

Subtle Fractures of the Immature Skeleton

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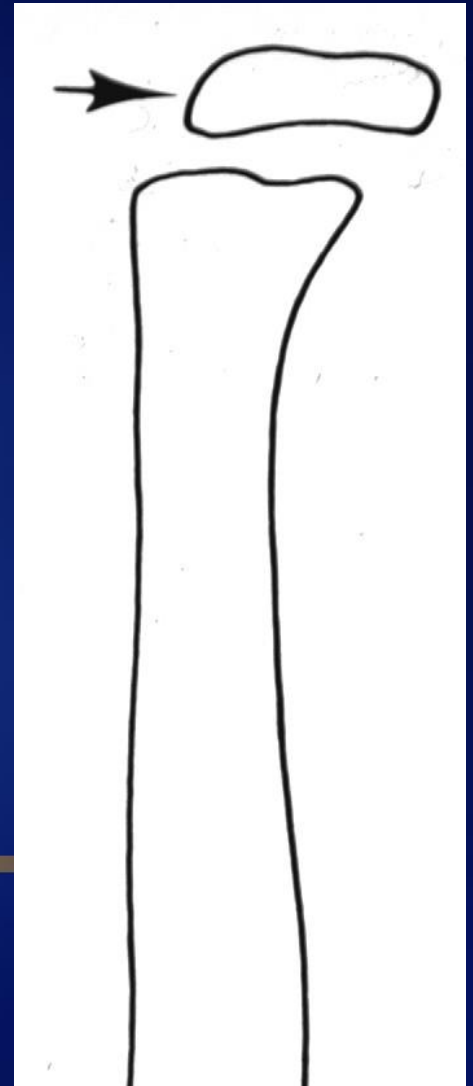
Immature Skeleton

- More porous, more elastic recoil
- Thinner cortex
- Open physes (cartilage)
- Developing epiphyses
- Strong ligaments



Epiphyseal-Metaphyseal Fractures

- Separation at cartilaginous physis
- Salter-Harris classification
 - I physis only
 - II metaphyseal
 - III epiphyseal
 - IV epiphyseal and metaphyseal



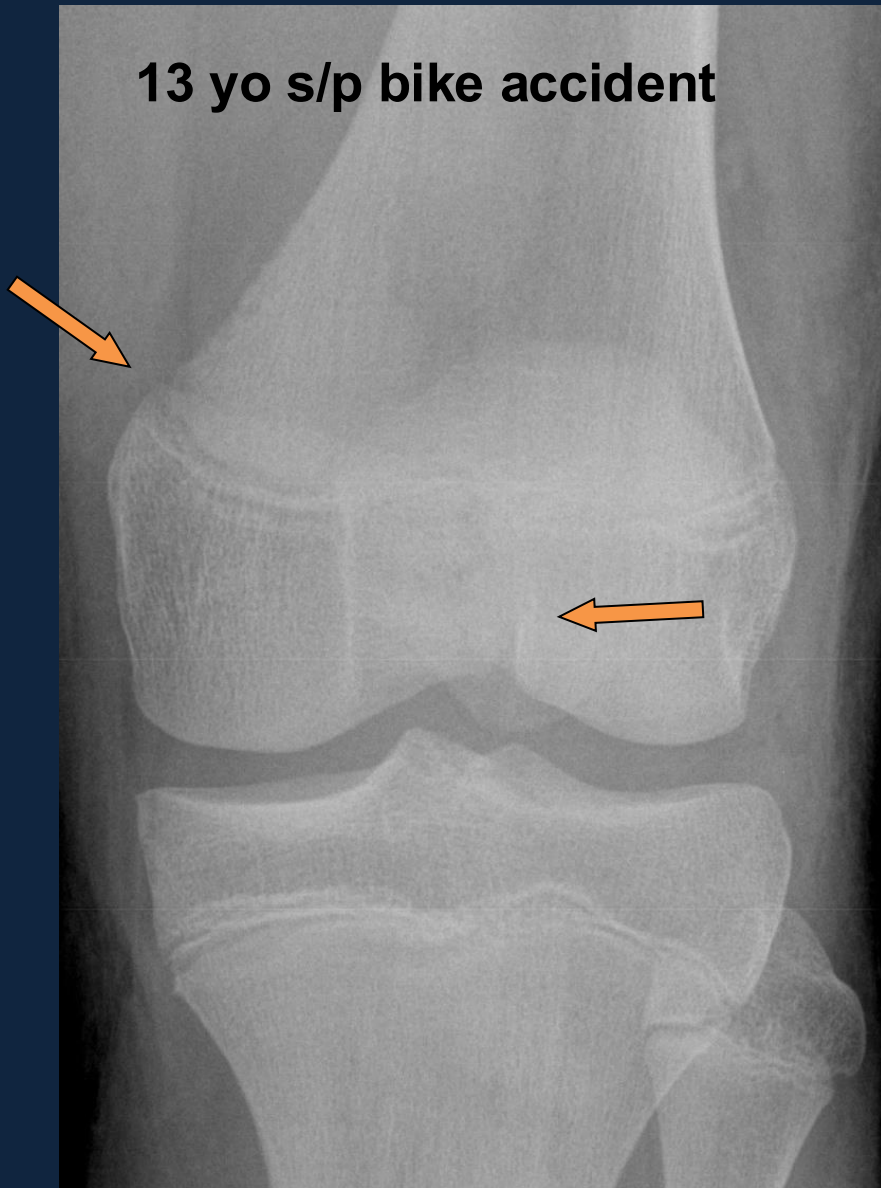
Salter Harris I fractures



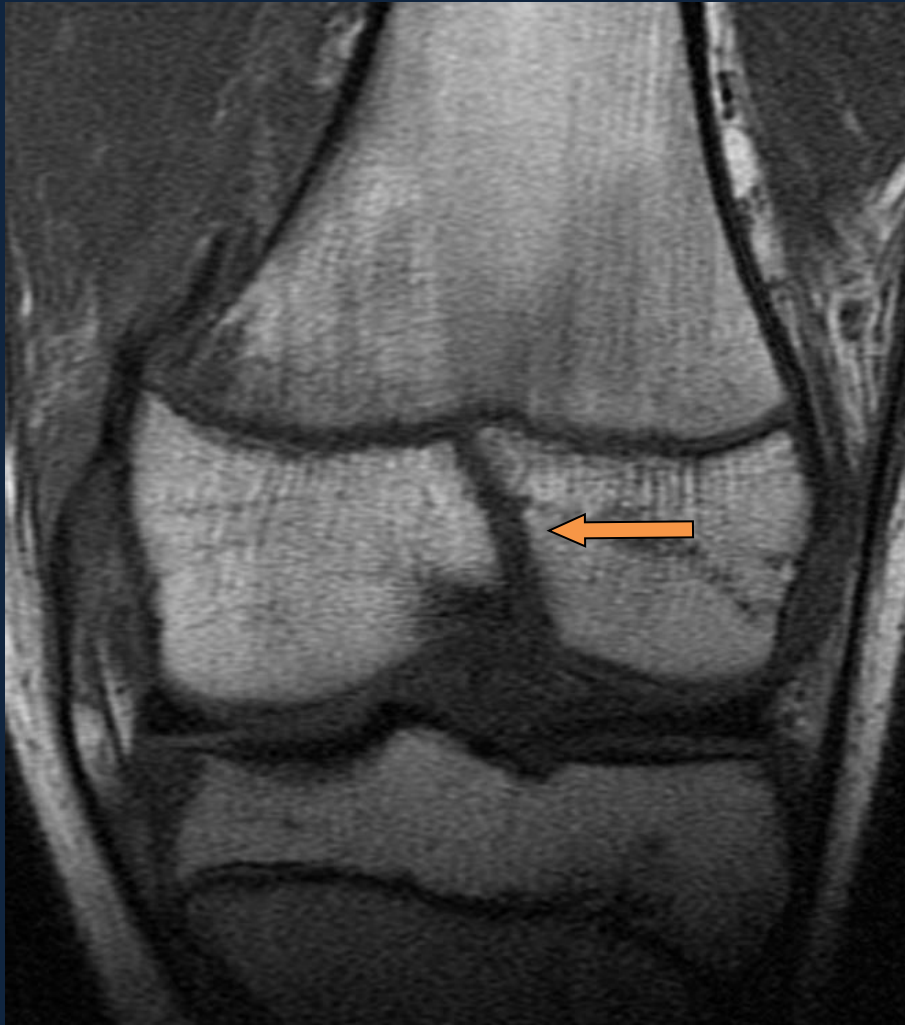


Salter-Harris III Fracture – Distal Femur

13 yo s/p bike accident



Coronal T1



Coronal PD Fat Sat



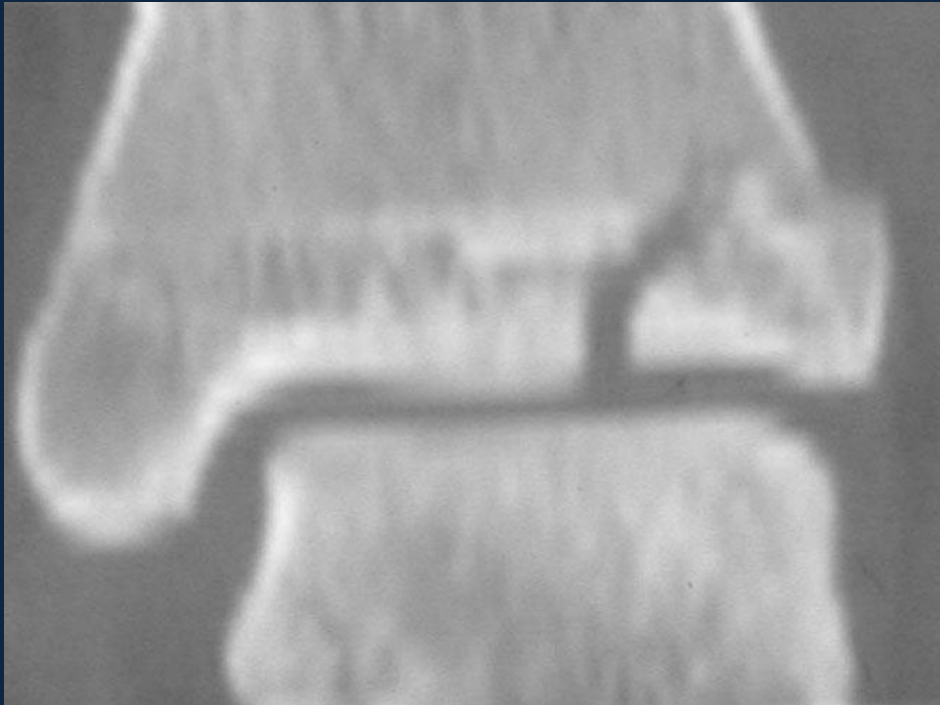
Transitional Fractures of Adolescence

- Occur when physis is partially fused
- Most common in distal tibia



Multiplanar CT shows fragment:

- displacement
- orientation
- number



2 mm

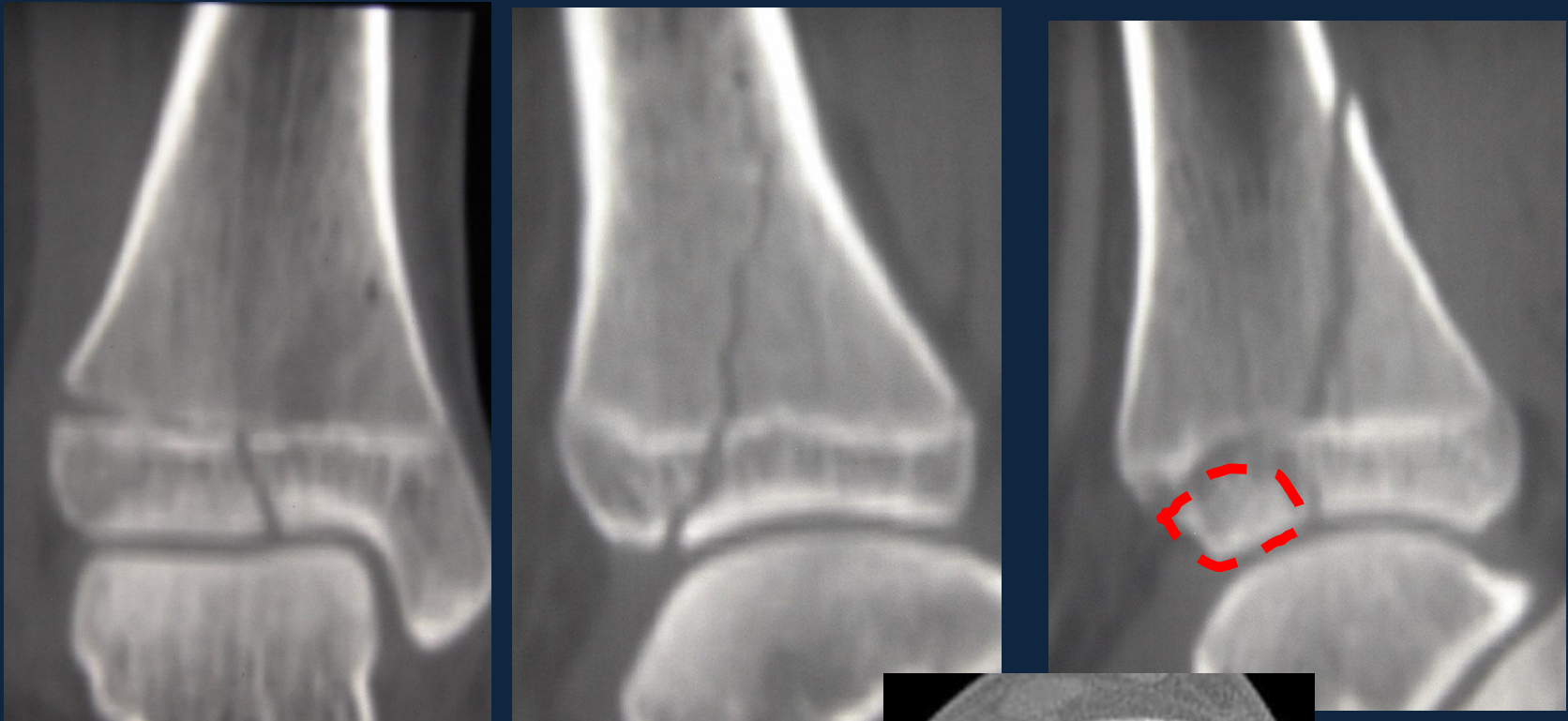
Complex Epiphyseal-Metaphyseal Fractures (Triplane Fractures)



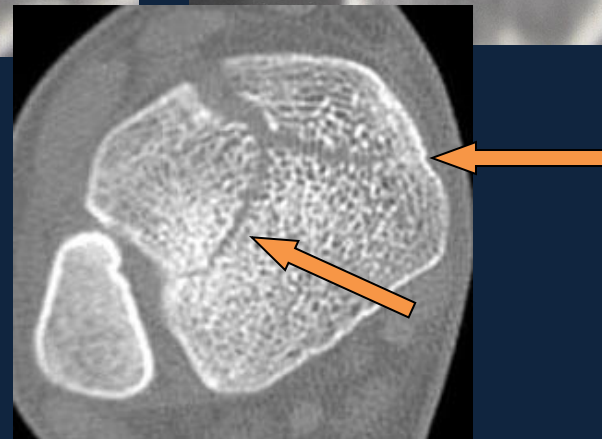
3 part Triplane Fracture



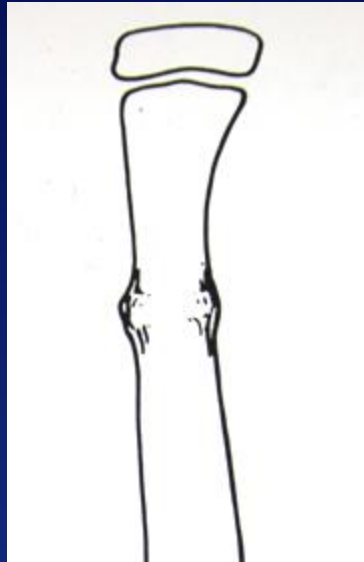
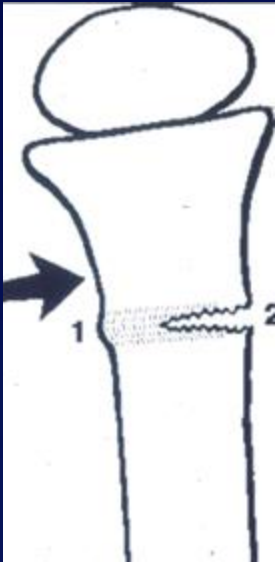
3 part Triplane Fracture



- K wire or screw fixation common
- Growth arrest in up to 21%



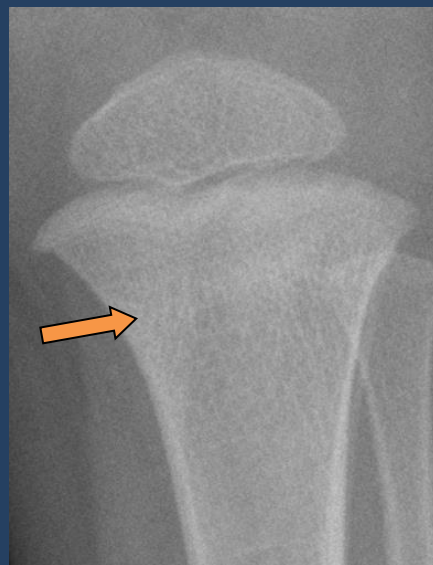
Buckle (Torus) Fracture



- Impaction
- Hyperextension
 - FOOSH
 - Jumping injuries



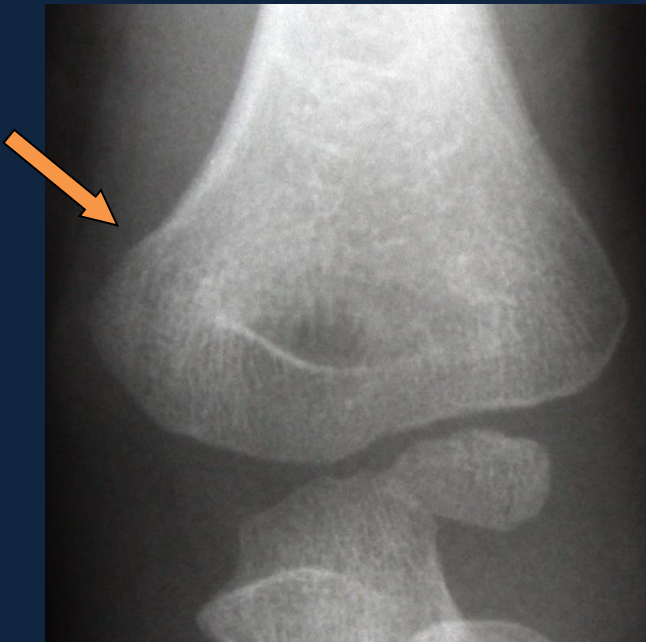


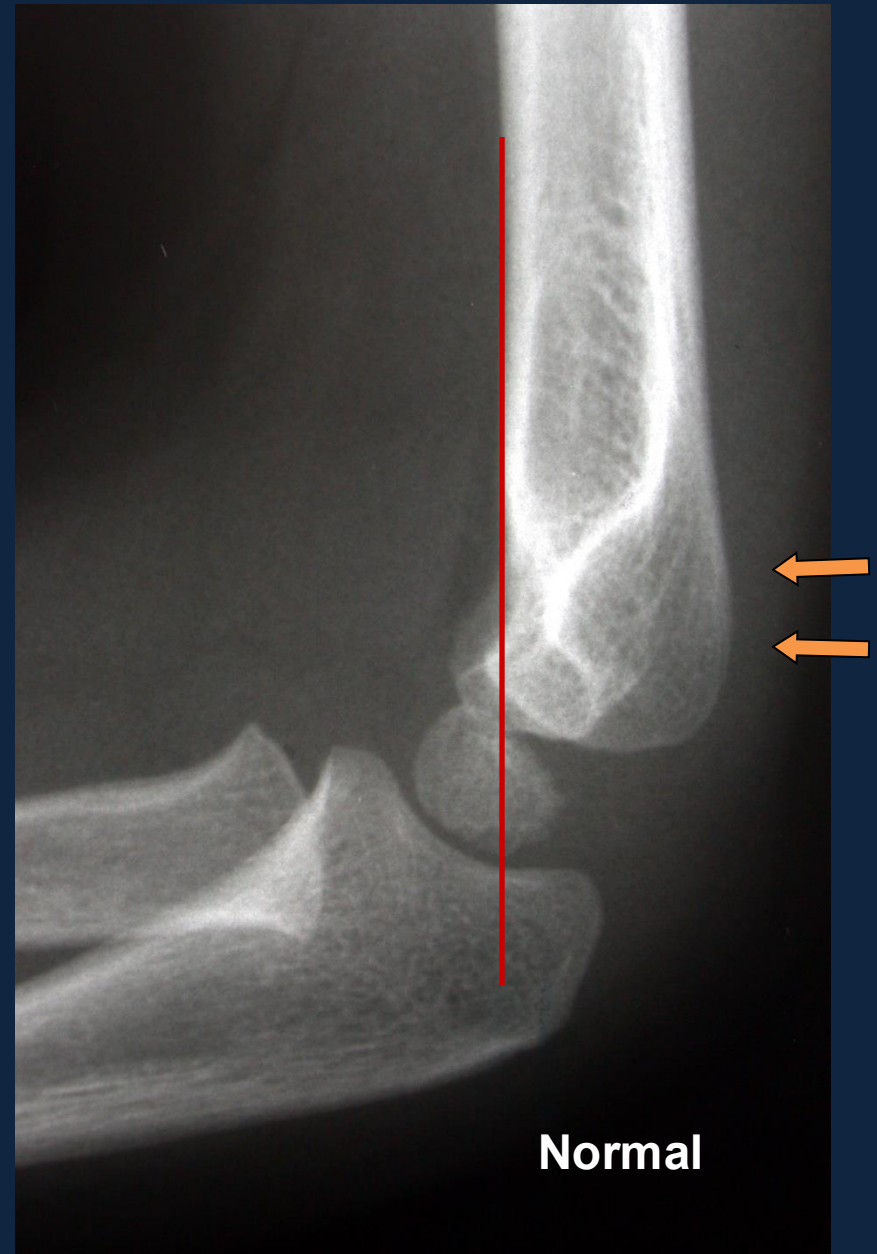
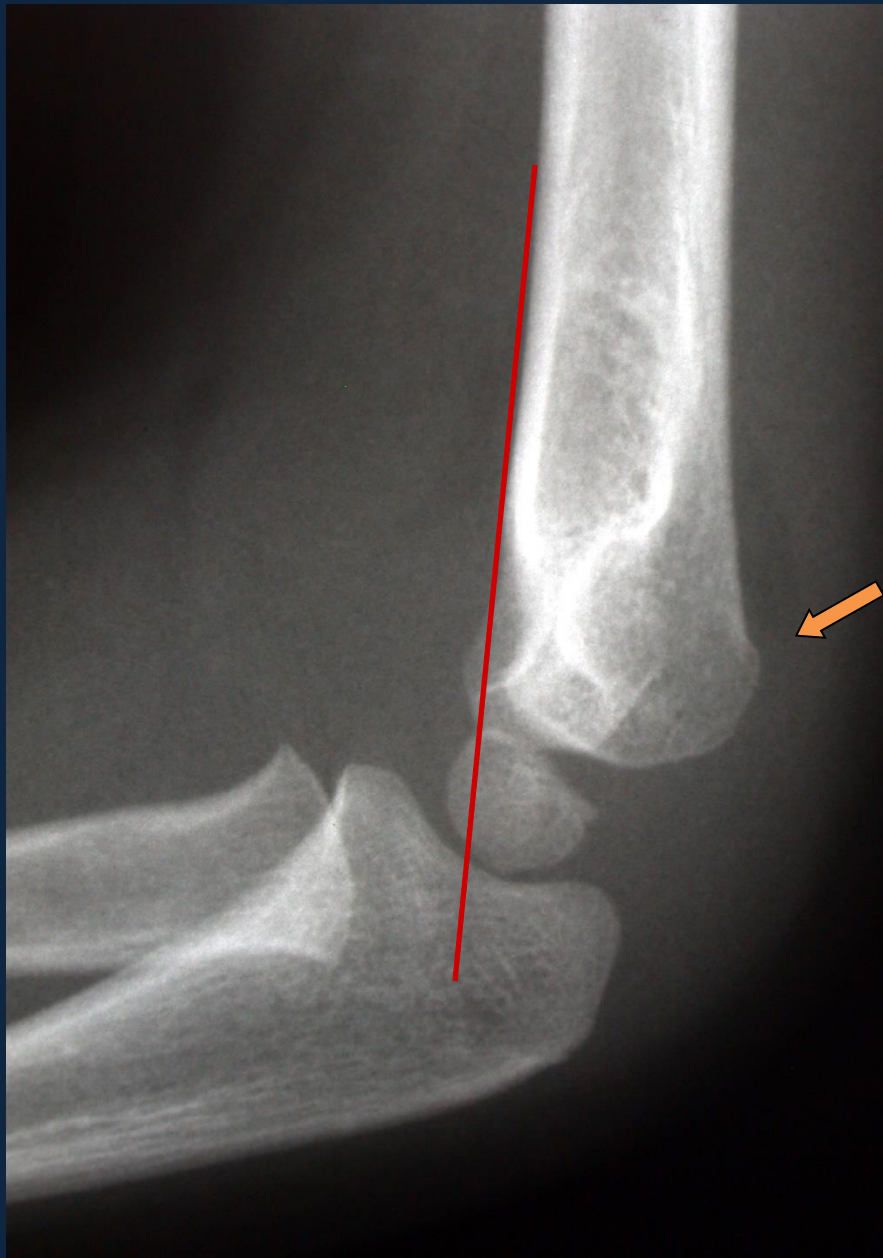


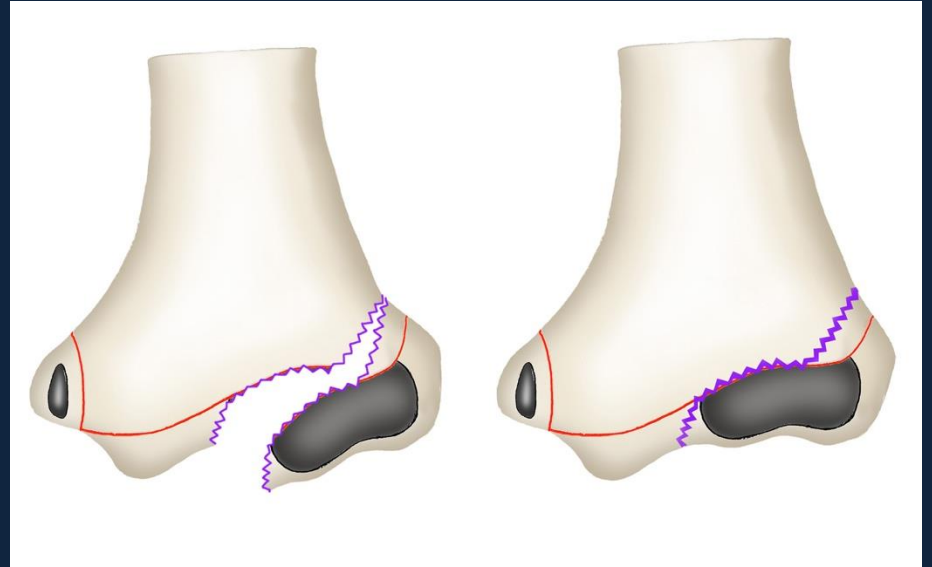
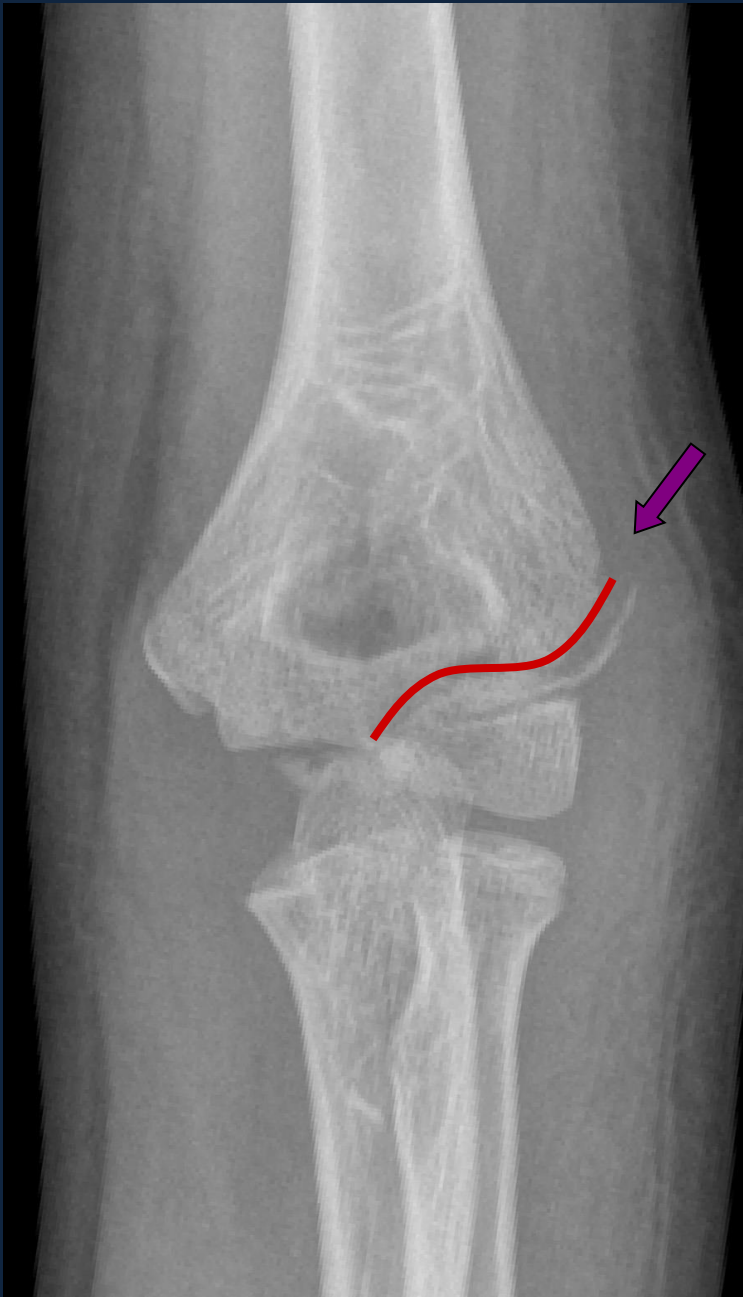


Supracondylar fracture (buckle type)

- Joint effusion without visible fracture
 - Sign of significant traumatic force
 - Fractures often present (20%), but may be subtle







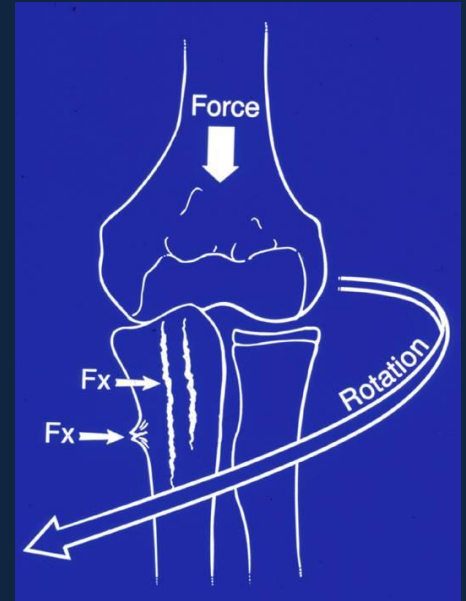
Lateral condyle fracture

- Potentially unstable
- Displacement hard to see
- MDCT for extent and displacement
- Cubitus varus deformity common



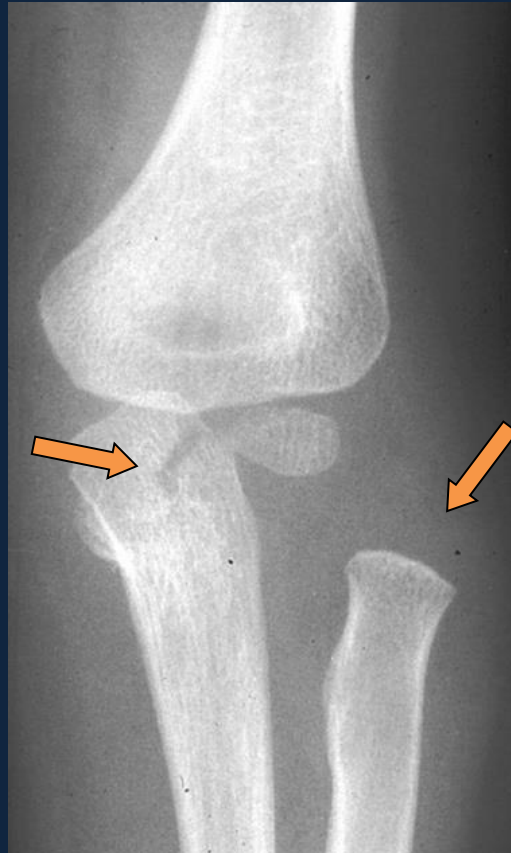
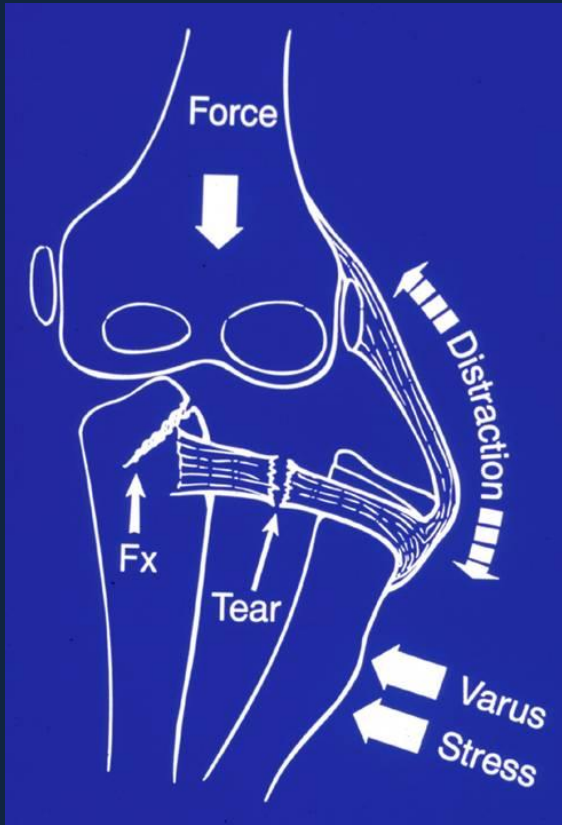


Longitudinal Olecranon Fractures

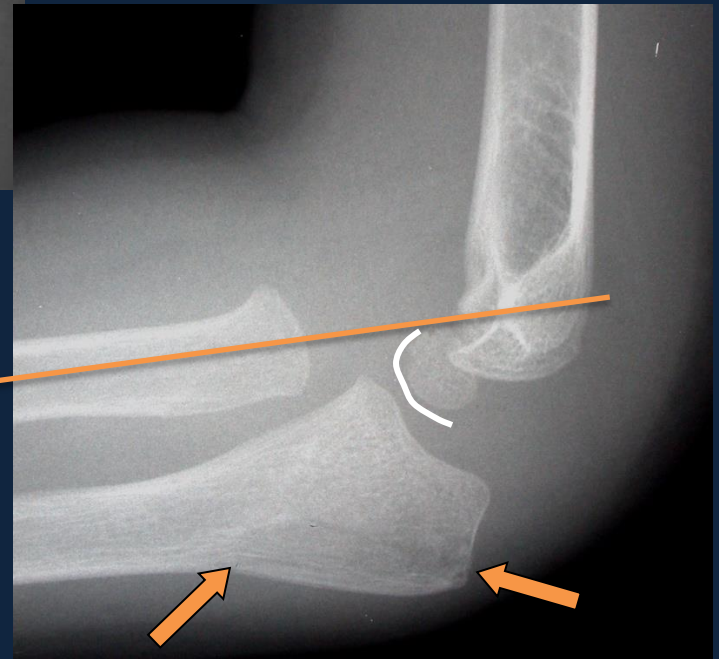


- Non-displaced
- Oblique or longitudinal

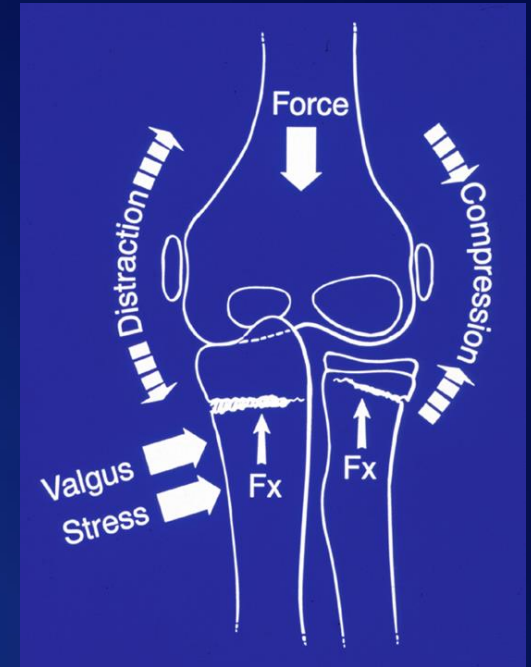




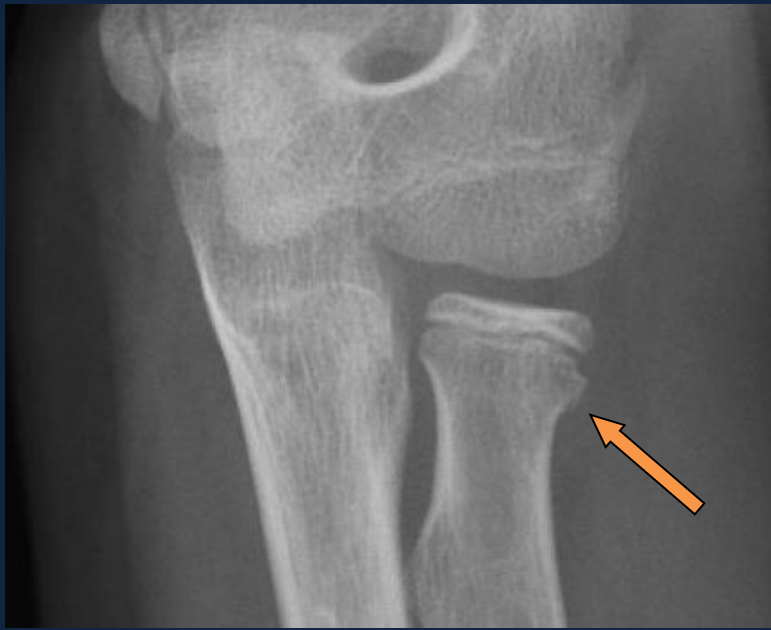
Monteggia lesion – ulnar fracture with radial head dislocation

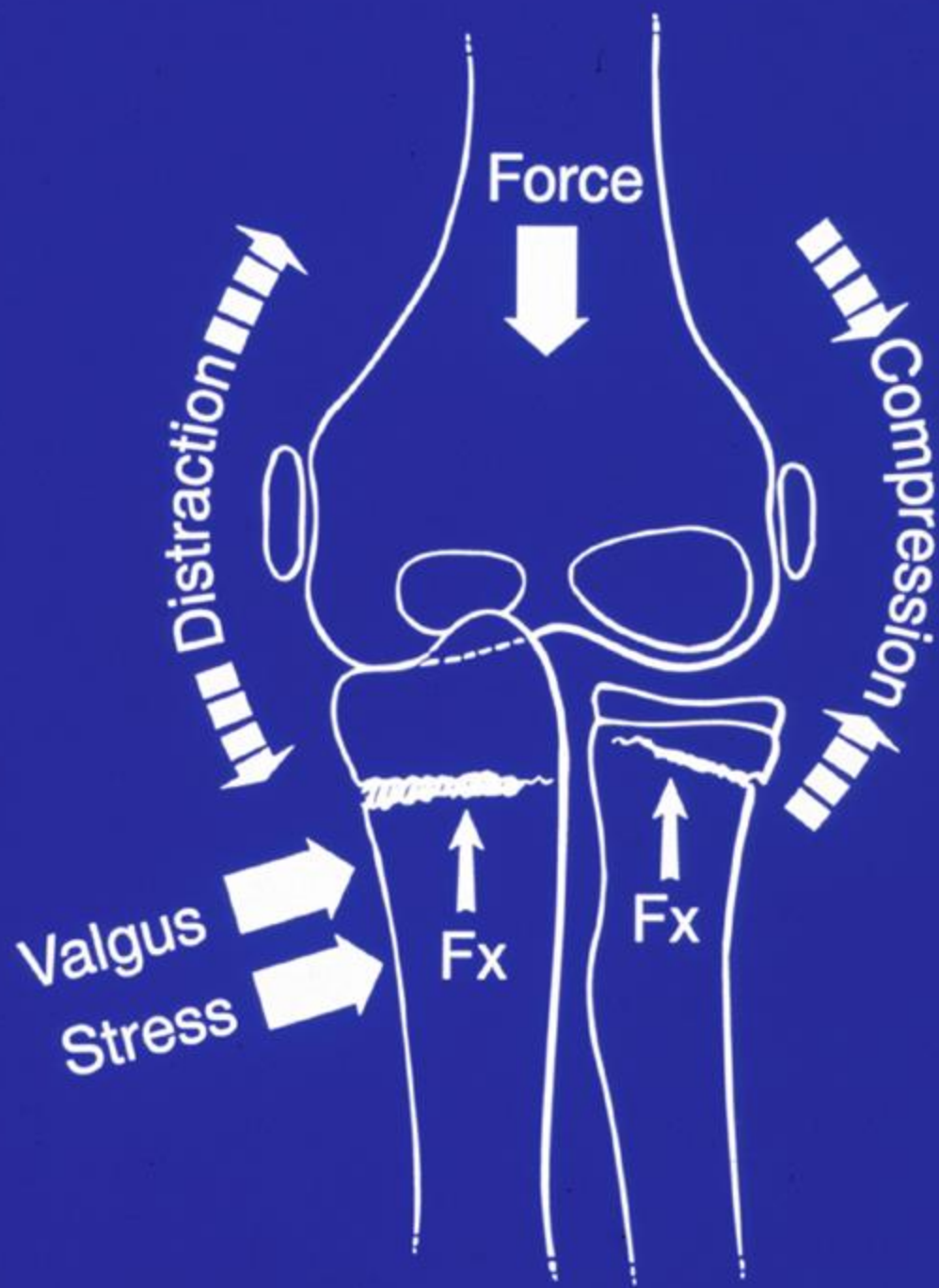


Radial Neck Fractures

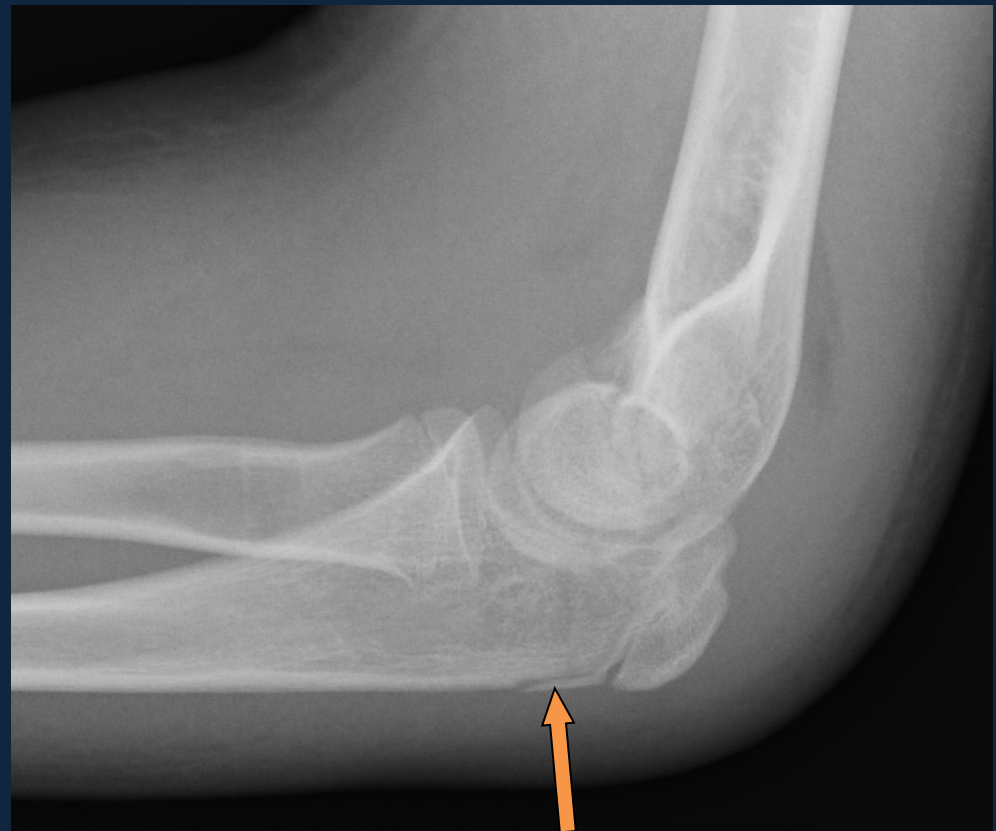
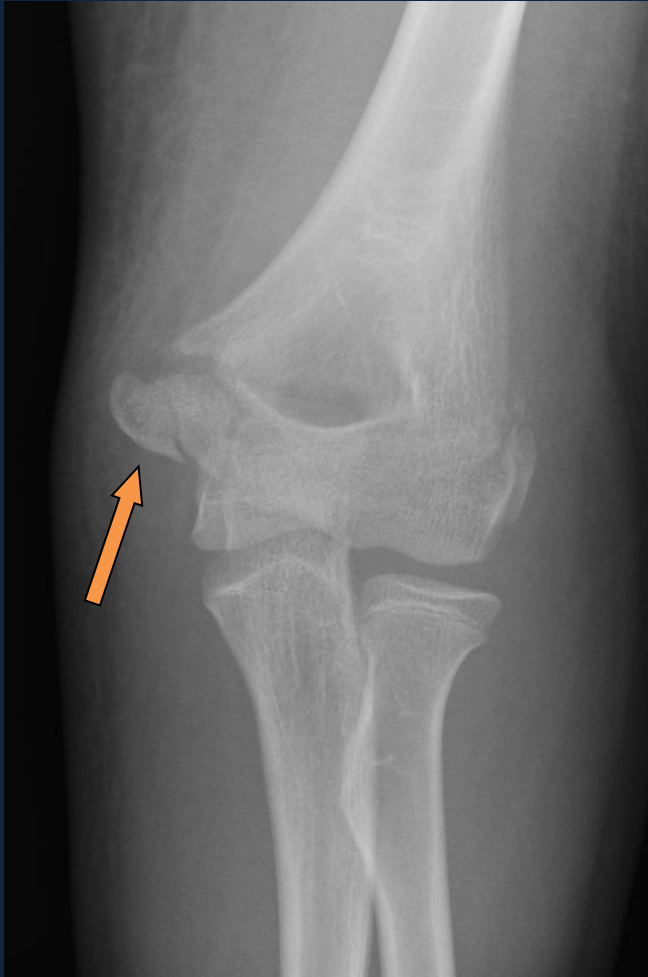


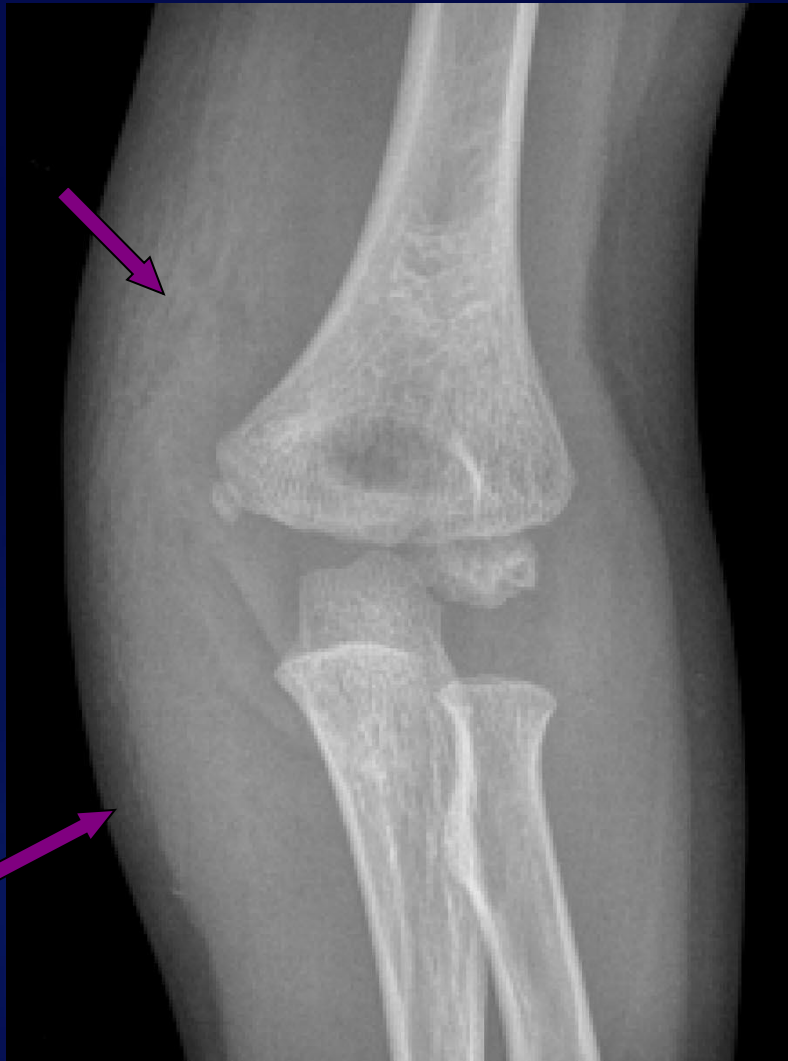
- Buckle and SH II fractures most common





Valgus Injury – Medial Epicondyle Avulsion, Proximal Ulna Fracture





Subtle Medial Epicondyle Avulsion Fractures

- Look for asymmetrical soft tissue edema

Pediatric Orthopedic Injuries

- Characteristic patterns and locations of injury
- CT for complex fractures
- Comparison views frequently help identify “occult” fractures
- MRI may be worthwhile for occult injuries