

RADY 403 Case File

Preeya Deol 3/22/24

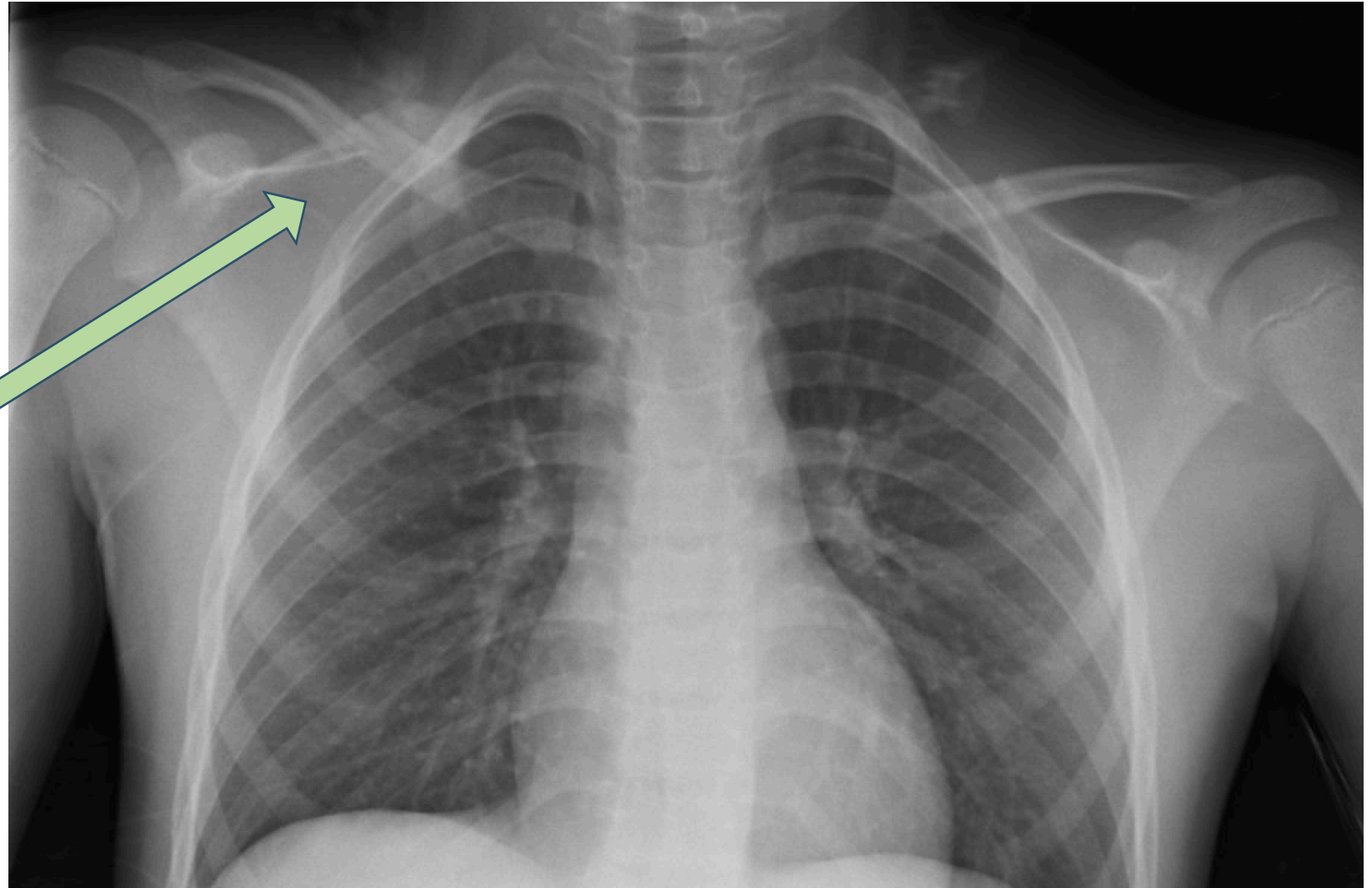
Focused patient history and workup

- 9 year old male presents as a trauma following an MVC with rollover in which he was a restrained passenger complaining of R upper arm pain and headache.
- Vital signs stable
- Pain present at locations of imaging studies
- CXR, XR R Humerus, CT head obtained as part of trauma work up

List of Imaging Studies

- XR Chest
- XR Right Humerus
- CT Head

XR Chest



**Displaced overriding
mid shaft right clavicle
fracture**

XR Right Humerus

Transverse midshaft right humerus fracture with anterolateral displacement and slight varus angulation.



Humeral Shaft Fractures¹

- Represent around 1-5 percent of all fractures
- Mechanisms: low-energy trauma, fall, neurological symptoms, etc.
- Typically diagnosed with radiographs
 - Possibly CTA pending pulse check, MRI for possible bursitis downstream
- Management:
 - Conservative
 - ORIF with plate
 - Close reduction and intramedullary nail
 - External fixation

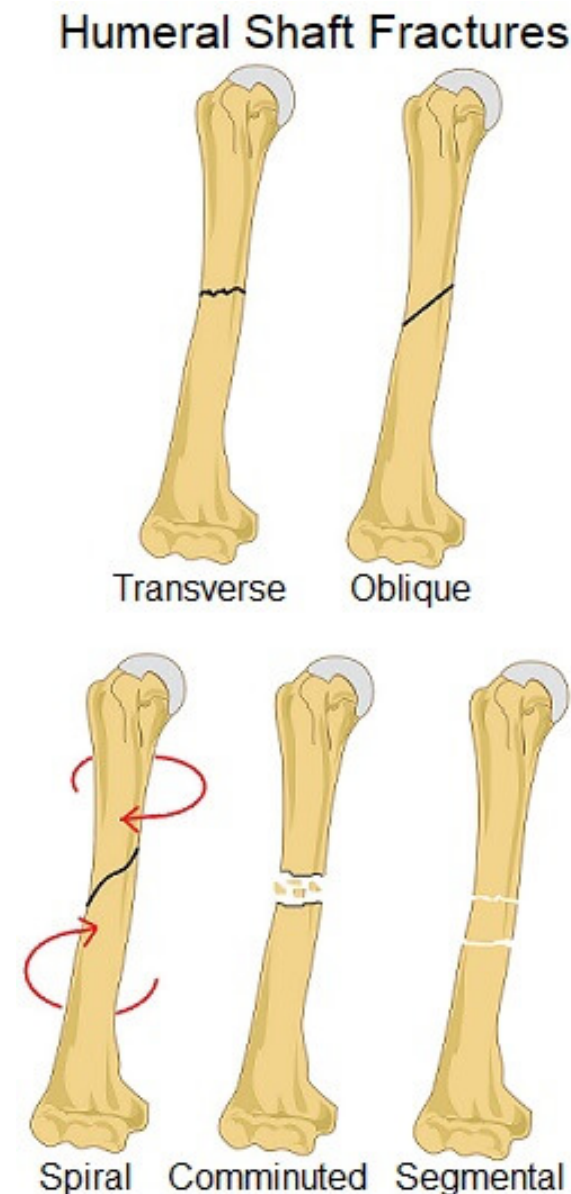
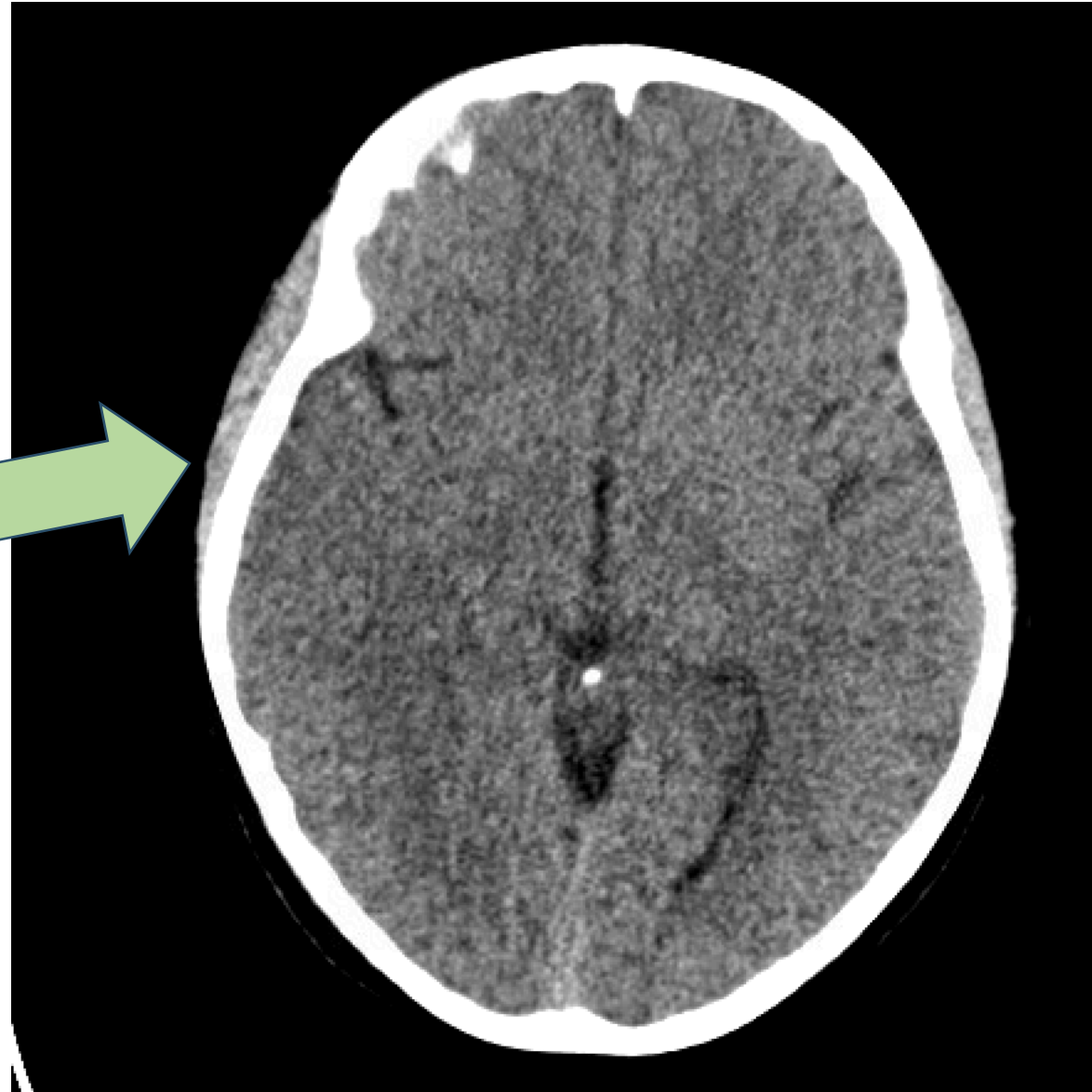
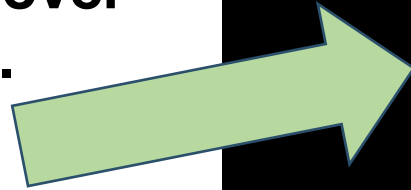


Figure 1²

CT Head

Small subgaleal hematoma over the right parietal region.



**No acute intracranial abnormality.
No fracture on bone windows.**

Appropriateness Criteria - CT Head

Variants 2:

Child. Minor acute blunt head trauma. Intermediate risk for clinically important brain injury per PECARN criteria. Excluding suspected abusive head trauma. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT head without IV contrast	May Be Appropriate	☼☼☼
Arteriography cerebral	Usually Not Appropriate	☼☼☼☼
CT head with IV contrast	Usually Not Appropriate	☼☼☼
CT head without and with IV contrast	Usually Not Appropriate	☼☼☼☼
CTA head with IV contrast	Usually Not Appropriate	☼☼☼☼
MRA head without and with IV contrast	Usually Not Appropriate	○
MRA head without IV contrast	Usually Not Appropriate	○
MRI head without and with IV contrast	Usually Not Appropriate	○
MRI head without IV contrast	Usually Not Appropriate	○
Radiography skull	Usually Not Appropriate	☼

Figure 2³

PECARN criteria

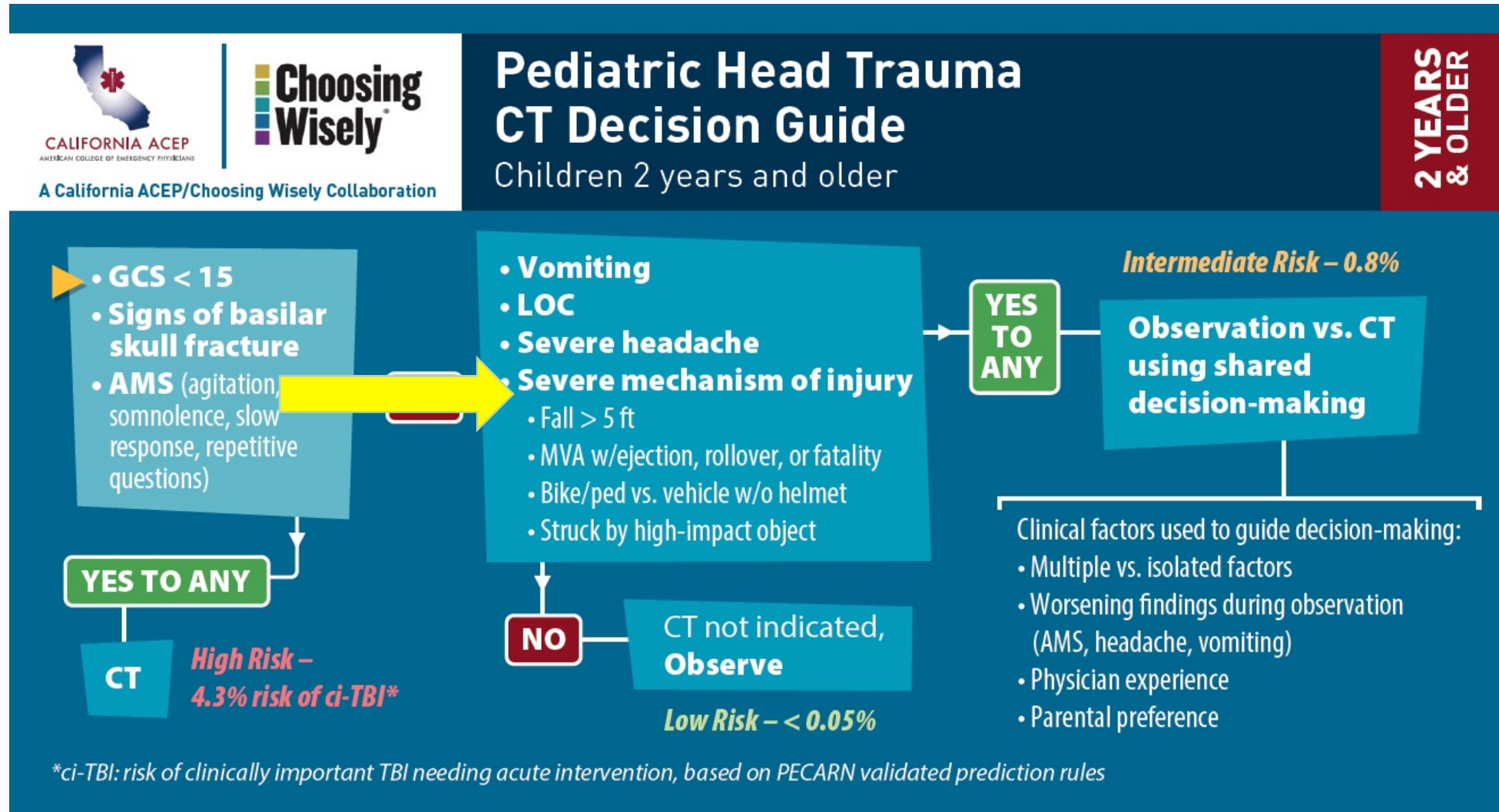
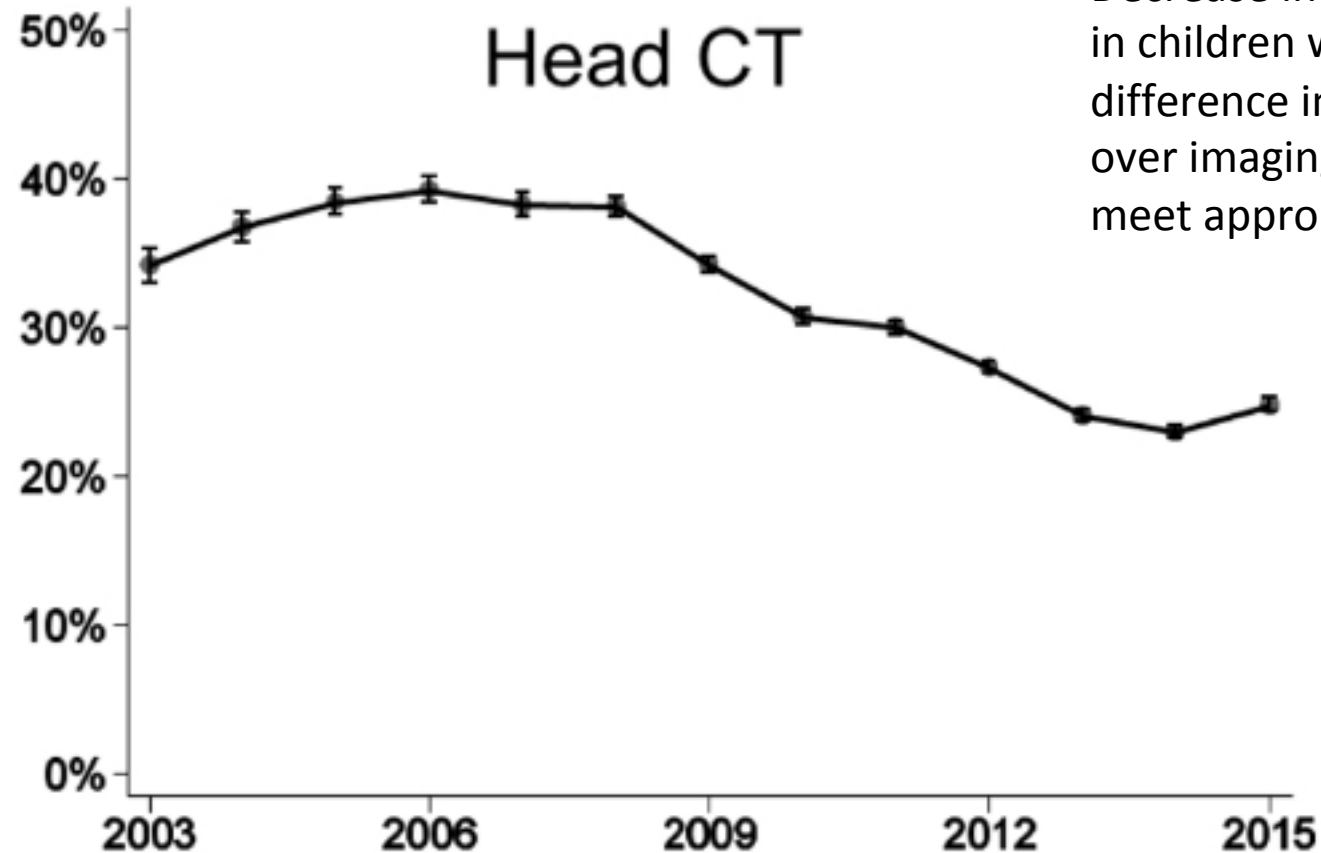


Figure 3⁴

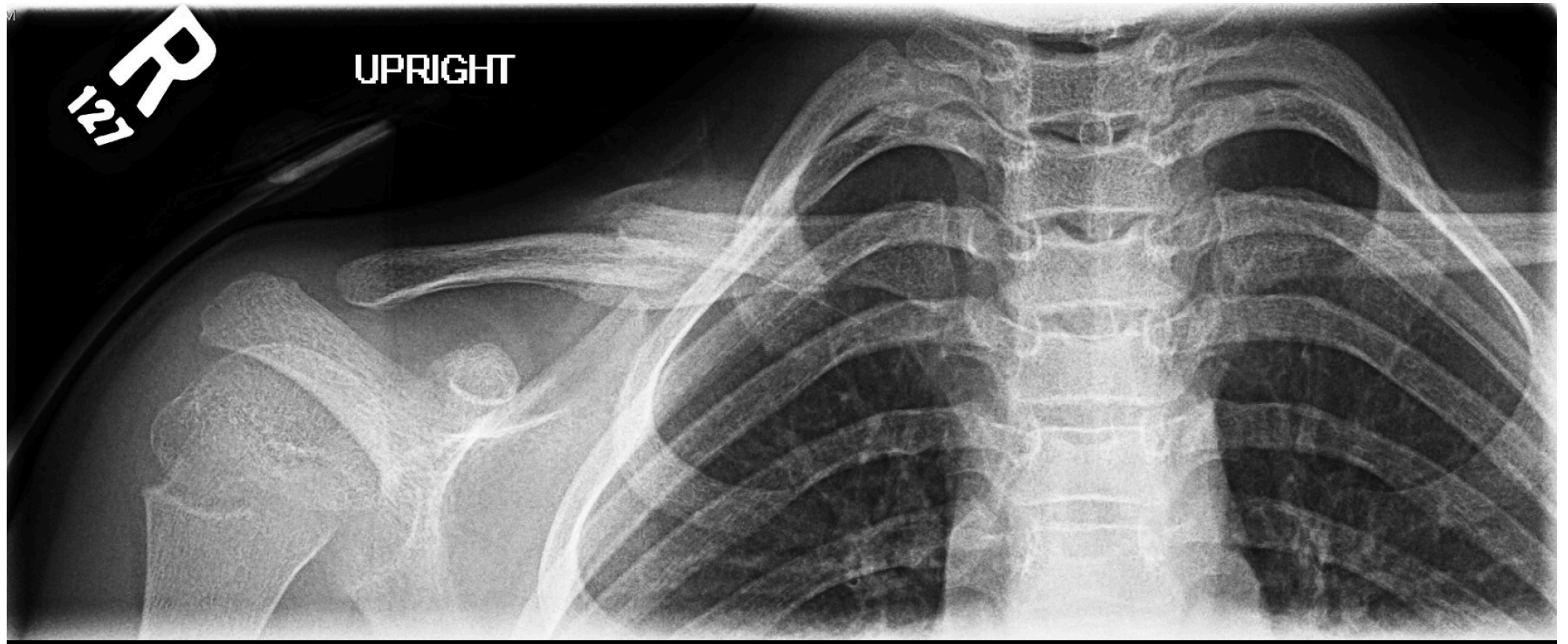
Imaging trends over time



Decrease in rates of head CT imaging in children without measurable difference in outcomes. May reflect over imaging of children who do not meet appropriateness criteria.

Figure 4⁵

Follow-up XR CXR - 2 months later



Healing right midshaft clavicle fracture.



Follow-up XR Right Humerus – 2 months later

Healing right mid shaft humerus fracture

No new fractures. Joints are preserved.
Partially visualized lungs are clear.

Patient treatment and outcome

- Headaches resolved spontaneously
- Coaptation splinting for R humerus and clavicle fractures
- Made a full recovery with complete return of function

References

1. Gallusser N, Barimani B, Vauclair F. Humeral shaft fractures. EFORT Open Rev. 2021 Jan 4;6(1):24-34. doi: 10.1302/2058-5241.6.200033. PMID: 33532084; PMCID: PMC7845564.
2. Wilson, C. "Humerus Fracture: Causes, Symptoms & Treatment." Shoulder, www.shoulder-pain-explained.com/humerus-fracture.html. Accessed 22 Mar. 2024.
3. Head Trauma-Child - Appropriateness Criteria, acsearch.acr.org/docs/3083021/Narrative/. Accessed 22 Mar. 2024.
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5. Coon ER, Newman TB, Hall M, Wilkes J, Bratton SL, Schroeder AR. Trends in Imaging Findings, Interventions, and Outcomes Among Children With Isolated Head Trauma. *Pediatr Emerg Care*. 2021;37(2):55-61. doi:10.1097/PEC.0000000000001475