

Common Shoulder Disorders

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Objectives

By the end of this teaching session the students should be able to

- Specify the symptoms, signs and potential immediate complications of **common shoulder disorders**
- Outline the assessment and appropriate investigation and to outline the immediate and long term management of patients **common shoulder disorders**
- Demonstrate knowledge of indications for non-operative and operative treatment and to know the most common non-operative and operative measurements used for **common shoulder disorders.**

Topics to be covered:

- Basic shoulder anatomy
- Impingement syndrome
- Rotator cuff pathology
- Adhesive capsulitis
- Acromioclavicular pathology
- Recurrent shoulder dislocations

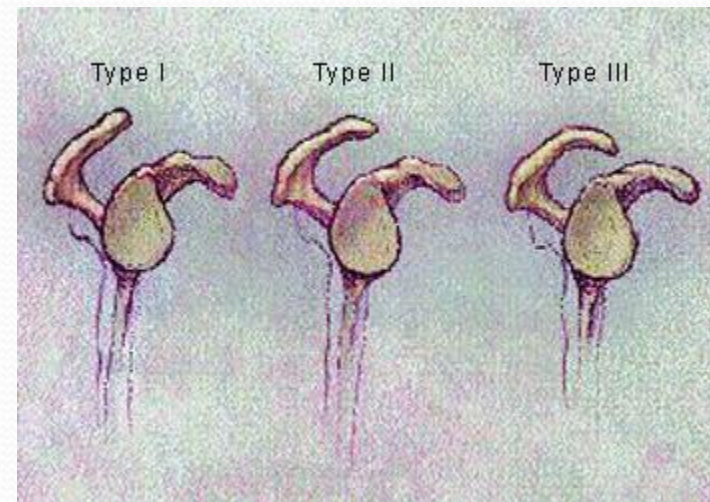
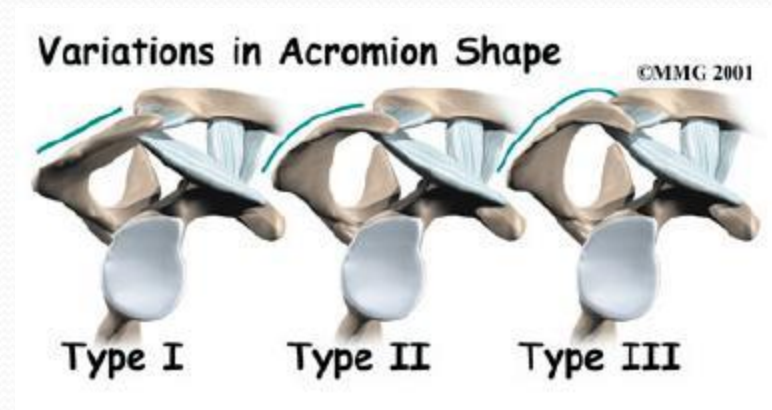
Shoulder Anatomy: Bony Anatomy

- Humerus
- Scapula
 - Glenoid
 - Acromion
 - Coracoid
 - Scapular body
- Clavicle
- Sternum



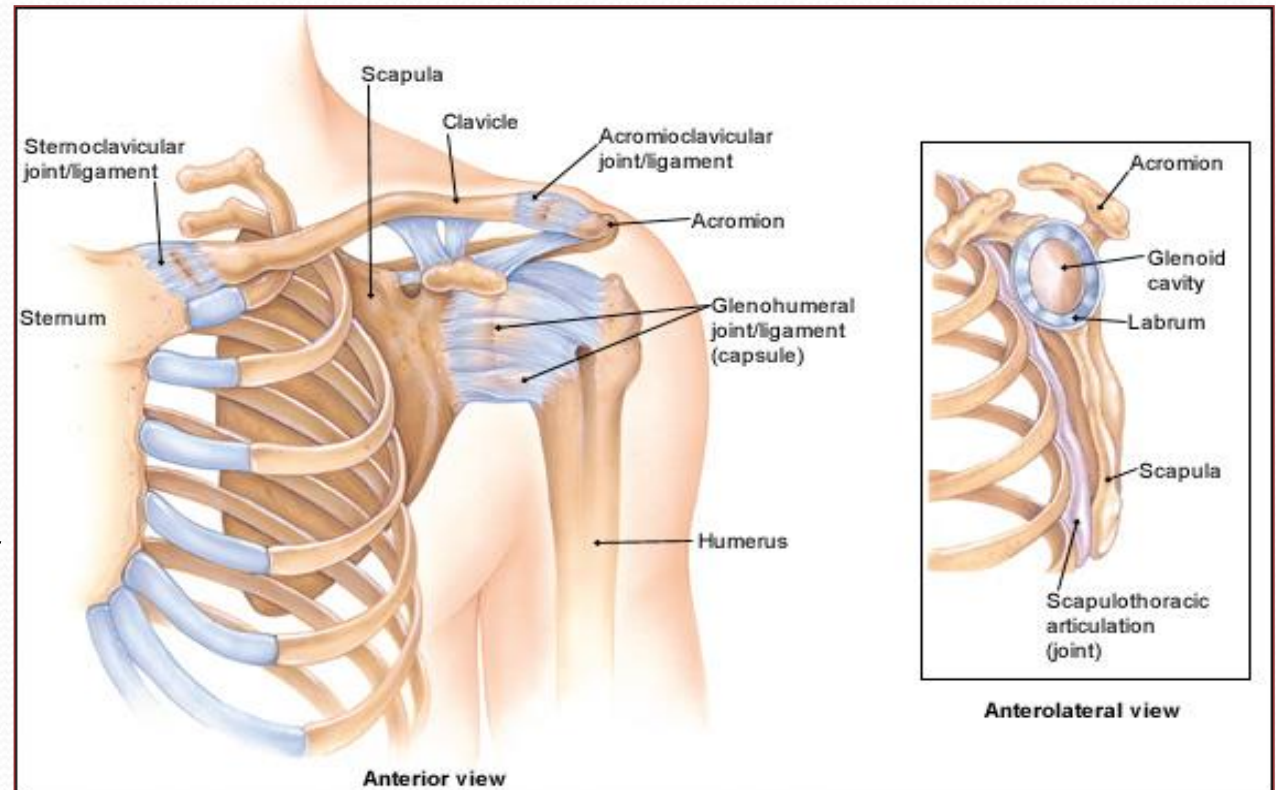
Bones

- *Humerus.*
- *Scapula (acromion):*
 - Type I : flat
 - Type II: curved
 - Type III: hooked
- *Clavicle*



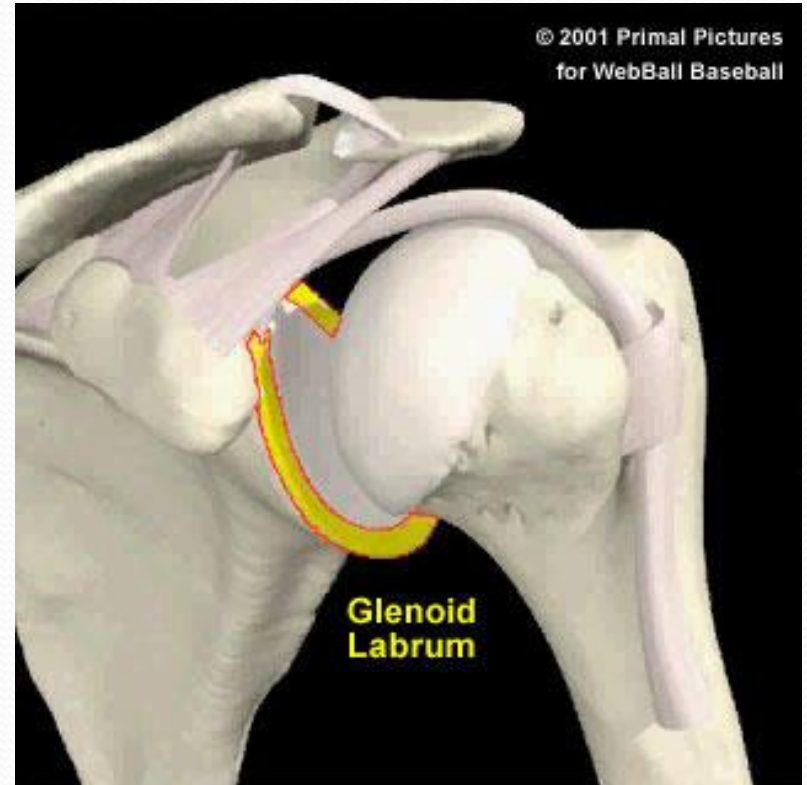
Joints

- *Glenohumeral joint: the main joint*
- *Acromioclavicular (AC) joint*
- *Sternoclavicular (SC) joint*
- *Scapulothoracic joint*



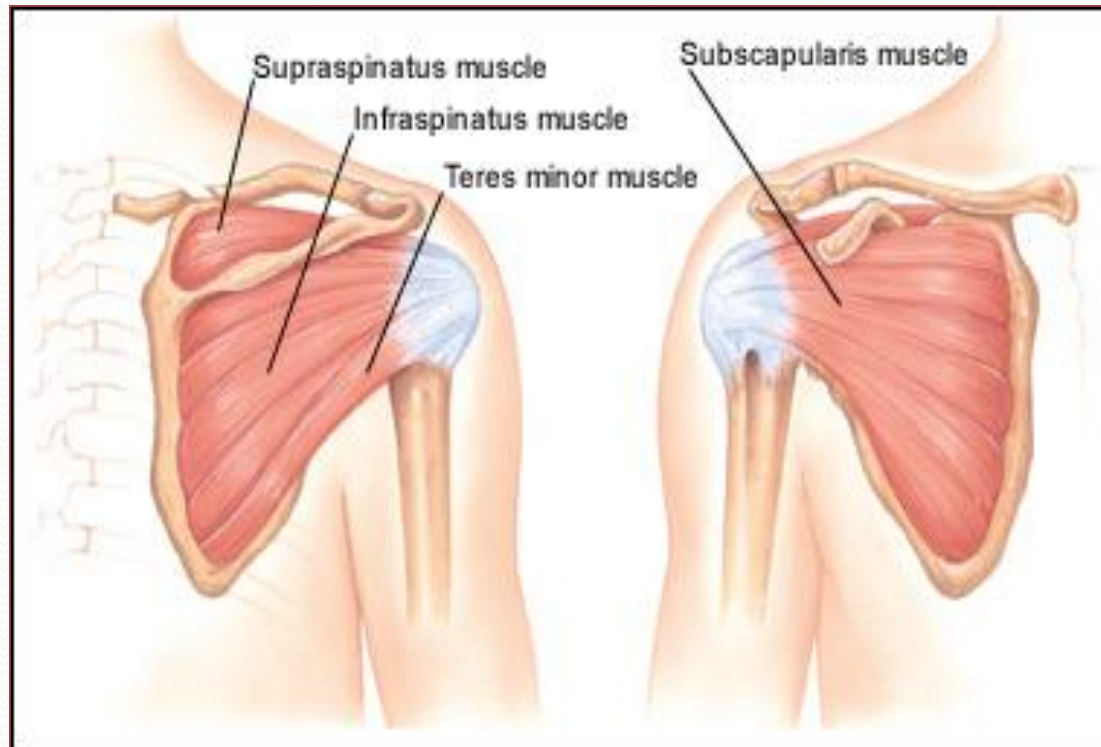
Glenohumeral Joint

- Most common dislocated joint
- Lacks bony stability
- Composed of:
 - Fibrous capsule
 - Ligaments
 - Surrounding muscles
 - Glenoid labrum



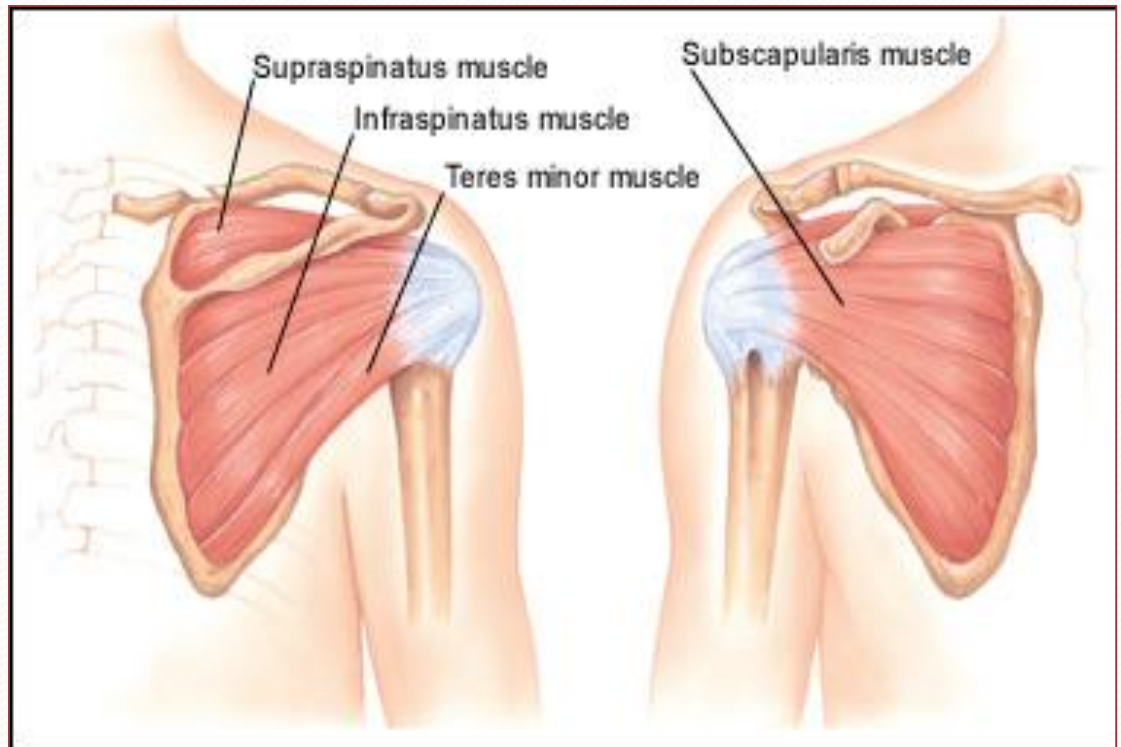
Shoulder Anatomy: Rotator Cuff Muscles

- Depress humeral head against glenoid



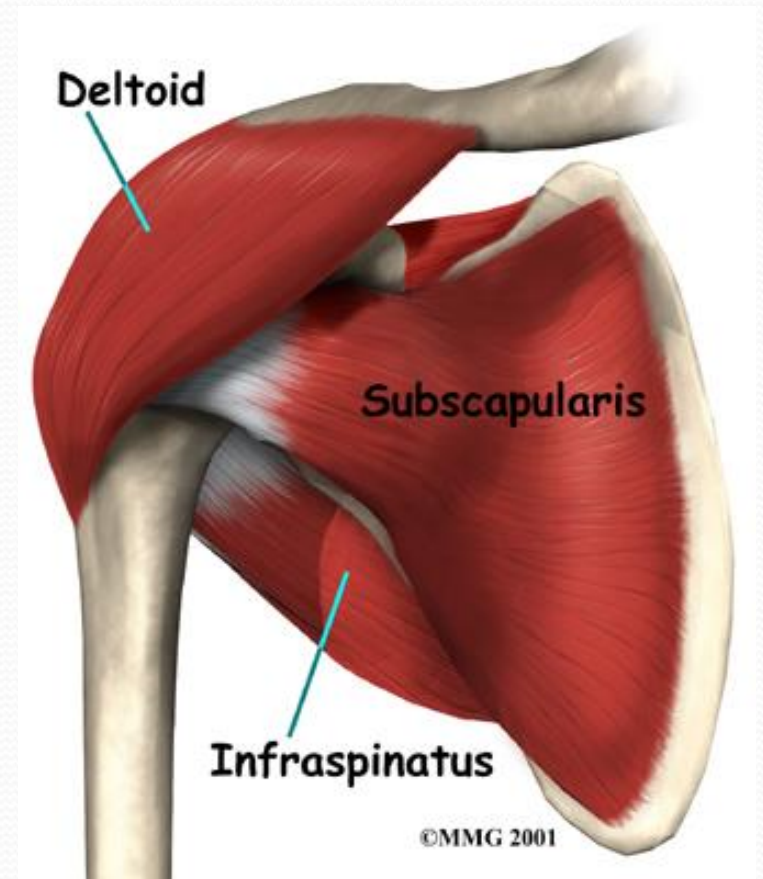
Shoulder anatomy: Rotator cuff muscles

- **Supraspinatus:**
 - Abduction
- **Infraspinatus:**
 - External rotation
- **Teres Minor:**
 - External rotation
- **Subscapularis:**
 - Internal rotation



Muscles

- Deltoid:
 - largest, strongest muscle of the shoulder.



Shoulder Anatomy: Other Musculature

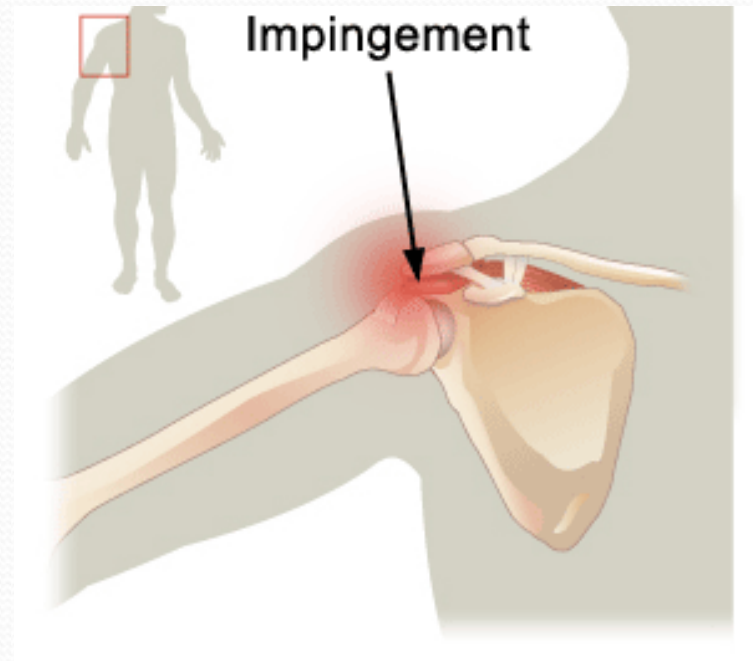
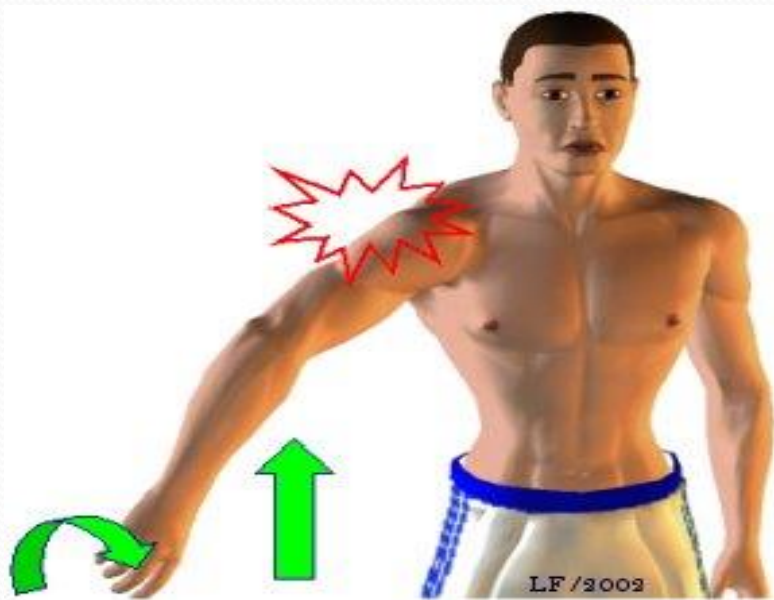
- Pectoralis major, latissimus dorsi, biceps
- Rhomboids, trapezius, levator scapulae, serratus anterior

Subacromial bursa

- *Between the acromion and the rotator cuff tendons.*
- *Protects the acromion and the rotator cuff from grinding against each other.*

Impingement Syndrome

- Describes a condition in which the supraspinatus and bursa are pinched as they pass between the head of humerus (greater tuberosity) and the lateral aspect of the acromion

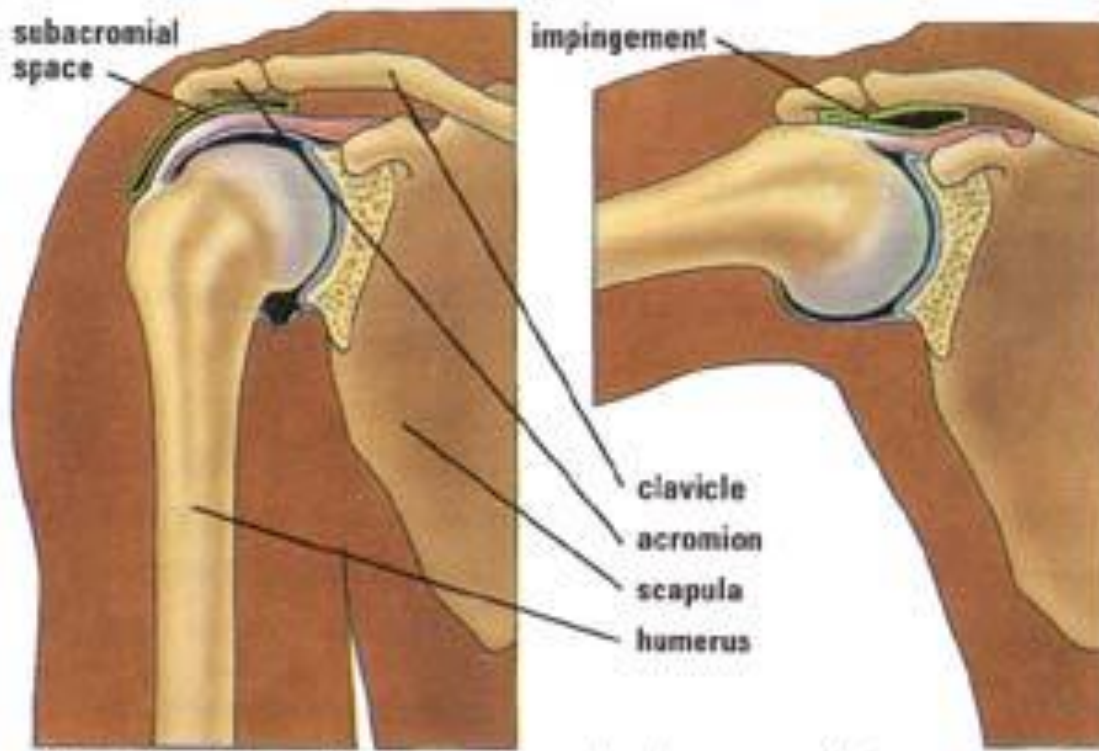


Impingement Syndrome

- It is the most common disorder of shoulder, accounting for 44– 65 % of all complaints of shoulder pain during a physician's office visit.

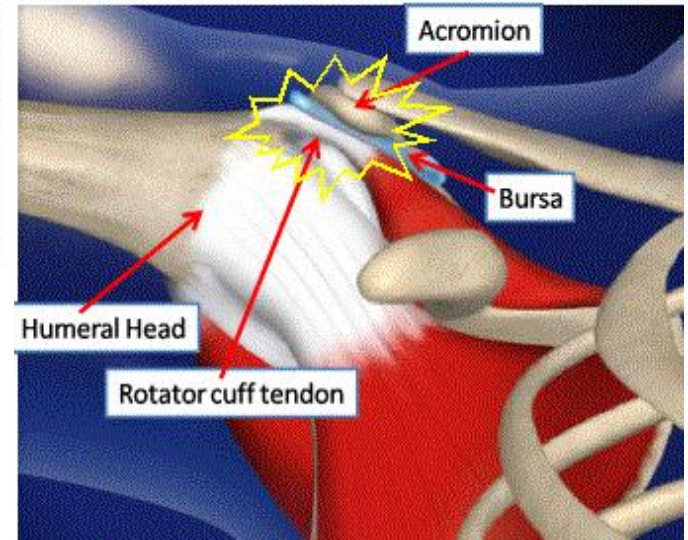
Risk factors

- Age: over 40 years
- Overhead activities
- Bursitis and supraspinatus tendinitis
- Acromial shape: type II & III acromion
- AC arthritis or AC joint osteophytes may result in impingement and mechanical irritation to the rotator cuff tendons



Normal subacromial space.

Impingement of the rotator cuff.



Symptoms

- Pain in the acromial area when the arm is flexed and internally rotated → Inability to use the overhead position.
- The pain may result from subacromial bursitis or rotator cuff tendinitis
- Pain when sleeping on the affected side..
- Pain will often become worse at night, as the subacromial bursa becomes hyperemic after a day of activity
- Decreased range of motion especially abduction
- Weakness

Differential diagnosis

- Rotator cuff tears
- Calcific tendinitis
- Biceps tendinitis
- Cervical radiculopathy
- Acromioclavicular arthritis
- Glenohumeral instability
- Glenohumeral osteoarthritis

Diagnosis

- Accurate diagnosis of impingement syndrome requires:
 - **History**
 - **Physical examination**
 - Imaging.

Physical examination

- Pain on “**impingement tests**”..
- Decreased range of motion (esp. internal rotation & adduction)
- Weakness in flexion and external rotation.
- Pain on resisted abduction and external rotation.

Impingement tests

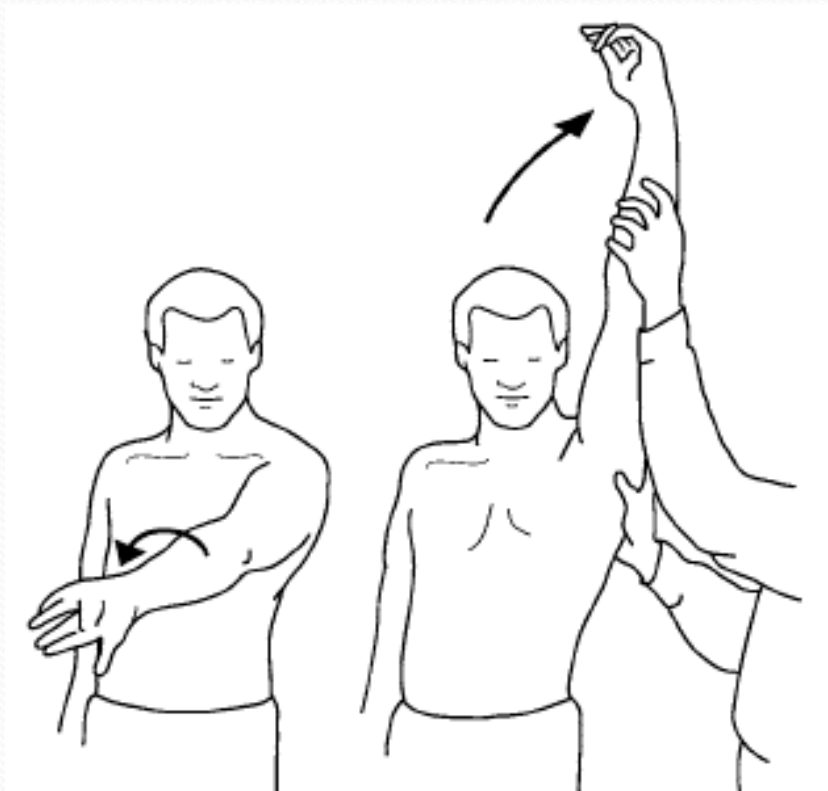
- **Neer's impingement test:**

passive elevation of the internally rotated arm in the sagittal plane (shoulder forward flexion).

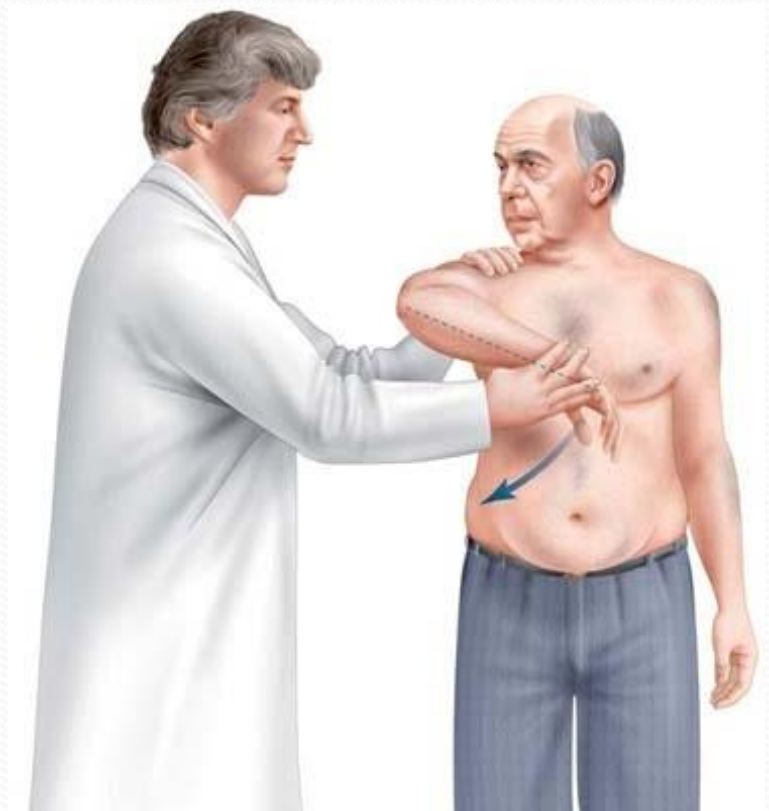
- **Hawkins' impingement test:**

with the elbow flexed to 90 degrees, the shoulder passively flexed to 90 degrees and internally rotated.

Neer's test



Hawkins test



Radiological findings

- Plain X-rays:
 - Acromial spurs
 - AC joint osteophytes
 - Subacromial sclerosis
 - Greater tuberosity cyst
- MRI:
 - To confirm the diagnosis and rule out rotator cuff tear



Supraspinatous outlet view

- **Type of acromion:**

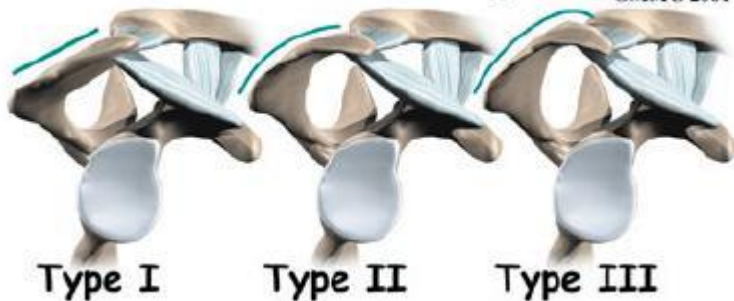
I flat

II round

III hooked

Variations in Acromion Shape

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Management

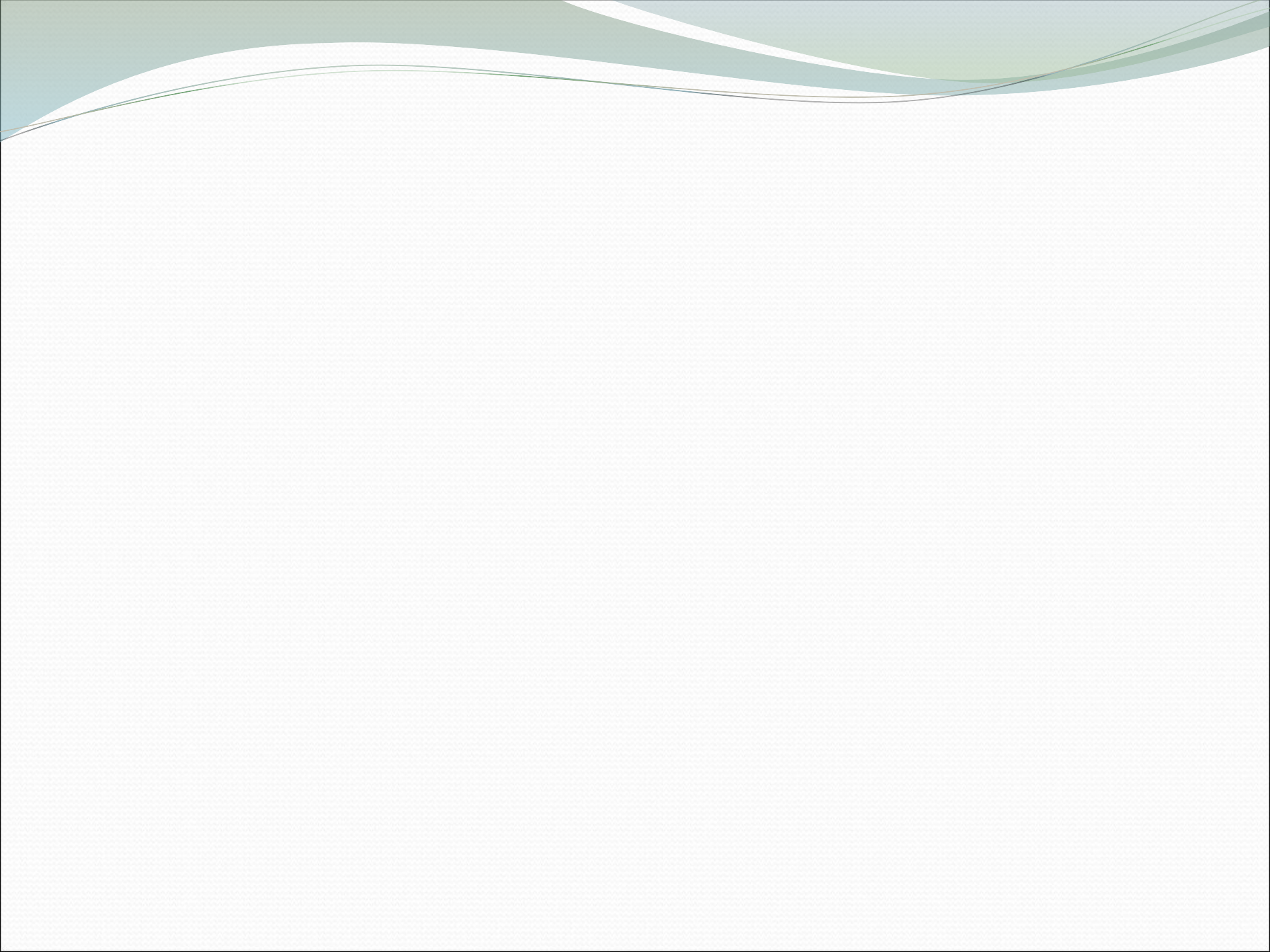
- Conservative treatment:
 - Always start with it
- Operative:
 - Indicated when conservative measures fail

Conservative treatment

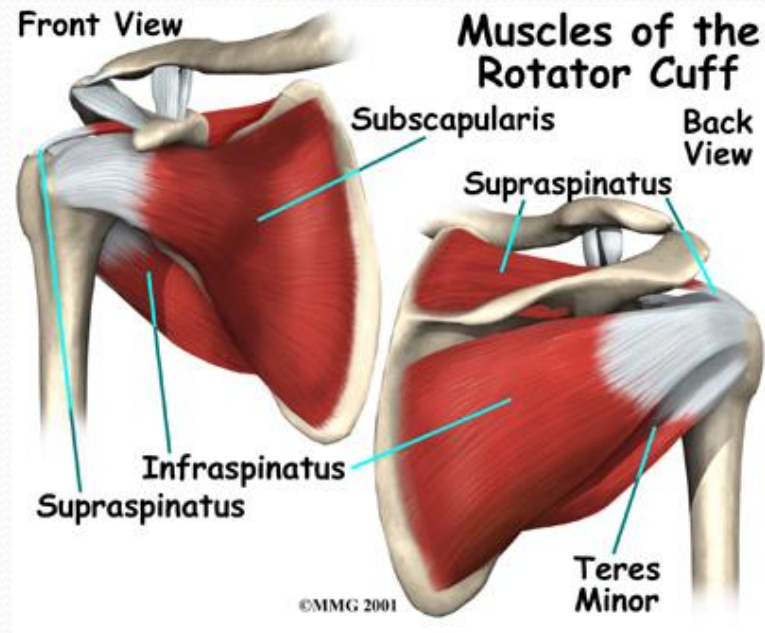
- Avoid painful and overhead activities
- Physiotherapy:
 1. Stretching and range of motion exercises
 2. Strengthening exercises
- NSAIDs
- Steroid injection into the subacromial space

Operative treatment

- The goal of surgery is to remove the impingement and create more subacromial space for the rotator cuff
- Indicated if there is no improvement after 6 months of conservative treatment
- The anterolateral edge of the acromion is removed
- Open (called: Acromioplasty) or arthroscopic technique (called subacromial decompression)
- Success rate 70-90%

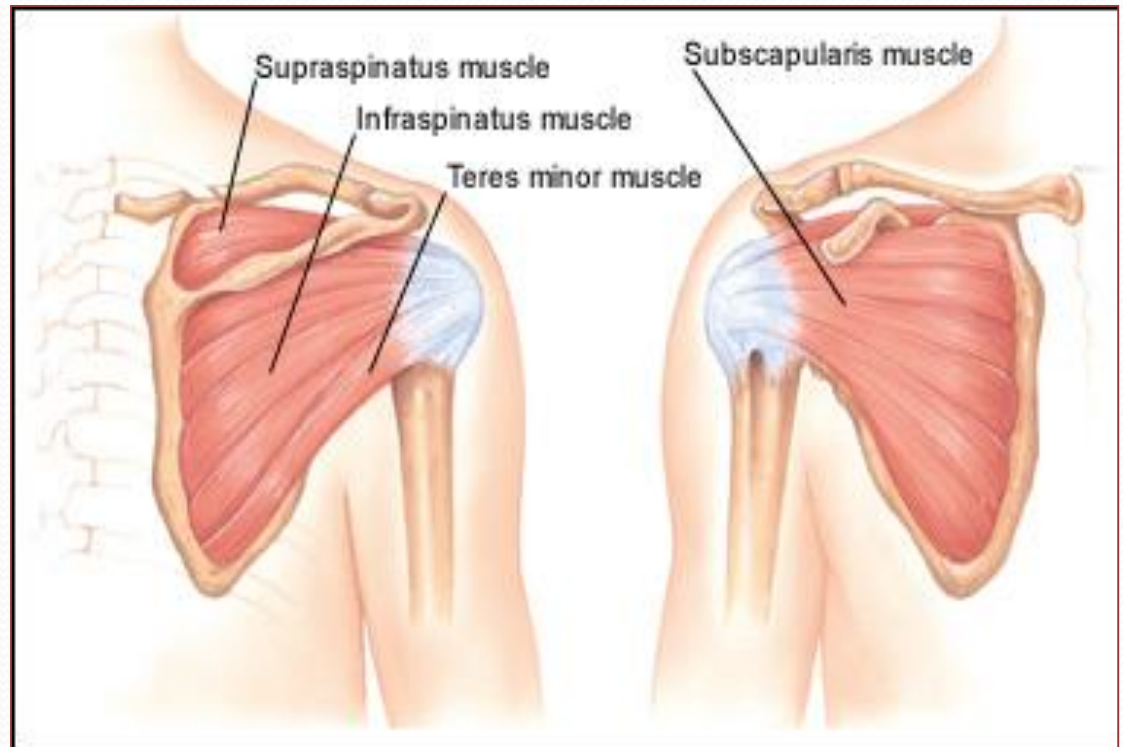


Rotator cuff



Rotator cuff muscles

- **Supraspinatus:**
 - Initiation of abduction + external rotation
- **Infraspinatus:**
 - External rotation
- **Subscapularis:**
 - Internal rotation
- **Teres Minor:**
 - Internal rotation



Cont” Function of rotator cuff muscles

- Keep the humeral head centered on the glenoid regardless of the arm’s position in space.
- Generally work to depress the humeral head while powerful deltoid contracts

Causes of rotator cuff tears

- Intrinsic factors:
 - Vascular
 - Degenerative (age-related)
- Extrinsic factors:
 - Impingement
 - Acromial spurs
 - AC joint osteophytes
 - Repetitive use
- Traumatic (e.g. a simple fall or trying to catch or lifting a heavy object or **after a shoulder dislocation in age >40**)

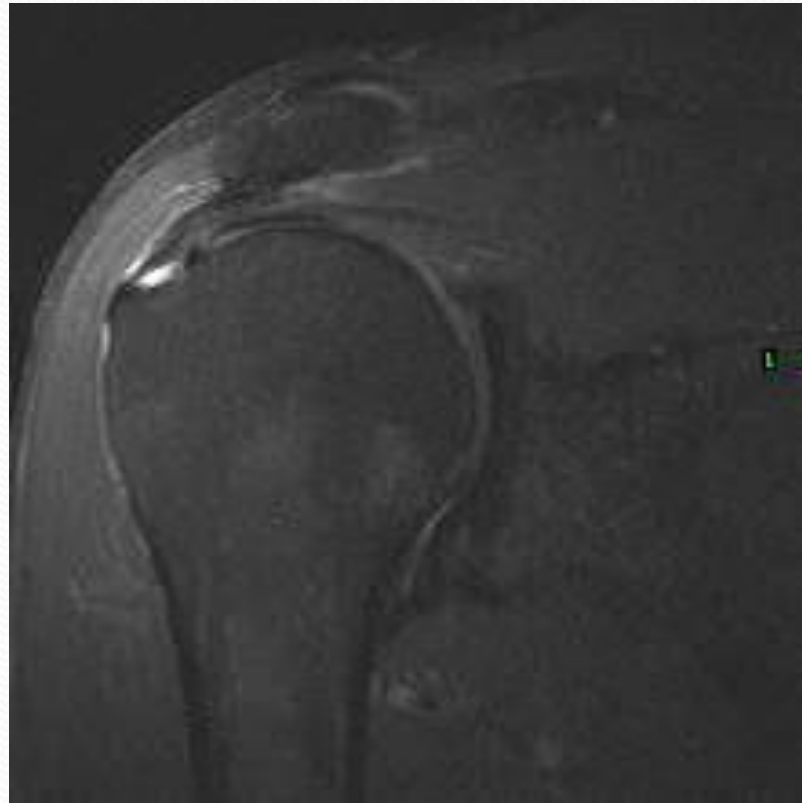
Diagnosis

- History
- Physical examination
- X-rays
- Ultra sound
 - Highly operator dependent
 - Does not provide information regarding concomitant pathologies.
- MRI
 - Sensitivity of 84% and a specificity of 96%.
 - Best for rotator cuff evaluation

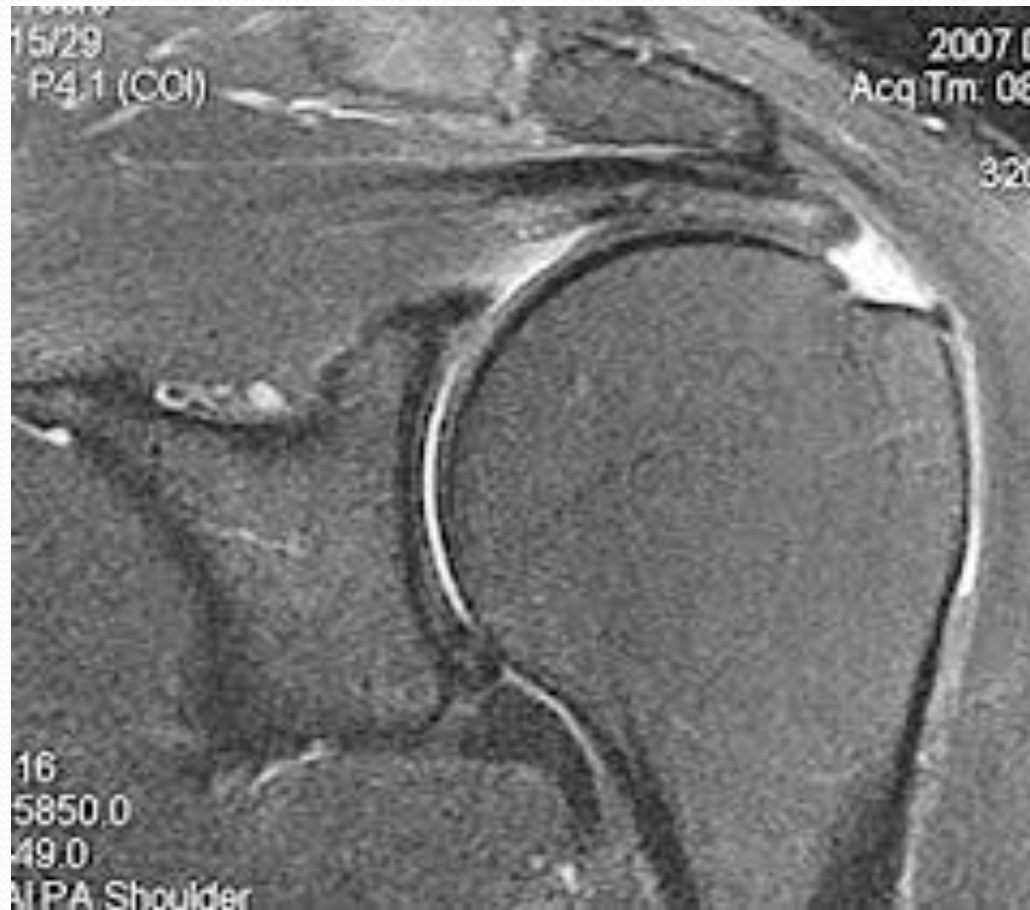
Wide spectrum

- Partial thickness
- Full thickness
 - Small
 - Large
 - Massive (irreparable)

Imaging – partial thickness tear



Imaging – full thickness tear



Non-operative treatment

- **Indications:**
 - All partial thickness tears
 - Full thickness tear:
 - Chronic +degenerative
 - Elderly low demanding + not active
- **Modalities of treatment:**
 - Activity modification
 - NSAID
 - Physical therapy
 - Range of motion
 - Strengthening of the rotator cuff and periscapular musculature
 - Steroid injections

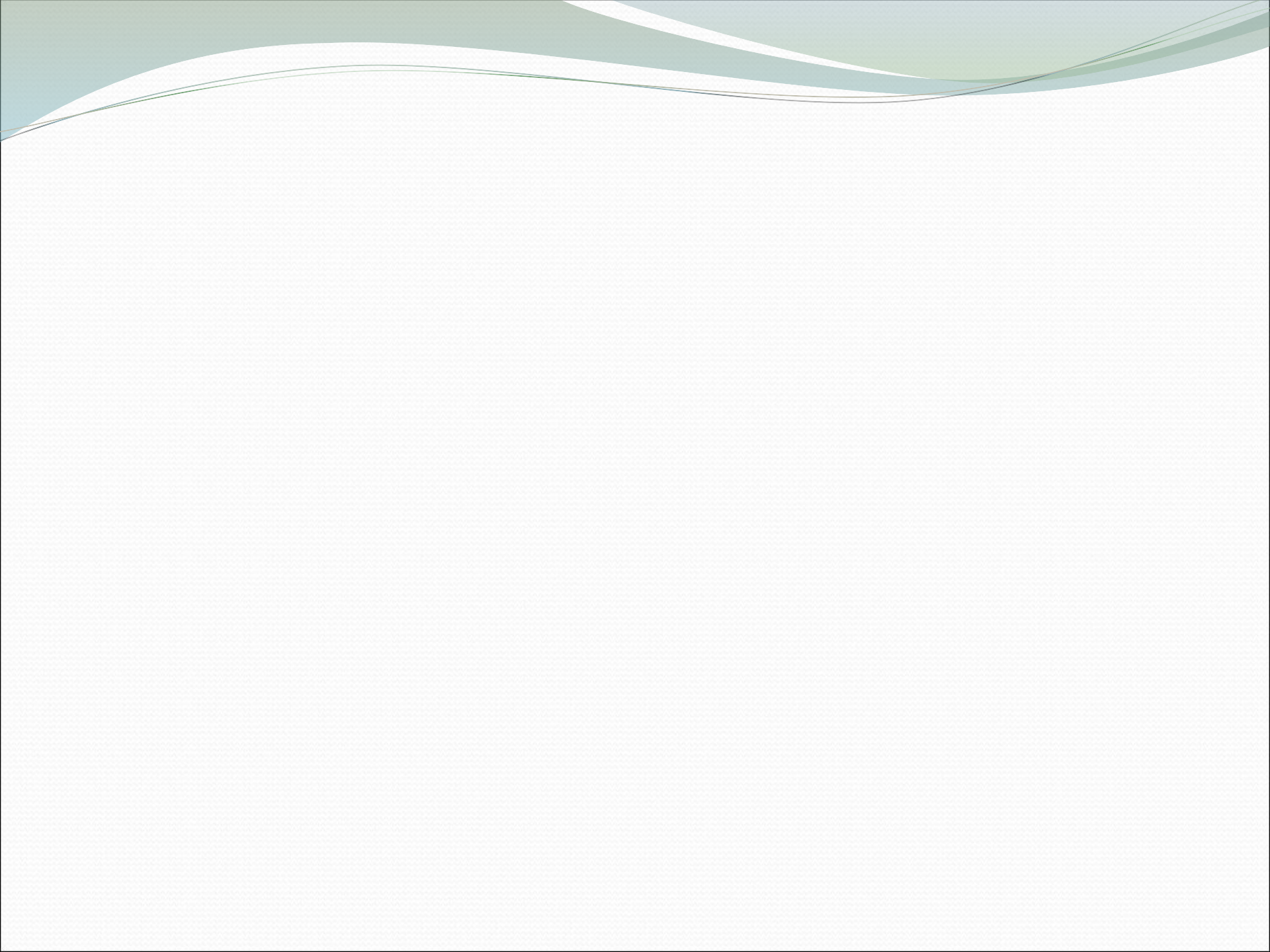
Surgical treatment

- **Indications:**
 - **Acute traumatic** tear
 - Failed non- operative treatment
 - Full thickness tear:
 - Acute, Young, painful
 - Old but active patient
- **Options:**
 - **Rotator cuff repair (Arthroscopic or open)**
 - **+/- Subacromial decompression**

Natural History

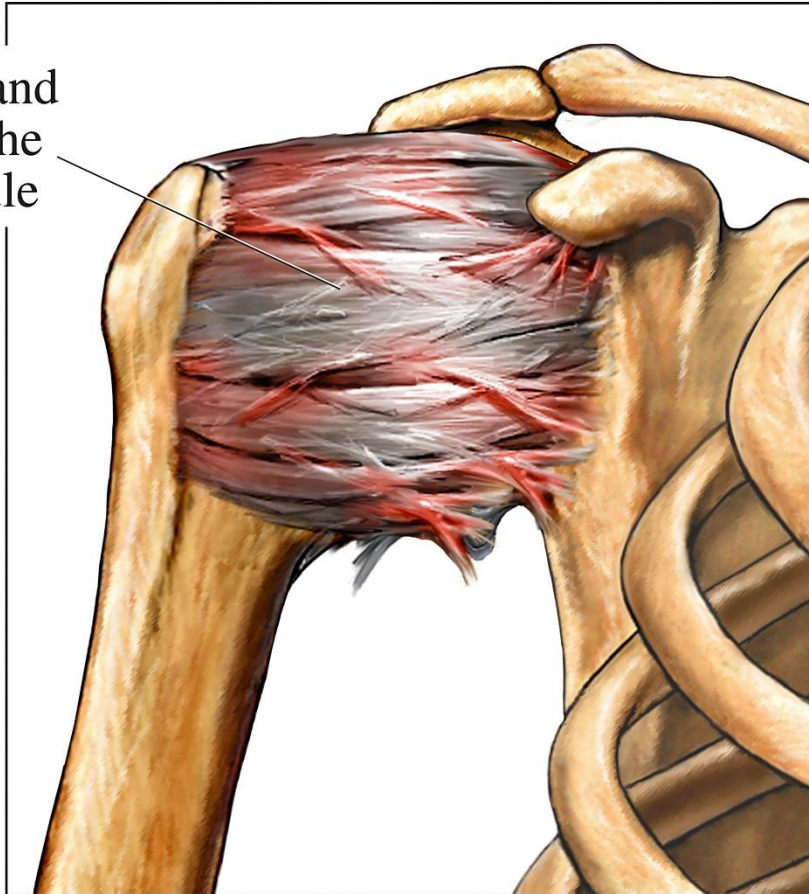
- If not treated → chronic pain and loss of motion and with time becomes irreparable → **rotator cuff arthropathy**
- Complications of surgery: not improving, stiffness, re-rupture





Adhesive Capsulitis

Inflammation and thickening of the shoulder capsule



Adhesive Capsulitis

- Also called “frozen shoulder” which is not specific term and should not be used.
- It is characterized by pain and restriction of **all** movements of the shoulder (global stiffness) due to fibrosis and contracture of the capsule.
- Usually self limiting (typically begins gradually, worsens over time and then resolves but may take 2-4 years to resolve)
- 10 % is bilateral



- Risk factors:

- DM

- Hypo and Hyperthyroidism

- Following injury or surgery to the shoulder (Called secondary adhesive capsulitis)

- Hyperlipidemia

- Stages:
 - Pain (freezing stage)
 - Stiffness (frozen stage)
 - Resolution (thawing stage)

Clinical Stages

Freezing stage

Pain+++ / Hot++

ROM mildly limited

3-9 Ms



Frozen stage

Pain decrease

ROM more restricted

4-12 Ms



Thawing stage

Slow improvement in ROM

12-42 Ms

Investigations

- **Mainly clinical diagnosis**
- To rule out other pathologies
- Most of the time → **normal investigations**
- X-ray:
 - Disuse osteopenia
- MRI:
 - Thickening of the joint capsule and diminished filling of the axillary pouch

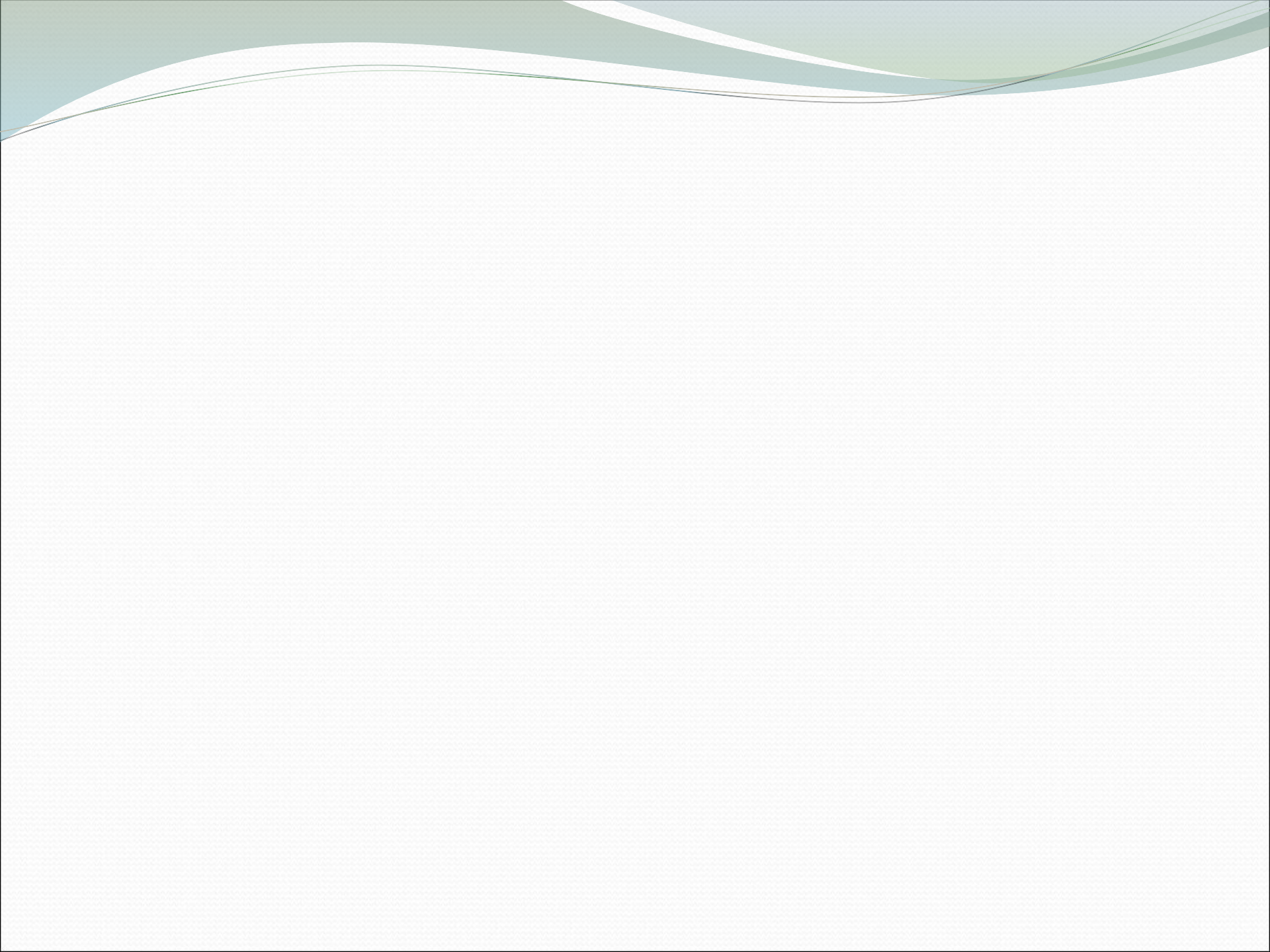
The diagnosis of adhesive capsulitis is often one of exclusion.

Adhesive Capsulitis

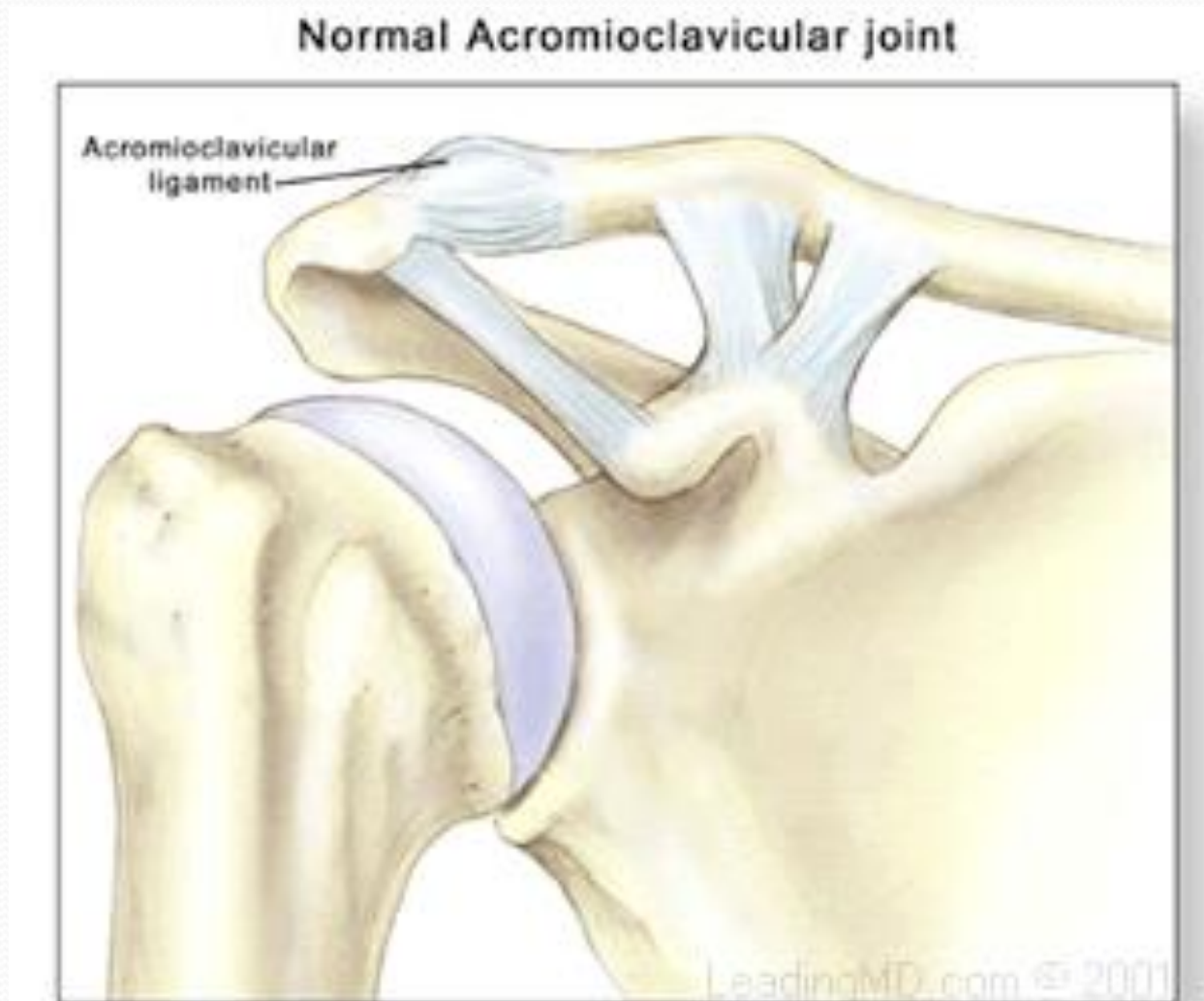
Treatment

- Resolves if untreated over 2-4 years
- Physiotherapy
- Pain and anti-inflammatory medications
- Steroid injections
- Manipulation under anesthesia
- Arthroscopic capsular release

<https://m.youtube.com/watch?v=nQMW509x6c4>



Acromioclavicular joint

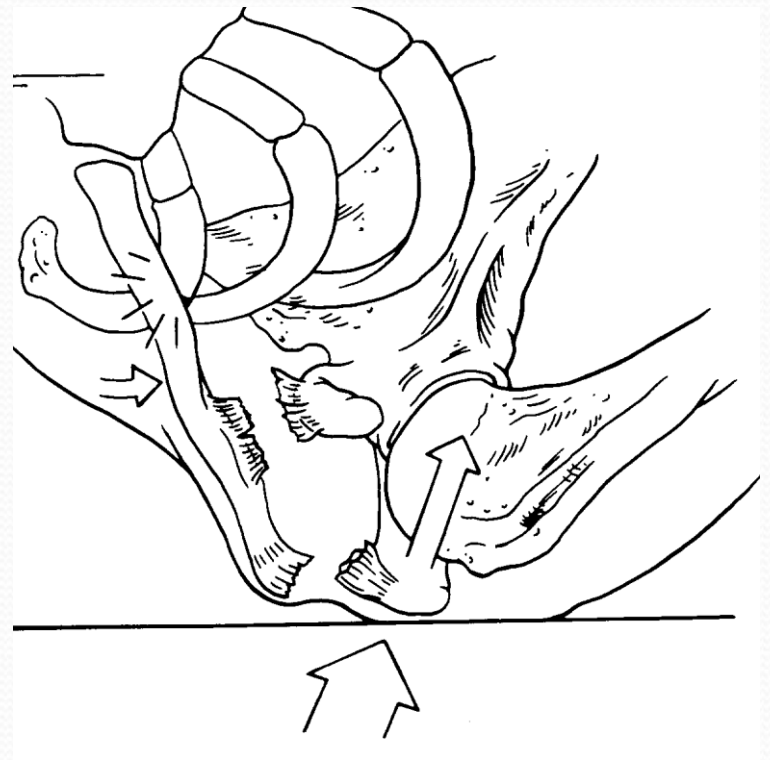
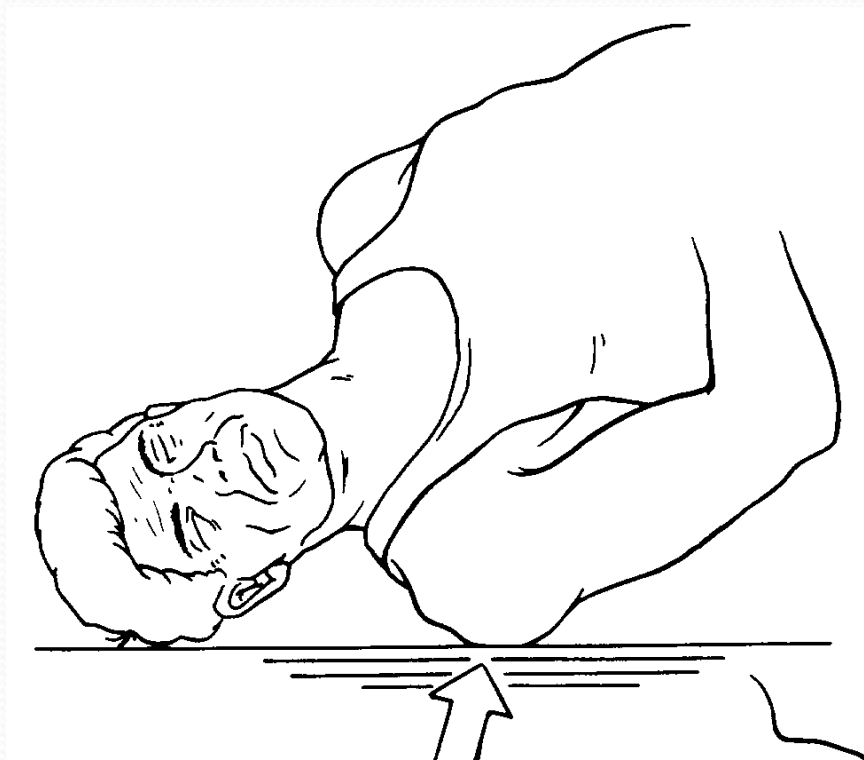


AC joint common conditions

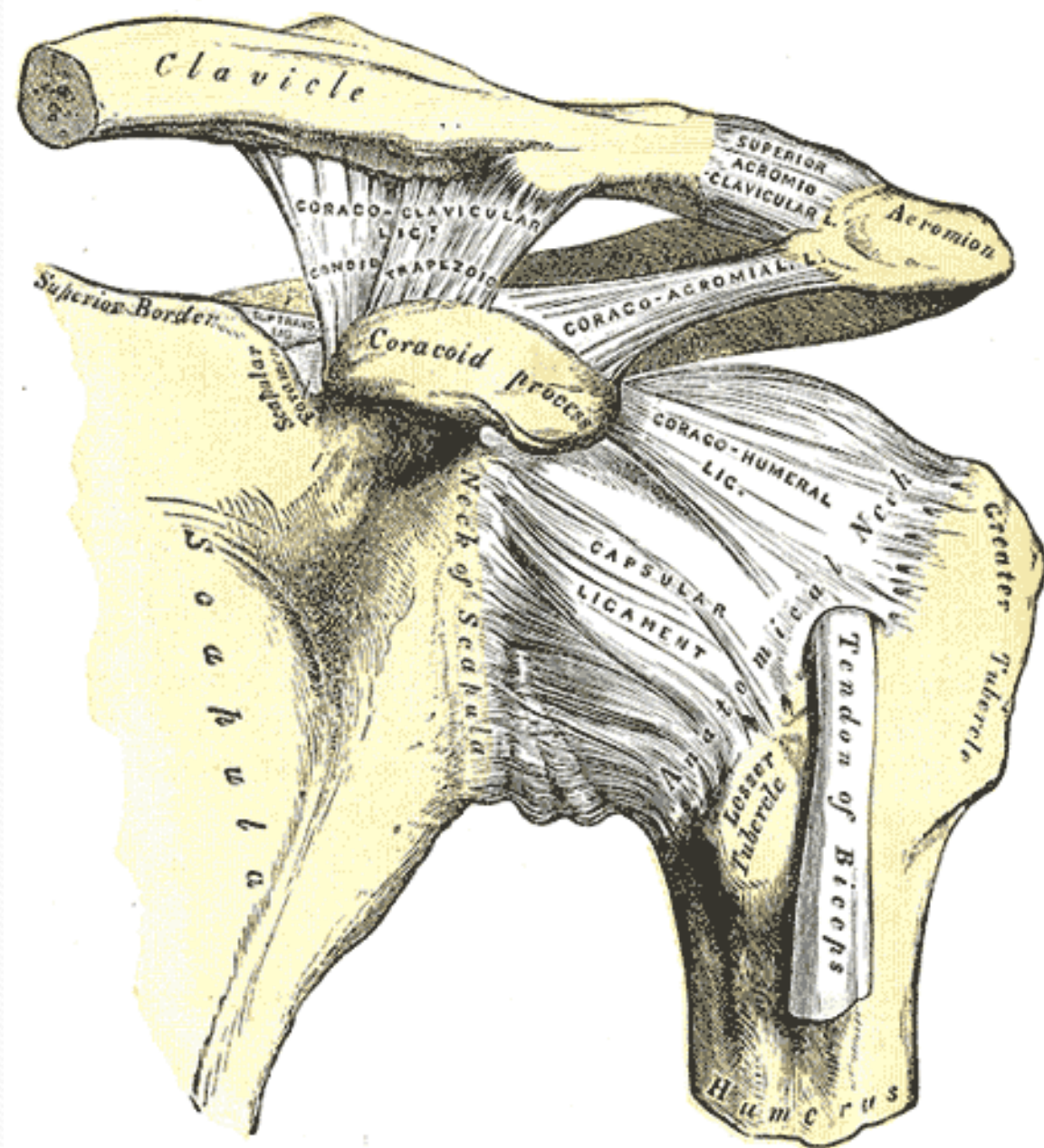
- Traumatic AC joint separation/dislocation
- Osteoarthritis
- Osteolysis of distal clavicle

Traumatic AC joint separation/dislocation

- Almost always a direct blow or fall onto acromion



- The joint is stabilized by three ligaments





Treatment

Conservative: partial dislocation



Surgical: complete dislocation



Acromioclavicular Osteoarthritis



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Causes of AC Arthritis

- Degenerative osteoarthritis.(wear and tear in old aged people) – the commonest
- Rheumatoid Arthritis .
- Gouty Arthritis.
- Septic Arthritis.
- Atraumatic distal clavicle osteolysis in **weight lifters**.

AC arthritis

- Arthritis is a condition characterized by loss of cartilage in the joint, which is essentially wear and tear of the smooth cartilage which allows the bones to move smoothly.
- Motions which aggravate arthritis at the AC joint include reaching across the body toward the other arm.

**Acromioclavicular
Osteoarthritis**



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Signs and Symptoms

Pain , which worsens with movement and progressively worsens.(the patient may suffer a night pain which is a sign of arthritis)

It is commonly associated with impingement syndrome

Diagnosis:

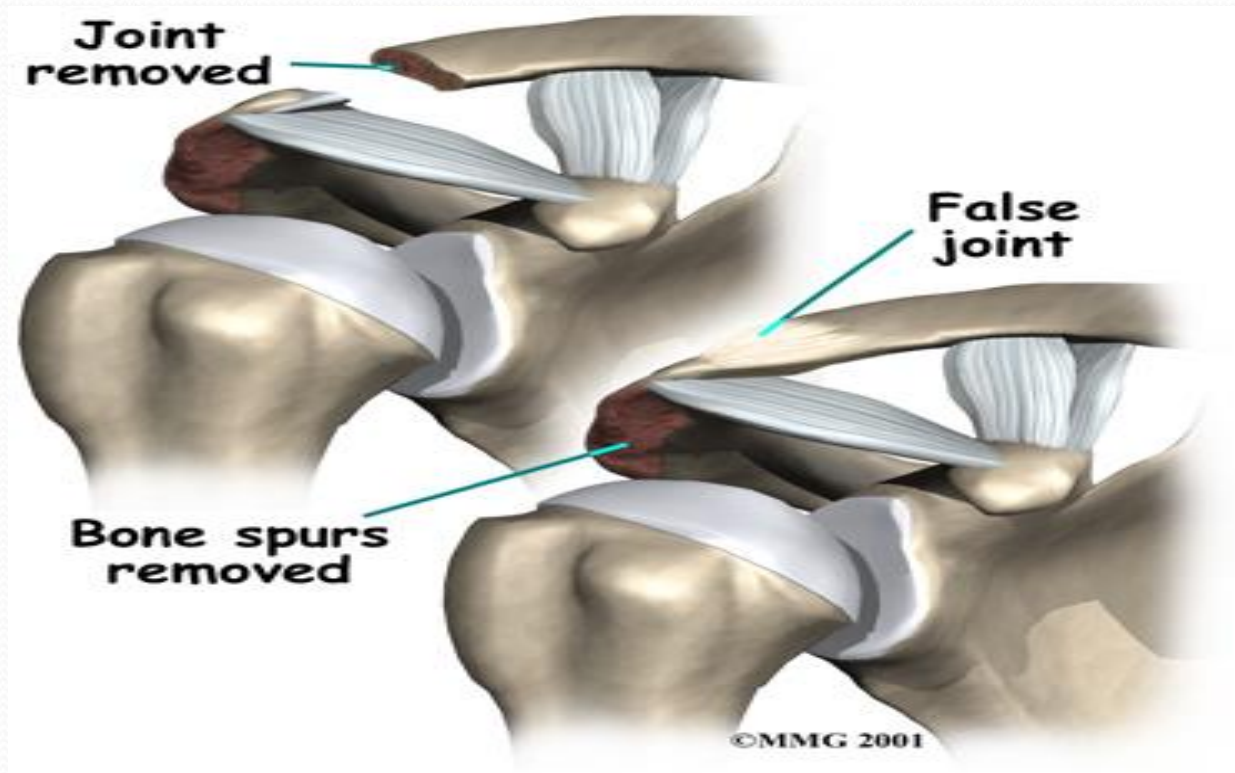
Clinical and by x-rays

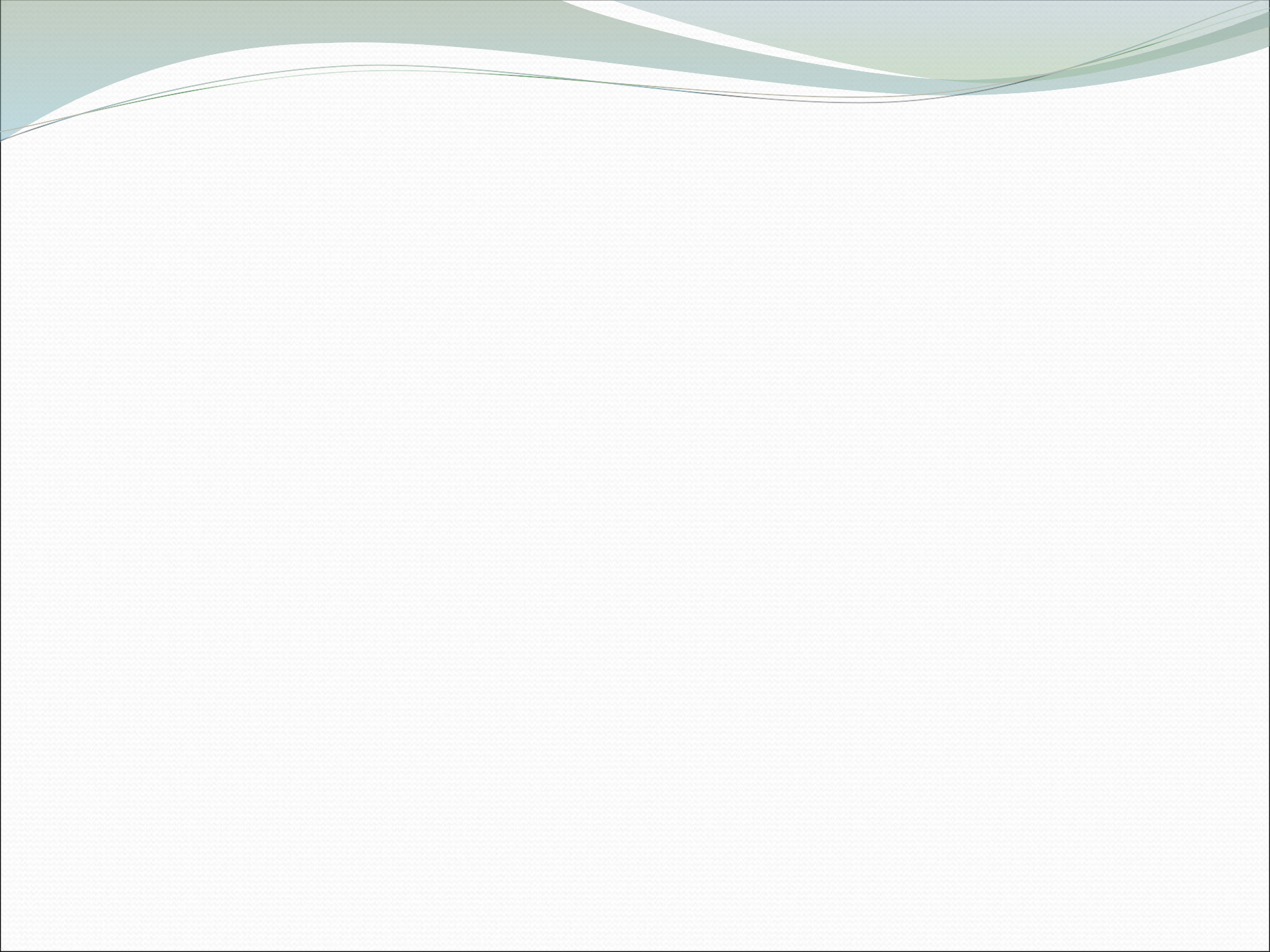
AC osteoarthritis

Non-surgical Treatment

- Rest , avoid weightlifting and push-ups
- Pain medications and NSAID to reduce pain and inflammation

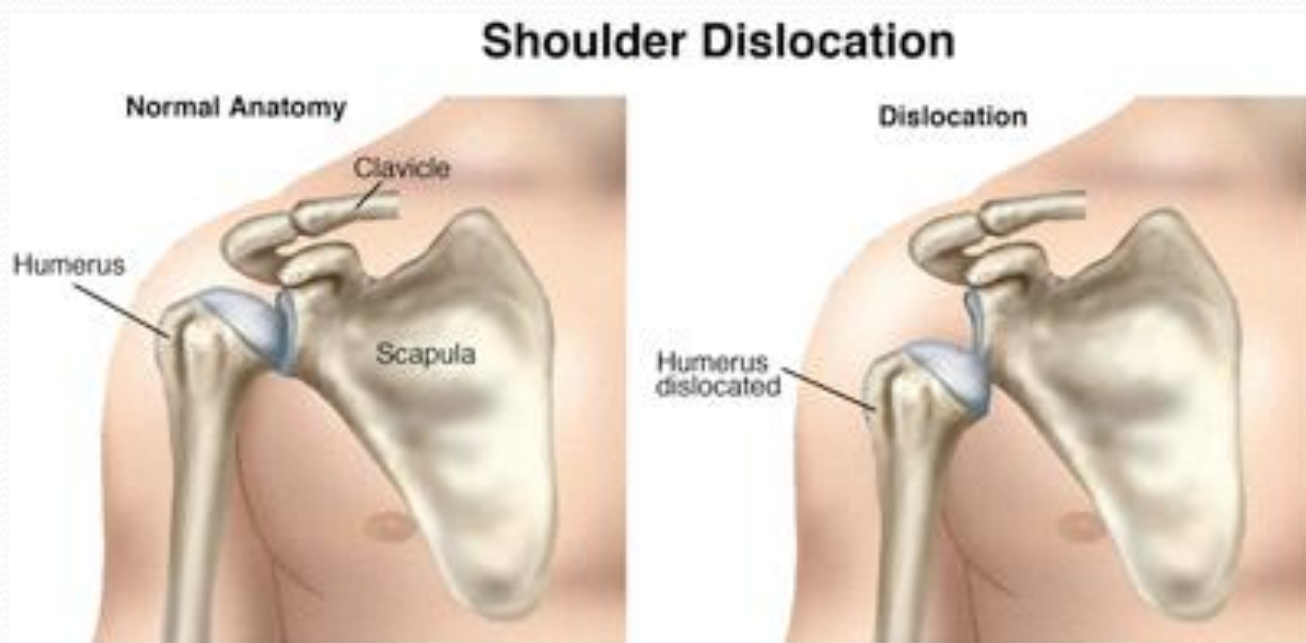
Surgical Treatment





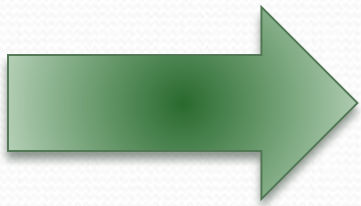
Shoulder dislocation

Acute dislocation is a surgical emergency and demands urgent relocation



Shoulder dislocation

- The shoulder joint has the greatest ROM of any joint in the body.
- It relies on soft-tissue restraints, including the capsule, ligaments, and musculature, for stability.
- Therefore, this joint is at the highest risk for dislocation.



**Most frequently dislocated
joint of the body**

Classification

Atraumatic (AMBRI)

- Multidirectional instability
- **Generalized ligamentous laxity**
- Bilateral
- Responds well to nonsurgical management
- Habitual

Traumatic (TUBS)

- 96%
- Unidirectional
- further classified by the direction of the humeral head dislocation:
 - **Anterior**
 - Posterior
 - Inferior

Acute traumatic dislocation

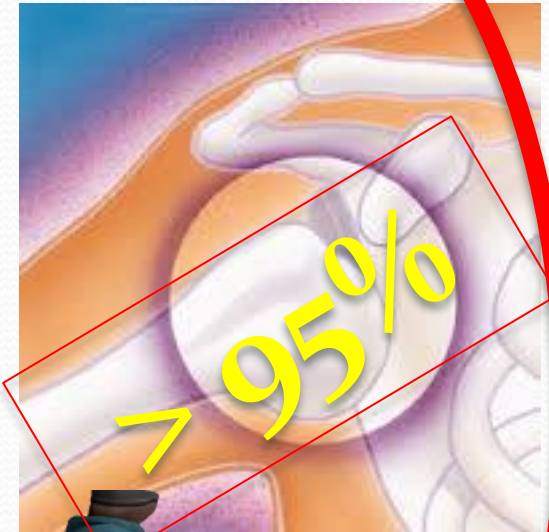
Posterior Dislocation



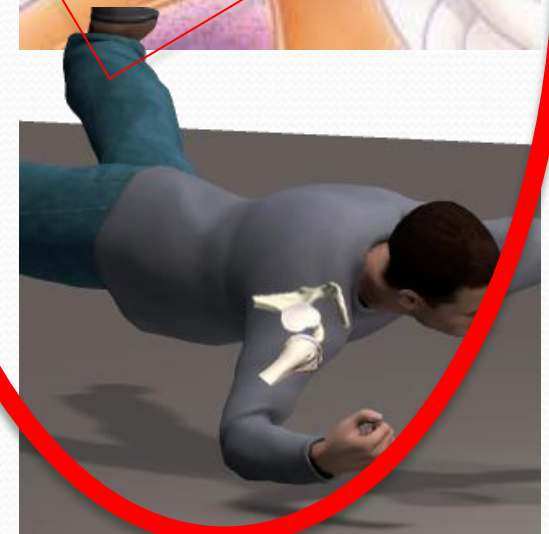
Inferior Dislocation



Anterior dislocation



Inferior Dislocation



Acute Anterior Traumatic Shoulder Dislocation

- Avulsion anterior labrum)the Bankart lesion) and sometimes anterior rim of the glenoid (Bony Bankart lesion)

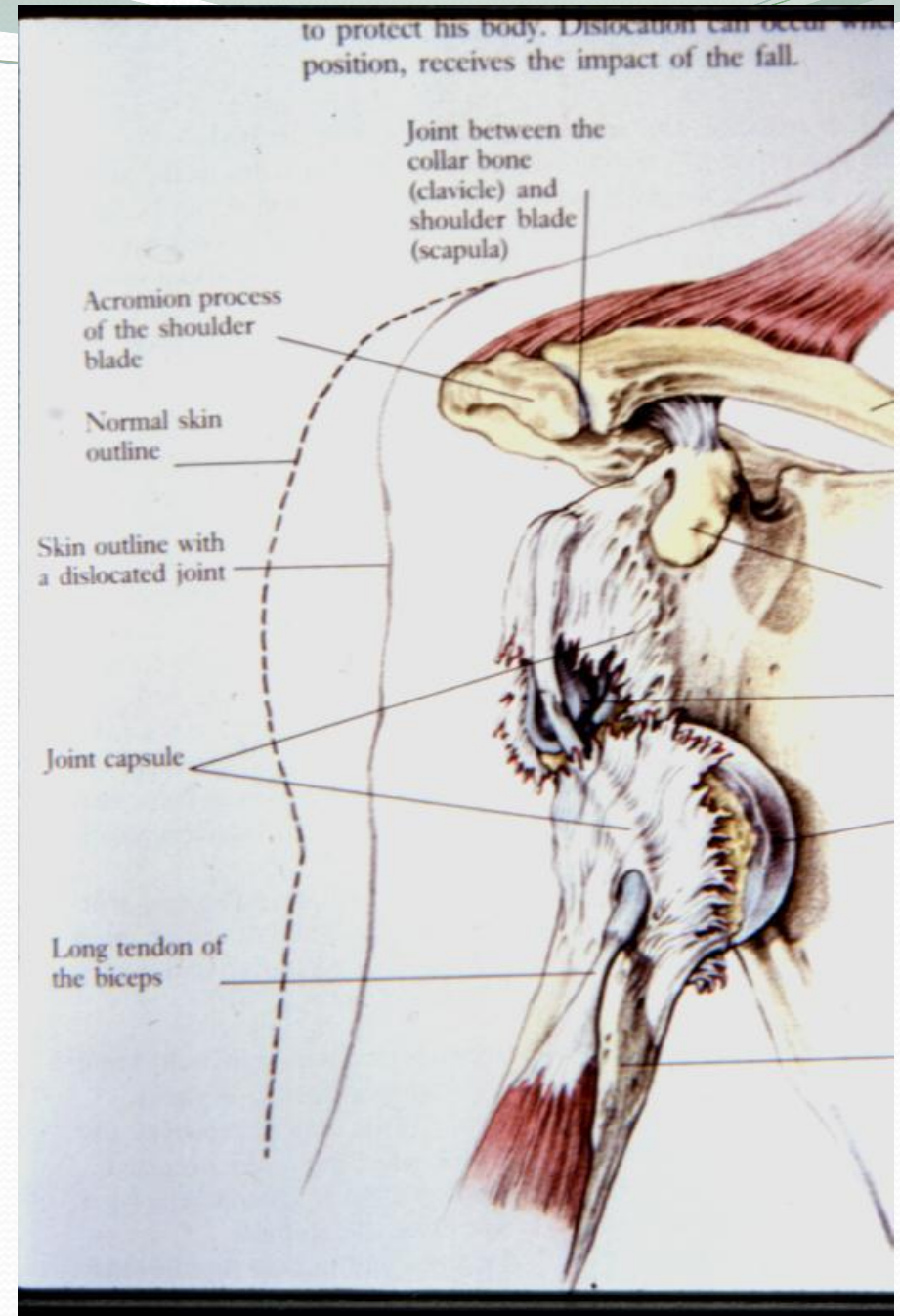


Mechanism of acute anterior shoulder dislocation

- Usually **indirect** fall on Abducted and extended shoulder
- May be **direct** when there is a blow on the shoulder from behind

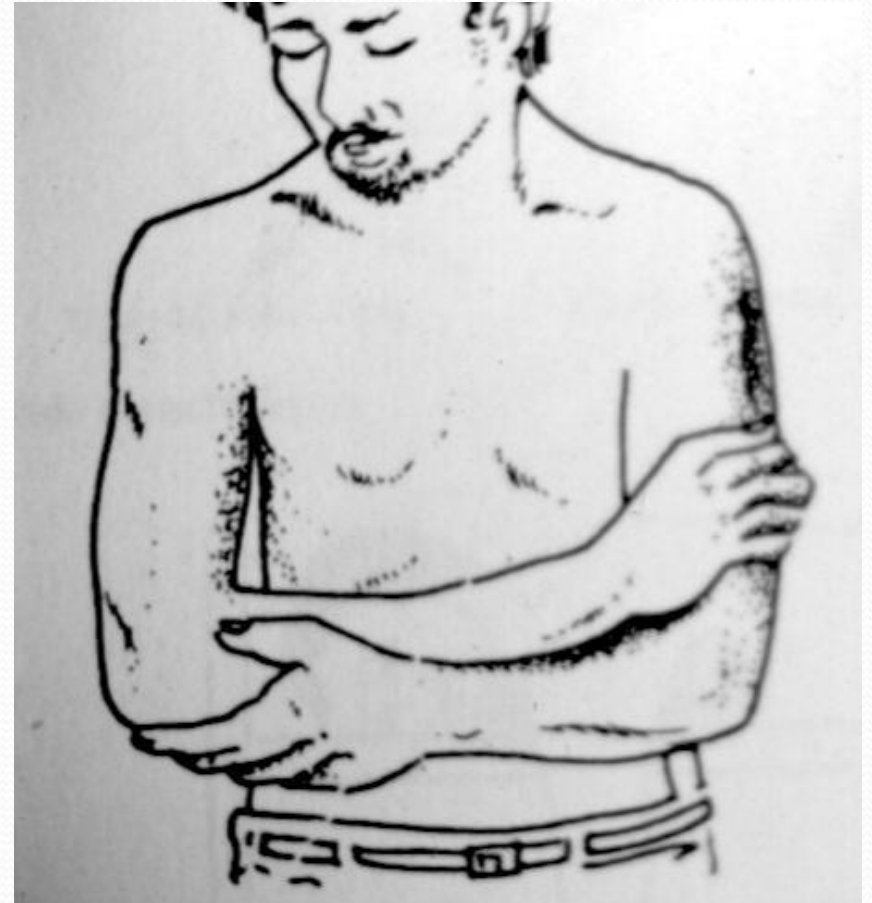
Anterior Shoulder dislocation

- It is anterior inferior
- Bankart lesion



Clinical Picture

- Patient is in pain
- Holds the injured limb with other hand close to the trunk
- The shoulder is abducted and the elbow is kept flexed
- There is loss of the normal contour of the shoulder



Clinical Picture

- Loss of the contour of the shoulder may appear as a step
- Anterior bulge of head of humerus may be visible or palpable
- A gap can be palpated above the dislocated head of the humerus



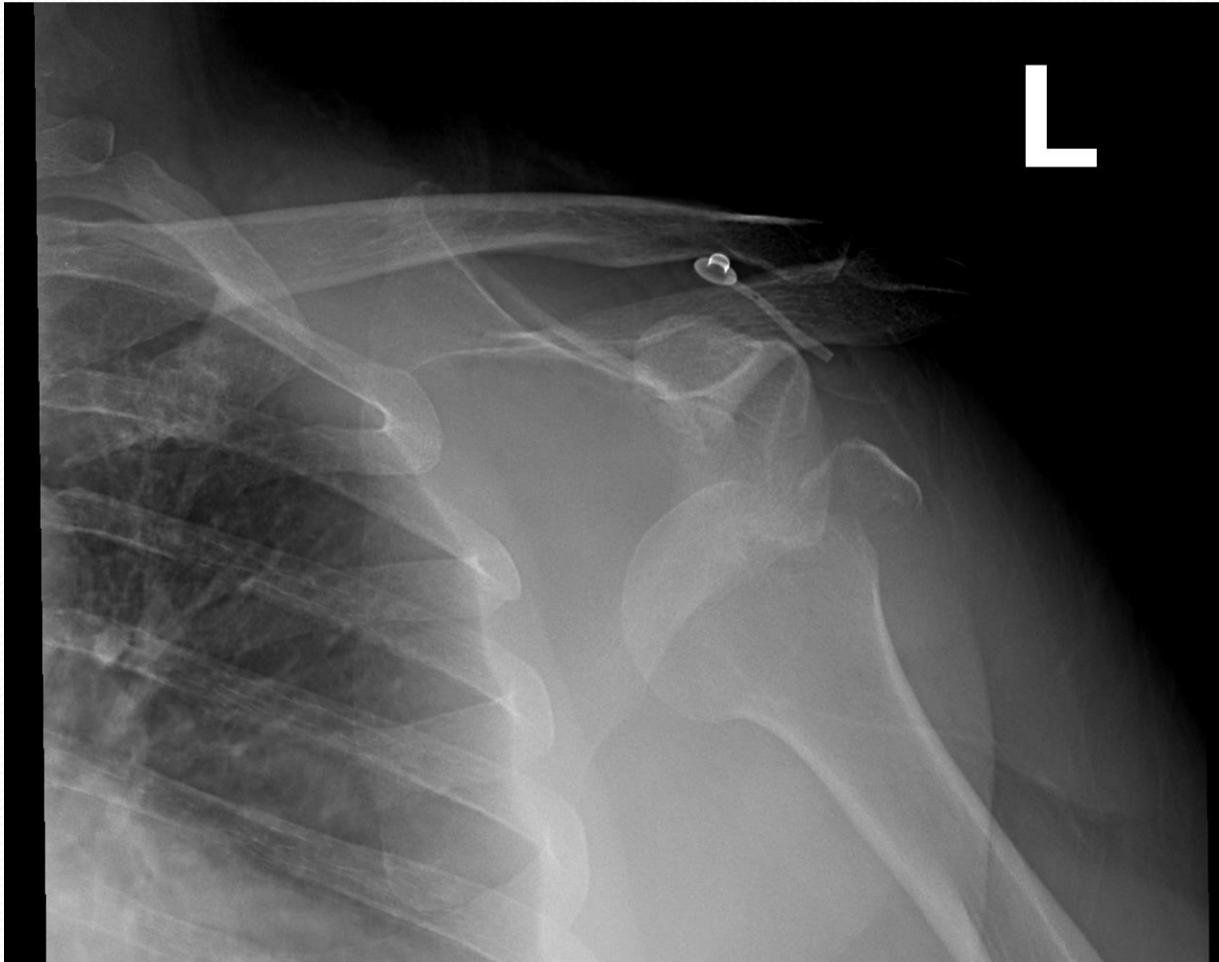


X-ray anterior shoulder dislocation



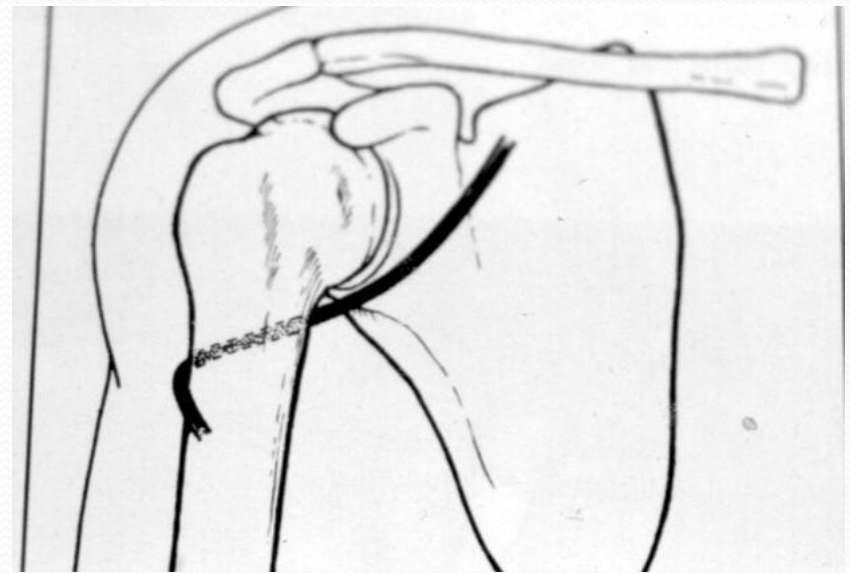
Associated injuries of anterior Shoulder Dislocation

- Injury to the neuro vascular bundle in axilla
- Injury of the **Axillary Nerve** (Usually stretching leading to temporary neuropraxia)
- Associated **fracture**



Axillary Nerve Injury

- It is a branch from posterior cord of Brachial plexus
- It hooks close round neck of humerus from posterior to anterior
- It pierces the deep surface of deltoid and supply it and the part of skin over it



Axillary nerve injury



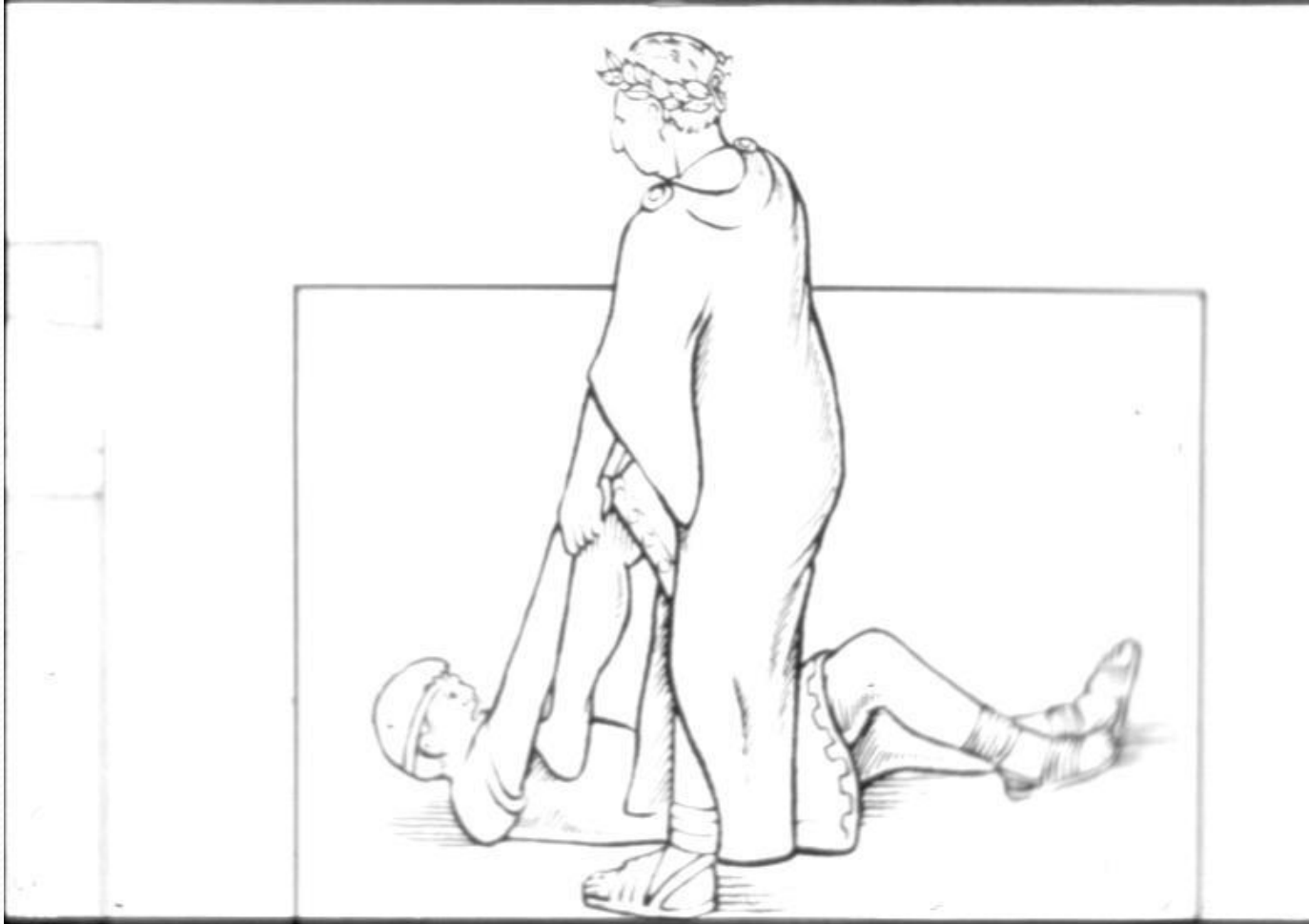
Management of Anterior Shoulder Dislocation

- Is an **Emergency**
- It should be reduced in less than 24 hours or there may be Avascular Necrosis of head of humerus
- Following reduction the shoulder should be immobilised strapped to the trunk for 3-4 weeks and rested in a collar and cuff

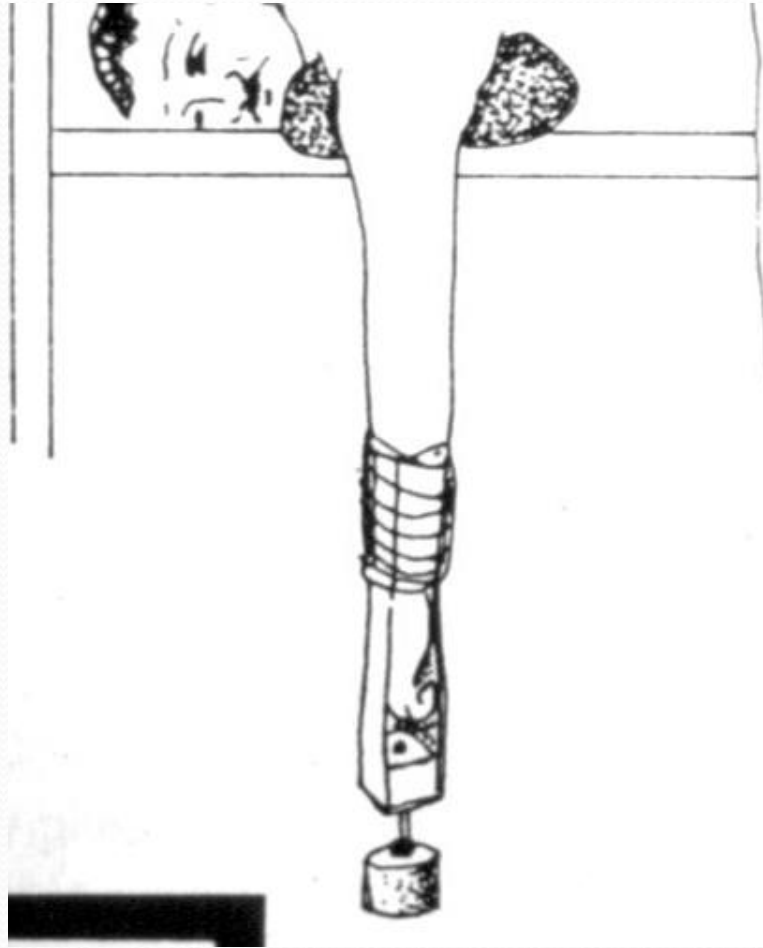
Methods of Reduction of anterior shoulder Dislocation

- **Hippocrates Method** (A form of anesthesia or pain abolishing is required)
- **Stimpson's technique** (some sedation and analgesia are used but No anesthesia is required)
- **Kocher's technique** is the method used in hospitals

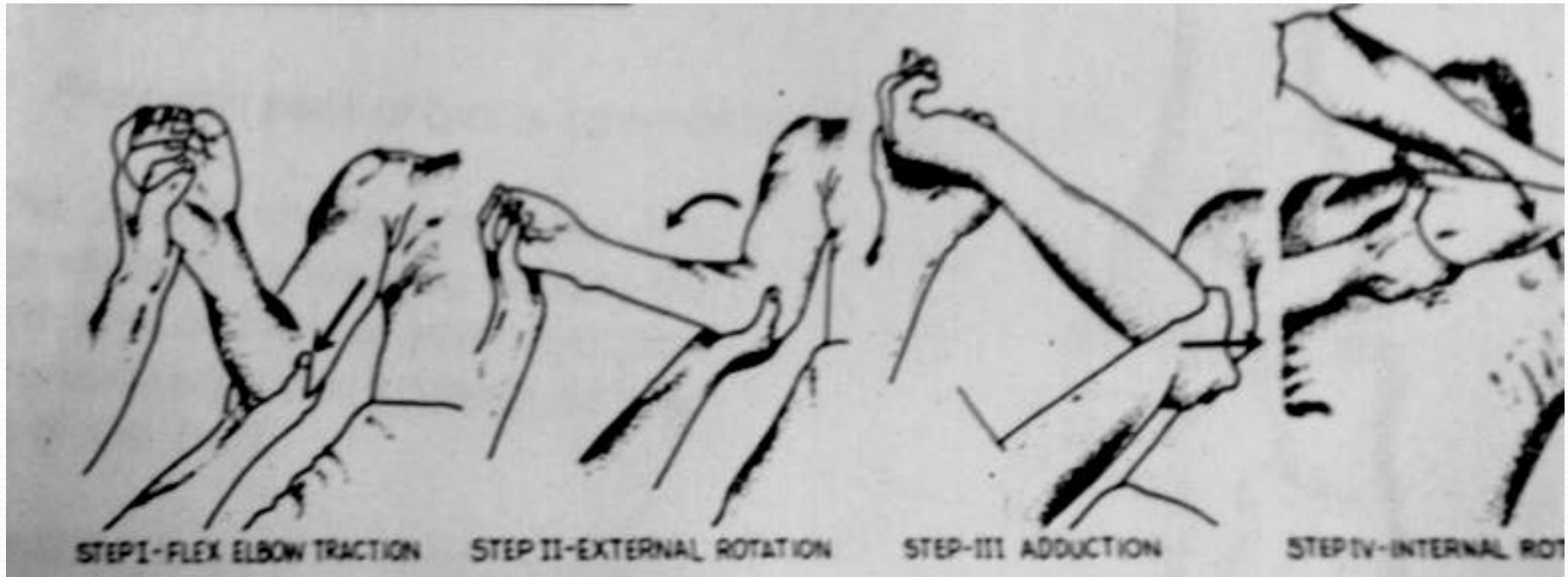
Hippocrates Method



Stimpson's technique



Kocher's Technique



Complications of anterior Shoulder Dislocation : Early

- Neuro vascular injury (rare)
- Axillary nerve injury
- Associated Fracture of neck of humerus or greater or lesser tuberosities

Complications of anterior shoulder Dislocation : Late

- **Avascular necrosis** of the head of the Humerus
(high risk with delayed reduction)
- **Recurrent shoulder dislocations**

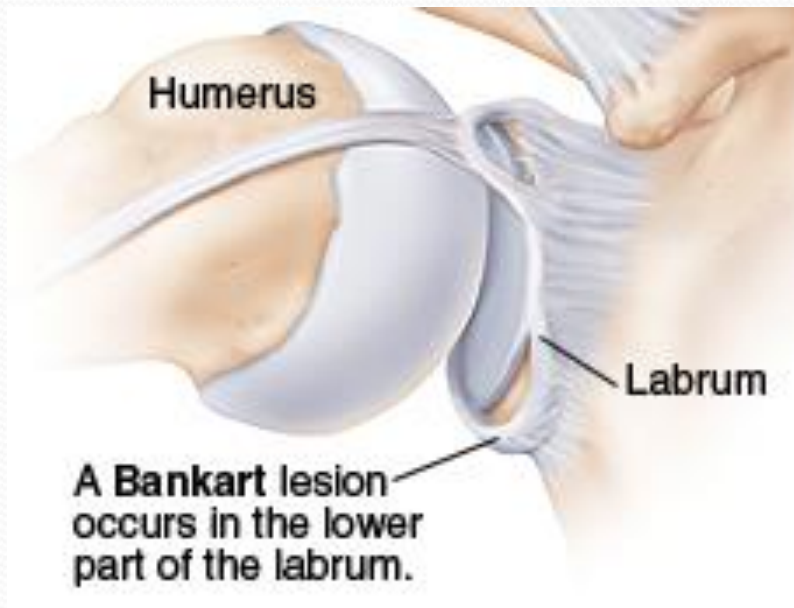
Associated Injuries

- **RCT or fracture of the greater tuberosity → 33%**
 - Dislocation + Patients > 40 years → high risk of **RCT** (20-54%)
- **Neurological injury → 13%**
 - Axillary nerve → most common
- **Bankart lesions → 85%**
- **Hill-Sachs lesion** (an impaction fracture of the supero-posterolateral humeral head on the glenoid rim) → 40-90%

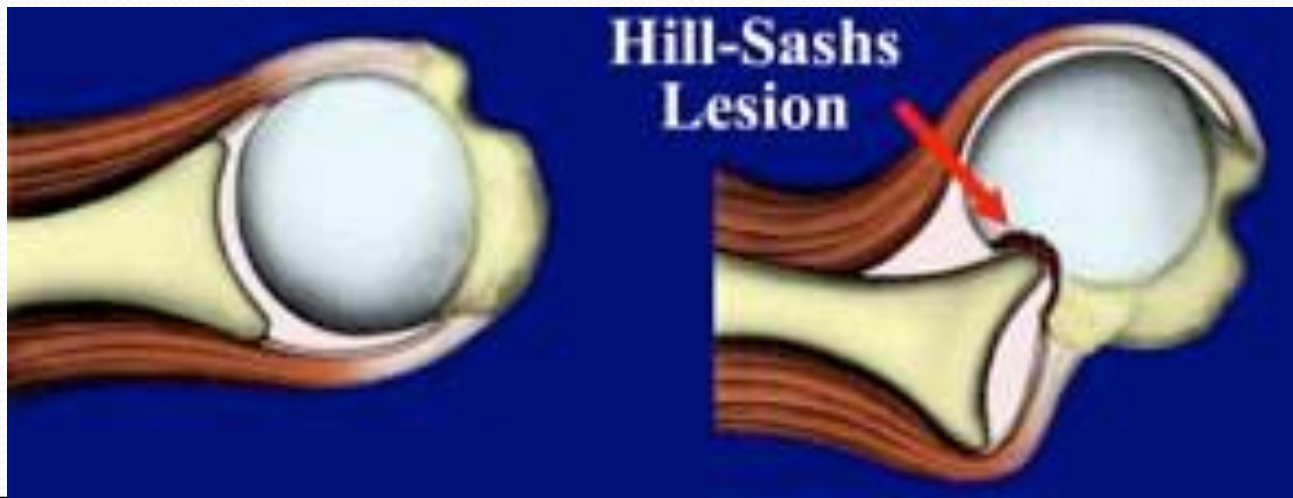
Shoulder dislocation in patient >40 Y/O → get an MRI to R/O RC tears

Bankart lesions

- Detachments of the anterior labrum from the glenoid rim



Hill-Sachs lesion

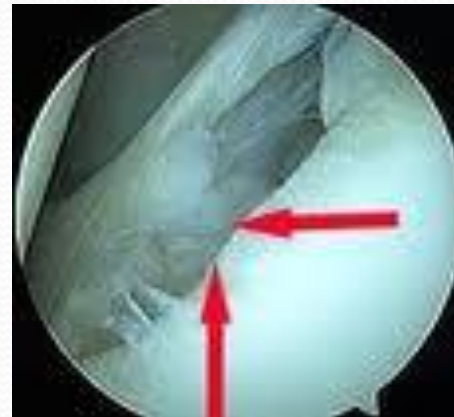
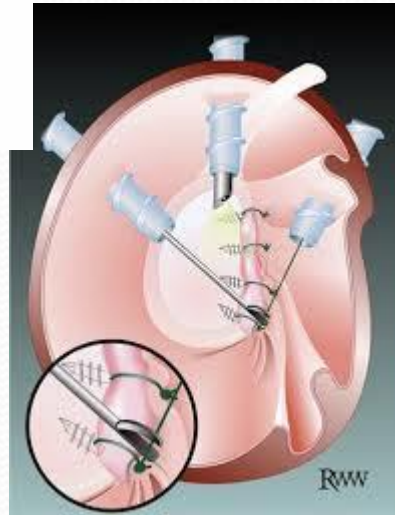
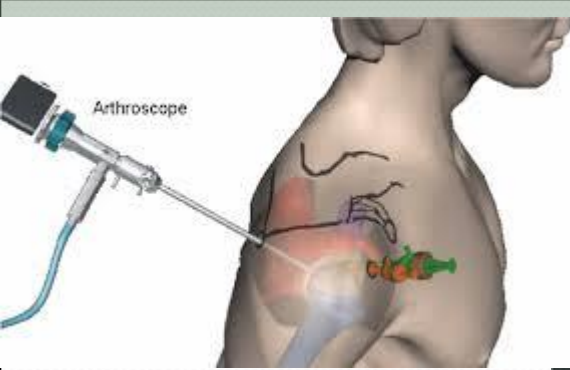


Post-reduction rehabilitation

- The goal of rehabilitation is to regain maximum ROM while retaining stability.
- The affected arm can be immobilized for 3 weeks, and limited physical rehabilitation is recommended.

Complications of anterior Shoulder Dislocation

- Axillary nerve injury
- Rotator Cuff Tear
 - Most common over age 40
- Greater Tuberosity Fracture
- Avascular necrosis of the head of the Humerus (high risk with delayed reduction)
- Recurrent shoulder dislocations/ instability



https://m.youtube.com/watch?v=6j8b_McA8_g

- 
- End of the lecture
 - Any questions?