Corticosteroid, Shoulder Steroid Injection.

Physical Therapy

Thanks for your attention

