Plating distal tibia fractures

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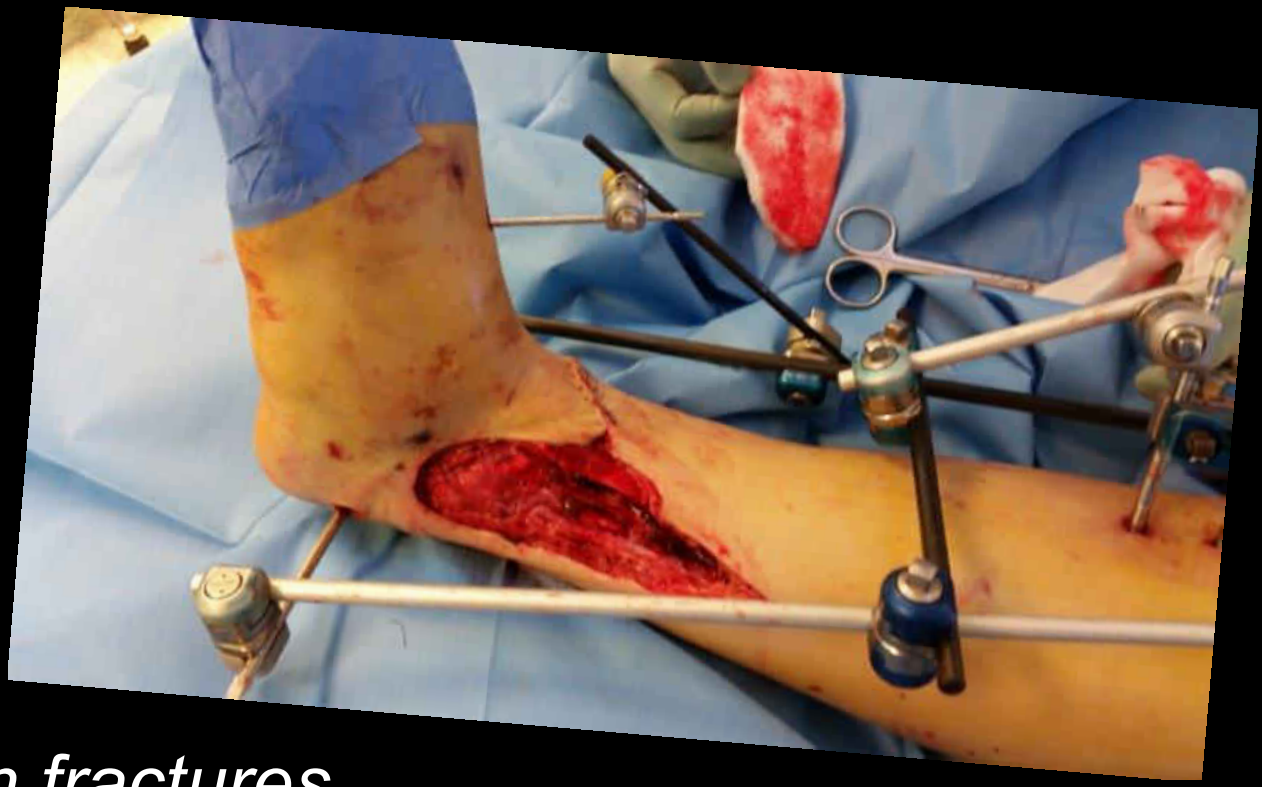
Objectives

- Plates versus nails
  - Loadbearing versus loadshearing in a slow healing environment
- Tips, tricks and pitfalls in distal tibia plating

the soft tissue injury with the accidental broken bone inside...



10-30% open fractures

Plates or IMNs for distal tibia fxs?

Mao et al. Journal of Orthopaedic Surgery and Research (2015) 10:95
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RESEARCH ARTICLE Open Access

Intramedullary nailing versus plating for distal tibia fractures without articular involvement: a meta-analysis

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Soft tissue complications favor IMNs

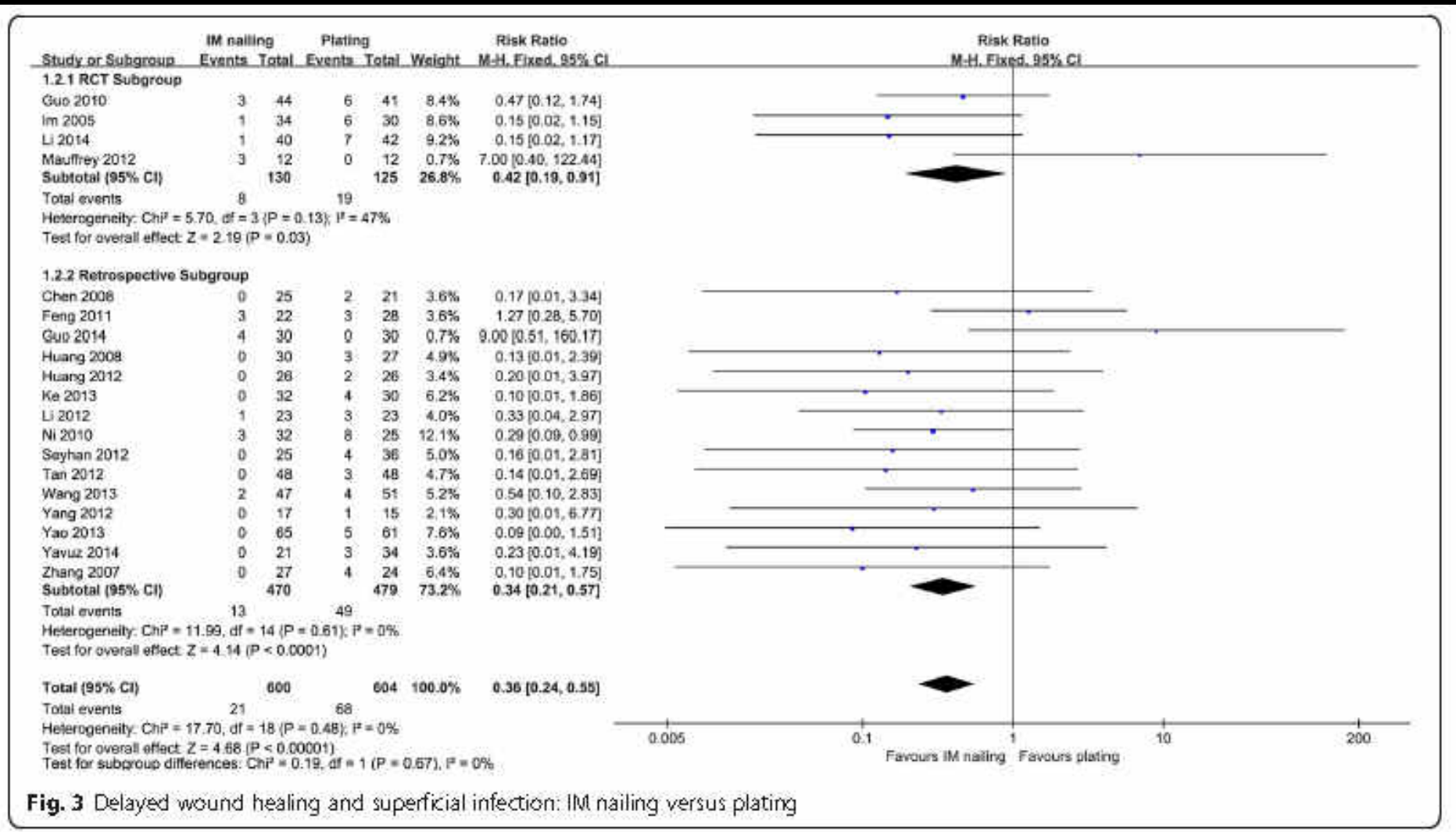


Fig. 3 Delayed wound healing and superficial infection: IM nailing versus plating

Alignment favors plates

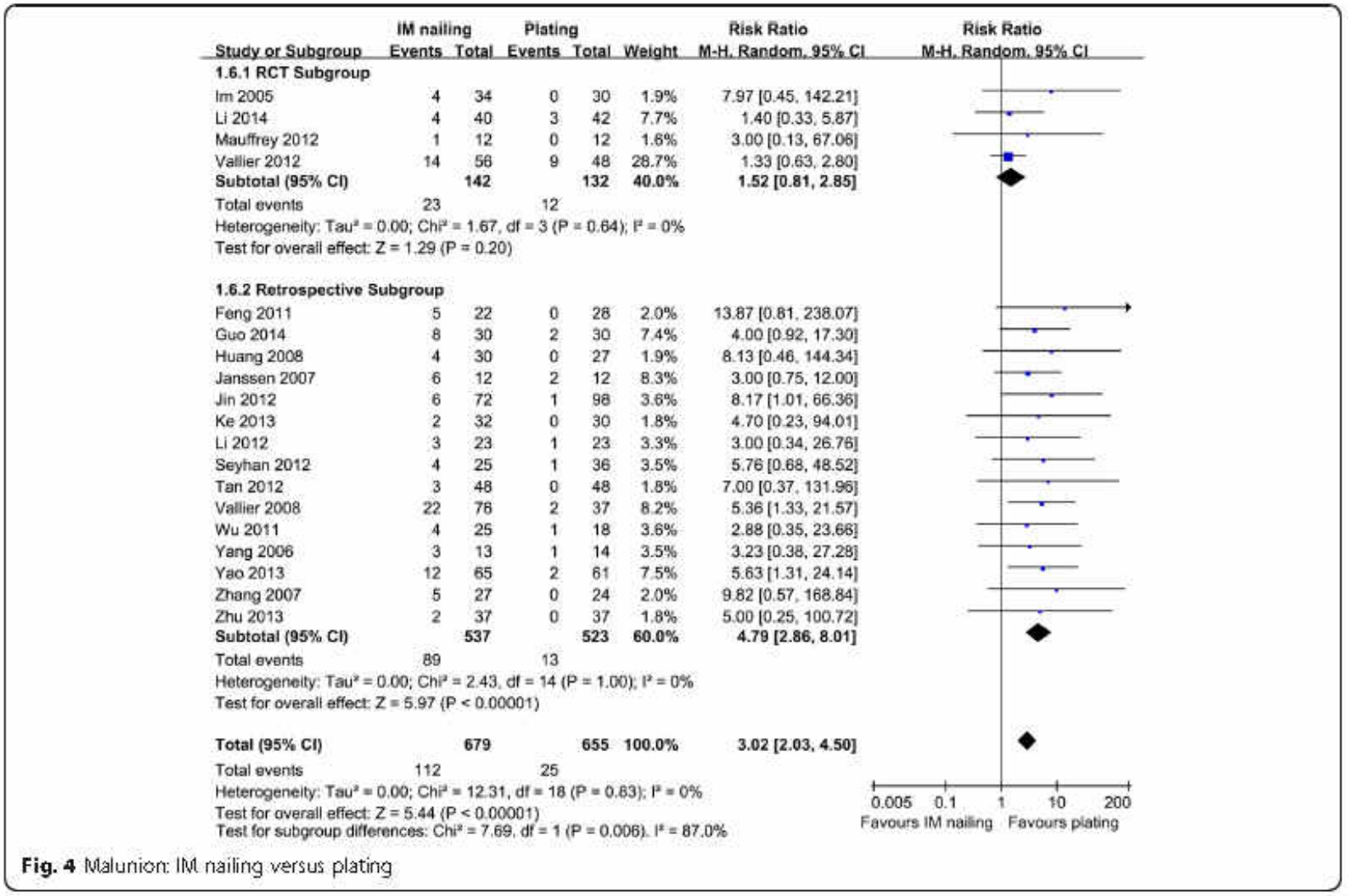


Fig. 4 Malunion: IM nailing versus plating

Knee pain favors plates

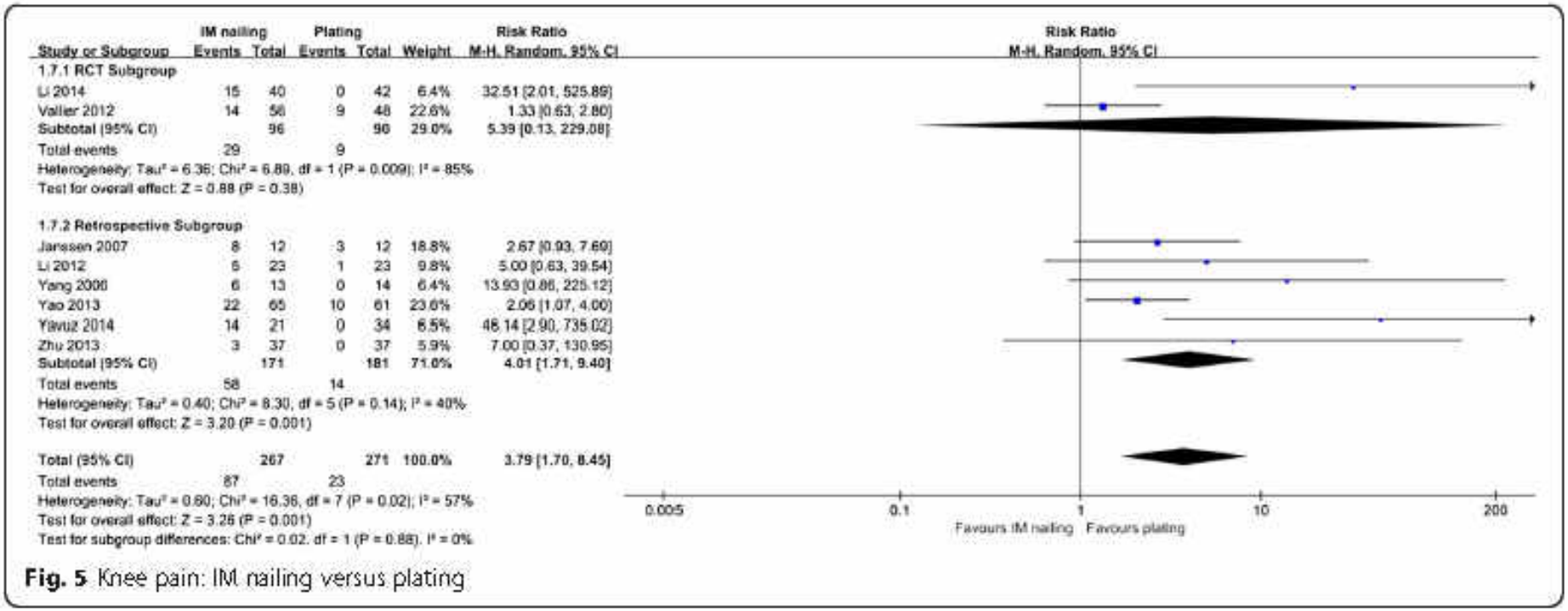


Fig. 5 Knee pain: IM nailing versus plating

Compication rates low, but....

The tips, tricks and pitfalls....

- Soft tissue considerations
  - Timing of final fixation
  - Percutaneous or open surgery?
- Choice of implants?
  - Locking plates?
  - Medial or lateral?
- Fix the fibula?

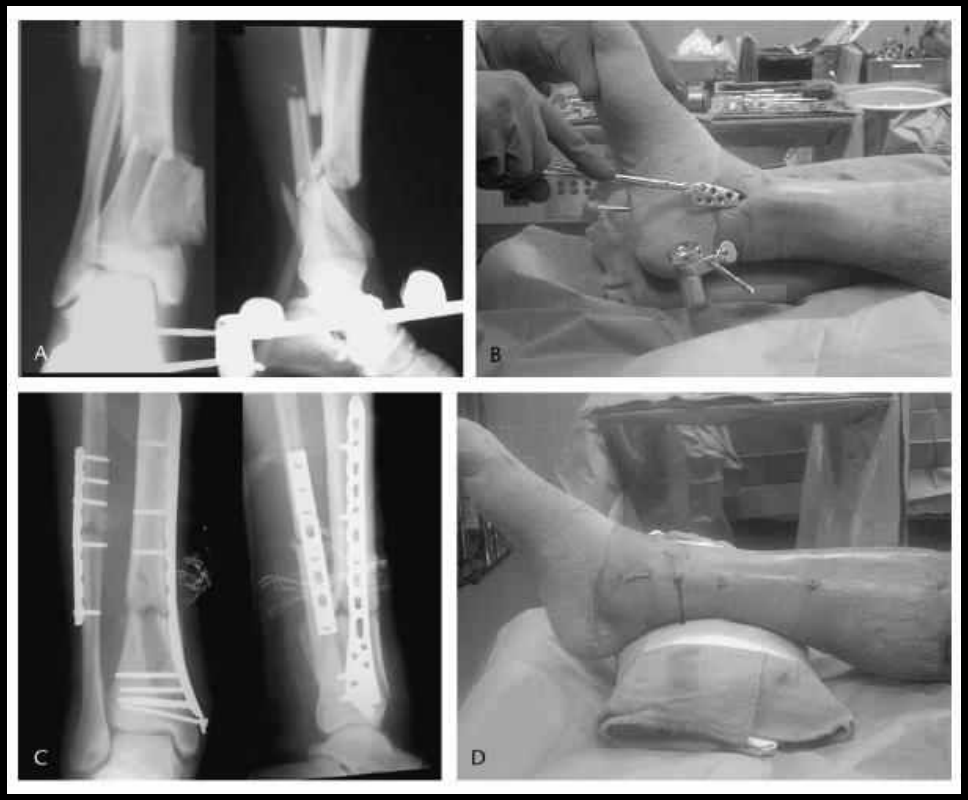
Timing of final ORIF

Staged protocols

Journal of Orthopaedic Trauma
Vol. 13, No. 2, pp. S32–S38

A Staged Protocol for Soft Tissue Management in the Treatment of Complex Pilon Fractures

Open versus MIPO- techniques?



Collinge et al, JOT 2007

Fracture reduction imperative!

Open versus MIPO- techniques?

Jeong, AOFAS 2015

Open versus MIPO- techniques?

Meticulous soft tissue handling and proper fracture reduction is imperative whether open or mipo techniques are used

Vallier et al, 2012

Are locking plates beneficial?

- Inreased delayed/ nonunion rates; constructs too stiff?

  Collinge, JOT 2007
  Mauffrey, JBJS 2012
  Bottlang, JBJS 2016

- Risks mitigated by longer plates, fewer locking screws and far distal locking

  Vallier, JOT 2012

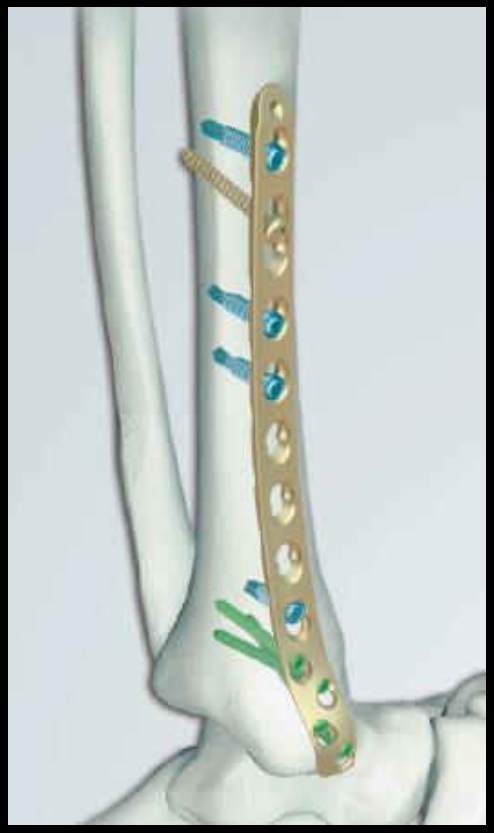
Are locking plates beneficial?

- Greater implant prominence leads to increased reop rates
  - Infections
  - Implant removals

Kent 2015, Sathiyakumar 2014

Are locking plates beneficial?

- Choose low profile implants



Medial or lateral plates?

Anterolateral Versus Medial Plating of Distal Extra... A Bio...

JOSEPH M. P... ..., BISHOP, MD

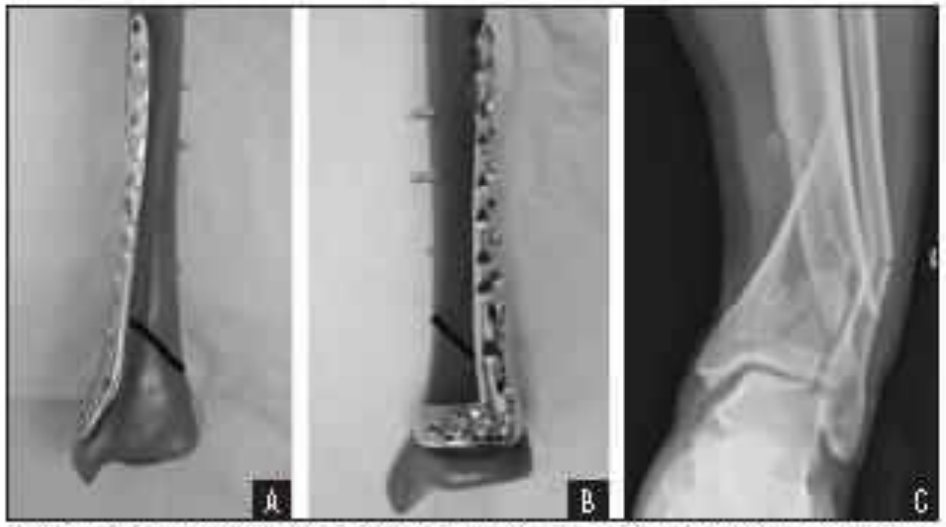
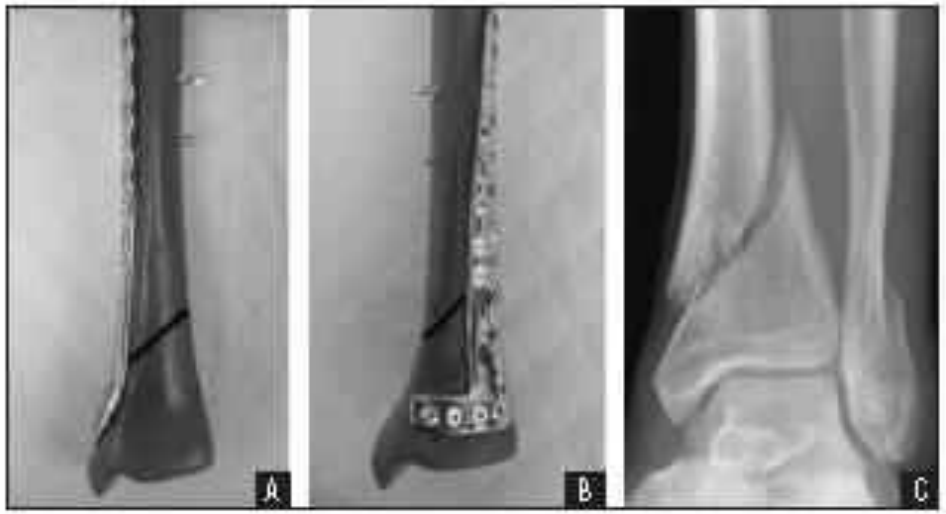
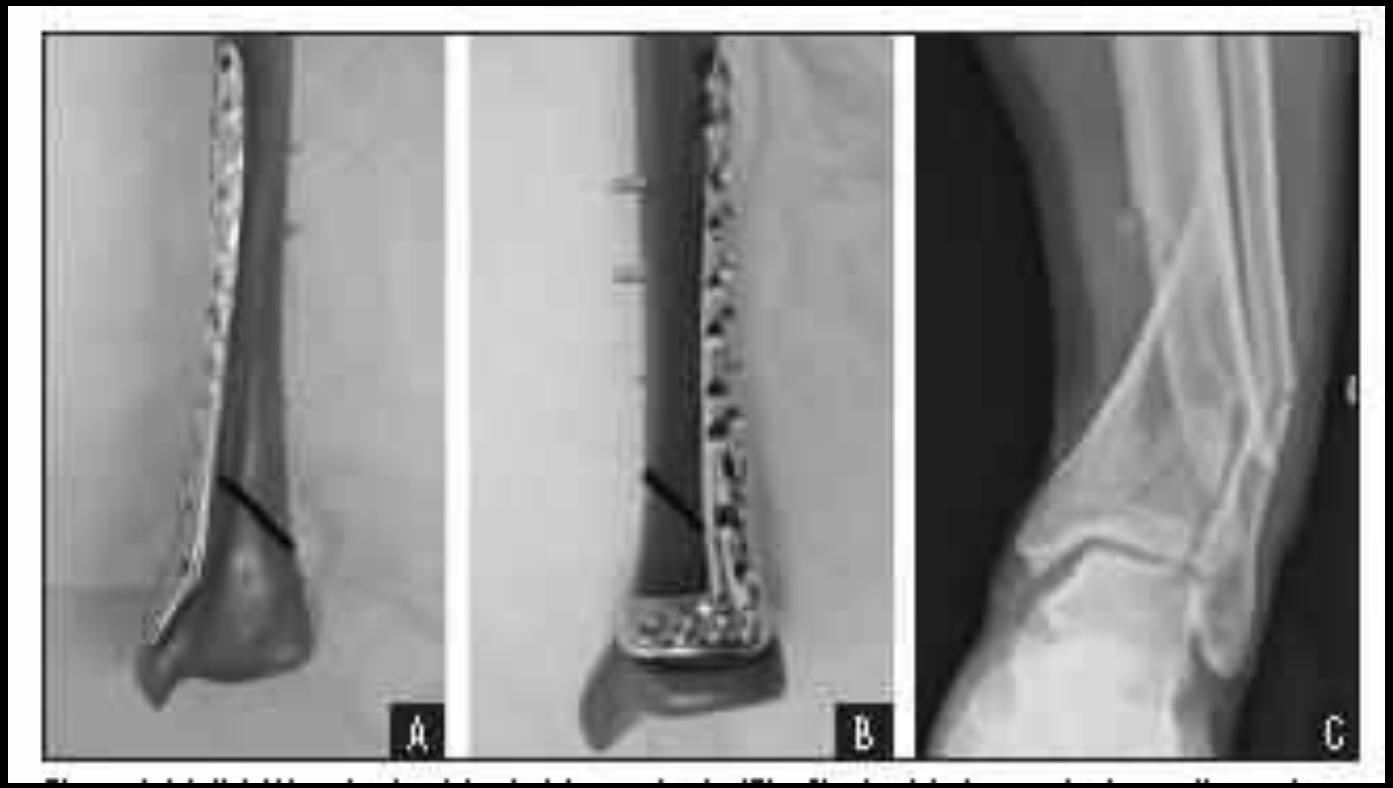


Figure 1: Medial (A) and anterolateral plate constructs (B) with simulated varus fracture patterns alongside an anteroposterior plain radiographic example of a varus injury (C). The black line denotes the osteotomy site.



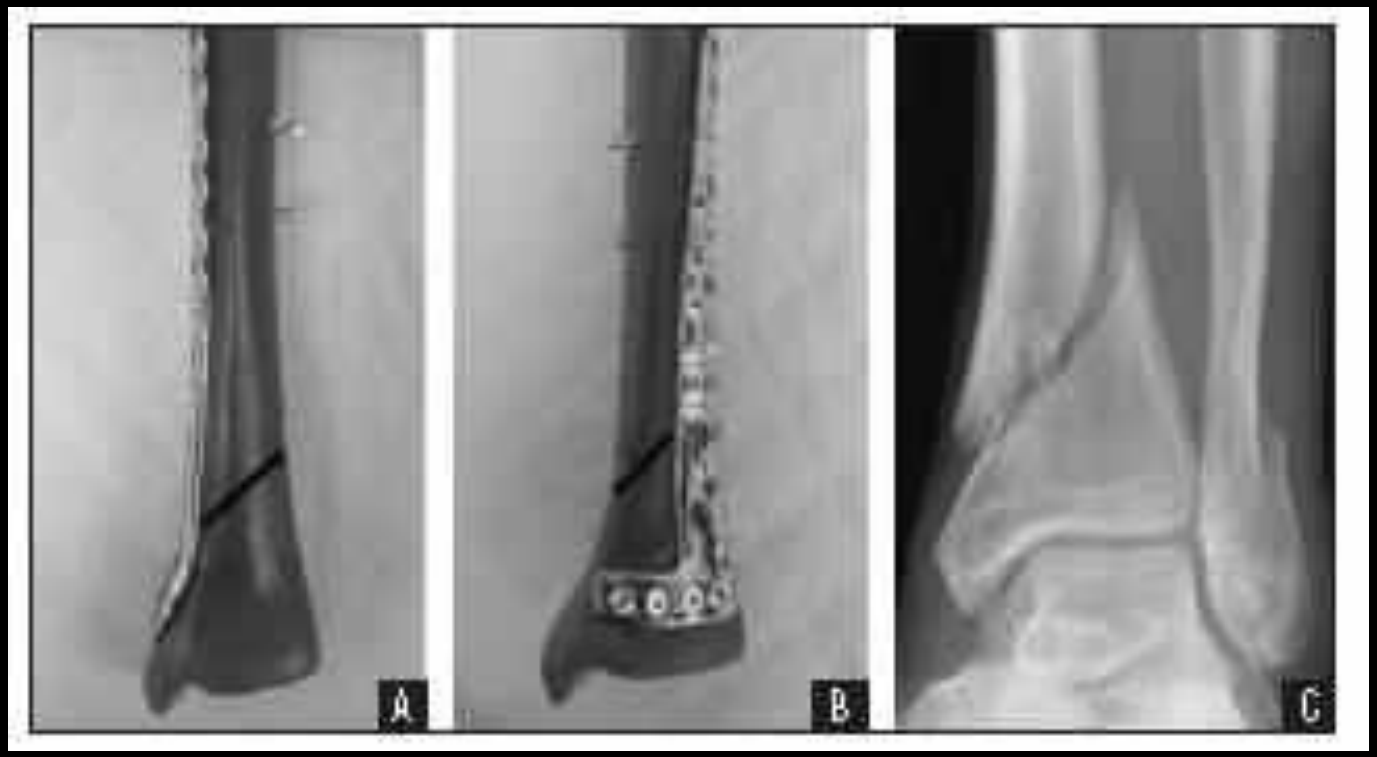
Medial or lateral plates?

- Biomechanical advantages of medial plate in varus fractures



Medial or lateral plates?

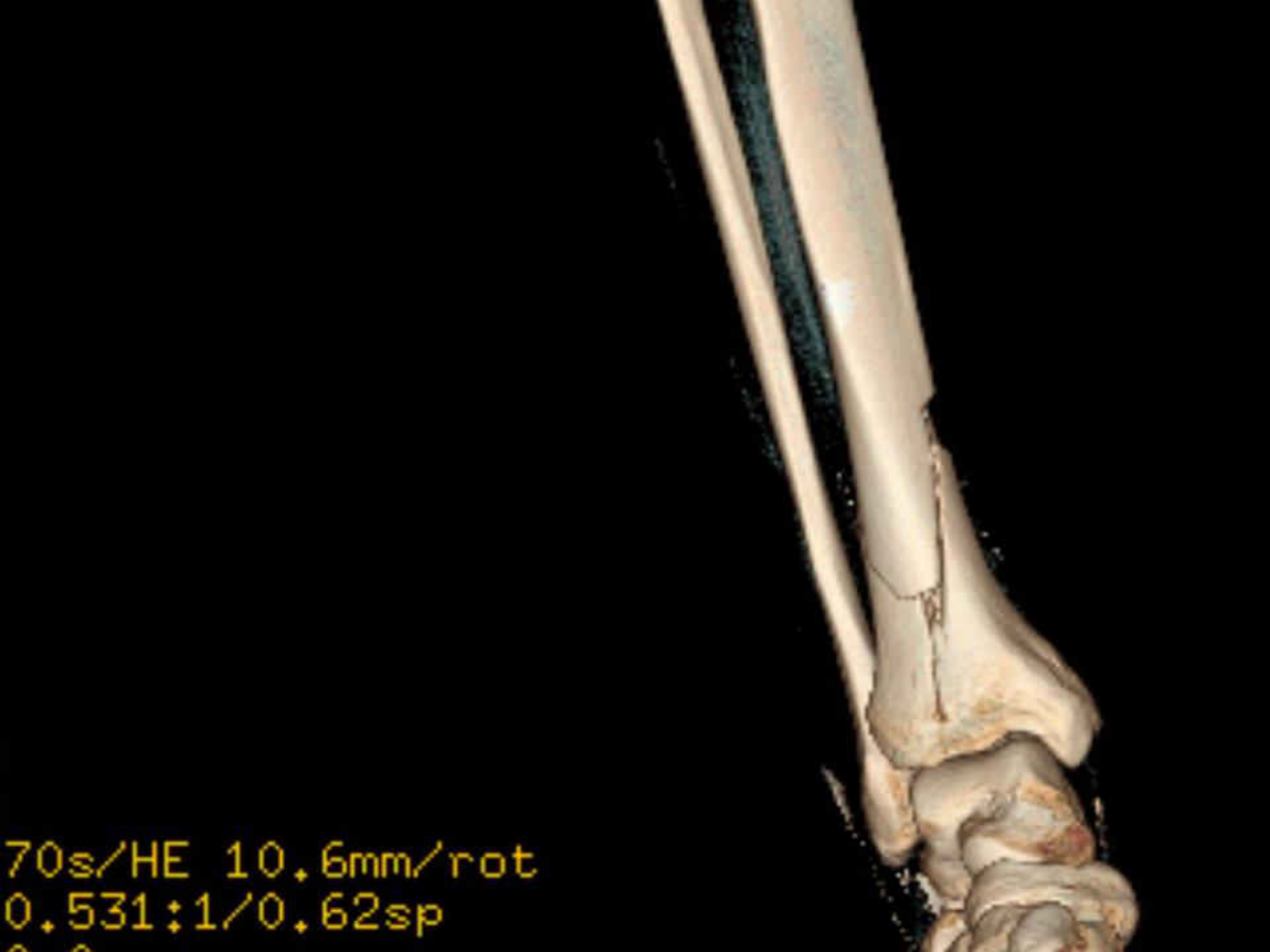
- No differences in valgus pattern fractures



Plates as an adjunct to IMN

Yoon & Liporace, JOT 2016

- Male 53
- Fell from roof 3 m
- NV intact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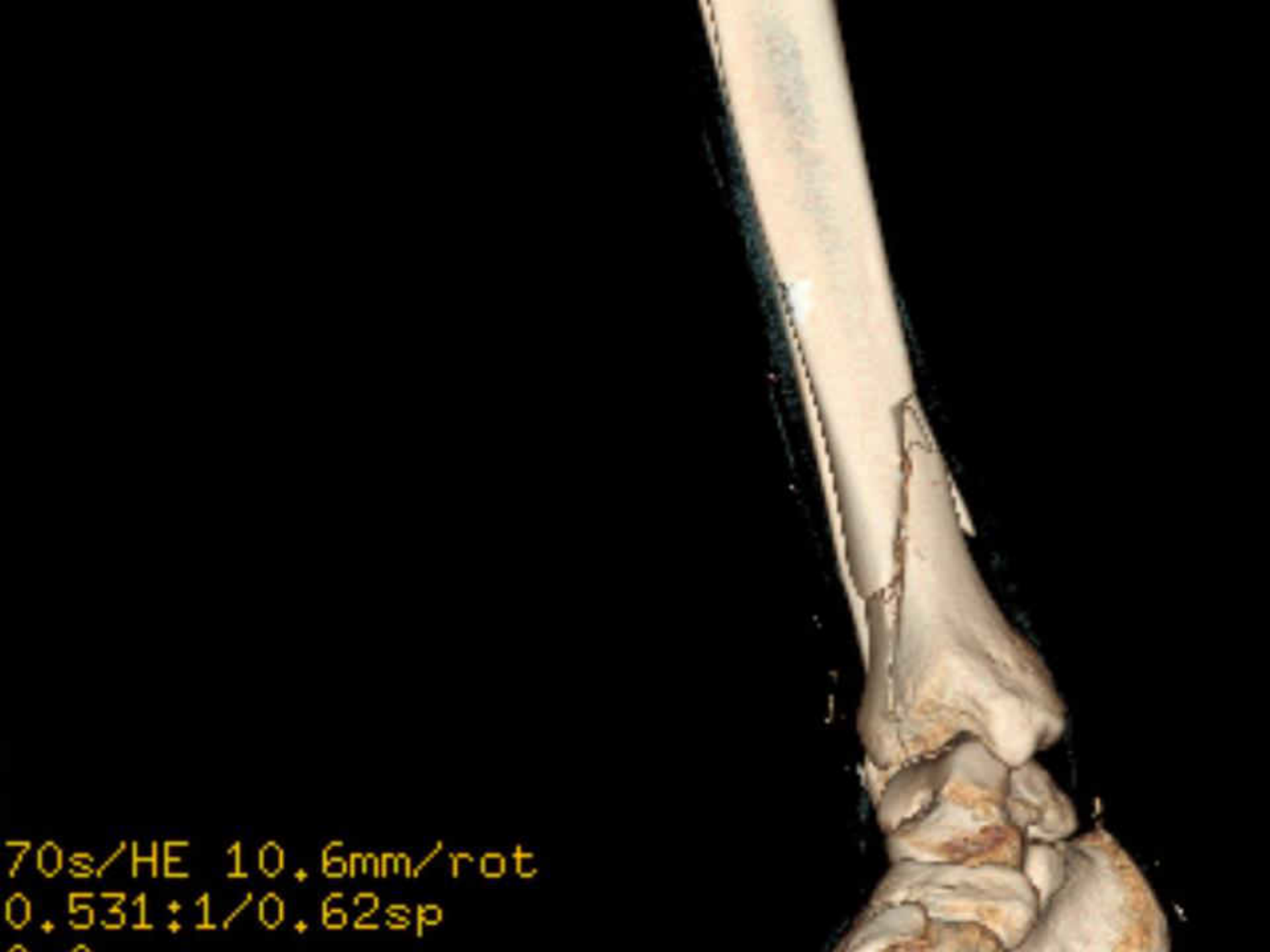
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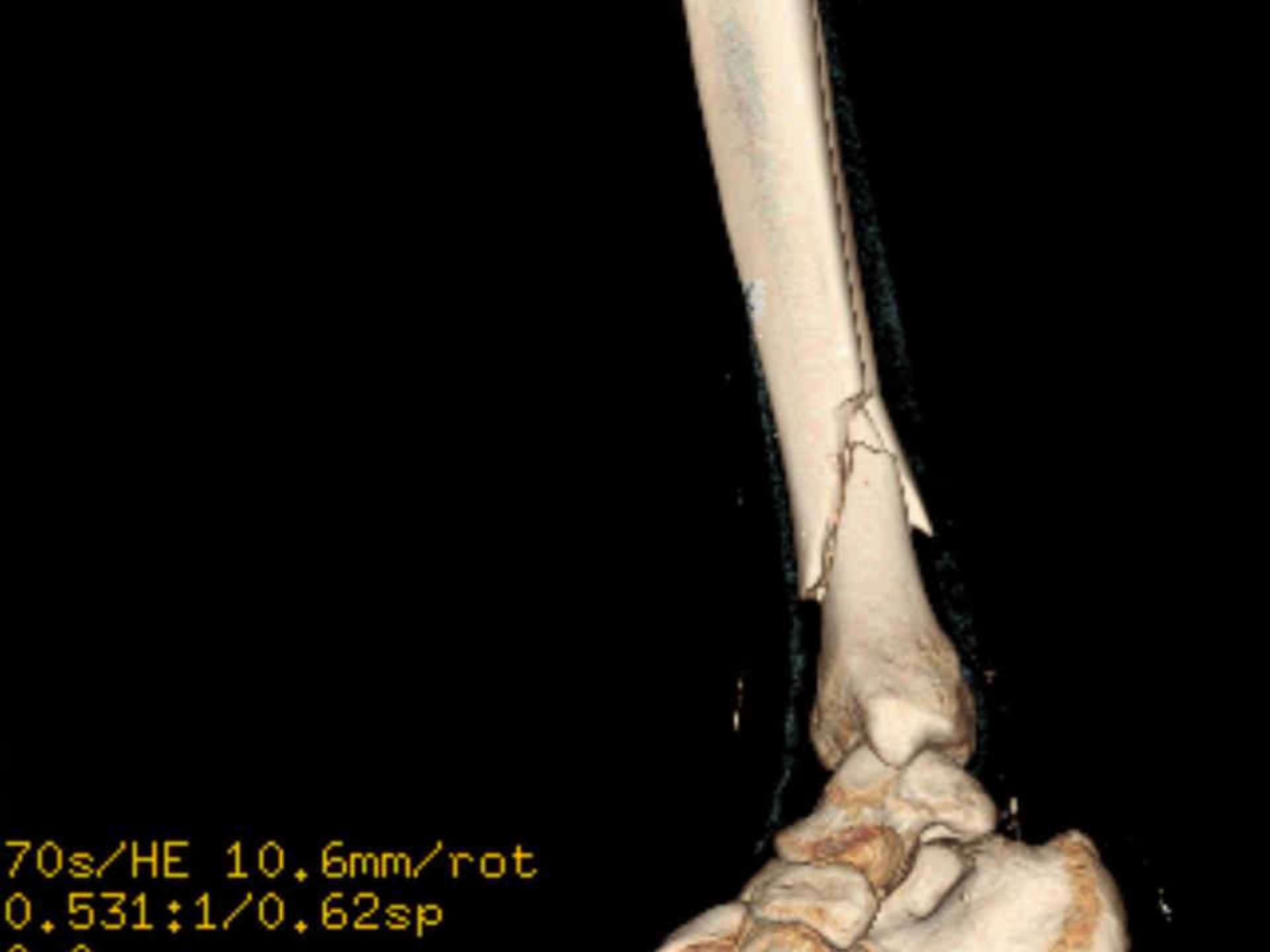
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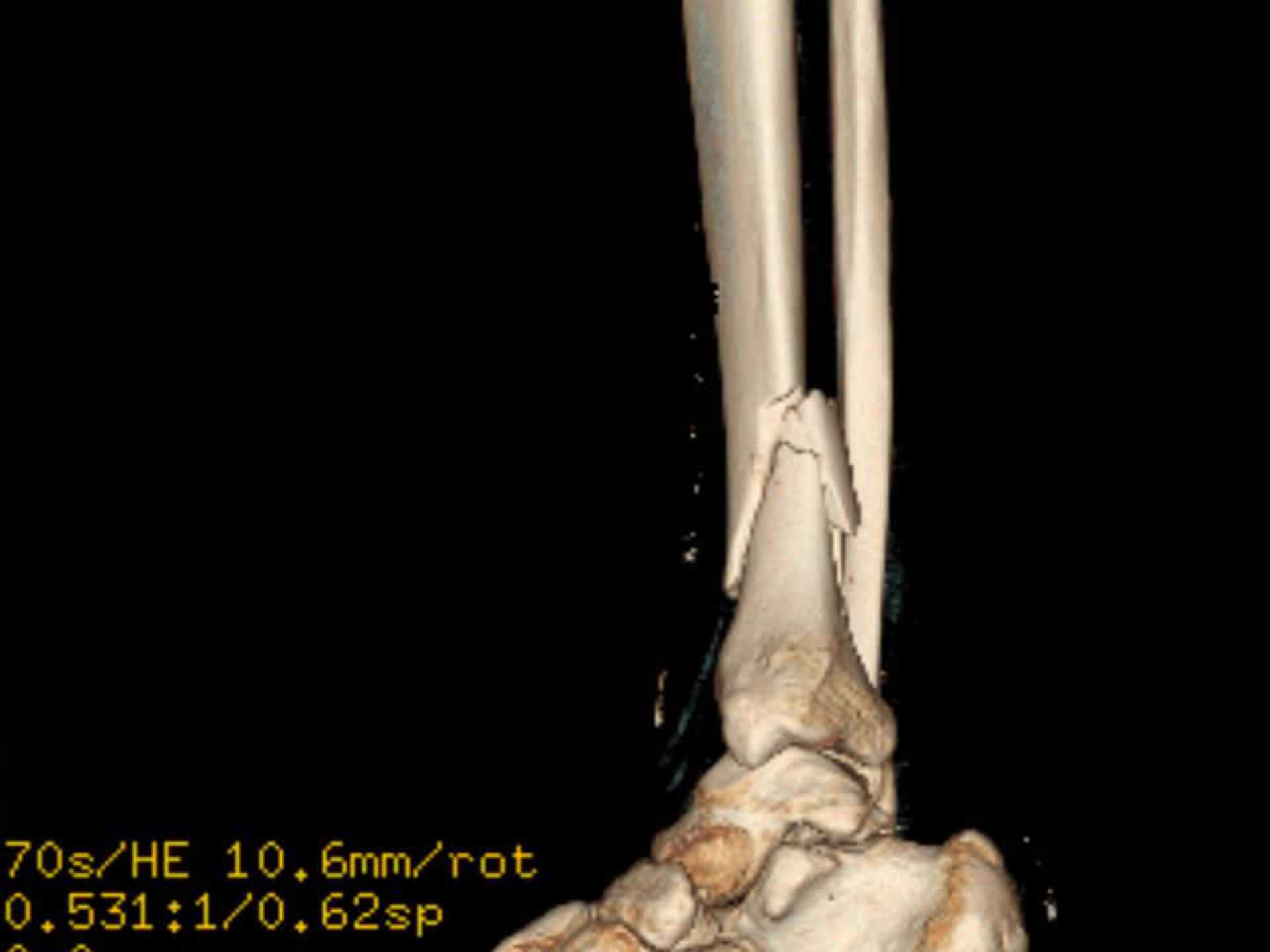
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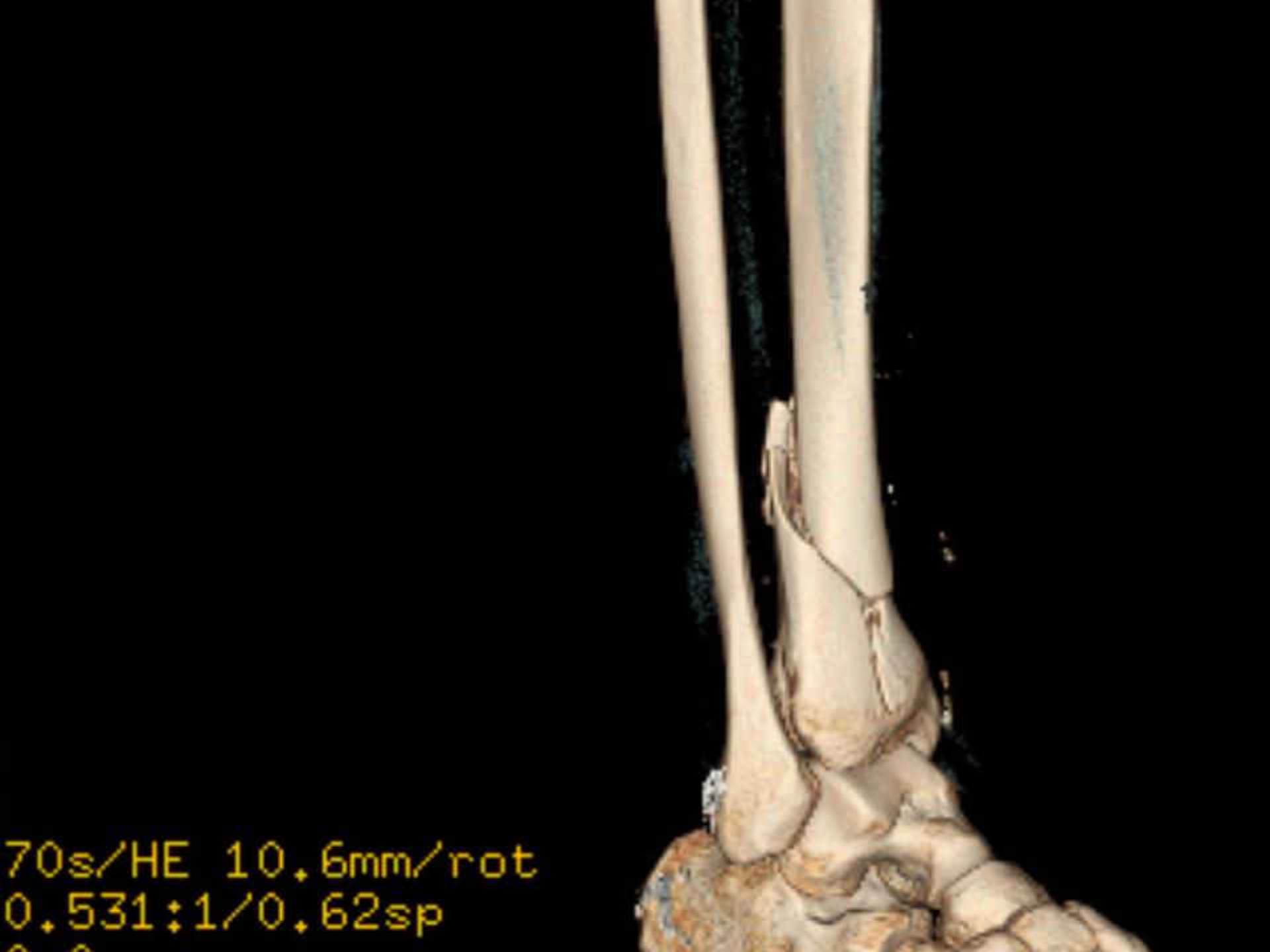
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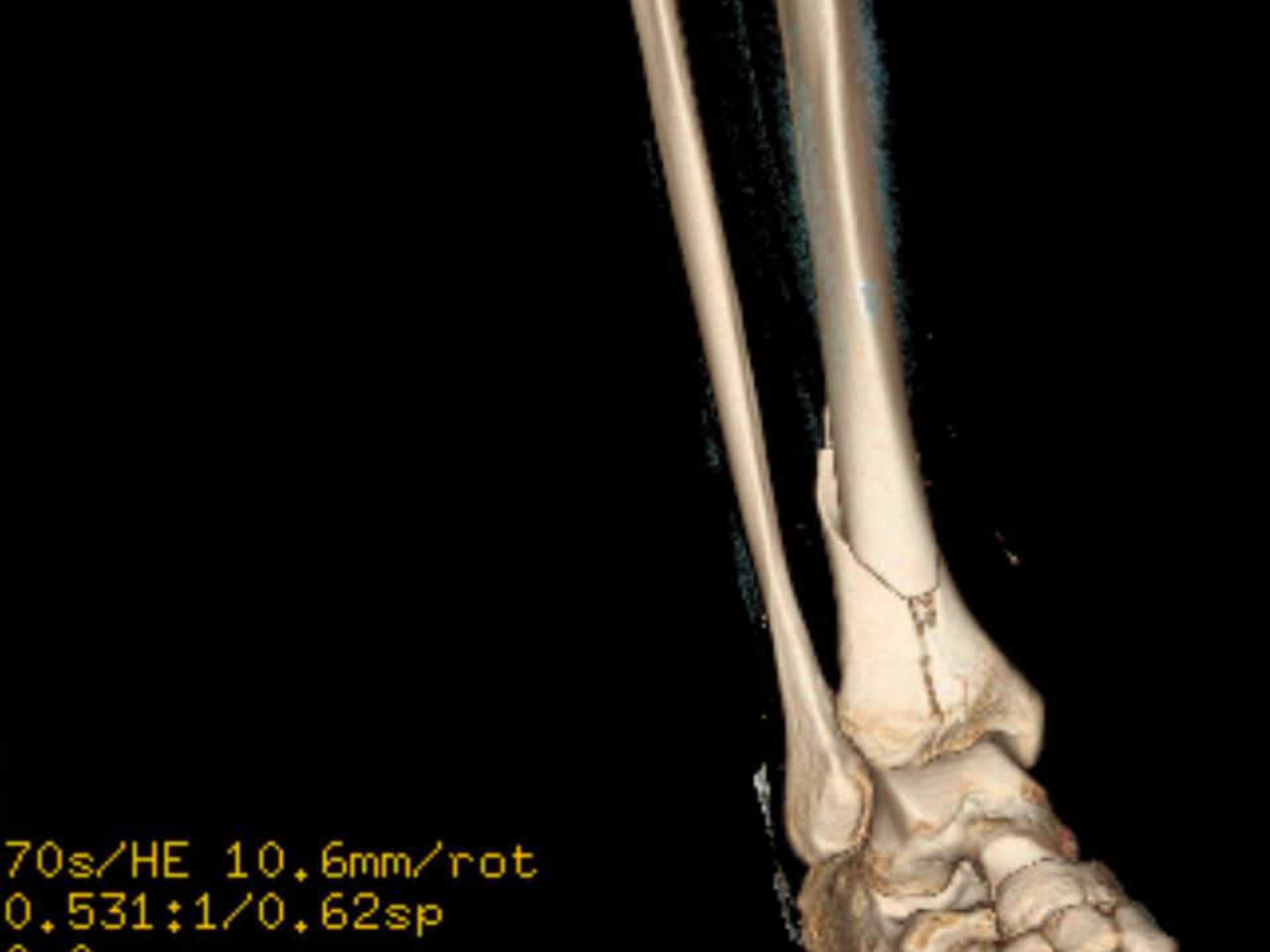
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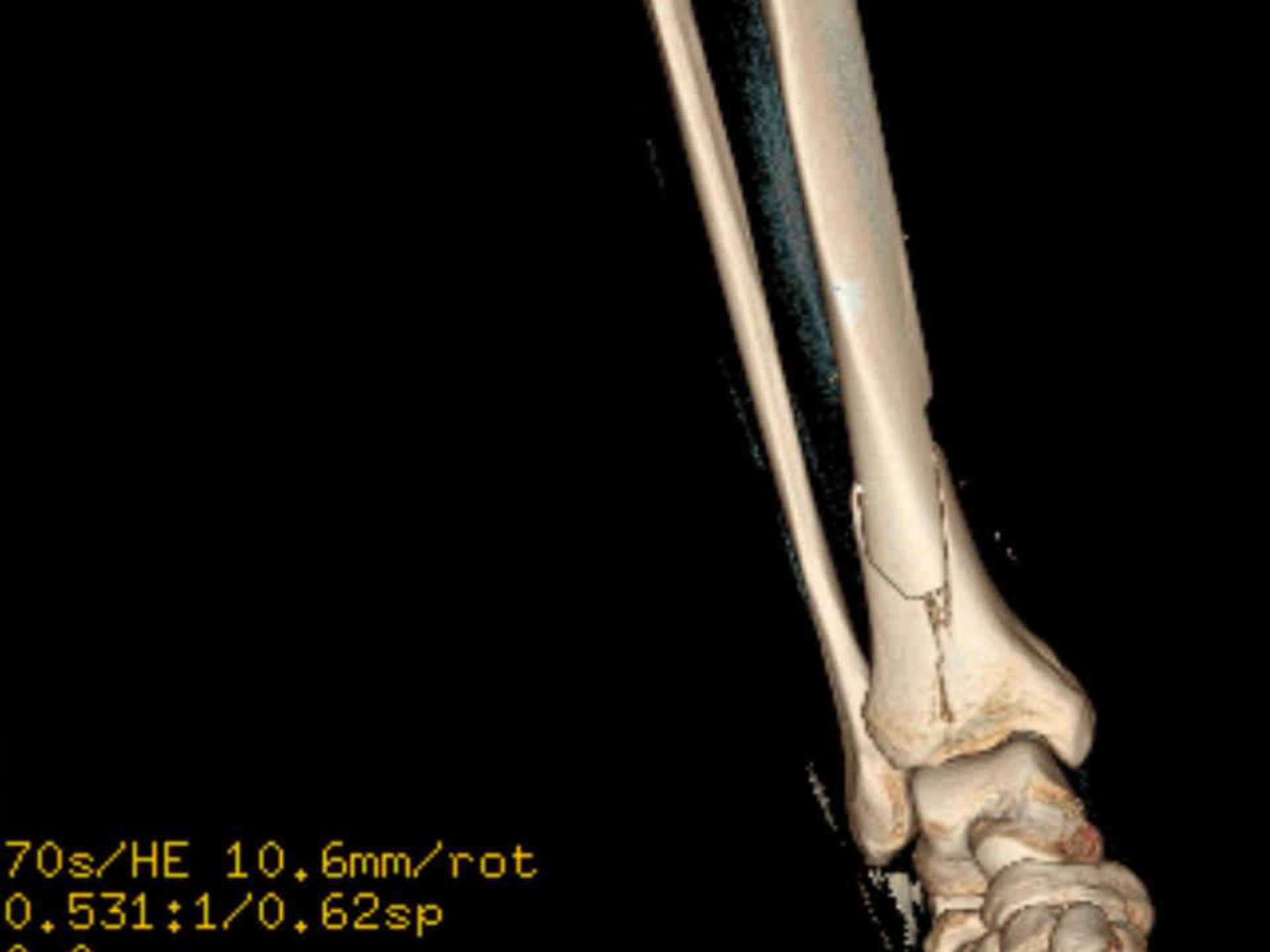
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- ORIF for reduction purposes
- Suprapatellar IMN

- Healed at 1 year

Fix the fibula - or not?

- Three- column principle?

Fix the fibula - or not?

- No evidence in the litterature
- Biomechanical considerations promote fibular fixation
- Before or after fixing the tibia?

Summary

- Plating of distal tibia fractures leads to higher risk of delayed unions and soft tissue complications compared to nailing
- Gentle soft tissue handling and adequate fracture reduction is imperative to avoid complications
- Low profile implants preferrable:
  - Simple fractures use standard implants
  - For bridging – use a locked plate with long working length
- Fixing the fibula is optional