



—BELMATT—  
HEALTHCARE TRAINING

# The Elbow & Forearm

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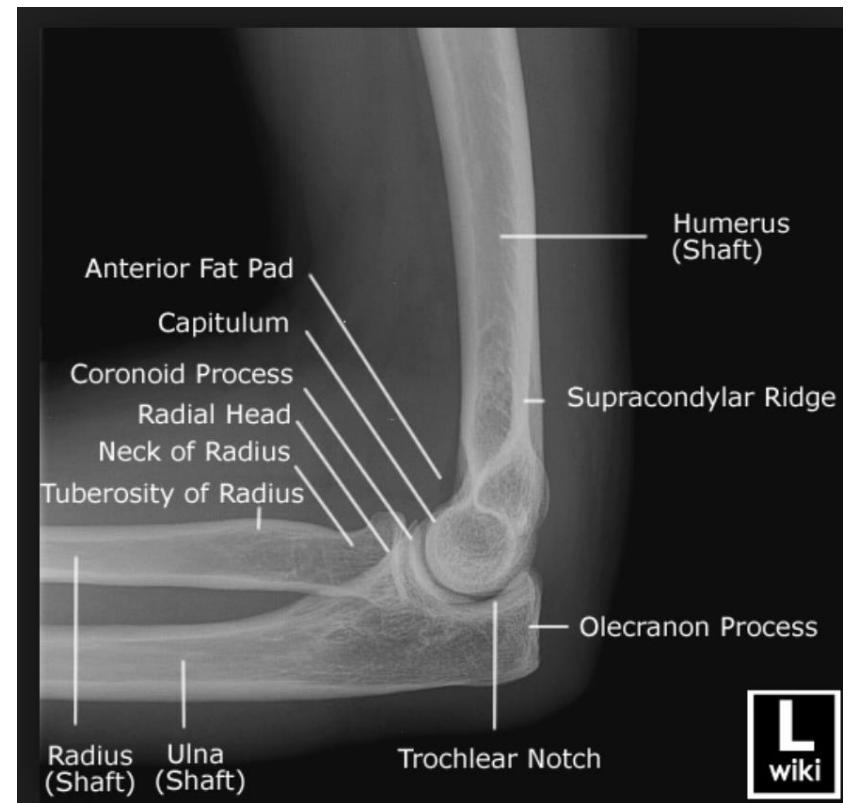
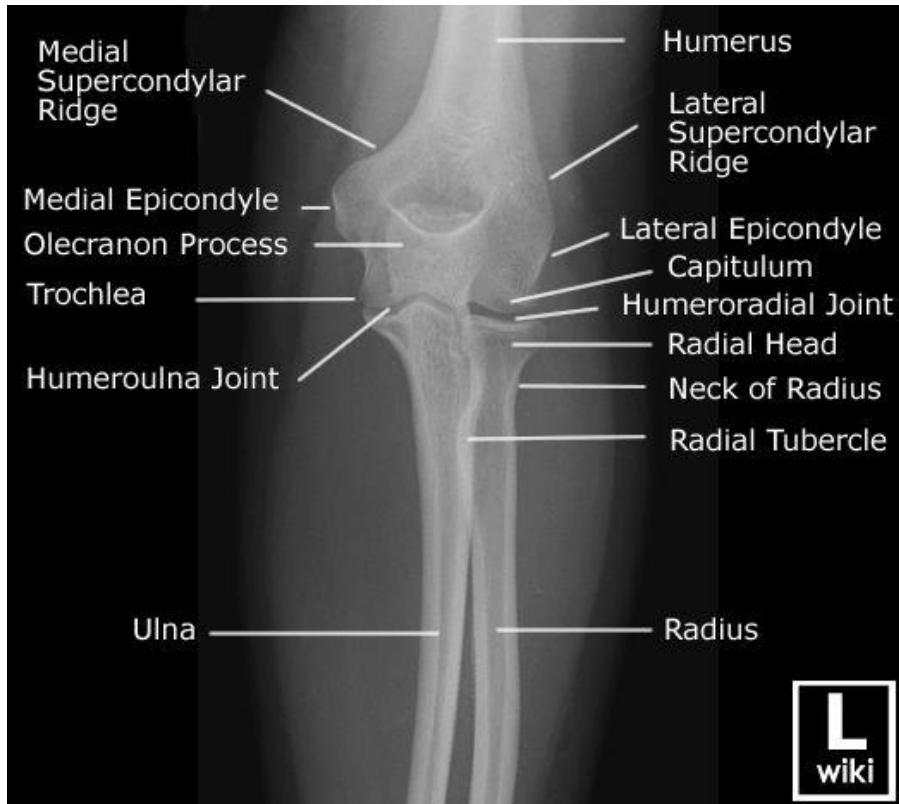
# Overview

- Anatomy of Elbow
- Standard x ray views
- Common pathologies – adults & children
- Approach to XR interpretations of the elbow / forearm
- UCC / ED Mx strategies
- Referral criteria

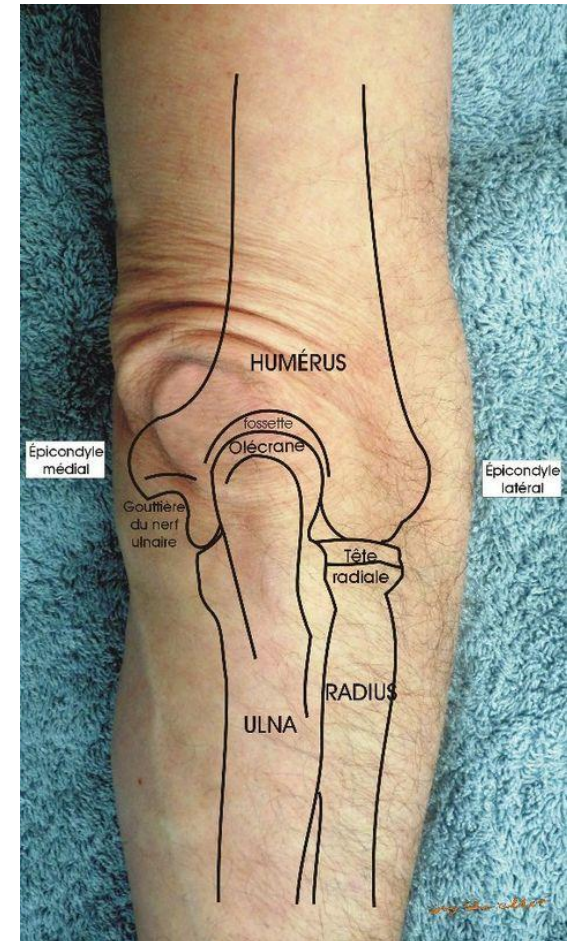
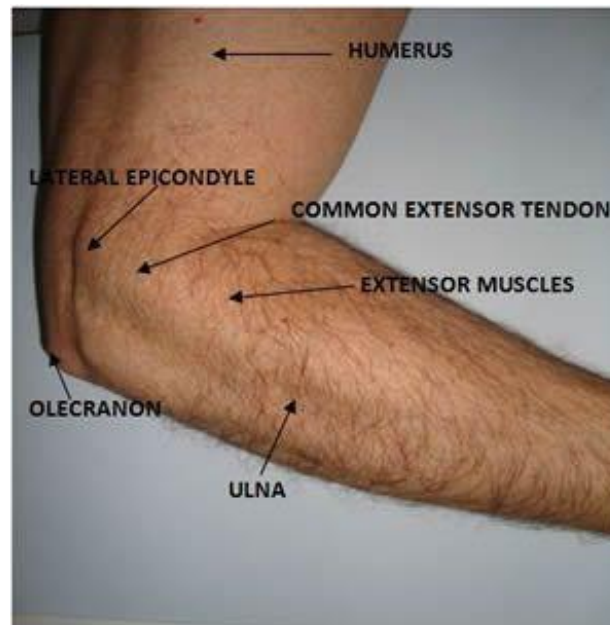
# Do the basics well

- Always start with a history
- Followed by examination.....  
Look, feel, move (active), NV deficit
- X-ray - 2 views for all

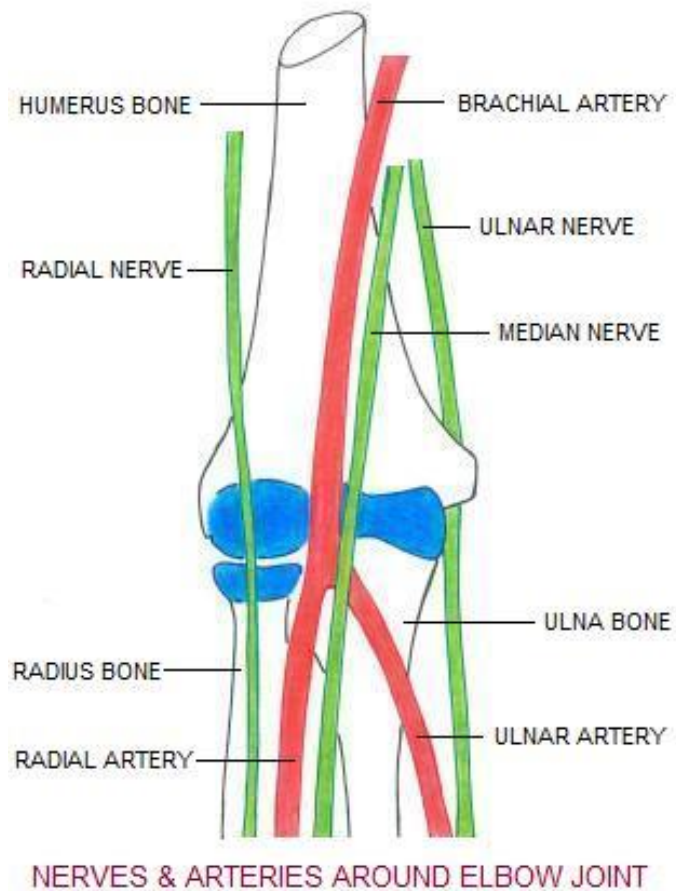
# Normal



# Surface Anatomy



# Neurovasculature



- Be aware of local structures
- Always examine distal NV status



# Normal XR – The Lines



- Lateral

Capitellum + trochlea  
behind one another

Radiocapitellar line (best  
applied in true lateral)

# Normal XR – The Lines

- Capitellum + trochlea behind one another
- Radiocapitellar line
- Anterior Humeral line





# Fat Pads

- Distal humerus
- 2 fat pads = Ant + Post
- Fat is seen as darker
- Joint effusions displace fat pads
- Posterior fat pad is abnormal



# Reading an X-ray

- Are the fat pads normal?
- Is the radiocapitellar line normal? (lateral)
- Is the anterior humeral line normal?
- In children – check the ossification centres.



# Painful swollen Elbow

- Fell off e-scooter
- Generally swollen and tender elbow
- Decreased ROM
- N/vasc in tact



# Fall onto elbow

- Unable to move

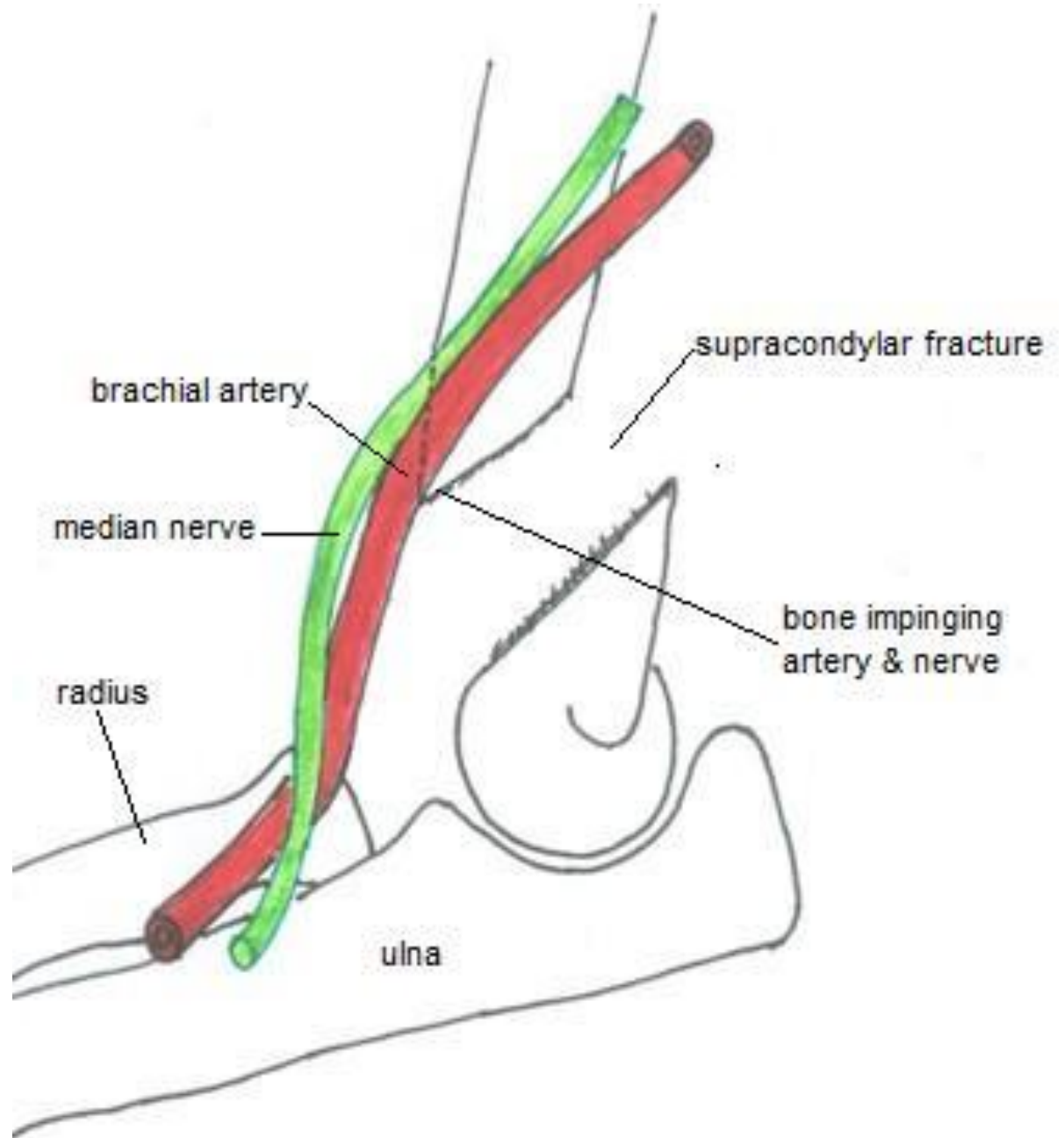




# The 2<sup>nd</sup> View



## The Tight N/Vasculature





# Painful deformed elbow post fall



Painful  
deformed  
elbow  
post fall



# Elbow reduction techniques

## Posterior Elbow Dislocation

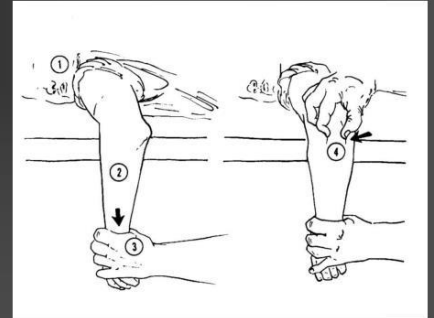
### ■ Manipulative Reduction

1. While an assistant holds the arm and makes steady countertraction,
2. Grasp the wrist with one hand and make steady traction on the forearm in the position in which it lies.
3. While traction is maintained, correct any lateral displacement with the other hand.



## Posterior Elbow Dislocation

4. After muscle relaxation occurs, the olecranon is grasped with the operator's other hand using the thumb and index finger. The olecranon is then guided to the reduced position without force. In this way, medial or lateral components of the dislocation can be controlled and corrected.



# Children



## 'CRITOL'

Capitellum	2
Radial head	4
Internal epicondyle	6
Trochlea	8
Olecranon	10
Lateral epicondyle	12

How old  
are they?





How old  
are they?





2 year old  
sibling  
pulled  
arm whilst  
playing



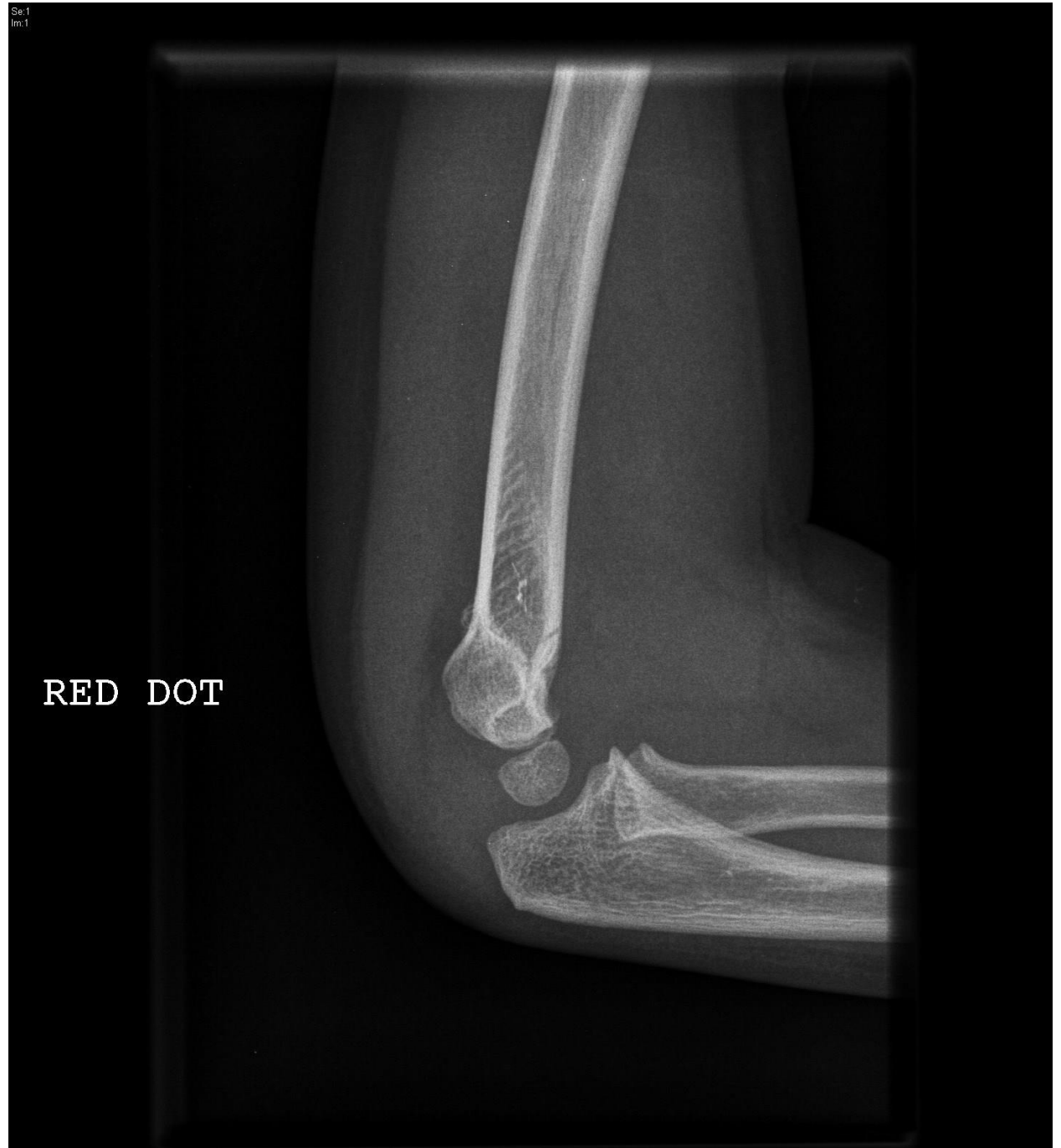
Pulled elbow



Radial head dislocation

# FOOSH

RED DOT



Fall on  
flexed  
elbow





# Fall on flexed elbow



# Supracondylar fracture

- # of distal 1/3 after FOOSH with hyper extension force line
- Most common age 5 to 9.
- Look for fat pad / Sail signs:
- Elevated anterior
- Posterior
- Gartland Classification: Types I/II/III



## Abnormal Anterior Humeral Line Elbow Alignment



Gartland  
Type 1



Gartland  
Type 2



Gartland  
Type 3

### Supracondylar fractures: Gartland classification

1. Minimally displaced fracture
2. Displaced distal fragment
  - Intact posterior cortex
3. Complete displacement
  - Posteromedial (75%) posterolateral (25%)

# Management

Manipulation if:

If there is evidence of arterial obstruction and the fracture is displaced or angulated.

If there is off ending of the fracture

If there is less than 50% bony contact

Consider Manipulation if:

If there is backward tilting of the distal fragment of 15 degrees or more

Severe torsional deformity.

# Forearm - Do the basics well

- Always start with a history
- Followed by examination.....  
Look, feel, move (active), NV deficit
- X-ray - 2 views for all
- If a # of a long bone is considered –  
always Xray joint above and below
- Clinical importance of # patterns

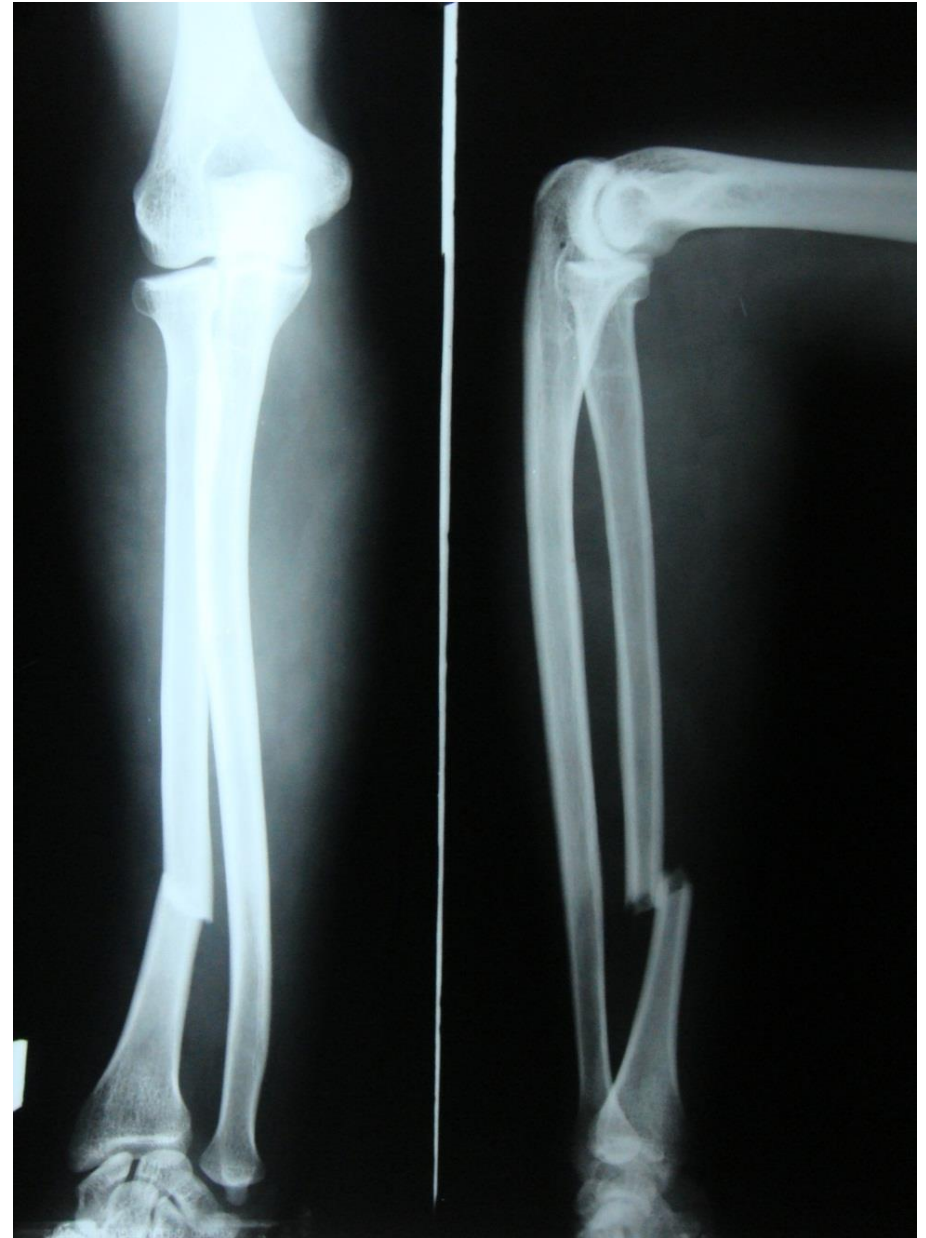
# Isolated Ulnar fractures

- Spiral fractures seldom occur when the person is not moving
  - Consider age and mechanism (? defensive)
- Mx:
  - If undisplaced, above elbow backslab at 90°
  - If displaced - refer



# Galeazzi fracture-dislocation

- Check carefully for NV status
- # radius and dislocation of distal radio-ulnar joint
- ('MUGR')
- Mx:
- Immobilize and refer for ORIF





## Monteggia fracture- dislocation

- # ulnar associated with dislocation of the radial head
- Mx: Surgery ORIF



# Paediatric Spiral Fracture forearm

- Spiral fractures seldom occur when the person is not moving
- Consider age and mechanism
- Look for old injuries
- Paeds / Safeguarding involvement



Se-1  
Im-1

A-AMBLAH  
Study Date: 11/12/2011  
Study Time: 11:27:08  
MRN:

L  
AT

C1500  
WTC01

# Summary

- History, Exam BEFORE you do your Xray requests
- Methodical examination of images
- Look for fracture patterns to fit the mechanism
- Paediatric fractures – think of age of child