

Tillaux Fracture in a 15 y.o. Male

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December 13, 2019

Diagnostic Radiology, RAD 4001

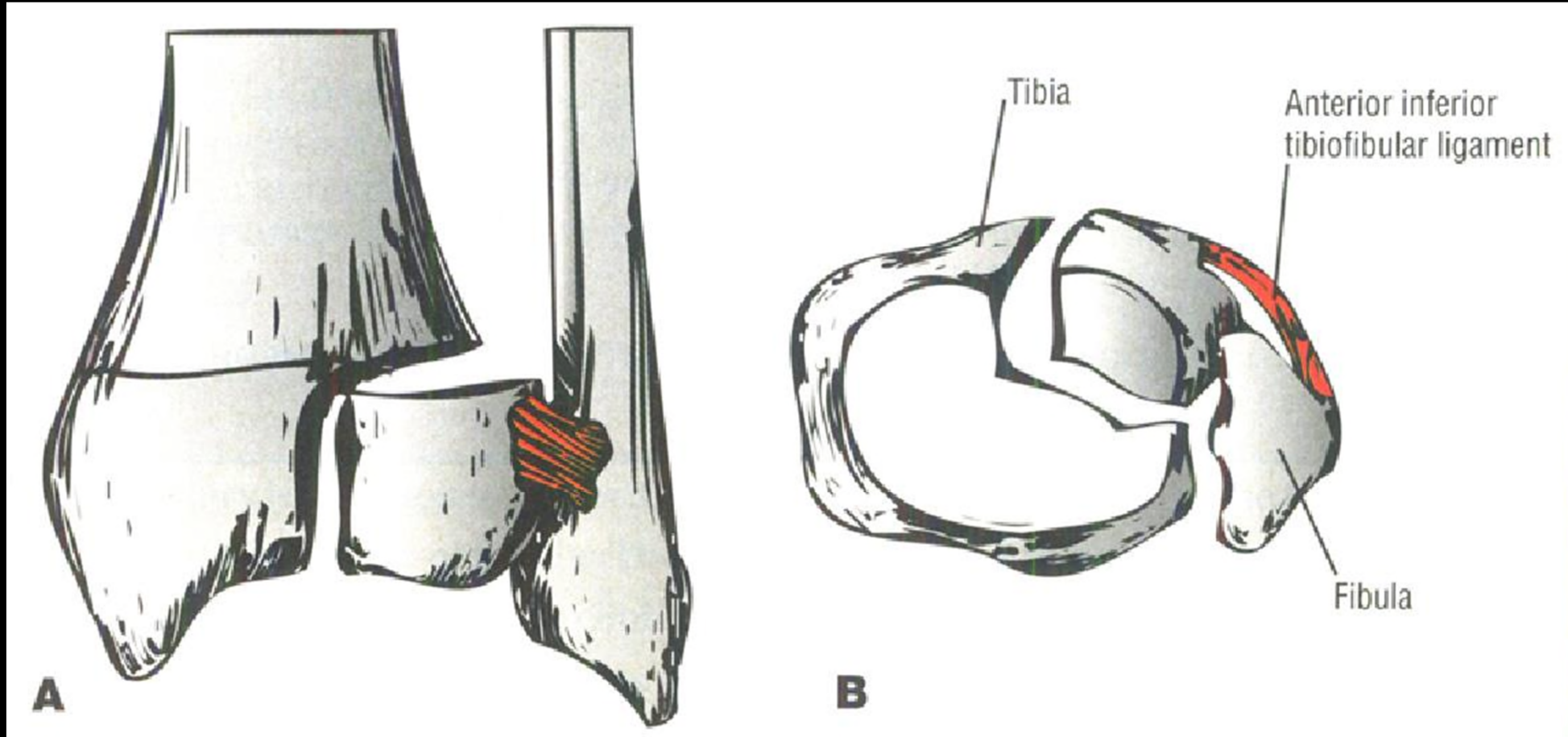
Dr. Jonathan David Hester, MD



Clinical History

- 15 y.o male with no PMHx presents with a L. distal tibial fracture requiring ORIF vs CRPS.
- HPI and Current Symptoms:
 - Pt reported that he fell during a school kickball game 1 week prior to presentation and twisted his L ankle.
 - Pt was asx and denies numbness/tingling, lack of sensation, weakness
 - Pain controlled with Tylenol PRN
- Physical exam findings:
 - LLE bandaged and wrapped in splint.
 - Toes warm and well perfused.
 - Able to wiggle R and L toes

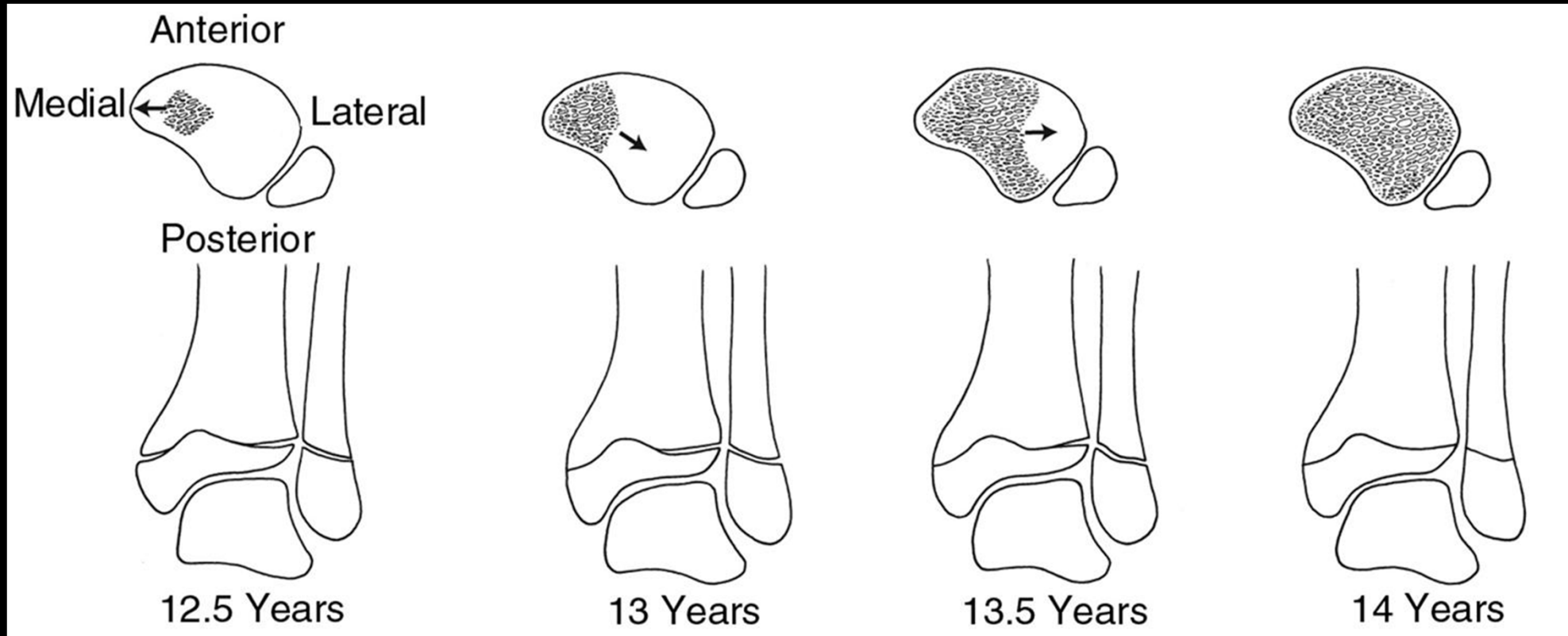
Tillaux Fracture



- Avulsion of the anterior tibiofibular ligament
- The ligament is stronger than the lateral physis

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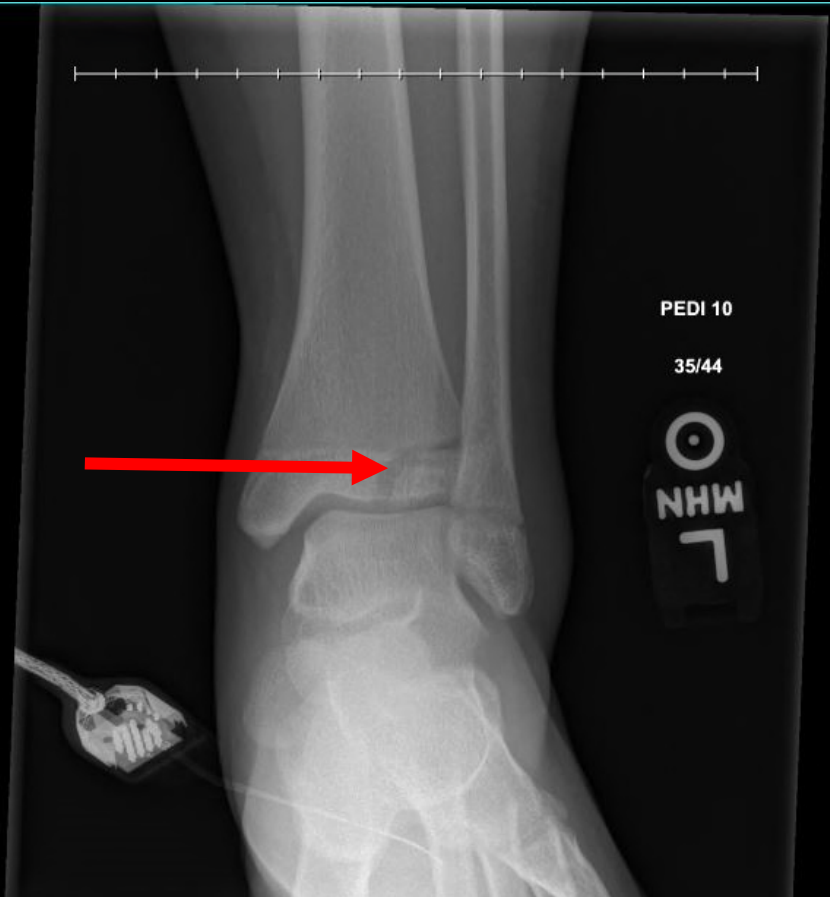
Tillaux Fracture



- Closure of the distal tibial physis begins centrally and extends medially then laterally

Tillaux Fracture

- 11/25/19: XR Ankle 3 View

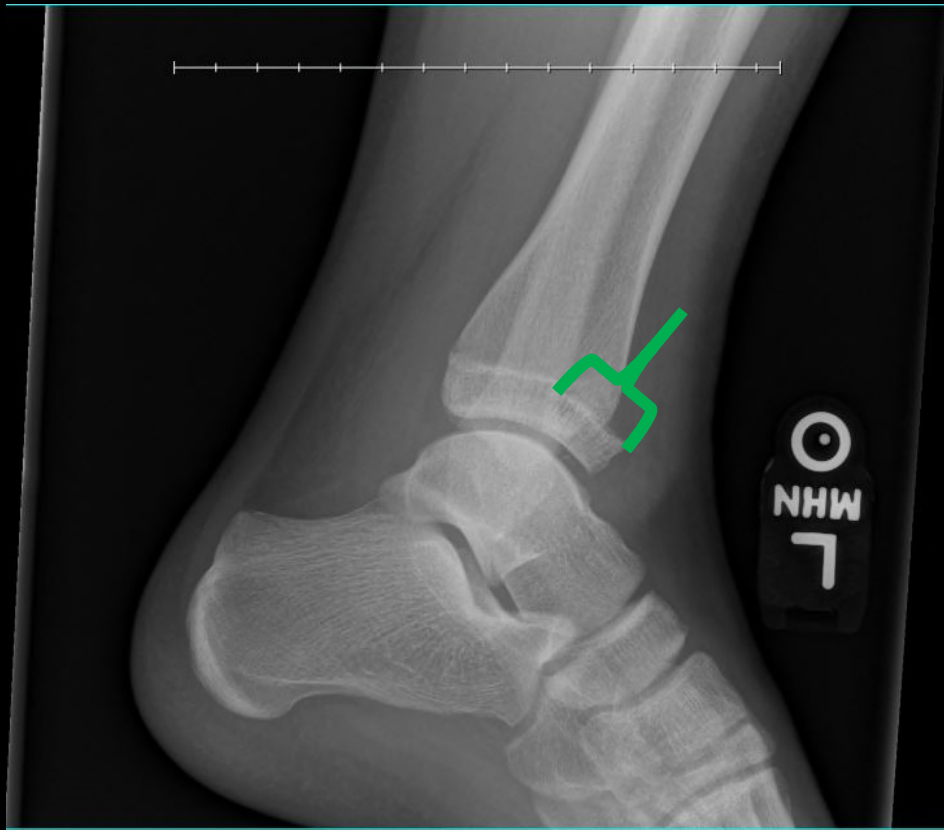


Label
Key

Tibial Fracture

Tillaux Fracture

- 11/25/19: XR Ankle and XR Foot



Label
Key

Anterior Displacement of Fragment (5mm)

Tillaux Fracture

- 11/25/19: CT Coronal and Sagittal View



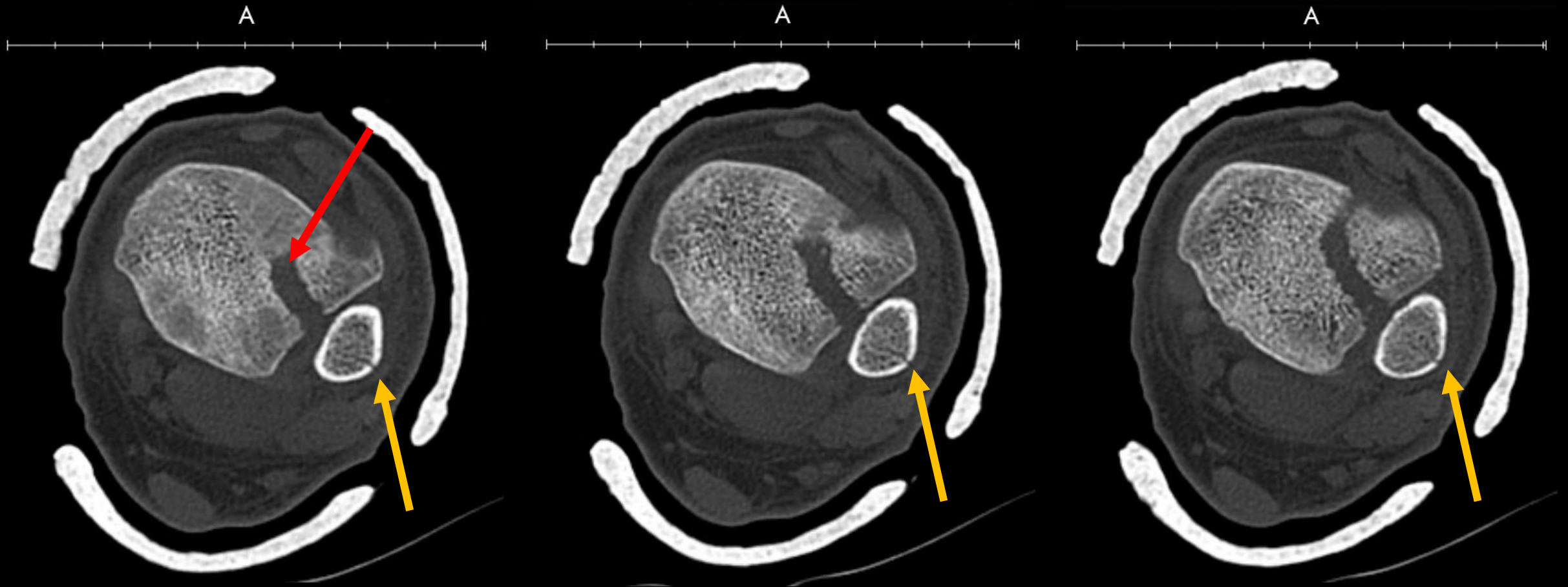
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Tibial Fracture Small Bone Fragments

Anterior Displacement of Fragment

Tillaux Fracture

- 11/25/19: CT Axial View



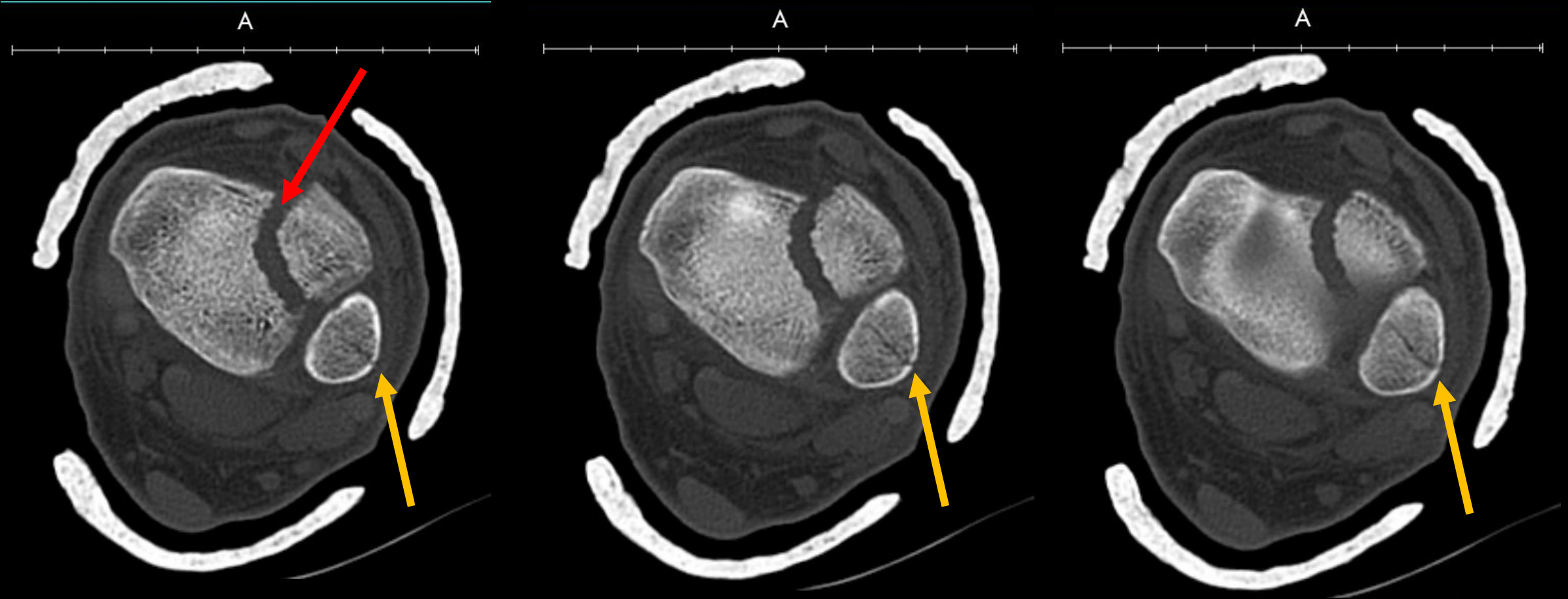
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Tibial Fracture

Fibular Fracture

Tillaux Fracture

- 11/25/19: CT Axial View



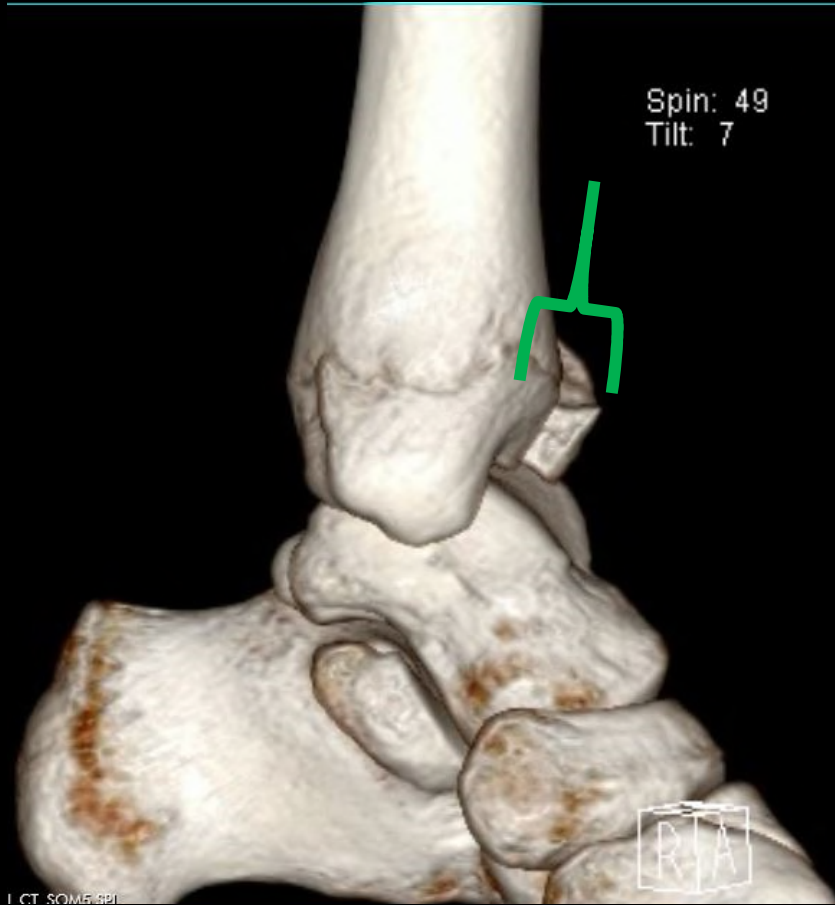
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Tibial Fracture

Fibular Fracture

Tillaux Fracture

- 11/25/19: 3D Volume Rendered CT scan



Label
Key

Tibial Fracture

Anterior Displacement of Fragment

Summary of Key Imaging Findings

Knee 3 View, Ankle 4 View, and Tibia Fibula Series

1. Salter-Harris III type (Tillaux) Fracture – subluxation of the distal tibial epiphysis with 3-4 mm step-off of the tibial plateau and a probable tiny intra-articular osseous fragment.
2. Minimally displaced, intra-articular oblique fracture of the base of the proximal great toe
3. Suspected widening of the medial clear space concerning for ligamentous injury

Ankle CT w/o Contrast

1. Salter-Harris IV fracture through the anterolateral distal tibia representing triplane fracture pattern
2. Minimally displaced Salter Harris II fracture of the distal fibula
3. Diffuse soft tissue swelling of the ankle

Differential Diagnosis: Salter-Harris Fractures

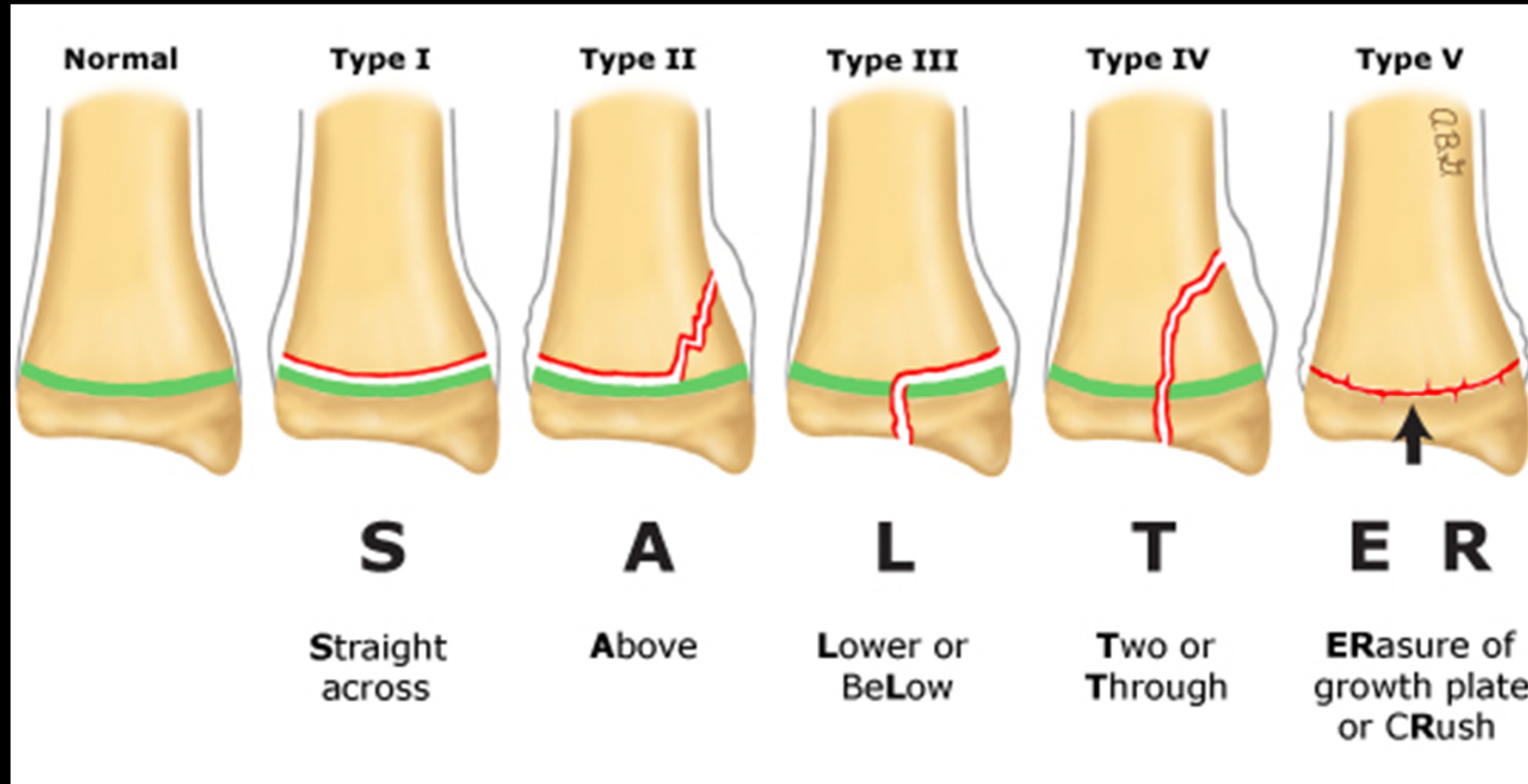


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Treatment Options: Operative vs Nonoperative

Nonoperative: Closed reduction and casting

- For fractures with $< 2\text{mm}$ displacement
- Reduced by internally rotating foot
- Cast for 3-4 weeks to control rotational component of injury
- Immobilization for an additional 2-4 weeks in short cast or boot

Operative: CRPP or ORIF

- For fractures with $> 2\text{mm}$ displacement
- Both have good outcomes

Discussion: CRPP vs ORIF

CRPP

- Use K wire or guidewire to reduce
- Assess reduction with fluoroscopy or arthrogram
- K wire or cannulated screw for final fixation
- Minimizes surgical time and avoids incision

ORIF

- Anterolateral approach
- K wire or cannulated screw for final fixation
- Use for failed closed reduction or delayed presentation

Screw placed lateral -> medial

Transphyseal fixation is (usually) ok!



Take Home Points

- Salter-Harris III (Tillaux) Fractures are intraarticular fractures through the epiphysis and across the physis
- They are most common in adolescents as the physes are often the weakest points in bone at that age
- Treatment involves reducing the fracture via CRPP or ORIF

References

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