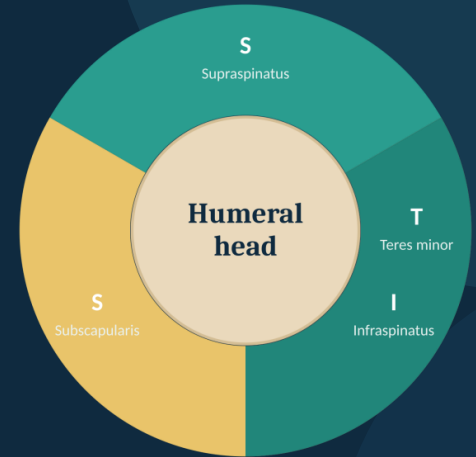


Shoulder Disorders

A structured approach to the painful, stiff, and unstable shoulder

Presented by **Group B · Leith Nuseir - Ayham Ababneh - Hamzah Ayasrah – Esraa Alnaimat**

Facilitator: Dr. Aws Khanfar





HOW THIS TALK IS ORGANIZED

Roadmap — Four Presenters



Foundations & Rotator Cuff 01

Anatomy · impingement · cuff tears

Leith



Capsule, Biceps & AC Joint 02

Frozen shoulder · biceps · AC OA

Ayham



Instability & Dislocation 03

TUBS/AMBRI · reduction · lesions

Hamzah



Degenerative & Calcific 04

GH osteoarthritis · calcific tendonitis

Abdulrazzaq



FRAMING THE PROBLEM

Causes of a Painful Shoulder



Referred

Cervical spondylosis · Mediastinal · MI



Joint

Glenohumeral & AC osteoarthritis



Bone

Infection · Tumors



Rotator cuff

Tendinitis · Impingement · Tears · Frozen shoulder



Instability

Dislocation · Subluxation



Nerve

Suprascapular nerve entrapment



PART 01

Foundations & Rotator Cuff Disease

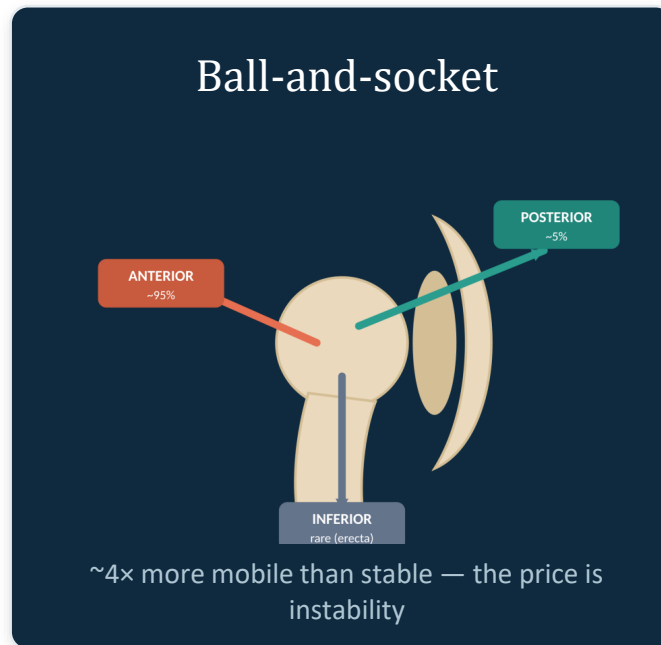
Anatomy · Subacromial impingement · Rotator cuff tears



RECALL THE ANATOMY

The most mobile — least stable — joint

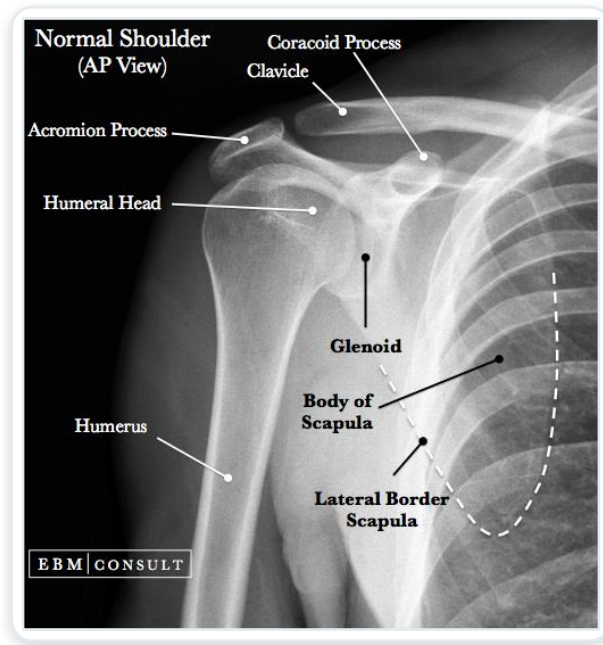
- **Bones** — Humeral head, glenoid, clavicle, acromion, coracoid
- **Static stabilizers** — Glenoid labrum, capsule, glenohumeral ligaments
- **Dynamic stabilizers** — Rotator cuff (SITS) + scapular muscles
- **Trade-off** — Shallow glenoid → huge ROM, low bony stability





IMAGING

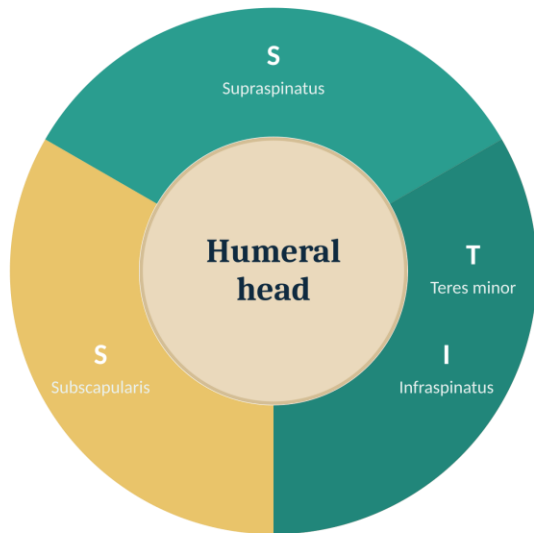
Bony landmarks on plain film





THE STABILIZING ENGINE

The rotator cuff — S · I · T · S



Centers the head

Compresses humeral head into glenoid during motion



Counter-balances deltoid

Opposes the upward pull that would cause impingement



External rotation

Infraspinatus / teres minor — key during elevation



Force couple

Cuff must fire before deltoid can abduct effectively



ROTATOR CUFF DISEASE (RCD)

One spectrum — the most common shoulder pain

Tendinitis

irritated tendon

Bursitis

inflamed bursa

Impingement

narrowed outlet

Tears

partial → complete

PATHOLOGY CASCADE (self-perpetuating)

Tendonitis → edema → thickened tendon → impingement → tear → edema

Compression

head vs acromion

Narrow outlet

muscle weakness / osteophytes

Overuse

overhead work, sport, adiposity, DM



SUBACROMIAL IMPINGEMENT

A crowded outlet — the supraspinatus outlet

Where

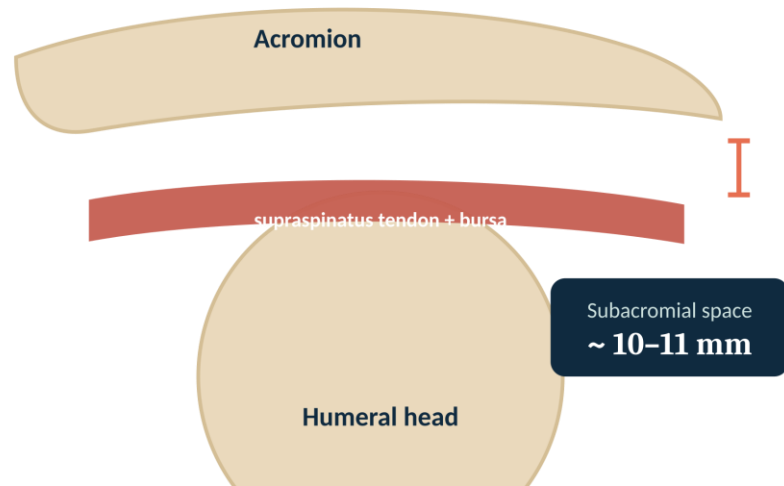
Cuff compressed under the coraco-acromial arch: anterior $\frac{1}{3}$ acromion, CA ligament & AC joint

Why

Any lesion narrowing the ~10–11 mm space → impingement (osteophyte, hooked acromion, cuff weakness)

Stages

- 1 Edema/hemorrhage (<25 y) · 2 Fibrosis/tendinitis (25–40 y)
- 3 Tear/bony change (>40 y)





Impingement & cuff — special tests



Neer's test

Passive forced elevation, internally rotated arm → pain



Hawkins-Kennedy

90° flexion + forced internal rotation → pain



Painful arc

Pain on abduction between 60°–120°



Empty can (Jobe)

Resisted elevation, thumb down → supraspinatus



Lift-off test

Hand off lower back → subscapularis weakness



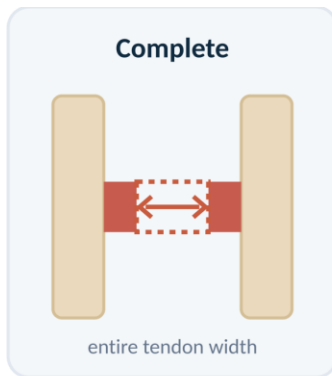
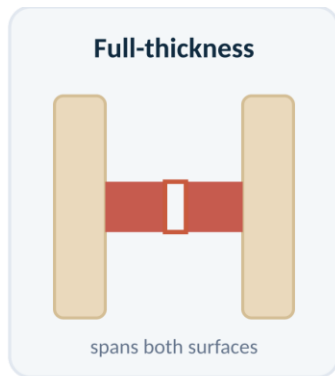
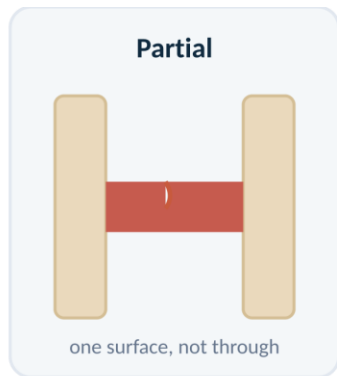
Drop-arm sign

Cannot lower abducted arm smoothly → cuff tear



ROTATOR CUFF TEARS

By thickness — and by mechanism



Most tears involve the SUPRASPINATUS tendon

ACUTE · younger

- Traumatic avulsion / eccentric load
Subscapularis after a fall (younger)
SIT tears >40 y with dislocation

CHRONIC · older (commoner)

- Degenerative — intrinsic tendon change
Hypovascularity worsens with age
Chronic impingement · bone spurs



ROTATOR CUFF TEARS

Clinical features & imaging

CLINICAL

- Night pain, worse lying on affected side

Pain worse with active motion

Weakness & loss of ROM (overhead)

Tenderness over greater tuberosity

Positive drop-arm test

Not resolving on NSAIDs

IMAGING

X-ray (AP) — high-riding humerus in massive tears
(reduced acromiohumeral distance)

MRI — investigation of choice; grades partial vs full-thickness tears & tendinopathy

US — dynamic, cheap; operator-dependent



IMAGING

MRI — normal vs. torn rotator cuff

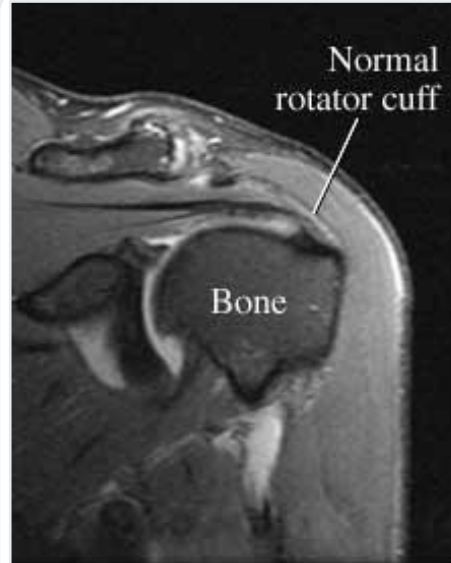


Figure 1

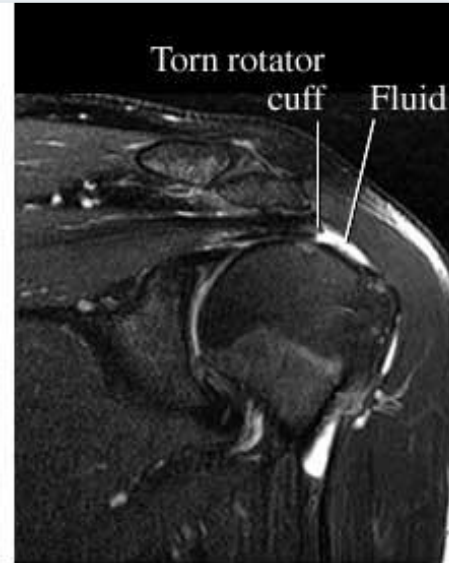


Figure 2



PUTTING IT TOGETHER

Cuff disease — management ladder

FIRST LINE · non-operative

- **Rest & activity modification** avoid overhead activities
- **NSAIDs 2–3 weeks** naproxen a reasonable choice
- **Analgesia** for symptom control
- **Physiotherapy / rehab** stretch, strengthen, ~6 weeks
- **Subacromial steroid injection** if impingement dominant

OPERATIVE · if refractory / large tear

- 1 Subacromial decompression + debridement
- 2 Rotator cuff repair (arthroscopic or mini-open)
- 3 Tendon release & repair of degenerate tissue
- 4 Tendon transfer
- 5 Reverse total shoulder arthroplasty



PART 02

Capsule, Biceps & AC Joint

Adhesive capsulitis · Bicipital disease · AC osteoarthritis



FROZEN SHOULDER

Adhesive capsulitis

Definition

Progressive pain + stiffness from inflammatory thickening of the capsule — usually self-resolving over ~18 months (full recovery up to 3 years). A misnomer: biopsy shows no true inflammatory cells.

PRIMARY

- Idiopathic
- Assoc. with DM
- Age 40–60, F > M

SECONDARY

- Immobilisation
- Post-MI / stroke
- Trauma / surgery

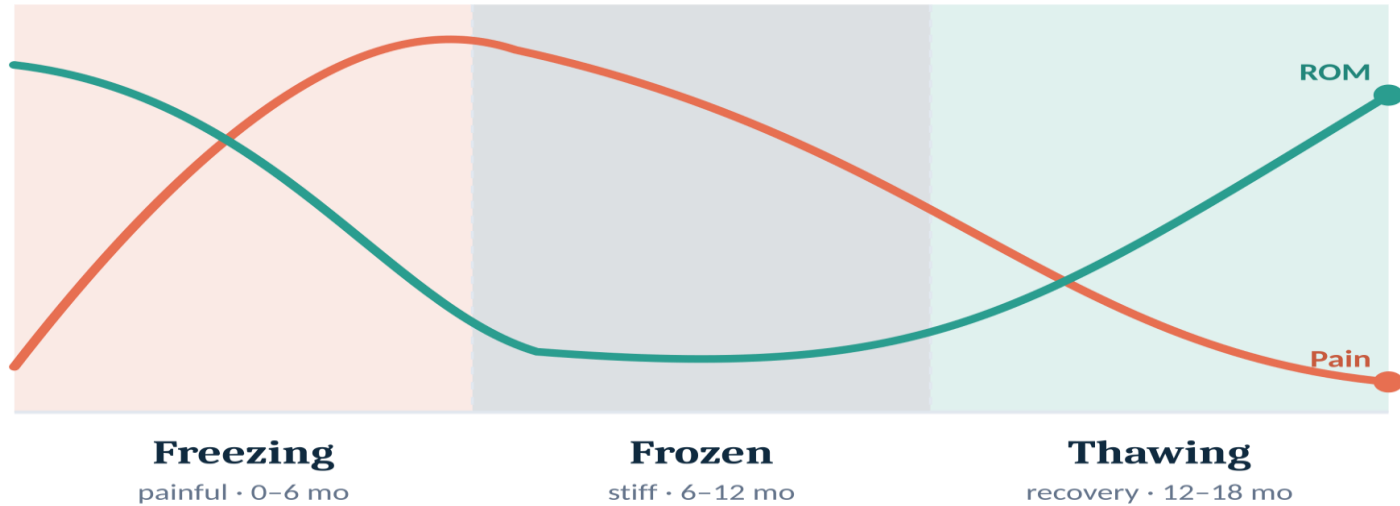
EXAM PEARLS

- **Loss of BOTH active & passive ROM**
distinguishes it from a cuff tear
- **First movement lost = external rotation**
in primary frozen shoulder
- **Diagnosis is clinical**
restricted active + passive range
- **Pathology starts at the rotator interval**
between supraspinatus & subscapularis



NATURAL HISTORY

The three stages — pain vs range





Clinical picture & management

CLINICAL

- Gradual diffuse shoulder pain

Worse at night

Stiffness increases as pain subsides

Uniform restriction of all movements

Predisposing: female, DM (×5), thyroid, MI, stroke, trauma, surgery

MANAGEMENT · mostly conservative

- Reassure — usually self-limiting
- Analgesia / NSAIDs in painful phase
- Keep the joint moving — gentle passive exercises
- Physiotherapy & occupational therapy
- Intra-articular steroid in early phase
- Refractory: hydrodilatation, MUA, arthroscopic release



Bicipital tendonitis & tendon rupture

BICIPITAL TENDONITIS

- **Tenderness over the tendon**
arm internally rotated $\sim 10^\circ$
- **Speed's test**
resisted elevation, supinated arm, elbow extended $\rightarrow$ pain
- **Yergason's test**
resisted supination, elbow flexed $\rightarrow$ pain at bicipital groove

BICEPS TENDON RUPTURE

Long head — the usual rupture; produces the **“Popeye” sign** (distal muscle bulge). Often well tolerated.

Distal biceps rupture — produces elbow flexion & supination weakness; more likely to need repair.



ACROMIOCLAVICULAR JOINT

AC joint osteoarthritis

The key paradox

Most common ASYMPTOMATIC joint affected by OA ($\approx 100\%$ by age 60). Most common SYMPTOMATIC OA joint is the knee.

Risk

Age >50 · F>M · prior AC injury · overhead work

Exam

Tenderness over AC joint · +ve scarf (cross-body) test · crepitus

X-ray

Narrowed space · sclerosis · osteophytes · subchondral cysts

MANAGEMENT

Non-operative first

- Activity modification & physiotherapy
- Analgesia
AC joint corticosteroid injection

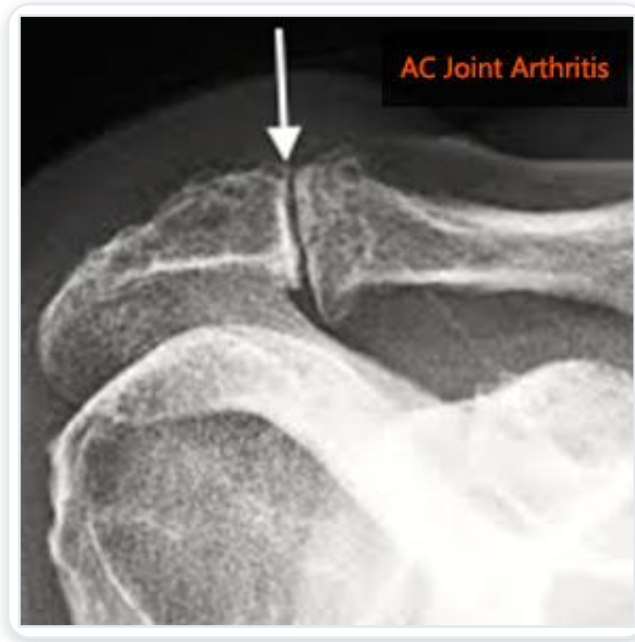
Operative

Distal clavicle resection — **Mumford procedure** (arthroscopic or open)



IMAGING

AC joint osteoarthritis on X-ray





PART 03

Instability & Dislocation

TUBS vs AMBRI · Reduction · Bankart & Hill–Sachs



Two ends of a spectrum — TUBS vs AMBRI

TUBS

Traumatic **U**nidirectional

Bankart lesion **S**urgery often needed

AMBRI

Atraumatic **M**ultidirectional

Bilateral **R**ehabilitation first

Inferior capsular shift if rehab fails

Sulcus sign

Inferior traction hollows out below the acromion → suggests multidirectional instability / inferior laxity.

Apprehension test

Anterior: positive in abduction + external rotation. **Posterior:** positive in flexion, adduction + internal rotation.



SHOULDER DISLOCATION

Direction & frequency

~95%

Anterior

subcoracoid subtype commonest

~5%

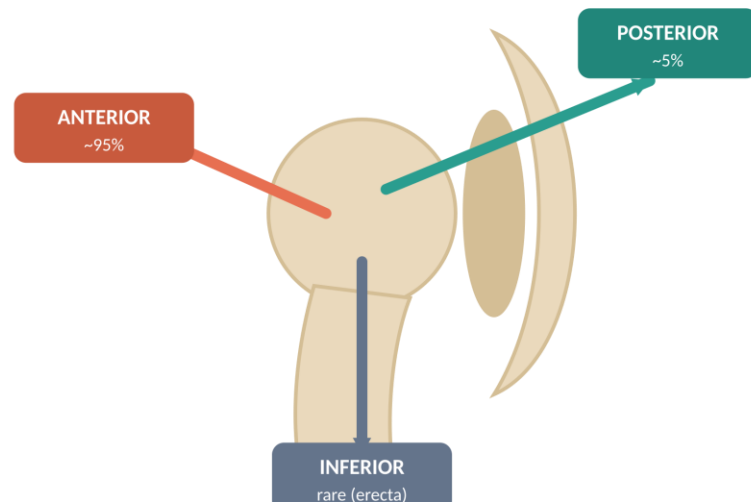
Posterior

seizure / electric shock — easily missed

Rare

Inferior (luxatio erecta)

arm fixed overhead





IMAGING

Anterior vs. posterior — the X-ray difference





ANTERIOR DISLOCATION

Mechanism, look & the nerve at risk

MECHANISM & APPEARANCE

- **Indirect (commoner)** arm forced into abduction + external rotation + extension (throwing)
- **Direct** posterior blow driving the head anteriorly
- **“Squared-off” shoulder** loss of the rounded deltoid contour; acromion prominent
- **Arm position** slight abduction, held by other hand; resists movement



Check the AXILLARY NERVE

Sensation over the lower deltoid (regimental badge) — before AND after reduction.

Also assess:

Radial, median, ulnar, musculocutaneous nerves · radial pulse & capillary refill



IMAGING

Anterior dislocation on X-ray





POSTERIOR DISLOCATION

The one you miss

CAUSES · “3 E's”

- Epileptic (grand-mal) seizure
- Electric shock
- Extreme trauma

Simultaneous violent contraction of all muscles drives the head posteriorly.

EXAM

- Arm adducted + internally rotated
- Cannot externally rotate the shoulder

IMAGING

“Light-bulb” sign — the internally rotated head looks round/symmetrical on AP film.

Easily missed on a single AP — get an axillary or scapular-Y view to confirm.

For ALL first-time dislocations: X-ray BEFORE reduction to exclude fracture.



IMAGING

The light-bulb sign





EMERGENCY MANAGEMENT

Reduce it safely — the sequence

1

Analgesia

narcotics ± sedation (midazolam)

2

Prepare

IV access, O₂, monitors — watch for resp. depression, naloxone ready

3

Reduce

traction–counter-traction is the workhorse

4

Re-image

repeat X-ray to confirm reduction

5

Immobilise

sling / position by direction

6

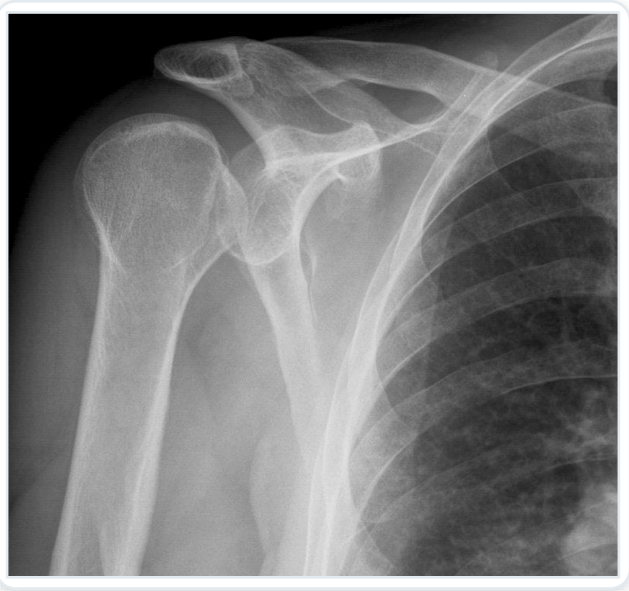
Rehabilitate

restore ROM & cuff strength



IMAGING

Before and after reduction



Pre-reduction



Post-fixation (screw)



COMPLICATIONS

The lesions that drive recurrence

EARLY · by age

Old (>60): rotator cuff tear

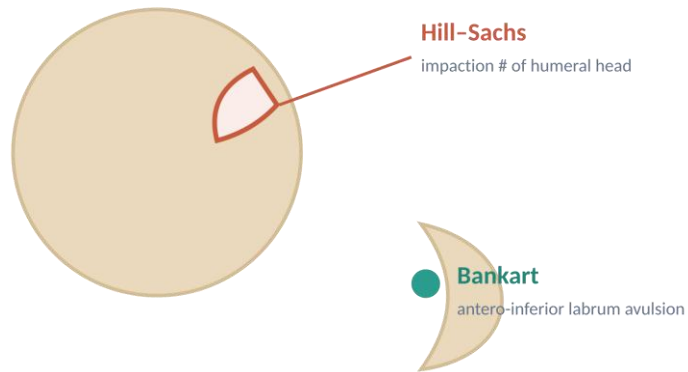
Middle (40–60): greater-tuberosity

Young: Bankart lesion (recurrence)

KEY LESIONS

Bankart — antero-inferior labrum + IGHL avulsion → **high recurrence**.

Hill–Sachs — impaction of postero-lateral head (anterior dislocation). **Reverse Hill–Sachs** = posterior.



Late: avascular necrosis · heterotopic calcification · recurrence

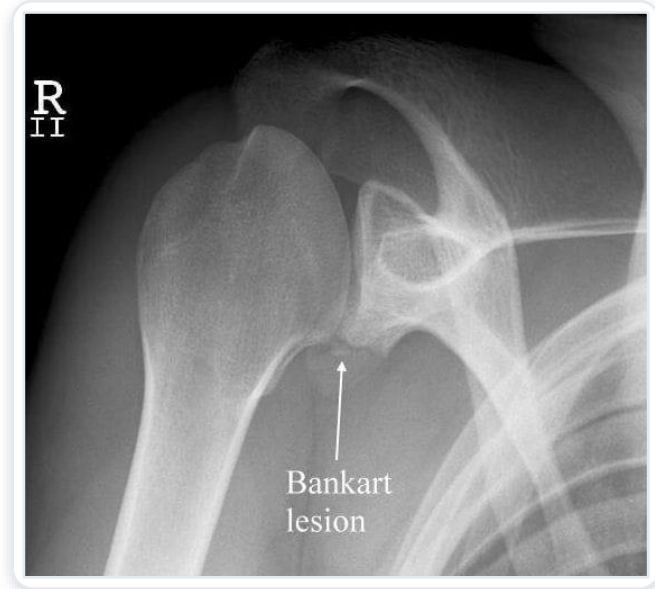


IMAGING

Hill-Sachs and Bankart lesions



Hill-Sachs lesion



Bankart lesion



PART 04

Degenerative & Calcific Disease

Glenohumeral osteoarthritis · calcific tendonitis



GLENOHUMERAL OSTEOARTHRITIS

Degenerative disease of the ball-and-socket

RISK FACTORS

- Age >50 · positive family history
- Post-traumatic (fracture / dislocation) — younger
- Rheumatoid arthritis · throwing athletes

CLINICAL

- Pain (often worse at night) · crepitus
- Progressive loss of range of motion
- Flattened anterior contour · muscle wasting



The 4 X-ray changes of OA

- L** Narrowed joint space
- O** Subchondral sclerosis
- S** Osteophytes
- S** Subchondral cysts

Management: conservative first (activity mod · physio · meds) → arthroplasty if refractory / progressive.



IMAGING

Glenohumeral osteoarthritis on X-ray





CALCIFIC TENDONITIS

Hydroxyapatite deposition — self-limiting

WHAT & WHERE

Idiopathic deposition of hydroxyapatite (calcium phosphate) in cuff tendons — especially supraspinatus.

Presents like impingement: night pain, pain on overhead activity, tenderness over greater tuberosity, +ve Neer / Hawkins.

Plain radiographs show the calcified deposit.

1

Formative

Normal X-ray, very severe pain

2

Resorptive

Punctate calcification appears (~3 wk); pain eases but still severe

3

Post-calcific

Well-defined calcification; healing

Self-limiting → conservative treatment; surgery rarely needed.



IMAGING

The calcified deposit on X-ray





BRINGING IT TOGETHER

A clinical approach to the painful shoulder



First: exclude referred pain

Cervical spine · cardiac (MI). Then localise the shoulder.



Active = passive loss?

YES → capsular (frozen shoulder / OA). NO (active worse) → cuff.



Painful arc / +ve Neer–Hawkins?

Impingement / cuff disease. Weakness + drop-arm → tear.



Trauma → instability?

Squared-off = anterior; can't ER = posterior. Check axillary nerve.



High-yield special tests

Test	What you do	Positive → structure
Neer's	Passive forced elevation, arm IR	Subacromial impingement
Hawkins–Kennedy	90° flexion + forced IR	Impingement
Painful arc	Abduction pain 60°–120°	Subacromial / cuff
Empty can (Jobe)	Resisted elevation, thumb down	Supraspinatus
Lift-off	Push hand off lower back	Subscapularis
Drop-arm	Lower abducted arm slowly	Cuff tear (large)
Speed's / Yergason's	Resisted elevation / supination	Long head of biceps
Scarf (cross-body)	Adduct across the chest	AC joint
Apprehension / Sulcus	ABER / inferior traction	Instability

TAKE-HOME

Five things to remember

1

Rotator cuff disease is the #1 cause of shoulder pain

one self-perpetuating spectrum: tendonitis → impingement → tear

2

Active AND passive loss = capsular

frozen shoulder / OA; active-only loss points to the cuff

3

Frozen shoulder: first movement lost is external rotation

clinical diagnosis, mostly self-limiting

4

Dislocations: anterior ~95%, posterior is the missed one

always check & document the axillary nerve

5

Bankart drives recurrence; Hill–Sachs is the head impaction

reverse Hill–Sachs = posterior dislocation

Thank you

Group B · Orthopedics & Trauma · Facilitator: Dr. Aws Khanfar

