

Distal Femur Fractures: Choosing the Right Approach and Implant

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Associate Professor

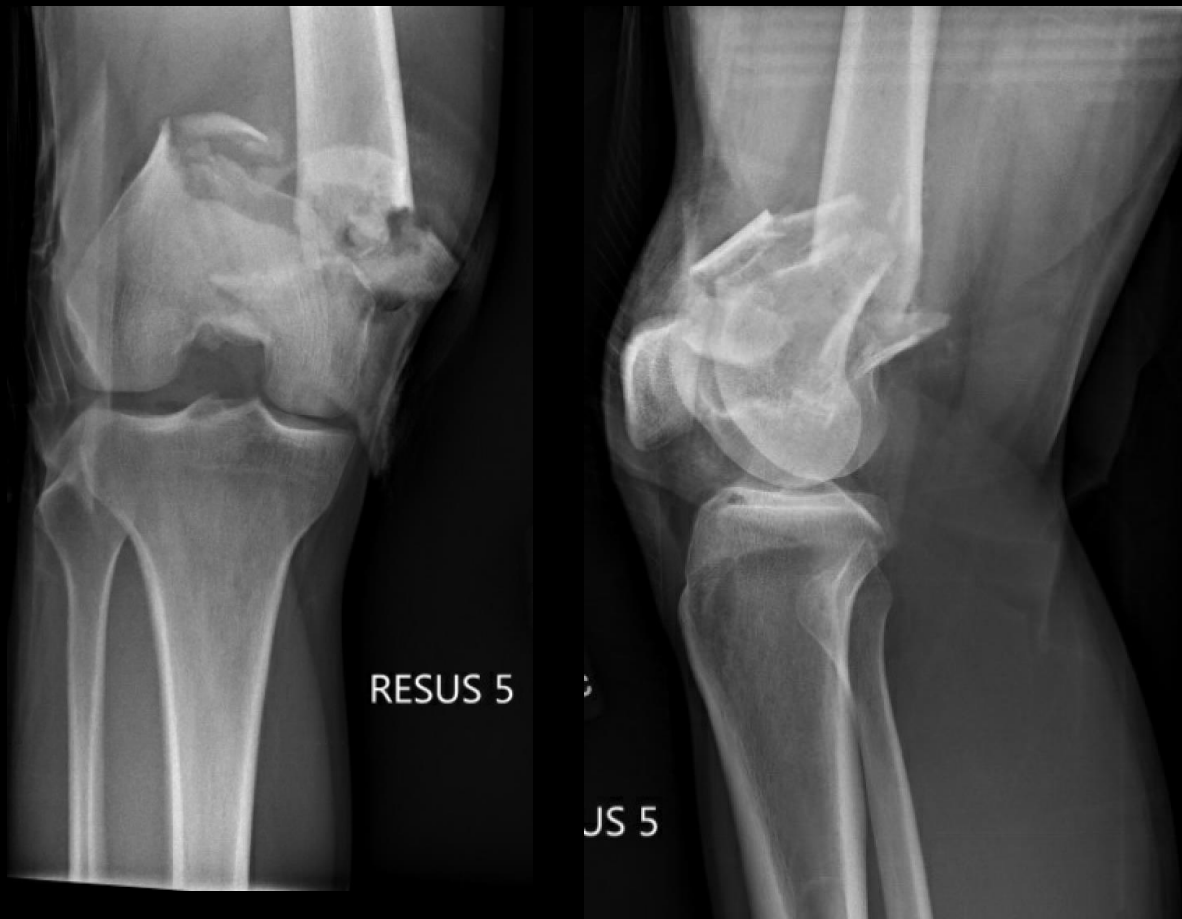
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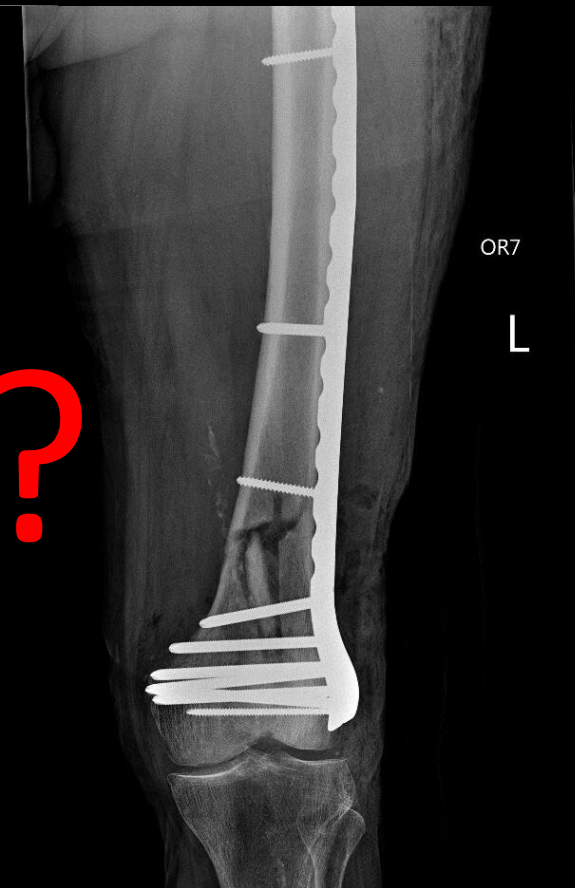
Disclosures

- None

Case: 32yo M MCC



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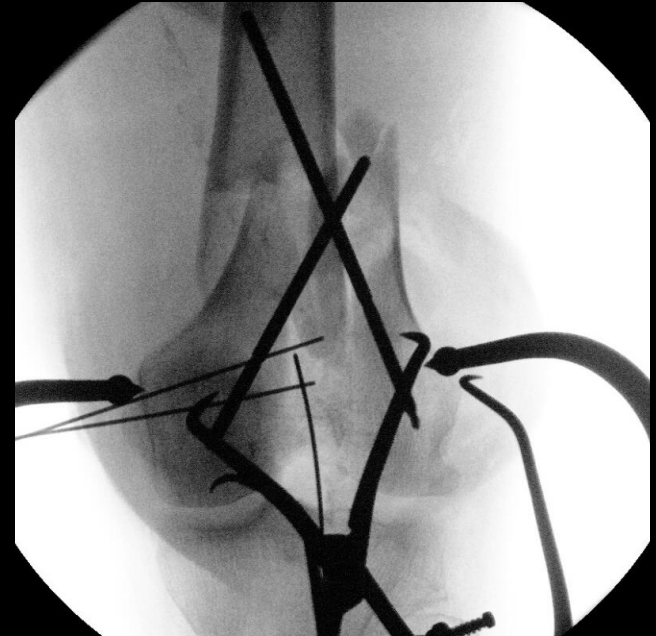


Learning objectives

- Pros and cons of plates and nails
- Recognize fractures patterns best suited for each
- Approaches for each implant

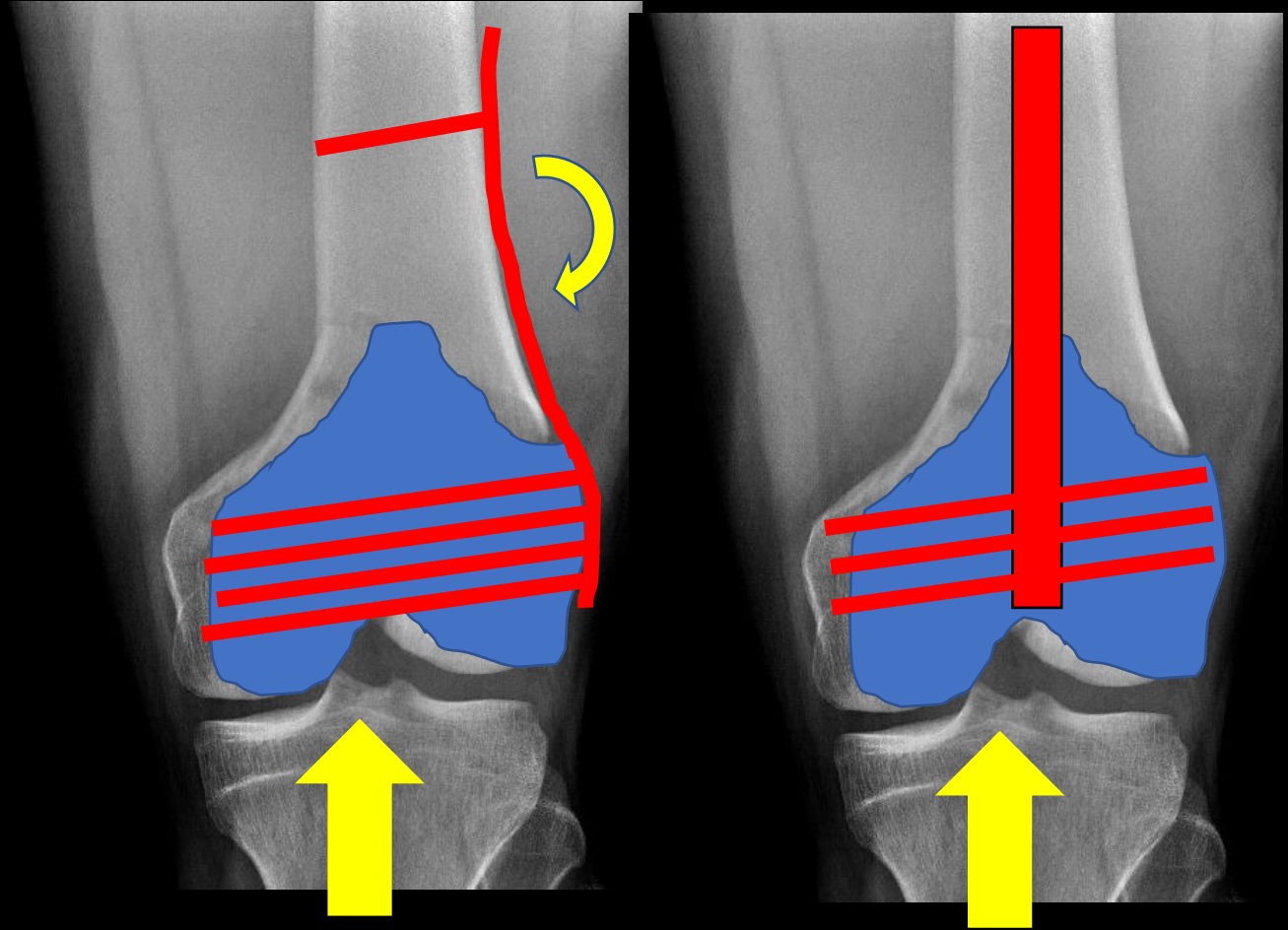
Why Plate

- Easier reduction
 - Open exposure joint +/- metaphysis
 - Straightforward ex-fix assisted reduction
- DISTAL FIXATION
 - More points of fixation
 - Fixation across intercondylar split



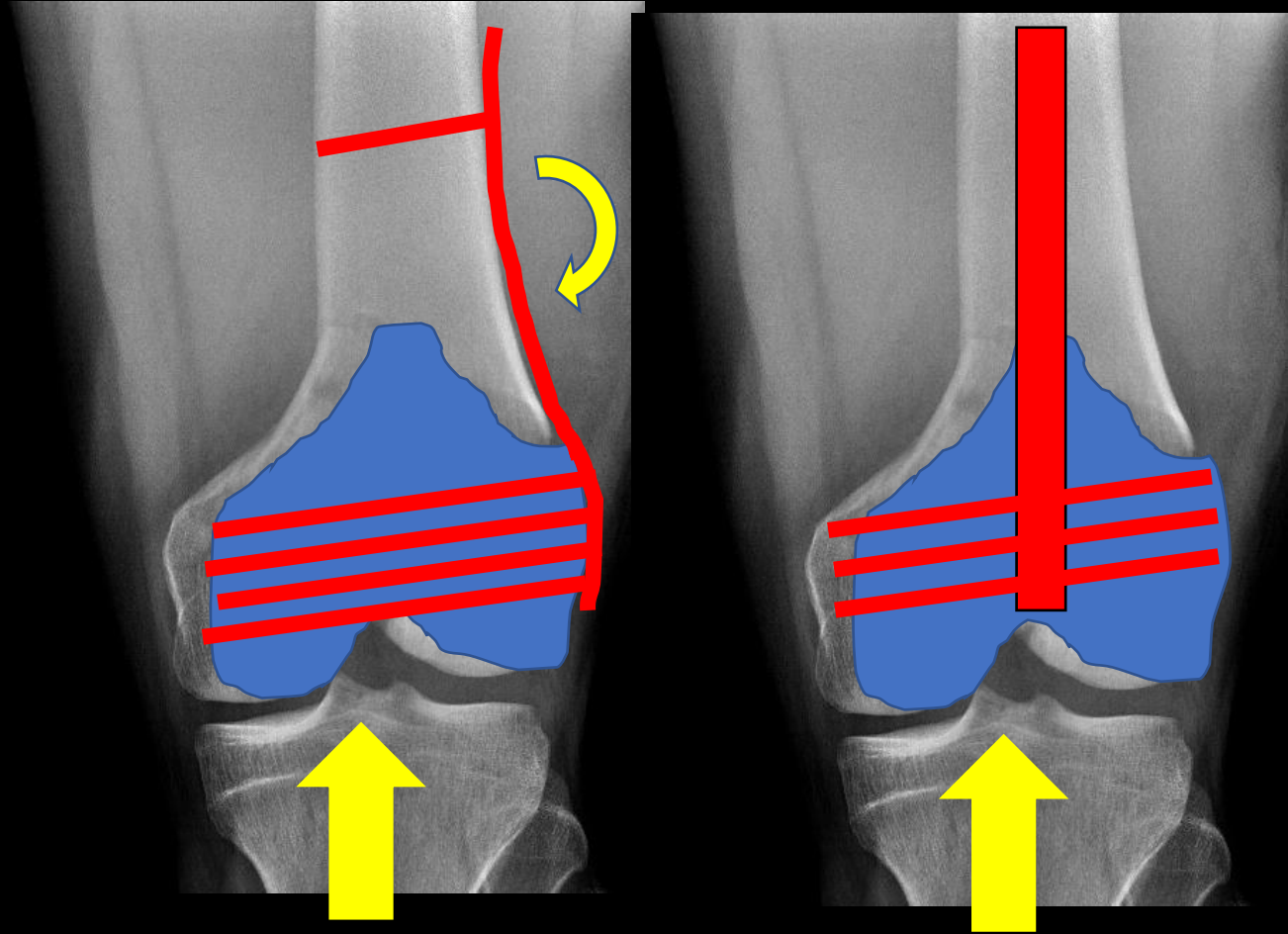
Why Not Plate

- Biomechanically disadvantaged



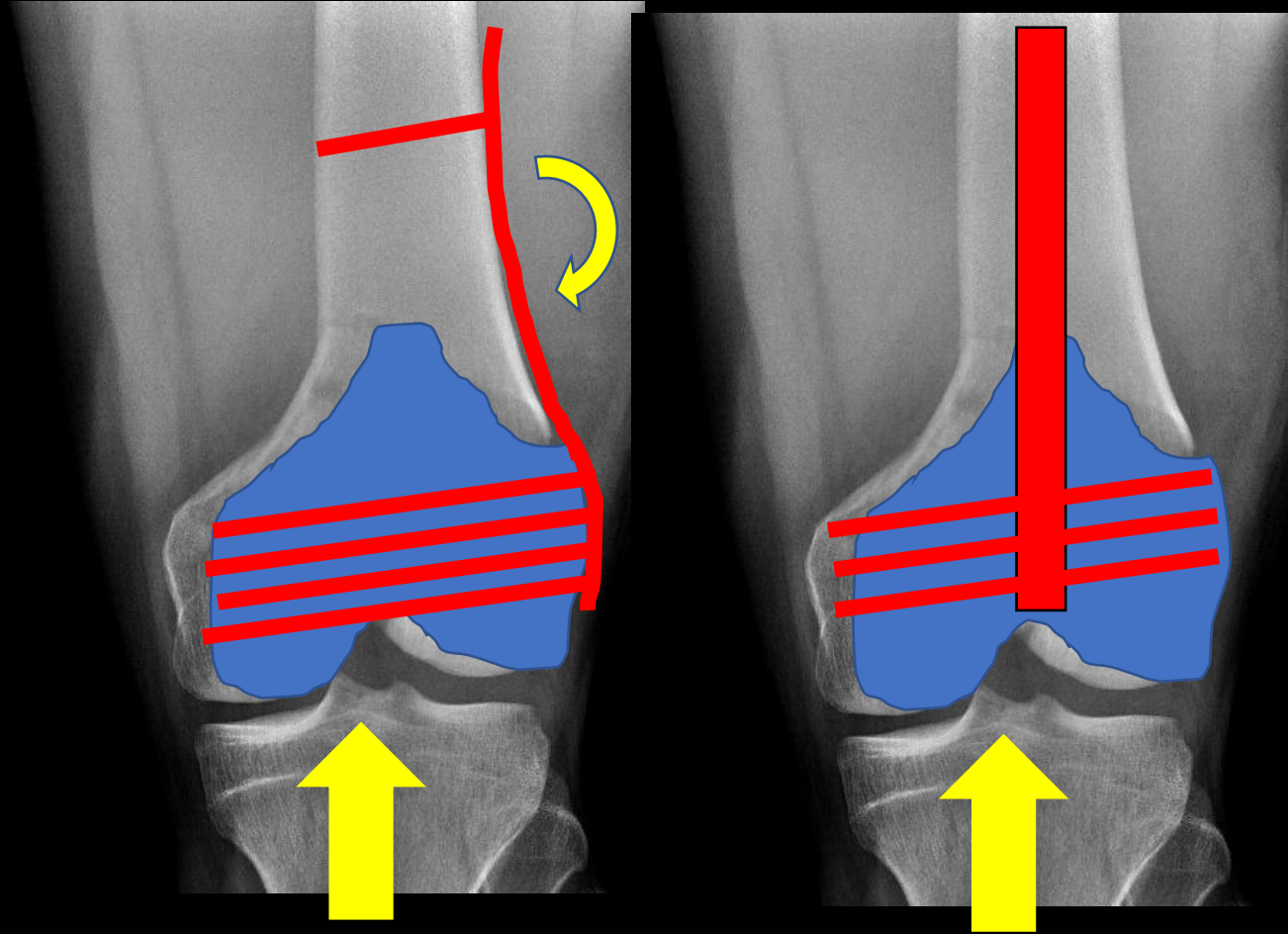
Why Not Plate

- Biomechanically disadvantaged
- Too stiff



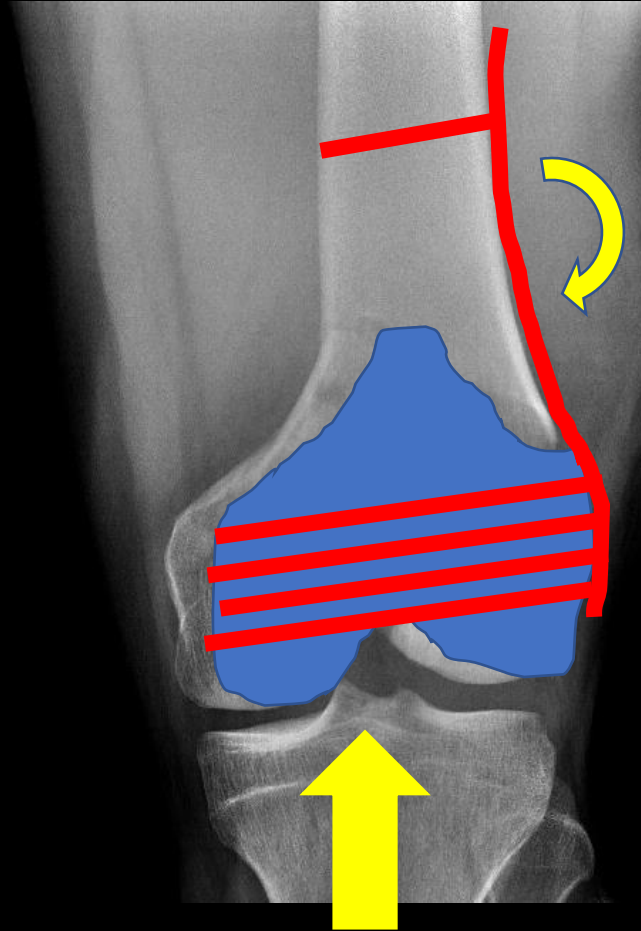
Why Not Plate

- Biomechanically disadvantaged
- Too stiff
- Metaphyseal stripping



Why Not Plate

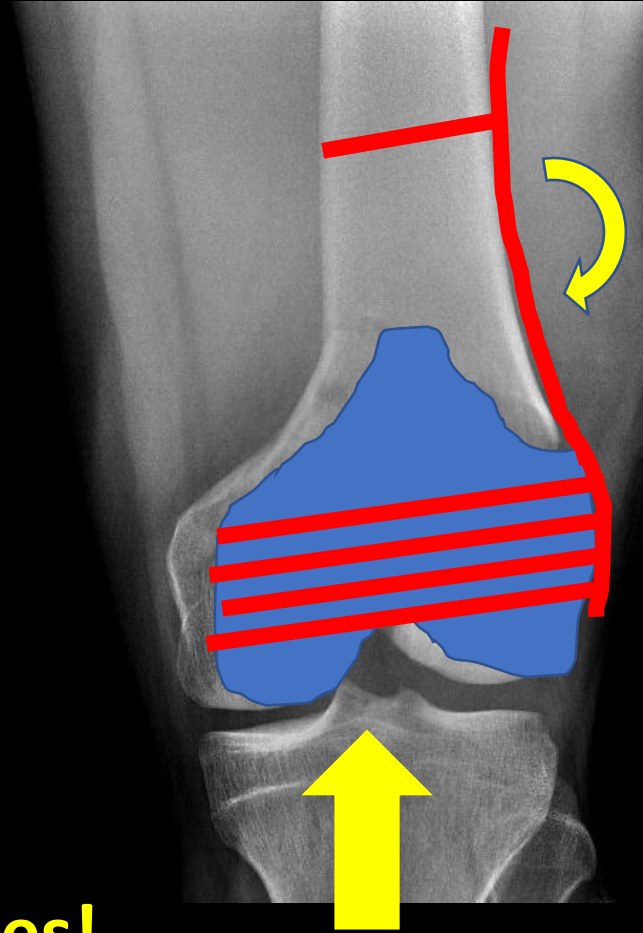
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 - Too stiff
 - Metaphyseal stripping
- Propensity for nonunion +/- plate breakage



Why Not Plate

- Biomechanically disadvantaged
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- Propensity for nonunion +/- plate breakage

Failure rates 18-25% in modern series!



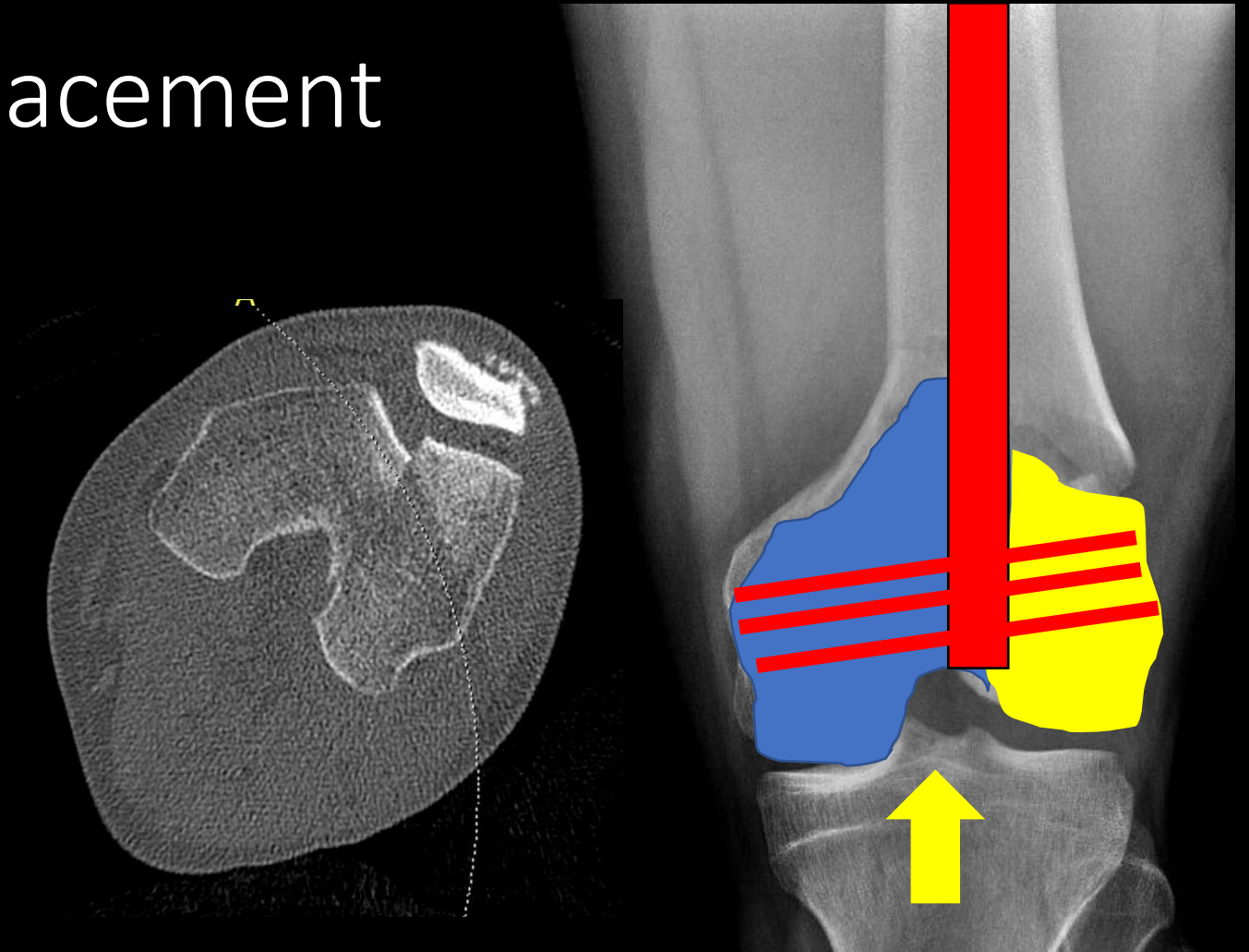
Ideal Case: Plate

- Intra-articular displacement
- B-type fractures
- Some periprosthetic fractures
- Too distal



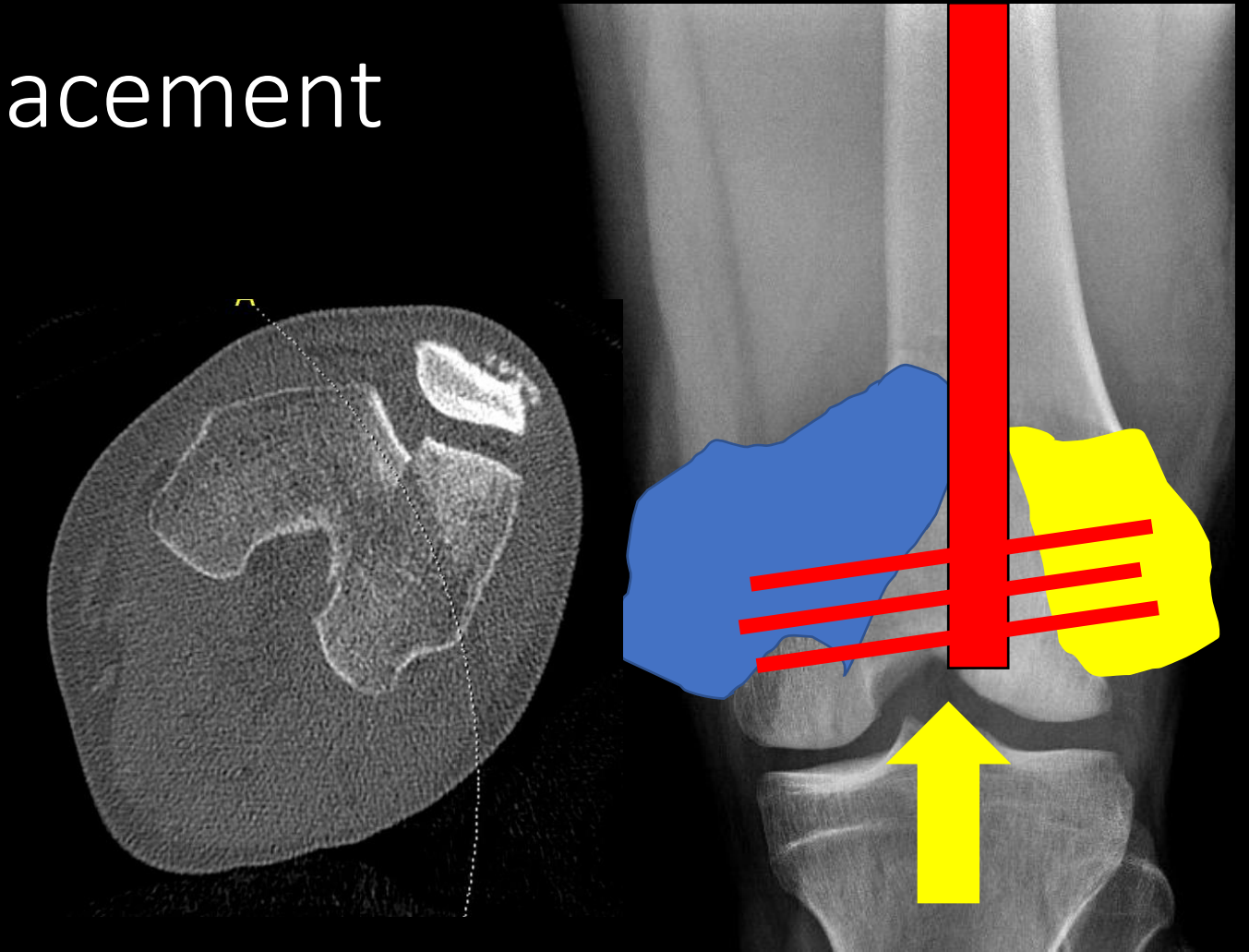
Intra-articular displacement

- Easier exposure
- Less "traffic"
- Better fixation individual condyles



Intra-articular displacement

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IMN failure in intra-articular fracture



From Miller et al. Cereus, 2002

B-type fracture pattern

- B = Buttress plate
- Apply plate over apex
- No benefit to nailing



Periprosthetic Fractures

- TKA with closed box or posterior notch
 - Must know specific design
 - Start site may not be optimal
- THA
 - Stems high risk for interprosthetic fx

Thompson SM, Lindisfarne EAO, Bradley N, Solan M.
Periprosthetic Supracondylar Femoral Fractures Above a Total
Knee Replacement: Compatibility Guide for Fixation With a
Retrograde Intramedullary Nail. The Journal of Arthroplasty.
2014 Aug;29(8):1639–41.



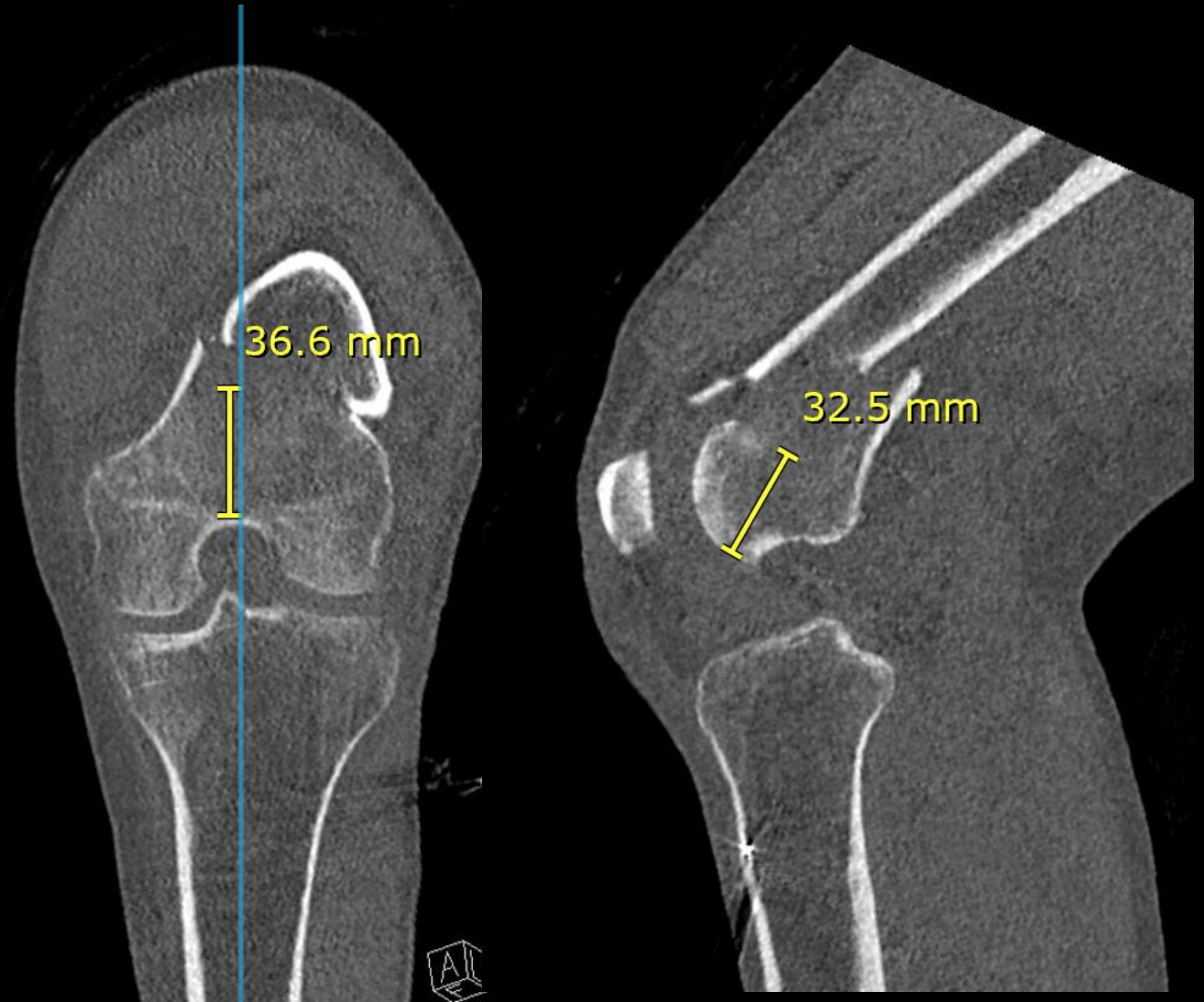
Case: Closed box TKA



X-TABL

Too distal

- Goal for IMN 3-4 multiplanar, interlocking screws
- Dependent on nail design
- Modern IMN ~3-4cm from notch



Ideal Case: Plate

- Intra-articular displacement
- B-type fractures
- Some periprosthetic fractures
- Too distal



Ideal Case: ~~Plate~~ IMN

- ~~Intra-articular displacement~~ Extra-articular
- ~~B-type fractures~~ A-Type Fracture
- Some periprosthetic fractures
- ~~Too distal~~ Not too distal



When is One not Enough?

- Acute fracture at high risk for nonunion
 - Medial comminution and/or bone loss
 - Open fracture
- Geriatric for early weight bearing
- Nonunion Repair



When is One not Enough?

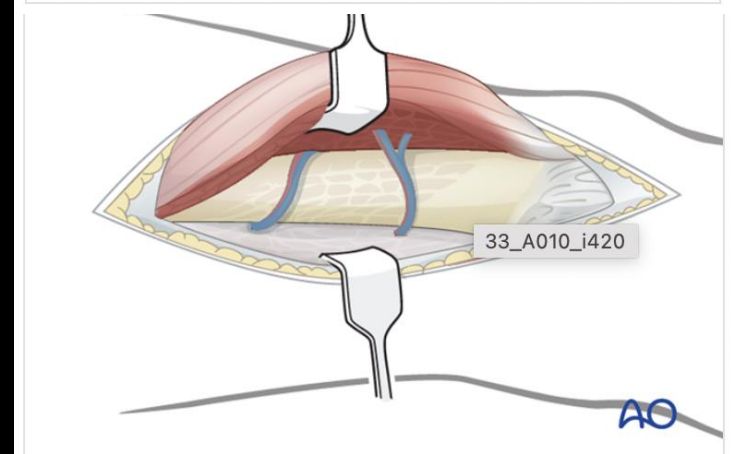
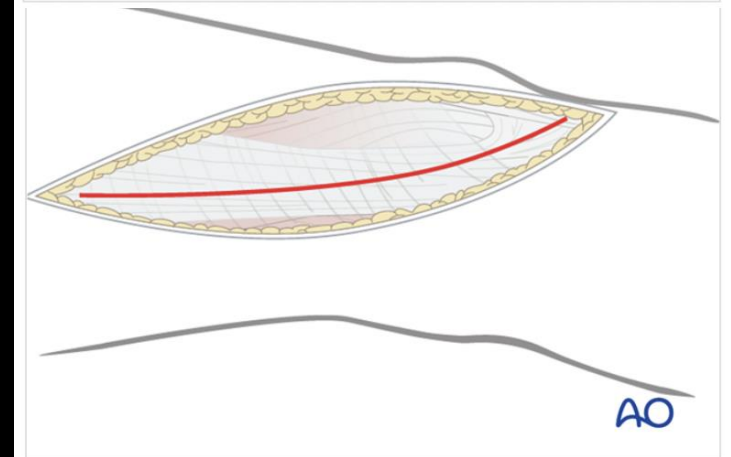
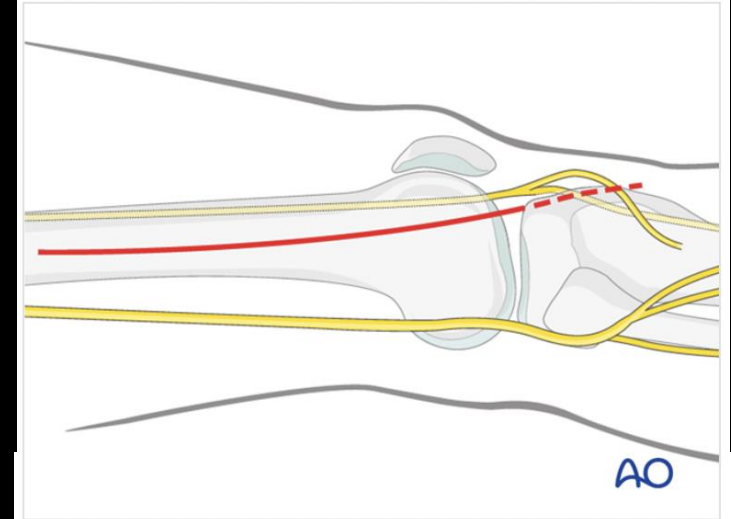
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Hot topic but limited data to support these approaches

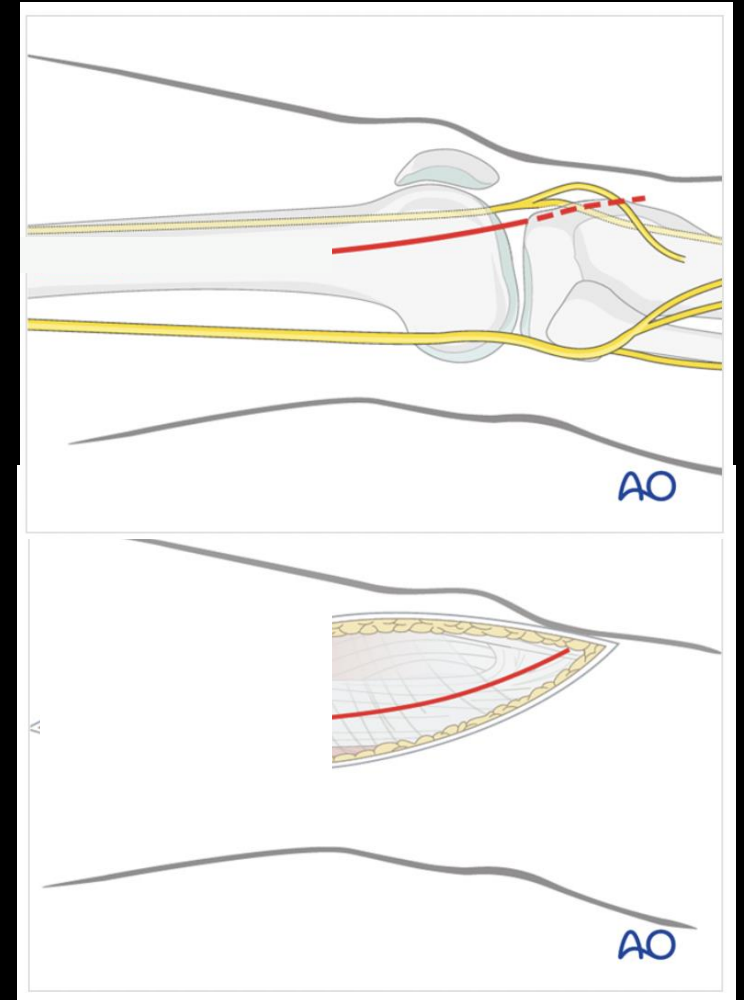
Surgical Approach: Plate

- Extra-articular fracture
 - Open Reduction
 - Direct Lateral with subvastus elevation
 - Closed Reduction
 - Direct Lateral



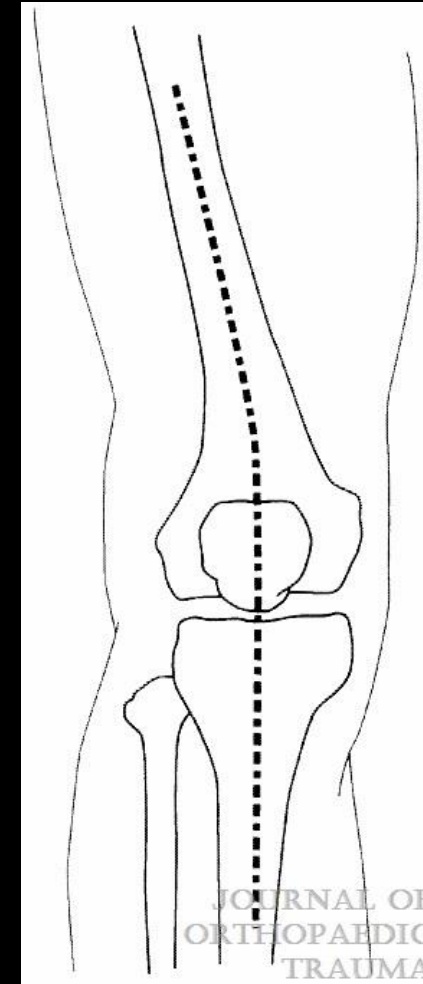
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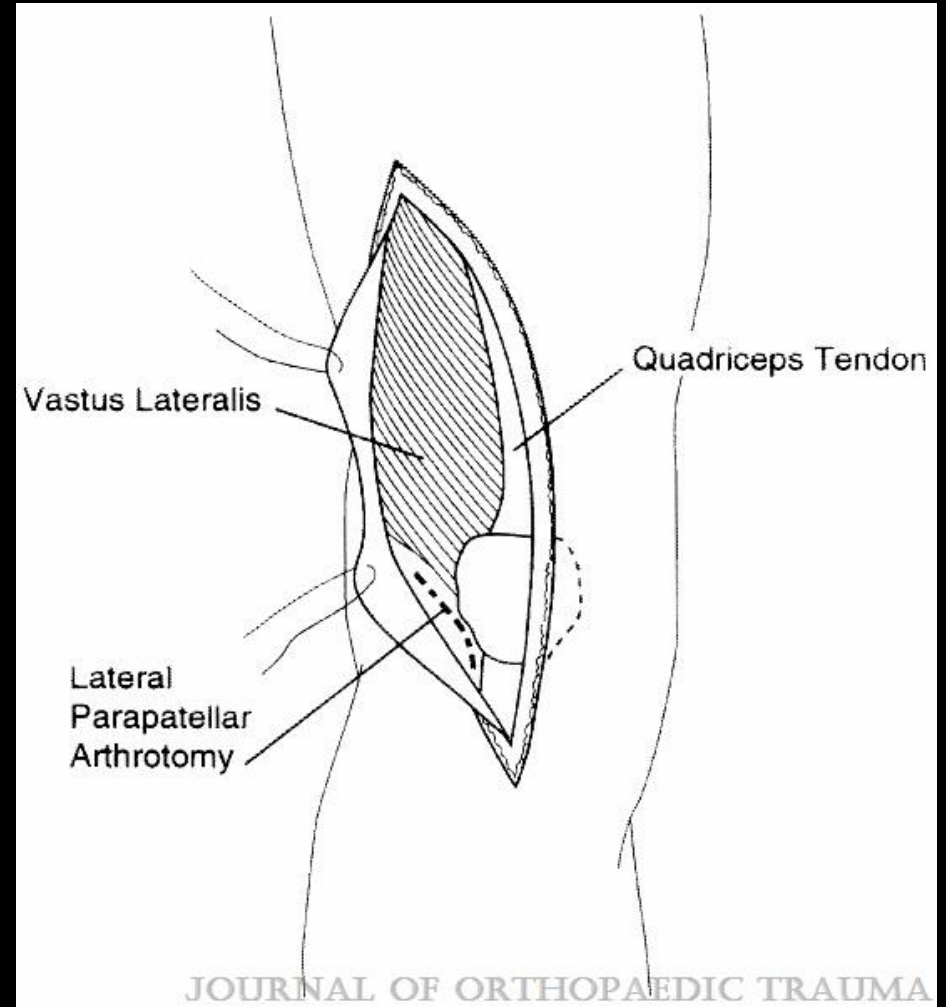
Surgical Approach: Plate

- Intra-articular
 - Open Metaphyseal Reduction
→ Swashbuckler
 - Closed Metaphyseal Reduction
→ Lateral Parapatellar (TARPO)



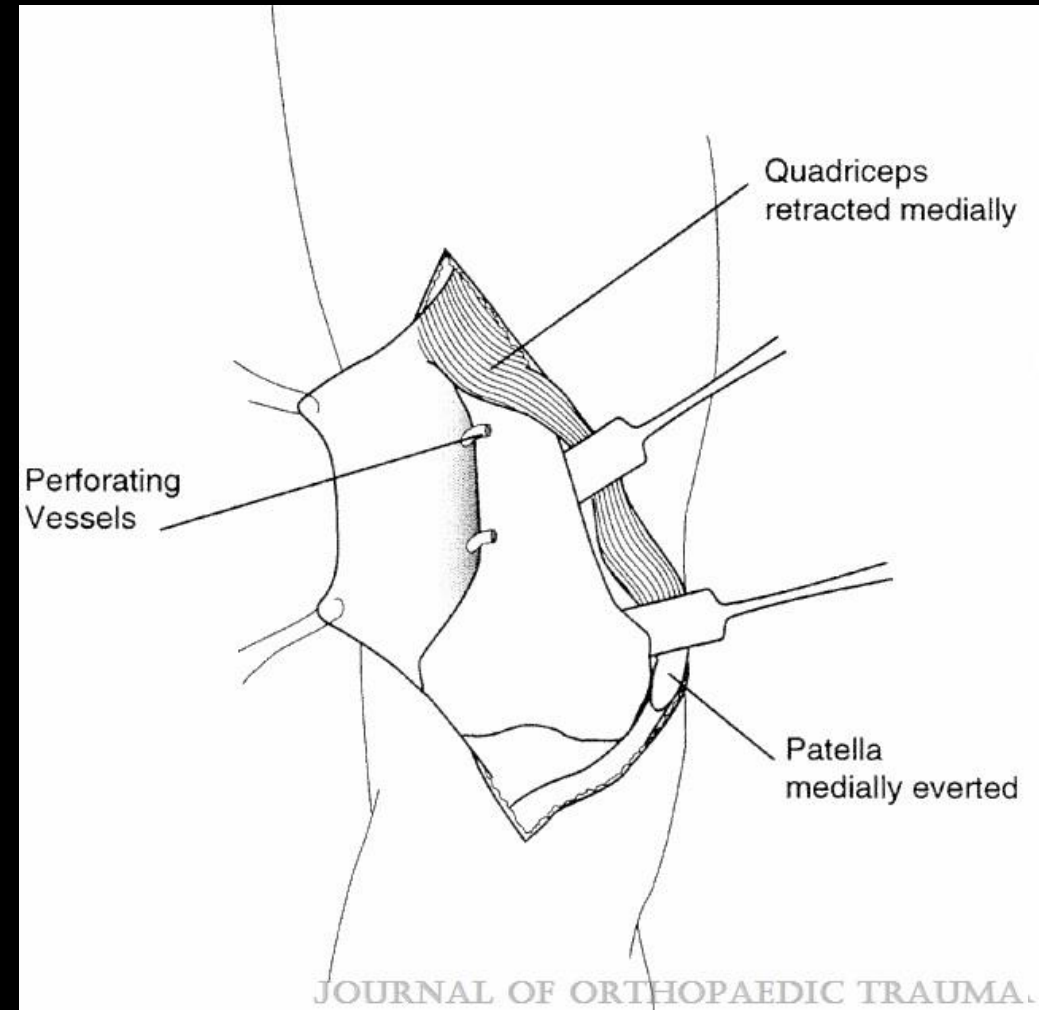
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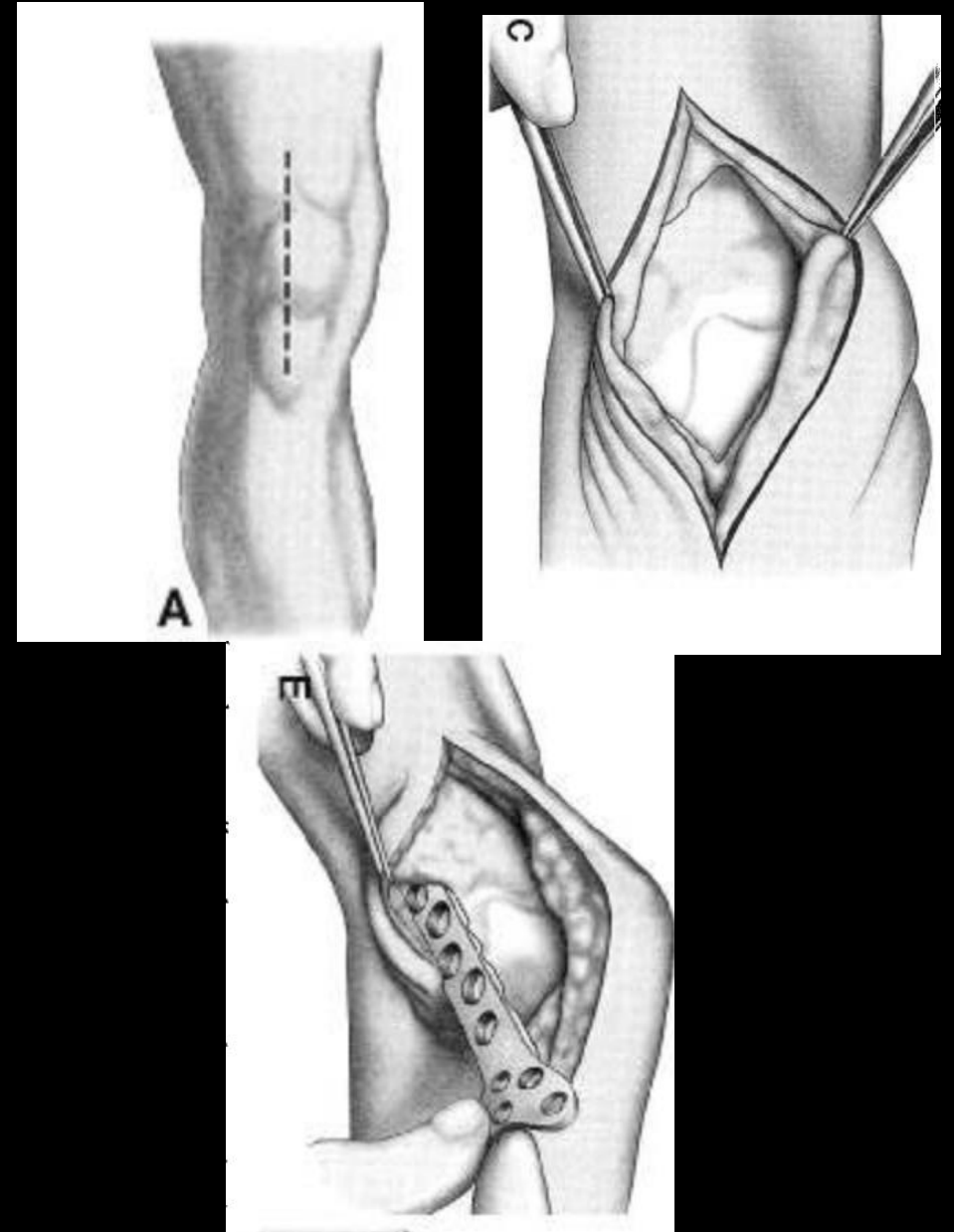
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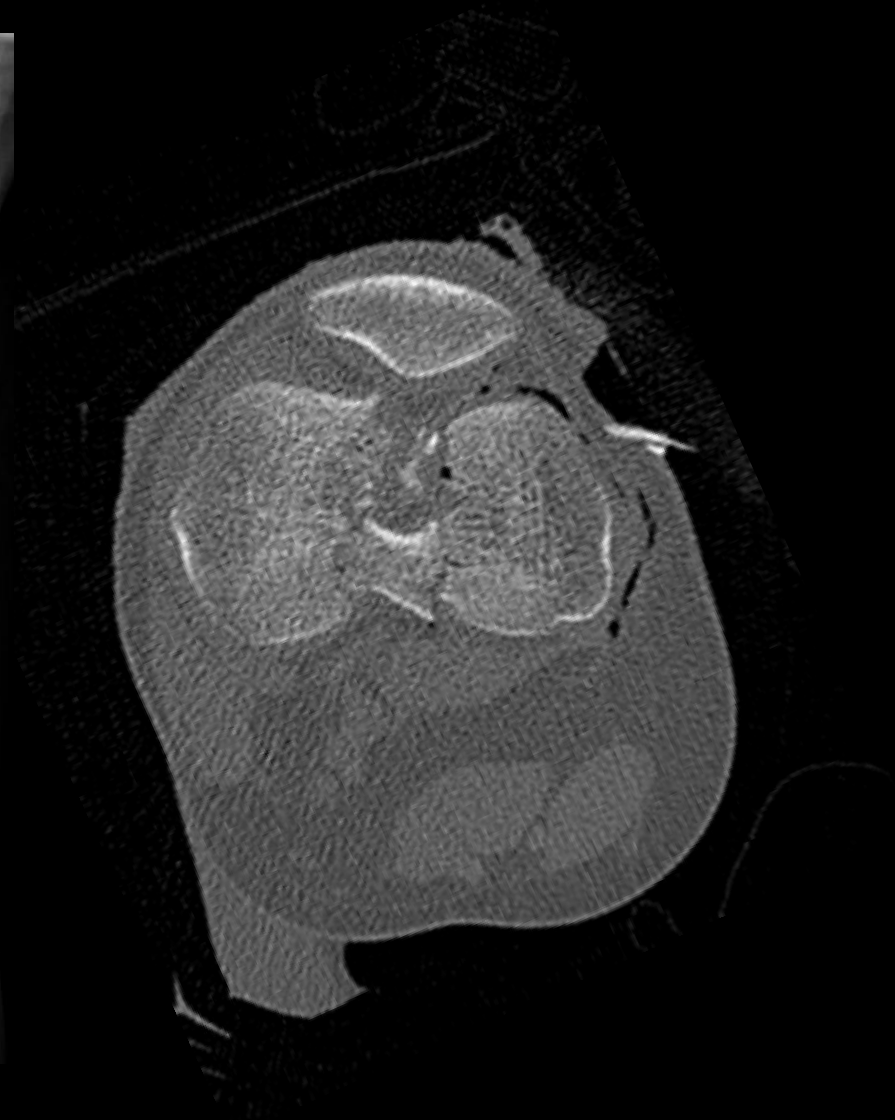


Surgical Approach: Plate

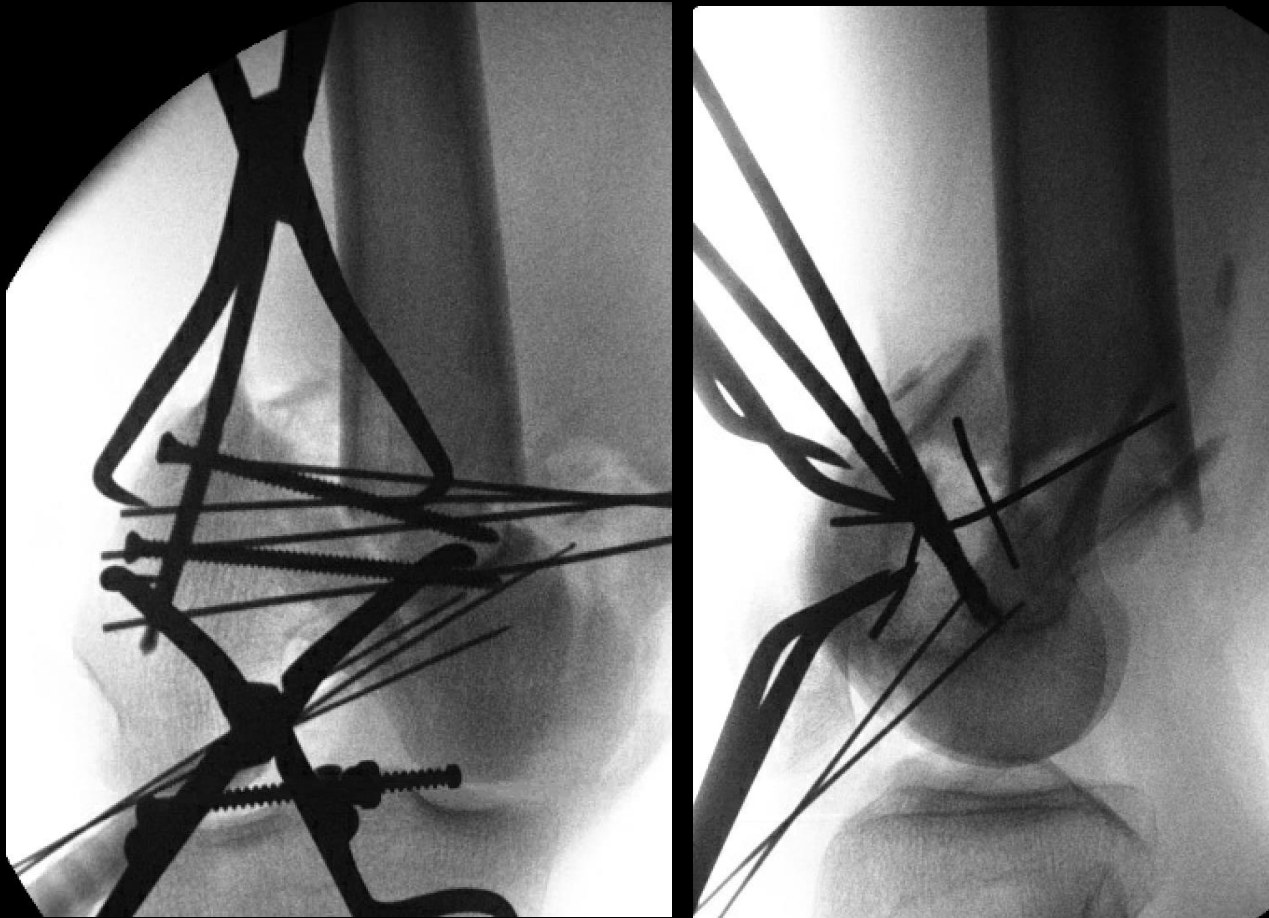
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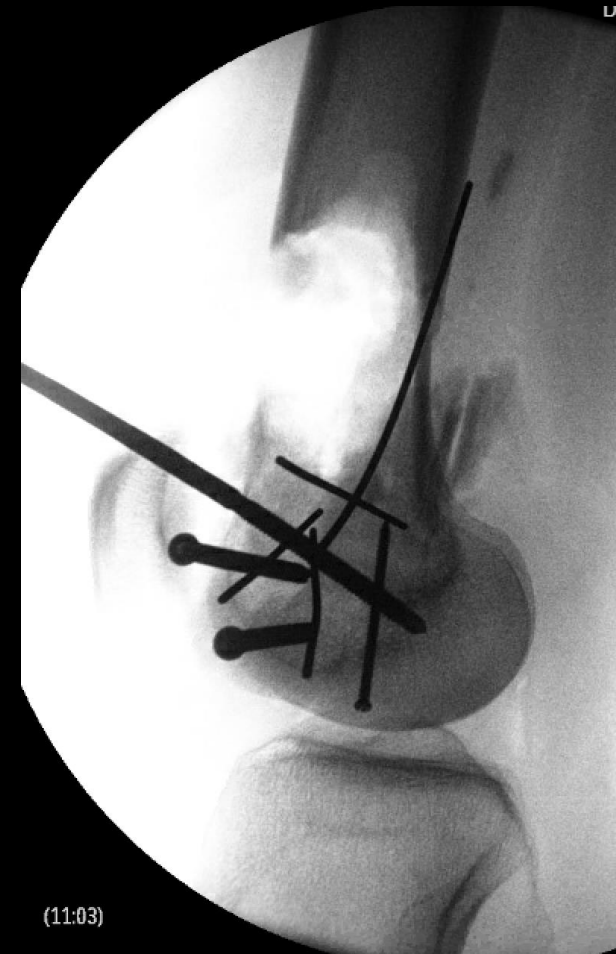
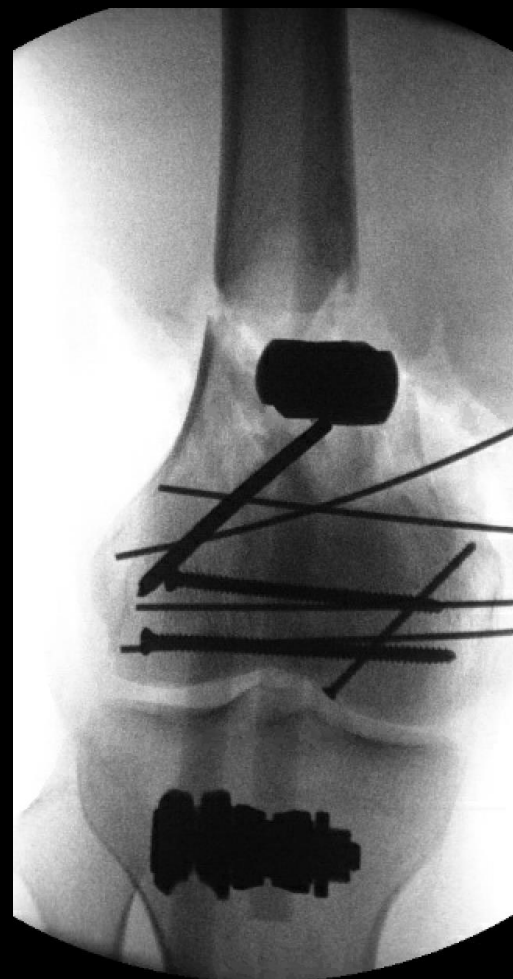
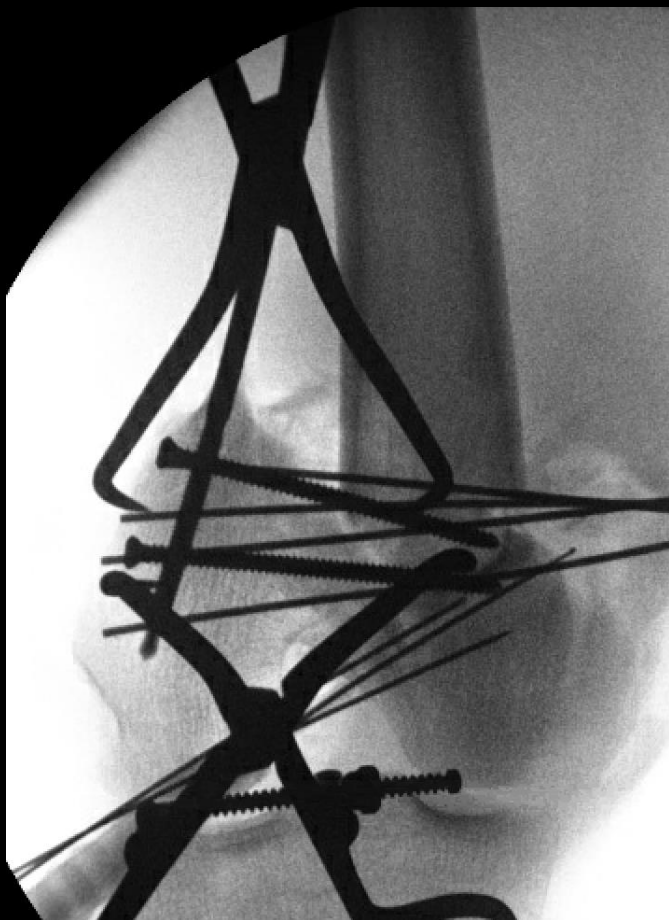
Case 1: 32yo M MCC open distal femur



Case 1: Intraop



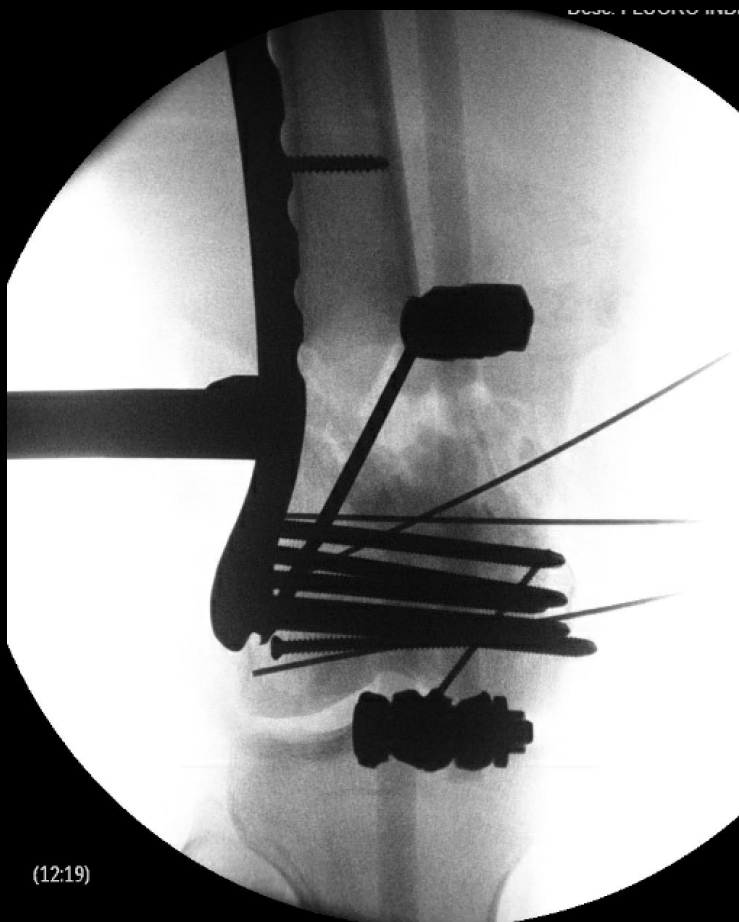
Case 1: Intraop



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(12:19)



Immediate Postop



X-TABLE LAT
OR7

R

1 of 2

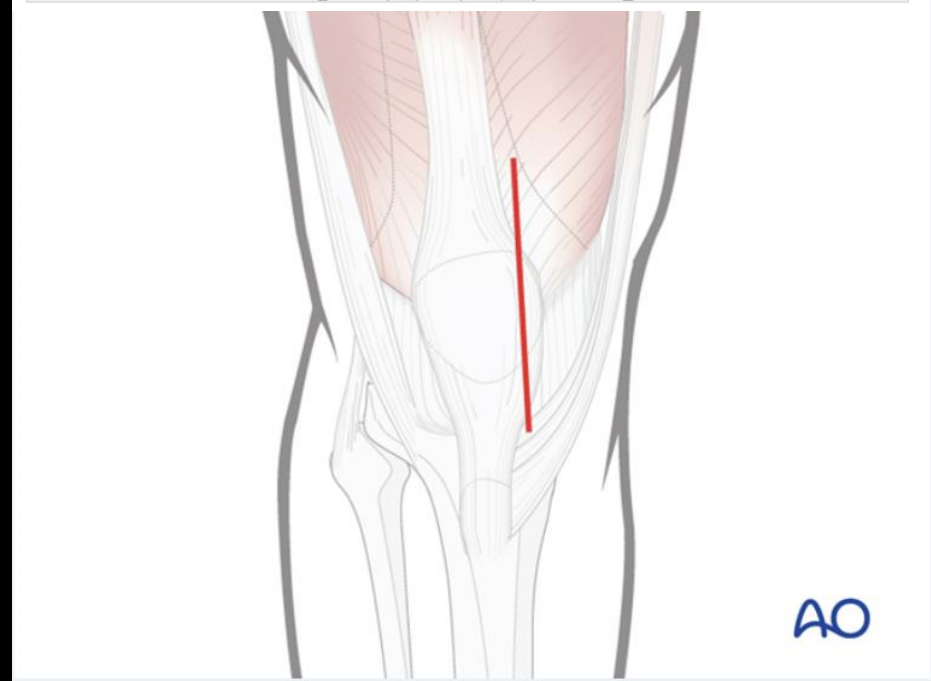
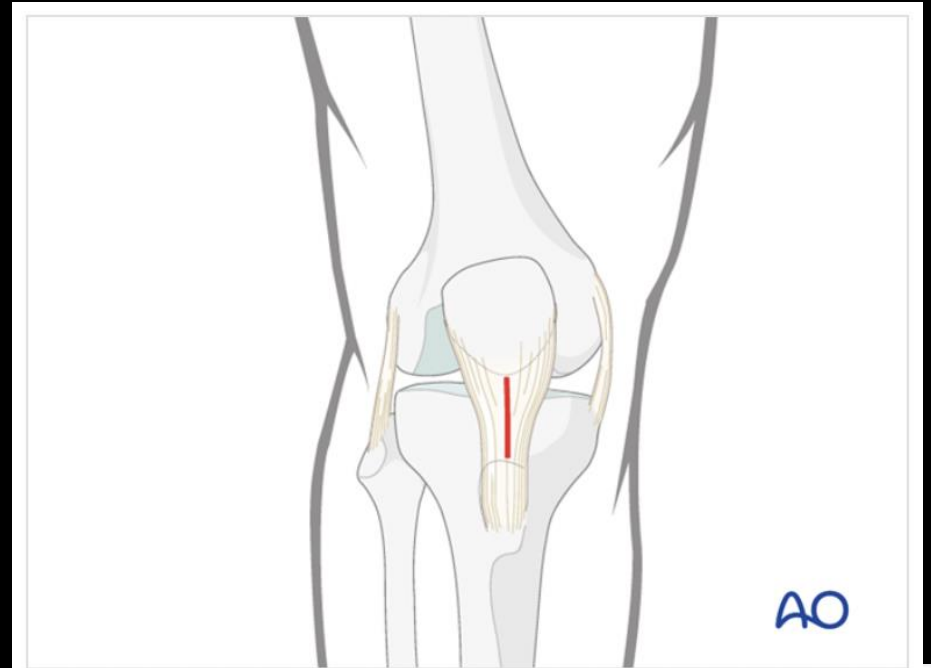


1 year follow up



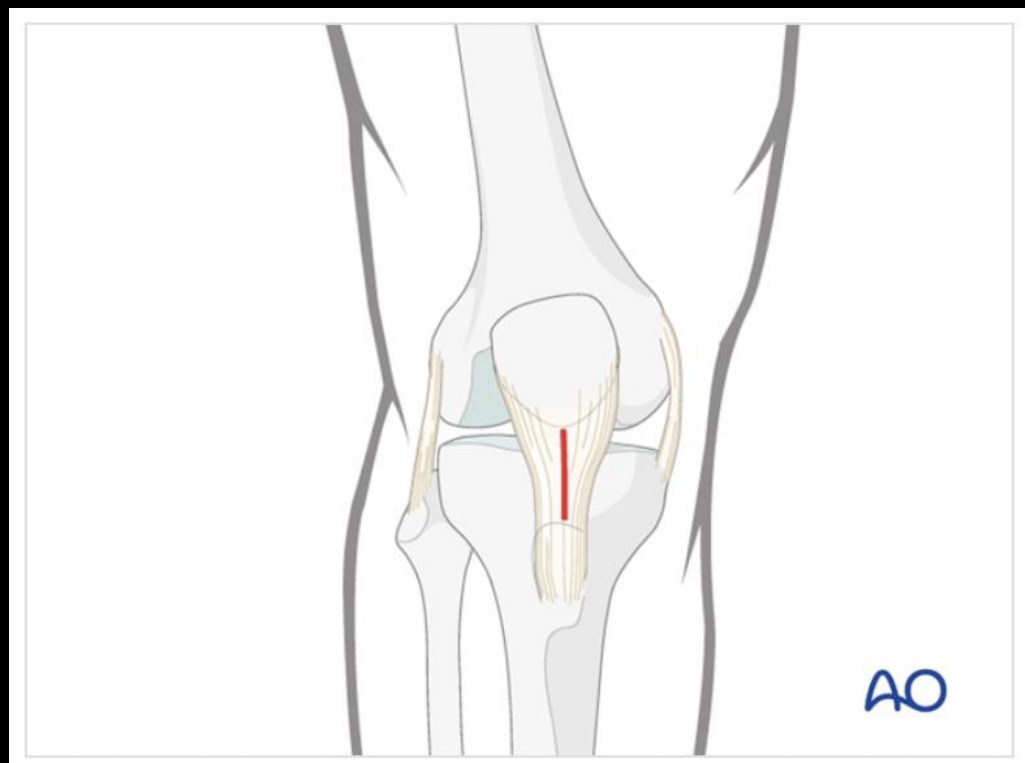
Surgical Approach: Nail

- Extra-articular
 - Infrapatellar
- Intra-articular
 - Medial Parapatellar



Case 2: 41yo M MCC extra-articular fracture







(08:47)



(08:47)



12 (08:53)
1



09:19)



(09:20)

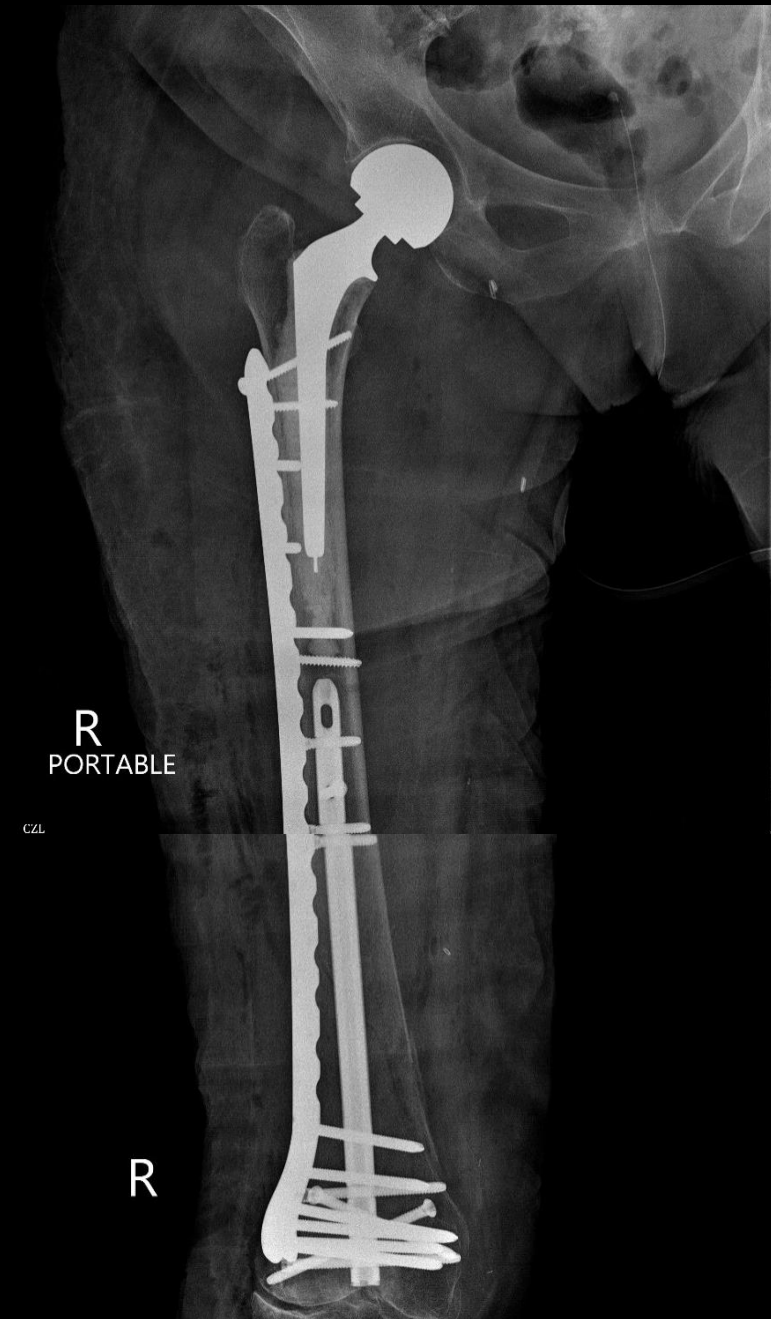


Follow up 6 weeks



Take-home messages

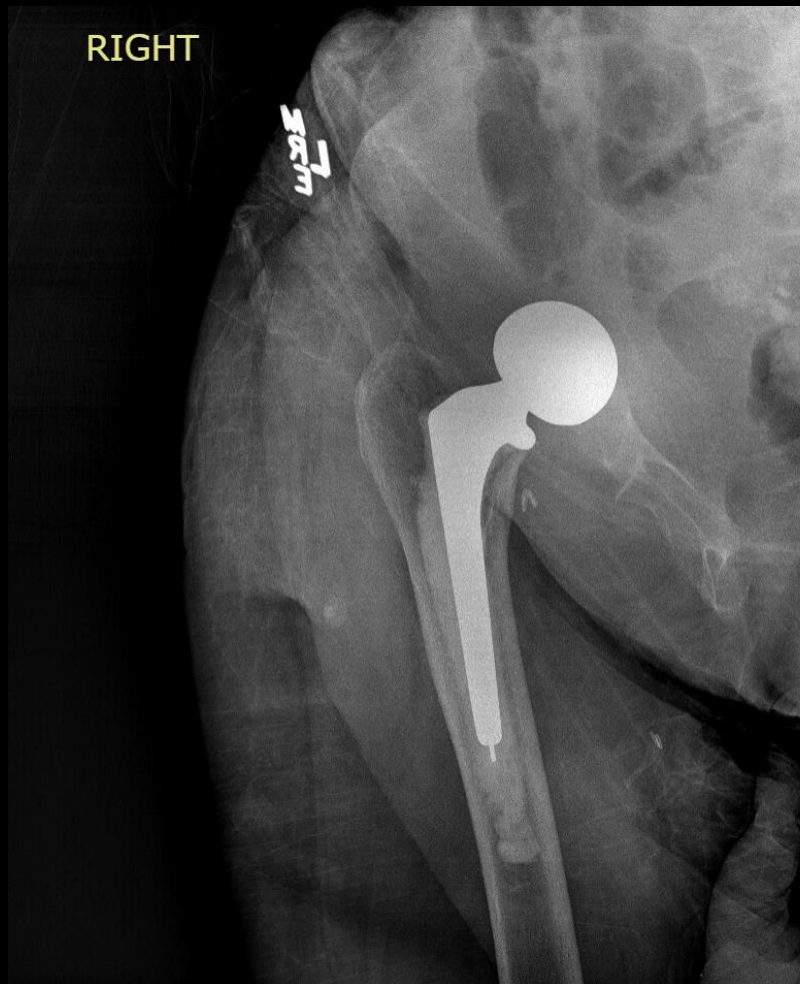
- Distal femur failure rates remain high
- Plates better fixation articular block
- Nails better for metaphyseal healing
- Approach dictated by implant and reduction



Thank you!

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Case 3: 80yo F fracture below THA



Nail plate + early weight bearing

