NOTES
UPPER LIMB INJURY

GENERALLY, WHAT IS IT?

PATHOLOGY & CAUSES

- Upper limb joint damage, dislocation
- Weakening/damaging of ligaments, tendons → distortion of normal anatomical joint structure, function loss/impairment

CAUSES

- Trauma, overuse

SIGNS & SYMPTOMS

- Pain, swelling, numbness
- Reduced range of motion
- Visible/palpable malformations

DIAGNOSIS

DIAGNOSTIC IMAGING

X-ray

- Dislocation
- Distorted articular spaces
- Fractures

MRI

- Damaged ligaments and soft tissue

Ultrasound

- Soft tissue damage
- Tendon dislocations

OTHER DIAGNOSTICS

- Physical examination
  - Reduced range of motion
  - Visible dislocation
  - Swelling

TREATMENT

MEDICATIONS

- Pain management
  - Sedation, analgesia

SURGERY

- Joint reduction

OTHER INTERVENTIONS

- Rest, ice
- Physical rehabilitation

DISLOCATED SHOULDER

osms.it/dislocated-shoulder

PATHOLOGY & CAUSES

- Humeral head detaches from glenoid fossa in glenohumeral joint
- Loose ligaments provide high mobility, but are prone to injury in abduction/external rotation

TYPES

Anterior dislocation

- Most common
- Blow to extended, raised, outwardly turned arm → damaged inferior glenohumeral ligament

Posterior dislocation

- Strong muscle cramp/electric shock
- Associated with tuberosity, surgical neck fractures of humerus

Inferior dislocation

- Uncommon
- Force applied to completely raised arm (e.g. individual falls, tries to grab onto something above)
- Highest incidence of axillary nerve, artery injuries

CAUSES

- Force from fall/blow → ligaments tear/stretch → humeral head slips out of position

RISK FACTORS

- Previous dislocations
- Sports

COMPLICATIONS

- Axillary artery, nerve damage from injury/while performing reduction

SIGNS & SYMPTOMS

- Shoulder feels unstable/like it's "rolling out"
- Shoulder pain (can radiate down arm)
- Limited range of motion
- Visible displacement
- *Injured/compressed axillary artery*: hematoma/weak distal pulse
- *Stretched axillary nerve*: shoulder area numbness

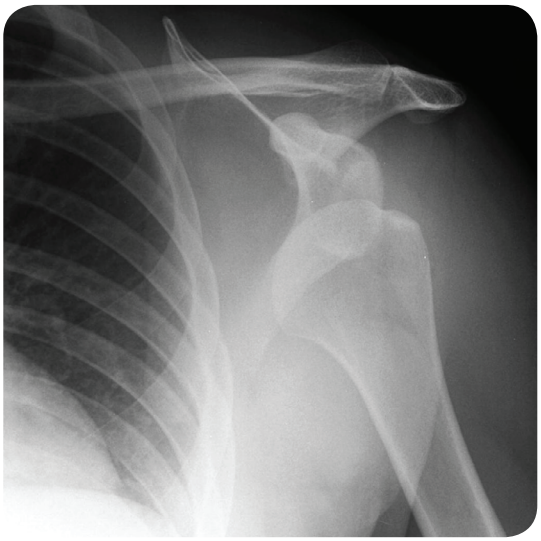

Figure 121.1 An X-ray image of the shoulder demonstrating an anterior dislocation.

DIAGNOSIS

DIAGNOSTIC IMAGING

X-ray

- Two views necessary
  - Anteroposterior view (AP)
  - Lateral view
- *Anterior dislocation*: humeral head is in front of glenoid

- *Posterior dislocation*: humeral head is in place in AP view
- Fractured bones

MRI

- Damaged ligaments (contrast enhancement for better visualisation)

CT angiogram

- Arterial damage

TREATMENT

- Reduction
  - Perform as soon as possible for easier reduction, less chance of complications
  - e.g. Hill–Sachs lesion/compression fractures on humeral head
- Immobilisation, rest
  - Age < 30 → three weeks
  - Age > 30 → 7–10 days

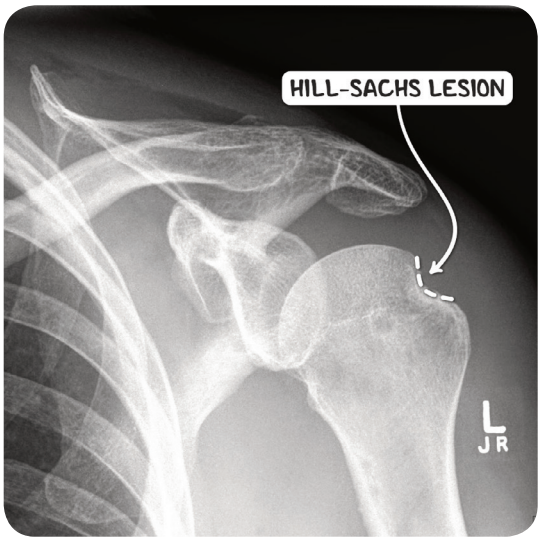

Figure 121.2 An X-ray image of the left shoulder demonstrating a Hill–Sachs lesion. A Hill–Sachs lesion is a posterolateral compression fracture that occurs as a result of recurrent anterior dislocations of the shoulder.

NURSEMAID'S ELBOW

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PATHOLOGY & CAUSES

- Dislocation of radial head in elbow joint
  - Pulled elbow/radial head subluxation

CAUSES

- Pulling extended arm makes annular ligament slip above radial head
- Lifting/swinging child
- Common in children < six years old

SIGNS & SYMPTOMS

- Child refuses to bend/use affected arm
  - Fear of pain
- Holds affected arm in prone position, close to body
- Inability to supinate

DIAGNOSIS

DIAGNOSTIC IMAGING

X-ray

- When fracture suspected

TREATMENT

OTHER INTERVENTIONS

- Reduction
  - Supination, elbow flexion
  - Hyperpronation (less painful)

ROTATOR CUFF TEAR

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PATHOLOGY & CAUSES

- One/more tendons of rotator cuff tear(s)
  - Supraspinatus, infraspinatus, teres minor, subscapularis comprise the rotator cuff
- Most common shoulder problem
  - Occurs in all age groups

TYPES

By course

- Acute tears
  - Strong force damages tendons (e.g. rowing, powerlifting)
- Chronic tears
  - Prolonged repetitive motions (especially overhead moves)
  - *Tendon degeneration*: aging, blood supplies worsen
  - Tendons become irritated, inflamed while passing through narrowed gaps

By amount of damage

- Partial thickness tears
  - Damaged supraspinatus tendon
- Full thickness tears
  - Damaged supraspinatus, infraspinatus, subscapularis, biceps tendon

By exterior/interior factors

- Exterior factors
  - Tendon impingement due to curved/hooked *acromion*
- Interior factors
  - Small repetitive injuries over prolonged period → tendon degeneration

SIGNS & SYMPTOMS

- "Arc of pain" (pain while lowering arm)
- Night pain
- Weakness, instability, restricted range of motion
- Compressed nerves → numbness

DIAGNOSIS

DIAGNOSTIC IMAGING

X-ray

- Anteroposterior view
  - Sclerosis, cyst formation, smaller gap between acromion, humerus
- Lateral view
  - State of acromion
- Axillary view
  - Humeral head position

MRI

- Connective tissue visualization
- Size, location of damage
- Swelling

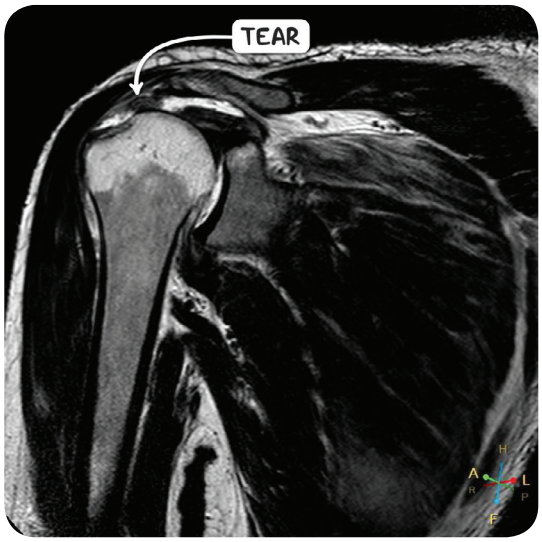

Figure 121.3 An MRI scan of the shoulder in a non-orthogonal plane demonstrating a complete tear of the supraspinatus and infraspinatus tendons.

Ultrasound
- Evaluate tear extent
- Tendon dislocations

OTHER DIAGNOSTICS

Supraspinatus injuries
- Active painful arc & drop arm test
  - Fully raise arm, then steadily lower it back
  - If pain occurs → positive test
- Jobe's test (aka "empty can")
  - Individual raises straight arm 90°, flexes forward 30° with thumb pointing down → resists attempt to depress arm
  - Pain without weakness → tendinopathy
  - Pain with weakness → tendon tear

Infraspinatus, teres minor injuries
- Test external rotation
  - Individual attempts external rotation of arm, examiner provides resistance

Subscapularis injuries
- Gerber's lift-off test
  - Place hand behind back → push backwards against resistance
- Supine Napoleon test
  - Individual lays down, places hand on abdomen with elbow flexed 90° → attempts to raise elbow while examiner secures hand, shoulder

Impingement test
- Neer test
  - Individual flexes pronated arm (with thumb pointing downwards) above head
- Hawkins test
  - Individual raises arm 90° with half-flexed elbow → examiner attempts to internally rotate shoulder

TREATMENT

MEDICATIONS
- Pain management
  - NSAIDs

SURGERY
- Small tears → arthroscopically
- Large tears → open surgical repair

OTHER INTERVENTIONS
- Rest, ice
  - Pain, inflammation management
- Physical therapy
  - Restore range of motion
- Strengthen muscles that support joint
- Exercises for preserving neurologic control

ROTATOR CUFF TEAR OVERVIEW

MUSCLE INJURED	IMPAIRED MOVEMENT	DIAGNOSTIC TEST
SUPRASPINATUS	Abduction	Active painful arc test Drop arm test Jobe's test
INFRASPINATUS	External rotation	External rotation test
TERES MINOR	External rotation	External rotation test
SUBSCAPULARIS	Internal rotation	Gerber's lift-off test Supine Napoleon test