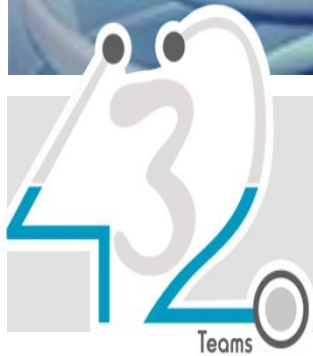


Orthopedics

432 Team

17 Common Shoulder Disorders



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Color Code:

Slides

431 team work

Doctor's Notes

Arabic Words

Team Notes

Books' notes

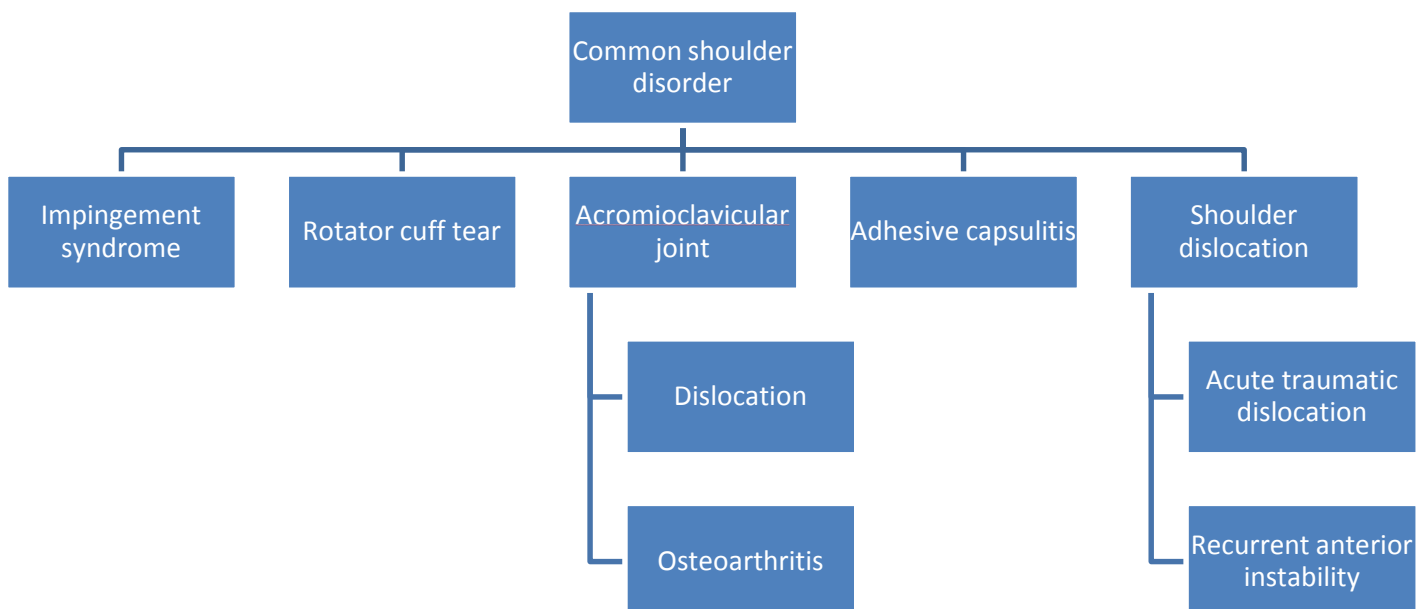
Important

Other Sources

Objectives

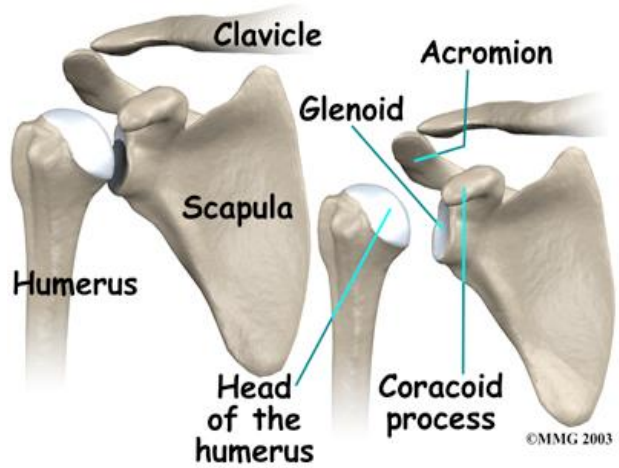
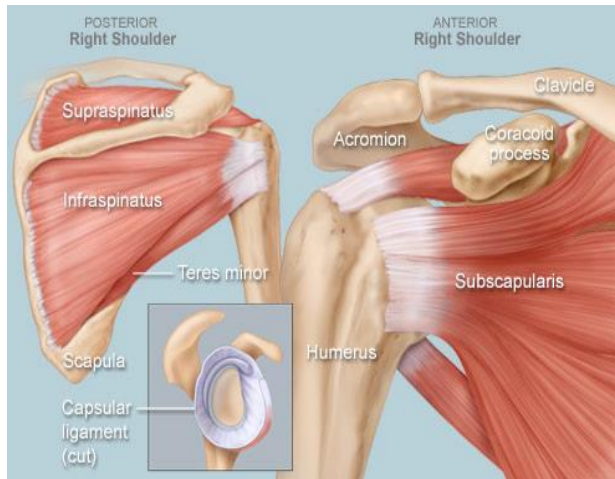
- Specify the symptoms, signs and potential immediate complications of **common shoulder disorders**
- Outline the assessment and appropriate investigation and to outline the immediate and long term management of patients **common shoulder disorders**
- Demonstrate knowledge of indications for non-operative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

MIND MAP



Anatomy

Anatomy of the shoulder:

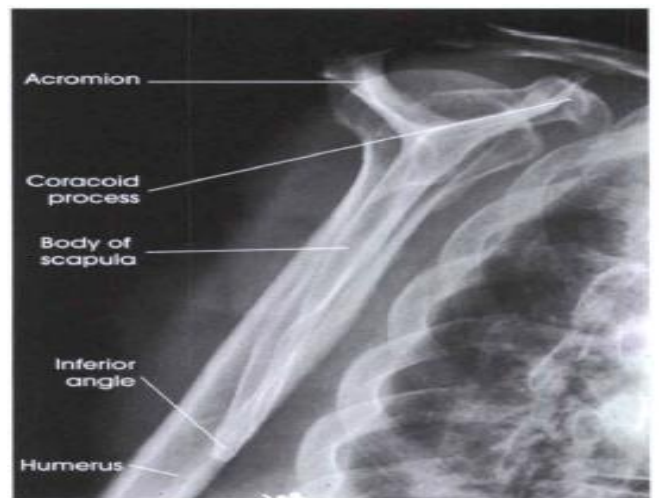


Different radiological views of the shoulder:

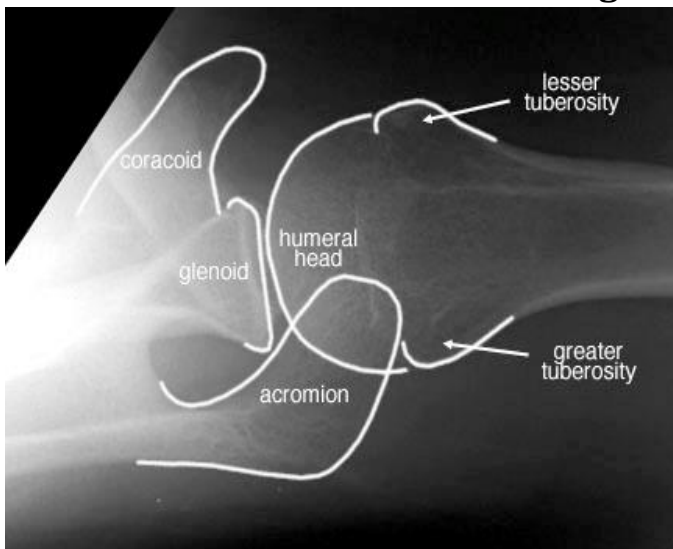
Axillary view



scapular Y shape



AP glenohumeral view



Subacromial Impingement Syndrome (SIS)

Commonest disorder of shoulder, accounting for 44–65% of shoulder pain.

Subacromial Impingement Syndrome

Subacromial bursitis

Rotator cuff tendinopathy

Partial- and full-thickness rotator cuff tears.

Stages of the impingement process:

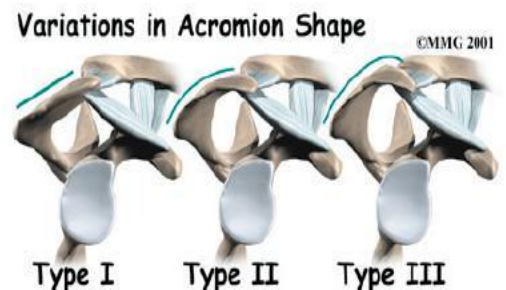
- **Stage 1** Acute bursitis with subacromial edema and hemorrhage. **< 25 Y/O**
- **Stage 2** Bursa no longer lubricates the underlying rotator cuff, leading to rotator cuff tendinopathy. **25-40 Y/O**
- **Stage 3** Progression to partial-thickness tear or a full-thickness tear. **>40 Y/O**

Causes of SIS: Extrinsic and intrinsic causes.

- **Extrinsic** → anything that minimize the acromioclavicular space.

Acromial morphology:

- **Type I** → flat
- **Type II** → curved
- **Type III** → hooked (higher incidence of cuff tears)



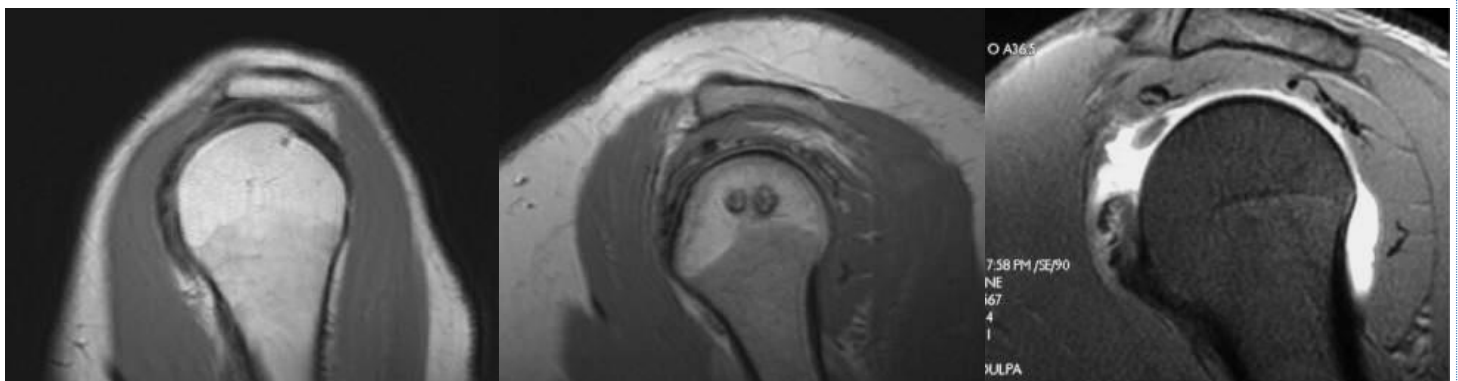
Coracoacromial ligament (CAL) → Acromial spurs

Acromioclavicular joint (AC) → Inferior osteophytes

Type 1

Type 2

Type 3



➤ **Intrinsic** → Weakness and damage to the supraspinatus (Its sucks the humeral head preventing it from migration).

1. Degenerative changes/trauma weaken the supraspinatus
2. Unable to center the humeral head on the glenoid.
3. Humeral head migrates superiorly.
4. Subacromial space narrowing.
5. Butting the tuberosity and cuff against the acromion.

The diagnosis is clinical: 1.History. 2.Physical. 3.Imaging.

History

Cuff-related symptoms

- Anterolateral arm pain **early**
- Duration weeks - months.
- **Nocturnal pain, exacerbated by lying on the involved shoulder or sleeping with the arm overhead.**
- Exacerbation of symptoms with:
 - Shoulder elevation at or above 90°
 - With lifting items away from the body
- If associated with RCT → weakness ++ (**late**)

Physical examination

IMPINGEMENT TESTS

Neer's impingement sign → inject xylocaine to reduce the pain.

If associated with RC tendinopathy (stage II)

- Pain on resisted shoulder elevation (empty can/Jobes test)
- Pain on resisted abduction and external rotation.

If associated with RCT (stage III) → Weakness +++

Neer's and Hawkins tests are used to evaluate for evidence of impingement, **sensitive, but not specific and not diagnostic.**

- Neither the Neer nor the Hawkins sign had diagnostic utility for impingement.



Imaging

Plain X-rays:

- ✚ Acromial spurs
- ✚ AC joint osteophytes
- ✚ Subacromial sclerosis
- ✚ Greater tuberosity cyst

These findings may be present in asymptomatic patients.

“Acromiohumeral distance (N=7-14mm) better reflected the clinical status of patients with subacromial impingement than did acromial shape”



MRI

- Ossification of the CAL
- Subacromial spur (**bony projection**)
- Bursal thickness >3 mm
- Collection of fluid medial to the AC joint or anterior aspect of the bursa
- RC pathology



Management

Stage 1 and 2 **BE CONSERVATIVE**

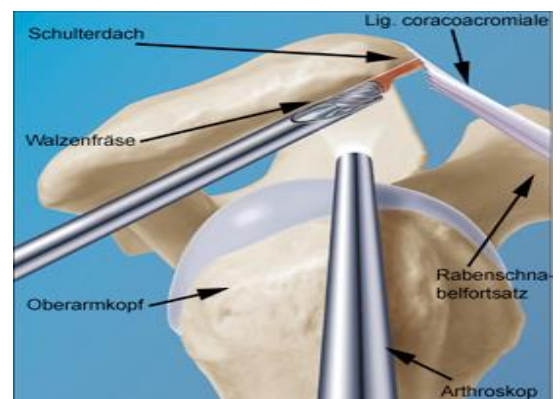
Conservative treatment: Always start with it nonsurgical treatment is successful.

- ✚ Avoid painful and overhead activities
- ✚ Physiotherapy
- ✚ NSAIDs
- ✚ Steroid injection into the subacromial space

Operative: **rare** if conservative measures fail

Arthroscopic subacromial decompression:

- ✚ Acromioplasty (**flatten the acromion**)
- ✚ Bursectomy (**clear the bursa**)
- ✚ CAL release



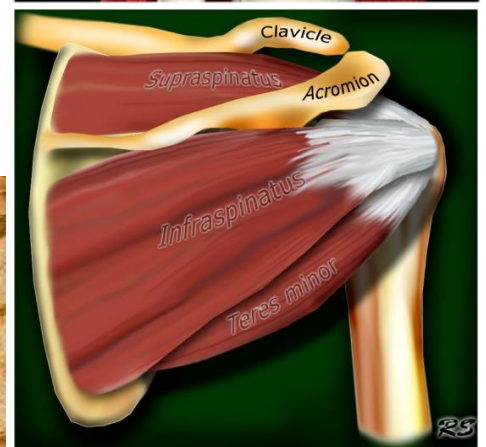
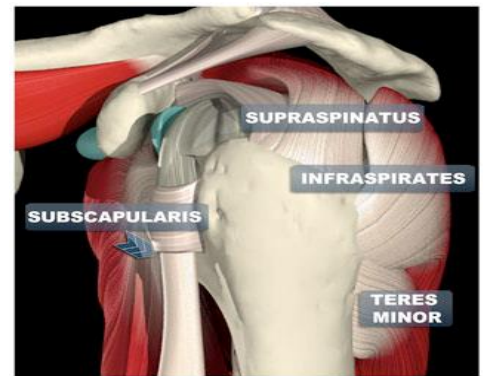
No difference in the outcome between conservative and surgical treatment.

Rotator cuff

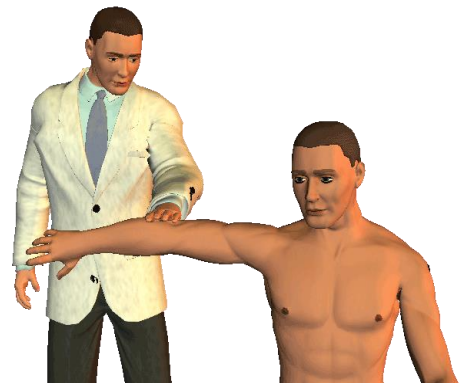
Supraspinatus → Initiates abduction, concavity-compression → prevents superior humeral head migration, **most common tear**.

Subscapularis → Primary Internal rotation, **strongest muscle**, Lift-off test/belly press/IR Lag, Inserts on Lesser tubricle.

Infraspinatus/teres minor (rotation) → Primary External Rotation, Test with arm at side, **2nd most common tear after Supraspinatus**.



Supraspinatus jobe test



Subscapularis:

Belly press test

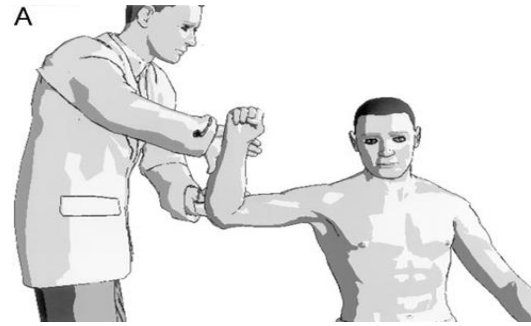
Lift-off test



Infraspinatus



Teres minor



Cuff Tear – Etiology

Intrinsic causes:

- Originates within tendon
- Overload
- Biology
 - Aging/Avascularity
 - ↑ Type III collagen
 - Smooth muscle Actin
 - Shear forces (**opposite forces**)

Extrinsic causes:

- Type III Acromion/AC osteophyte/sclerosis may be age-related
- Precursor to RCT
- Subacromial space
- Decrease with Abduction/IR in partial "RCT"

Traumatic:

- Shoulder dislocation
 - Age >40
 - **Roll out RCT specially in old patient**
- A simple fall or trying to catch or lift a heavy object can cause RCT



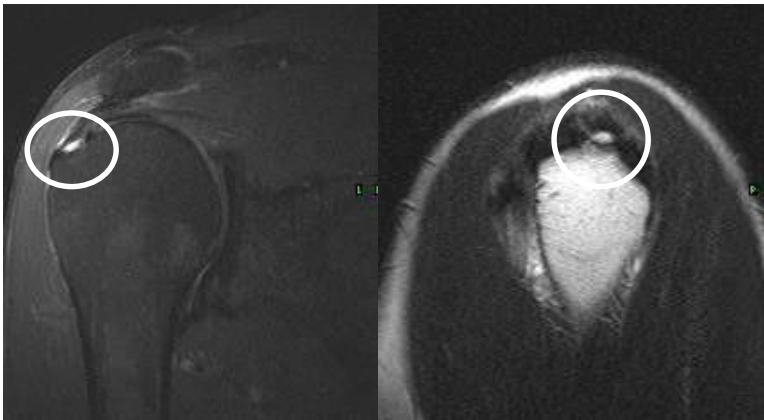
Symptoms

- ✓ Pain is the predominant symptom
 - Night pain and with overhead activities.
 - Painful range of motion
- ✓ Stiffness
- ✓ Apparent or real muscle weakness.
- ✓ **Partial tendon lesions are often much more painful than full thickness tears.**

Imaging

- ✓ **Ultra sound**
 - Operator dependent
 - Does not provide information regarding concomitant pathologies.
- ✓ **MRI**
 - Sensitivity of 84% and a specificity of 96%.
 - **Best for RC evaluation**
 - **Shows articular side tear (foot print)**
 - **Complete tears are easier to diagnose on MRI than full-thickness tear**

Partial RC tear



Full thickness tear



Do we need to treat asymptomatic elderly patient with an MRI reported RCT? No .. Only symptomatic patient

MRI study of 96 ASYMPTOMATIC shoulders

- Age 19-39 years of age :
 - no full-thickness and 4% partial thickness tears
- > 60 years of age:
 - 28% incidence of full thickness
 - 26% incidence of partial-thickness tears.

Natural history

- Most partial tears do not heal on their own.
- Partial tears progress to become larger with time.
- If chronic and irreparable → rotator cuff arthropathy (**shoulder arthritis**)

Treatment

Non operative

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

Surgical

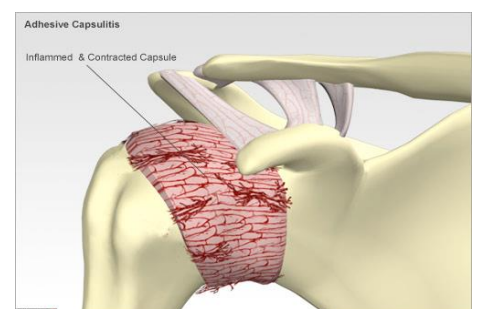
- **Indications:**
 - Acute traumatic tear
 - Failed non- operative treatment
 - Full thickness tear:
 - Acute, Young, painful
 - Old but active patient
- **Options:**
 - Associated with extrinsic causes: treat like SIS
 - Debridement only (<50% partial thickness tear)
 - Rotator cuff repair (Arthroscopic or open) [\(watch me\)](#)

Complications

- Recurrent tear (or non-healing)
- Stiffness
- Infection

Adhesive capsulitis

- It is characterized by painful, gradual loss of active and passive shoulder motion resulting from fibrosis and contracture of the joint capsule.
- **“Frozen shoulder” is not to be used as a diagnostic term, better to use stiff painful shoulder.**



- 3-5 % in the general population and up to **36% in diabetic patients.**
- Idiopathic (primary)
- Pathogenesis: Chronic inflammation of the capsule subsynovial layer → capsular thickening → fibrosis → adherence of the capsule to itself and to neck of the humerus.
- Conditions produce symptoms similar to those of adhesive capsulitis:
 - ✚ Rotator cuff tears.
 - ✚ Calcific tendinitis.
 - ✚ Glenohumeral or acromioclavicular arthritis.
 - ✚ Cervical radiculopathy.
- Motion loss is multifactorial rather than isolated capsular restriction.

Risk factors:

- ✓ Women 40-60 years.
- ✓ Thyroid dysfunction (hypo & hyper)
- ✓ Cervical spondylosis (**arthritis**).
- ✓ Breast cancer treatment (**tamoxifen**).
- ✓ Cerebrovascular accident.
- ✓ Cardiovascular disease / Myocardial infarction.
- ✓ Diabetes mellitus
 - Diabetes is associated with a significantly worse prognosis, greater need for surgery, and suboptimal results.

Clinical presentation:

- Pain
 - Several months duration.
 - Gradual.
 - Commonly referred to the origin of the deltoid.
 - Night pain and can't sleep on the affected side.

Pain following repetitive overhead activity is not a typical feature → think about other pathology (Sub-acromial impingement syndrome)

- Loss of motion
 - With or after the onset of the pain.
 - Progressively worse with time
 - Patients have difficulty dressing, combing their hair, reaching to a back pocket, or fastening a brassiere.

Staging

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

Physical examination

- A mechanical restraint to passive motion is the hallmark of adhesive capsulitis.
- Best appreciated on passive external rotation with the arm at the side.
- In early stage, painful ROM++

Investigations

- Mainly clinical diagnosis
- To rule out other pathologies (**dislocation**)
in epileptic patient → posterior dislocation.
- 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 by exclusion.

Treatment

Mainly conservative

- Physical therapy regardless of stage.
 - Gentle progressive stretching
- Patients counseling about the prolonged recovery period.
 - Self-limiting disorder in 1-3 years

- **Adjunct to PT:**
 - NSAID
 - Steroid injections

Surgery Rare - If no improvement after 6 months of therapy

- Manipulation under anesthesia
- Arthroscopic capsular release ([watch me](#))

Acromioclavicular joint

AC joint common conditions

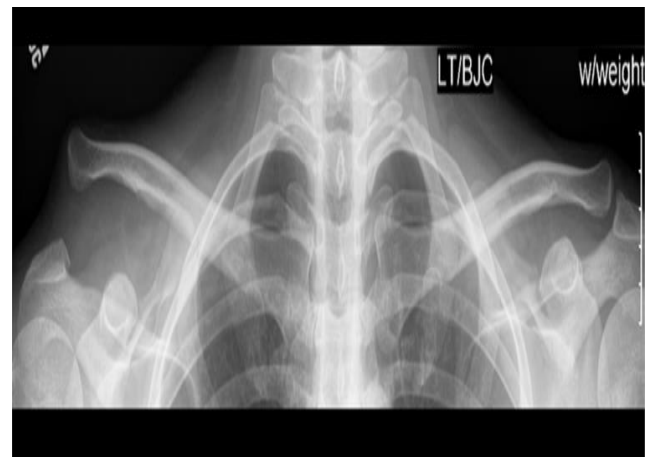
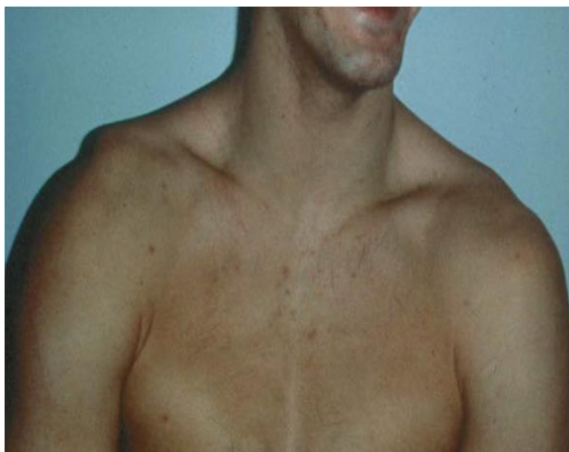
Traumatic AC joint separation/dislocation

Osteoarthritis

Osteolysis of distal clavicle: [resorption of distal clavicle](#)

Traumatic AC joint separation/dislocation:

- Almost always a direct blow or fall onto acromion



Treatment:

Conservative: partial dislocation

Surgical: complete dislocation



Painful Conditions of the acromioclavicular Joint:

Primary Osteoarthritis

Most common cause of pain in the AC joint

50 % of elderly asymptomatic Pts may have radiological evidence of OA

Post-traumatic Arthritis

Distal Clavicle Osteolysis

Repetitive microtrauma

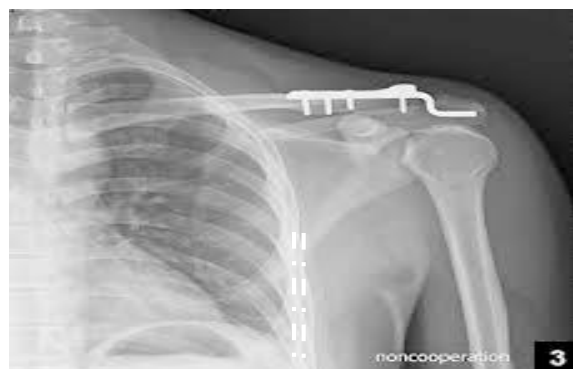
Weight-lifting athletes

X-ray:

AC OA



Distal clavicle osteolysis

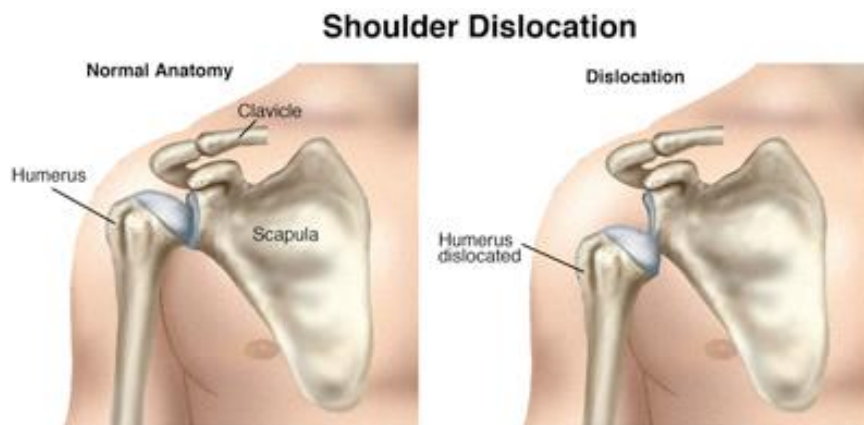


Treatment:

- **Conservative (main treatment)**
 - activity modification
 - NSAID
 - Corticosteroid injections
 - physical therapy
- **Surgical**
 - Failed non-operative measures
 - Distal clavicle resection

Shoulder dislocation:

Acute dislocation is a surgical emergency and demands urgent relocation



- 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: Large joint of the body.

Classification:**Atraumatic**

- **Multidirectional instability**
- **Generalized ligamentous laxity**
- **Bilateral**

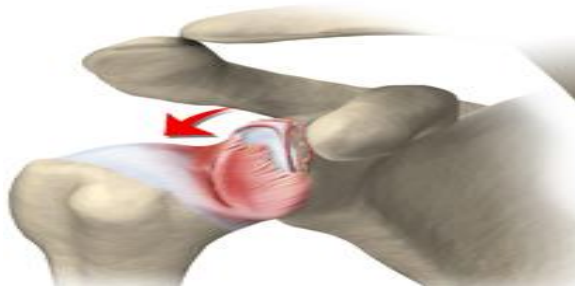
Responds well to nonsurgical management

Traumatic

- **96%**
- **Unidirectional**

- Further classified by the direction of the humeral head dislocation:
 - Anterior
 - Posterior
 - Inferior

Posterior Dislocation



Inferior Dislocation



Inferior Dislocation



Anterior dislocation



Acute Anterior



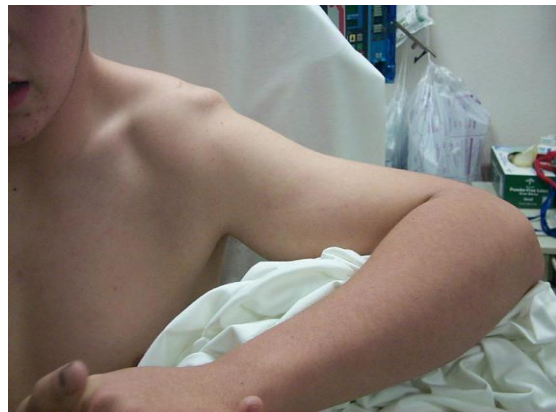
Traumatic Shoulder Dislocation:

- Mechanism of injury
 - Violent external rotation in abduction levers the head of the humerus out of the glenoid socket, avulsing anterior bony and soft tissue structures in the process (the Bankart lesion)



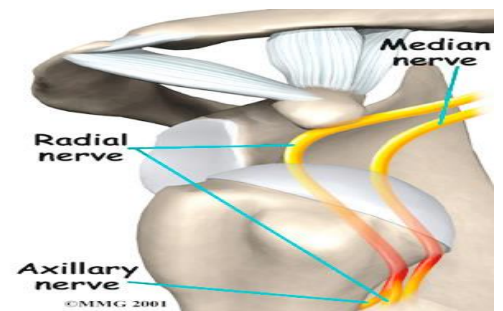
Clinical presentation:

- Patient is in pain+++
- The arm is usually held in an abducted and externally rotated position.
- There is loss of the normal contour of the deltoid
- Acromion is prominent posteriorly and laterally.
- The humeral head itself may well be palpable anteriorly.

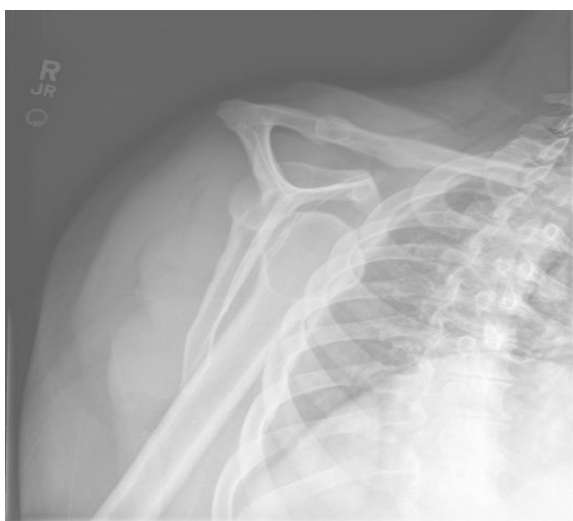
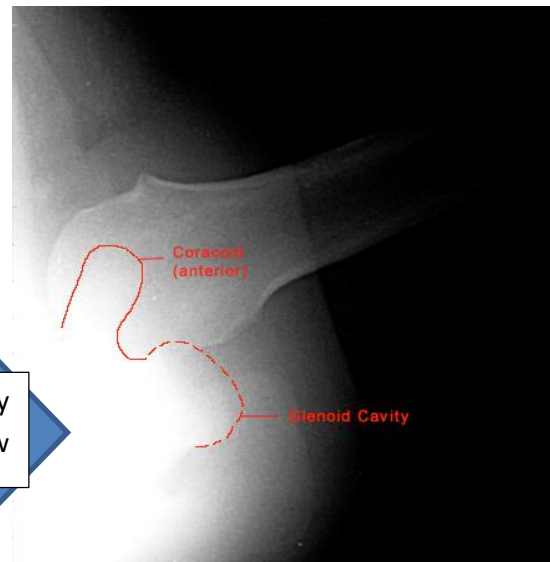
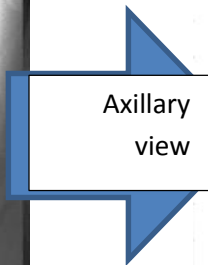
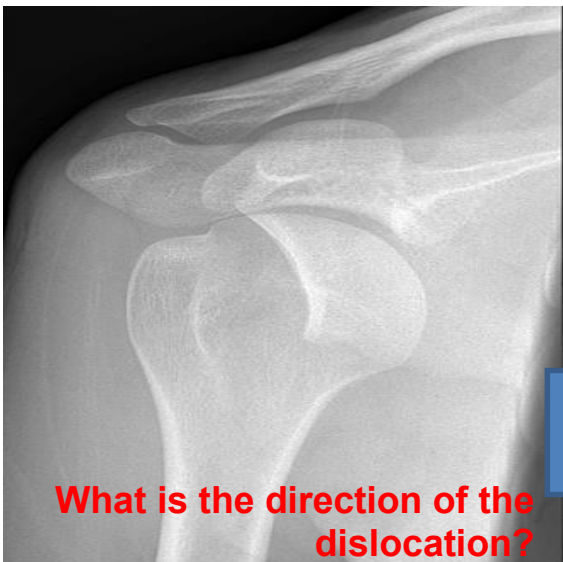
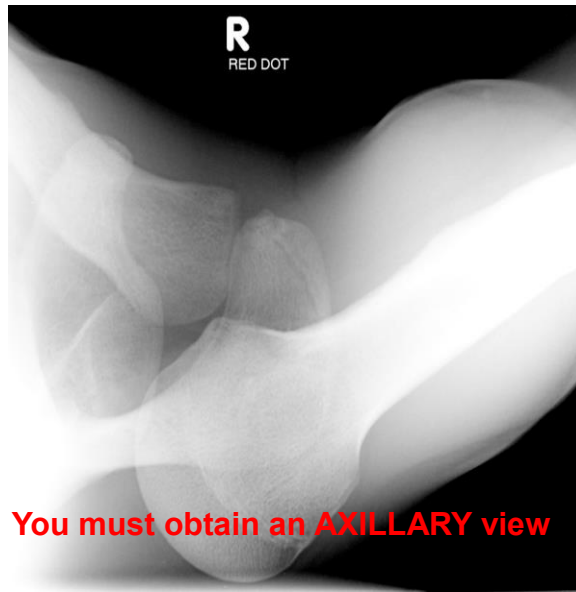


Neurological assessment:

- Neurological injury → 13%
- Axillary nerve
 - Deltoid weakness or numbness over the anterolateral shoulder.
 - Normal sensation does not exclude axillary nerve injury.



Radiological evaluation



Is it dislocated or not?

You must obtain an AXILLARY view!

Acute management:

1. R/O other injuries (ATLS)
2. Clinical assessment
3. Neurovascular examination
4. X-ray
 - AP+ Scapular Y+ Axillary views
 - R/O fracture dislocation
5. Immediate reduction at ER
6. Re-check neurovascular
7. X-ray (you must confirm the reduction on Axillary view)
8. Shoulder Immobilization
9. if no fracture → D/C home with analgesia and F/U at OPD

Shoulder reduction steps: (the doctor said concentrate on Traction-Countertraction only)

- Explain to the patient the procedure and the risks
- Analgesia
- +/- sedation
 - Must monitor the CV + respiratory
- Maneuvers
 - More than 24 techniques reported

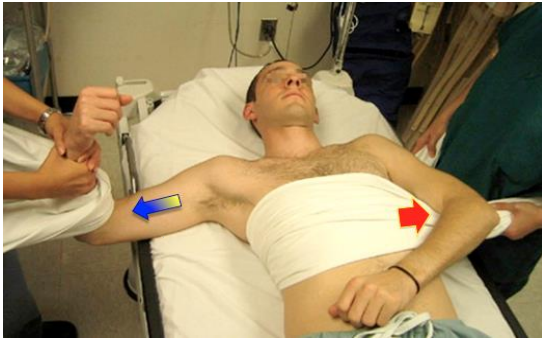
What pre-medication regimen works best?

- Intra-articular lidocaine is preferred to IV sedation
 - No difference in reduction success
 - Shorter time in ER
 - Fewer complications (0.9% vs 16.4%)

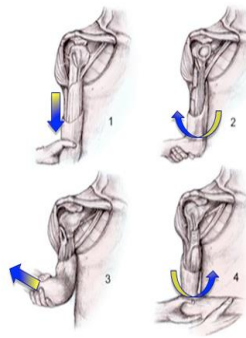
FARES Technique: Fast, Reliable, and Safe

- No sedation or analgesics
Gentle longitudinal traction
Arm moved into abduction
with vertical oscillating
movements.
- After 90 degrees abduction,
arm moved into external
rotation while abduction and
oscillations.





Traction-Countertraction



Kocher



Stimson

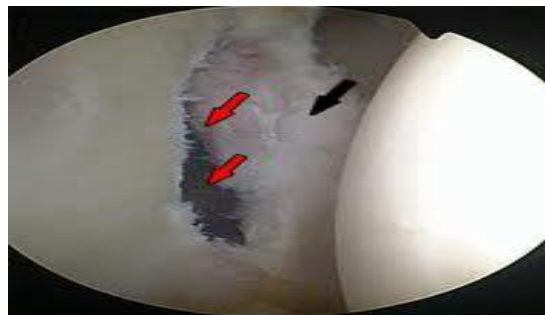
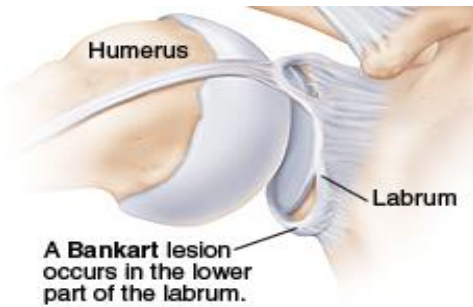
Associated Injuries:

- **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 posterolateral humeral head on the glenoid rim) → 40-90%

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

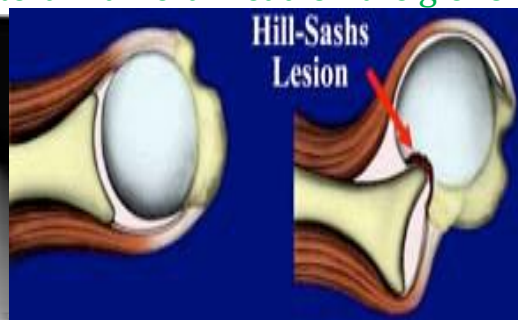
Bankart lesions:

- **Detachments of the anterior labrum from the glenoid rim.**



Hill-Sachs lesion:

An impaction fracture of the posterolateral humeral head on the glenoid rim.



Post-reduction rehabilitation:

- The goal of rehabilitation is to regain maximum ROM while retaining stability.
- The affected arm can be immobilized for a minimum of 1 to 4 weeks, and limited physical rehabilitation is recommended.
- Physical therapy and immobilization **do not reduce the risk of recurrence.**
- **? ROM can be safely initiated within 1 week**
- **No benefit** of conventional sling immobilization for longer than **one week** for the treatment of primary anterior shoulder dislocation in younger patients
- **Does immobilization reduce recurrence rates?**

Immobilization in internal rotation does not affect recurrence (EBM Level I)

Immobilization in external rotation **might** (EBM Level I&II)

Age <30 = more important factor (recurrence rate more with young patients)

With young patient recurrence rate is 90%

When to request MRI or CT?

Shoulder dislocation diagnosed clinically, you request imaging in specific conditions only

MRI

In patients with limited active ROM, weakness, or persistent pain 2 to 3 weeks after closed reduction

Rotator cuff pathology is suspected (>40)

In cases of recurrent dislocation to evaluate for underlying pathoanatomy.

CT

Suspected bone loss (eg, bony Bankart lesions)

Complications of anterior Shoulder Dislocation:

Axillary nerve injury

Rotator Cuff Tear

Most common over age 40

Greater Tuberosity Fracture

DECREASES Risk of Recurrence

Avascular necrosis of the head of the Humerus (high risk with delayed reduction)

Recurrent shoulder dislocations/ instability

Recurrent shoulder dislocations/ instability:

Risk factors:

AGE of Patient < 30 Y/O

Management: surgical (Arthroscopy, (bankart repair).

Summary

- Subacromial impingement syndrome is the most common disorder of the shoulder.
- Rotator cuff tear most common supraspinatus then infraspinatus and the strongest is subscapularis.
- Treat only symptomatic patients.
- Adhesive capsulitis common with diabetes.
- Adhesive capsulitis is a diagnosis of exclusion.
- Treatment is conservative.
- AC joint common conditions are: dislocation, osteoarthritis and osteolysis of distal clavicle.
- Management of AC dislocation depends on the type, partial : conservative –complete :surgical
- Shoulder is the **Most frequently dislocated Large joint of the body**
- **Acute shoulder dislocation is a surgical emergency and demands urgent relocation**
- **Shoulder dislocation in patient >40 Y/O → get an MRI to R/O RCT**
- Recurrence rate of shoulder dislocation is more with young patient (less than 30)

MCQs

- 1- **Rotator cuff tear is best diagnosed by :**
 - A- Plain radiographs
 - B- MRI
 - C- CT
 - D- Sonography

- 2- **Which of the following muscle is Most commonly tear :**
 - A- Supraspinatus muscle
 - B- Infraspinatus muscle
 - C- Subscapularis muscle
 - D- Teres minor muscle.

Answers: 1-B 2- A