BELMATT
HEALTHCARE TRAINING

The Shoulder Girdle

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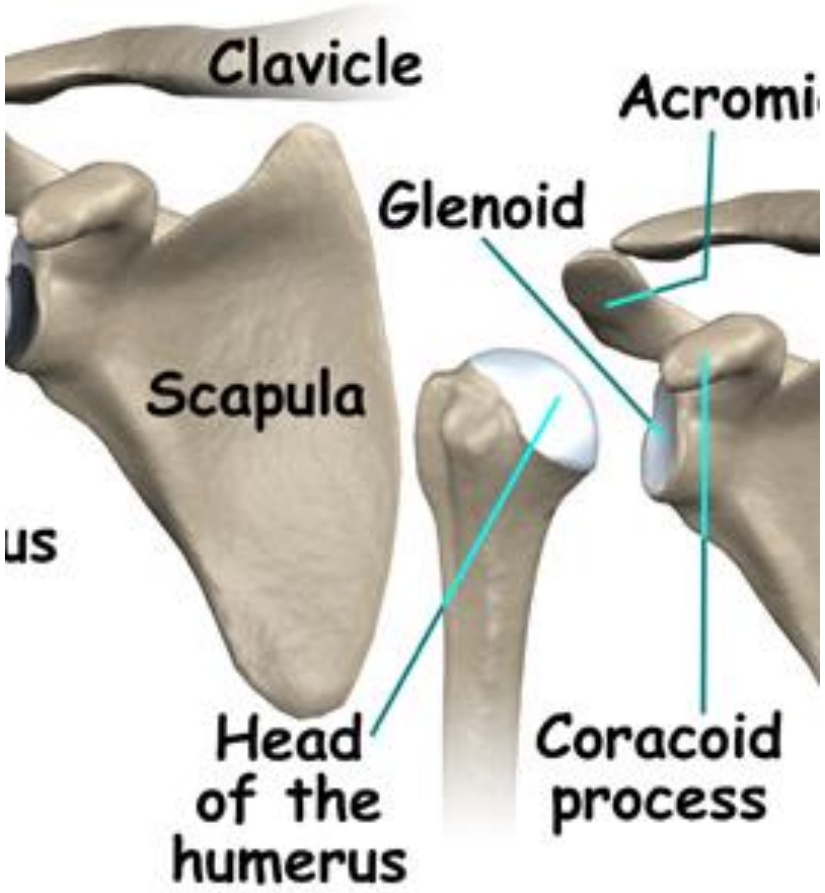
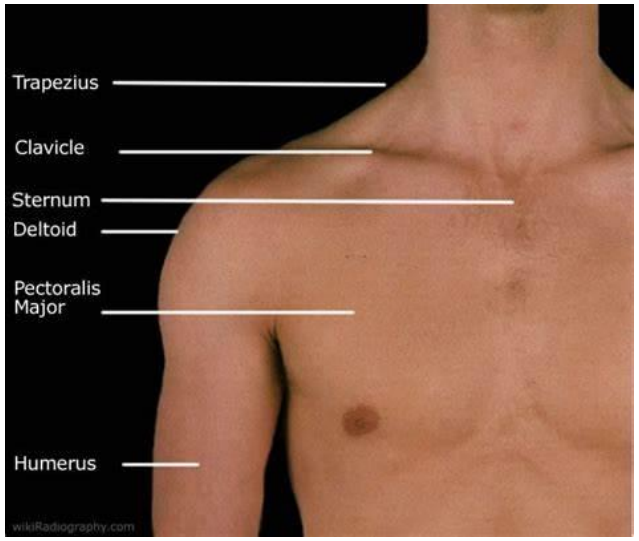
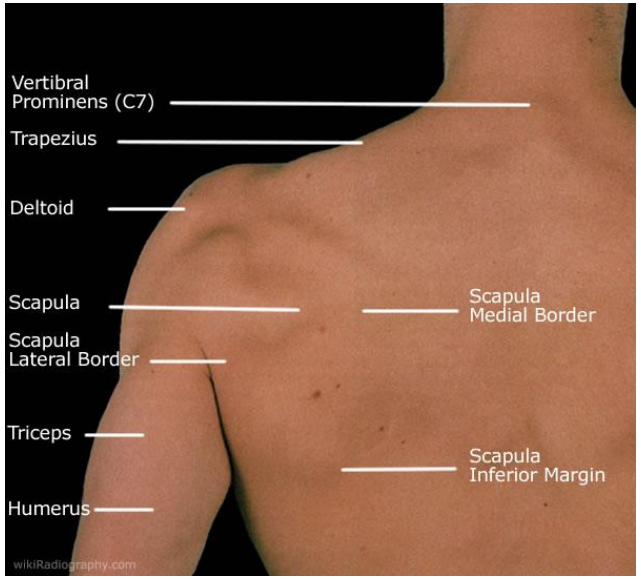
Objectives

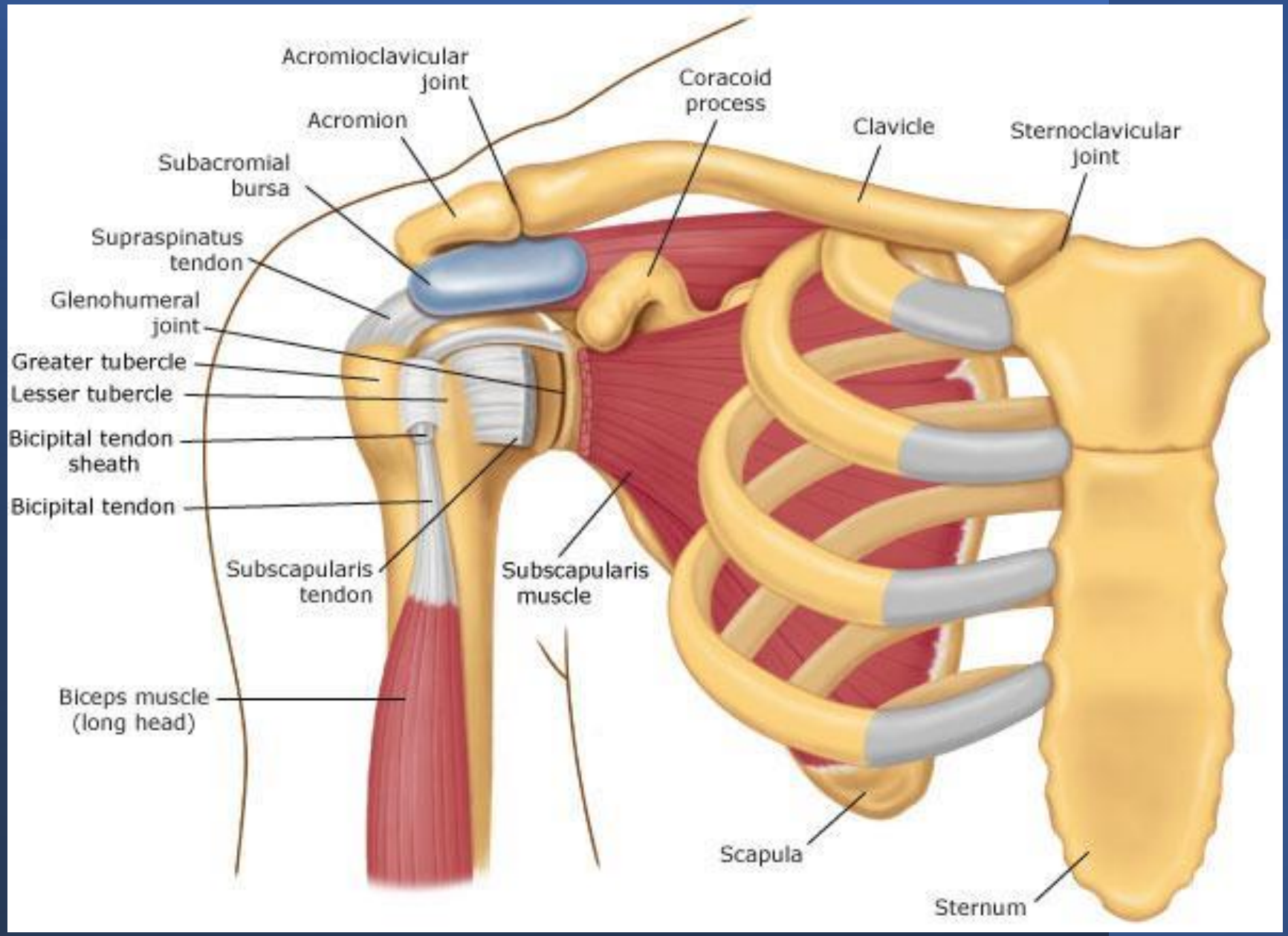
- Anatomy
- Normal Radiographic views
- Humeral injuries
  - Fractures
  - Dislocations
- Impingement syndrome
- AC Joint Disruption
- Clavicle and sternoclavicular problems
- Scapular Fractures

Shoulder anatomy









Shoulder radiographs

- Anteroposterior
    - Neutral
    - External rotation
    - Internal rotation
- Axillary
- Scapular lateral

AP Views

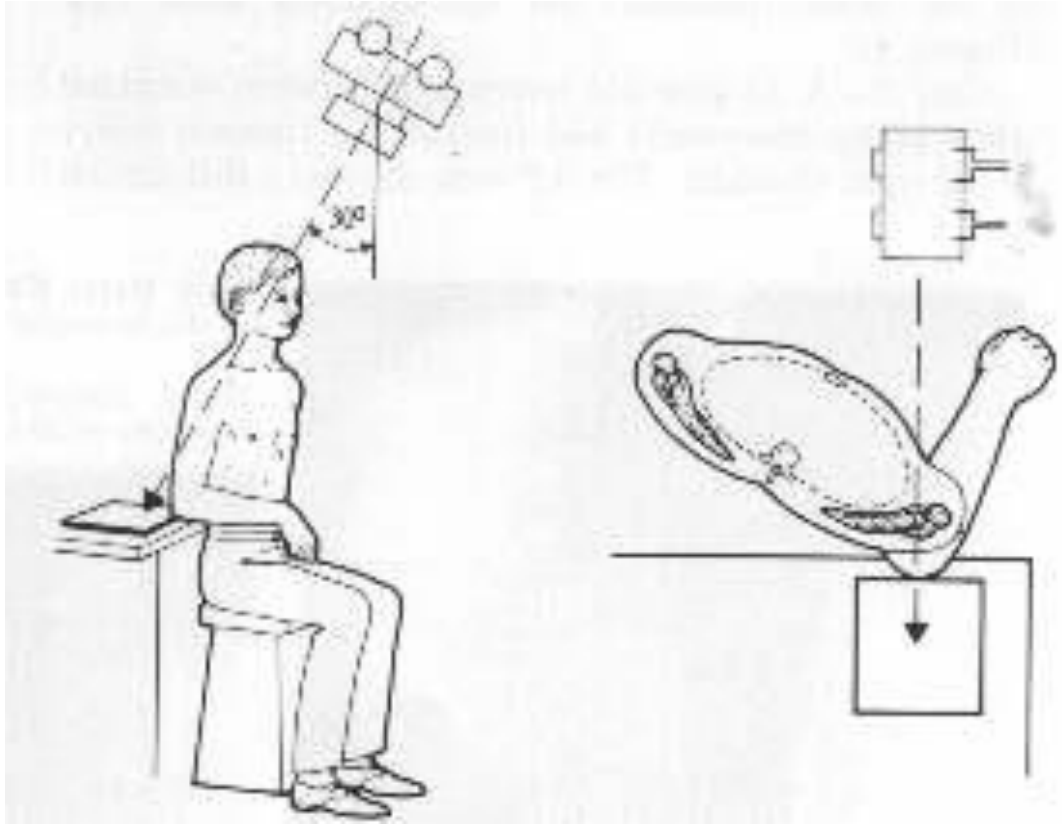
Neutral

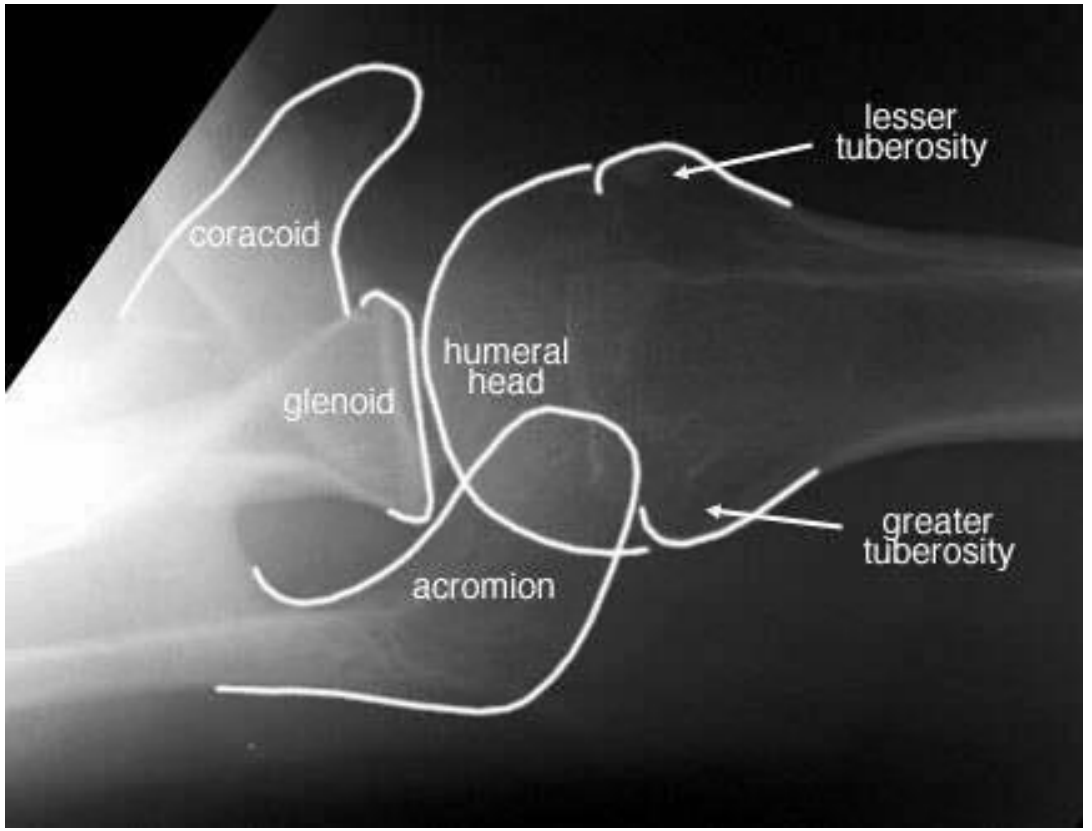
External rotation

Internal rotation

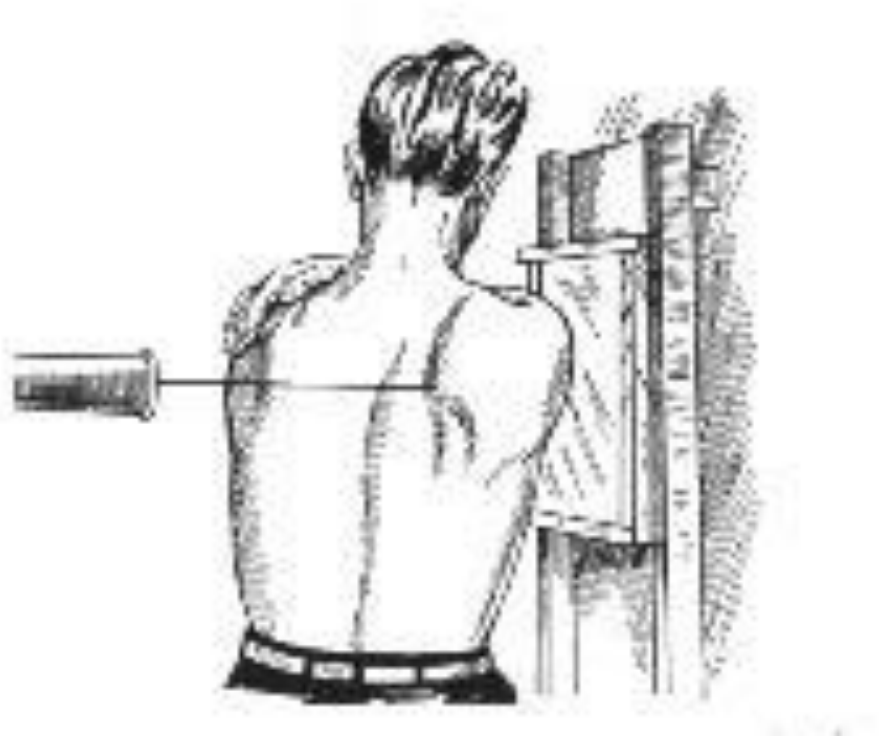

clavicle
AC Joint
Acromion
Coracoid
Acromiohumeral interval
Glenoid
Humeral head

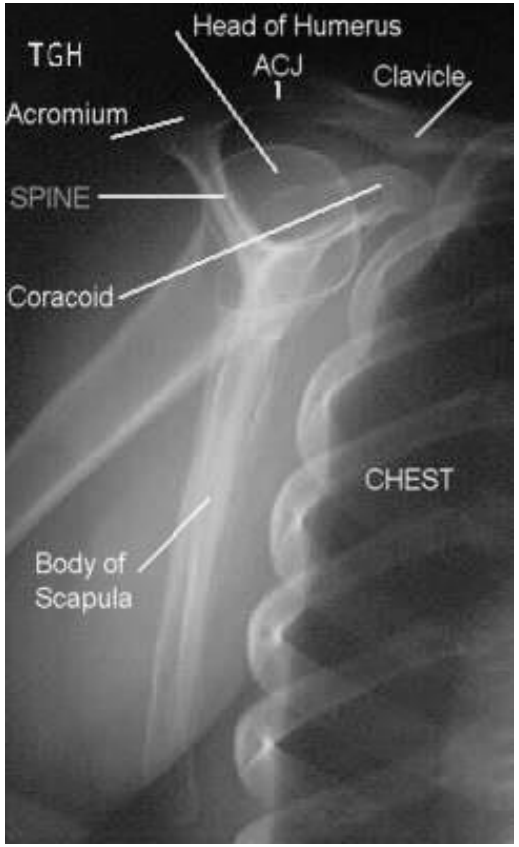
Axial View




lesser tuberosity
coracoid
humeral head
glenoid
greater tuberosity
acromion

Scapular lateral





The ABC Approach

- Adequacy
  - Most of the clavicle and proximal humerus
- Alignment
  - Humerus in the glenoid.
  - Relationship of clavicle to acromium.
- Bones
  - Name and draw around each bone
- Cartilage, joints, soft tissues Lipohaemarthrosis, calcification
  - AC, Glenohumeral joint, supraspinatous tendon
- Chest

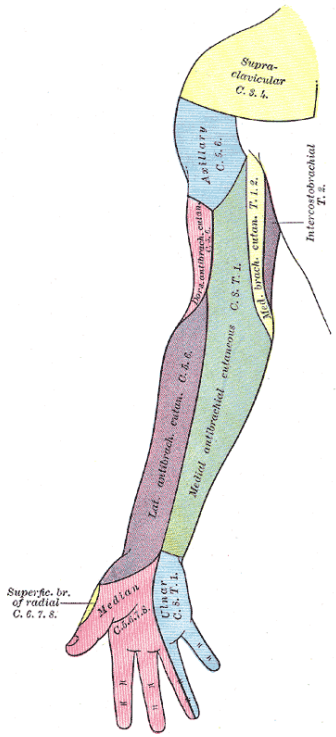
Injuries to the humerus

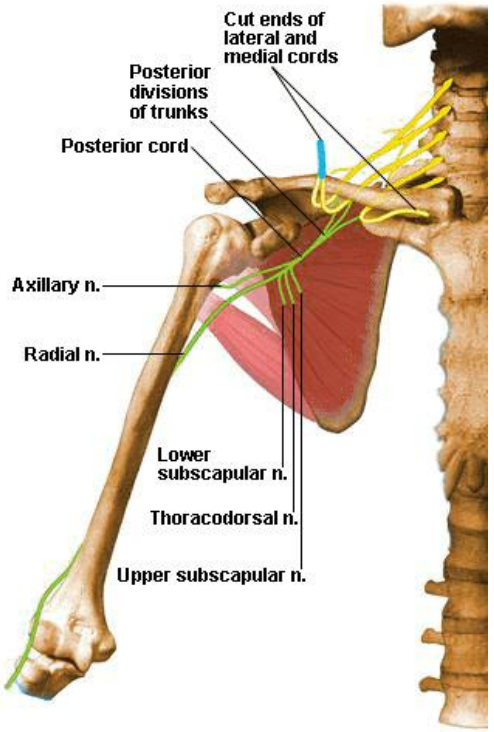
- Fractures
- Dislocations of humeral head

Proximal humerus Fractures

- Characteristics
  - Elderly, osteoporotic onto outstretched hand
  - Pain and reluctance to move arm
  - Bruising deformity and crepitus
  - CHECK AND DOCUMENT NERVE FUNCTION

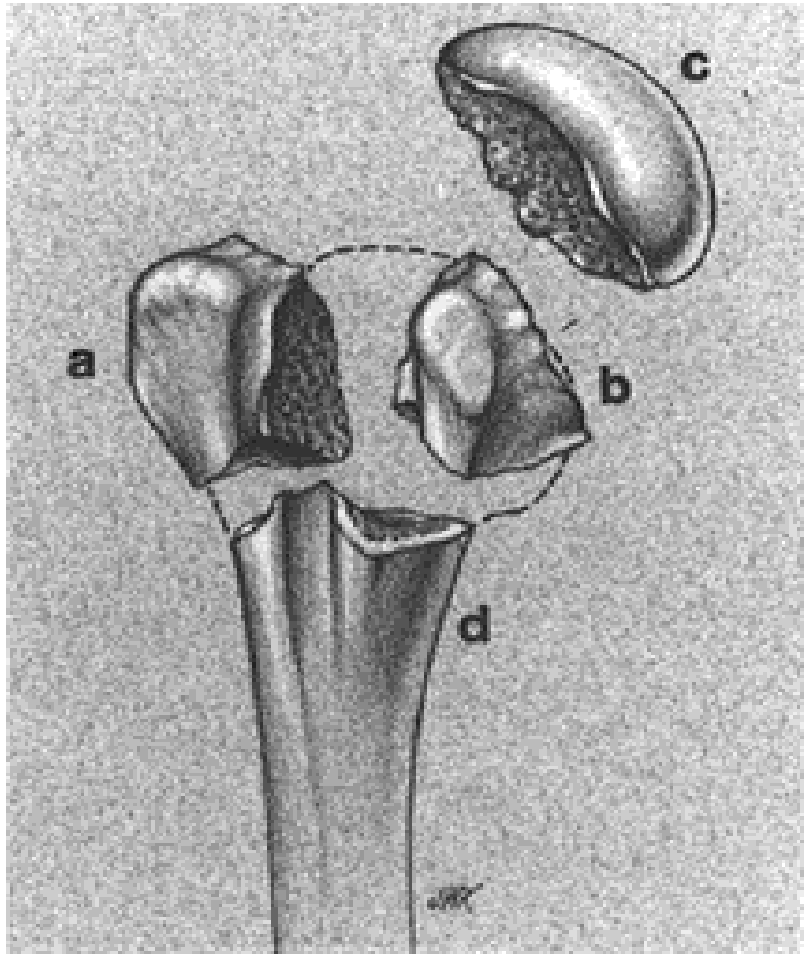
Axillary nerve

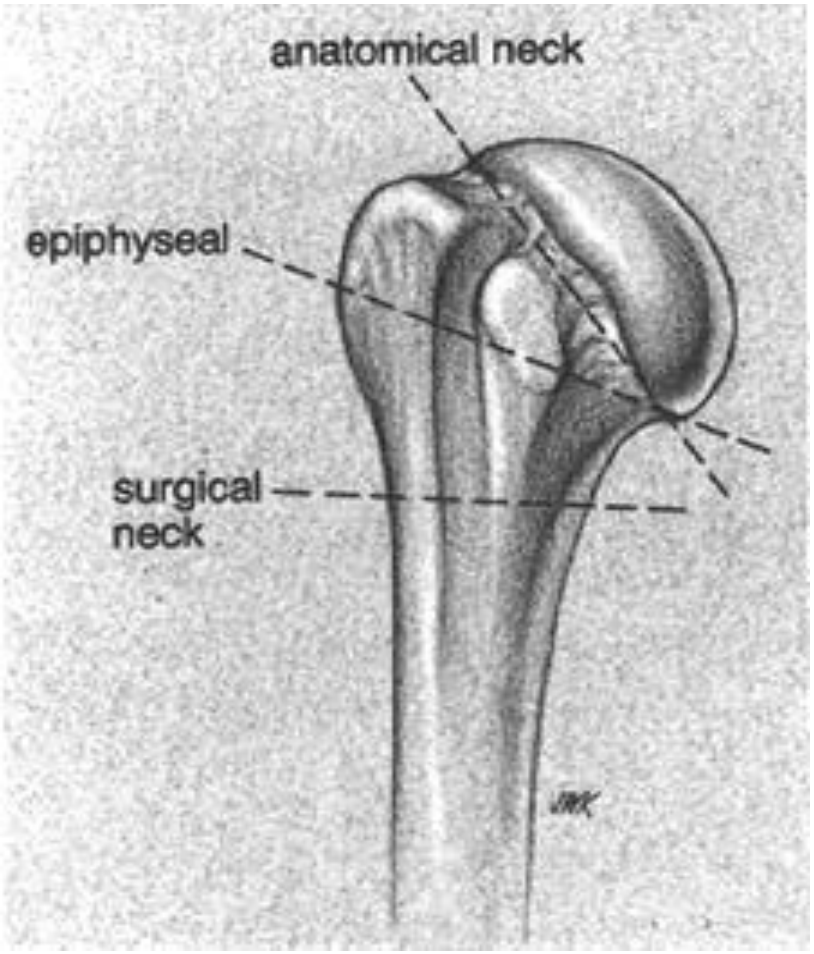




Radiological features

- Views: AP gleno-humeral joint and apical oblique or axial
- May see lipohaemarthrosis which may displace the the humeral head downwards (pseudo-subluxation).


c
a
b
d


anatomical neck
epiphyseal
surgical
neck

Neers Classification

I

Minimal displacement

II

Anatomical neck

III

Surgical Neck

IV

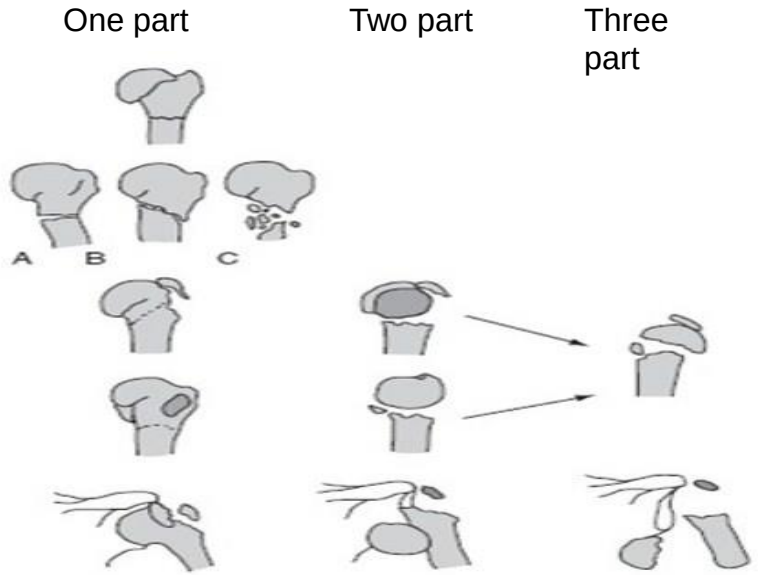
Greater tuberosity

V

Lesser tuberosity

VI

Fracture Dislocation



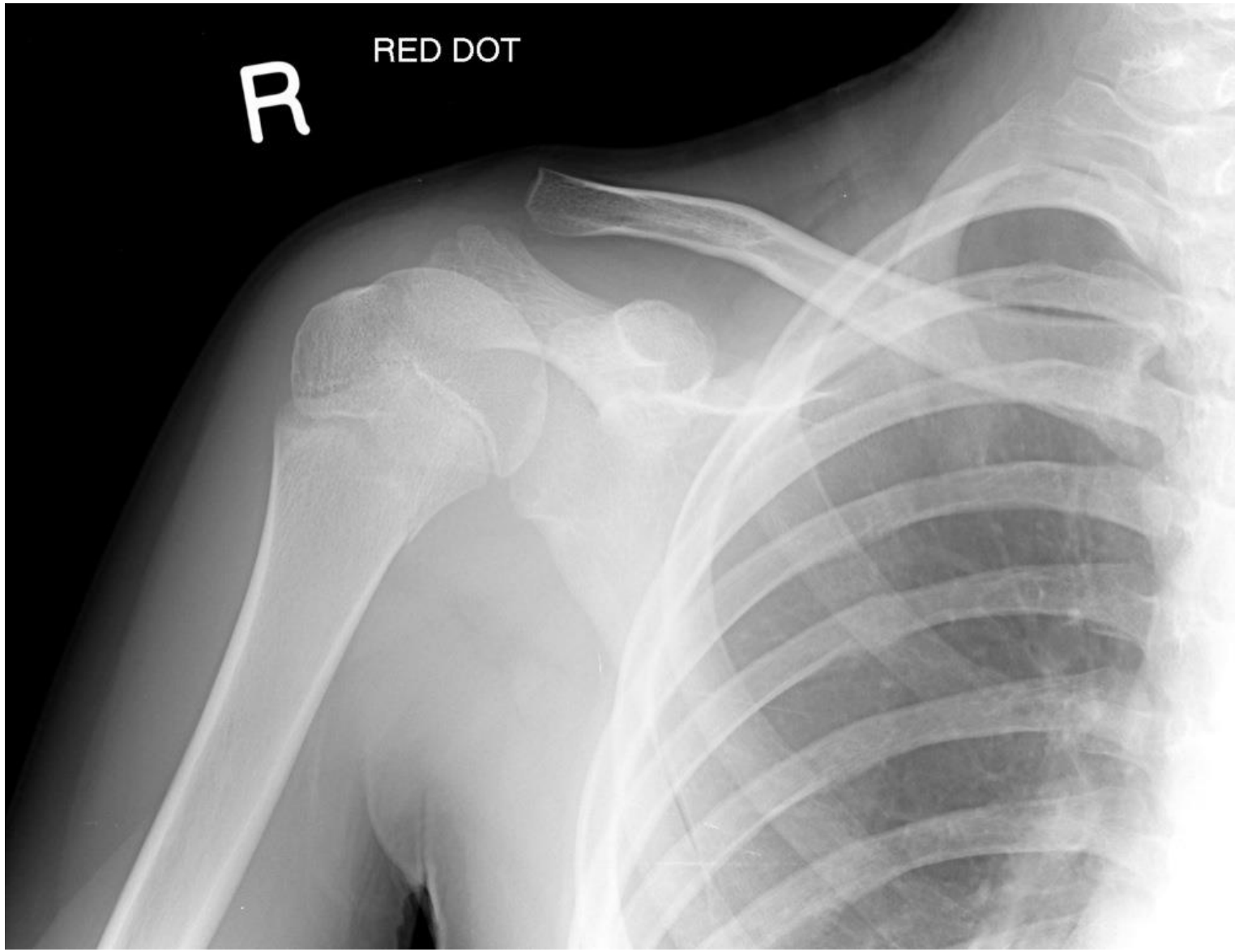
Case 1

Case 2

Case 2
View 2

Case 3

Case 4



Proximal humerus fracture

- Management

  Minimally displaced fractures

  - Collar and Cuff / Broad arm sling
  - Analgesia
  - # clinic

  2/3/4 part fractures with significant displacement

  - Refer

  Fracture dislocation

  - Refer for closed reduction with x ray screening

Adjuncts

Humerus – shaft fractures

- Characteristics

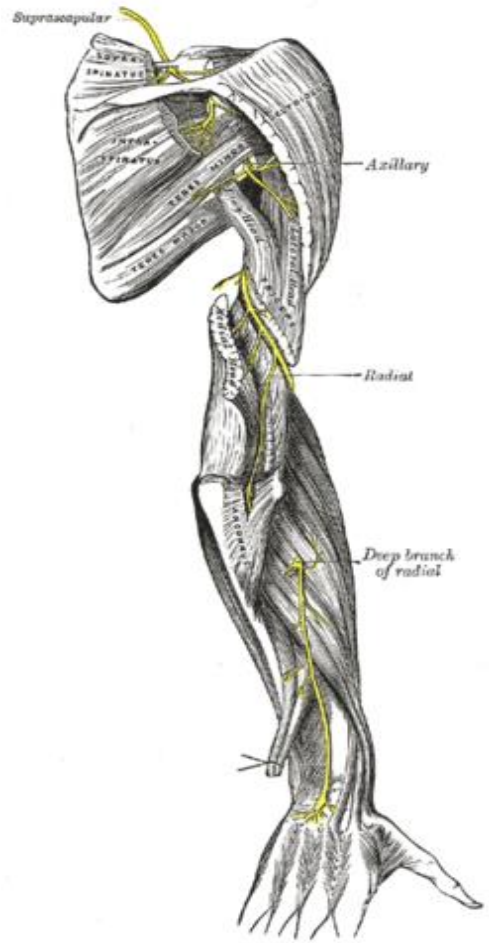
  Direct trauma/fall

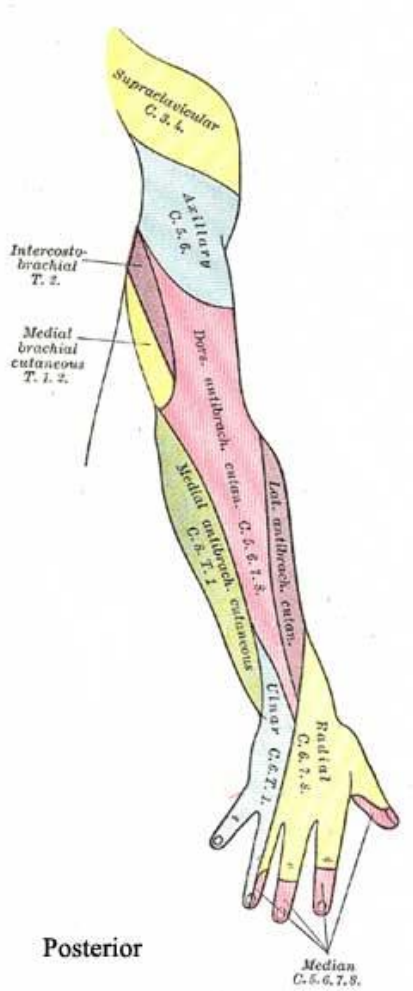
  Arm wrestling!

- Features
- Swelling+
- Pain+
- ?Neurovascular deficit

- Radiographs AP and Lat

Radial nerve





Radiological Features

- Two views as displacement can be underestimated
- Fractures tend to be midshaft and transverse
- Incomplete fractures can be subtle

Case 5

Case 6

Case 7

Humerus – shaft fractures

- U-slab

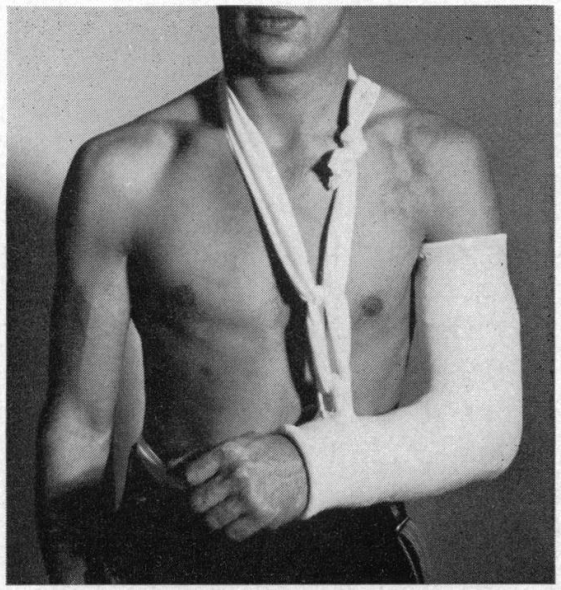
- Hanging cast if very displaced/comminuted

- Operation if:

  Open

  Neurovascular compromise

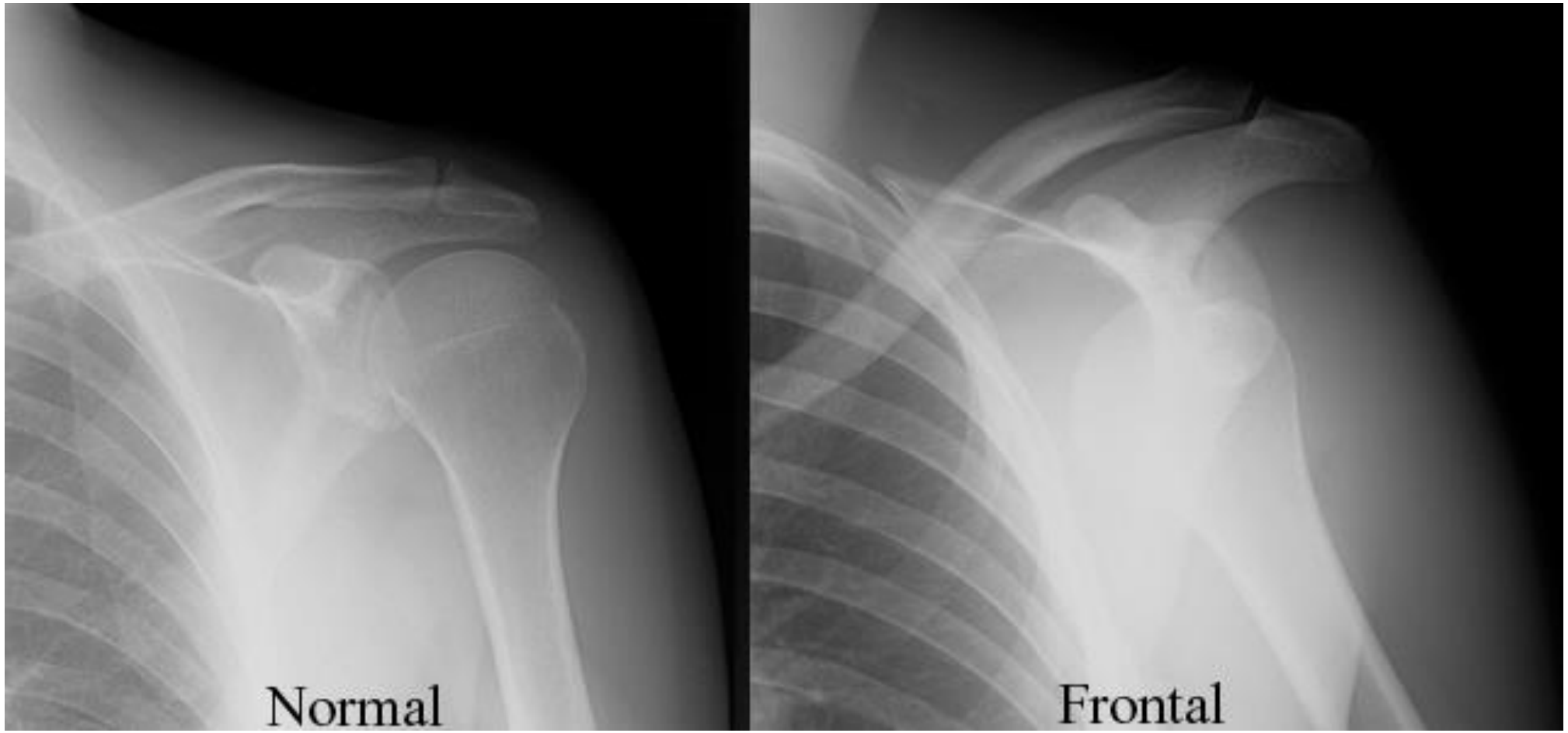
  Segmental



Dislocation

- Commonest joint to dislocate
  - Men 20 – 30
  - Women 60-80
- Named according to position of head of humerus with regards to glenoid.
  - Anterior
  - Posterior
  - Inferior

Dislocation
Anterior



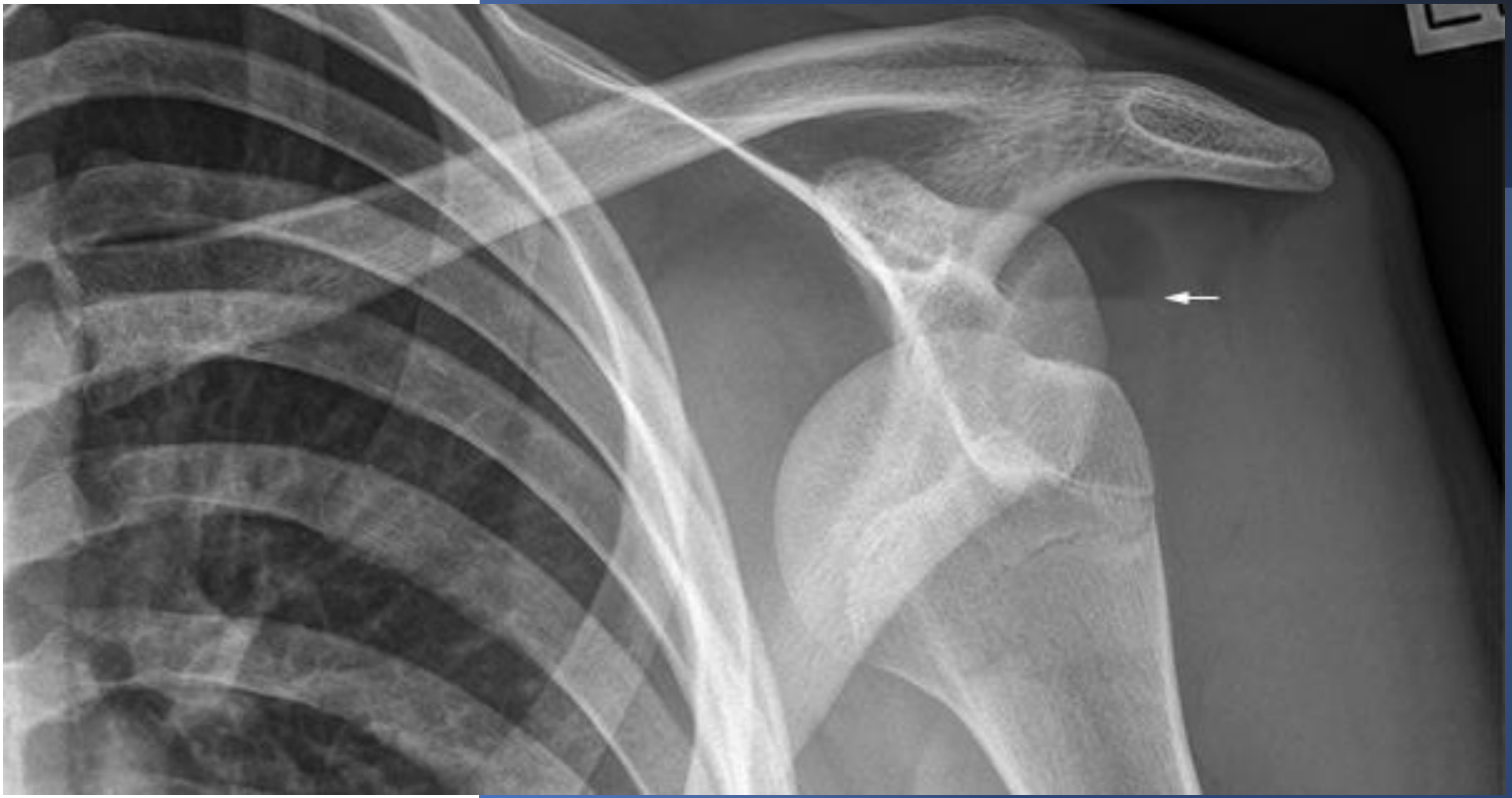
Dislocation Anterior

Anterior

- Clinical features
  - Pain, deformity and reluctance to move arm
- Orientate yourself on the x ray
- What to do when see..
  - Examine the axillary nerve
  - Look for associated fractures

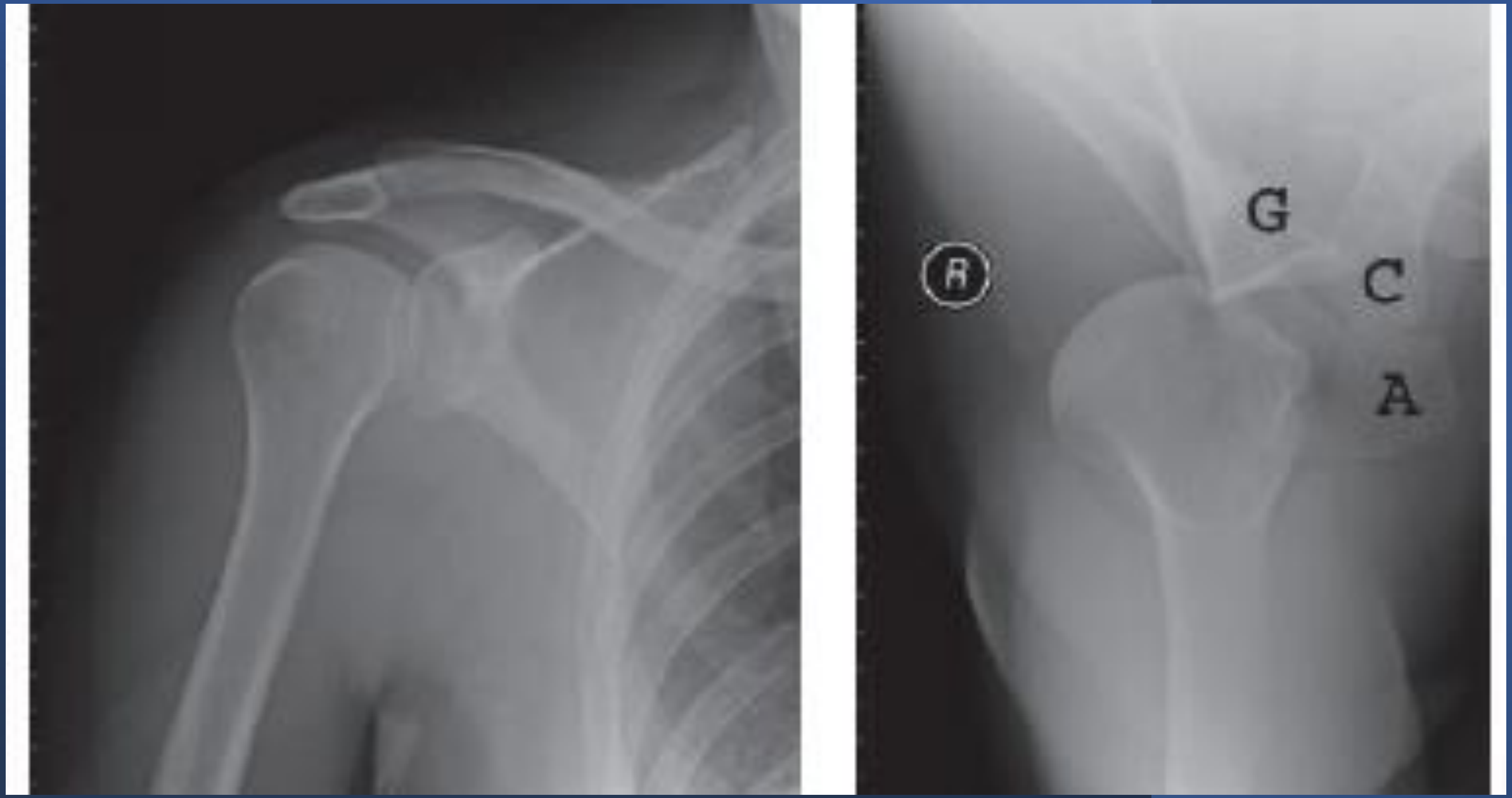
Views to request?

- Standard AP view
- Axillary projection with arm in abduction (not always possible with dislocation) or transcapular Y view



Reduction

- Various methods
- Modified Kocher’s method


R
G
C
A

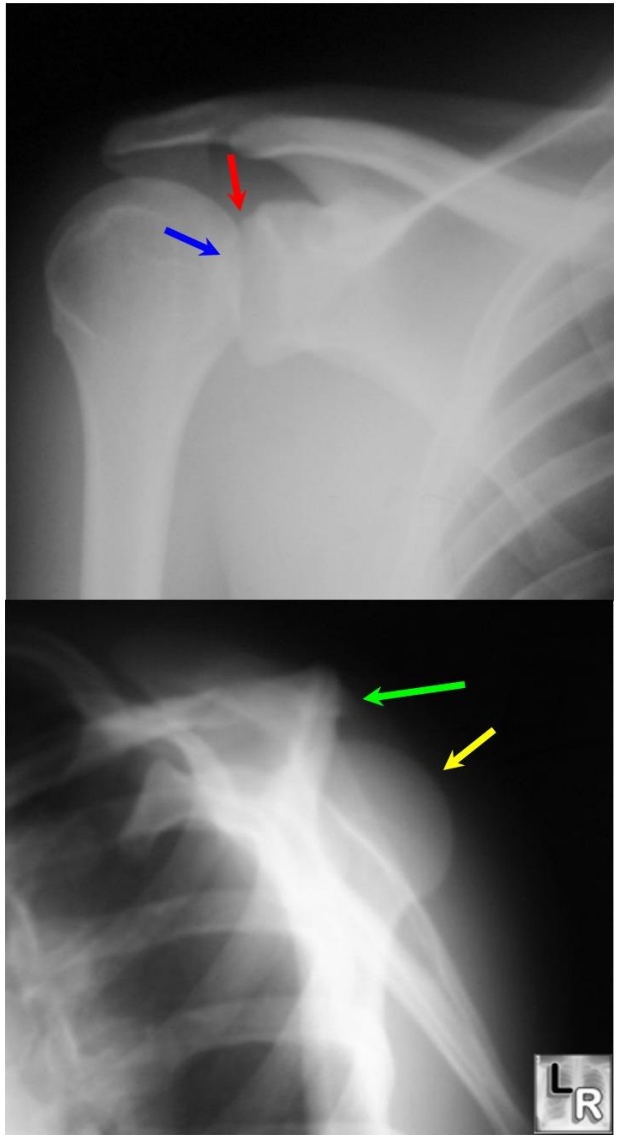
Posterior dislocation

- MUCH less common
- Force+
- Must get axillary view if suspect

Post reduction information

- Support in collar and cuff
- Pendulum exercises to ensure elbow movement
- # clinic follow up
- Analgesia
- Consideration of ADLs

XR findings

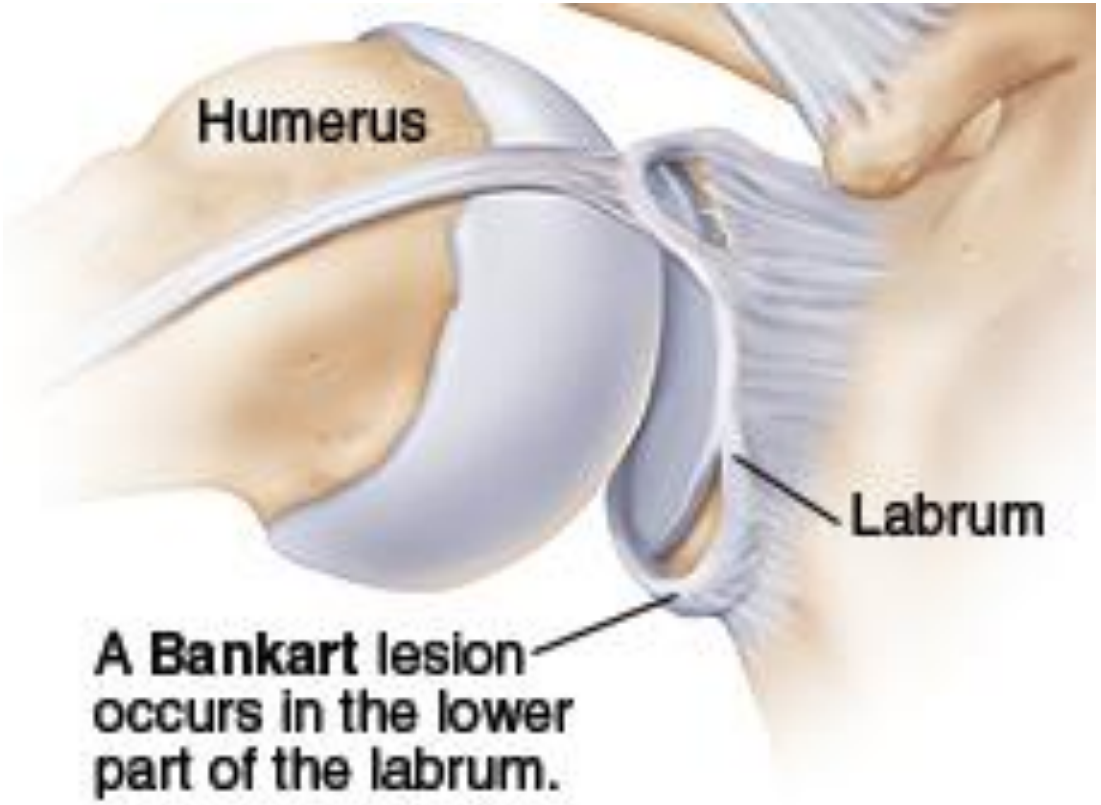


Inferior dislocation

Caveats

- How long after dislocation are you going to pull it?

- Be aware of chronic instability: labrum and capsule detached from anterior rim of glenoid (classic Bankart lesion)→ anterior subluxation



Case 8

Shoulder pain without trauma

Radiological changes associated with OA

- Joint space narrowing
- Osteophytes
- Subchondral sclerosis
- Bone cysts

Impingement syndrome

Structures involved:

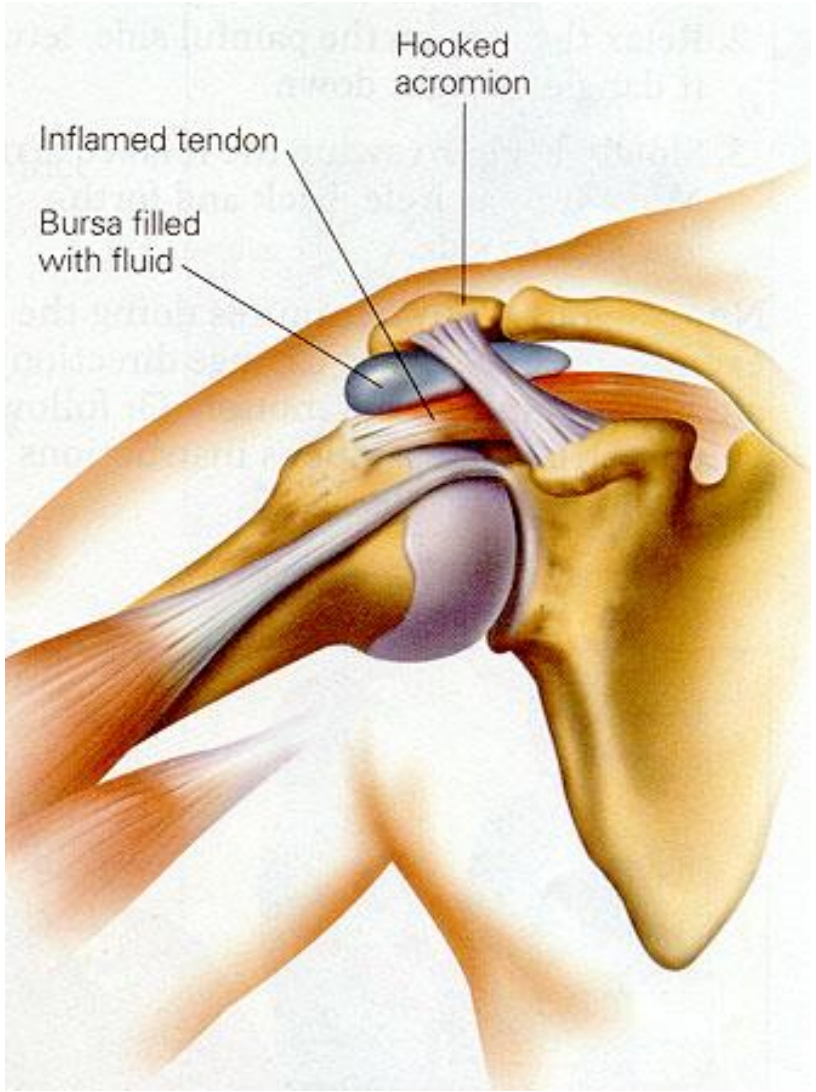
- Supraspinatus tendon
- Long head on biceps
- Subacromial bursa

Symtoms

- Painful arc

Investigations

- X ray
- USS
- MRI



calcification

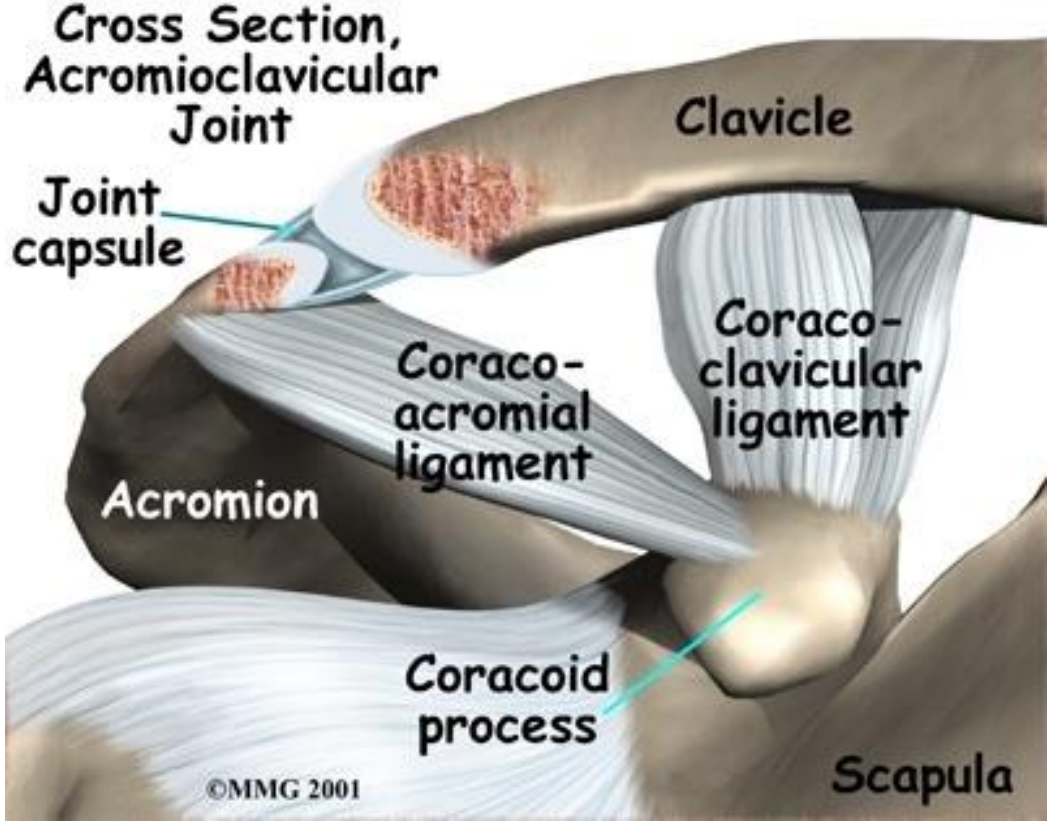
Calcific tendonopathy of the rotator cuff (arrow).

Acromioclavicular Joint injury

- **Characteristics**

- Child/Adult playing rugby
- Fall onto shoulder

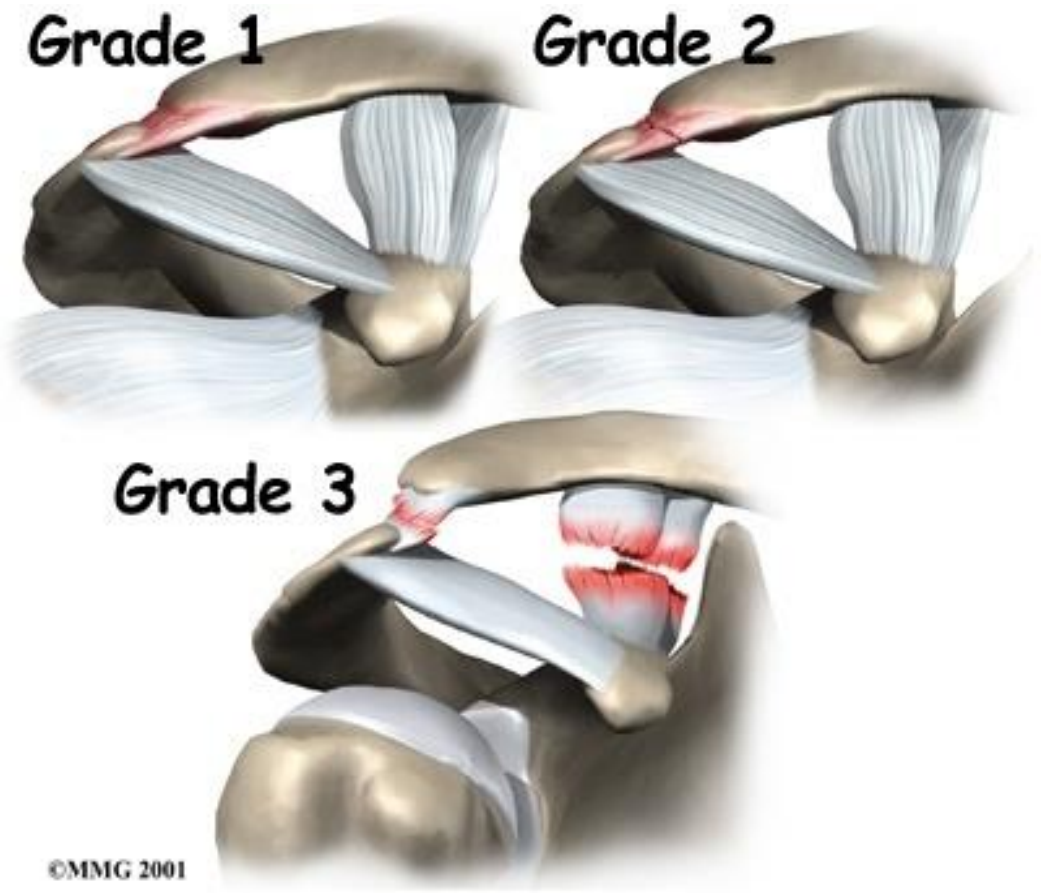
- **Features**
- Visible step
- Crepitus
- Bruising
- Points to ACJ!



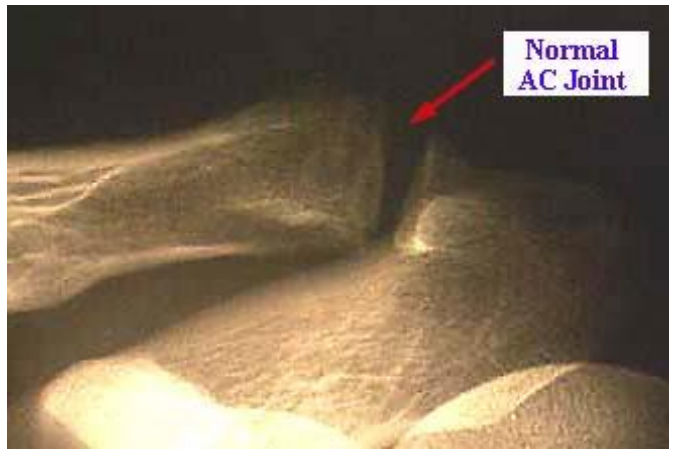
AC Joint injury

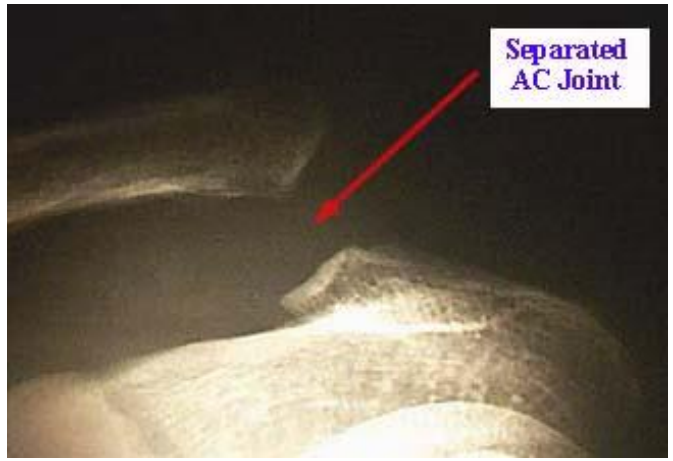
- Classification:
  - I – Sprain
- II – Subluxation
- III – Dislocation

- Patient will point to site of pain: ACJ. Tenderness/Asymmetry



ACJ





AC joint injury

- Views: AP, 15 degree cephalic tilt, axial views.
- No role for stress views in the ED
- Distance from coracoid to undersurface of clavicle = 11-13mm

- Mx

  Broad arm sling +/- physiotherapy

  Fracture clinic

Clavicle Fractures

Fall directly onto shoulder or outstretched hand

80% junction of middle and outer third

May be associated AC or Sternoclavicular #

Clinical features

- Pain at the fracture site and
- Palpable step / crepitus
- Look for skin tenting and necrosis (rare)
- Look for pneumothorax / neurovascular injury

Radiological findings

AP view (usually can be seen on one view)

Fracture line obvious – greenstick in children

Pathological # / radiotherapy features

Clavicle #s

Clavicle fractures

- Treatment
- Poor outcome and complications related to ORIF (80% conservative)
- Refer:
  - Comminution with separation (multiple piece)
  - Significant Foreshortening of the clavicle (indicated by shoulder forward).
  - Skin penetration (Open Fracture).
  - Clearly associated nervous and vascular trauma (Brachial Plexus or Supra Clavicular Nerves).
  - Non Union after several months (3–6 months, typically)
  - Distal Third Fractures which interfere with normal function of the ACJ (Acriomio Clavicular Joint).
- Conservative
  - Broad arm sling and analgesia
  - Think physiotherapy if don't look like they are going to move their shoulder much.
  - **Always** inform them of non-union/potential for operation.

Scapula fractures

- **Characteristics**
- Significant mechanism – young to middle aged
- **Features**
- Polytrauma patients – if you see it: suspect other chest injuries.

Scapula fractures

- Clinical features

  Arm held adducted

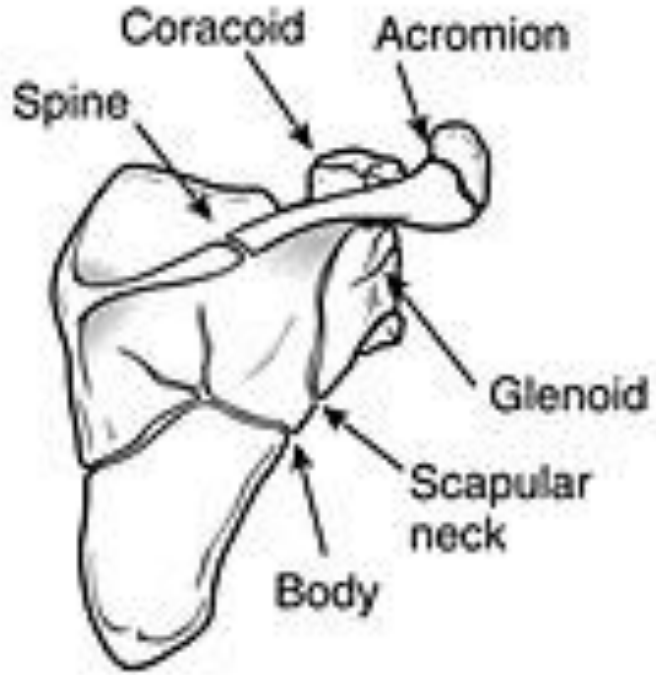
  Crepitus

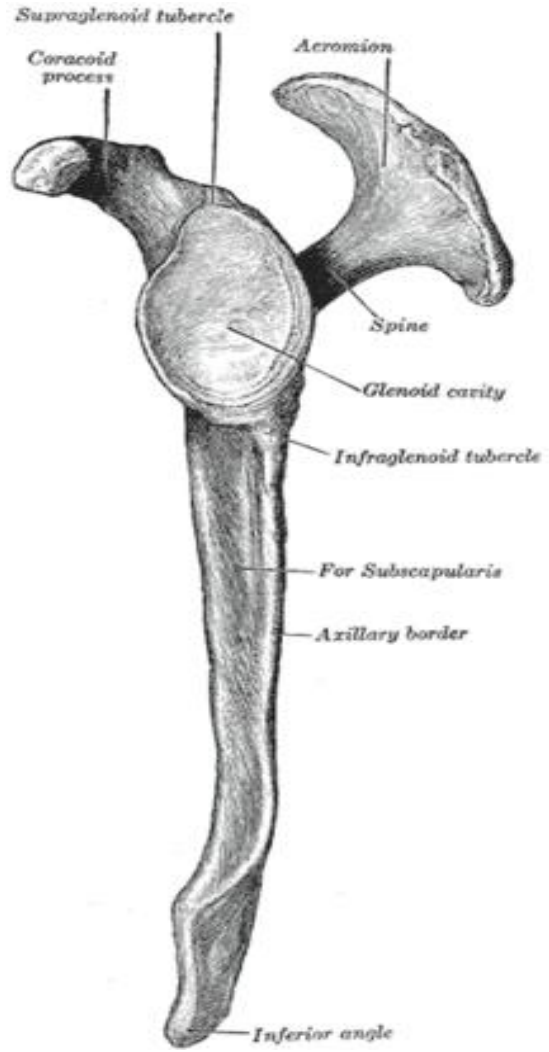
  Swelling

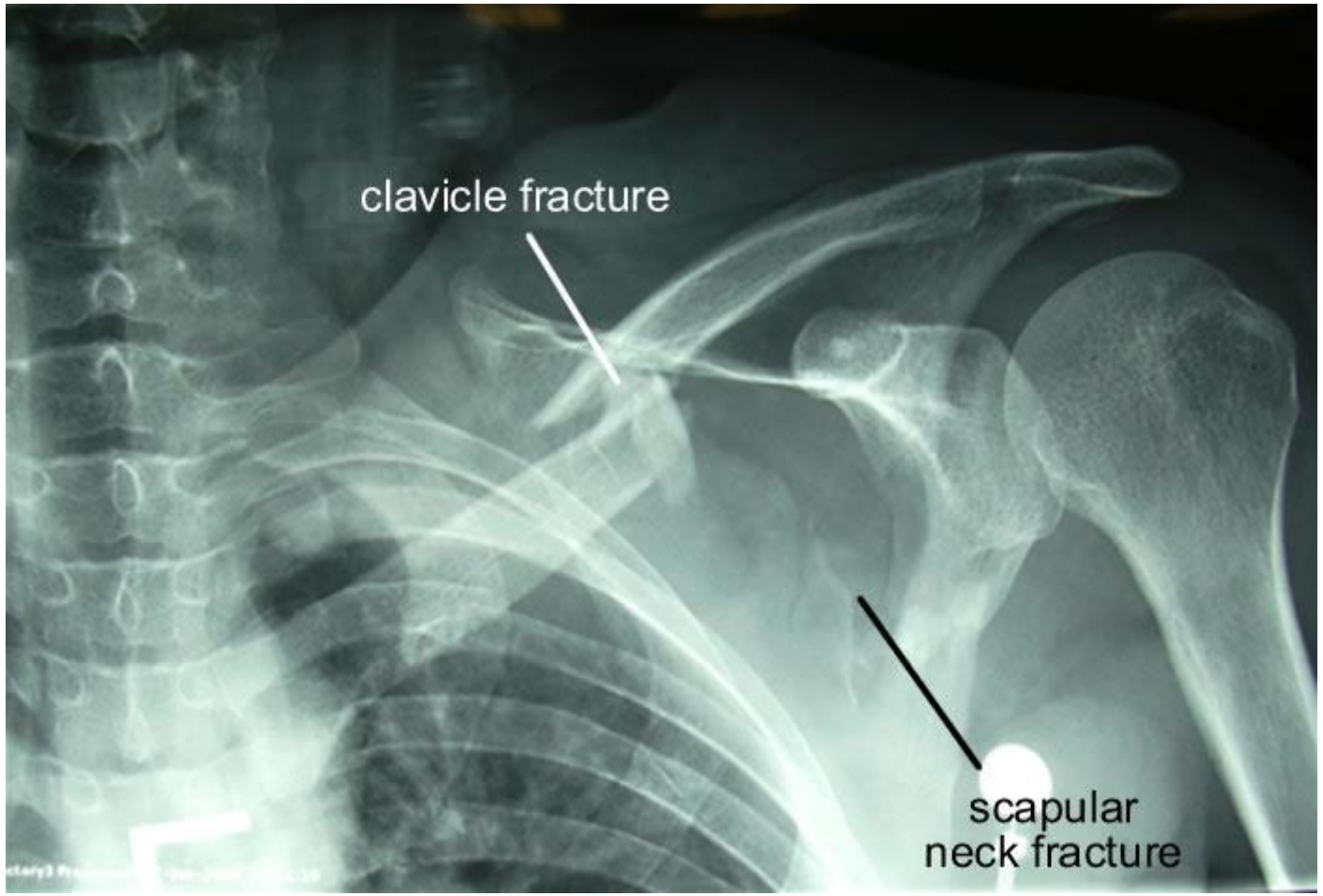
  Radiology

  AP CXR

  AP gleno-humeral joint, lateral scapular and axillary lateral views


Coracoid
Acromion
Spine
Glenoid
Scapular neck
Body


Supraglenoid tubercle
Coracoid process
Acromion
Spine
Glenoid cavity
Infraglenoid tubercle
For Subscapularis
Axillary border
Inferior angle


clavicle fracture
scapular
neck fracture

Scapula fractures

- Management

  Spine, body, neck: ok non-operative

  Sling with analgesia and early mobilisation

  Floating shoulder: scapular neck and ipsilateral clavicle fracture and significant glenoid displacement (>5mm articular step): ORIF


Any
Questions

Summary

- Recognise the areas in which the bones and soft tissues around the shoulder are damaged.
- Always request two views (analgese well first!)
- Assess function and neurology
- Look carefully if fracture / dislocation seen for the other
- Always consider the clinical findings do they fit
- Don’t forget the possibility of pathological fracture if minor trauma