Anatomy of Shoulder joint

Presented by

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PO(Programme outcome)	CO (Course outcome)
PO 1- Demonstrate comprehensive knowledge and application of the Trisutra concept to explore root causes, identify clinical manifestations of disease to treat aliments and mantain heathy status	CO3- Description and demonstrate the shoulder joint with attachments of associated structures and its clinical application
PO 2- Demonstrate knowledge and skills in Ayurveda, acquired through integration of multi disciplinary perspectives and keen observation of clinical and practical experiences.	

Specific Learning Objectives

By the End of the class you will be able to :

1. Structure of Shoulder joint.
2. Ligaments, relations of Shoulder joint
3. Movements, clinical aspect of shoulder joint.

- Teaching Learnings method- Lecture with power point presentation
- Domain- Cognitive – Application
- Must to know/desirable to know/Nice to know- Must to know
- Millers pyramid- Knows how
- Bloom texonomy- Understand

Kaksha sandhi

- कक्षावङ्क्षणदशनेषूलूखलाः | (सु.शा.५/३२)

  Ulukhala variety of joints is found at *Kaksha*, *Vankshana* and *Dashana*

Shakha Marma

- बाहुमर्माणितुशिप्रतलहृदयकूर्चकूर्चशिरोमणिबन्धेन्द्र बस्तिकूर्पराण्युर्वीलोहिताक्षाणि कक्षधरं चेति;

Snayu Marma

- आणीविटपकक्षधरकूर्चकूर्चशिरोबस्तिक्षिप्रांसविधुरो त्क्षेपाः स्नायुमर्माणि

Vaikalyakar Marma

- लोहिताक्षाणि जानूर्वीकूर्चविटपकूर्पराः ।
  कुकुन्दरे कक्षधरे विधुरे सकृकाटिके ।।

Pramana

- उर्व्यः शिरांसि विटपे चसकक्षपार्श्वेएकैकमङ्गुलमितं

Sthan

- वक्षःकक्षयोर्मध्ये कक्षधरं

Vidha lakshana

- कक्षधरे पक्षाघातः

Glenohumeral Joint

- Gleno-

  Glenoid cavity of Scapula

- Humeral-

  Humerus bone (Head of Humerus)

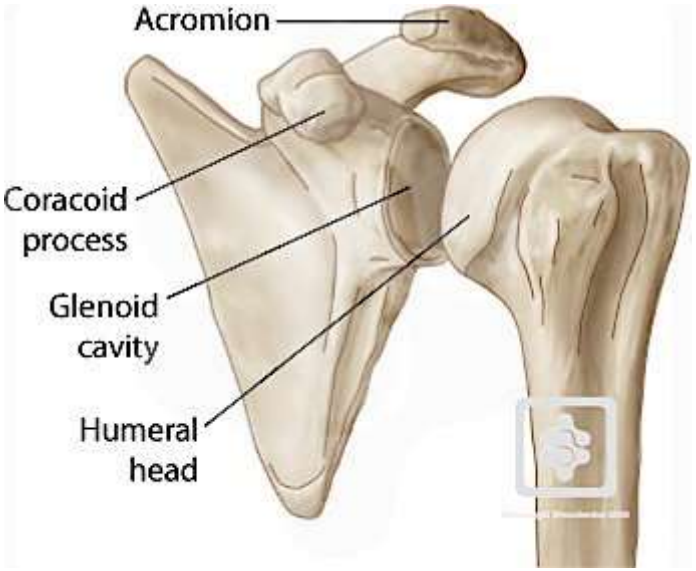
1. **Type of joint**
2. **Articular Surface**
3. **Articular capsule and synovial membrene**
4. **Glenoid Labrum**
5. **Ligament of shoulder Joint**
6. **Relations**
7. **Movements and Muscle acting on the joint**
8. **Blood Supply**
9. **Nerve Supply**
10. **Clinical aspect**

Shoulder joint (glenohumaral joint)

- **It is a ball and socket joint type of synovial joint**
- **It permits a wide range of movement**
- **Its mobility make the joint relatively unstable**

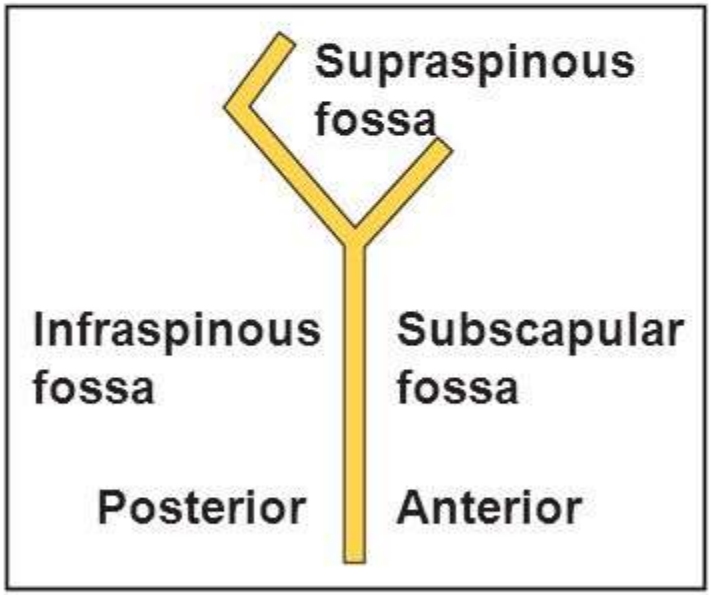
Articular surfaces

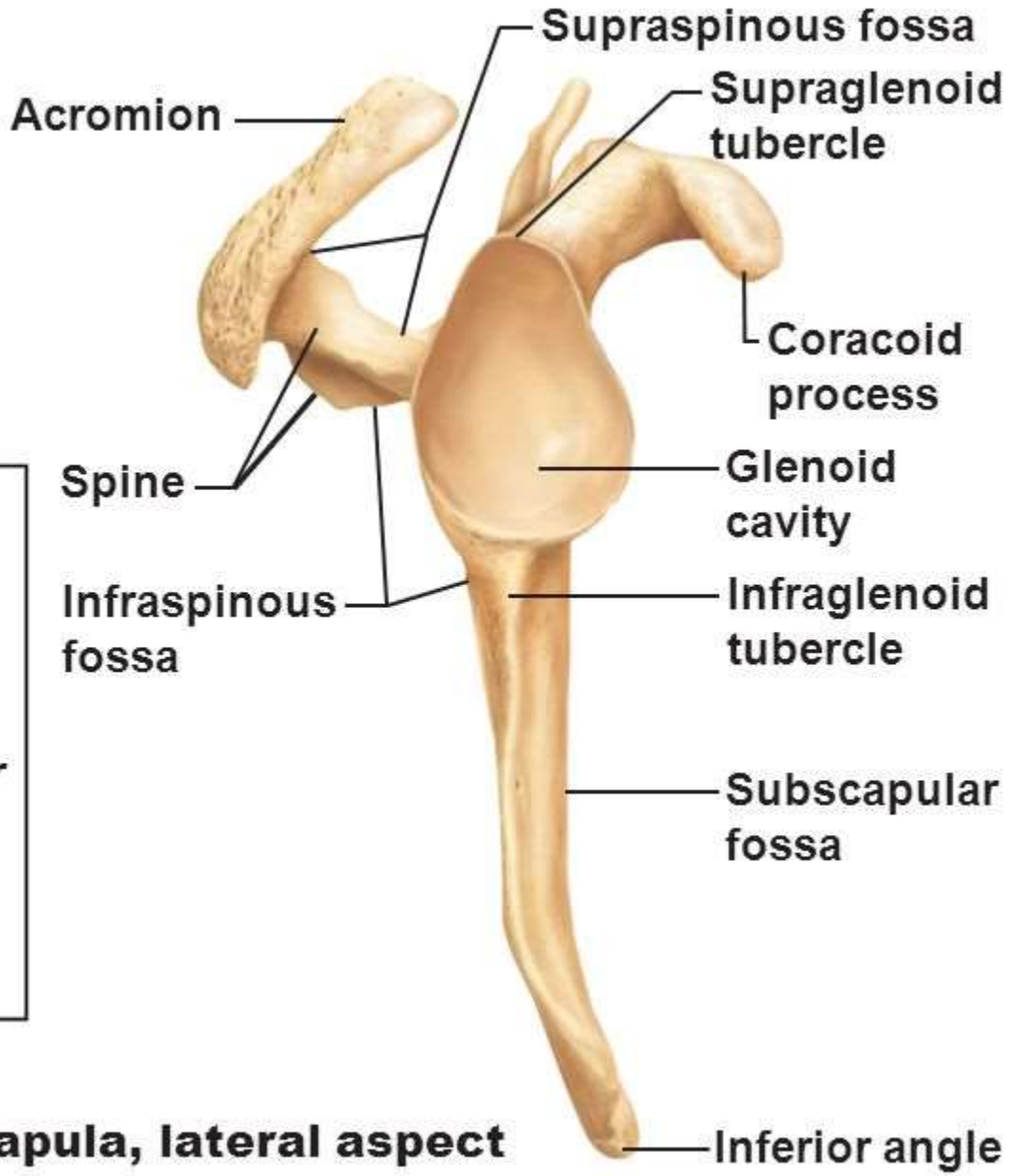
The large round humeral head articulates with the relatively shallow glenoid cavity of the scapula


Acromion
Coracoid process
Glenoid cavity
Humeral head

Glenoid cavity

- Pear shape
- Shallow
- Directed laterally and upward
- Cavity 1/3 of the humarus head comes contact in with the glenoid cavity at any position
- Glenoid fossa is deepened by a fibrocartilaginous of glenoid labrum





(c) Right scapula, lateral aspect

Fibrous capsule

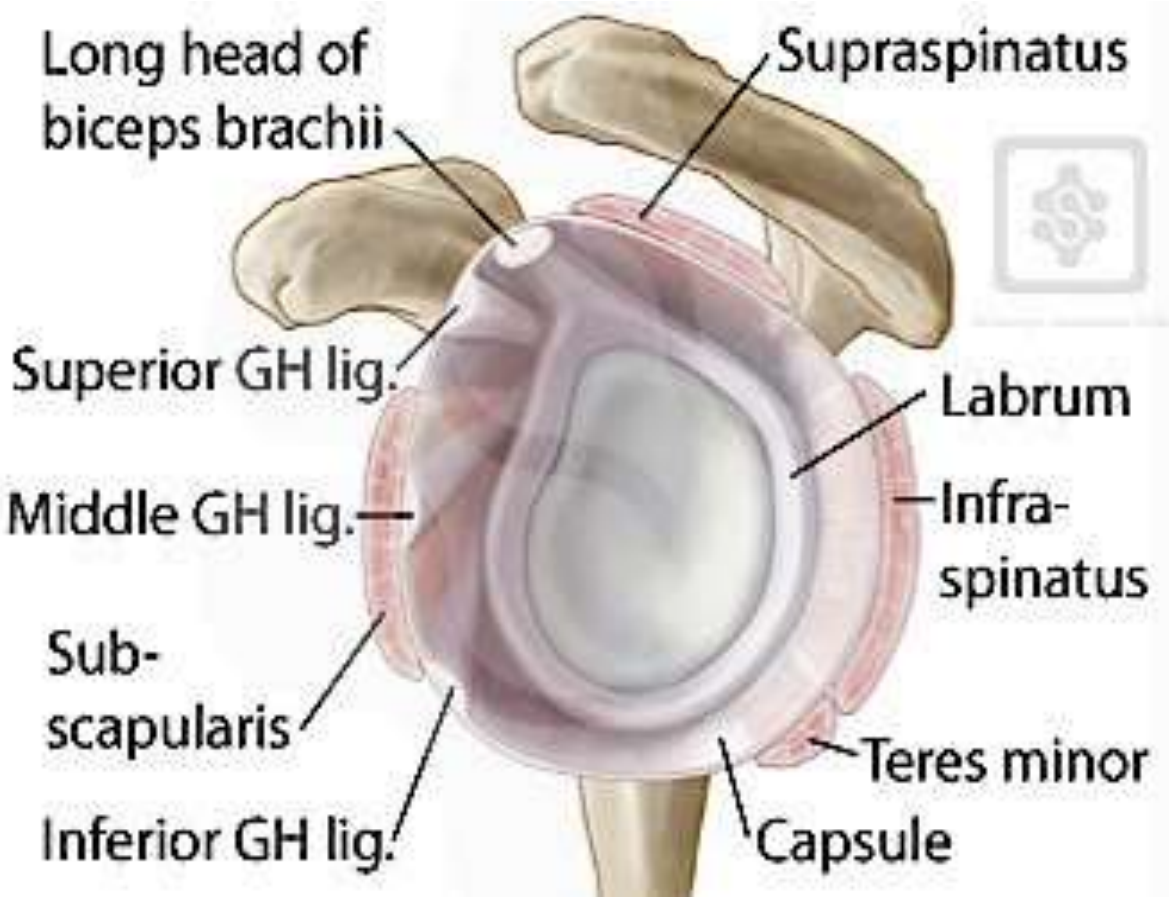
- **Joint capsule surrounds the glenohumeral joint and is attached medially to the margin of the glenoid cavity and laterally to the anatomical neck of the humerus**

- **Superiorly the part of the capsule enclose to the root of the coracoid process and supraglenoid tubercle of scapula**
- **It is least supported inferiorly where dislocation are very common**


Healthy shoulder joint
Acromion
Ligaments
Clavicle
(collarbone)
Humerus
(arm bone)
Scapula
Capsule
Biceps tendon

Glenoid Labrum

- **Fibrocartilage rim attached around the margin of glenoid cavity**
- **Triangular on shape**
- **Deepen cavity for articulation and protects the edges of bones**
- **Lined by the synovial membrane**


Long head of biceps brachii
Supraspinatus
Superior GH lig.
Labrum
Middle GH lig.
Infra-spinatus
Sub-scapularis
Teres minor
Inferior GH lig.
Capsule

Ligaments

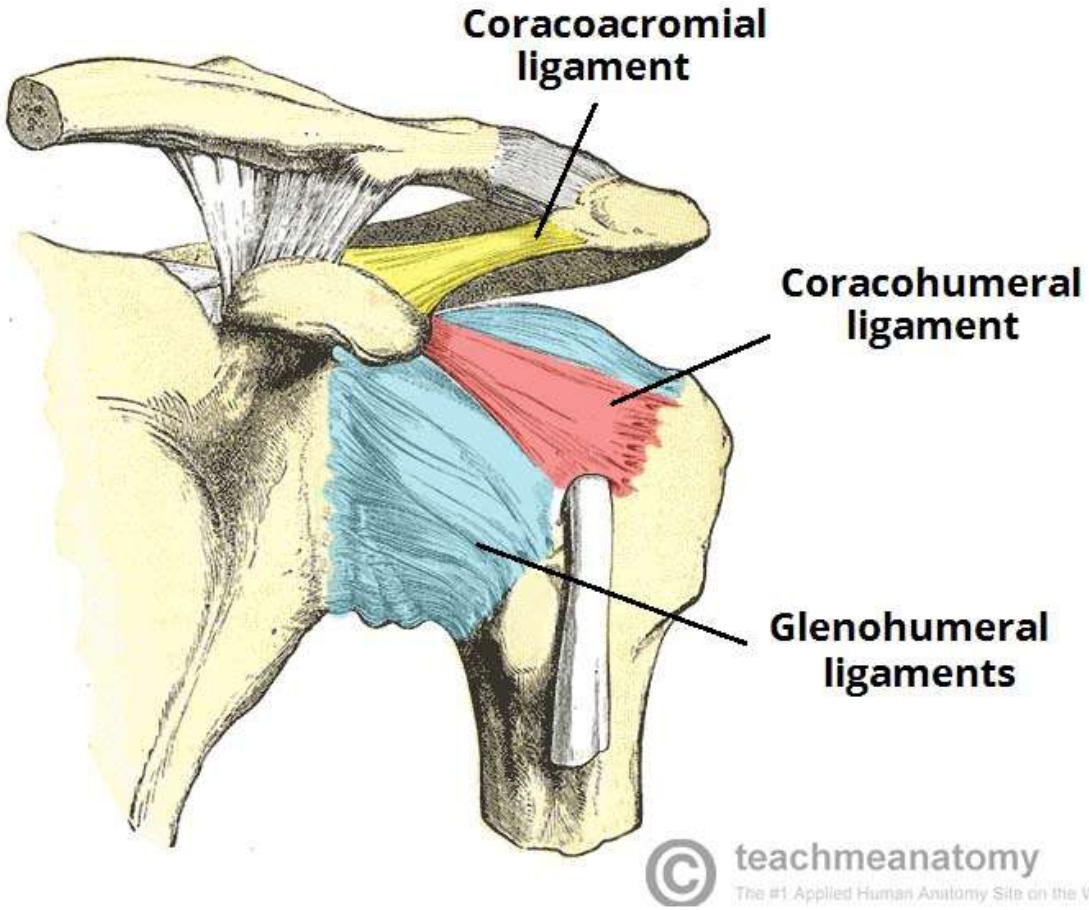
- **Glenohumeral ligament**
- **Coracohumeral ligament**
- **Transverse ligament**
- **Coracoacromial arch**

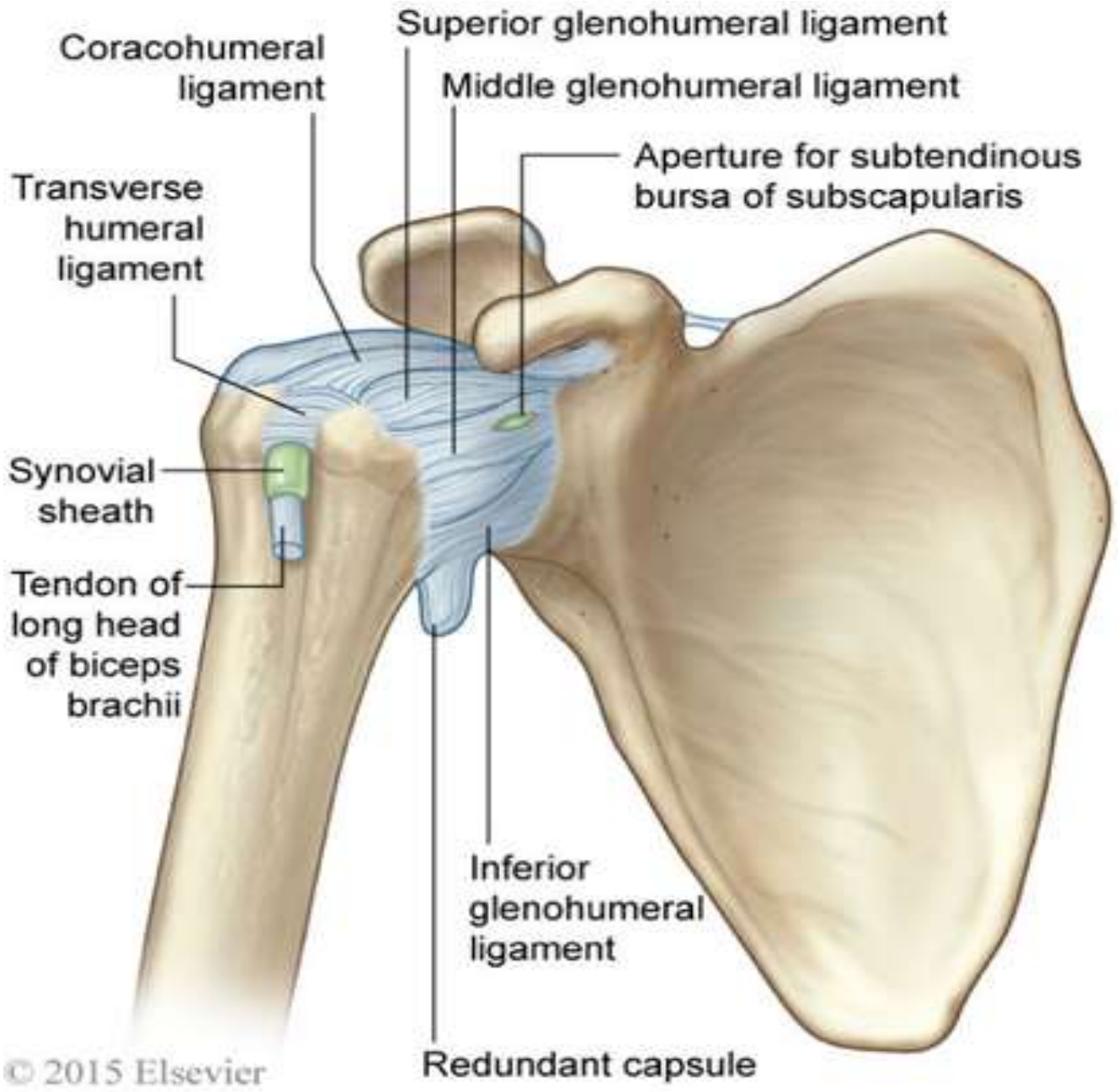
Glenohumeral ligament

- **Glenohumeral ligaments (superior, middle and inferior) – Consists of three bands, which runs with the joint capsule from the glenoid fossa to the anatomical neck of the humerus.**
- **They act to stabilize the anterior aspect of the joint.**

Coracohumeral ligament

It is a strong band that passes from the base of coracoid process to the anterior aspect of the greater tubercle of the humarus


Coracoacromial ligament
Coracohumeral ligament
Glenohumeral ligaments
teachmeanatomy
The #1 Applied Human Anatomy Site on the Web.

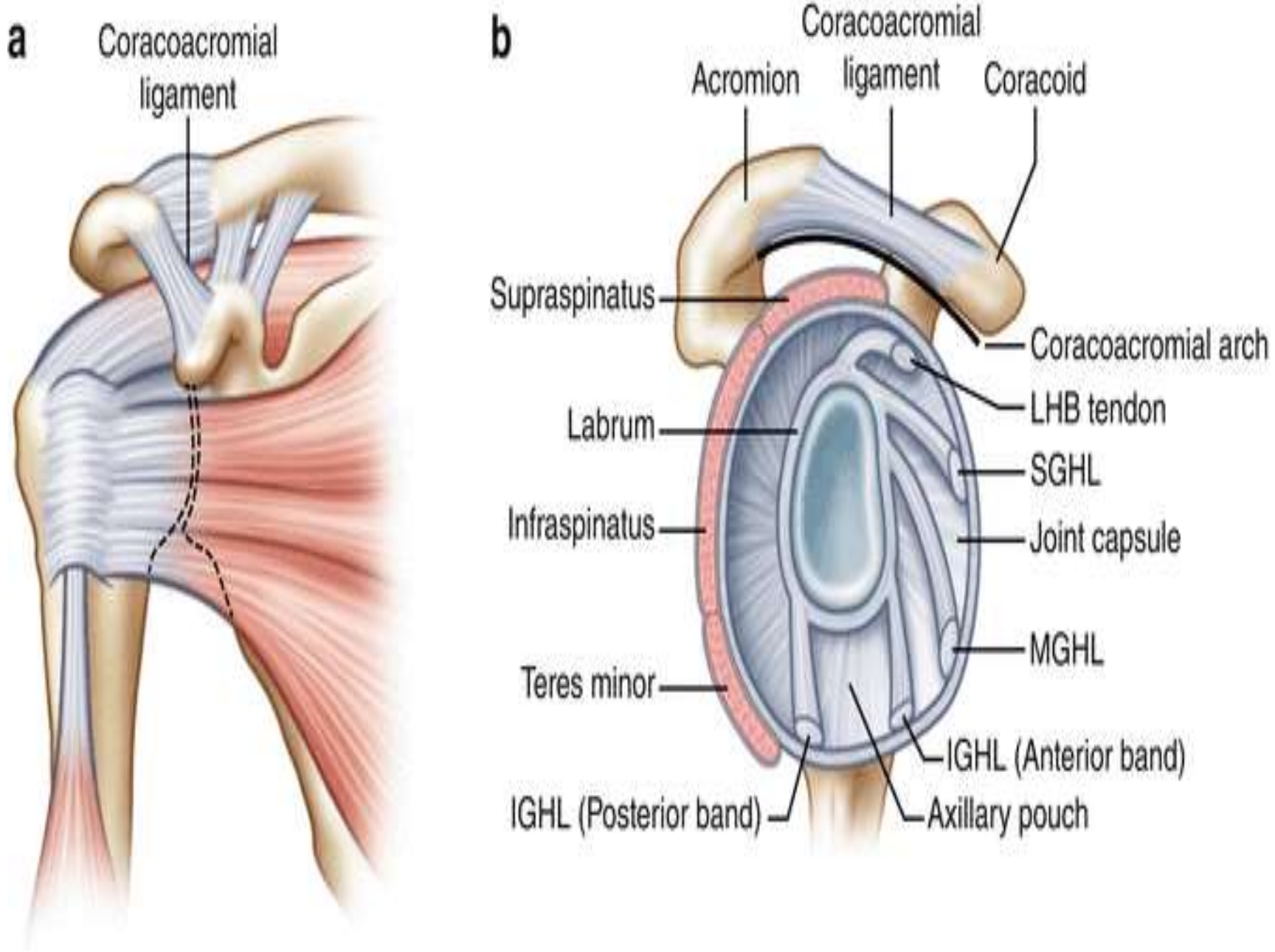


Transverse ligament

It is a broad fibrous a band that runs more or less obliquely from the greater to the lesser tubercle of the humarus, bridging over the intertubercular sulcus this ligament converts the groove into a canal, which holds the synovial sheath and tendon of the biceps brachii

Coracoacromial arch

- **Coracoacromial arch it is an extrinsic, protective structure formed by the smooth inferior aspect of the acromion and the coracoid process of the scapula**
- **The coracoacromial arch is so strong that a forceful superior thrust of the humarus will not fracture it ; the humarus shaft or clavicle fracture first.**


a
Coracoacromial ligament
b
Coracoacromial ligament
Acromion
Coracoid
Supraspinatus
Coracoacromial arch
LHB tendon
Labrum
SGHL
Infraspinatus
Joint capsule
MGHL
Teres minor
IGHL (Anterior band)
IGHL (Posterior band)
Axillary pouch

Relations:

- **Superiorly:**

  Coracoarcomial arch, sub deltoid bursa, supraspinatus and deltoid muscle.

- **Inferiorly:**

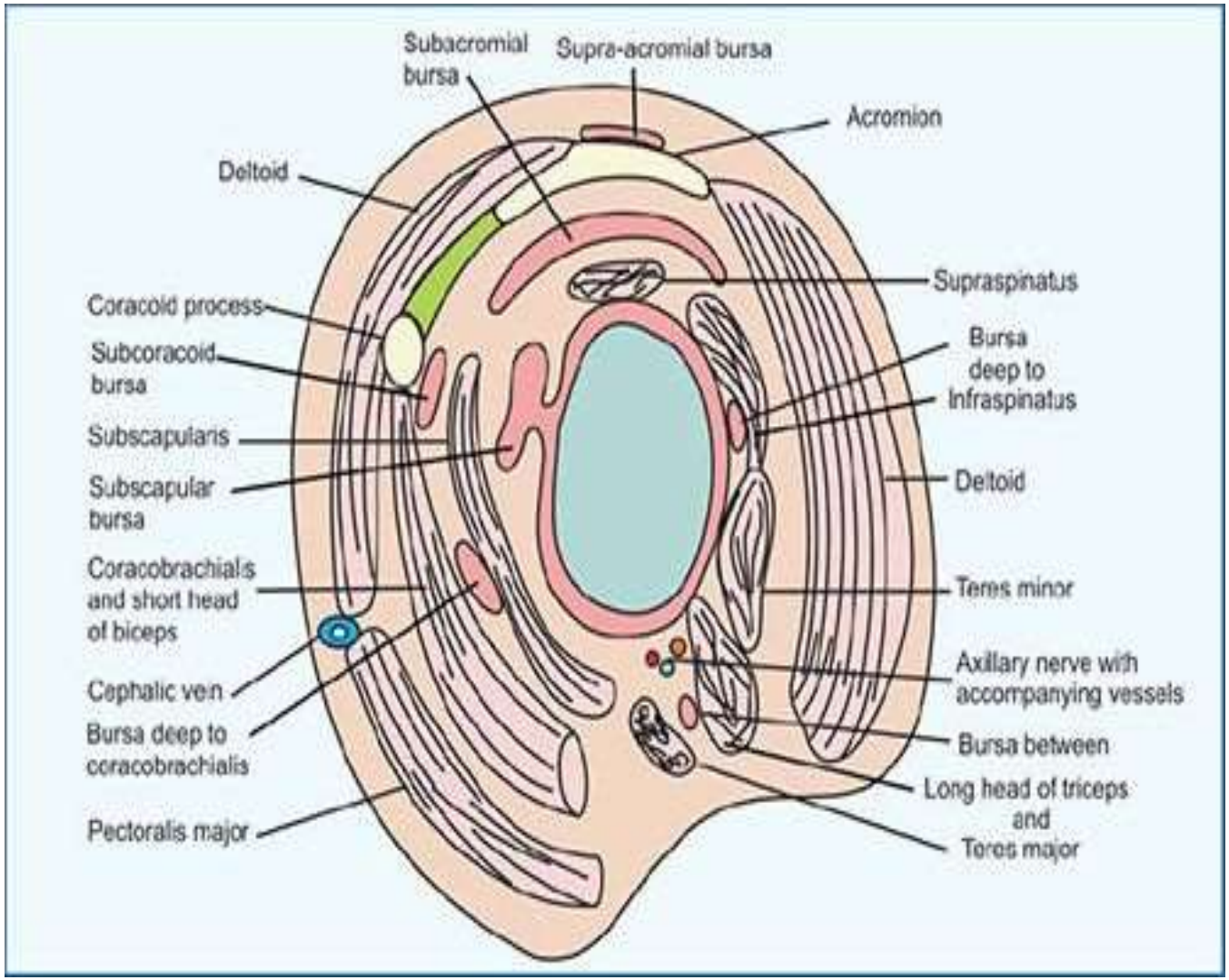
  Long head of the triceps, posterior circumflex humeral artery and axillary nerve.

- **Anteriorly:**

  Sub Scapularis, corcao brachialis, short head of biceps brachii and deltoid.
- **Posteriorly:**

  Infraspinatus, teres minor and deltoid
- **Within the joint:**

  Tendon of the long head of biceps brachii muscle


Subacromial bursa
Supra-acromial bursa
Acromion
Deltoid
Supraspinatus
Coracoid process
Subcoracoid bursa
Bursa deep to Infraspinatus
Subscapularis
Subscapular bursa
Deltoid
Coracobrachialis and short head of biceps
Teres minor
Axillary nerve with accompanying vessels
Cephalic vein
Bursa deep to coracobrachialis
Bursa between
Long head of triceps and Teres major
Pectoralis major

Movements

- Flexion
- Extension
- Abduction
- Adduction
- Medial Rotation
- Lateral Rotation
- Circumduction

Blood supply

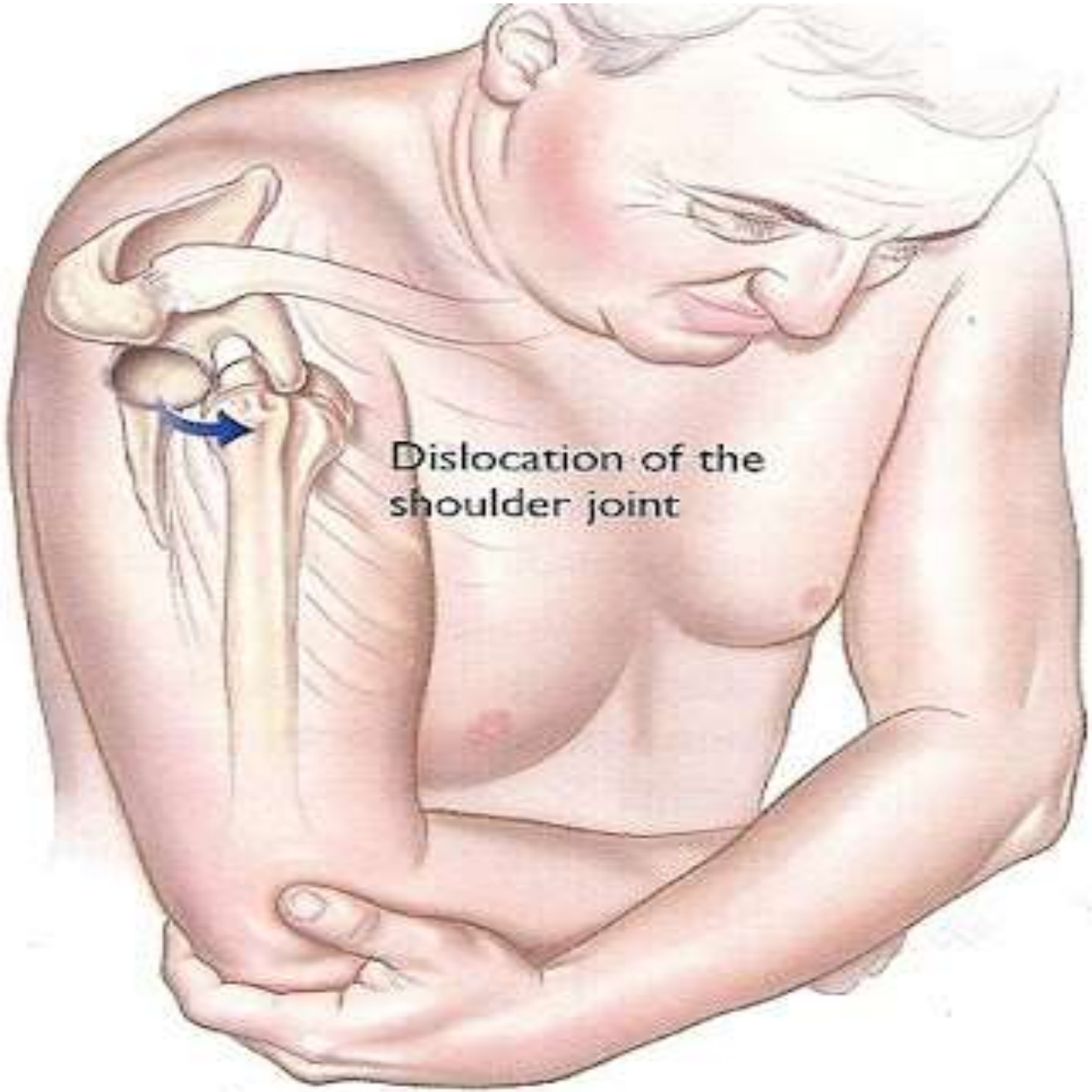
- Anterior circumflex humeral artery
- Posterior circumflex humeral artery
- Suprascapuar artery
- Sub scapular artery

Nerve supply

- Axillary nereve
- Musculocutaneous nerve
- Suprascapular nerve

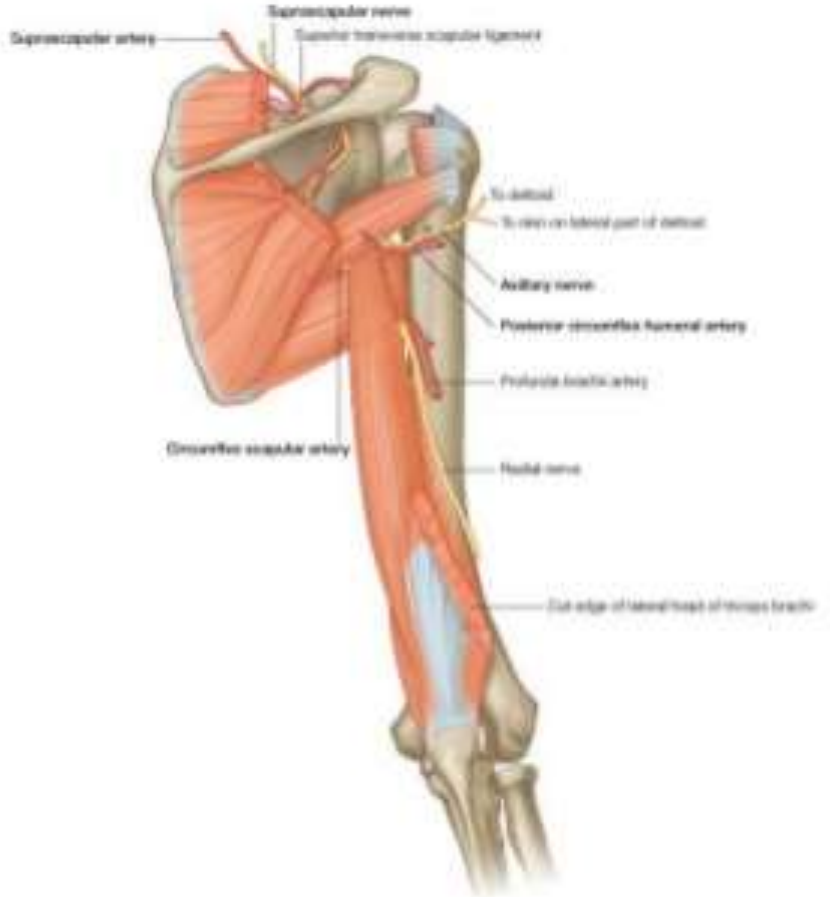
Clinical condition

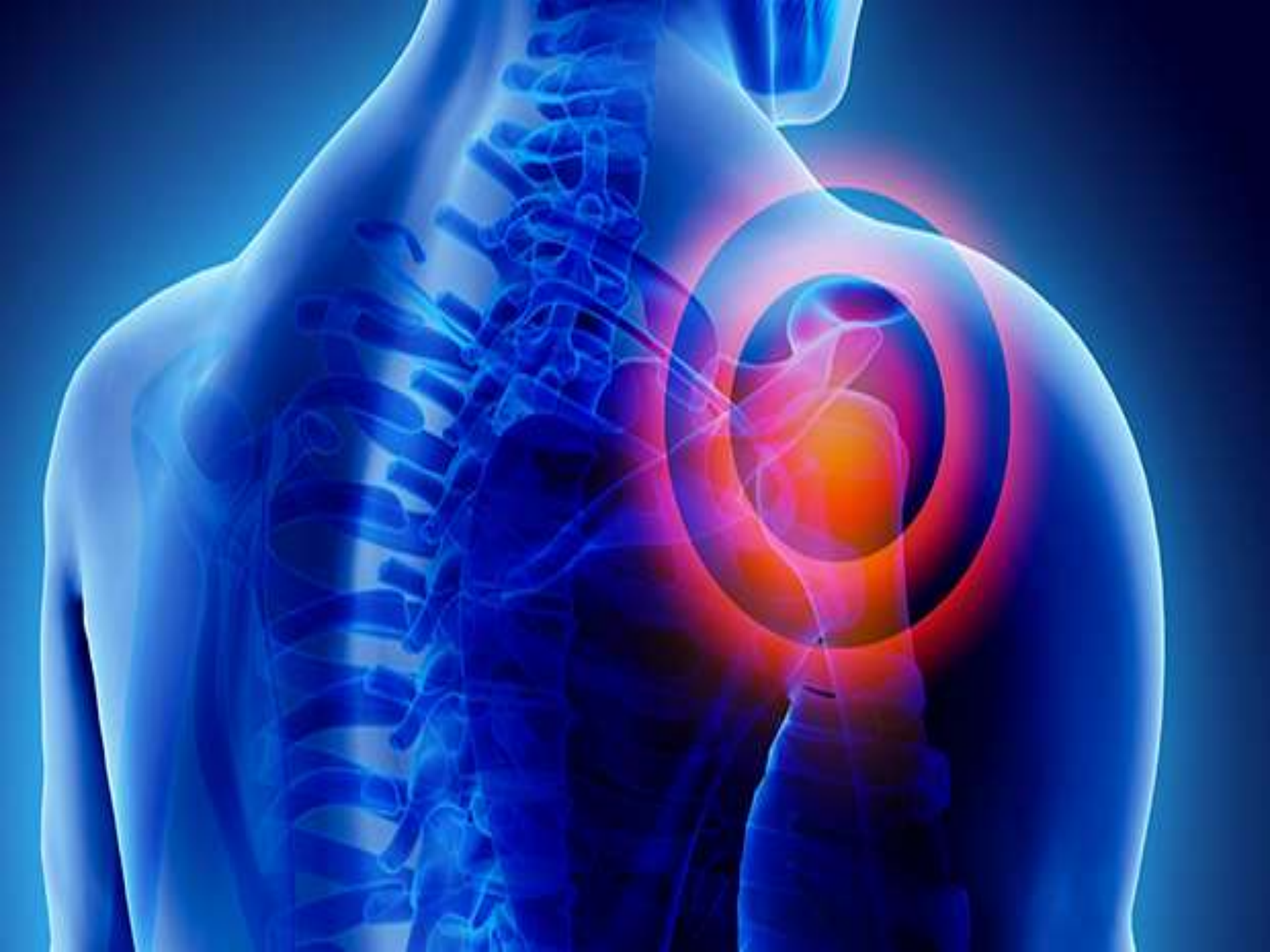
- **Shoulder Joint Dislocation**
- **Shoulder Tip Pain**
- **Frozen Shoulder**


Dislocation of the
shoulder joint

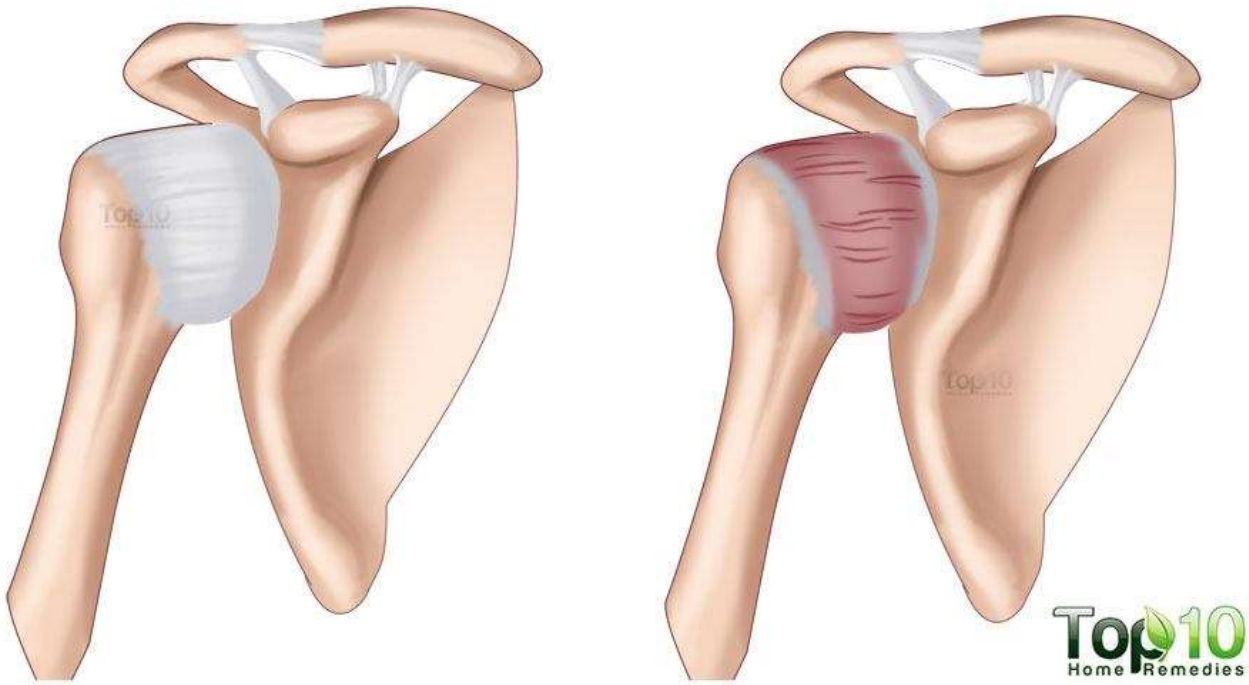
Applied anatomy

- **Referred pain from diaphragm, pleura & peritoneum (supplied by phrenic nerve -C3,C4 &) to tip of shoulder via supraclavicular nerve (C3&C4)**
- Dislocation
- Bursitis
- Supraspinatus Tendinitis
- Rupture of supraspinatus
- Rotator cuff injury
- Frozen shoulder
- Arthroscopy & arthroplasty





Adhesive Capsulitis of Shoulder



Formative Assesment
MCQs On Shoulder joint

1. **What type of synovial joint is the shoulder (glenohumeral) joint classified as?**

   A. Hinge joint

   B. Ball and socket joint

   C. Saddle joint

   D. Pivot joint

2. **Name the three bones that form the shoulder joint**.

   A. Scapula, clavicle, humerus

   B. Scapula, radius, ulna

   C. Clavicle, humerus, sternum

   D. Humerus, scapula, vertebrae

3 . **What are the four muscles that make up the rotator cuff?**

A. Deltoid, trapezius, supraspinatus, infraspinatus

B. Teres major, supraspinatus, infraspinatus, subscapularis

C. Supraspinatus, infraspinatus, teres minor, subscapularis

D. Supraspinatus, teres major, deltoid, subscapularis

4. **Which ligament reinforces the superior part of the shoulder joint capsule?**

A. Coracoacromial ligament

B. Coracohumeral ligament

C. Glenohumeral ligament

D. Acromioclavicular ligament

5. **What structure deepens the glenoid cavity to help stabilize the shoulder joint?**

A. Acromion

B. Glenoid labrum

C. Coracoid process

D. Deltoid muscle

6. What is the main blood supply to the shoulder joint?

A. Subclavian artery
B. Axillary artery and its branches
C. Brachial artery
D. Radial artery

7. **Which tendon passes through the intertubercular (bicipital) groove of the humerus?**

A. Supraspinatus tendon
B. Biceps brachii (long head) tendon
C. Subscapularis tendon
D. Teres minor tendon

8. **What is the function of the rotator cuff muscles?**

A. To elevate the shoulder
B. To stabilize the glenohumeral joint
C. C. To support the elbow
D. D. To extend the arm

9. **Which injury is most commonly associated with anterior dislocation of the shoulder-**

A. Radial nerve palsy
B. Axillary nerve injury
C. Median nerve injury
D. Ulnar nerve compression


Just a note to say...
Thank You !