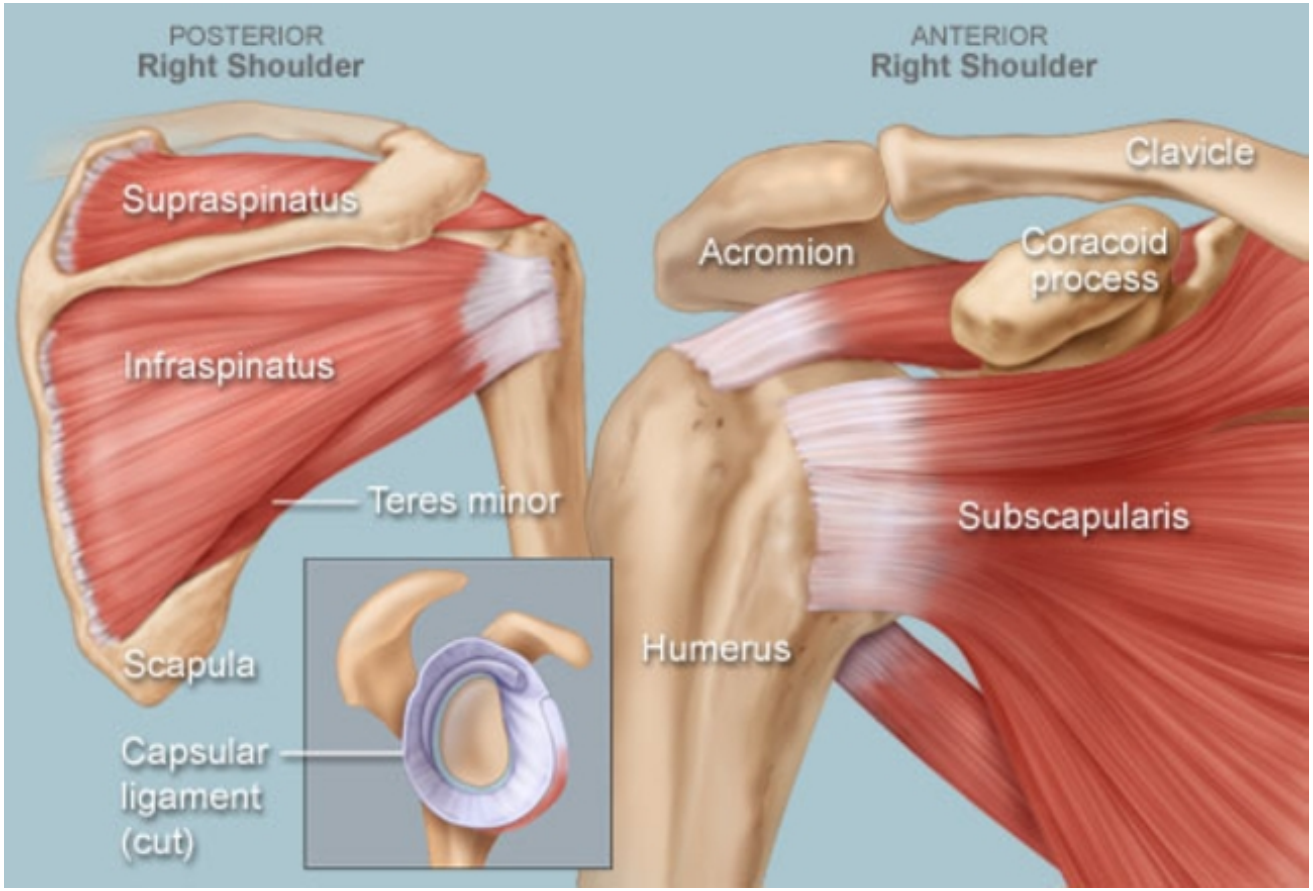
Shoulder Disorders

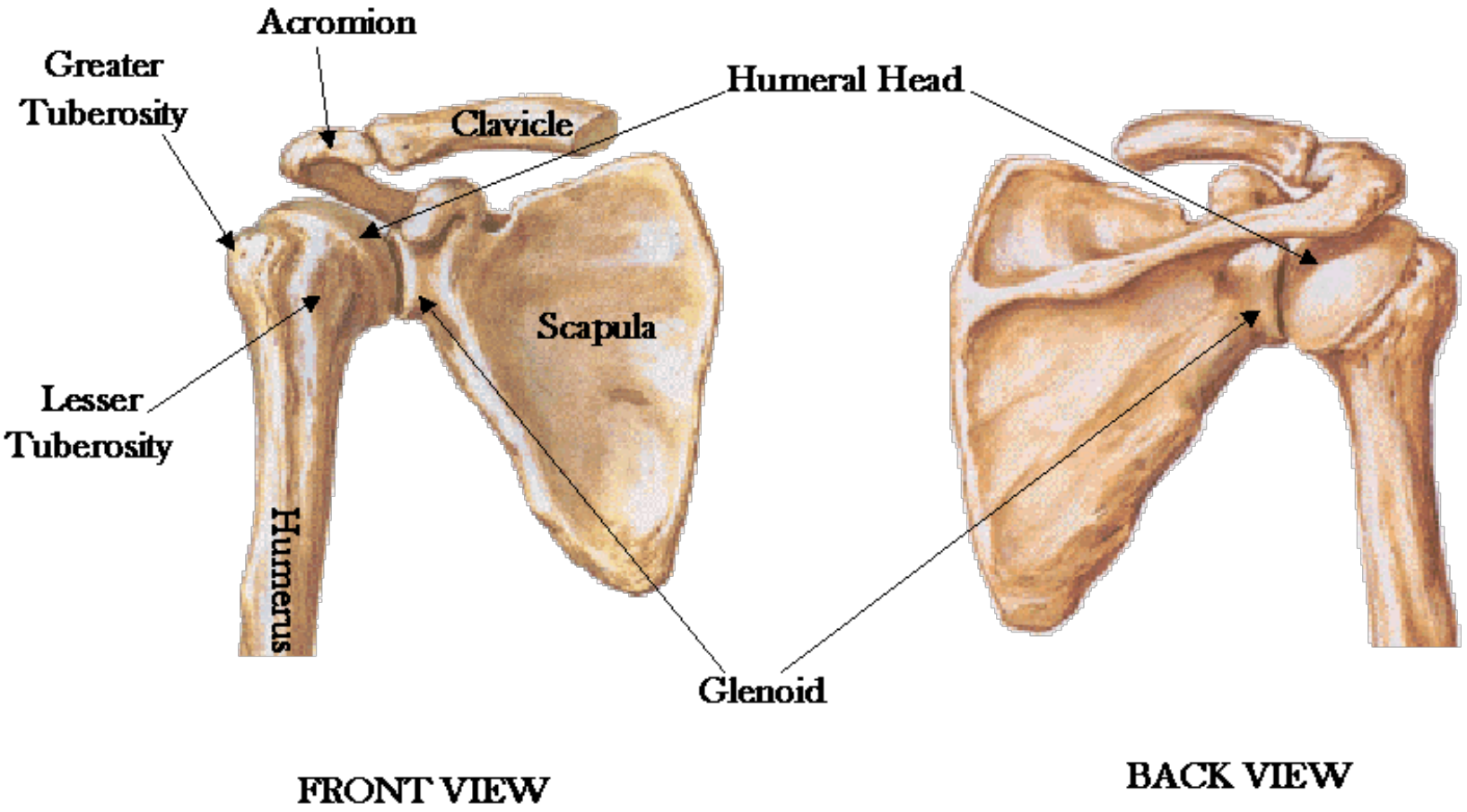
Aws Khanfar

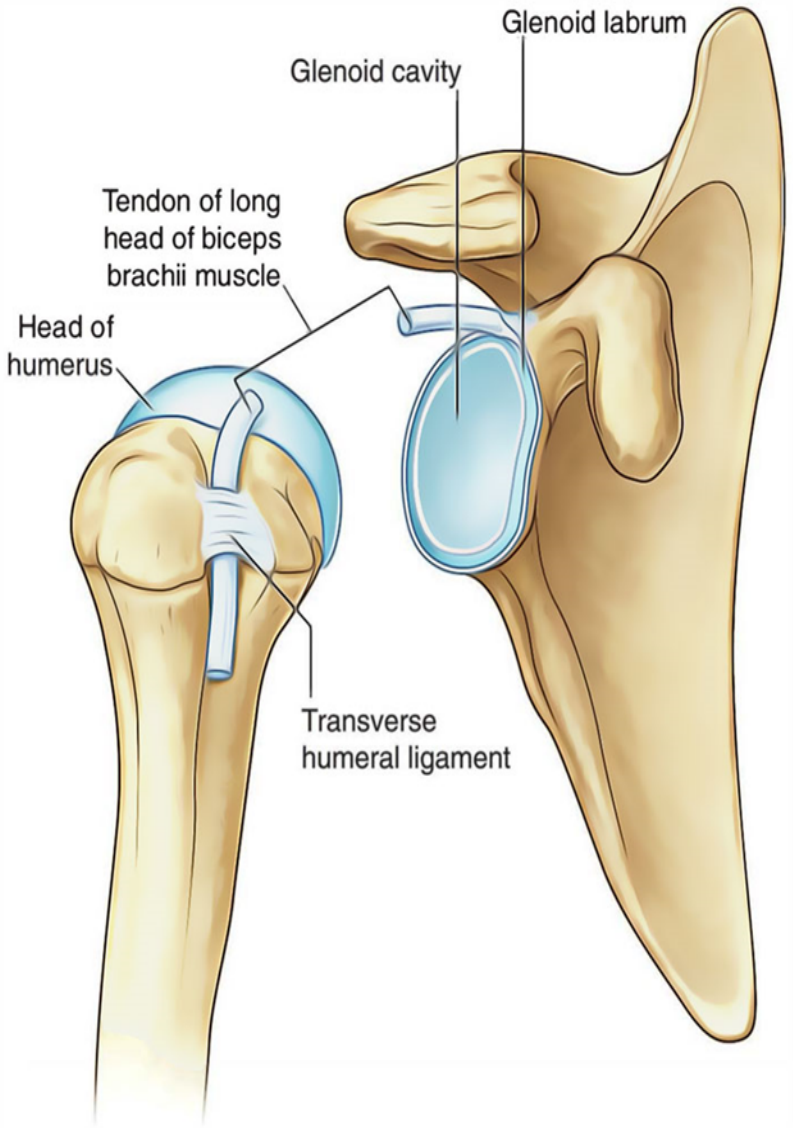
Recall The Anatomy..

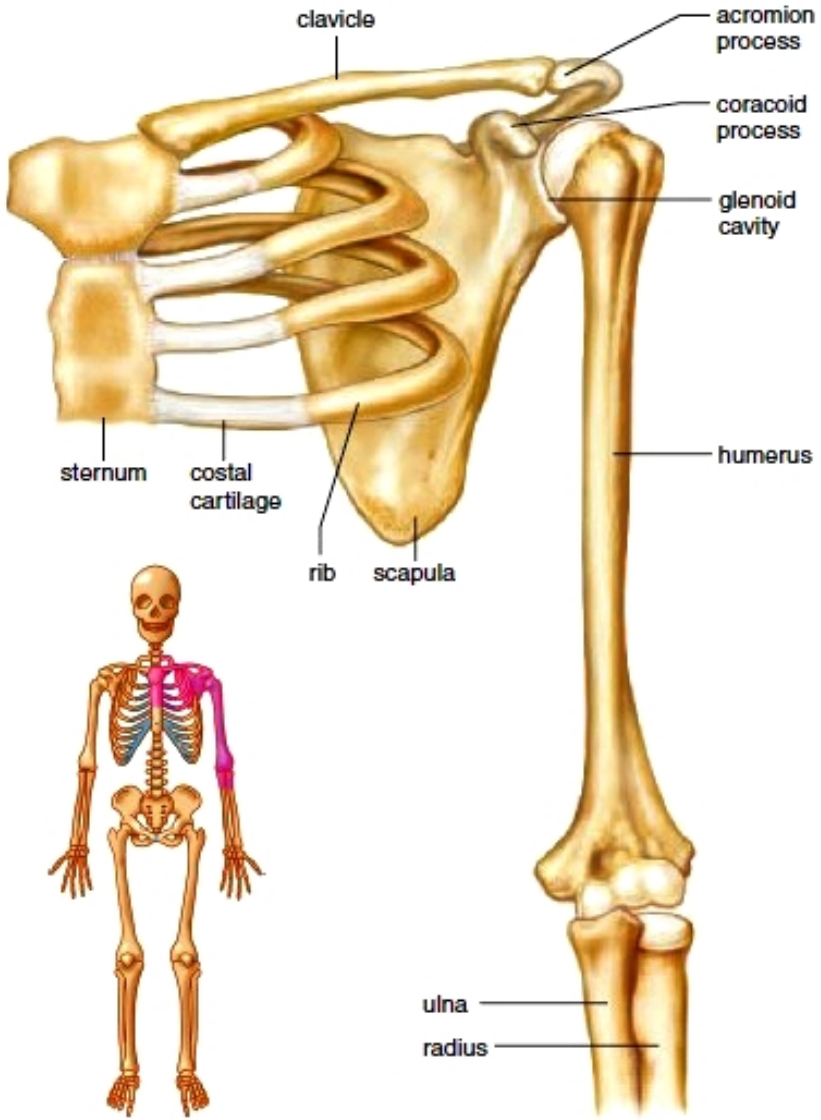
- Bones
- Muscles
- Capsules
- Ligaments



Bones

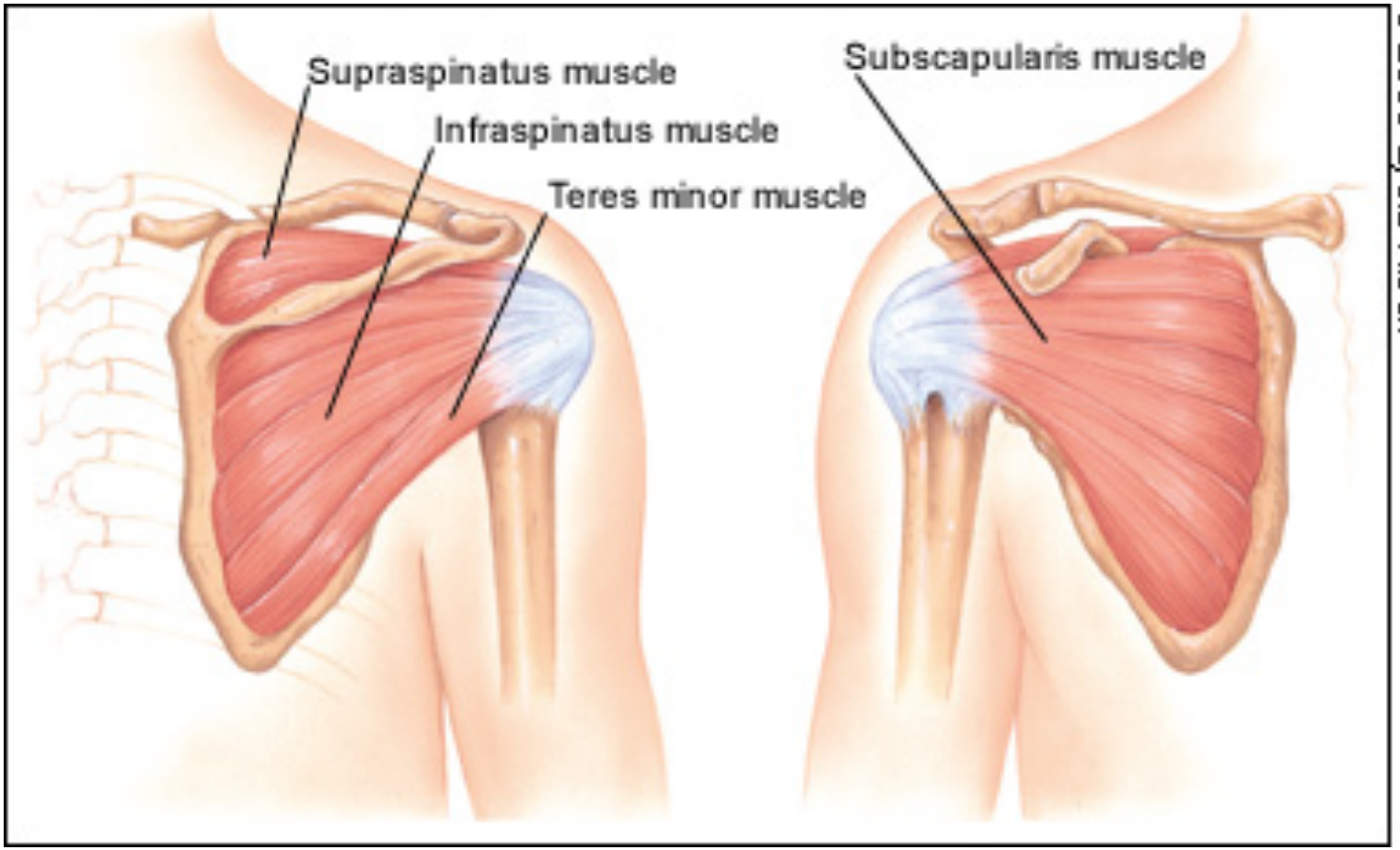

Acromion
Greater Tuberosity
Humeral Head
Clavicle
Scapula
Lesser Tuberosity
Humerus
Glenoid
FRONT VIEW
BACK VIEW



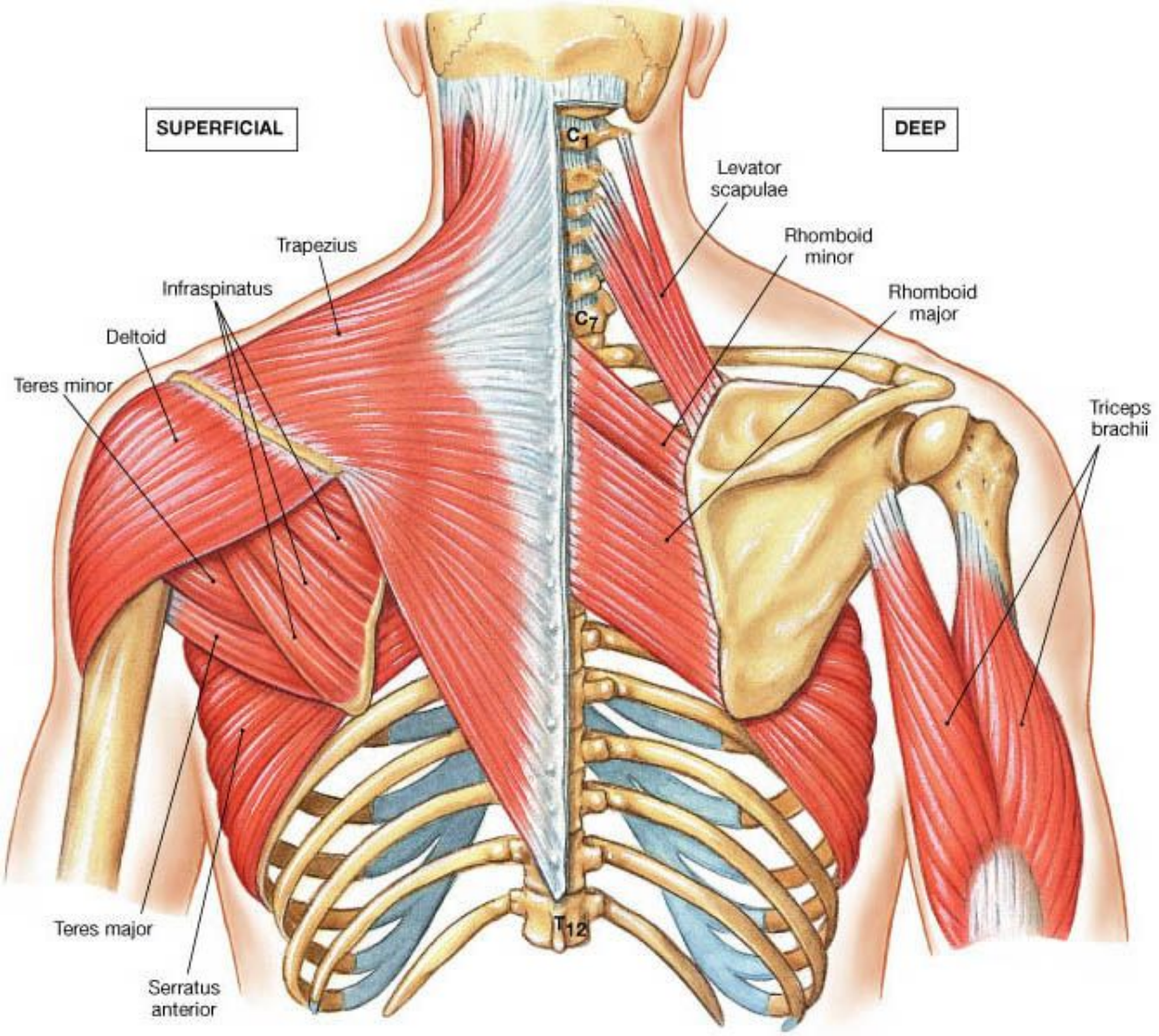


a. Pectoral girdle, frontal view

Rotator Cuff Muscles



Other Muscles



Capsule

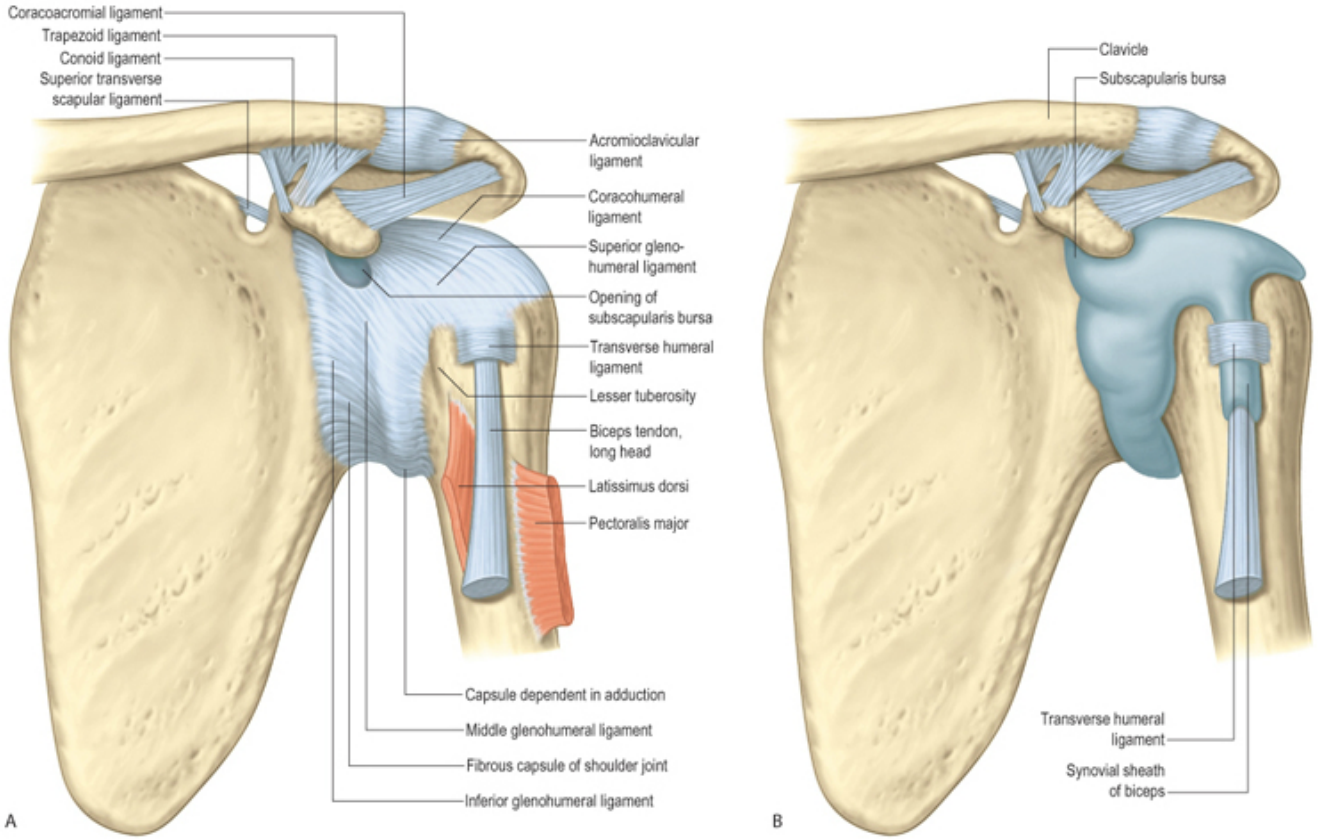
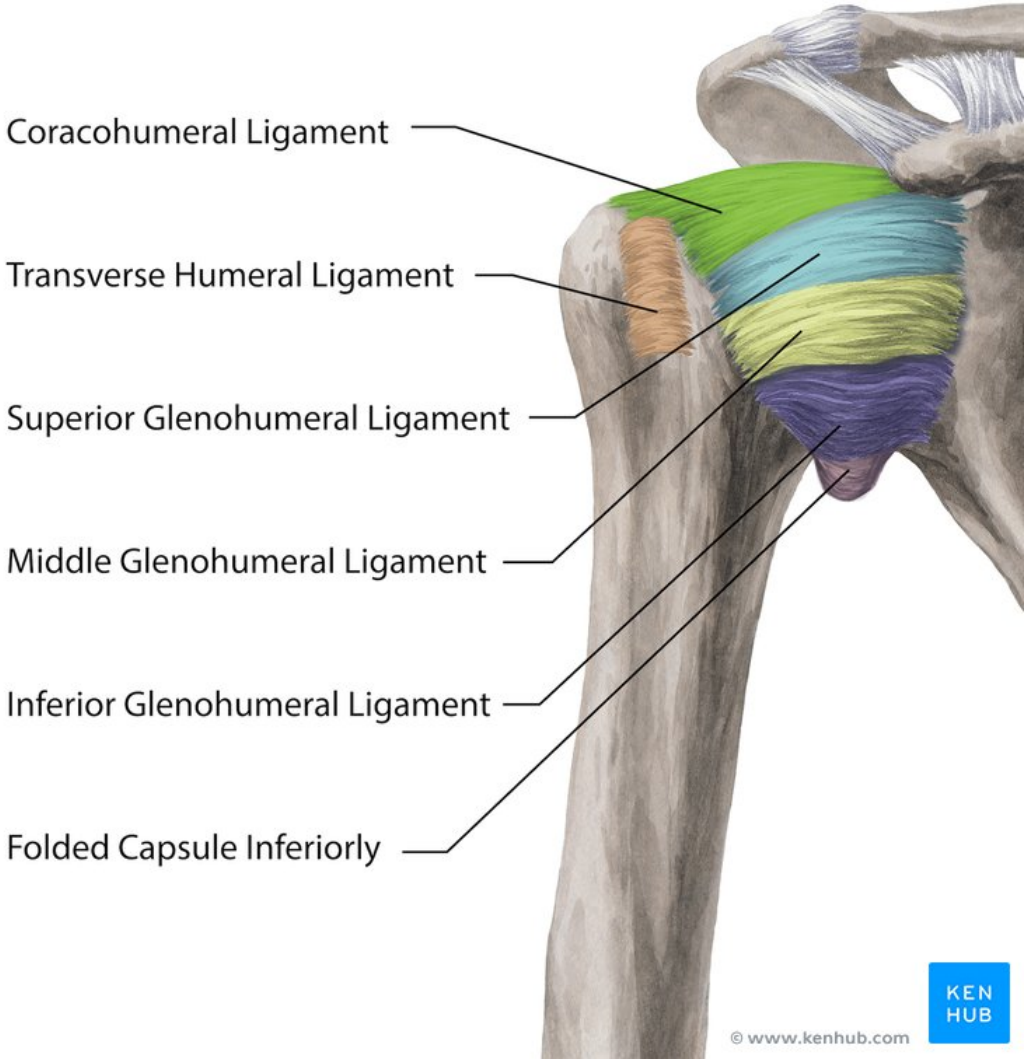


Fig. 46.14 A, The anterior aspect of the left shoulder. B, A deeper view of the anterior aspect than in (A), showing the subscapularis bursa.

From Standring, Gray's Anatomy, 40th edn. Churchill Livingstone/Elsevier, Philadelphia, 2009 with permission.

Ligaments


Coracohumeral Ligament
Transverse Humeral Ligament
Superior Glenohumeral Ligament
Middle Glenohumeral Ligament
Inferior Glenohumeral Ligament
Folded Capsule Inferiorly
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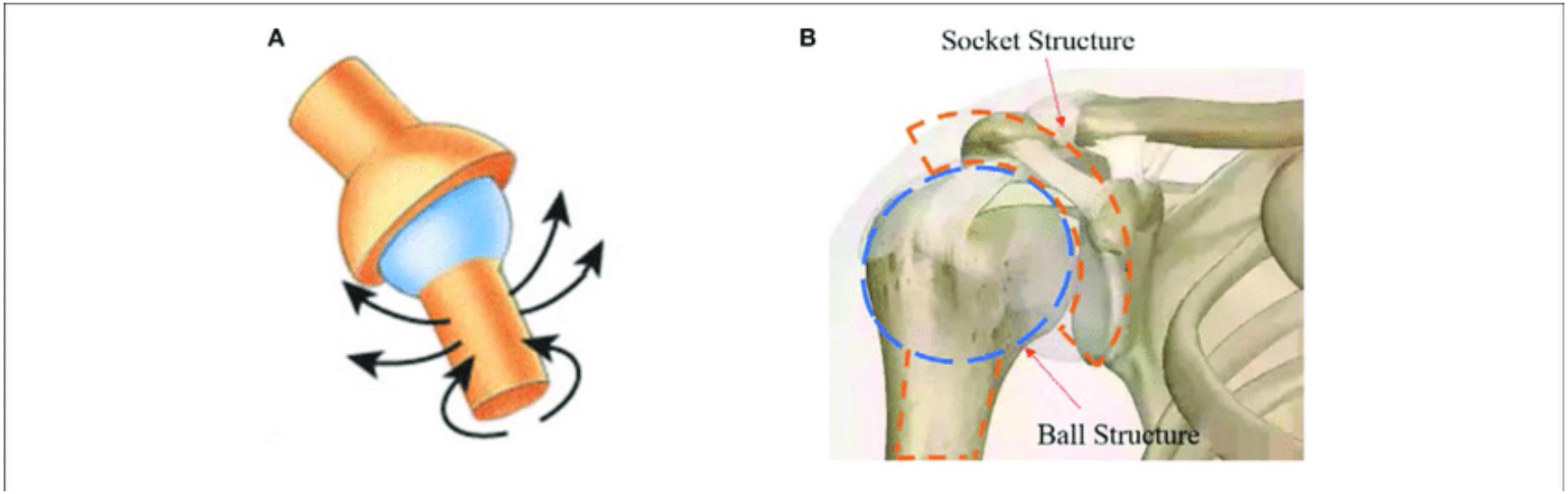
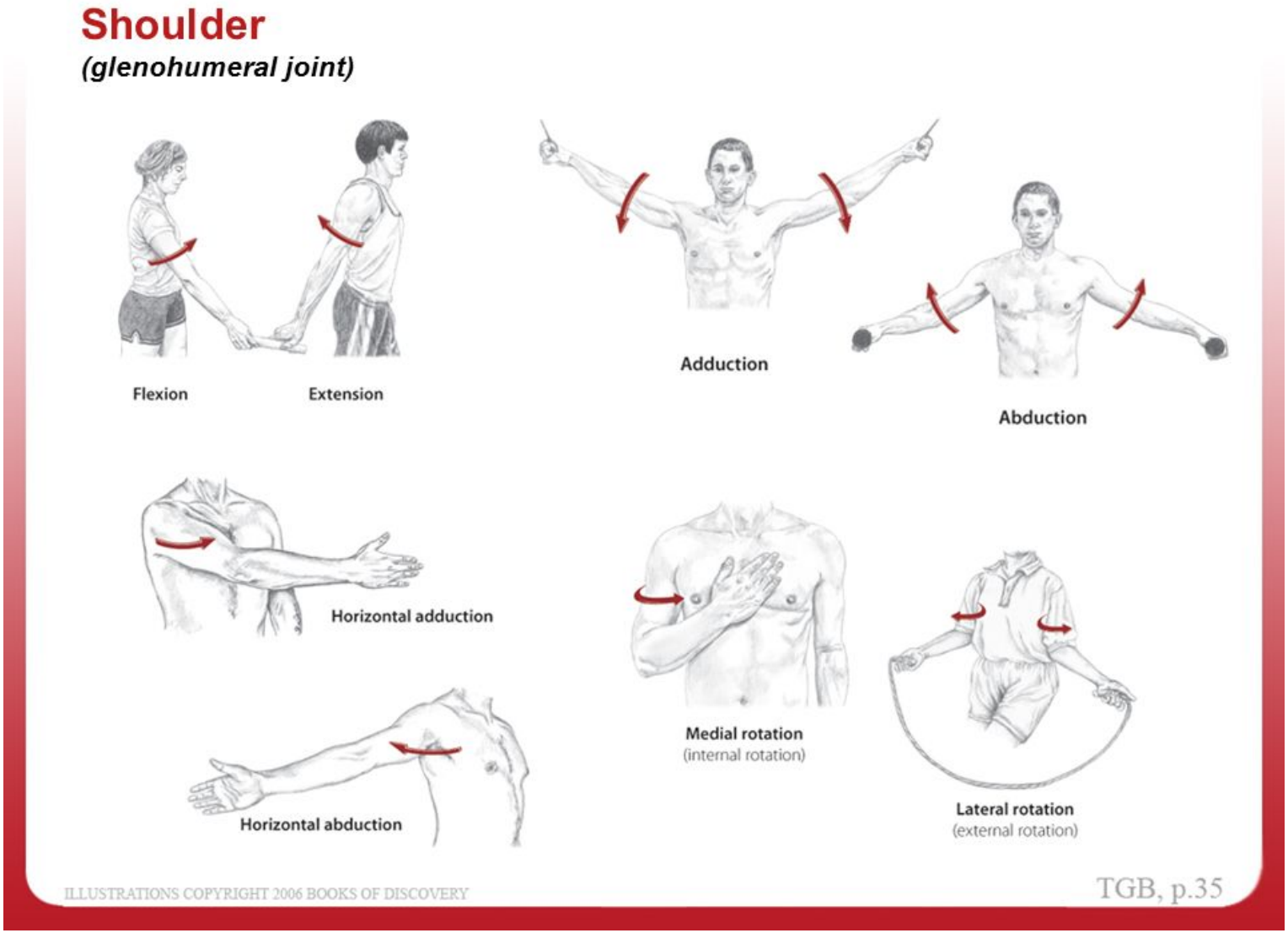
Glenohumeral joint

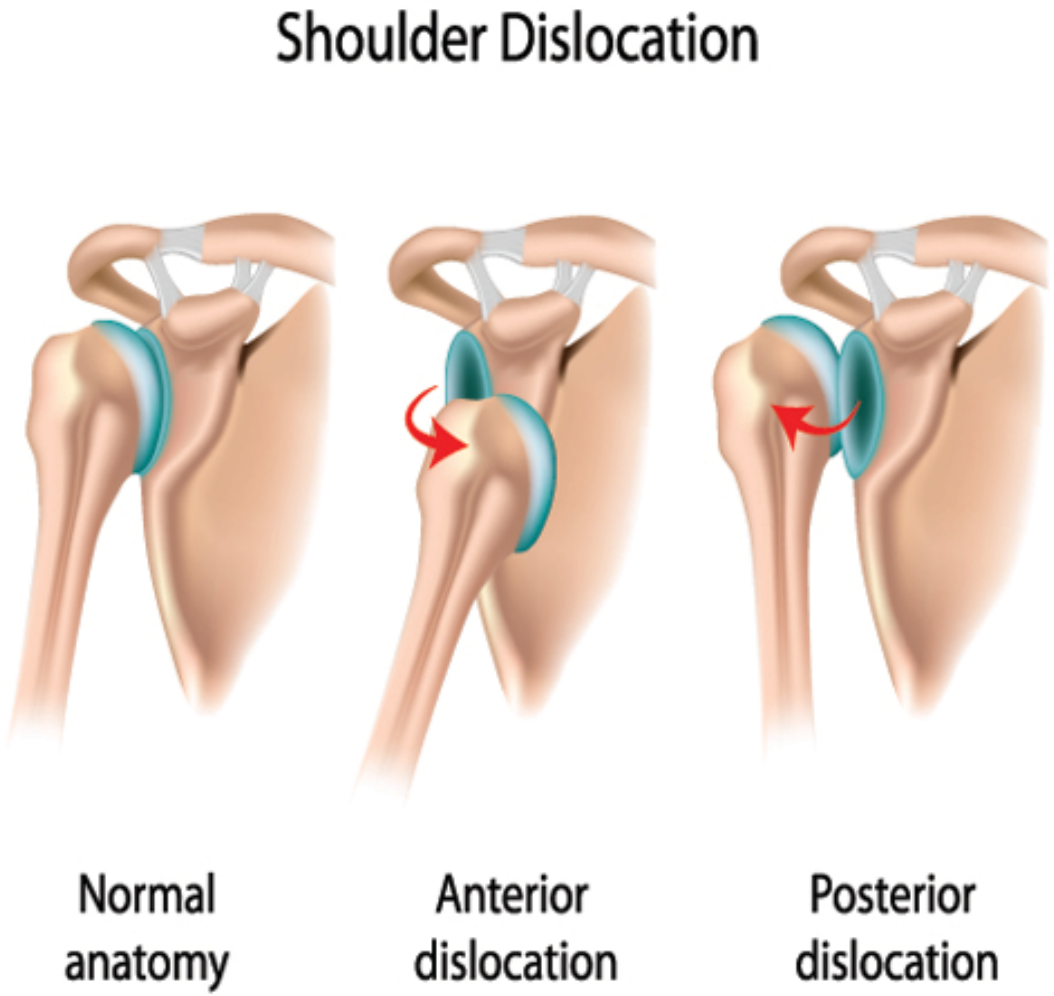
Least stable joint



Has a wide range of motion



Shoulder (GHJ) dislocation

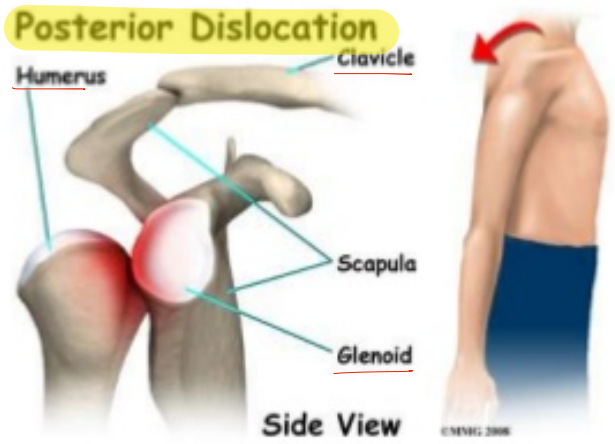


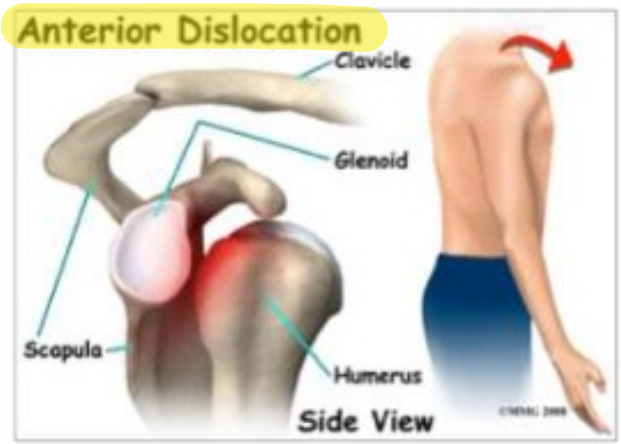
Types

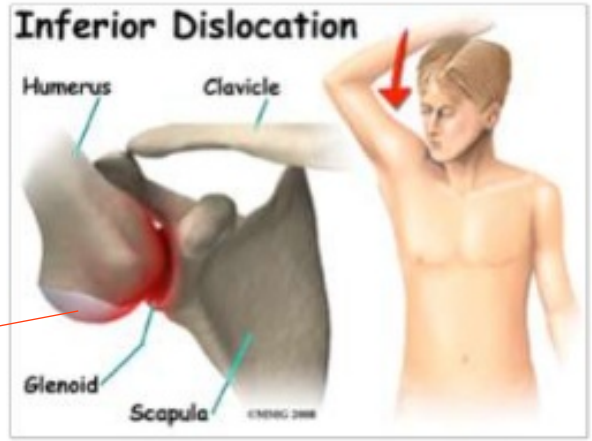
According to the direction in which the humerus exits the joint: Those are traumatic

1. Anterior 95% Neutral Rotation
2. Posterior 5% Internal Rotation
3. Inferior (luxatio erecta) extremely rare 1/1000 dislocation

Multidirectional (habitual) - painless Due to ligament laxity







Cartilage goes inferiorly

Anterior dislocation

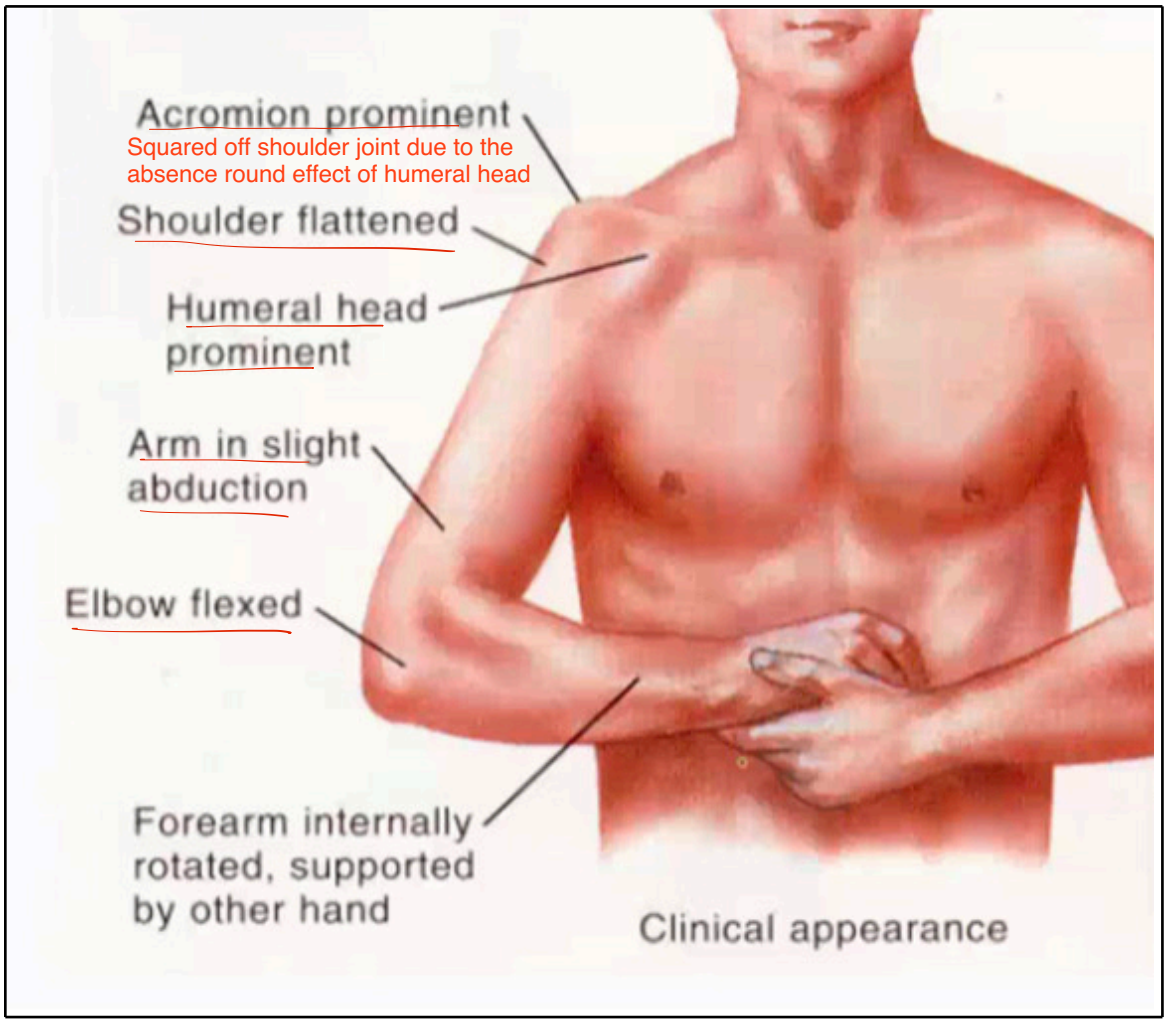
Mechanism

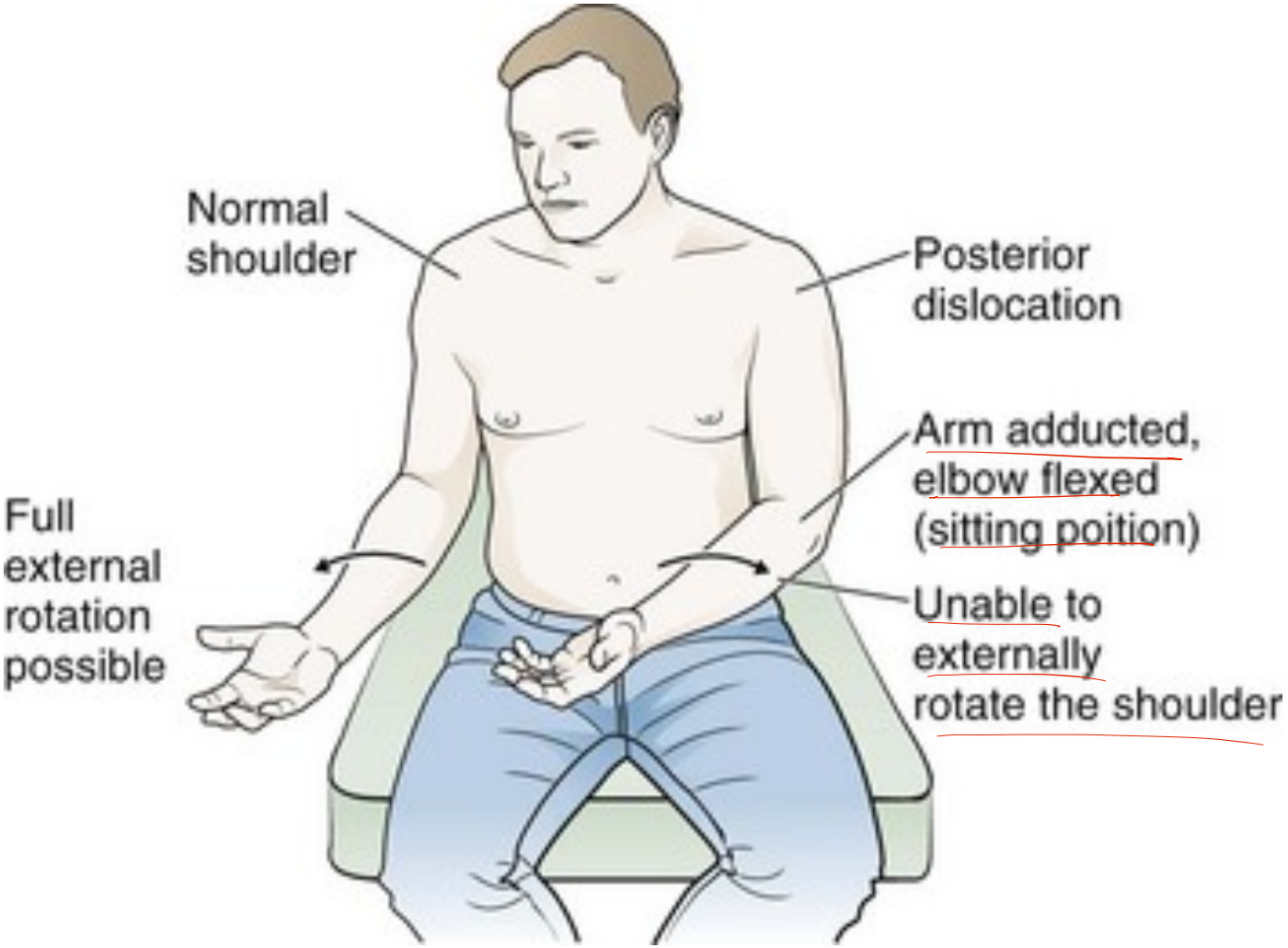
- Indirect
  - Commoner, the arm goes in throwing position / late cooking phase (abduction, external rotation and extension).
- Direct
  - Due to blow, ضربة from posterior pushing the humerus head anteriorly

The sport that has the Highest incidence of anterior shoulder dislocation is Hand Ball (1/6 players will experience it)

Shoulder is squared off

ازا بحط ايدي تحت ال acromion على طول رح احس ال glenoid, فاضي ما في اشي




Normal shoulder
Posterior dislocation
Arm adducted, elbow flexed (sitting poition)
Full external rotation possible
Unable to externally rotate the shoulder

- Patient resists abduction and internal rotation and is unable to touch the opposite shoulder.

- Positive Apprehension test

Here between attacks (not while dislocation), in recurrent dislocations

During PE

- Compare **radial pulses**, ulnar pulse, capillary refill
- Examine the **Axillary nerve (sensation of the skin over the lower half of the deltoid)**
  (before and after reduction)
- Evaluate sensory and motor function of the musculocutaneous, radial, ulnar, and median nerves.

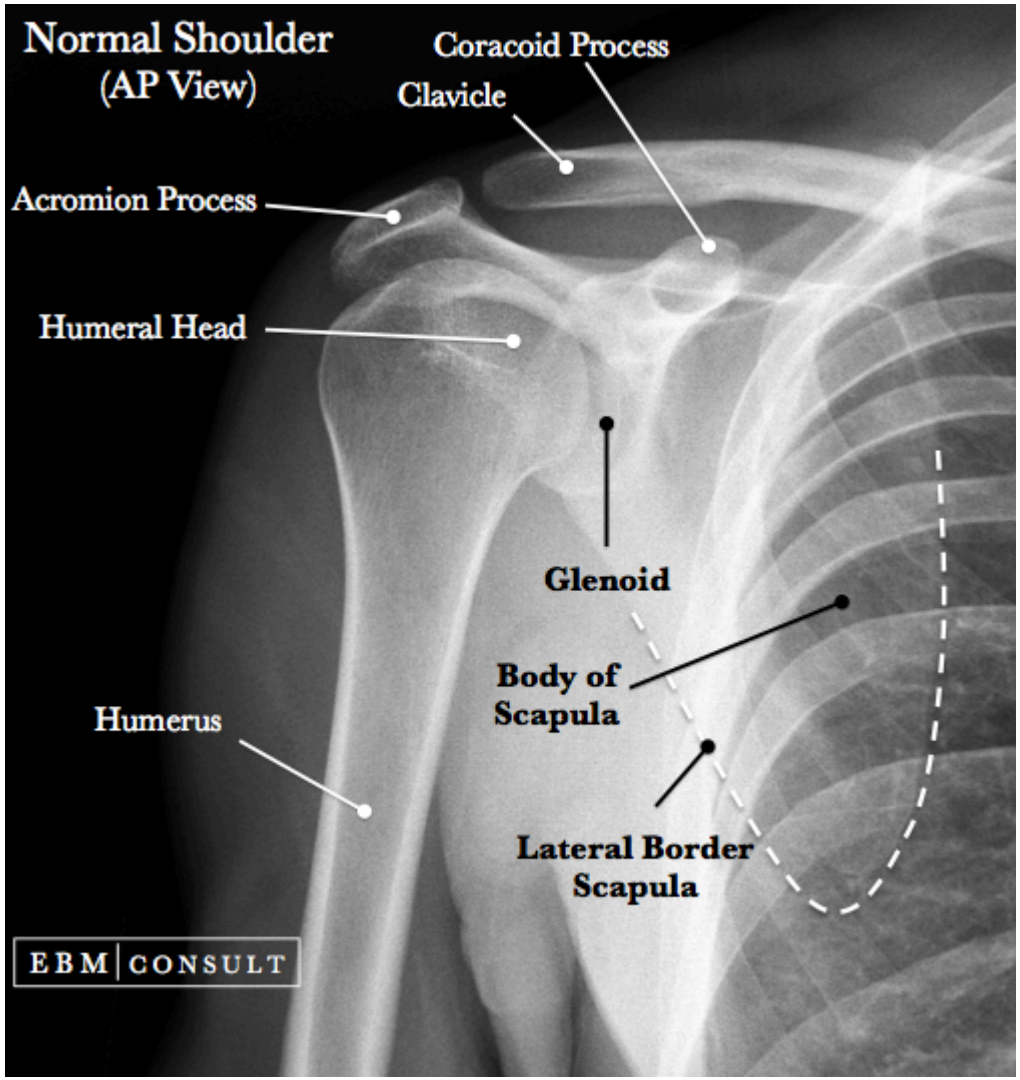
Radial nerve: Motor: extension of wrist and extension of MCPs. Sensory: First web space
Median nerve: motor: Ok sign. Sensory: pulp of index finger
Ulnar: motor: Abduction and Adduction of the fingers. Sensory: Pulp of little finger
Musculocutaneous: Motor: flexion of elbow joint

Imaging

In first time dislocation, ALWAYS do an X-Ray before reduction to r/o any fractures

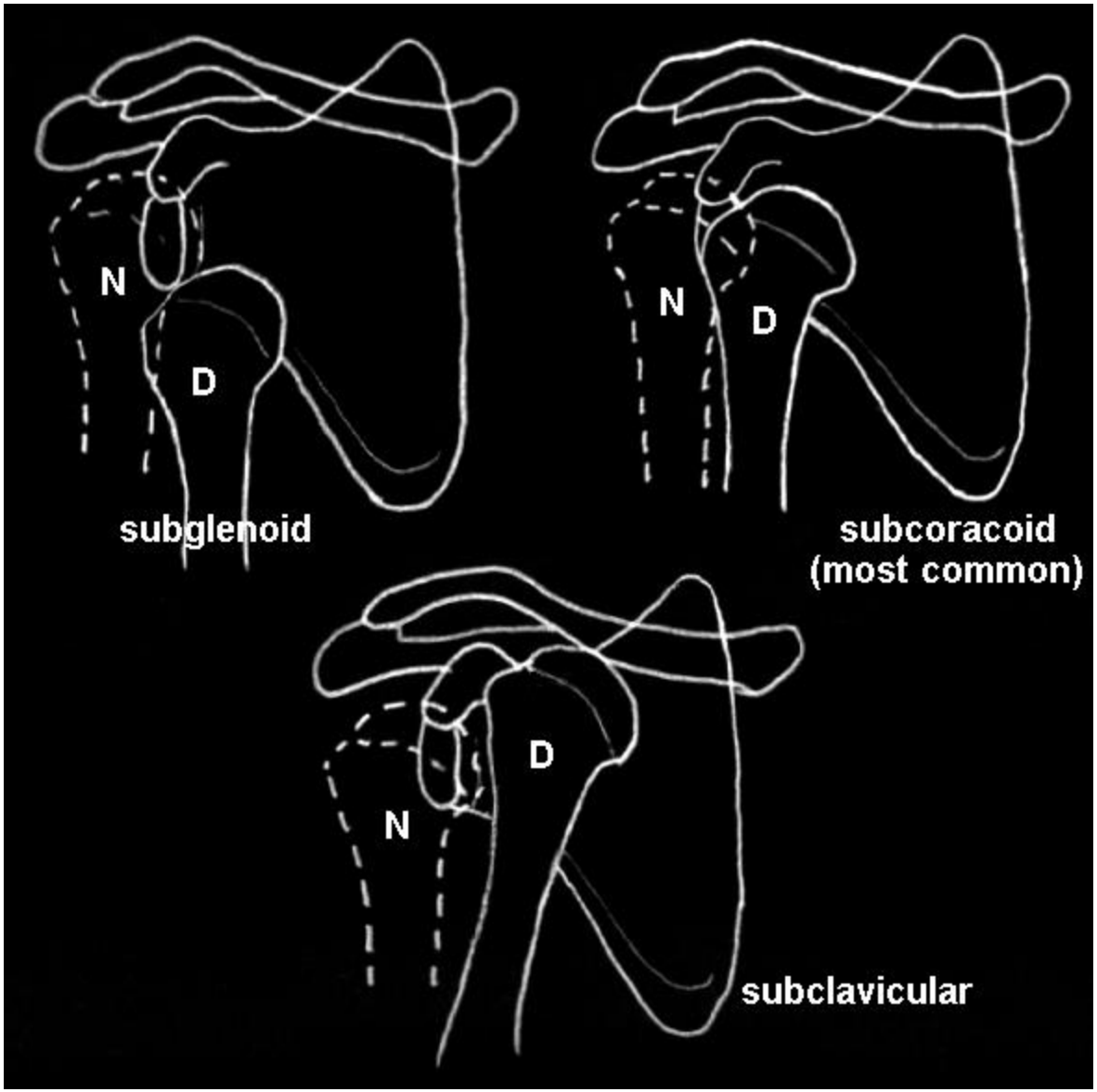
Anterior AP view is better
Posterior Scapular or Axillary view

Normally, Humeral head and glenoid are facing toward each other, while in ant dislocation it won't

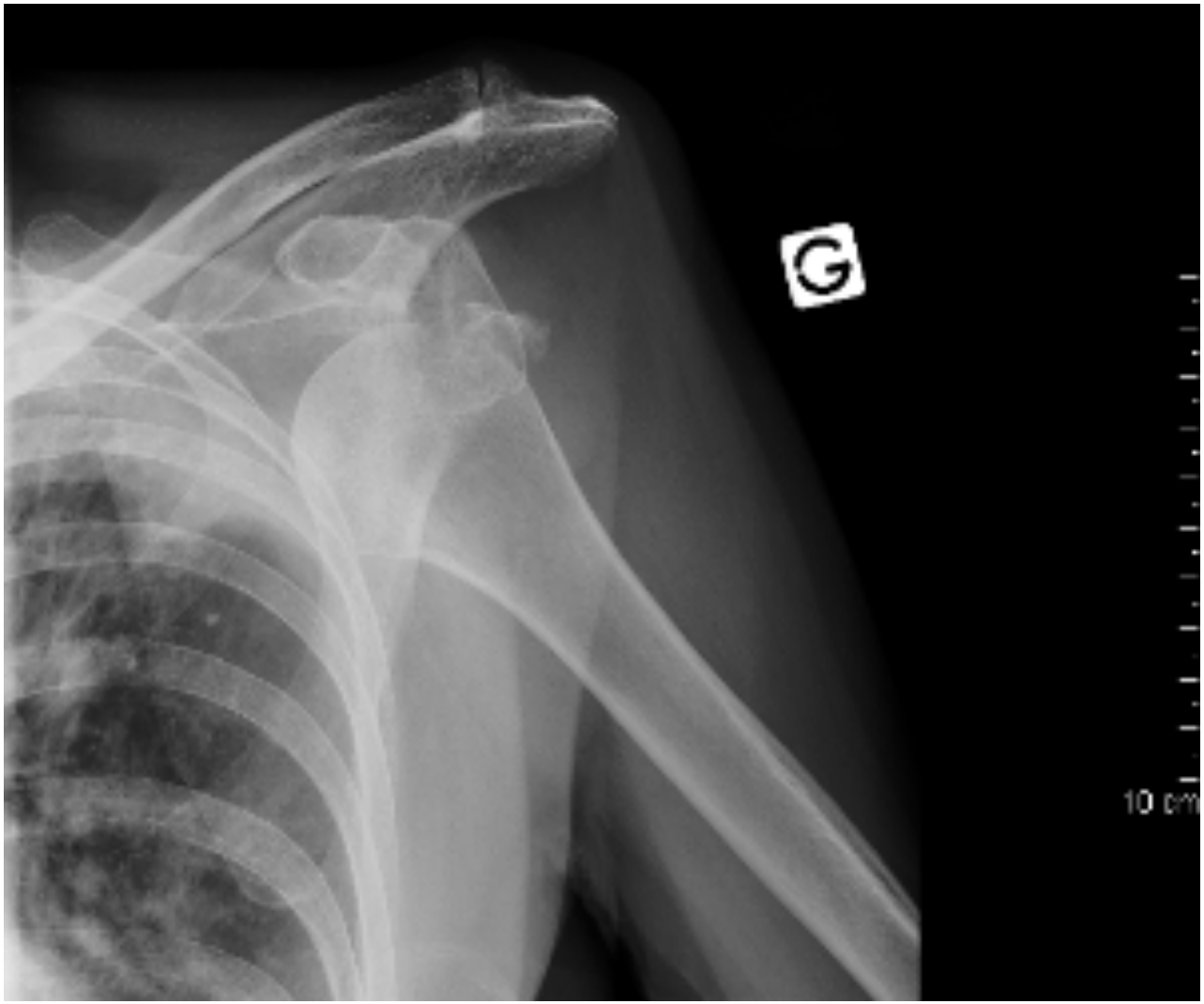


Anterior Shoulder Dislocation

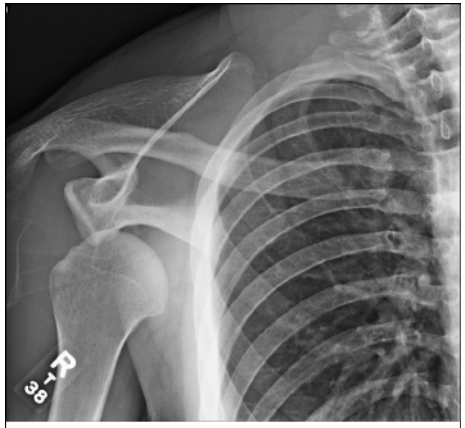
Remember..



Anterior Dislocation; humeral head is away from glenoid. There is fracture on greater tuberosity due to muscle pull (supra and infra spinatus and teres minor) leading to avulsion fracture .



Anterior Shoulder Dislocation



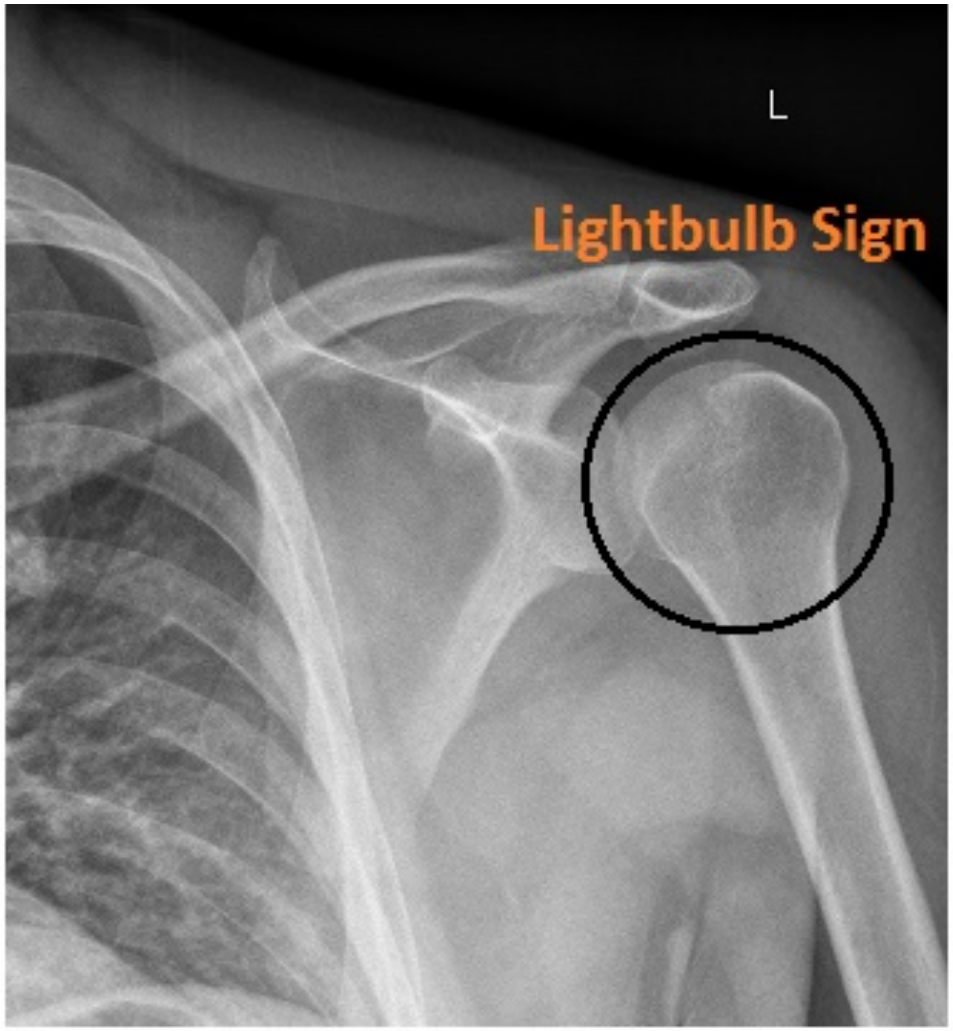
Posterior dislocation

- Might be hard to see on X-Ray
- "Light bulb" appearance

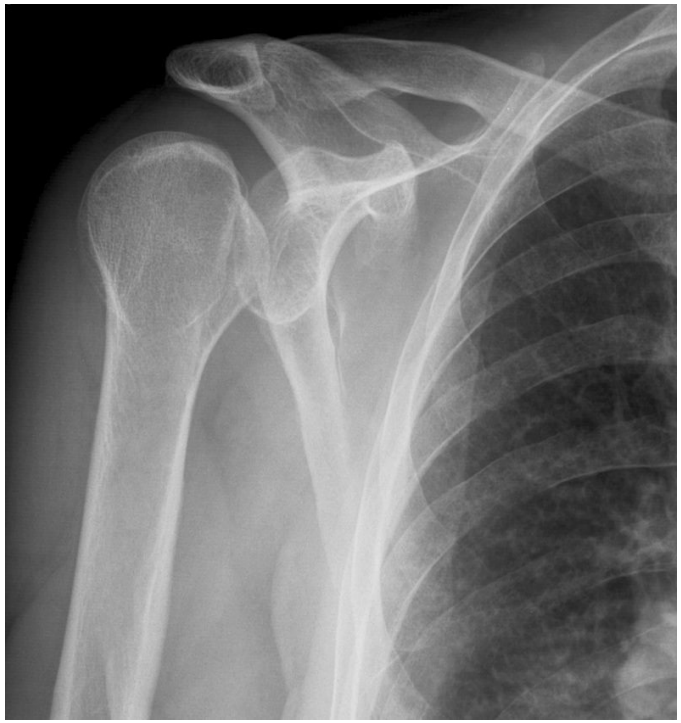
Posterior Dislocation usually occur due to:

1) electrical shock (stimulation will occur to all muscles and shoulder joint goes toward the stronger muscles which are antegravity muscles posteriorly)
2)grand mal seizure (also activation of all muscles)

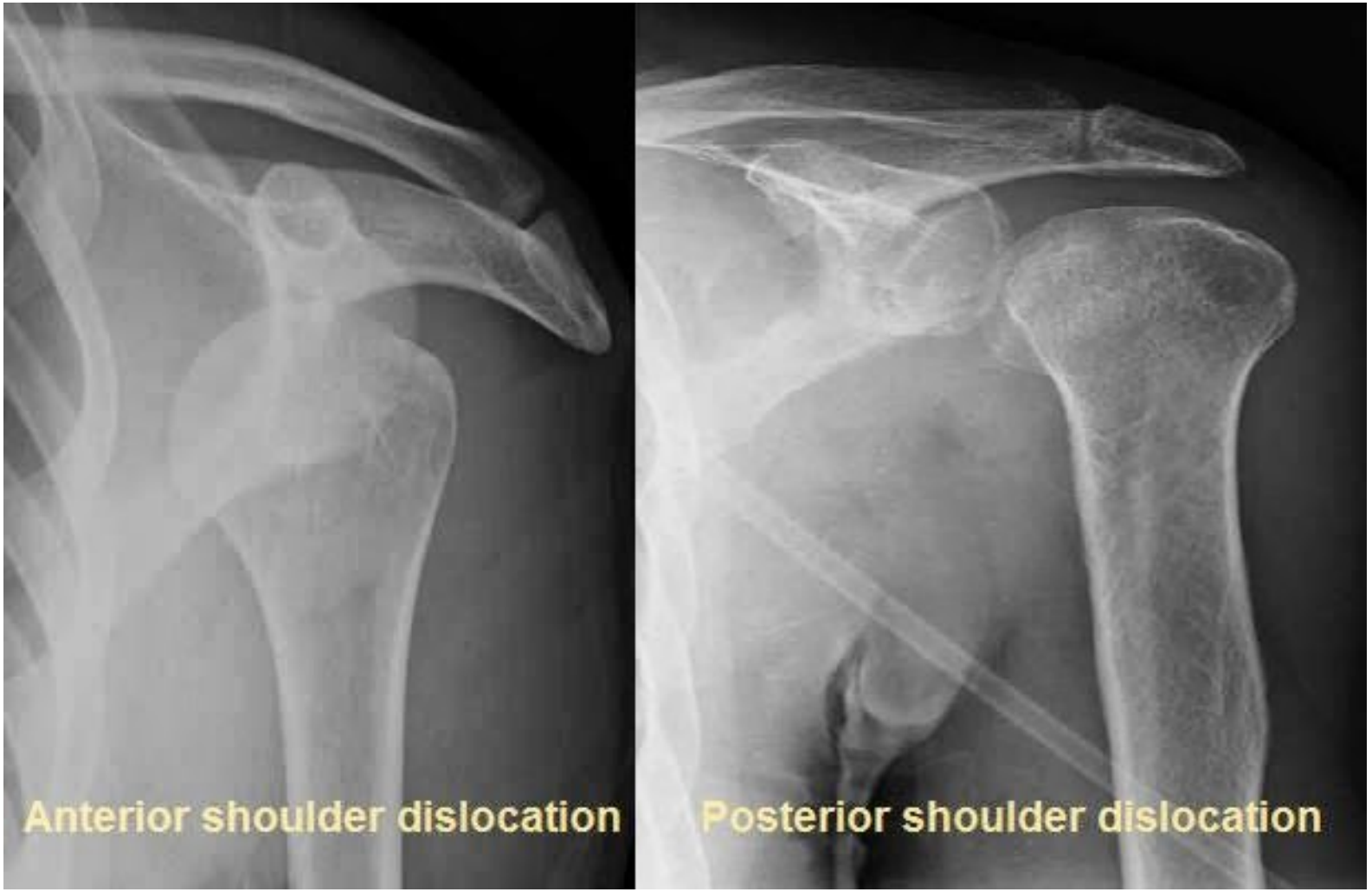
Lightbulb means that the humeral head becomes as a circle, in order to see it more clearly we need another view



Posterior Shoulder Dislocation



ال anterior سهل اني اشوفها لانه ال humeral head بتطلع بالكامل لبرا، بس ال posterior اصعب لانهم بضلوا على نفس المستوى بس بيتغير شكل ال humeral head بصير lightbulb تقريبًا دائري



Management

EMERGENCY

We should put IV access with large Bore cannula and give IV fluids, O2 mask, ecg monitor, IV fluids, O2 monitor, BP cuff

- Analgesia Narcotics mainly
- Sedation Medazolam (Benzodiazepines)

Naloxon when needed

Synergistic respiratory depression

- Reduction Best method is traction counter traction. Avoid rotation - - > twisting force - - > spiral injury

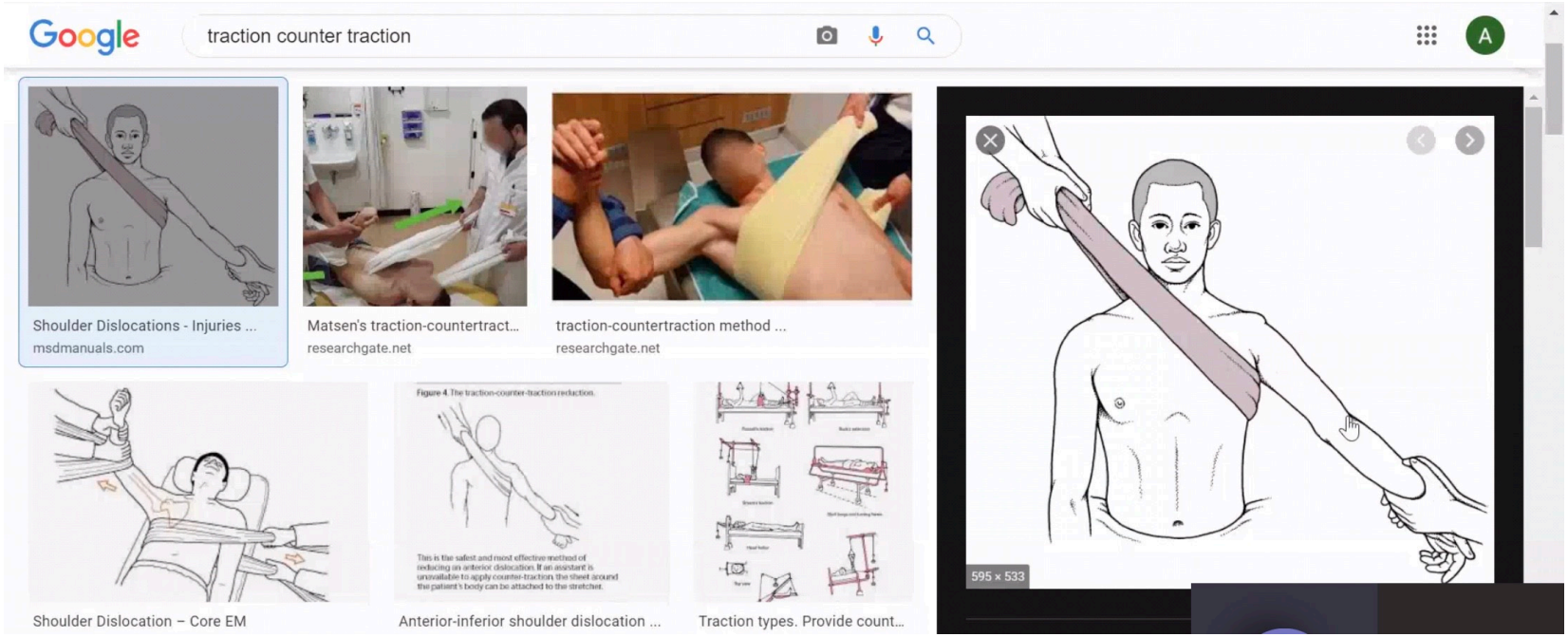
Muscle-->stretch reflex

- Repeat X-ray after relocation
- Immobilize
- Rehabilitation

Reduction Methods:

The doctor will do disimpaction Muscles will pull the bone toward the center of rotation (The glenoid)

- **Traction- Counter traction method**



Complications

Early

- >60 Old-> rotator cuff tear
- 40-60 Middle ages ->Fractures: Greater tuberosity fracture in the anterior dislocation. GT or LT in the posterior dislocation
- Young->BankArt lesion The chance of this decreases with age - decrease recurrence rate of shoulder dislocation

  Avulsion of labrum, ant inf glenohumeral ligament--> recurrent shoulder dislocation

- Neurovascular lesion

  - Hill Sachs lesion in anterior dislocation
  - Reverse Hill Sachs in posterior dislocation

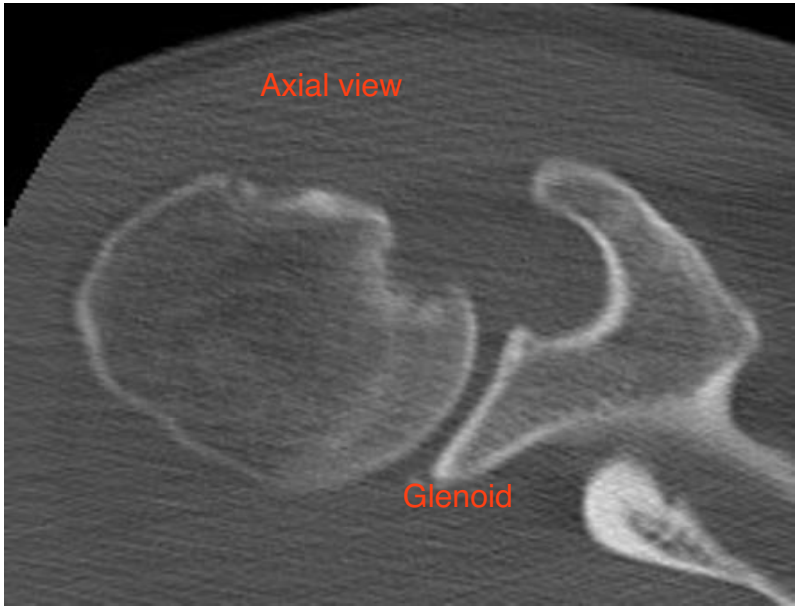
Hill Sachs Lesion أكياس التلة

Impression fracture, Glenoid is much more stronger than humeral head, so when ant dislocation happens, posterior part of the head will fracture as a result of glenoid touching

Hill Sachs Lesion

Reverse Hill Sachs

Impression fracture, Glenoid is much more stronger than humeral head, so when post dislocation happens, anterior part of the head will fracture as a result of glenoid touching



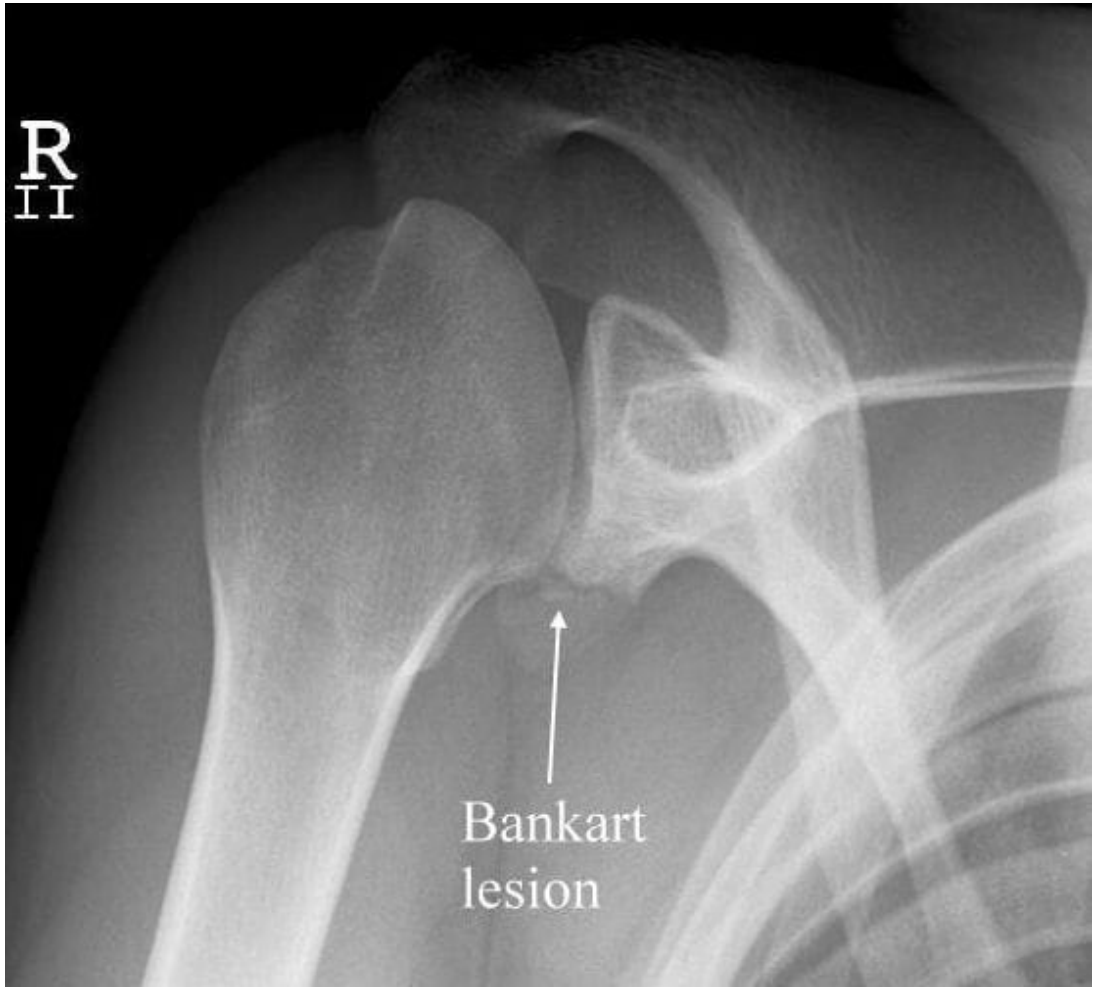
Bankart lesion

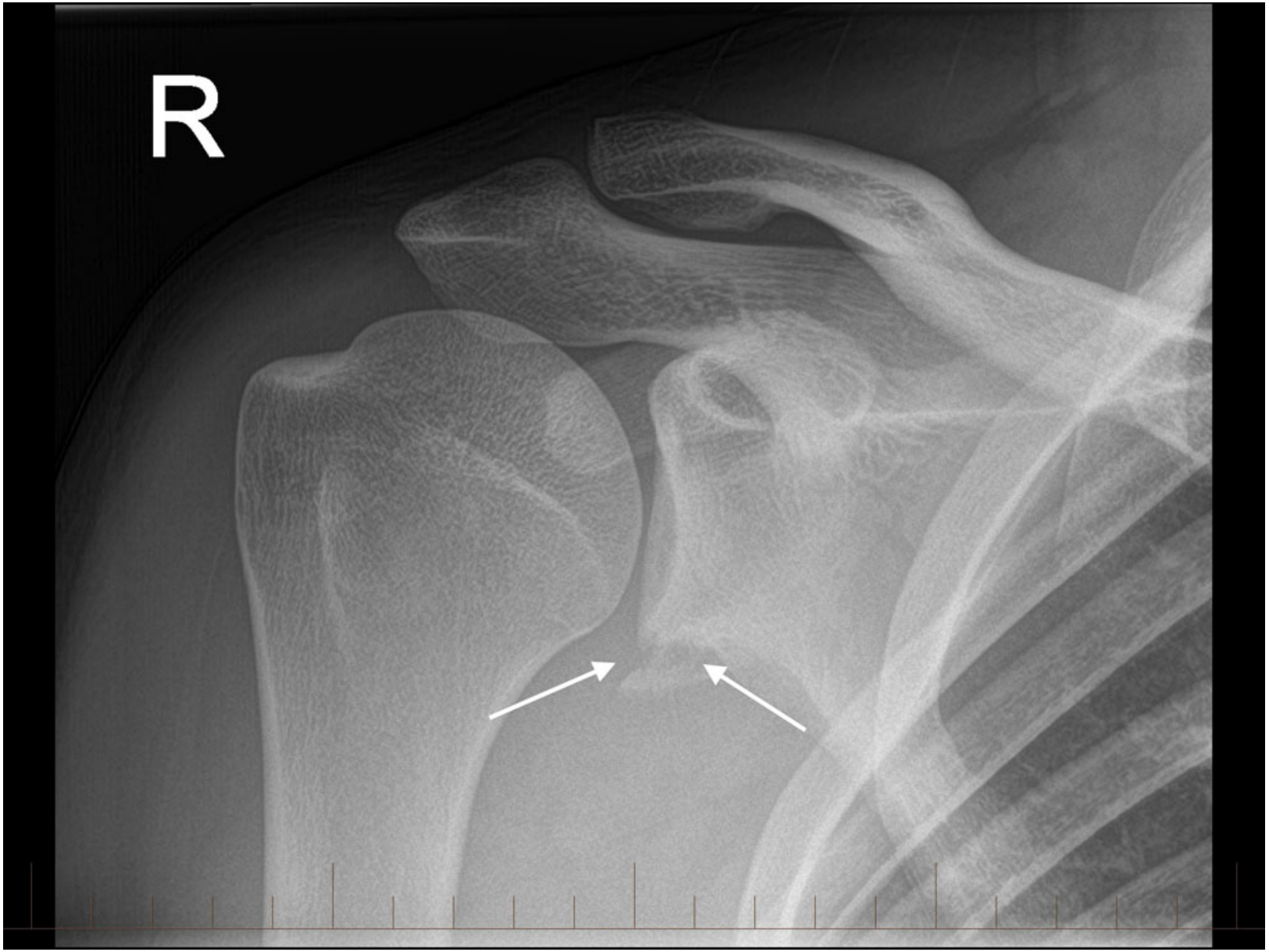
Avulsion of labrum

anterior and inferior glenohumeral ligaments are incompetent.

100% risk for recurrence

Labrum is fibrocarilagenous complex found around the rim of glenoid (deepens the glenoid), anterior inferior glenohumeral ligament is attached on it

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Late Compilcations

- Avascular necrosis of humeral head
- Heterotropic calcification
- Recurrence

Management of posterior dislocation

Closed reduction Traction counter traction

Operative reduction

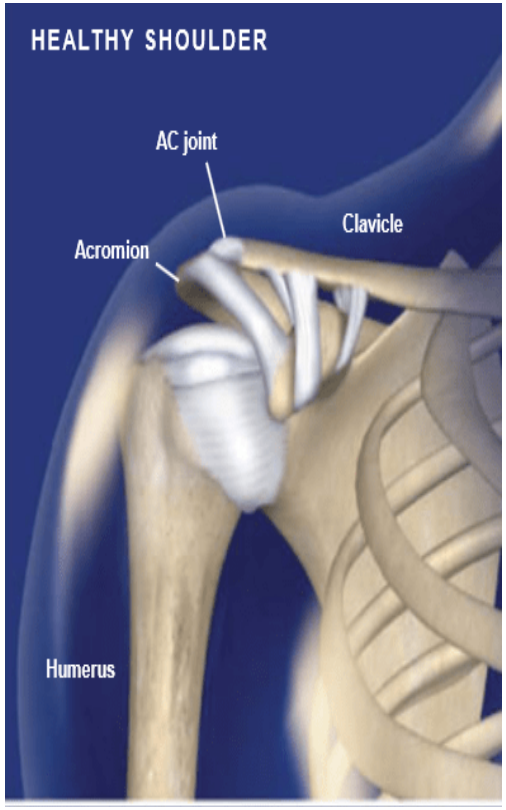
- If closed reduction failed
- Displaced fracture
- Recurrence
- Large defect (Reverse Hill-Sachs)

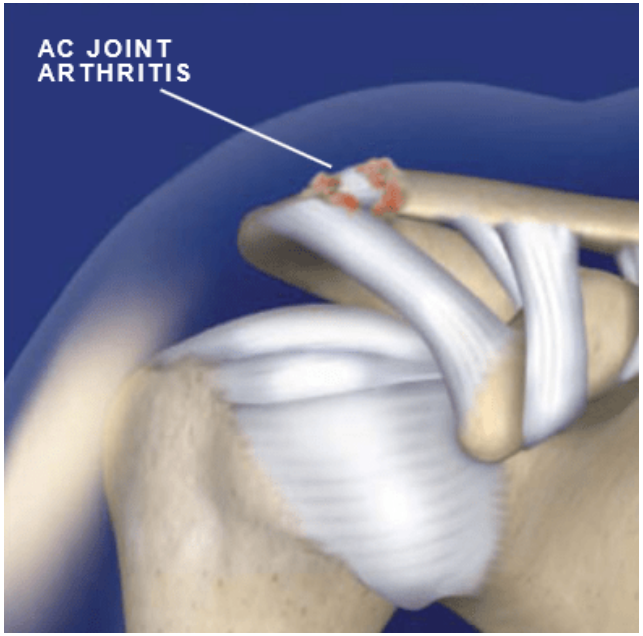
Acromioclavicular joint

AC joint Osteoarthritis

- Degenerative progressive joint disease After 60 years of age, 100% it will be present
- Most common ASYMPTOMATIC joint to be affected in OA.

Most common symptomatic joint osteoarthritis is knee osteoarthritis





Epidemiology :

- Elderly above 50 yrs.
- Women > men.

Risk factor :

- Prior AC separations.
- People engaged in overhead activities.

Any injury on AC joint (AC joint dislocation, miniscal tear inside the AC joint, Fracture in the distal end of clavicle)

Presentation :

- Mostly asymptomatic.
- Pain during activities. 5%

Physical Examination:

- Tenderness over the AC joint, +ve Scarf Test, crepitations.

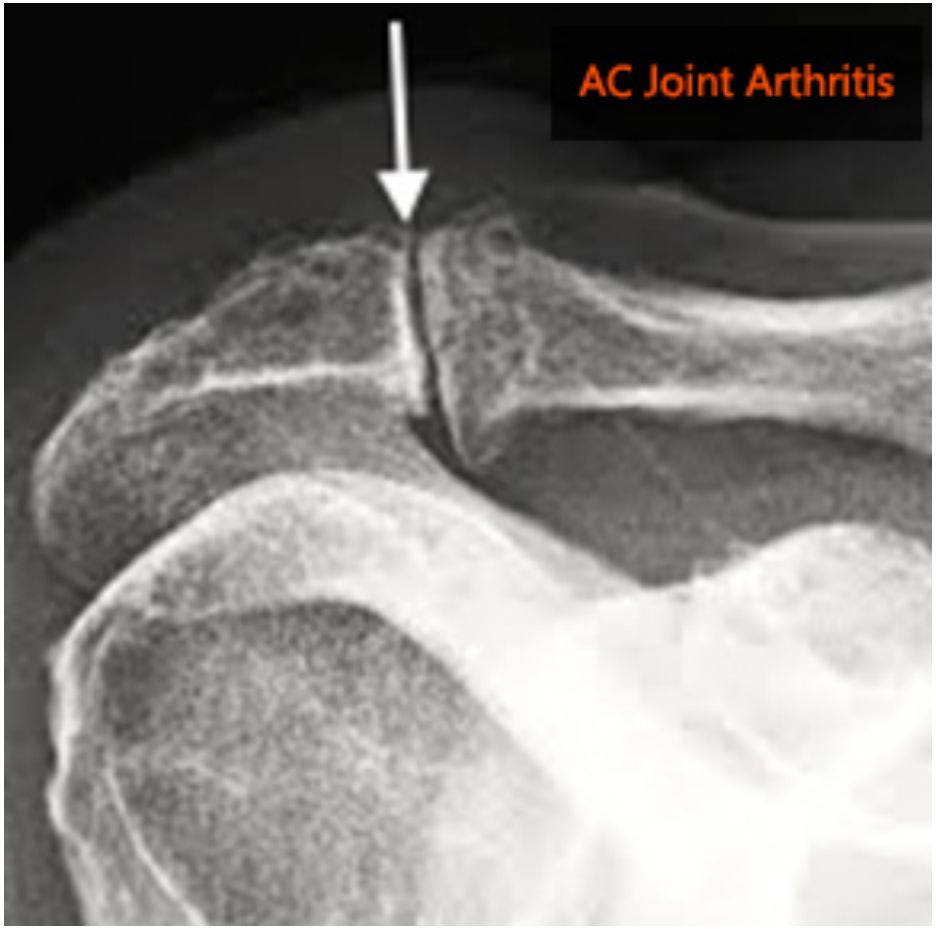
Investigations

Plain X-ray

Osteoarthrosis changes:

- 1) Narrowed joint space
- 2) Subchodral sclerosis
- 3) Osteophytes
- 4) Subchondral cysts

5) Destruction of the joint with ankylosis




AC joint
OA

Management

- Non-operative
  - Activity modification and physical therapy
  - Analgesia
  - AC joint injection with corticosteroids
- Operative
  - arthroscopic vs open distal clavicle resection (Mumford procedure)

Glenohumeral Joint Osteaoarthritis

Degenerative progressive joint disease

- Epidemiology :
  - more common in the elderly
  - may be associated with throwing athletes at younger age

Risk factors :

- Age (usually over 50 yrs)
- Positive family hx (Hereditary)
- Posttraumatic (fracture or dislocation): occurring at younger ages
- Rheumatoid arthritis It is in fact a risk factor for osteoarthritis in every joint in our body

Clincial presentation

- **Symptoms**
  - Pain
  - Limited range of motion
  - Crepitations.
- **Physical exam**
  - Tenderness at GH joint
  - Flattening of the anterior shoulder contour
  - Functional limitations at GH joint
  - Painful shoulder
  - Muscle atrophy or weakness

Investigations :

Shoulder X-ray :

General osteoarthosis changes:

1) Narrowed joint space
2) Subchodral sclerosis
3) Osteophytes
4) Subchondral cysts

Management

- Nonoperative:
  - Activity modification
  - Physiotherapy
  - Medications

Operative:

Indications :

1- unresponsive to nonoperative treatment

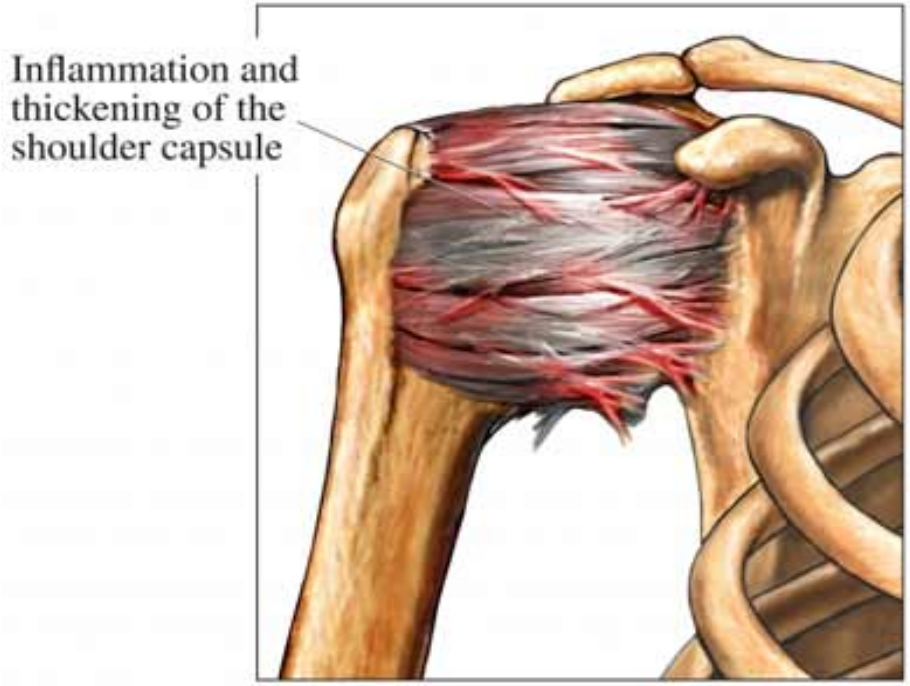
2-progressive pain

3- decreased ROM

4- inability to perform activities of daily living

Frozen shoulder/adhesive capsulitis

Capsulitis is Misnaming; when we see the capsule with scope we think that it's inflamed because it appears red and dusky and thickened, but when we take biopsy we don't find inflammatory cells



Frozen shoulder

It is primary disease, idiopathic syndrome, if the stiffness in the shoulder is secondary to trauma, injury or any cause, the name will change into secondary shoulder stiffness.

- It is a disorder in which the shoulder capsule **becomes inflamed, stiff and grows together with abnormal bands of tissue, called adhesions.** (Grossly)

➢ Frozen shoulder is characterized by pain and **loss of motion or stiffness in the shoulder**.

➢ Pain is usually constant, worse at night, when the weather is colder.

➢ It affects more women than men. The recovery is very slow.

➢ First movment to be lost is external rotation

While in secondary shoulder stiffness, first movement lost is Abduction

➢ It is idiopathic pathology

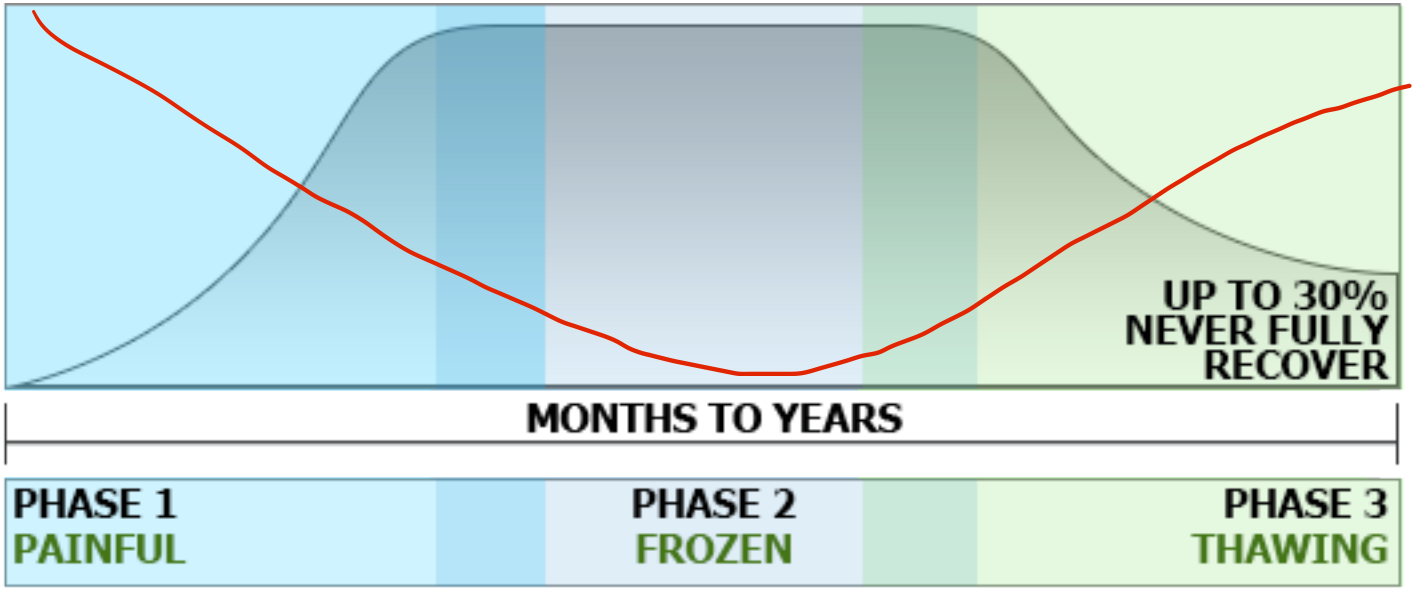
Stages of Frozen Shoulder

Pain starts mild, increases with time, on the otherhand, range of motion starts normal and decreases with time

- Freezing stage: Any movement of your shoulder causes pain, and your shoulder's range of motion starts to become limited.
- Frozen stage: Pain may begin to diminish during this stage.
- Thawing stage: The range of motion in your shoulder begins to improve.

Here pain reaches plateu and range of motion reaches القاع

And pain decreases



Clinical presentation

Symptoms:

- Severe aching pain in shoulder/upper arm.
- Restricted shoulder movement.
- Difficulty in routine activities.

Signs:

- Restricted flexion, extension, abduction and circumduction.
- Uniform impairment of all shoulder movements.

Management

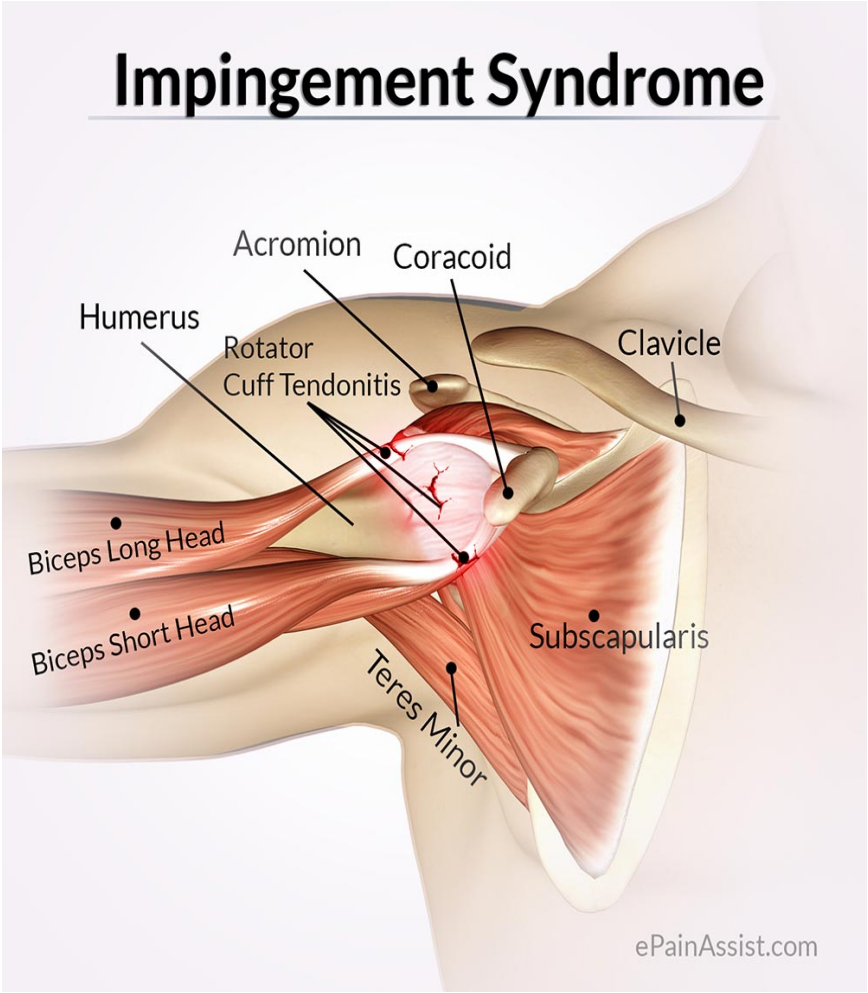
- Conservative :
- Rest to joint during acute stage.
- Provide sling.
- Mild passive shoulder exercises

- To prevent the problem, a common recommendation is to keep the shoulder joint fully moving to prevent a frozen shoulder.
- Physical therapy and occupational therapy can help with continued movement.

Impingement Syndrome

Subacromion space: Space between acromion and humeral head is very narrow, which is around 11mm, any disease condition that further narrows the space will result in impingement syndrome

- Compression of the rotator cuff against the anterior structure of coracoacromial arch, anterior 1/3 of the acromion, coraco-acromial ligament & AC joint.



Stages of Impingement Syndrome

مش مهمة

- **Stage 1:** Edema and hemorrhage (patients usually <25 years)
- **Stage 2:** Fibrosis and tendinitis (patients 25-40 years)
- **Stage 3:** RC tear, biceps tendon rupture, bony change (patients generally >40 years)

Clinical Presentation

Symptoms

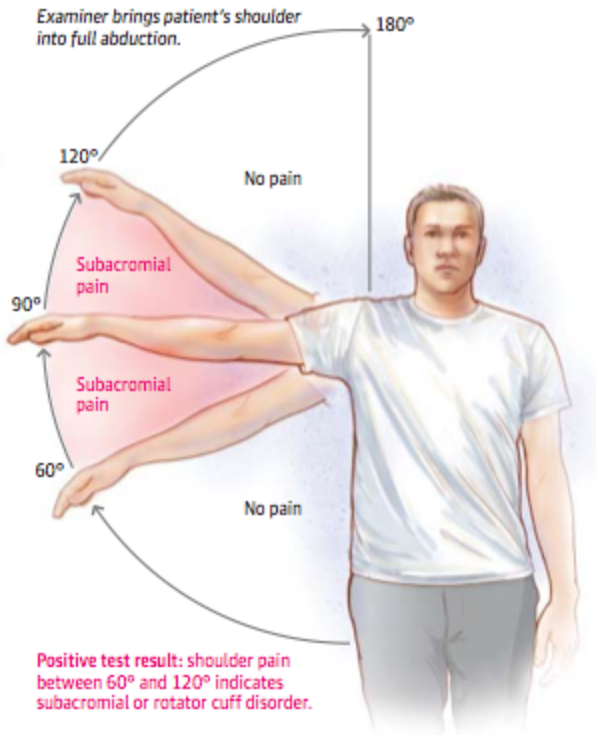
- shoulder pain: whenever he tries to do abduction, pain will occur
  More severe at night
  - ✓insidious onset
  - ✓exacerbated by overhead activities and lifting objects away from body
  - ✓night pain
- Weakness with active abduction in midrange
- Limited internal rotation compared to normal side

P/E

+ ve impingement tests

+/- rotator cuff tear tests

Impingement tests



Neer's test

Hawkins-Kennedy Test

Investigations

If any question is about tendon/ muscle to be affected in any disease condition in the shoulder joint, the answer will be supraspinatous tendon/muscle

• Plain x ray

- Findings :

- Traction osteophytes

- Calcification of the coracoacromial ligament

- Cystic changes within the greater tuberosity

- Hooked acromion

AC osteoarthritis, tendonitis, acromion fracture

• MRI :

Evaluating the degree of rotator cuff pathology

• CT /US :

Accurately image the rotator cuff tendons and muscle bellies

Management

First line Management is <u>non operative</u>

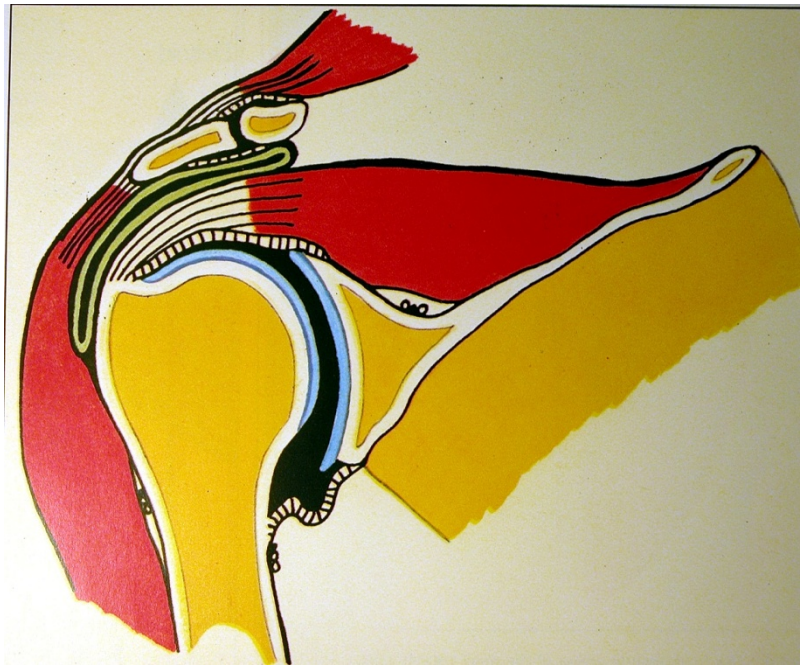
- ❖ Activity Modification
- ❖ NSAIDS For 2-3 Weeks Best choice is naproxin
- ❖ Physiotherapy
- ❖ Stretching, strengthening, Manual therapy-6 weeks

Rotator cuff tear

Major funtion of rotator cuff is stabilization, pressing the femoral head against the glenoid, then the deltoid can function, deltoid alone cannot contract without the presence of rotator cuff, it will just pull the joint upward with no full rotation, abduction and adduction..

Important functions:

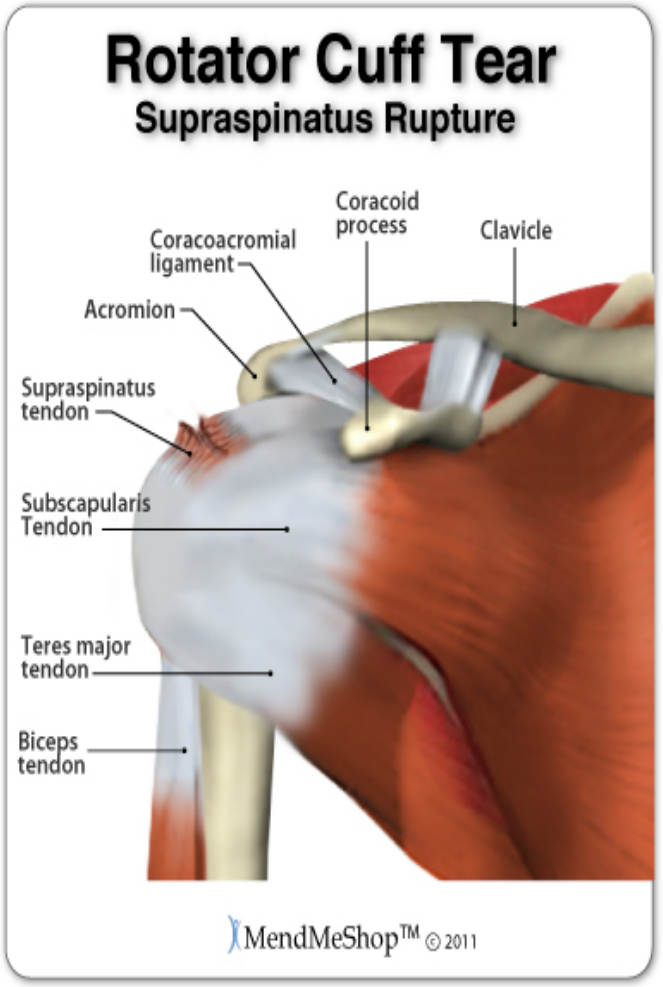
- Counterbalance the upward pull of the deltoid on the humerus.
- Hold the head of the humerus secure in the glenoid.
- Externally rotate the shoulder which is important during arm elevation.



Rotator Cuff Tear

- Partial Thickness Tear
- Full Thickness Tear
- Complete Rupture

Supraspinatus tendon is flat tendon, if it got injured in one side and the injury doesn't reach the other side then it is partial thickness, if the injury reaches the other side then it is called full thickness but it still attached, if the full thickness tear affects all the width of supraspinatus then it will be called complete full thickness



Mechanisms of tear is either acute or chronic

1- Acute :acute avulsion injuries Excentric contraction

- acute subscapularis tears seen in younger patients following a fall
- acute SIT tears seen in patients > 40 yrs with a shoulder dislocation

DDx:

- Any shoulder diseases
- Cervical spine diseases
- MI Important to exclude it, because the pt might present with shoulder pain in Mi

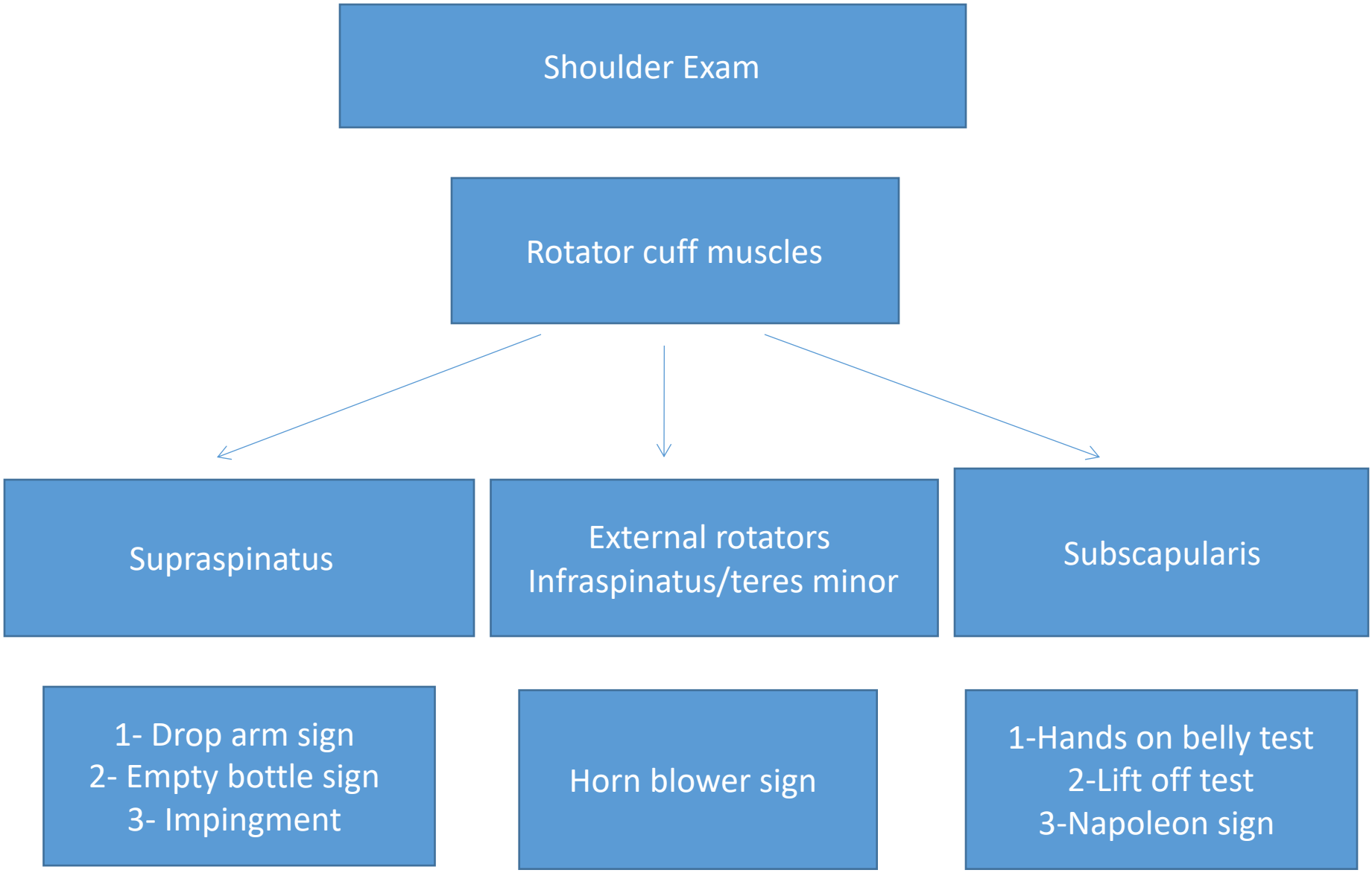
2- Chronic : More common

- chronic degenerative tear (intrinsic degeneration is the primary etiology)
- Chronic impingement

Clinical presentation

Symptoms :

- Pain around shoulder
- non resolving or responding to NSAIDS
- Sleep disturbed by pain
- Weakness during activities of daily living


Shoulder Exam
Rotator cuff muscles
Supraspinatus
External rotators
Infraspinatus/teres minor
Subscapularis
1- Drop arm sign
2- Empty bottle sign
3- Impingment
Horn blower sign
1-Hands on belly test
2-Lift off test
3-Napoleon sign

Investigations

Supraspinatus

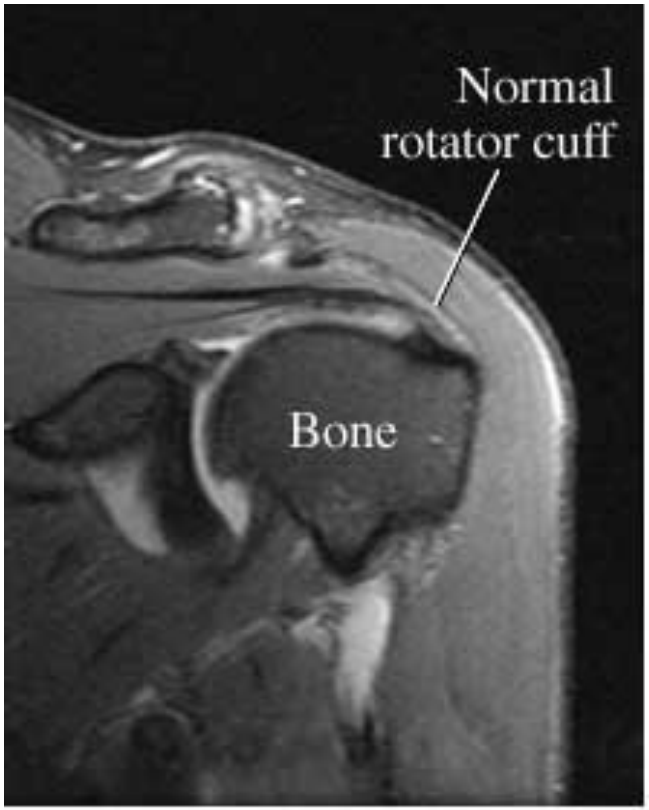


Figure 1

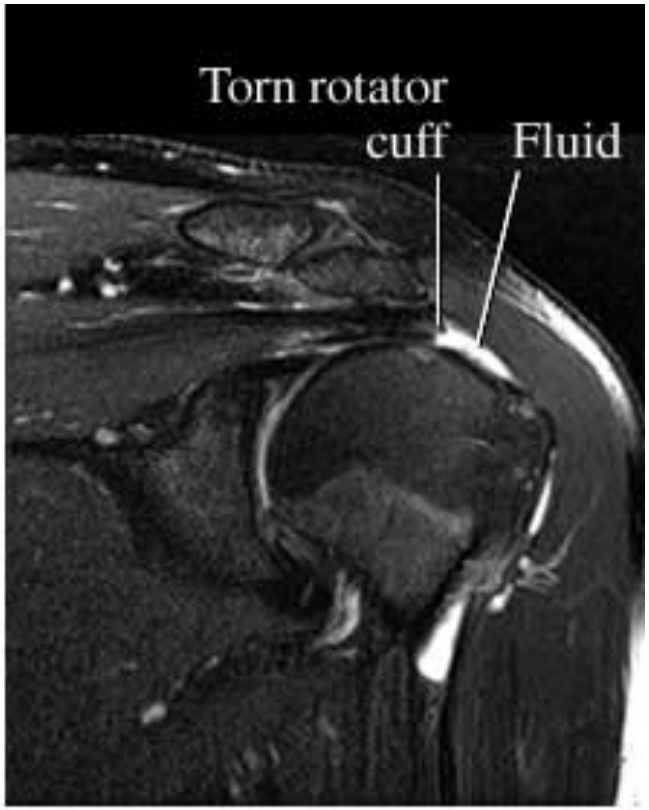


Figure 2

Full thickness tear

Treatment

Nonoperative

First line of treatment for most tears

1. **Physical therapy**
2. **NSAIDS**
3. **Corticosteroid injections:**

if impingement thought to be major cause of symptoms.

Operative

1. Subacromial decompression and rotator cuff debridement alone
2. Rotator cuff repair (arthroscopic or mini-open)
3. Tendon release, debridement of degenerative tissue and repair
4. Tendon transfer
5. Reverse total shoulder arthroplasty

Calcifying tendonitis

It is idiopathic syndrome

Three stages:

First stage: normal x-ray, with very severe pain
Second Stage (after 3 weeks): punctate calcifications appear on X-ray, pain slightly decrease but still severe
Third Stage: Will delineated calcification

Self limiting, conservative treatment, no surgery is required

Thank you