



Pediatric Musculoskeletal Radiology (MSK)

Outline

- Introduction
- Do I need x-rays?
- What should I order?
- What do I see?
- Cases



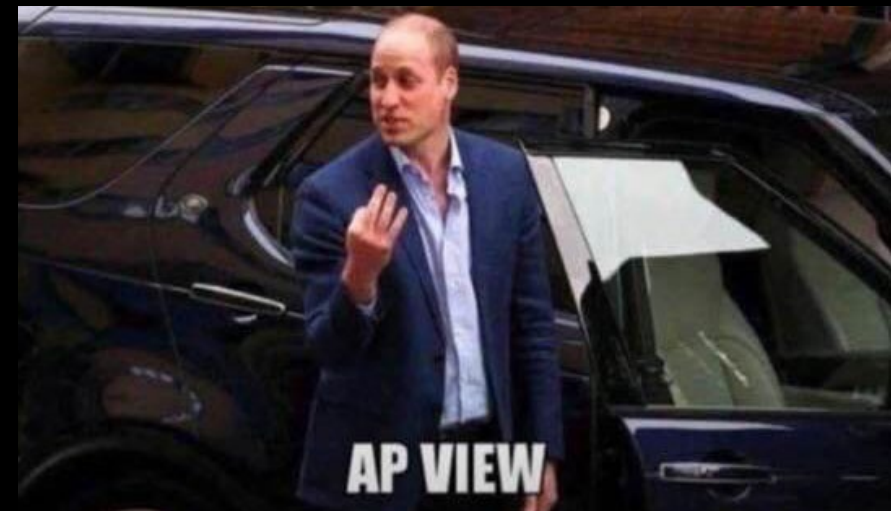
Introduction

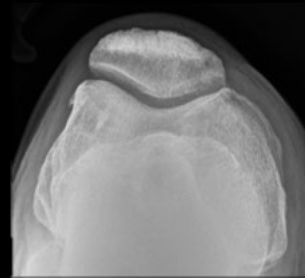
- 14 yo male with elbow pain
- What additional history do I need?
- Do I need imaging?
- What views should I order?



What views should I order?

- “One view is no view”
- Fracture or dislocation seen on only one view is REAL, but not seeing it on only one view doesn’t rule it out
- Learn the views for major joints/bones
 - Long bones: 2-views (AP and lateral)
 - Joints: 3-views
 - Shoulder: IR, ER, and Axillary
 - Knee: AP, lateral, and tunnel or sunrise depending on suspected pathology
 - Ankle: AP, lateral, mortise

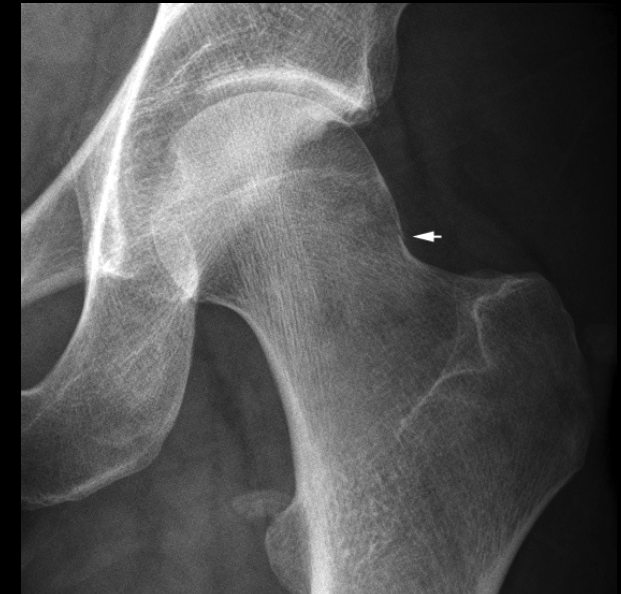




eORIF

Reading Plain Films

- Long bones
 - Follow the cortex all the way around on every bone
 - Look for step-offs and abrupt contour changes
 - Pay attention to the trabecular patterns
 - Look for disruptions or density changes due to impaction



Reading Plain Films

- Long bones
 - Follow the cortex all the way around on every bone
 - Look for step-offs and abrupt contour changes
 - Pay attention to the trabecular patterns
 - Look for disruptions or density changes due to impaction
- Intra-articular
 - Look for an effusion
 - “Fluid-fluid” line is a lipohemarthrosis and is pathognomonic for an intraarticular fracture



How do I describe a fracture?

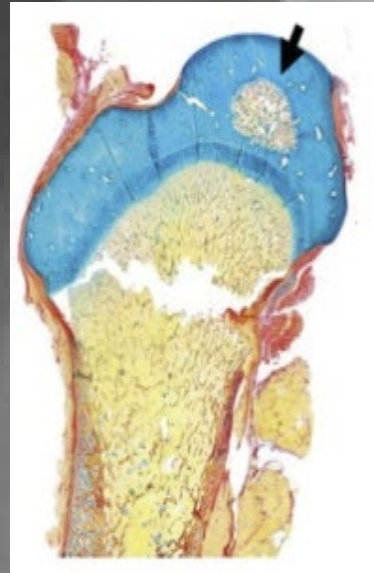
- Fracture
 - Not: broken, cracked, shattered, etc.
- Displacement
 - Non-displaced; Minimally displaced; Displaced by X amount
- Angulation
 - Direction: defined as the direction of the distal component OR the direction of the apex
- Out of date language: “Compound Fracture”
 - Current terminology: “Open fracture” or “Closed fracture”



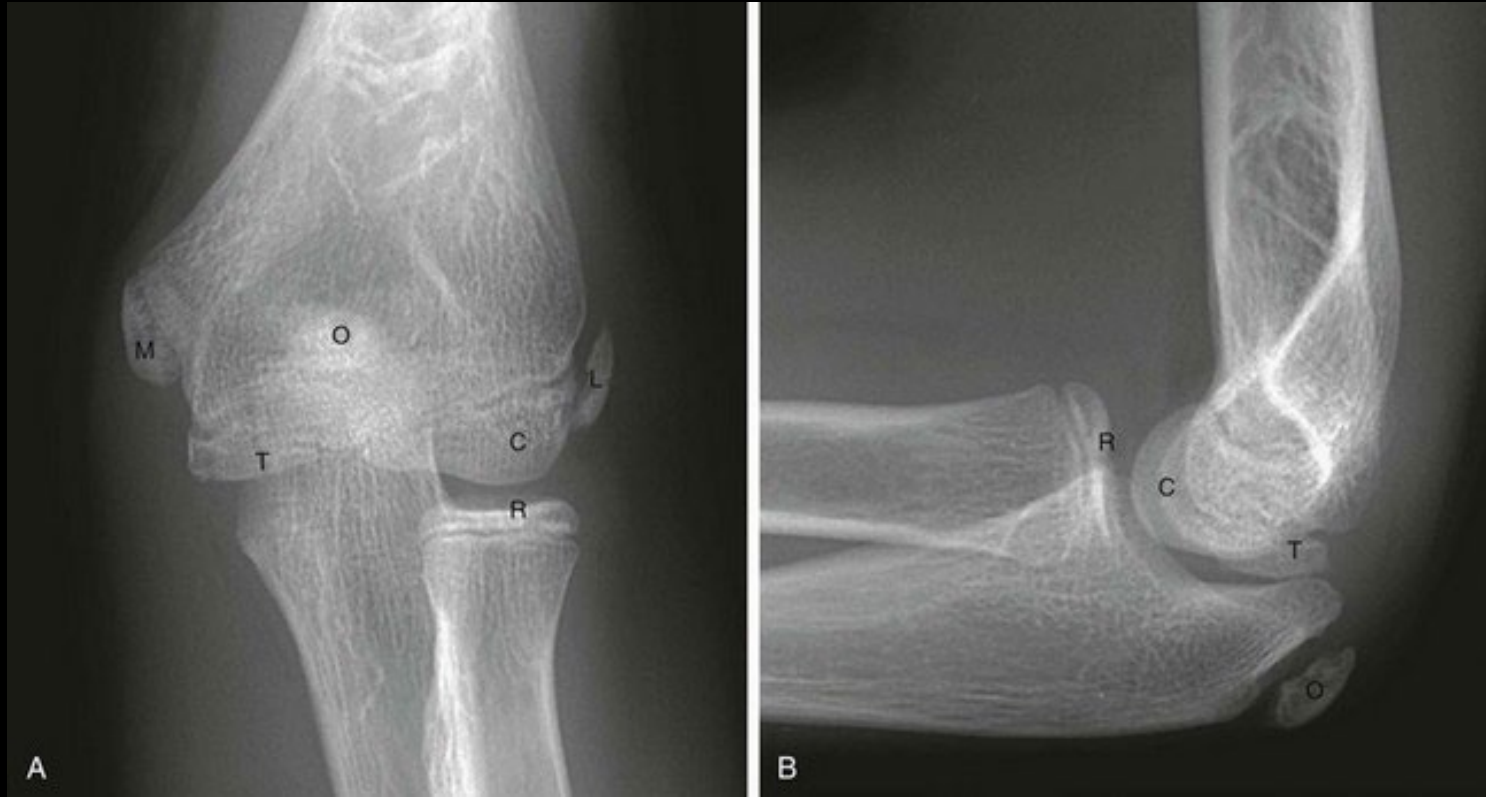
Indirect Signs of Fractures



What makes Peds different from Adult?



What makes Peds different from Adult?



- CRITOE

Fracture or Ossification Center?



Case 1

- 2 yo M
- CC: Not using arm since yesterday
- Fails the “cookie test”





Case 1



Case 2

- 4 yo F
- CC: Fall off couch



Case 2



Case 3

- 5 yo F
- CC: Fall off monkey bars



Case 3



Case 4

- 15 mo M
- CC: Refuses to walk or stand for last two days



Case 4



Case 5

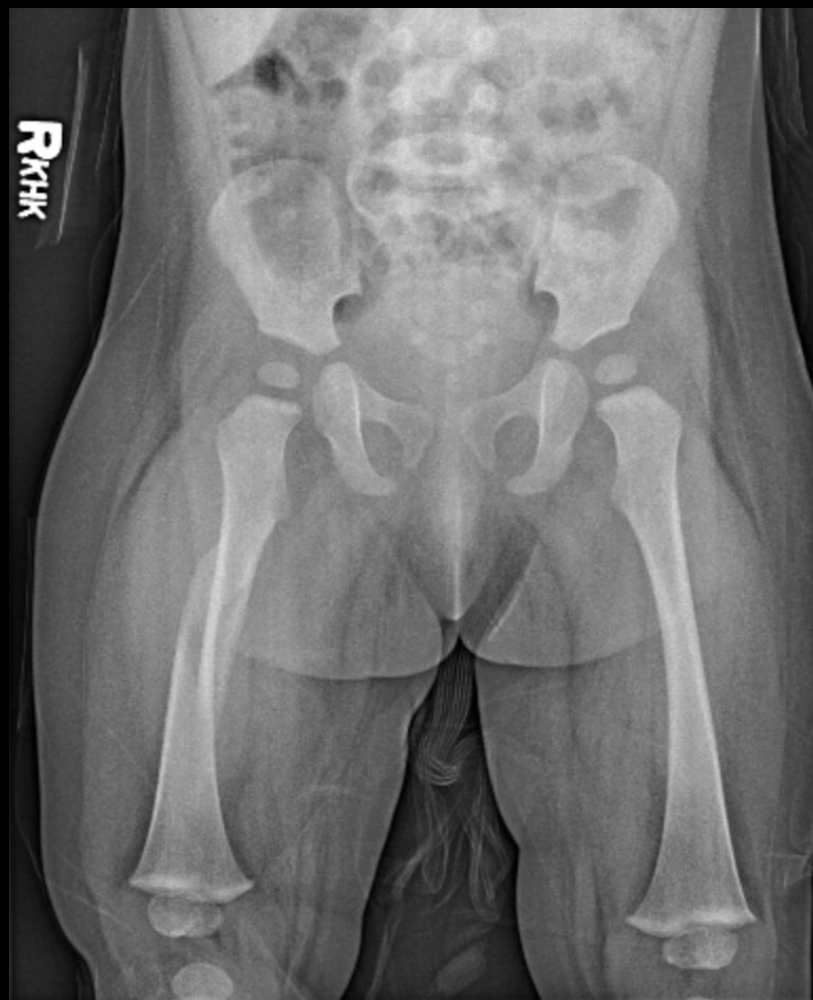
- 2 mo M
- CC: Choking episode



Case 5



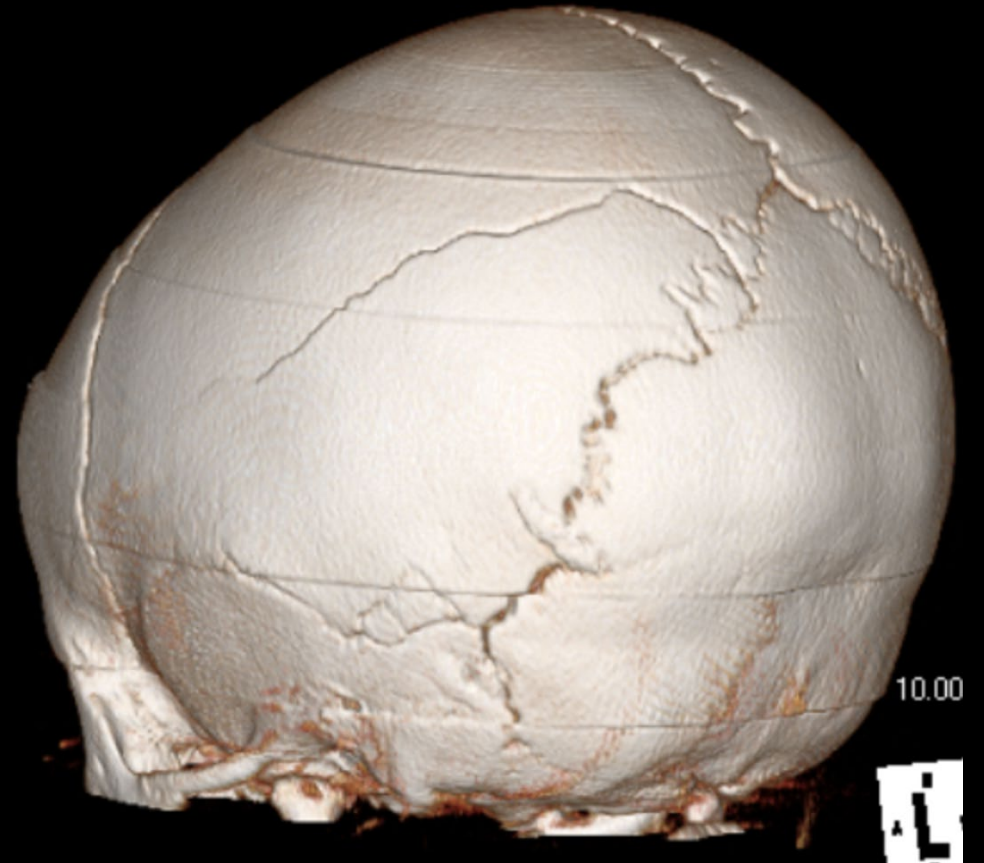
Case 5



Case 5



Case 5



Case 6

- 10 yo M
- CC: Wrist pain after fall off a swing during recess



Case 6



Case 7

- 7 yo M
- CC: Learning to fly



Case 7



Case 8

- 14 yo M
- Fall on out-stretched hand (FOOSH) while playing football



Case 8



Case 9

- 1st DOL F
- CC: Diminished movement of the left upper extremity





Case 9



Case 10

- 17 yo F
- CC: Right arm pain after playing softball

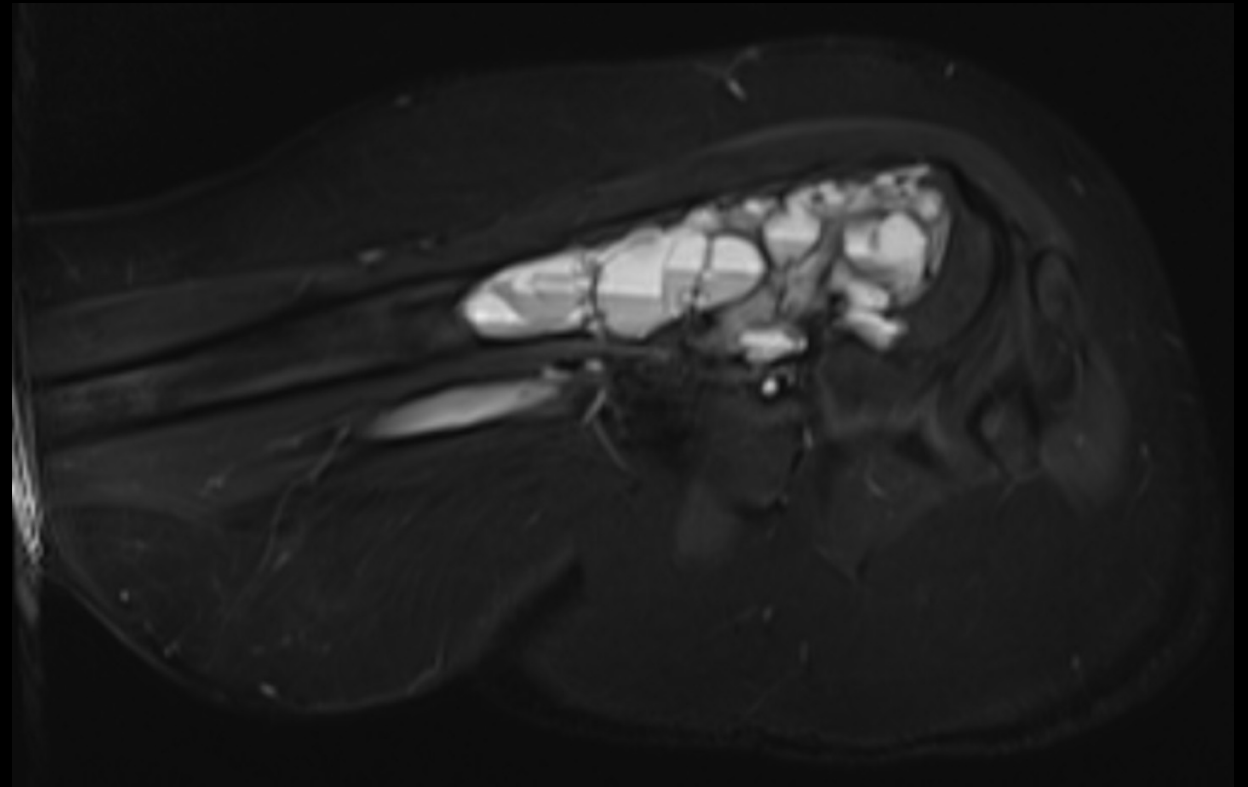
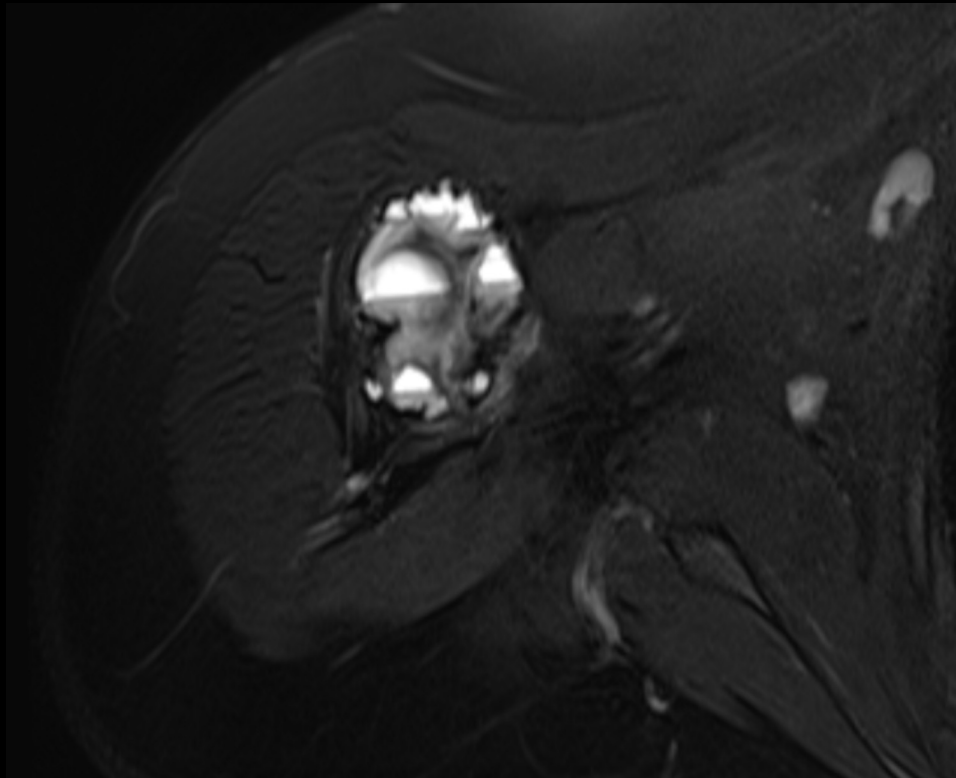


Case 10





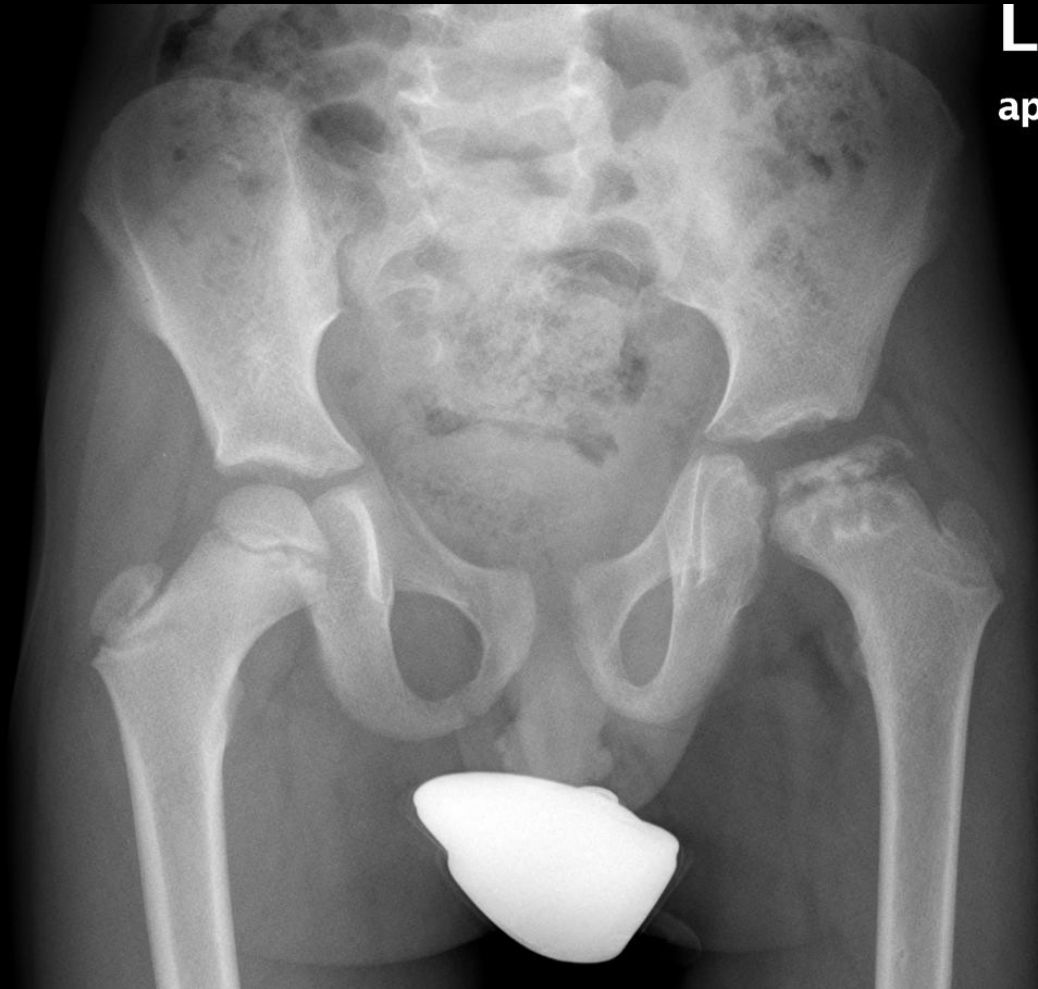
Case 10



Limping Child

- Ddx
 - Legg-Calve-Perthes
 - Septic hip
 - Slipped Capital Femoral Epiphysis (SCFE)

Limping Child - Legg-Calve-Perthes



Limping Child - Septic Hip



Kocher Criteria

Refusal to bear weight

Fever

ESR > 40 mm/hr

WBC > 12k

Chance Child has Septic Arthritis

4/4	99%
3/4	93%
2/4	40%
1/4	3%

Limping Child - SCFE



Questions?

Cases

- Nursemaid's Elbow (MS3 ED MO3)
- Greenstick Fracture
- Supracondylar Humerus Fracture (MS3 ED MO2)
- Toddler's Fracture
- Non-accidental Trauma (MS3 ED MO9)
- Salter-Harris (Physeal) Fracture
 - Wrist
 - Ankle
- Scaphoid fracture (MSK 15)
- Newborn Clavicle Fracture
- Tumor (ABC)
- Limping Child
 - Legg-Calve-Perthes
 - Septic Hip
 - Slipped Capital Femoral Epiphysis (SCFE)