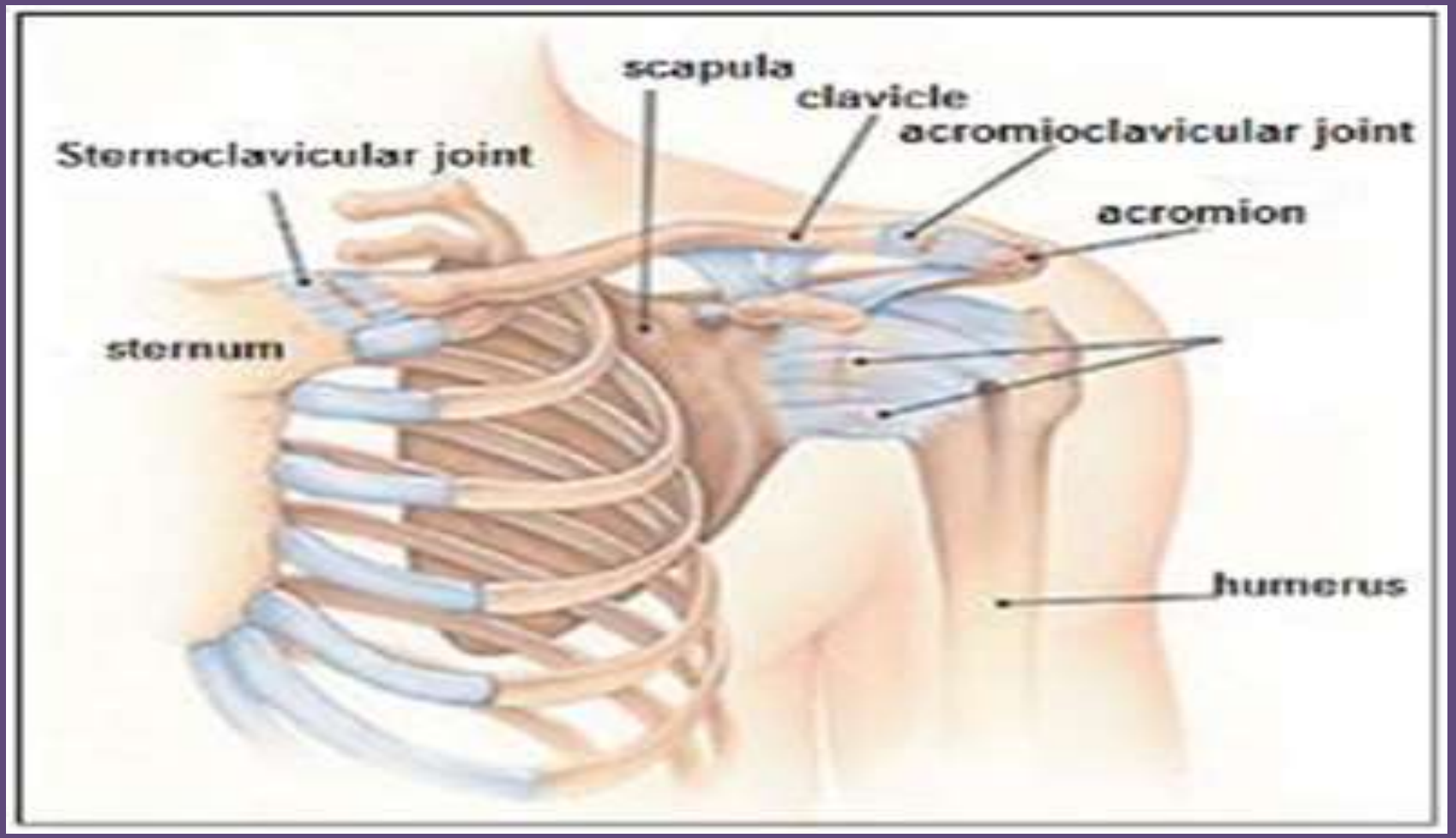
SHOULDER JOINT

Dr. Dalia M. Biram


scapula
clavicle
acromioclavicular joint
Sternoclavicular joint
acromion
sternum
humerus

In each joint we will discuss the following:

1. Type of joint.
2. Articular surfaces.
3. Capsule (covers margins of articular surfaces).
4. Synovial membrane (lines the inner of the capsule).
5. Ligaments related.
6. Movements and muscles producing it.
7. Nerve supply (from NS of surrounding MS)

- **Type:**

  Synovial, polyaxial, ball & socket

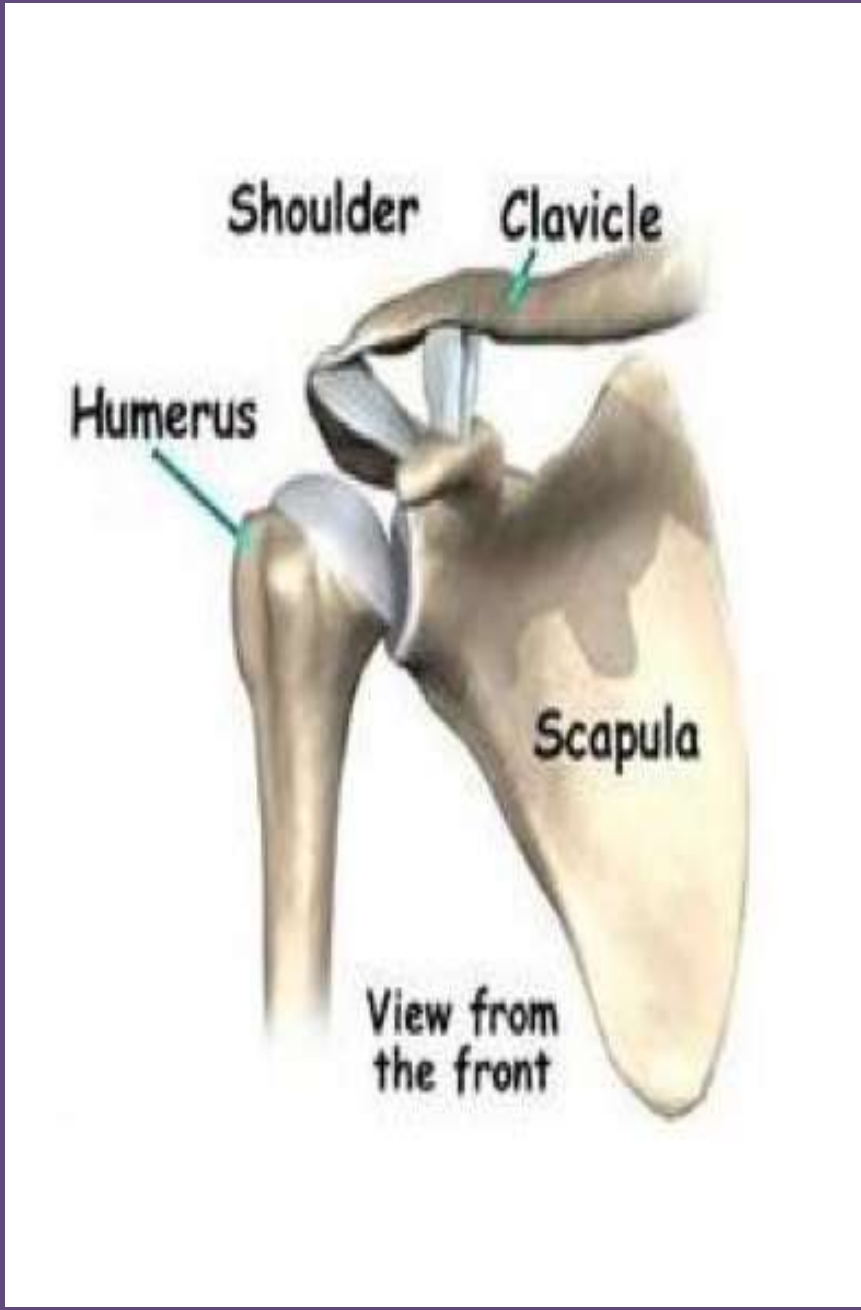
- **Articular surface:**

  a)Head of humerus

  b)Glenoid cavity of scapula

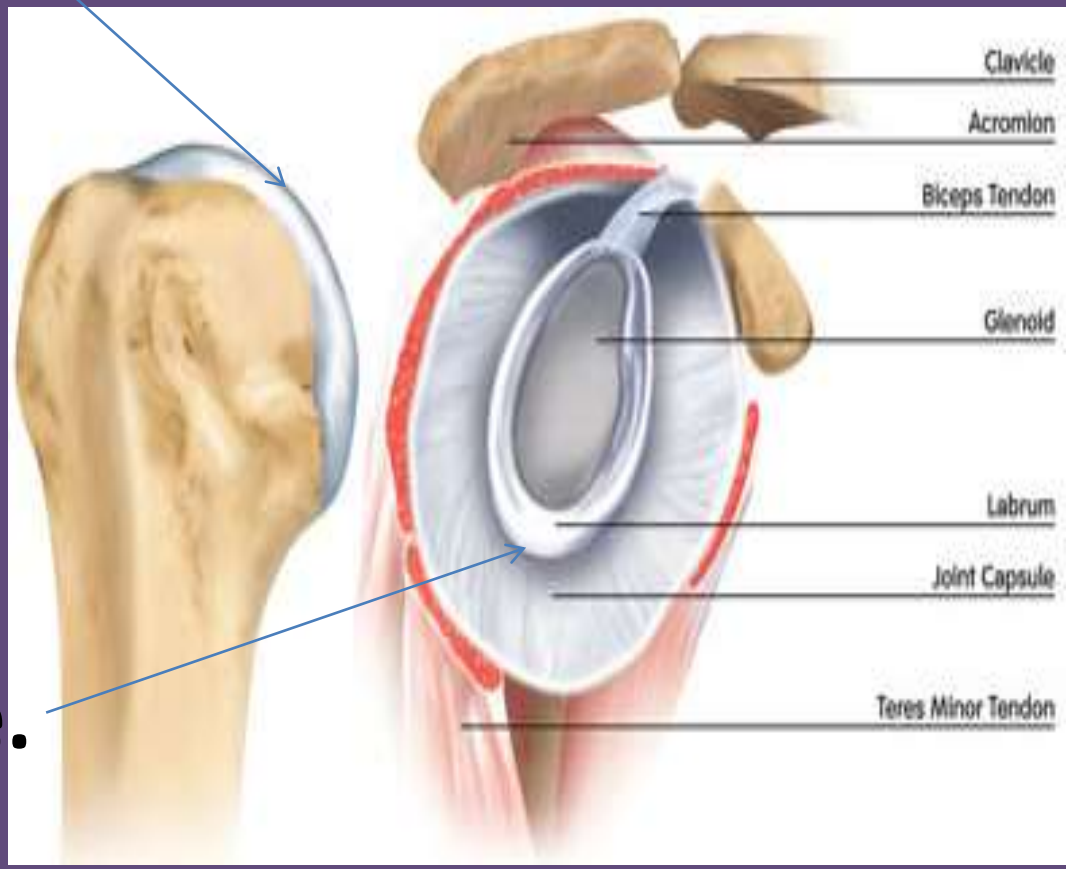
  *Each of the articular surfaces is covered by hyaline cartilage.

  *The glenoid cavity is deepened by a fibro-cartilaginous rim; labrum glenoidale.



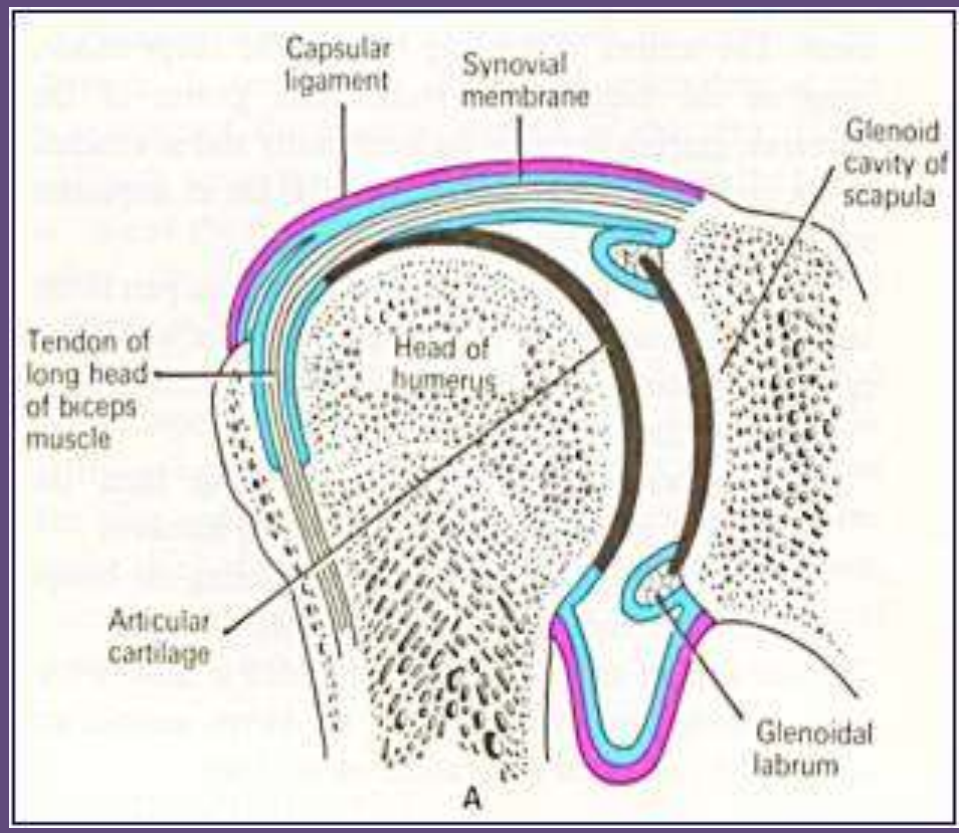
- **hyaline cartilage.**

- **labrum glenoidale.**



Capsule

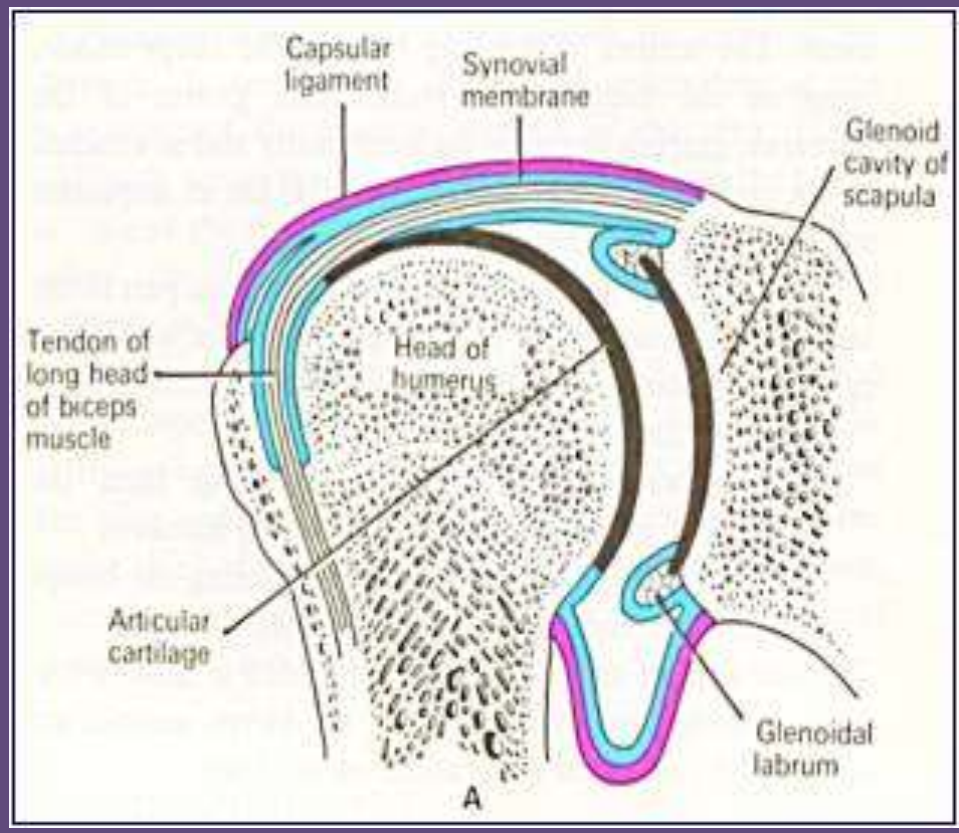
- attached to the margins of the glenoid cavity outside the labrum glenoidal.
- Laterally is attached to the anatomical neck of the humerus, except inferiorly where it extends about 1 cm to the shaft.



Synovial membrane

-It lines all the structures inside the capsule of the shoulder joint EXCEPT the articular cartilage.

-It forms a tubular sheath around the tendon of long head of biceps so it is an intra-capsular, extra-synovial structure.



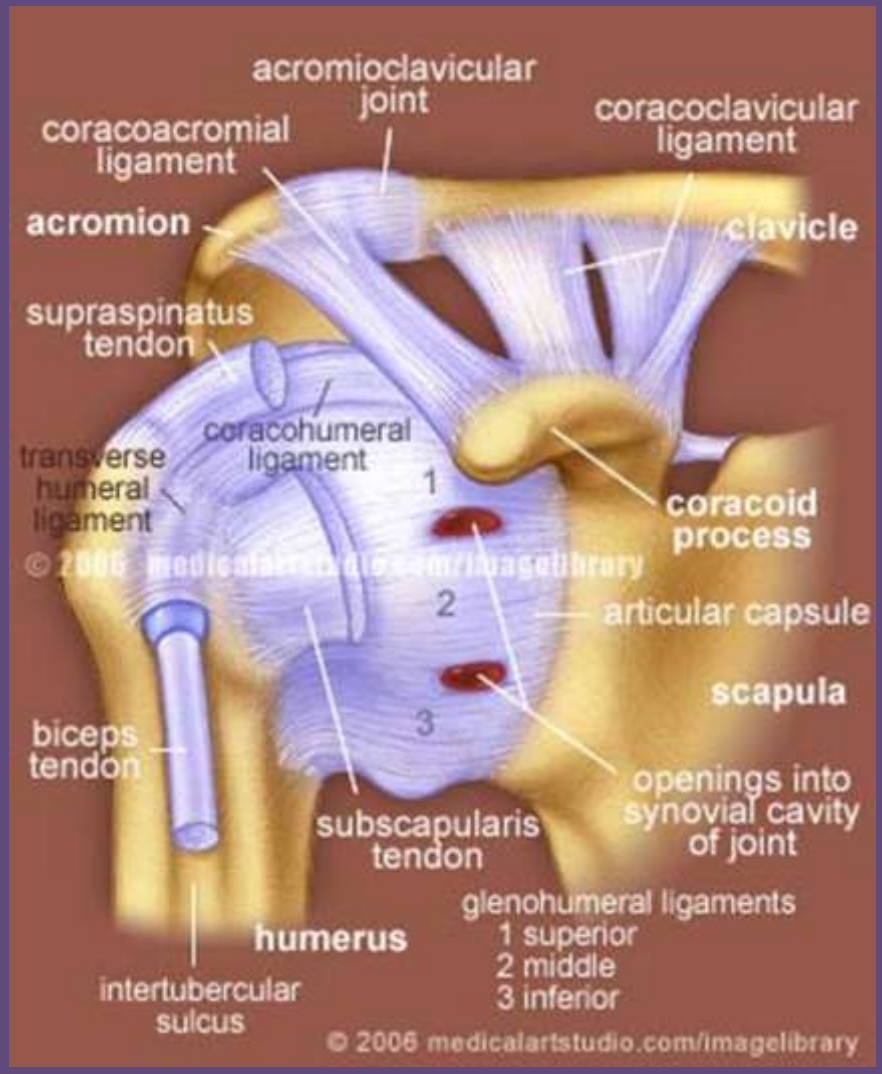
LIGAMENTS RELATED TO SHOULDER JOINT(---- humeral)

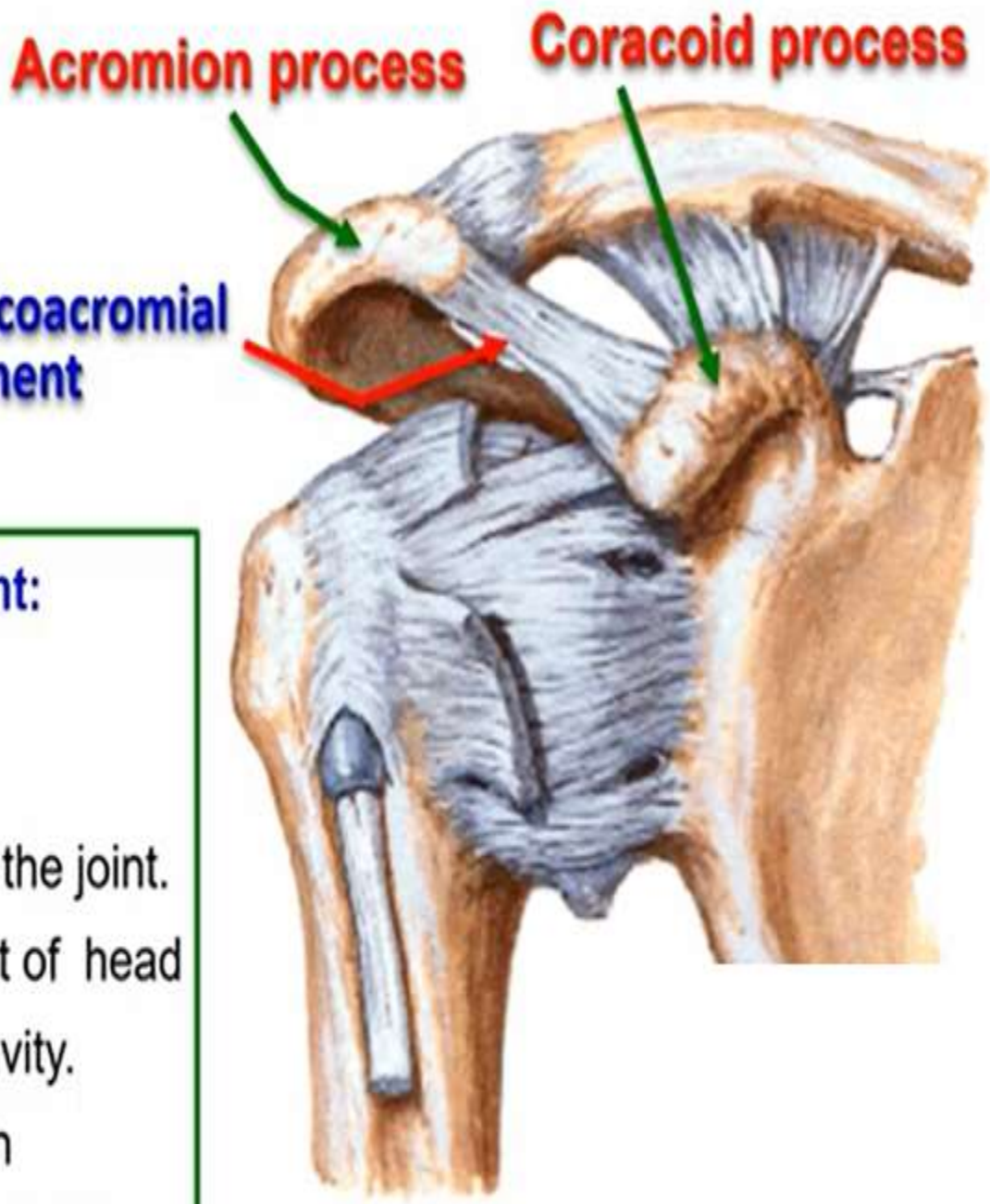
1- False ligaments:

glenohumeral ligaments (Thickenings of the Capsule)

2- True ligaments:

- Coraco-humeral ligament.
- Transverse humeral ligament (bridges over the bicipital groove).





❖ Coracoacromial ligament:

- between coracoid and acromion processes.
- It protects the superior aspect of the joint.
- It prevents superior displacement of head of humerus above the glenoid cavity.
- Ligament, coracoid and acromion processes called **Coracoacromial arch**

** Stability of shoulder joint:

- The shoulder joint is an **unstable** joint for the following factors;

1) Small shallow glenoid cavity.

2) The capsule is **lax**.

3) The ligaments are **weak**.

4) The inferior aspect not supported by muscles.

** Its stability depends on the following factors:

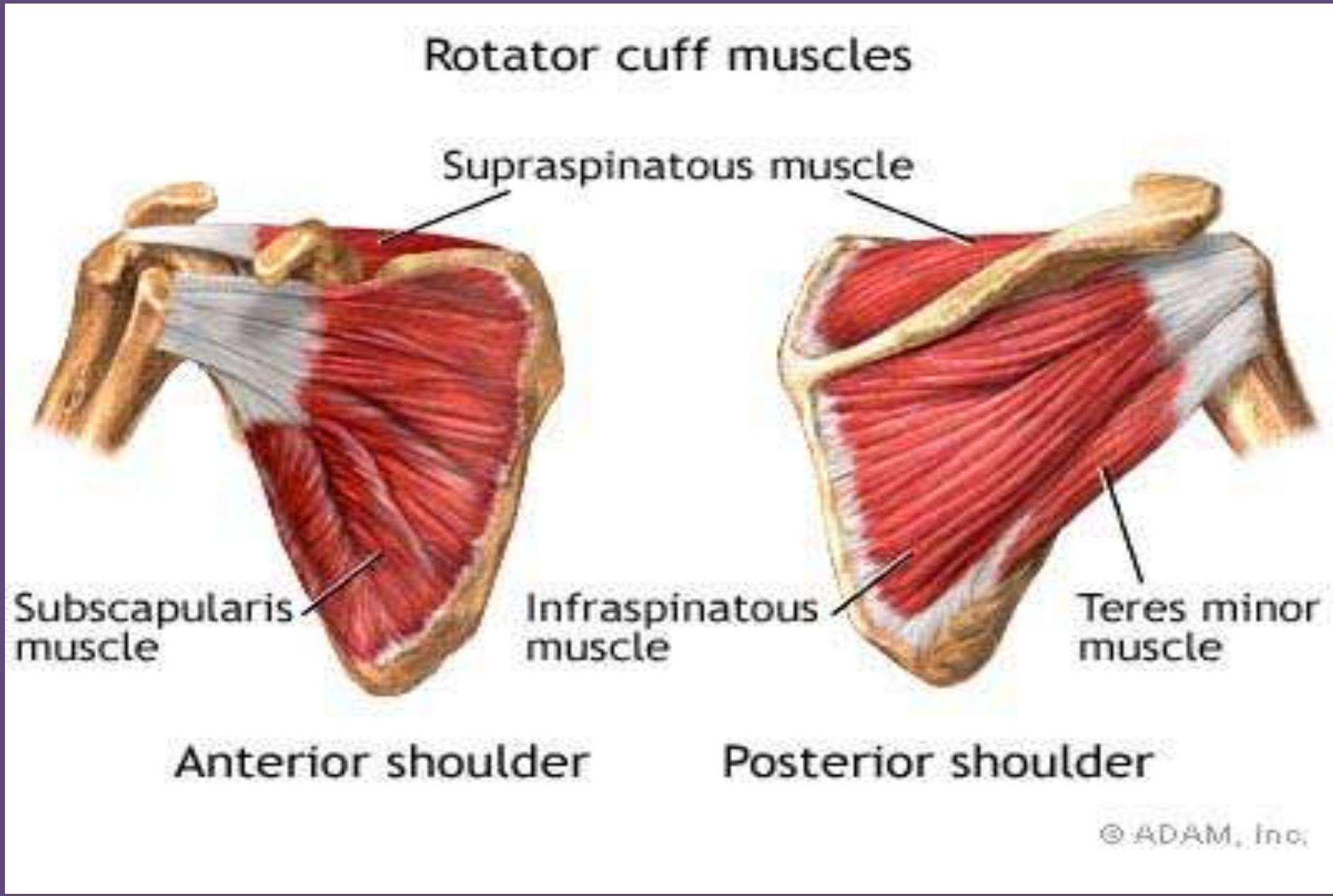
1- Rotator cuff of muscles adherent to the capsule of the joint.

2- Glenoid Labrum increases the depth of the cavity.

3- Long head of biceps passes above the head of humerus intracapsular, hence prevents its **upward displacement**.

4- Coracoacromial arch forms, the secondary socket of the joint and protect the joint from above and prevents the **upward dislocation** of the head of humerus

5- Long head of triceps plays an important role during abduction.


Rotator cuff muscles
Supraspinatous muscle
Subscapularis muscle
Infraspinatous muscle
Teres minor muscle
Anterior shoulder
Posterior shoulder
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** **Bursae related to the joint**

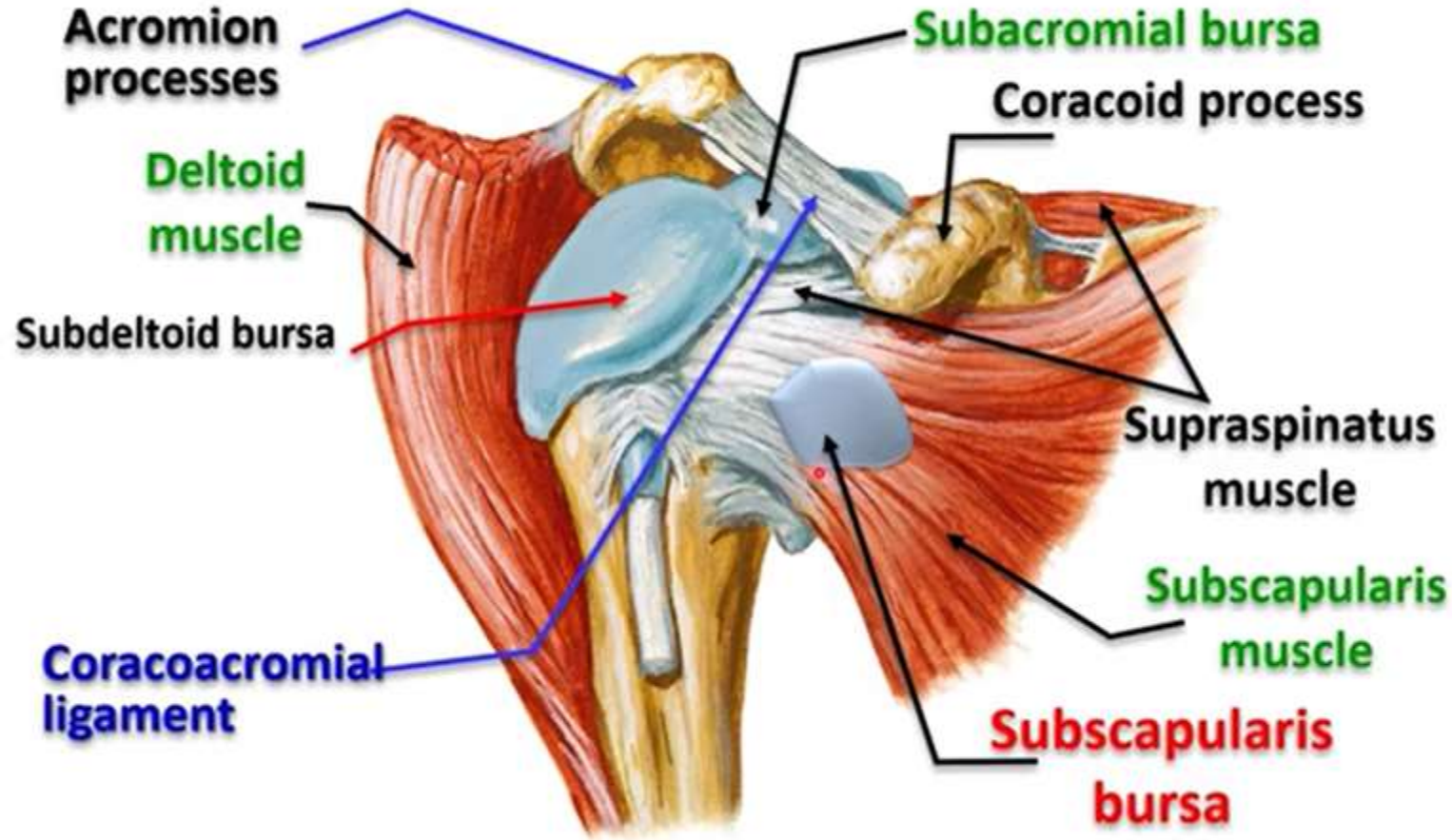
1- **Subscapularis bursa;** between the tendon of subscapularis and capsule.
It **communicates** with the joint cavity.

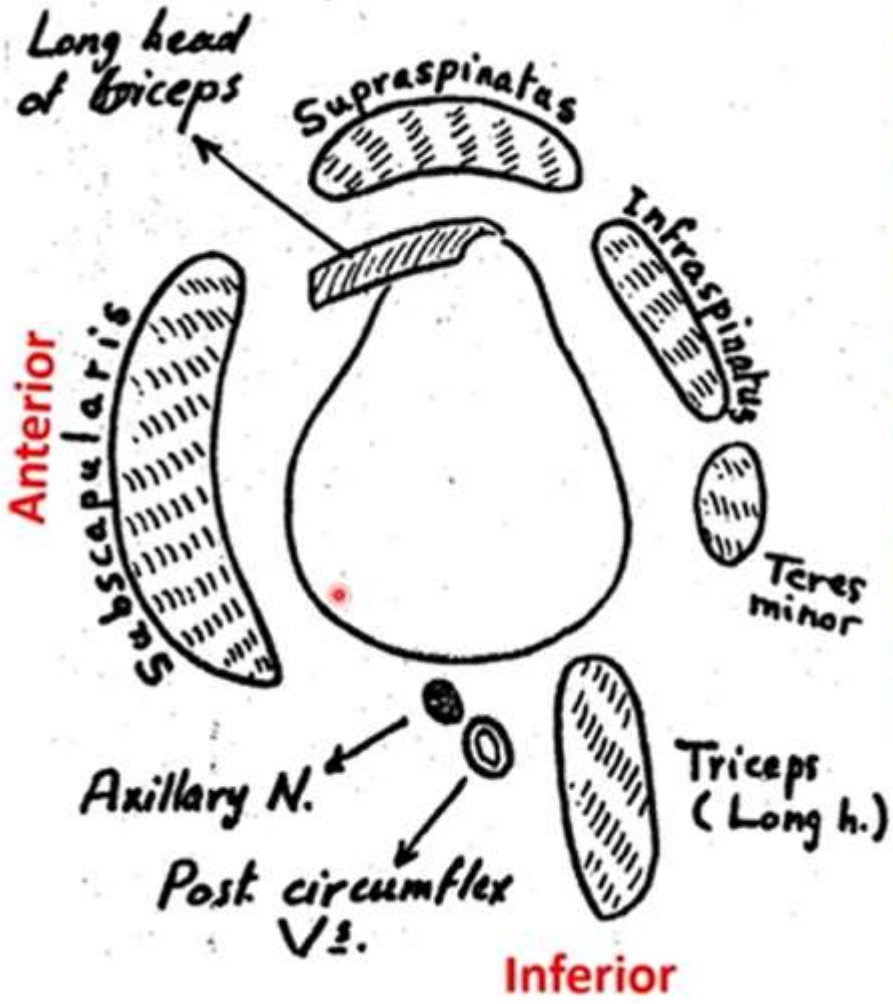
2- **Subacromial bursa;**

- It lies between the coracoacromial arch **above**, and supraspinatus tendon and capsule **below**.
- It continues downwards beneath the deltoid with **Subdeltoid bursa**.
- It is the **largest synovial bursa in the body** and facilitates the movements of supraspinatus tendon under the coracoacromial arch.
- It does not **communicate** with the joint cavity.

3- **Infraspinatus bursa;** between the tendon of infraspinatus and capsule

Bursae related to shoulder joint





❖ **Relations of the shoulder joint**

1) **Anteriorly;** anterior fibers of the deltoid and subscapularis.

2) **Superiorly:** middle fibers of the deltoid, supraspinatus, and long head of biceps.

3) **Posteriorly:** posterior fibers of the deltoid, infraspinatus, and teres minor.

4) **Inferiorly**: Long head of triceps, axillary nerve and posterior circumflex humeral vessels.

❖ Movements of shoulder joint

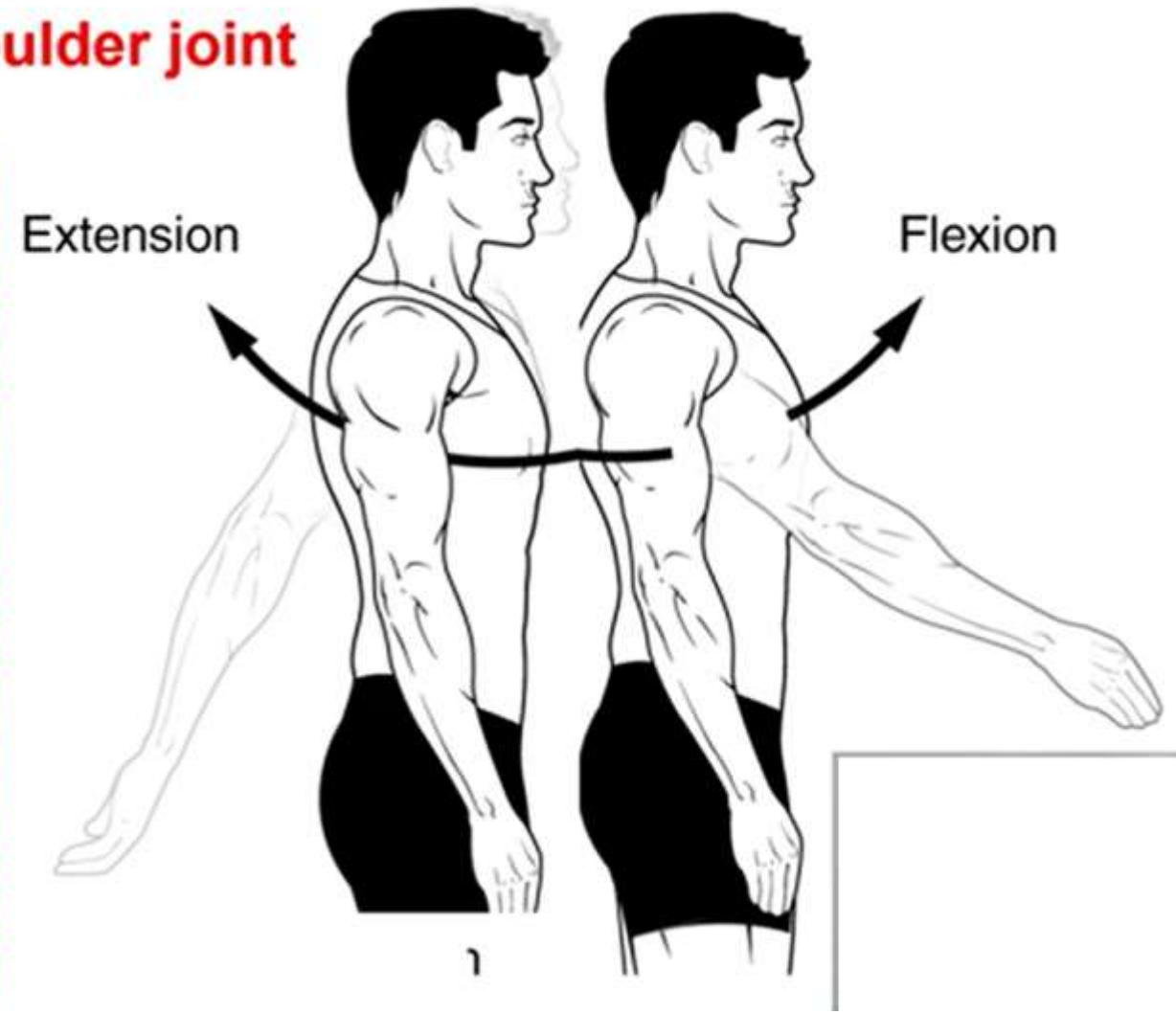
❖ **Flexion**

❖ (Muscles infront):

- Anterior fibers of the deltoid and Pectoralis major.
- Coracobrachialis and short head of biceps.

❖ **Extension**

❖ (Muscles in the back): Posterior fibers of the deltoid, teres major and latissimus dorsi.



** **Movements of shoulder joint:**

❖ **Abduction:**

a- From 0 to 15 by supraspinatus muscle

b- From 15 to 90 by the middle fibers of the deltoid.

c- More than 90 to 180 by the combined actions of lower 5 digitations of serratus anterior and trapezius muscle.

- After 90 degree of abduction, head of humerus is locked by coracoacromial arch. **S0, the scapula rotates upward and lateral to raise the arm above the head.**

❖ **Adduction:**

- a- by the **3 muscles inserted into the bicipital groove:**

  1- Pectoralis major. 2- Latissimus dorsi. 3- Teres maior

- b- **3 Rotator cuff muscles** (Subscapularis, Infraspinatus and teres minor)

** **Movements of shoulder joint:**

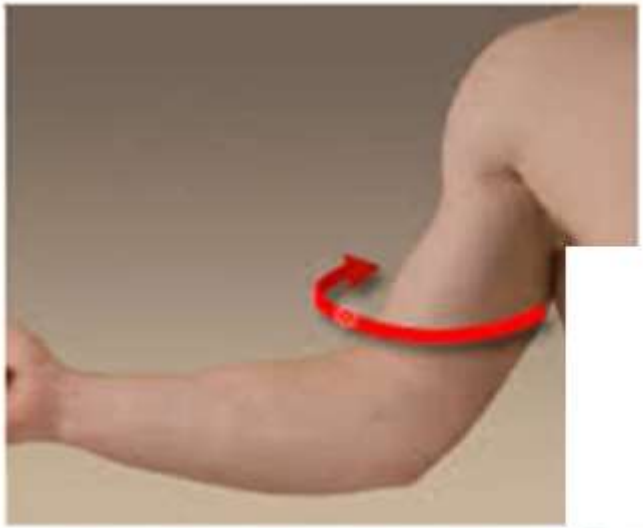
- **Medial rotation** by

- Anterior fibers of the deltoid.

- **3 muscles** inserted into bicipital groove (pectoralis major, latissimus dorsi, teres major)

- **Lateral rotation:** by Posterior fibers of deltoid, infraspinatus and teres minor.

- **Circumduction**: includes flexion, abduction, extension and adduction done in succession.

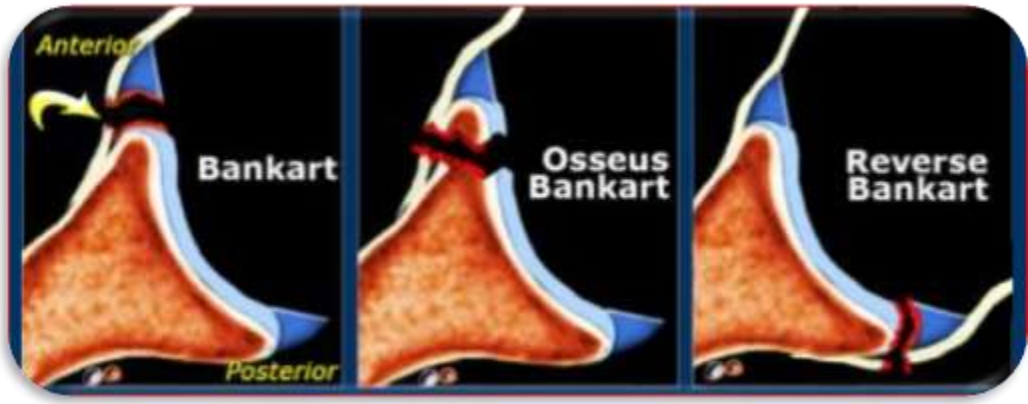


Shoulder (Glenohumeral Joint)

X ray of shoulder joint

Shoulder instability

Bankart
Detachment of the anteroinferior labrum (3-6 o'clock) with complete tearing of the anterior scapular periosteum with or without an osseus fragment of the glenoid.
Reverse Bankart
Detachment of the posteroinferior labrum (6-9 o'clock) with tearing of the posterior scapular periosteum with or without an osseus fragment of the glenoid.



3D-reconstruction of a large bony Bankart in the 2 - 6 o'clock position.

Anterior shoulder dislocation

- by far the most common, accounting for up to 95% of all cases
- In most of those, the head of the humerus comes to rest under the coracoid process, referred to as sub-coracoid dislocation
- usually results from anterior glenolabra injury, particularly from disruption of the anterior band of the inferior glenohumeral ligament (IGHL) e.g. Bankart lesion

Bankart lesions are disruptions of the glenoid labrum with or without an avulsion of bone fragment.

Radial nerve injury


Thank You