

Tibial Pilon Fractures: An Algorithmic Approach

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Associate Professor

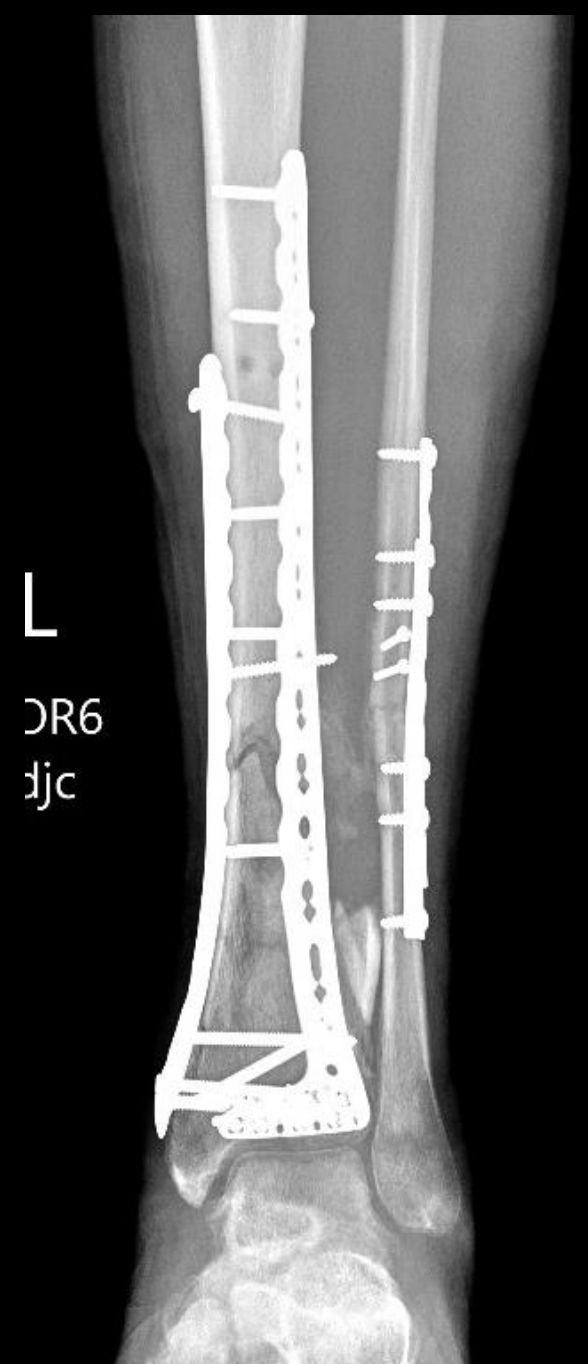
UCSF Department of Orthopaedic Surgery

Disclosures

- None

Learning Objectives

- Staging + Soft-tissue handling
- Review Approaches
- Approach Algorithm



Case: 28yo M motorcycle crash



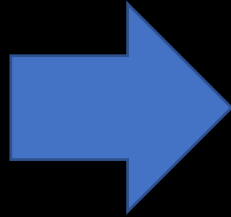
Respect the soft-tissues!



Stage 1: External Fixation

- Functional reduction
 - Length/Rotation/Alignment
 - “Talus Under Tibia”
- Splint soft-tissues
- Wait ~2 weeks for definitive fixation





Frame Configuration: Delta + Cuneiform Pin



Should I fix fibula with ex-fix?

- Benefits:
 - Length
 - Greater stability
 - One less step in the future

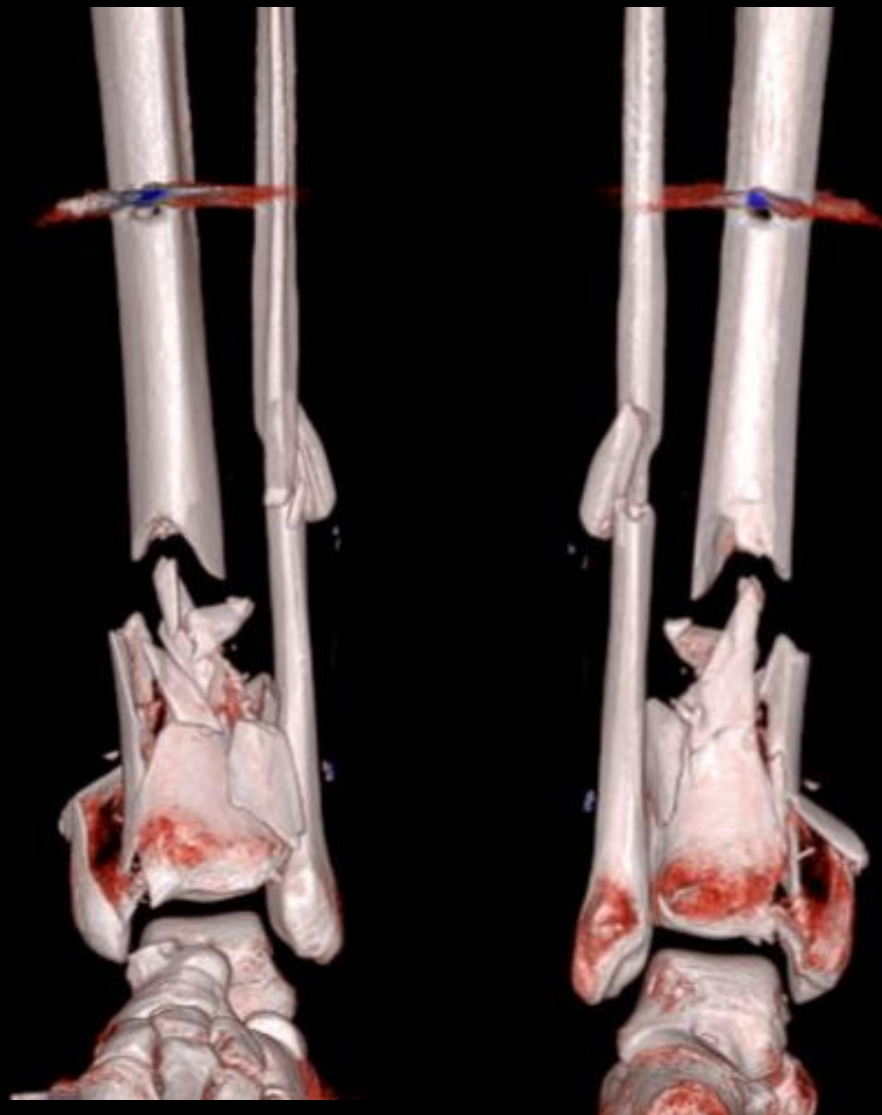
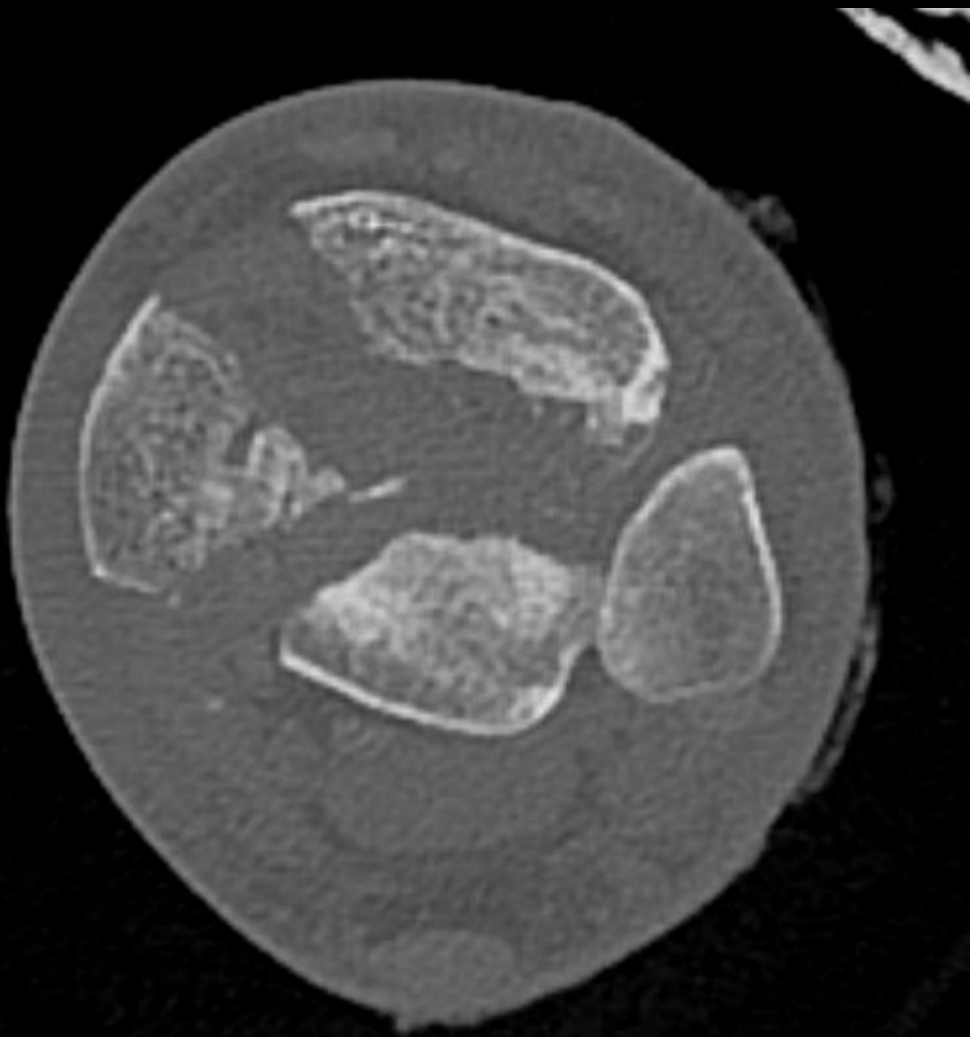


Should I fix fibula with ex-fix?

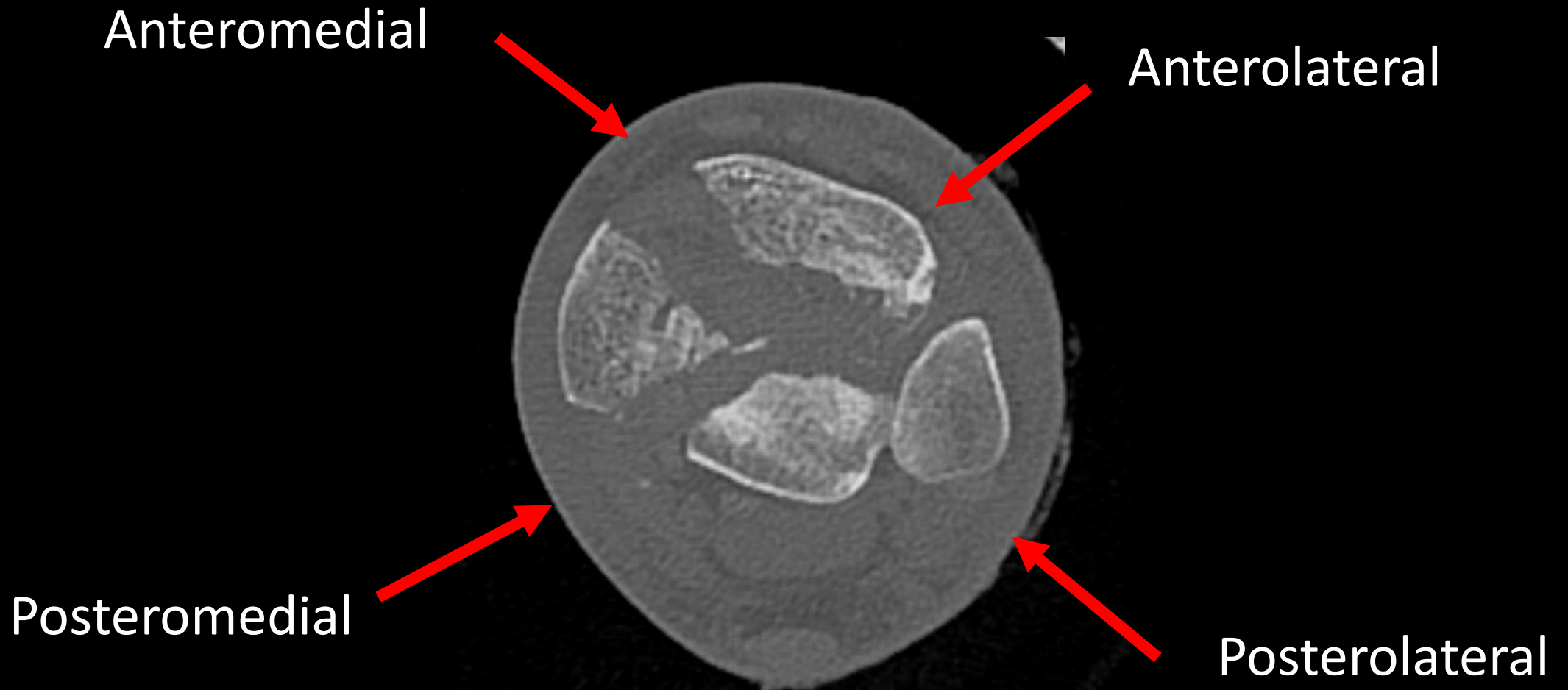
- Benefits:
 - Length
 - Greater stability
 - One less step in the future
- BUT, ONLY IF:
 1. You will do the definitive fixation
 2. You can ANATOMICALLY reduce the fibula
- Use Posterolateral Approach!



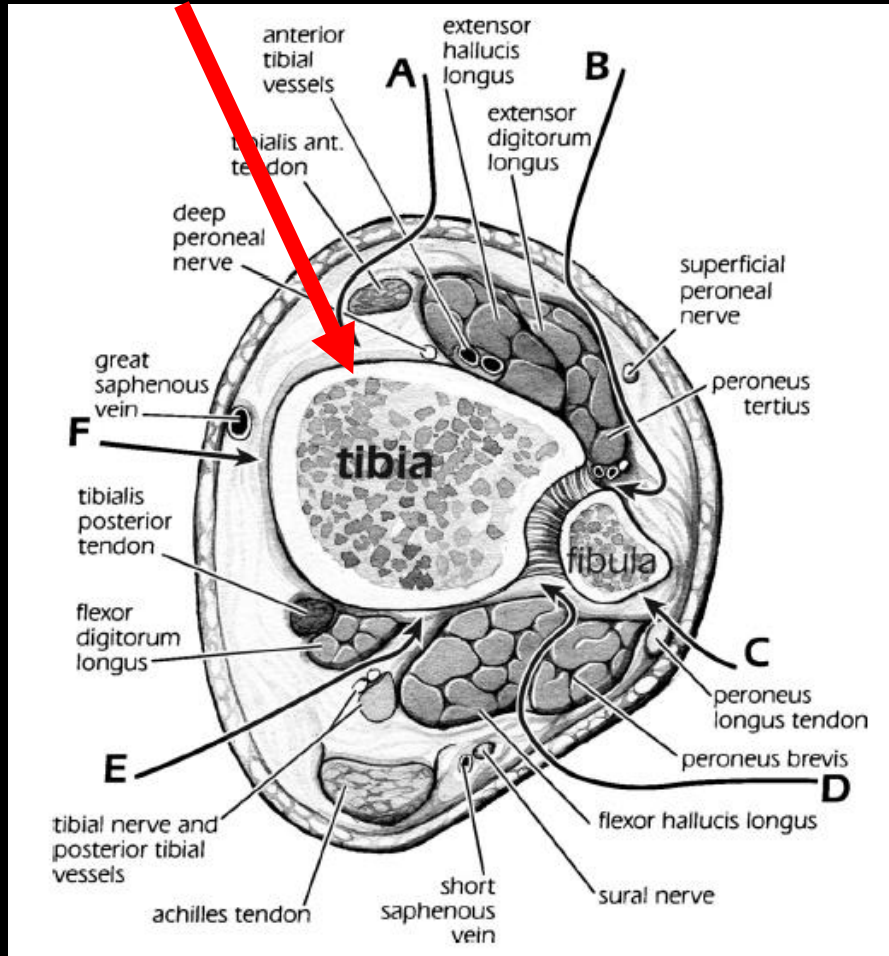
Span, Scan, and Plan!



Approach Options

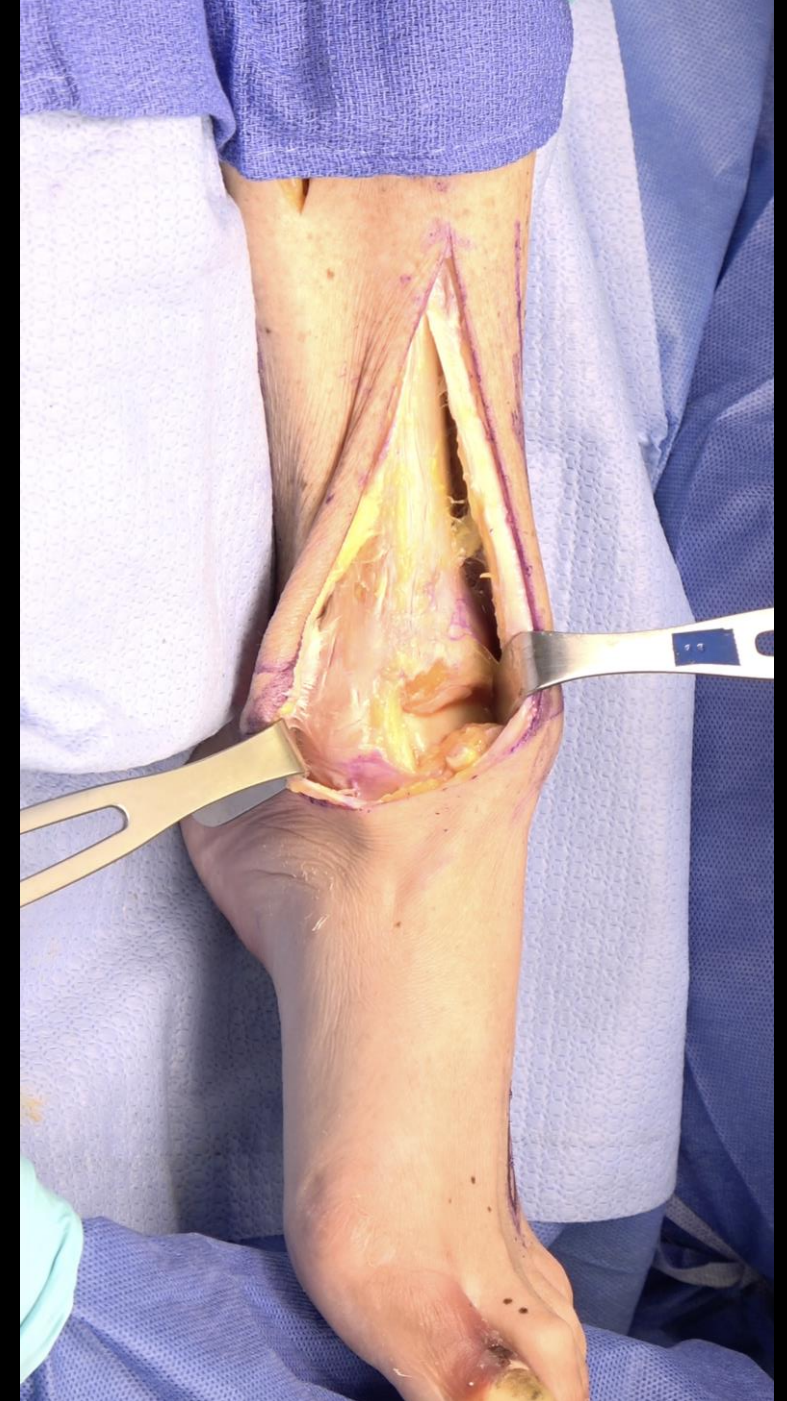


Anteromedial approach



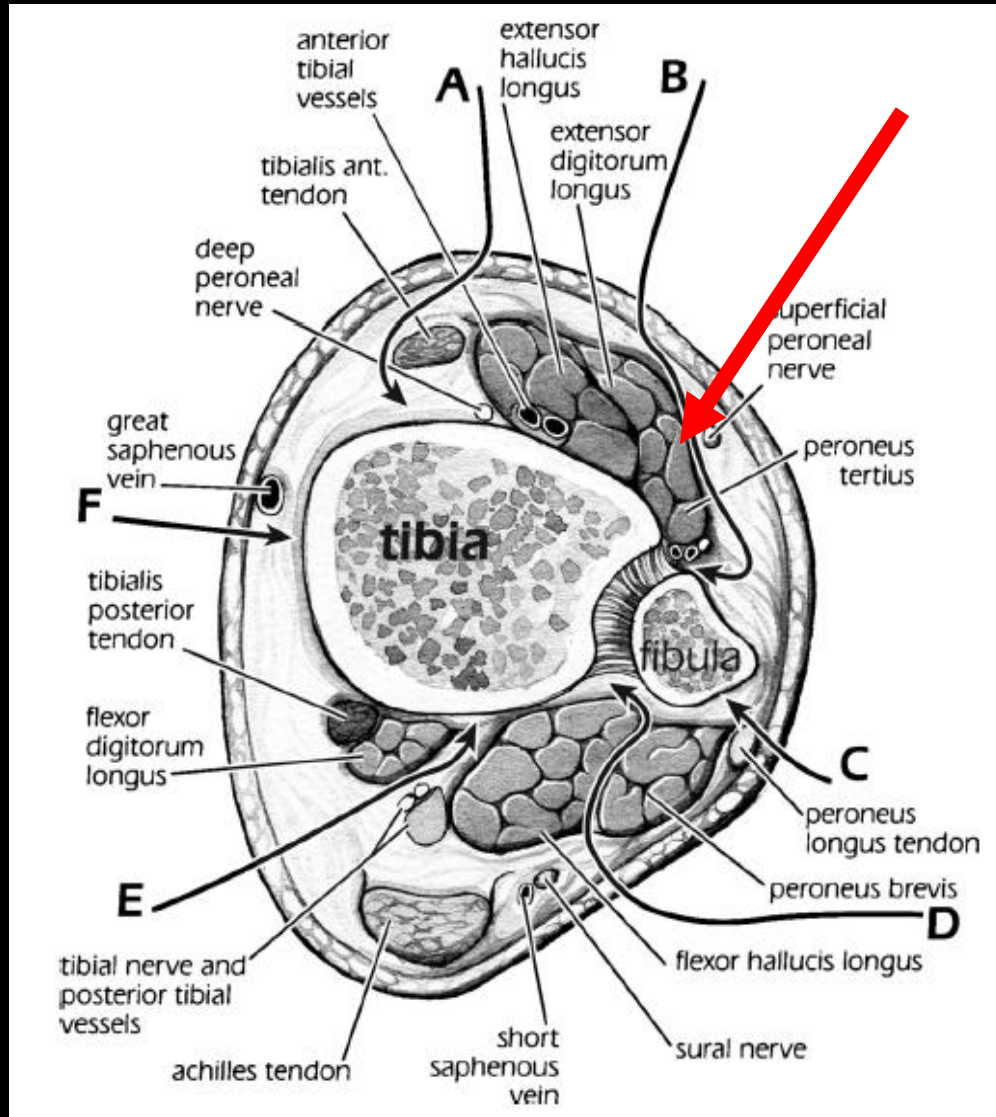
Anteromedial approach

- Pros
 - Extensile exposure
 - Access to medial and anterior tibia
 - Straightforward approach
- Cons
 - High risk for wound healing issues
 - Limited access to lateral fracture exit





Anterolateral approach

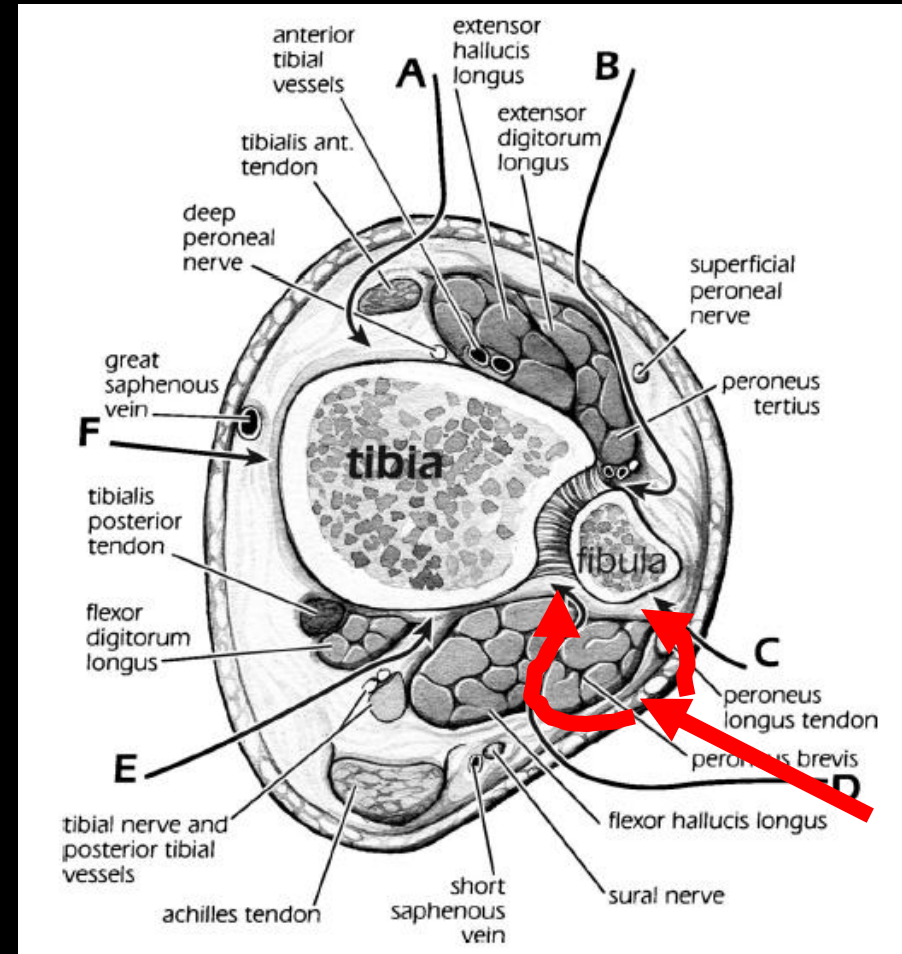


Anterolateral approach

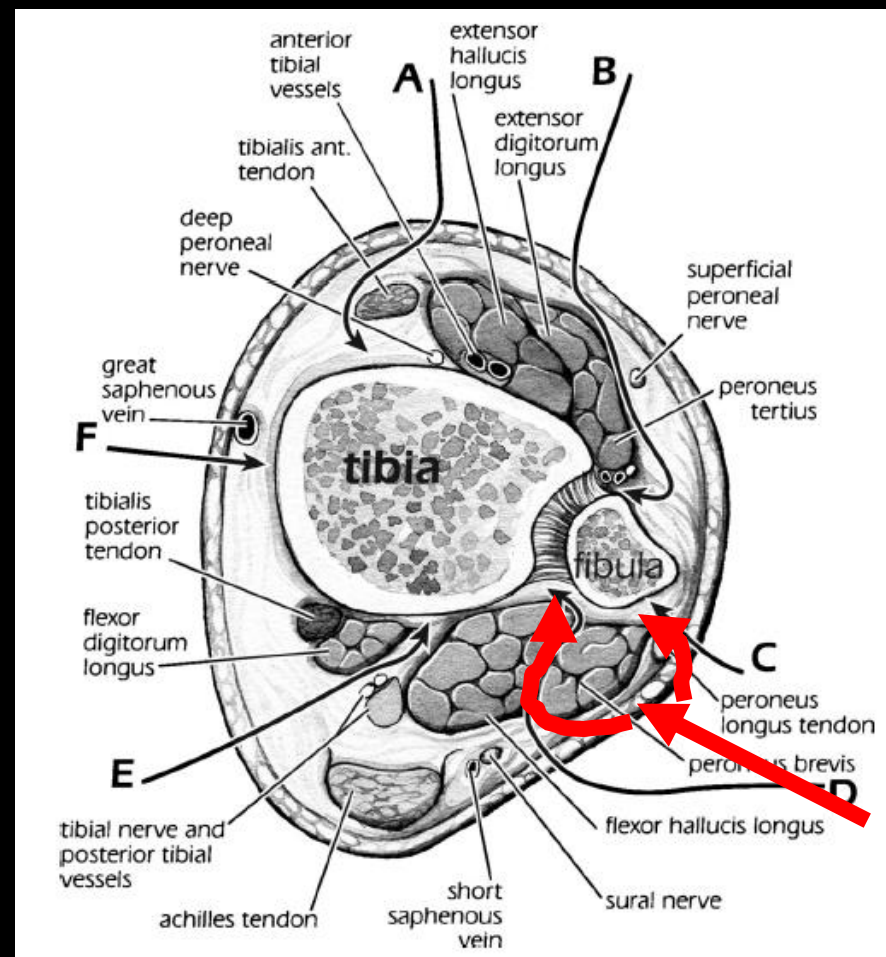
- Pros
 - Soft-tissue friendly (relatively)
 - Access to AL fracture exit
- Cons
 - Technically more difficult (non-extensile)
 - Risk to SPN
 - Limited access to anteromedial fracture



Posterolateral approach



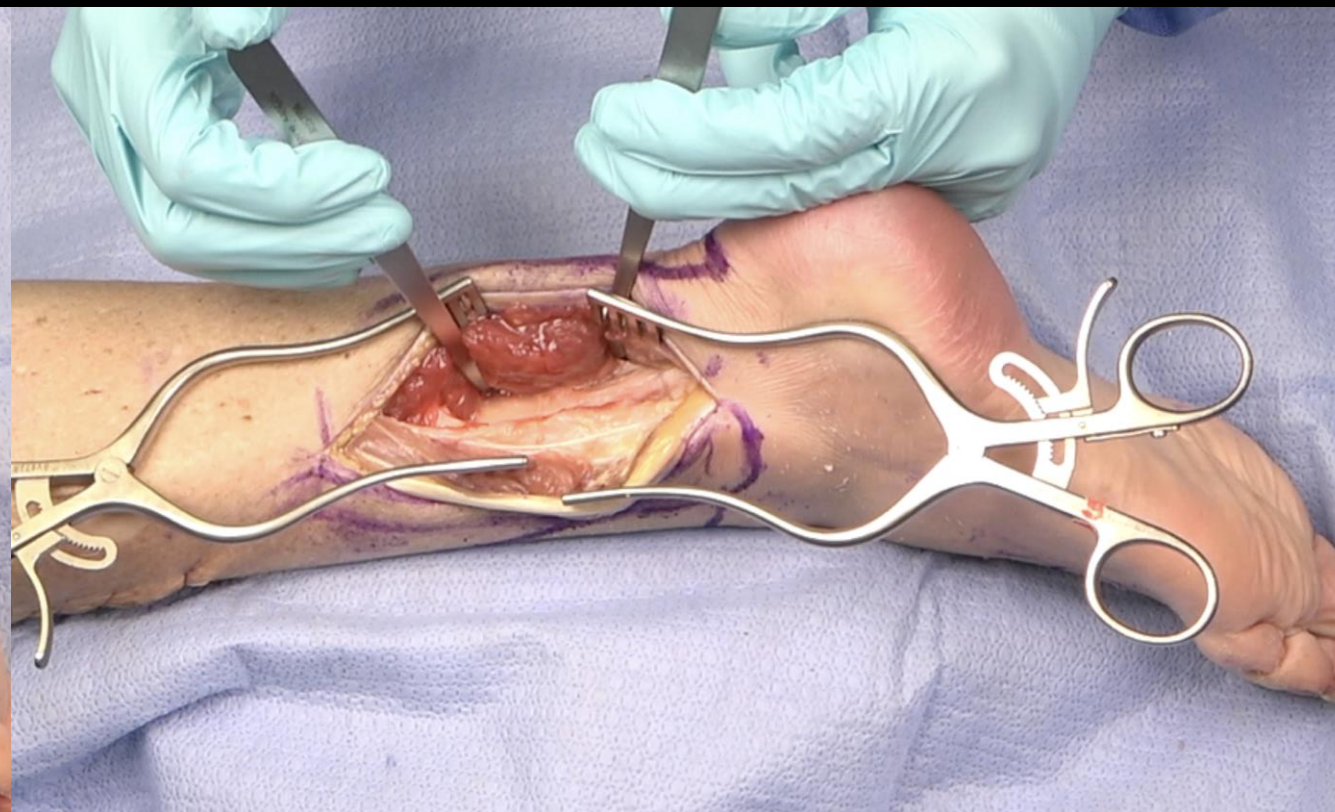
Posterolateral approach



Fibula



Posterior Tibia



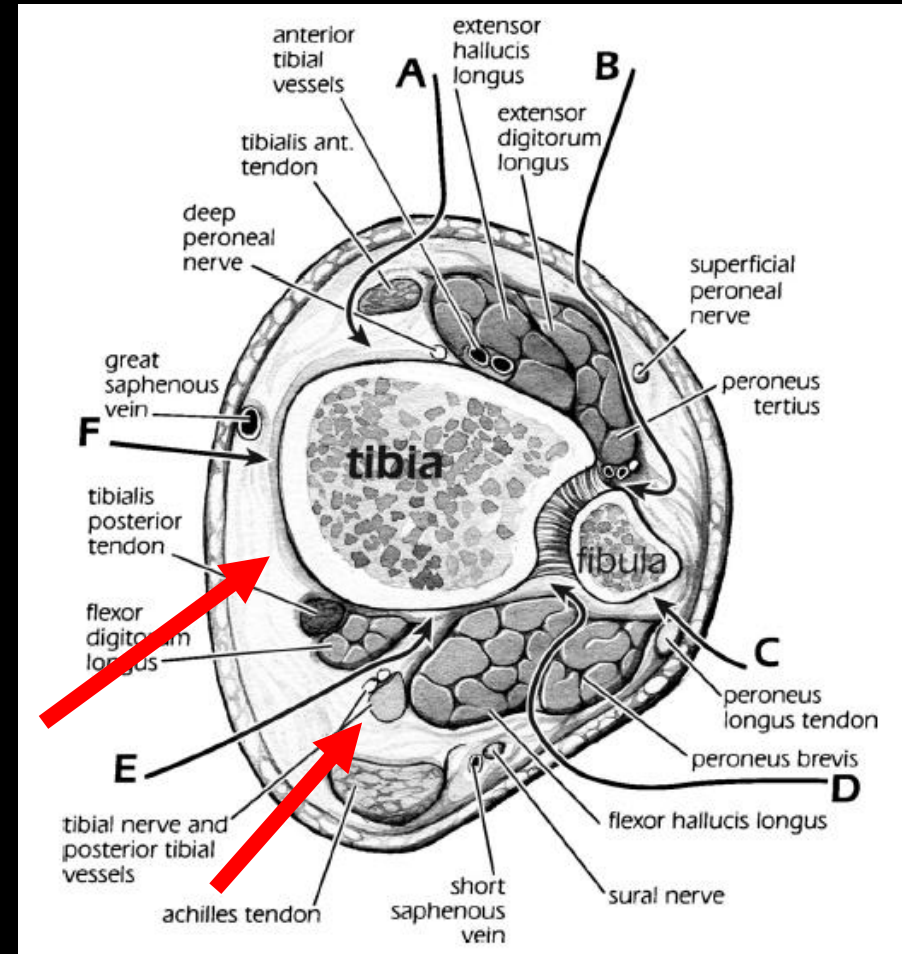
Fibula



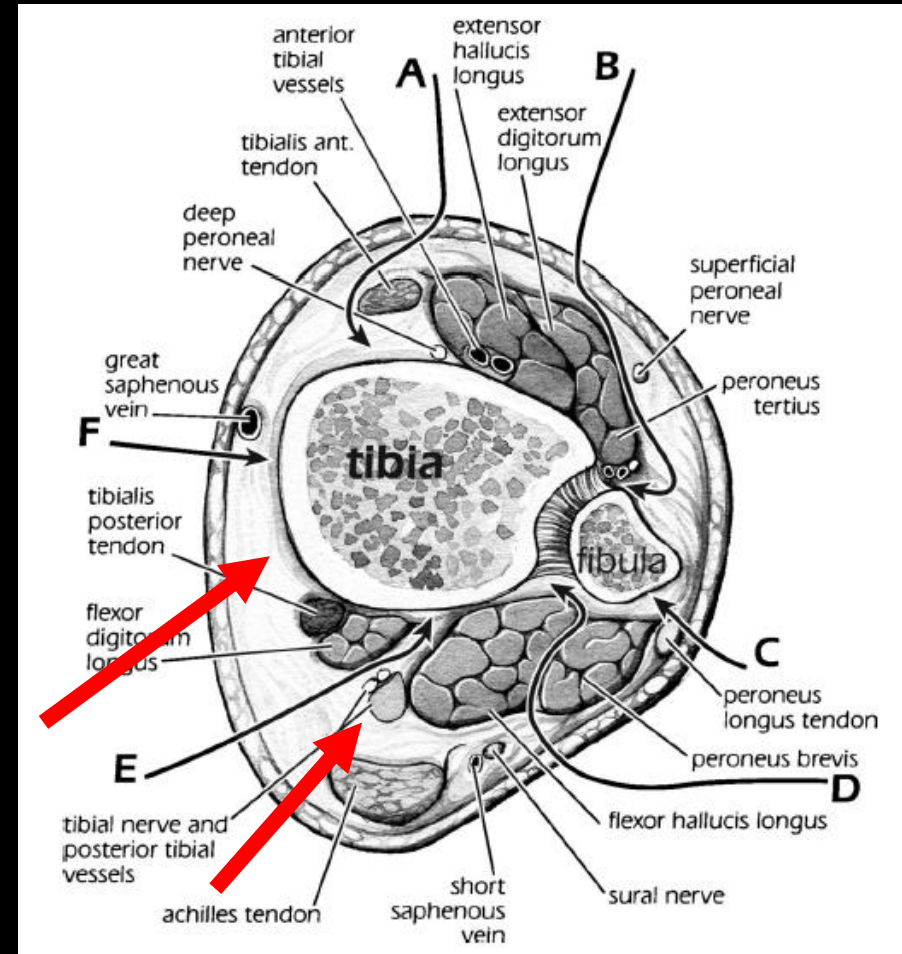
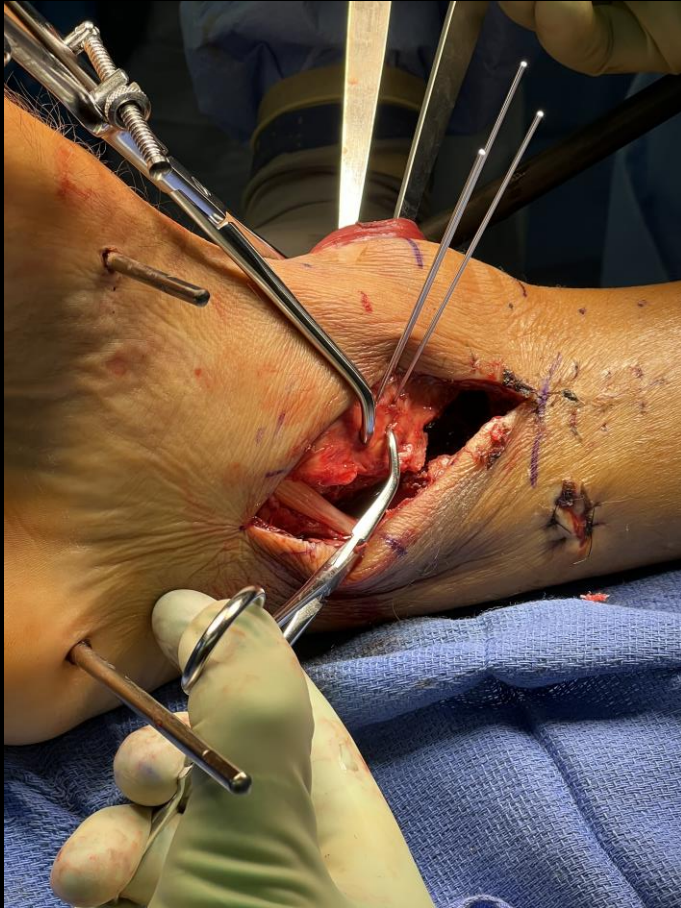
Posterior Tibia



Posteromedial Approach (Extensile)



Posteromedial Approach (Limited)



Limited Posteromedial

Algorithm for Approach

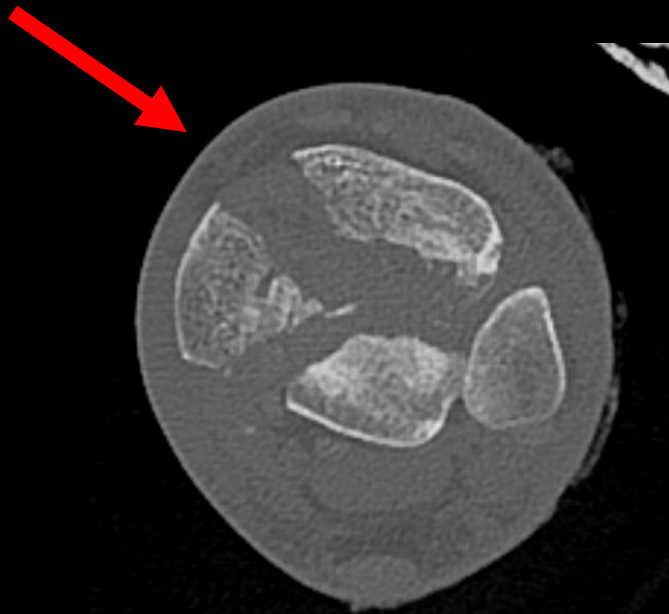
- **Fibula** → Always posterolateral
 - Access to fibula AND posterior tibia
 - Anterolateral to tibia remains safe
- **B-Type Pilon (Partial Articular)**
 - “B = Buttress” → Approach directed toward the apex
- **C-Type Pilon (Complete Articular)**
 - Anteromedial vs. anterolateral
 - Posterior approach IF NEEDED for PL fragment

B-Type vs C-type



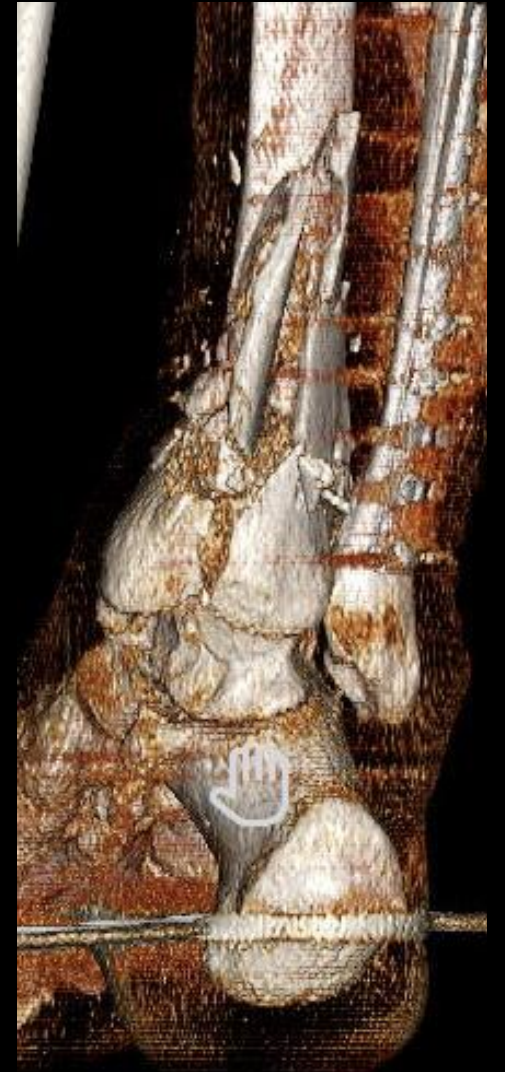
C-type: Anteromedial or Anterolateral?

- **Anterior fracture line exit**
- Posteromedial approach needed
- Soft-tissue considerations



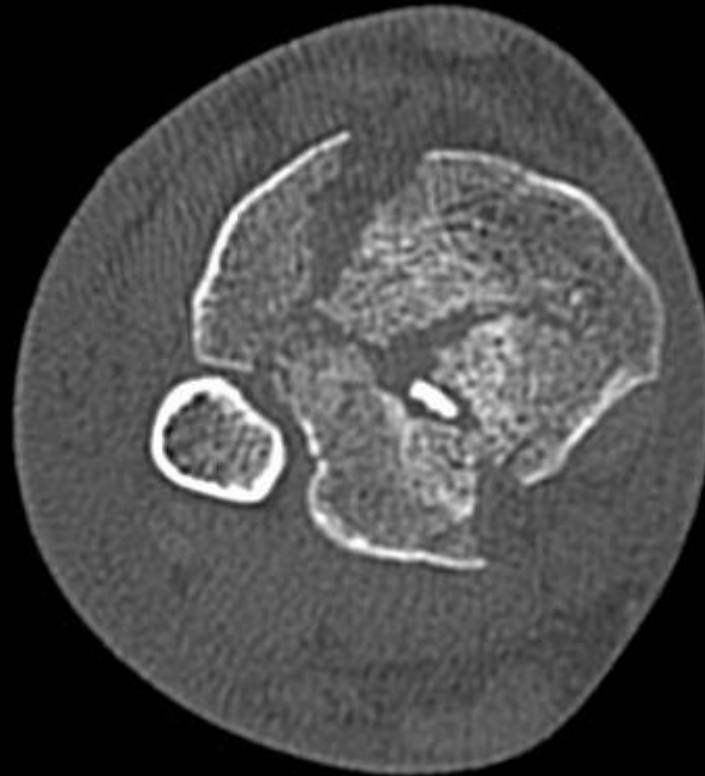
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- **Posteromedial approach needed**
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C-type: Anteromedial or Anterolateral?

- Anterior fracture line exit
- Posteromedial approach needed
- **Soft-tissue considerations**



Definitive Fixation

- Secure articular fragments (Create block)
- Secure articular block to shaft
- Medial buttress



Definitive Fixation

- Secure articular fragments (Create block)
- Secure articular block to shaft
- Medial buttress

***Not based on approach!**



Take Home Messages

- **Staged treatment and soft-tissue handling to prevent infection**
- **Posterolateral for fibula**
- **B-type: Buttress the apex**
- **C-type: AM or AL based +/- posterior for PL fragment**

Thank you!

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