Upper limb X-ray Interpretation

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My Medical Journey

- University of Exeter Medical School
- South Thames Foundation School
  - FY1 @ Croydon Hospital
  - FY2 @ East Surrey Hospital
- F3 year
  - Research Fellow @ St George's in trauma and orthopaedics under Prof Tennent
  - Building my research portfolio
  - Studying for a PgCert in Medical Education
  - Managing major trauma

Objectives

- X-ray interpretation structure
- Clinical cases
- Review X-ray upper limb pathology

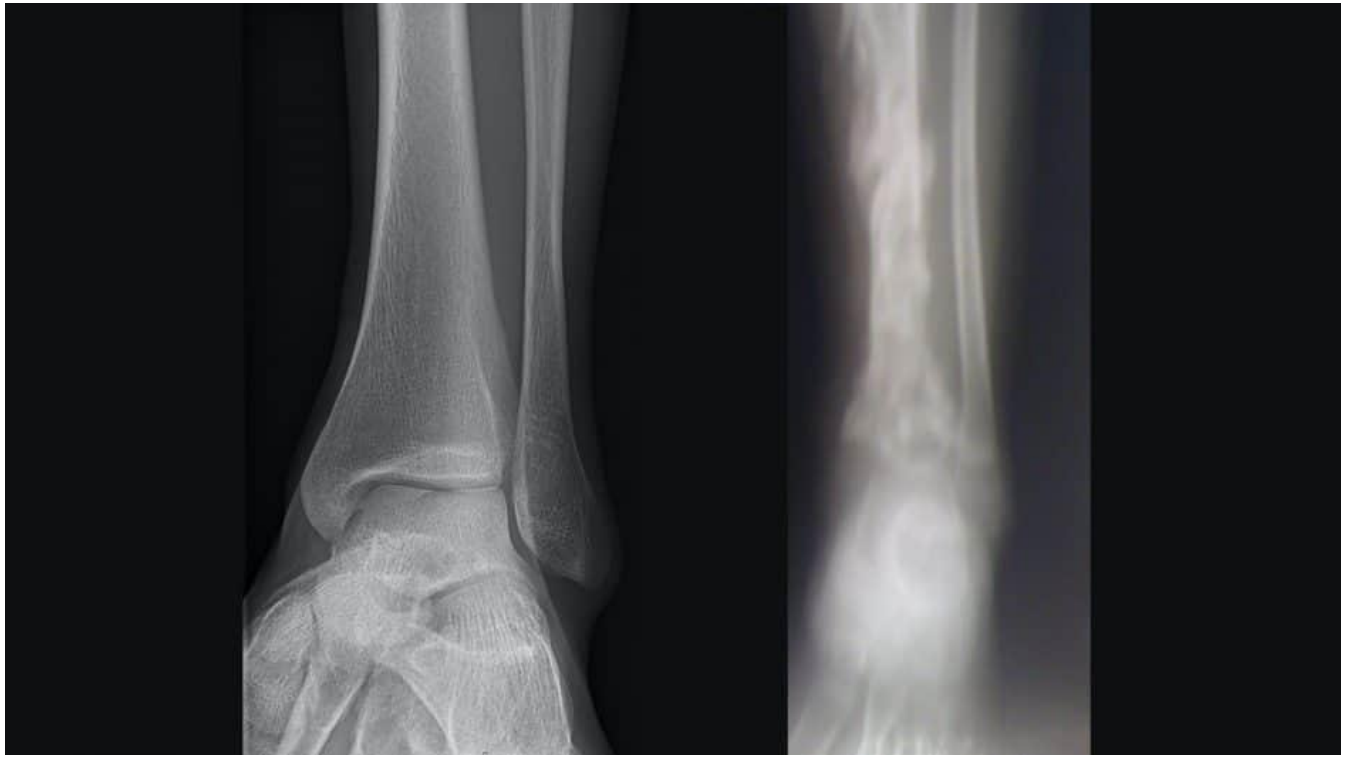
Please be interactive and don’t be afraid to have a go at answering

All X-rays are real cases but the names are fictional.

X-ray Interpretation (take your time)

Confirm details

- Patient details: name, D.O.B, Hospital number
- X-ray details:
  - Location
  - skeletal maturity
  - 2 views
  - is the X-ray adequate?



ABCS (good pneumonic)

- Alignment + Joint space
- Bone texture
- Cortices
- Soft tissue

https://geekymedics.com/musculoskeletal-msk-x-ray-interpretation-osce-guide/

Interpretation in clinical practice

Two schools of thought for an OSCE:

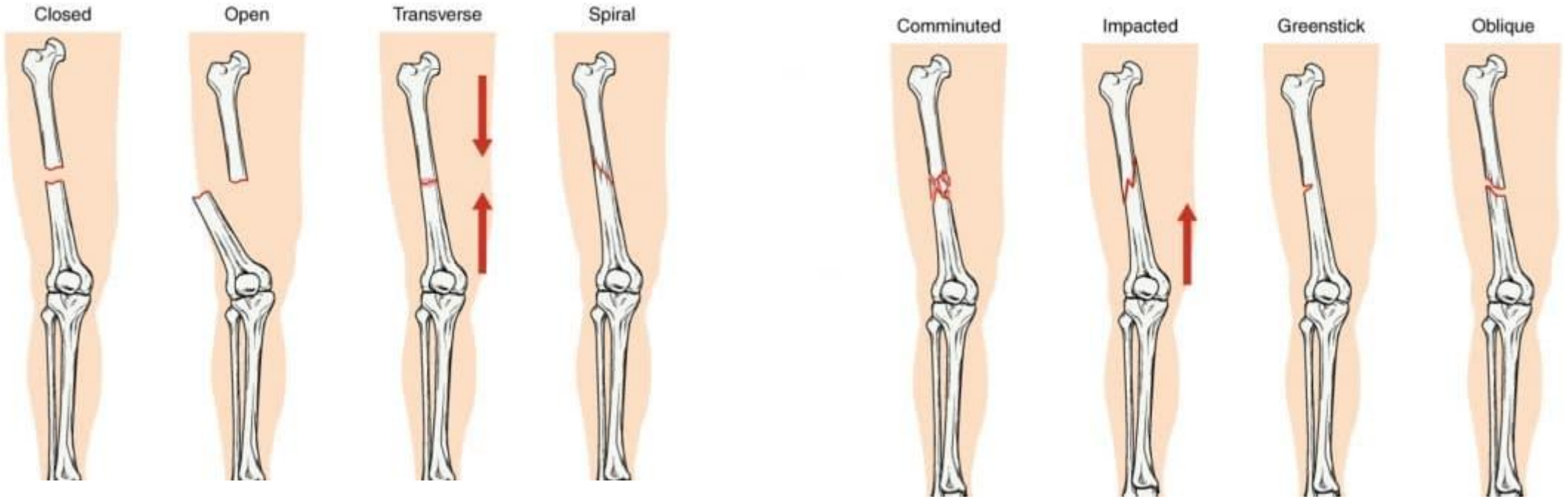
1) Describe everything out loud as you go through it
2) Use pneumonic in your head and systematically go through the X-ray, then describe pertinent findings.

My advice:

- Patient + X-ray details (including skeletally mature/immature)
- Positive findings
- Say you would review + compare to any previous imaging and like to look at joint above and below

Types of fracture

What types of fracture are there?



https://openstax.org/books/anatomy-and-physiology/pages/1-introduction

Description of a fracture

- Bone
- Location
- Type of fracture
- Articular involvement
- Displacement (angulation, translation, rotation)

Remember you always describe in terms of the distal fragment!

Case 1

30M falls off bicycle whilst cycling in wet conditions.

Walks in to ED but complains of right wrist pain. No other injuries.

Examination reveals there is an obvious deformity of his right wrist.

No PMH, No Meds or allergies.

Right handed and works as an accountant.

Bloods and observations are unremarkable

X-ray is ordered

Josh Smith
12/6/1980
1234567

Smith’s fracture

Distal radius fracture with volar angulation

What is the management? (OSCE style)

- Full A-E examination and Check for other injuries
- Wrist
  - Check if any open wounds
  - Check neurovascular status
  - Manipulation of arm
  - Volar Backslab + check neurovascular status again
  - ORIF


L

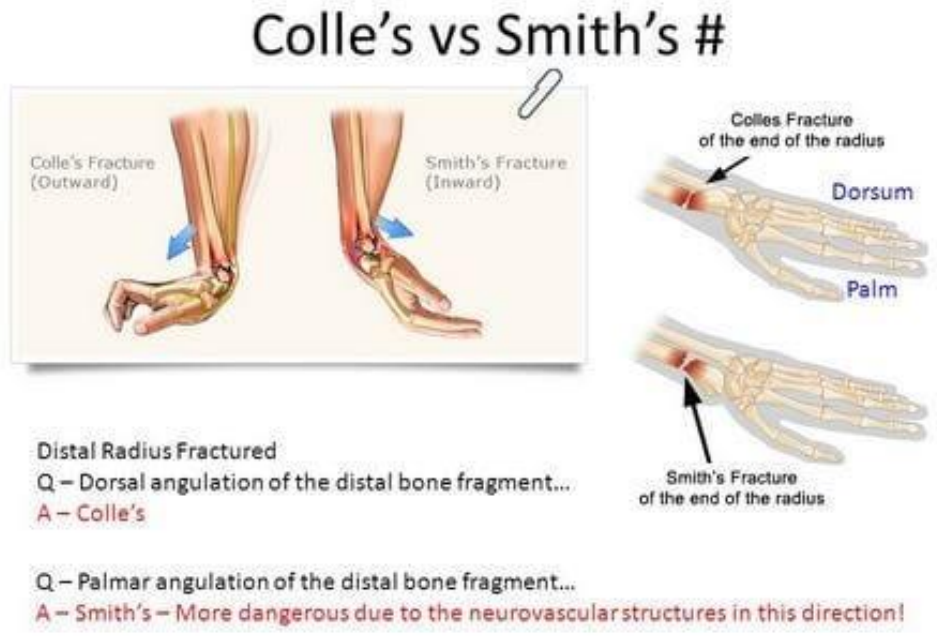
Distal radius fractures

Most common orthopaedic injury

Mechanism: Usually due to a fall on outstretched hand

Most common types:

- Colle's – dorsal angulation
- Smith's – volar angulation



https://www.drgordongroh.com/orthopaedic-injuries-treatment/hand-wrist/distal-radius-fractures-broken-wrist/

Case 2

5M Fallen of bunk bed onto left arm this after 8 year old sister pushed him.

Pain and swelling in left elbow region.

Reports some tingling in left hand.

PMH nil, UTD immunisations. No meds. NKDA.

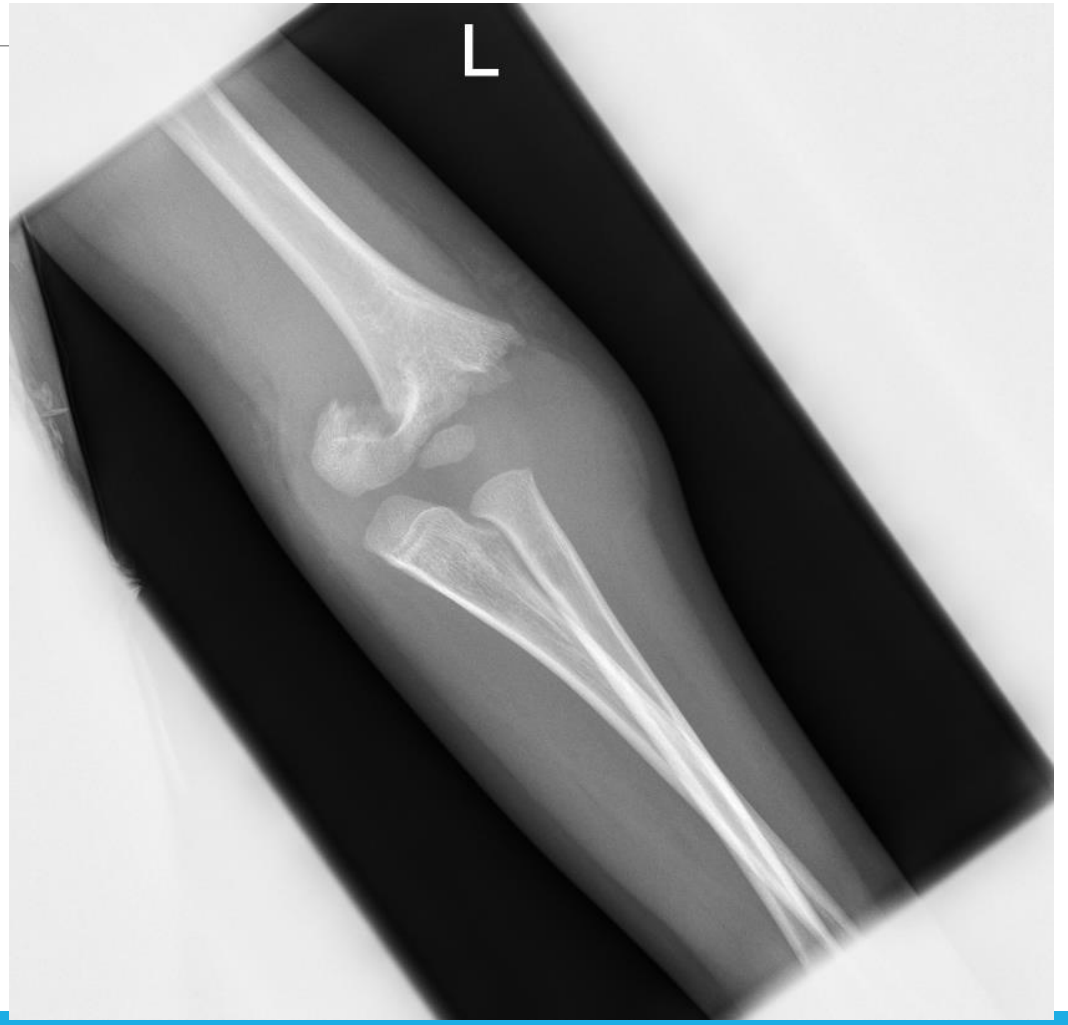
O/E:

Swollen + deformed left elbow.

Reduced sensation medial three and a half digits. Unable to make a pincer grip

CRT 2s and Warm + perfused hand.

John Adams
25/12/2014



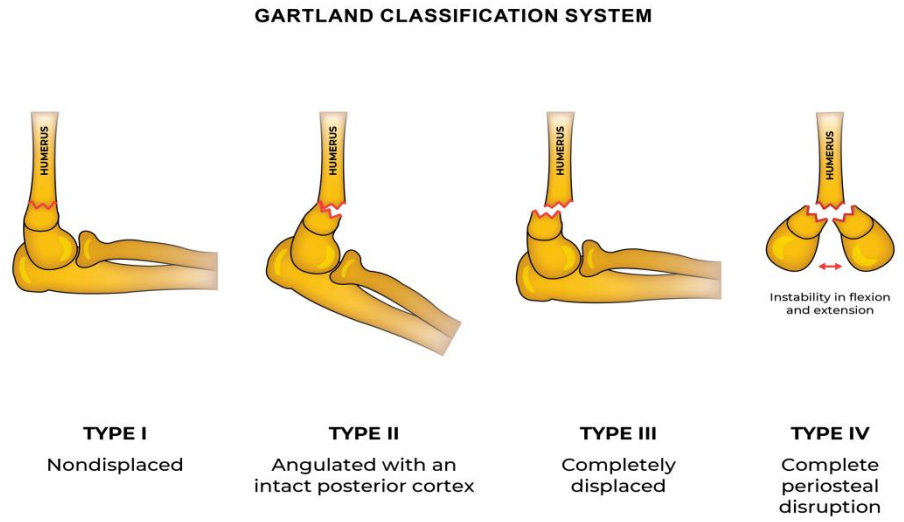
Supracondylar fracture

How would you manage this patient?

- Full A-E examination and check for other injuries
- Arm
  - Check if any open wounds
  - Check neurovascular status including pulses and CRT
  - Call your registrar
  - Manipulation of arm
  - Above elbow Backslab with arm flexed + check neurovascular status again
  - Conservative v CRPP

Supracondylar fracture

- One of most common fractures in children (most common age 5-7)
- Most commonly an extension type injury when falling over on outstretched arm
- Vascular/neurological status of limb leads management decisions
- Gartland classification
- Operative v non-operative treatment



Case 3

55F last night when getting out of the bath slipped and fell on the bath mat landing on left shoulder

Instant pain and reduced ROM, she put it in a homemade sling and came to ED

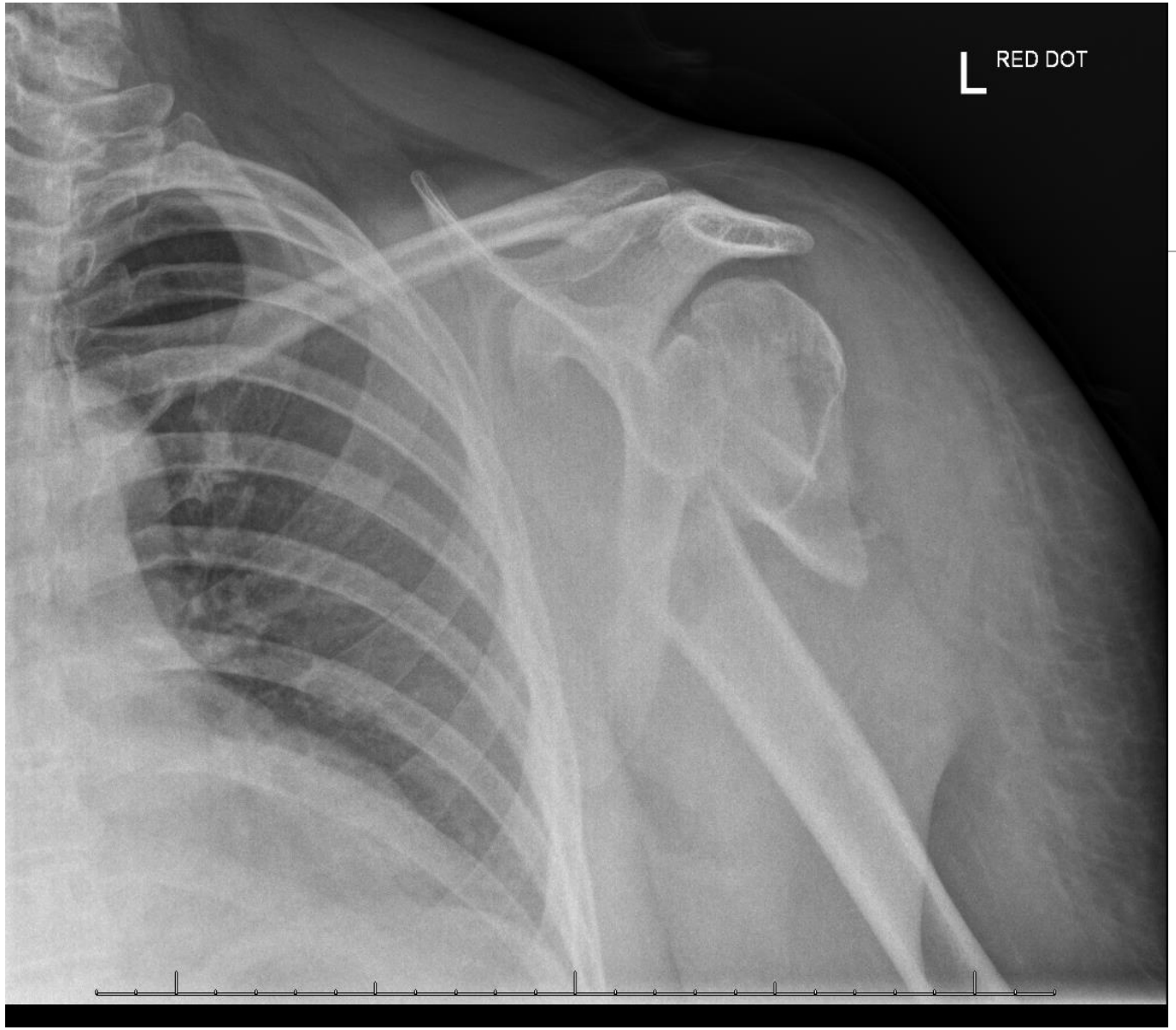
PMH: HTN and DMII and PE x 2. No surgical history.

NKDA

Works as a cleaner, non-smoker.

O/E: Swollen and bruised left shoulder. Reduced range of movement in all ROM due to pain.

Which part of the history and which part of examination is missing?


L
RED DOT

Proximal humerus fracture

How would you manage this?

- Full A-E examination and check for other injuries
- ?cause for fall
- Shoulder and arm
  - Check if any open wounds
  - Check neurovascular status including pulses and CRT
  - Collar and cuff for comfort and therapeutic management in most cases

Which nerve is most at risk of injury with this fracture?

Proximal humerus fractures

- Usually in older patients or patients with osteoporotic bone
- Elderly patients who fall or high energy injury in younger patients.
- Fracture of surgical neck/anatomical neck/greater or lesser tuberosity
- Majority of cases managed conservatively with a collar and cuff (aim for gravity to reduce fracture)
- Surgical fixation in complex cases/comminuted and displaced fractures

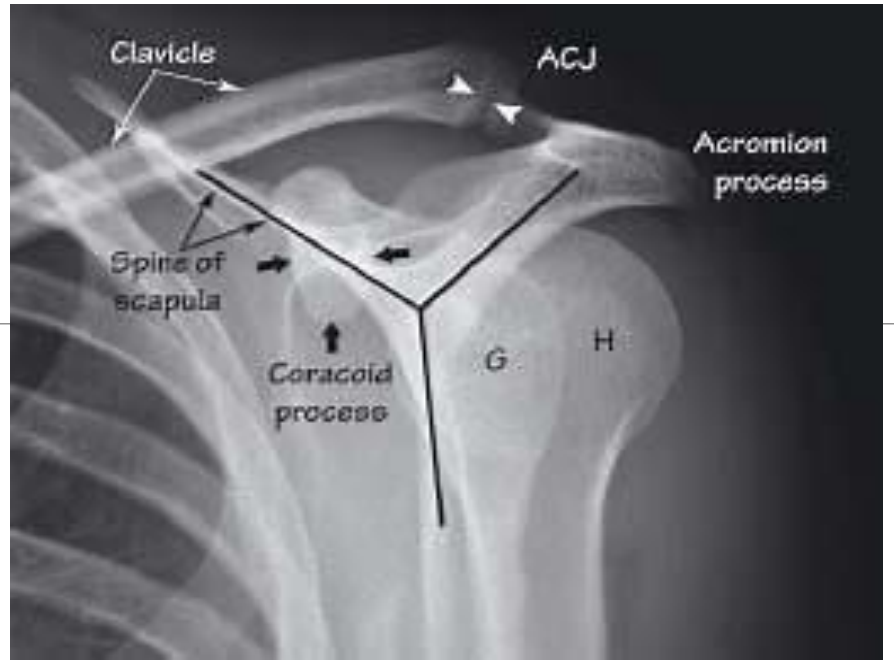
Neer classification/AO classification if you want to read further

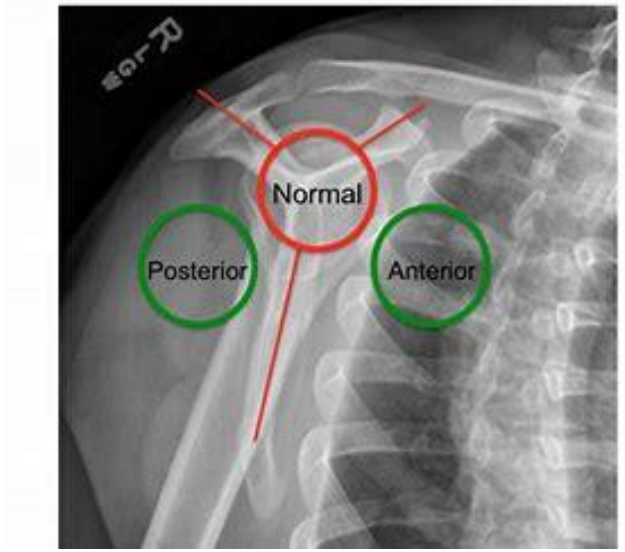
X-rays to interpret

You will now see a number of X-rays which I would like someone to interpret

- Please interact and try to describe each X-ray and give a diagnosis
- Combination of trauma and chronic pathology

Jake Kelly
12/8/1990
Playing rugby – tackled opponent and felt pain in right shoulder


Clavicle
ACJ
Acromion process
Spine of scapula
Coracoid process
G
H


Normal
Posterior
Anterior


R

Margaret Jones
11/09/1940
Pain in left wrist and right shoulder for 2 years

https://www.theskeletalsystem.net/carpal-bones

Charlie Bowler
27/03/2010
Fall from standing off a step

Summary

- MSK X-ray interpretation – can be applied to all parts of the body
- Clinical cases + management of common pathologies (trauma and chronic)
- Practice makes perfect
- Thankyou for listening

Questions?