

# Skeletally immature patient with left hand pain after a fall

Jessica Malcolm  
Elizabeth Wolfe  
Atul Kumar, MD, MS





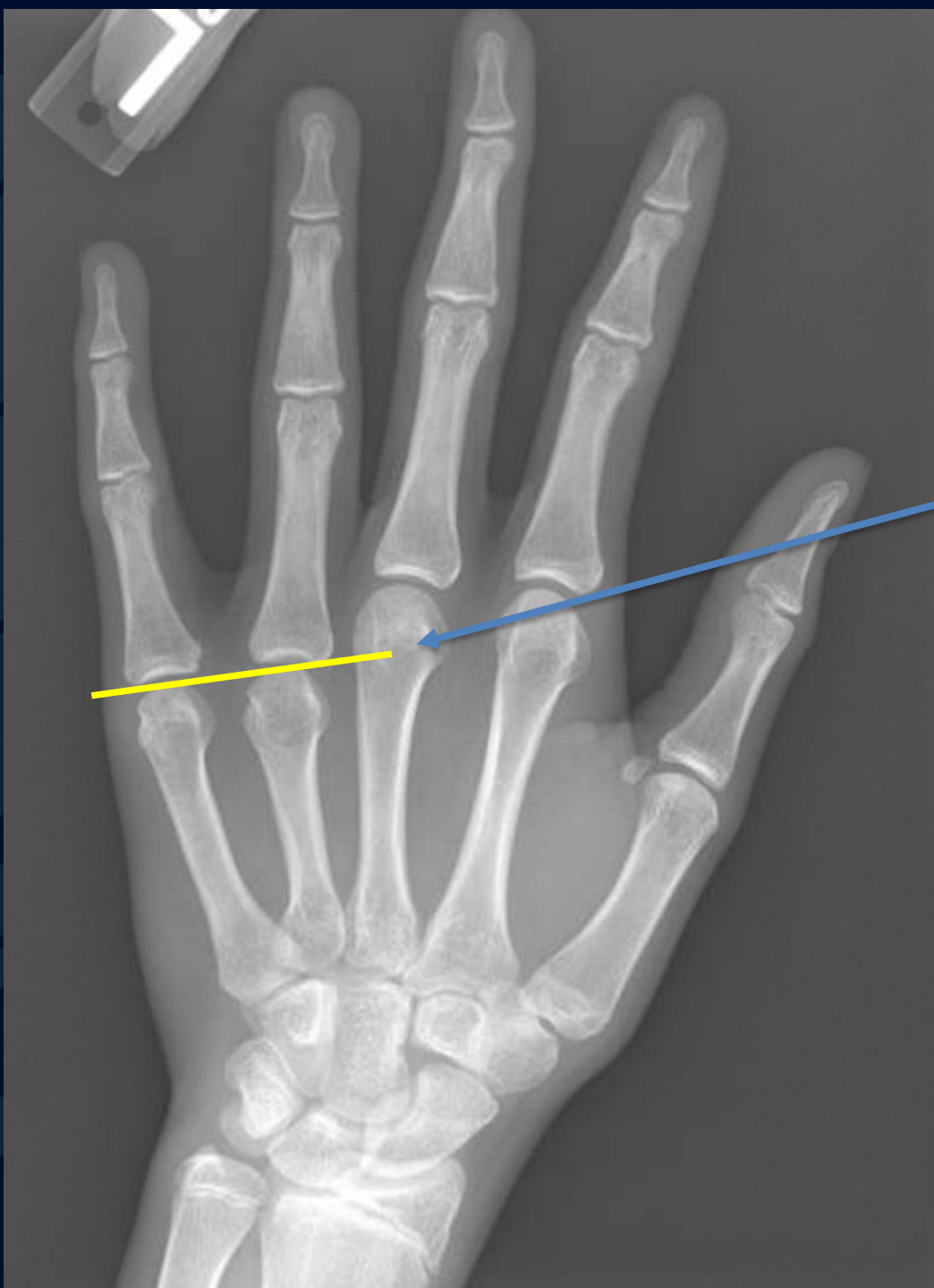
**UConn**  
**HEALTH**

RADIOLOGY

A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide. It features detailed vein patterns and a lobed edge.

?

# Idiopathic short 4<sup>th</sup> and 5<sup>th</sup> metacarpals



Positive metacarpal sign:  
yellow line tangent to the  
heads of the 4<sup>th</sup> and 5<sup>th</sup>  
metacarpals intercepts  
the third metacarpal

Oblique view demonstrates shortened 4<sup>th</sup> and 5<sup>th</sup> metacarpals with no evidence of fracture.



# Short 4<sup>th</sup> and 5<sup>th</sup> metacarpals

- Radiographic imaging features:
  - Line drawn across heads of 4<sup>th</sup> and 5<sup>th</sup> metacarpals, should not intersect the 3<sup>rd</sup> metacarpal. If it does, this indicates that the 4<sup>th</sup> metacarpal is shortened.
  - Metacarpal sign may be positive in up to 10% of normal individuals
- 4<sup>th</sup> and 5<sup>th</sup> metacarpals can be shortened in many conditions.
- Idiopathic is most common
- Differential includes infection, trauma (premature growth plate closure), pseudohypoparathyroidism, Turner Syndrome, and Albert's hereditary osteodystrophy



# References

- Jameson, J L. *Hormone Resistance Syndromes*. N.J., 1999.
- Rajagopal G, Mukka A, et al. Archibald's metacarpal sign. *Journal of Clinical and Scientific Research*. 2:114-115. 2013. DOI: 10.15380/2277-5706.JCSR.12.061
- Slater S. An Evaluation of the Metacarpal Sign (Short Fourth Metacarpal). *Pediatrics*. 46 (3): 468-471, 1970
- Weissleder R, Wittenberg J, et al. *Primer of diagnostic imaging*. Mosby, 2003.