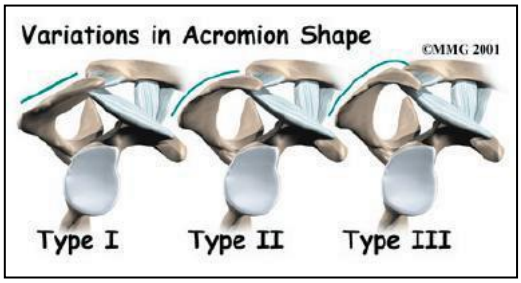
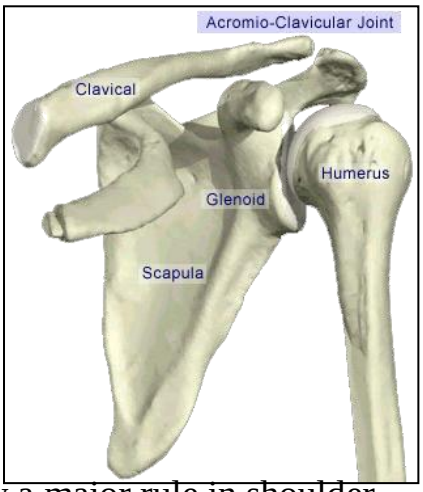
Chronic Shoulder Disorder

Shoulder anatomy

- Bony anatomy: (it has a greatest rang of motion due its unique anatomy (ball&sacket))
  - 4 different bones participate in the formation of the shoulder. These are:
    - Humerus
    - Scapula
    - Clavicle
    - Sternum
  - The scapula has 4 significant boney parts. These are:
    - Glenoid
    - Acromion
    - Coracoid
    - Scapular body
  - The acromion can have 3 different presentation:
    - Type 1: Flat.
    - Type 2: Curved.
    - Type 3: Hooked.

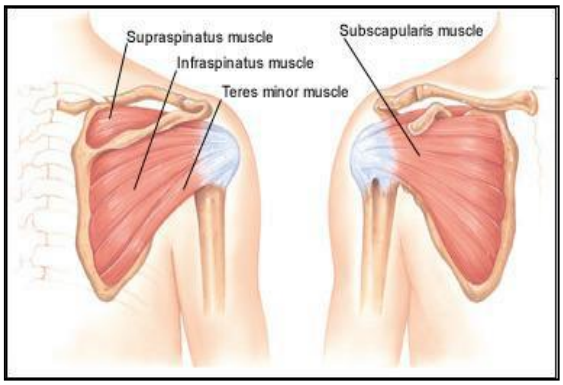




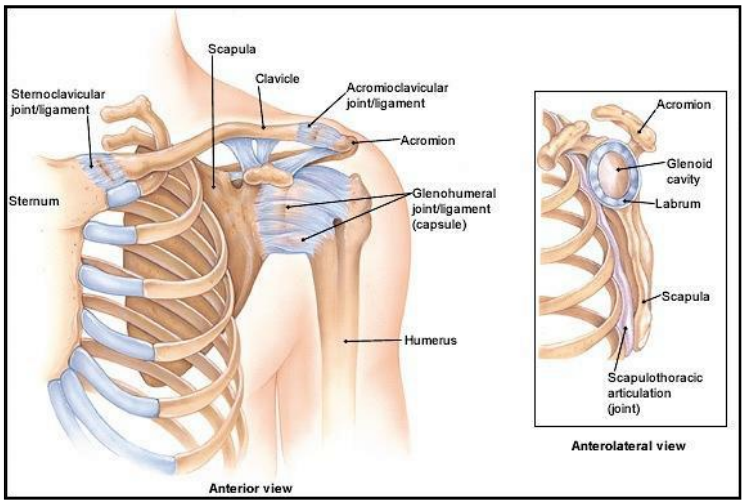
- Joints:
  - The shoulder has 4 different joints that play a major rule in shoulder movement, as well as stabilizing its different bones. These joints are:
    - Glenohumeral joint: the main joint (the most common joint to be located due to big ranr of motion affect stability)
    - Acromioclavicular (AC) joint
    - Sternoclavicular (SC) joint
    - Scapulothoracic joint
  - The Glenohumeral joint is the most common joint to have a dislocation.
  - This is due to its poor articulation, resulting in a lack of bony stability.
  - The GH joint is composed of:
    - Fibrous capsule
    - Ligament
    - Surrounding muscles
    - Glenoid labrum (is the of the meniscous in the knee and v.imp in the stability)

- Rotator cuff muscles:
  - The four muscles of the rotator cuff are over half of the seven scapulohumeral muscles.
  - They play a major rule in the movement, protection and stabilization of the GH (shoulder) joint.
  - The stabilization part is mediated by their action in "depressing the humeral head against the glenoid" bone of the scapular.
  - The rotator cuff muscles are:
    - Supraspinatus: → Abduct the arm. Initiate it (and we test it by empty can or horn blower test)
    - Infraspinatus: → Externally rotate the arm. (we do externally rotation against resistance)
    - Teres minor: →Externally rotate the arm.
    - Subscapularis: → Internally rotate the humerous. (attached at lesser tubersity)(we do lift off test)
  - The supraspinatus tendon, which is just beneath the acromion, is the most common site for "wear and tear" injury, producing what is called impingement syndrome.

Supra/infraspinatus attached at greater tubersity



(Rotator cuff Muscles)



(Shoulder Joints)

- Other musculatures:
  - Deltoid muscle: (it origin from 3 spaces clavicle , acromin , scapular body) most imp ms hold shoulder in place innervated by axillary nerve
    - This is the largest and strongest muscle of the shoulder.
  - Others include: Pectoralis major, latissimusdorsi, biceps, rhomboids, trapezius, levator scapulae, serratus anterior

deltoid hold and abduct …when its contract pulls humoral head up and ratater cuff keeps humoral head in place (down)

couple forces :one is pulling up (deltoid) one is depressing the head (rotater cuff)

- Subacromial bursa soft tissue its function minimize the friction located in subacromin space
    - Between the acromion and the rotator cuff tendons.
    - Protects the acromion and the rotator cuff from grinding against each other.

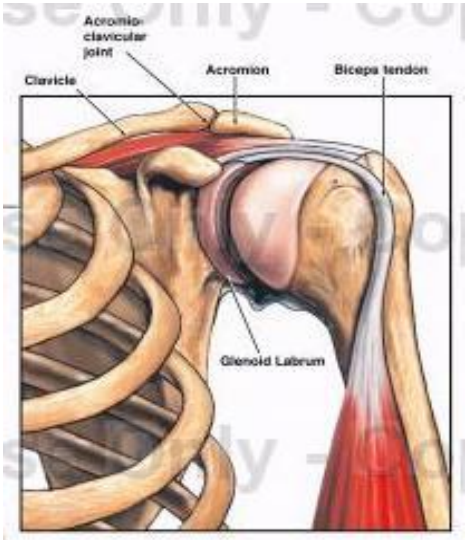
Impingement Syndrome

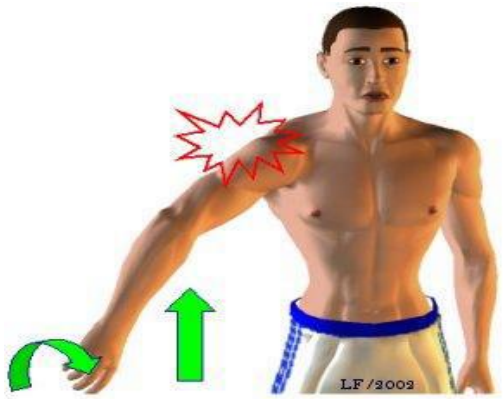
- Describes a condition in which the supraspinatus and bursa are pinched as they pass between the head of humerus (greater tuberosity) and the lateral aspect of the acromion(mechanism either increase in the size e.g tendinitis ,bursitis /or decrease in space , osteophyte is formed)and usually both of them happen

  movement with abduction is very painful something is impinged

- Risk factors
  - Age (middle and older age; 40-85y)
  - Overhead activities (e.g. lifting, swimming, tennis)
  - Bursitis and supraspinatus tendinitis
  - Acromial shape: type II & III acromion is common
  - AC joint pathology
    - AC joint arthritis or osteophytes may result in impingement and mechanical irritation to the rotator cuff tendons.
  - Rotator cuff weakness.

- Symptoms
  - Pain in the acromial area when the arm is flexed and internally rotated
    - →This means inability to use the overhead position.
  - The pain may result from subacromial bursitis or rotator cuff tendinitis
    - → This result in narrowing, or even complete loss, of the subacromial space, and hence a friction between the bony acromion and the delicate supraspinatus tendon.
  - 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 lead to stiffness then weakness
  - Weakness

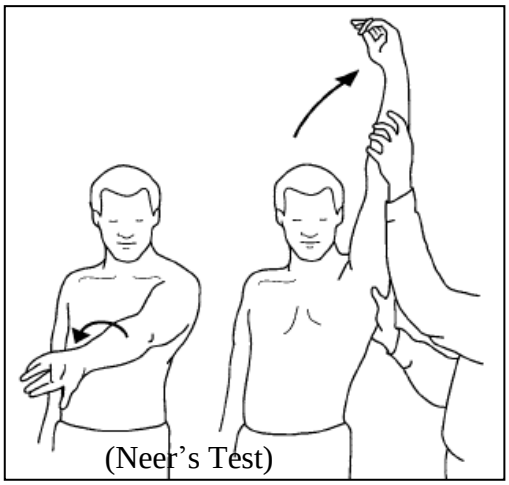




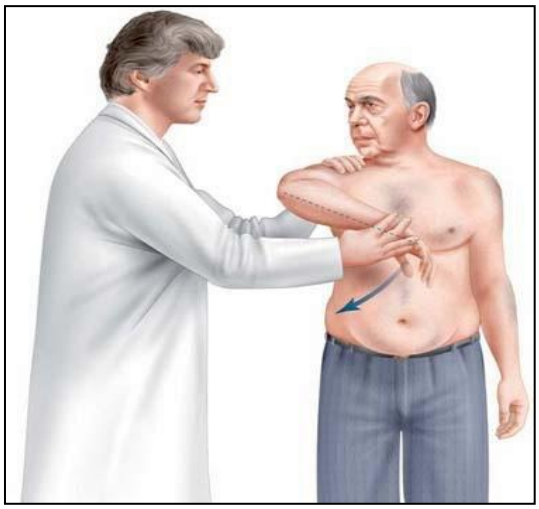
- Differential diagnosis
  - Rotator cuff tears
  - Calcific tendinitis
  - Biceps tendinitis
  - Cervical radiculopathy
  - Acromioclavicular arthritis
  - Glenohumeral instability
  - Degeneration of the glenohumeral joint.

- Physical examination
  - Atrophy of rotator cuff muscles. Late stage
  - Decreased range of motion (esp. internal rotation & abduction)first thing to happen
  - Weakness in flexion and external rotation.
  - Pain on resisted abduction and external rotation.
  - Pain on "**impingement tests**".
- Impingement tests

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. More sensitive than neer

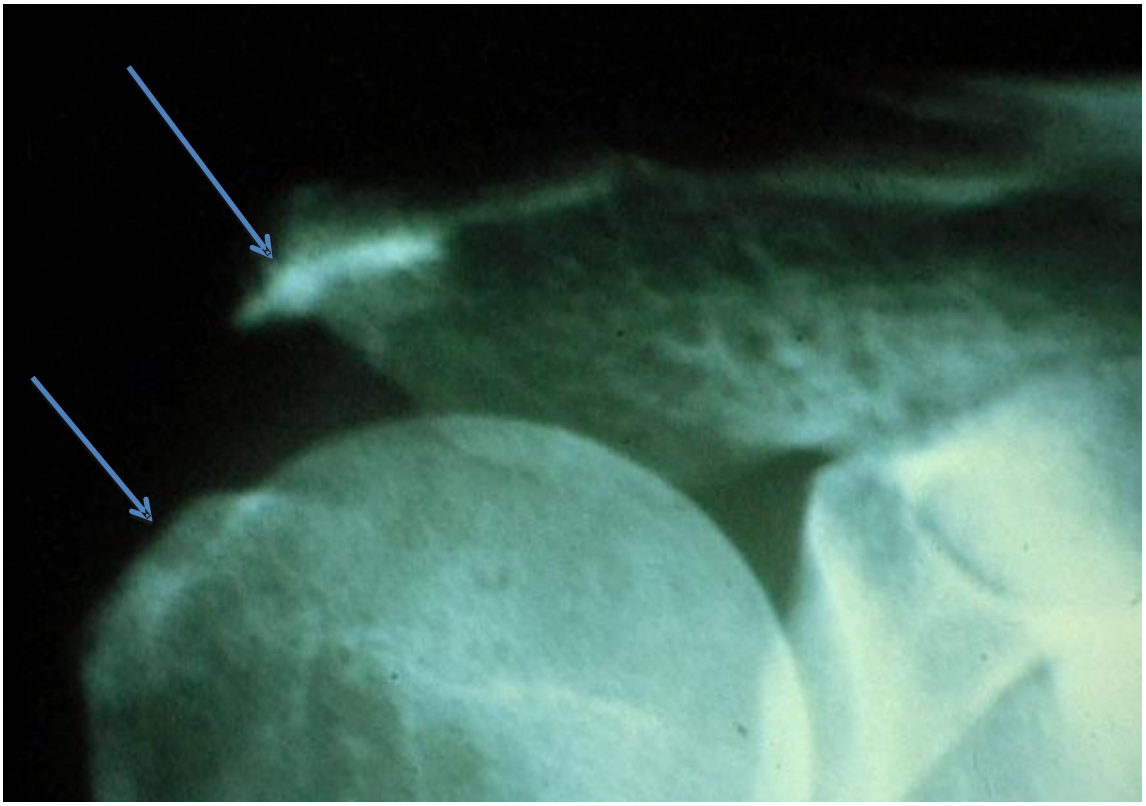


(Neer's Test)



(Hawkins test)118

- Radiological findings
  - Plain X-rays: u may and u may not find anything depend on the stage
    - Acromial spurs
    - AC joint osteophytes
    - Subacromial sclerosis
    - Greater tuberosity cyst
    - Acromion shape
      - ✓ *Supraspinatus outlet view is useful in determining the type of acromion shape.*
      - ✓ *Please remember that round and hooked types are commonly associated with impingement syndrome.*
  - MRI: is the best investigation to confirm the diagnosis and rule out other diagnoses
    - To confirm the diagnosis and rule out rotator cuff tear.



Very rare to see changes in x-ray

Supraspinatus outlet view: Round acromionvery useful view give us shape of the acromion

- Management
  - Conservative treatment: (Always to begin with)
    - Avoid painful and overhead activities
    - Physiotherapy:
      - Stretching and range of motion exercises
      - Strengthening exercises
    - NSAIDs→ to reduce the inflammation
    - Steroid injection into the subacromial space potent anti inflammatory max to dose and two month gap

Chornic use can cause destruction of the cartilage and rapture of the tendon(ms rapture)

  - Operative: (when conservative measures fail)
    - 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 better than open coz open need to immobilze the shoulder and this is risk factor of stiffness) (called subacromial decompression) shevring the acromion and removed the burse but in case of tendinitis we do nothing ▪ Success rate 70-90%

Rotator Cuff Tears

- Causes:
  A. Intrinsic factors:
     - Vascular long standing vascular ischemia can cause ms rapture coz the ms is weaken
     - Degenerative (age-related) old age >50 but younger usually acute injury

  B. Extrinsic factors:
     - Impingement with over use can lead to supraspinatous tear
     - Acromial spurs
     - AC joint osteophytes can lead to impingement then tear
     - Repetitive use

  C. Traumatic (e.g. a fall or trying to catch or lift a heavy object)treat them acutely immediately
- Diagnosis
  - History overhead activity diminished
  - Physical examination mentioned before
  - X-rays
  - MRI

- Wide spectrum presentations: (width of rotater cuff 8-10mm)
  - Partial tear <50% of width of rot cuff
  - Complete tear full thickness
    - Small not moving
    - Large
    - Massive (irreparable) ms retracted to glenoid, cant repair
- Treatment
  - Degenerative type: (always start with non-operative) study shows 50%of ppl aged >50 have rotater cuff tear foun in MRI and they asymptomatic
    - Rest
    - Physio
    - NSAIDs
    - Steroid injection
    - ✓ If no improvement within 6 months, surgical repair (open or arthroscopic) is indicated
  - Traumatic type: (acute surgical repair)
  - If not treated → chronic pain and loss of motion and with time becomes irreparable → rotator cuff arthropathy chronic tear(ms contracted)it appeared as fatty filtration in MRI ..humeral head will migrate and hit acromion …OA
  - Complications of surgery: not improving, stiffness(physiotherapy , NSAIDs,steroid inj. Manipulation under anesthesia)

Adhesive Capsulitis

- Also called "frozen shoulder" inflamed capsule cause adhesion
- " Global stiffness "→ It is characterized by pain and restriction of all movements of the shoulder started as pain then all motion reduced
- Usually self-limiting (typically begins gradually, worsens over time and then resolves but may take >2 years to resolve)
- 10 % is bilateral

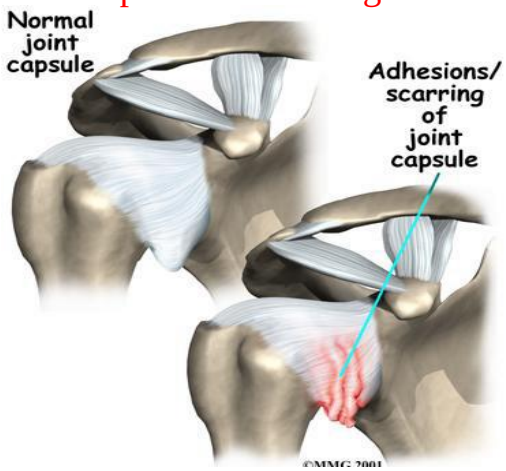
- Risk factors:
  - DM (esp. insulin dependent) high risk factor and more in type 1
  - Hypo and Hyperthyroidism
  - Following injury or surgery to the shoulder post rot cuff repair
  - High cholesterol

- Diagnosis:
  - Mainly clinical global stiffness
  - X-rays and MRI to rule out other pathologies

by exclusion

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

- Treatment
  - Resolves if untreated over 2-4 years
  - Physiotherapy main treatment
  - Pain and anti-inflammatory medications
  - Steroid injections in the GHj
  - Manipulation under anesthesia one of the complication is iatrogenic fracture coz it is very stiff
  - Arthroscopic capsular release

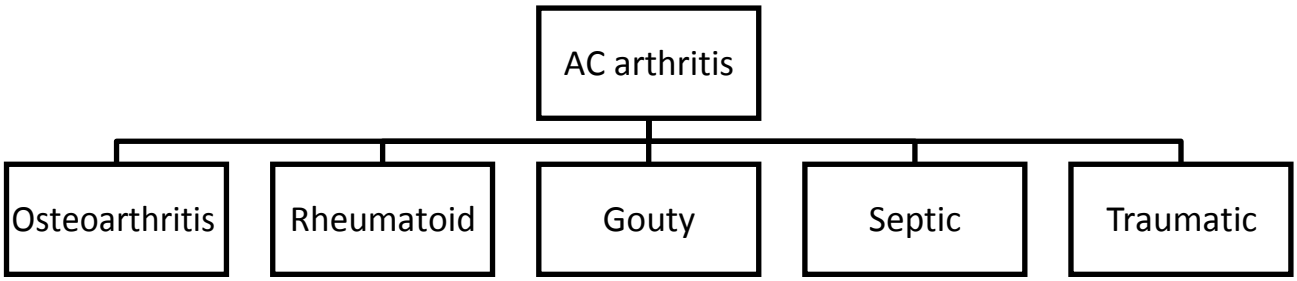


Acromioclavicular Pathology

- The AC joint is different from joints like the knee or ankle, because it doesn't need to move very much.
- The AC joint only needs to be flexible enough for the shoulder to move freely.
- It just shifts a bit as the shoulder moves.
- The joint is stabilized by three ligaments (ac dislocation of lig tear)

- **AC Arthritis**
  - Joints have a smooth cartilage that allows the bones to move smoothly.
  - Arthritis is a condition characterized by loss of cartilage in the joint, leading to afriction and inflammation of the affected bones.
  - Motions that aggravate arthritis at the AC joint include reaching across the body toward the other arm.

  - Causes of AC arthritis:
    - Degenerative osteoarthritis. (wear and tear in old aged people)
    - Rheumatoid arthritis.
    - Gouty Arthritis.
    - Septic Arthritis.
    - A traumatic distal claivcle osteolysis in weight lifters. Osteolysis of the bone and widening of joint space
      - ✓ Result from repeated movements that wear away the cartilage surface found at the acromio-clavicular joint
    - Post-traumatic osteolysis of lateral end of clavicle.(like dislocation or a fracture)



- **AC osteoarthritis: associated with rot cuff tear**
  - *Signs and Symptoms*
    - Pain, which worsens with movement and progressively worsens.(the patient may suffer a night pain which is a sign of arthritis)

tenderness over AC joint

    - It is commonly associated with impingement syndrome

  - *Diagnosis*:
    - Clinical and by x-rays

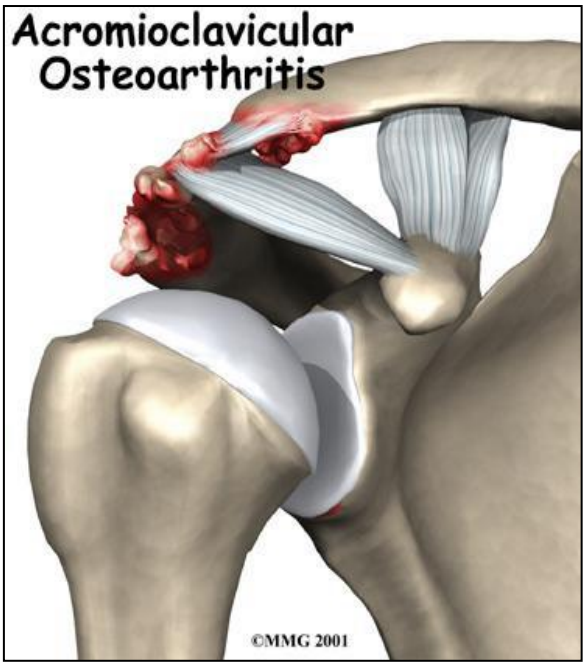
  - *Treatment*:

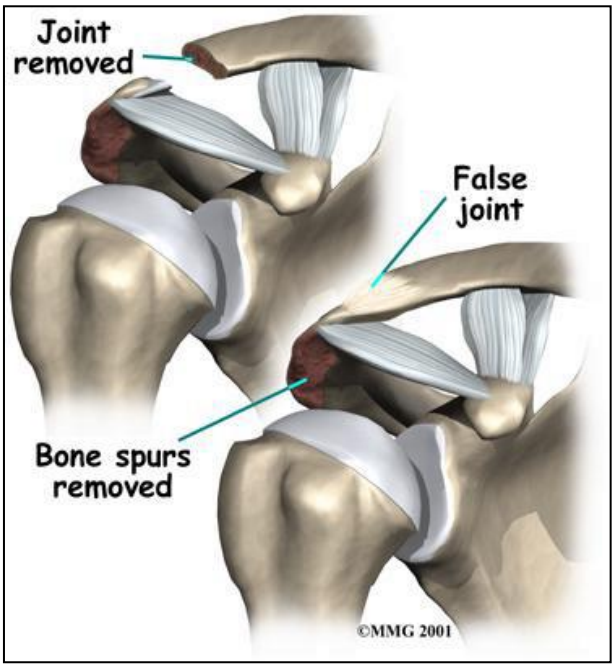
a) Non-surgical Treatment
    - Rest, avoid weightlifting and push-ups
    - Pain medications and NSAID to reduce pain and inflammation

b) Surgical treatment:
    - It involves removing of the AC joint applying an artificial joint.

Removing distal clavical 1cm latrally

    - The bone spurs must also be removed.





Dislocation of the Shoulder

- Mostly **Anterior**> 95 % of dislocations
- **Posterior** Dislocation occurs < 5 %
- True **Inferior** dislocation (luxatioerecta) occurs < 1% very rare

✓ **Habitual** Non traumatic dislocation may present as Multi directional dislocation due to generalized ligamentous laxity and is **Painless** physiotherapy 1st choice in treatment

- Anterior shoulder dislocation:
  - It is usually caused by **an indirect** fall on an abducted and extended shoulder.
    - ✓ May be direct when there is a blow on the shoulder from behind
  - Usually also inferior.
  - **Bankart's Lesion** labrum get detached .. recurrent shoulder dislocation and corrected by bankart's repair

  - Clinical Picture
    - Patient is in sever pain one of the emergency (longstanding dislocation can lead to avascular necrosis , neuropraxia , ms stretch and should be reduce ASAP)
    - 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
    - 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

Anterior Shoulder dislocation: there is a loss of the contour of the shoulder appears as a step

- Associated injuries of anterior Shoulder Dislocation neurovascular examination should be done
  - Injury to the neuro vascular bundle in axilla
  - Injury of the **Axillary Nerve** (Usually stretching leading to temporary neuropraxia)
  - Associated **fracture** in greater tubercity

- 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
  - Injury can will result in a loss of abduction and sensation over the lateral arm

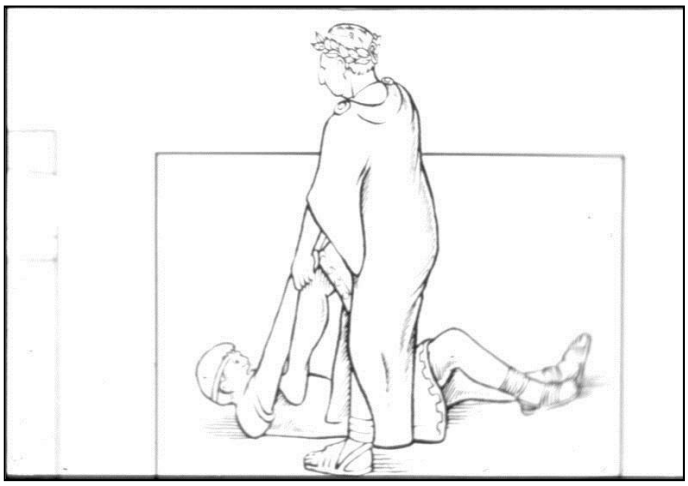
- Management of Anterior Shoulder Dislocation
  - Is an **Emergency**
  - It should be reduced in less than 24 hours or there may be Avascular Necrosis of head of humerus
  - Following reduction the shoulder should be immobilized strapped to the trunk for 3-4 weeks and rested in a collar and cuff

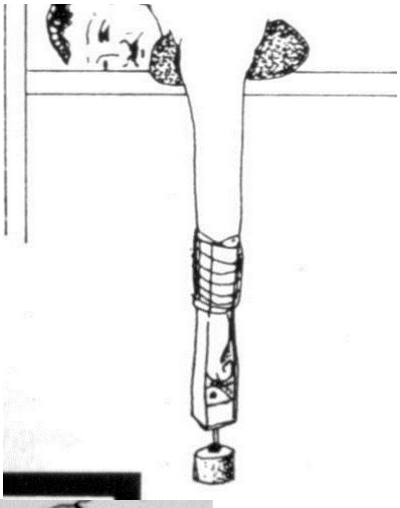
- Methods of Reduction of anterior shoulder Dislocation

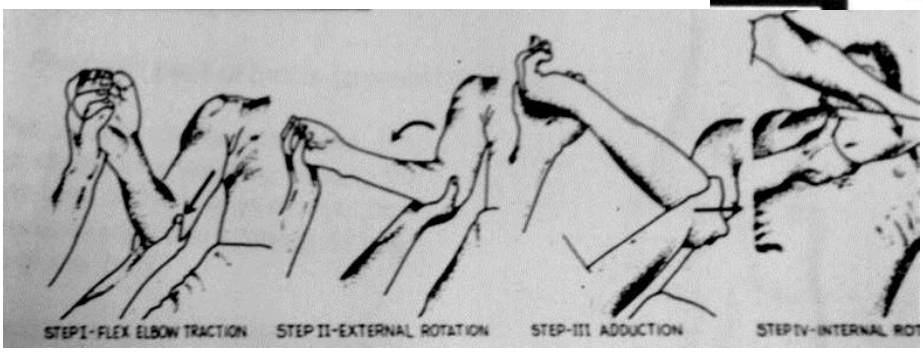
  - **Hippocrates Method** old one and done if there is no time to go to hospital
    - →A form of anesthesia or pain abolishing is required

  - **Stimpson's technique old one**
    - → Some sedation and analgesia are used but No anesthesia is required

  - **Kocher's technique done in ER**
    - → Is the method used in hospitals under general anesthesia and muscle relaxation (should be conscious but relaxed and control his own airway)







Complications of anterior Shoulder Dislocation	
Early	**<u>Late</u>**
- Neuro vascular injury (rare) - Axillary nerve injury - Associated Fracture of neck of humerus or greater or lesser tuberosi	- **Avascular necrosis** of the head of the Humerus (high risk with delayed reduction) - **Recurrent shoulder dislocations**