

---

# Pediatric ED Orthopedics: Pearls and Pitfalls

Arun Sayal, MD, CCFP(EM)  
Emergency Dept. and Fracture Clinic  
North York General Hospital  
Toronto, ON  
University of Toronto  
[arun.sayal@utoronto.ca](mailto:arun.sayal@utoronto.ca)

# This session will be recorded

---

- ❑ We are recording this Zoom session so that it can be watched again at your convenience, and so that we can share it with your colleagues who were not able to join us today.
- ❑ If you would prefer that this recording **not** be shared with your EM colleagues, please email [amcknight@ghem.ca](mailto:amcknight@ghem.ca) within 24 hours of the session.
- ❑ We will share the presentation slides and other materials (journal articles, etc.) by email; you will have access to all materials regardless of whether the recording is shared.

## Please also note:

---

- ❑ The information in this presentation and the video recording is up to date as of the date it was recorded October 2, 2020.
- ❑ It has not been updated to include any subsequent advances in practice, and the information presented in this video does not replace hospital, health centre, or governmental guidelines.

# Clinical Diagnosis

- History
- Physical
- +/- Test





# Clinical Diagnosis

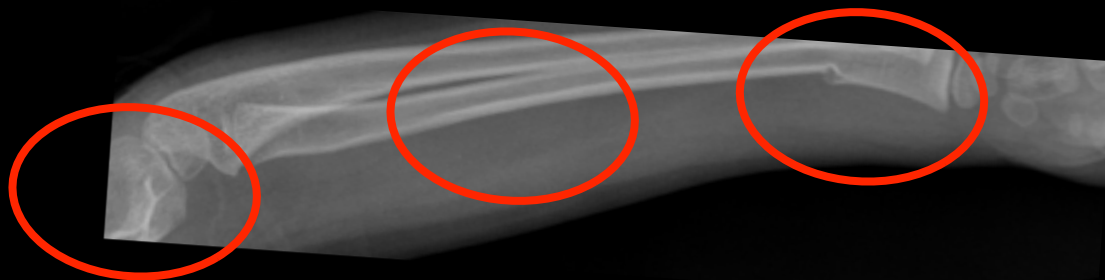
- History
- Physical
- **+/- Test**

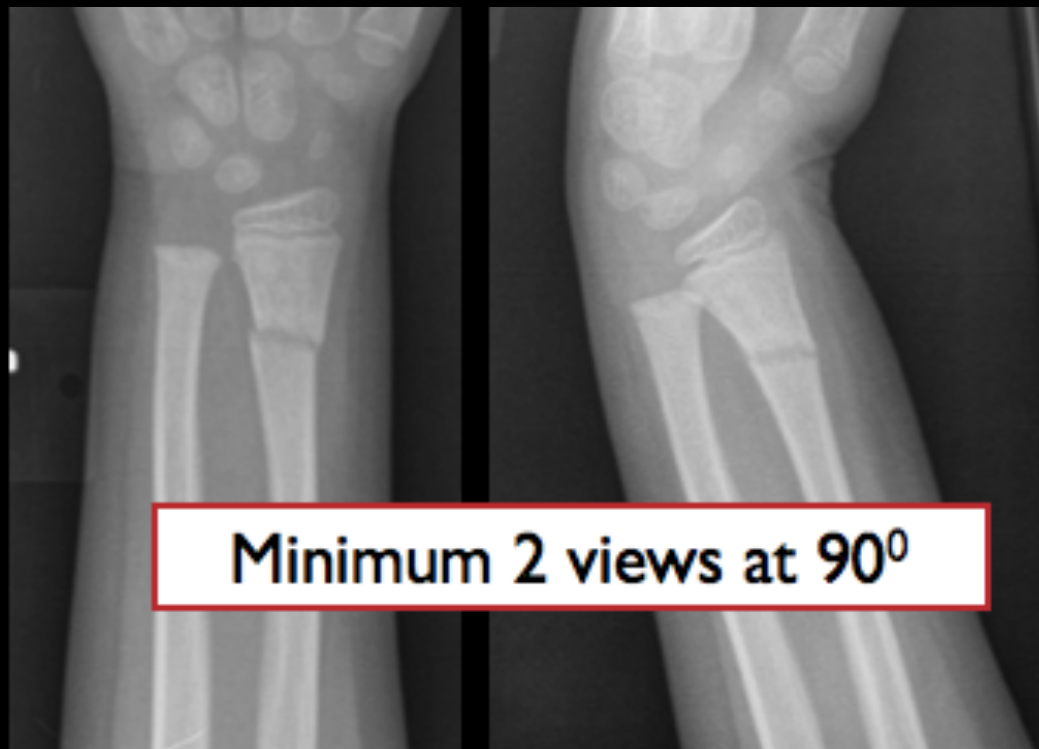
# X-ray Principles

- Be specific
- Adequate views
- Extra views
- X-rays are good – not perfect









Minimum 2 views at 90°



# *Pearls and Pitfalls*

- 'Weak link' is the growth plate
- Remodelling
- Time to heal
- Most common molding mistake

# 'Weak link'



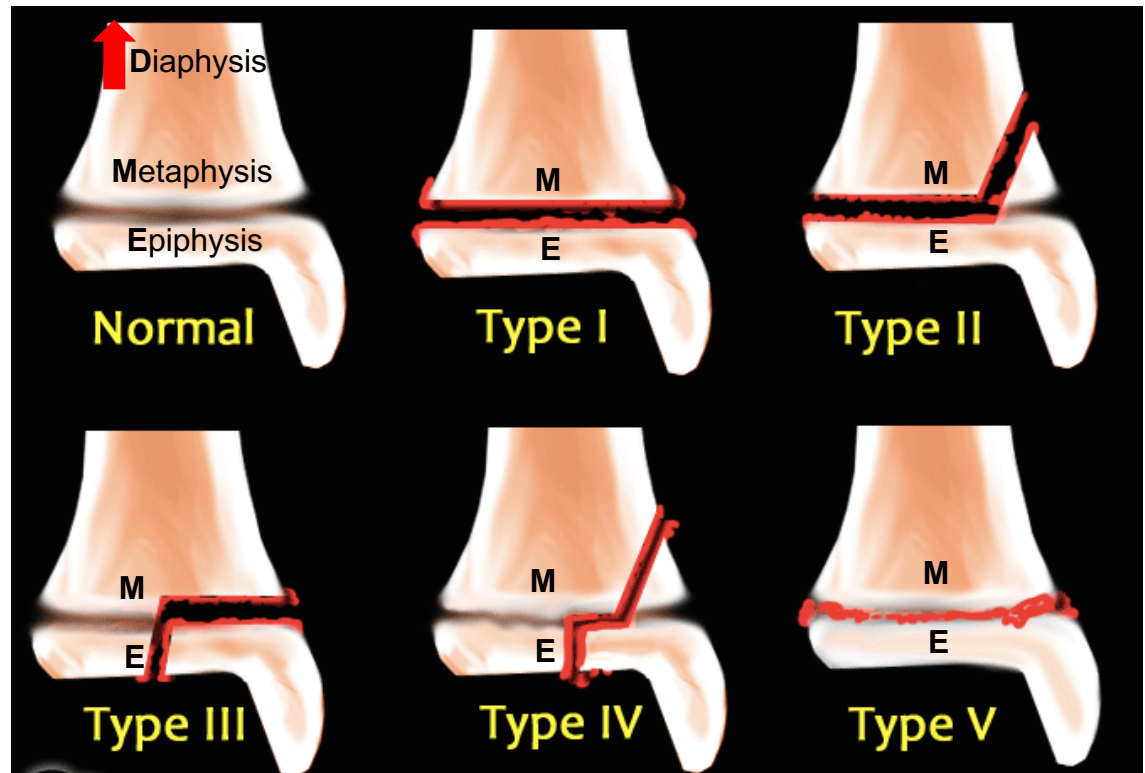
**II - 75%**

**III - 10%**

**IV - 10%**

**I - 5%**

**V - <<1%**



# *Common Pediatric Pitfalls*

- Wrist
- Elbow

3 years later

Distal radius remodels at  
 $\sim 1^\circ / \text{month}$



# Acceptable Angulation

## Peds Distal Radius Fractures

- 0-5 yo - < 20 degrees
- 5-10 yo - up to 15 degrees
- 10-15 yo - <10 degrees – with caution for girls
  
- If it looks bent, straighten it!



# Peds Elbow Injuries

- Be careful
- Signs of /significance of an effusion
- Beware of the less common fractures
- Option: x-ray opposite side

# DDx: Pediatric Elbow Injuries

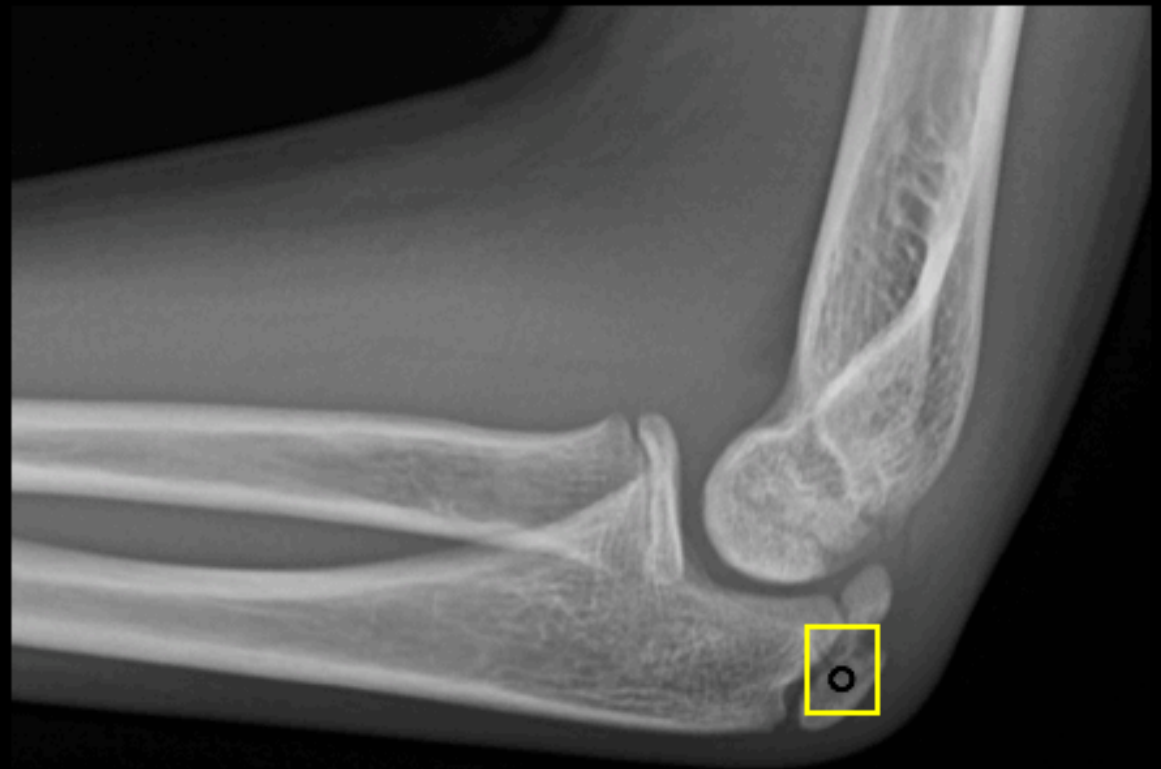
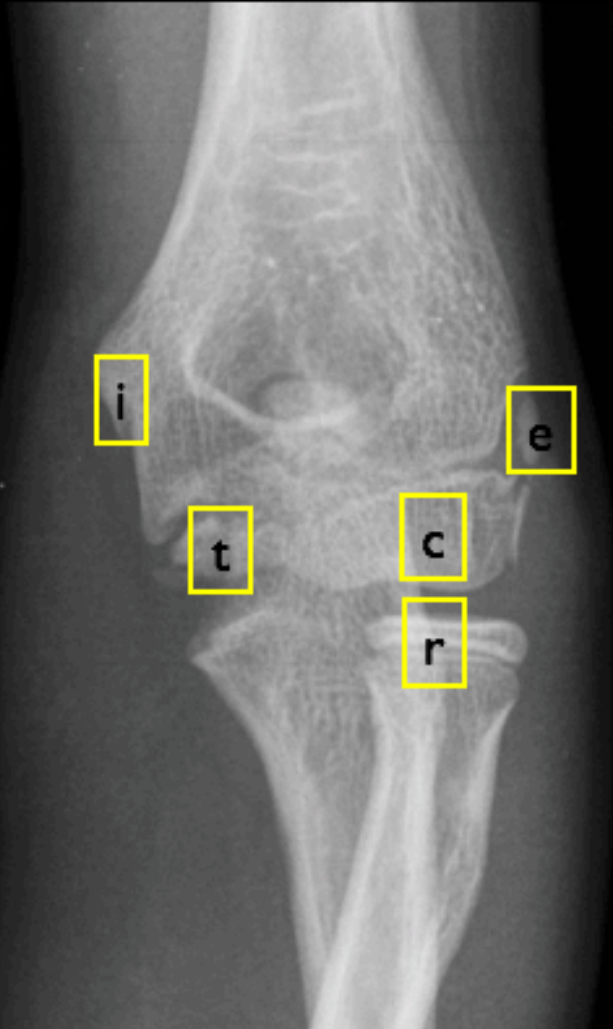
- Supracondylar
- Pulled Elbow

‘CRITOE’

# DDx: Pediatric Elbow Injuries

- Supracondylar
- Pulled Elbow
  
- Medial Epicondyle
- Lateral Condyle
- Radial Head
- Olecranon
- Dislocation

# 'CRITOE'



# **CRITOE** – Order of Appearance of Ossification Centres about the Elbow

- Capitellum
- Radial Head
- Internal (medial) epicondyle
- Trochlea
- Olecranon
- External (lateral) epicondyle

# *Pearls and Pitfalls*

- ‘Weak link’ is **often** the growth plate
- Remodelling (**location, plane, age, gender**)
- Time to heal (**Kids are growing machines...**)
- Most common moulding mistake  
(**not recognizing fall on back of hand**)

# **Low Threshold to X-ray**

Young – Traumatic

Old – Traumatic

15-60 y.o. – Persistent pain

# Low Threshold to X-ray

## Radiation Dose to Adults From Common Imaging Examinations

Procedure	Approximate effective radiation dose	Equiv. Extrem. X-rays
Computed Tomography (CT) — Abdomen and Pelvis	10 mSv	<b>10000</b>
Computed Tomography (CT) — Chest	7 mSv	7000
Chest X-ray	0.1 mSv	100
Extremity (hand, foot, etc.) X-ray	0.001 mSv	1

*Source: American College of Radiology*



# Thank you!



**arun . sayal @ utoronto. ca**