Distal Femur Fractures:

Indications & Techniques

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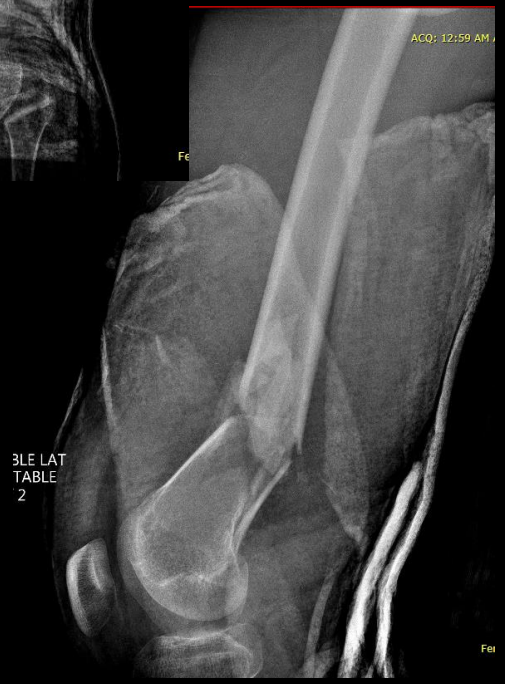
Case

- 26yo M MVA
  - L1 burst fx
  - L prox tibia fx
  - L intercondylar distal femur fx

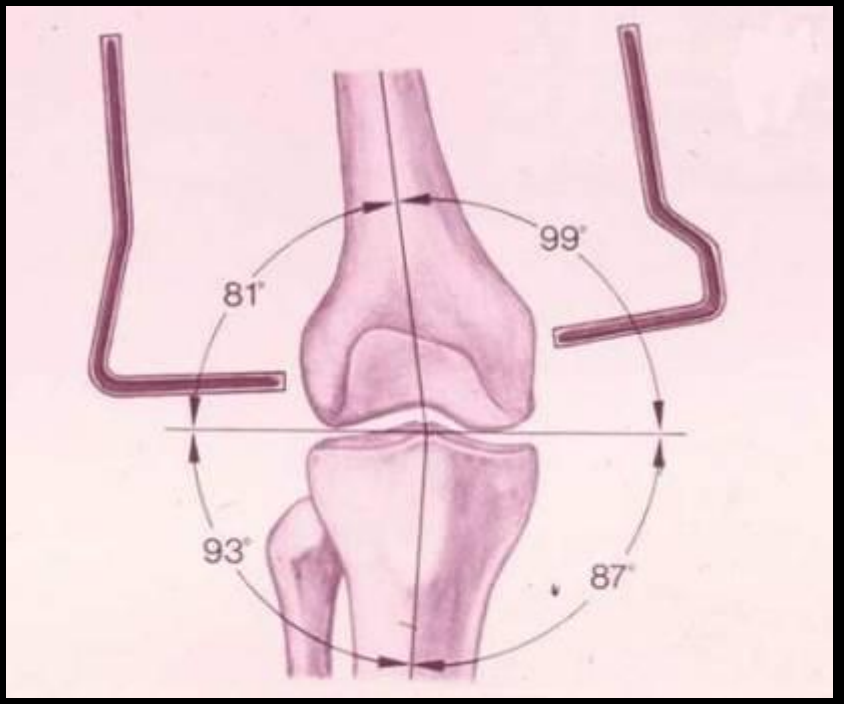


Objectives

- Understand distal femoral anatomy
- Review Classification and Imaging
- Differentiate articular and meta-/dia-physeal reduction techniques and healing
- Pick an implant

Distal Femoral Anatomy: Valgus

- LDFA: 81°
  - Angle between diaphysis and articular surface



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- LDFA: 81°
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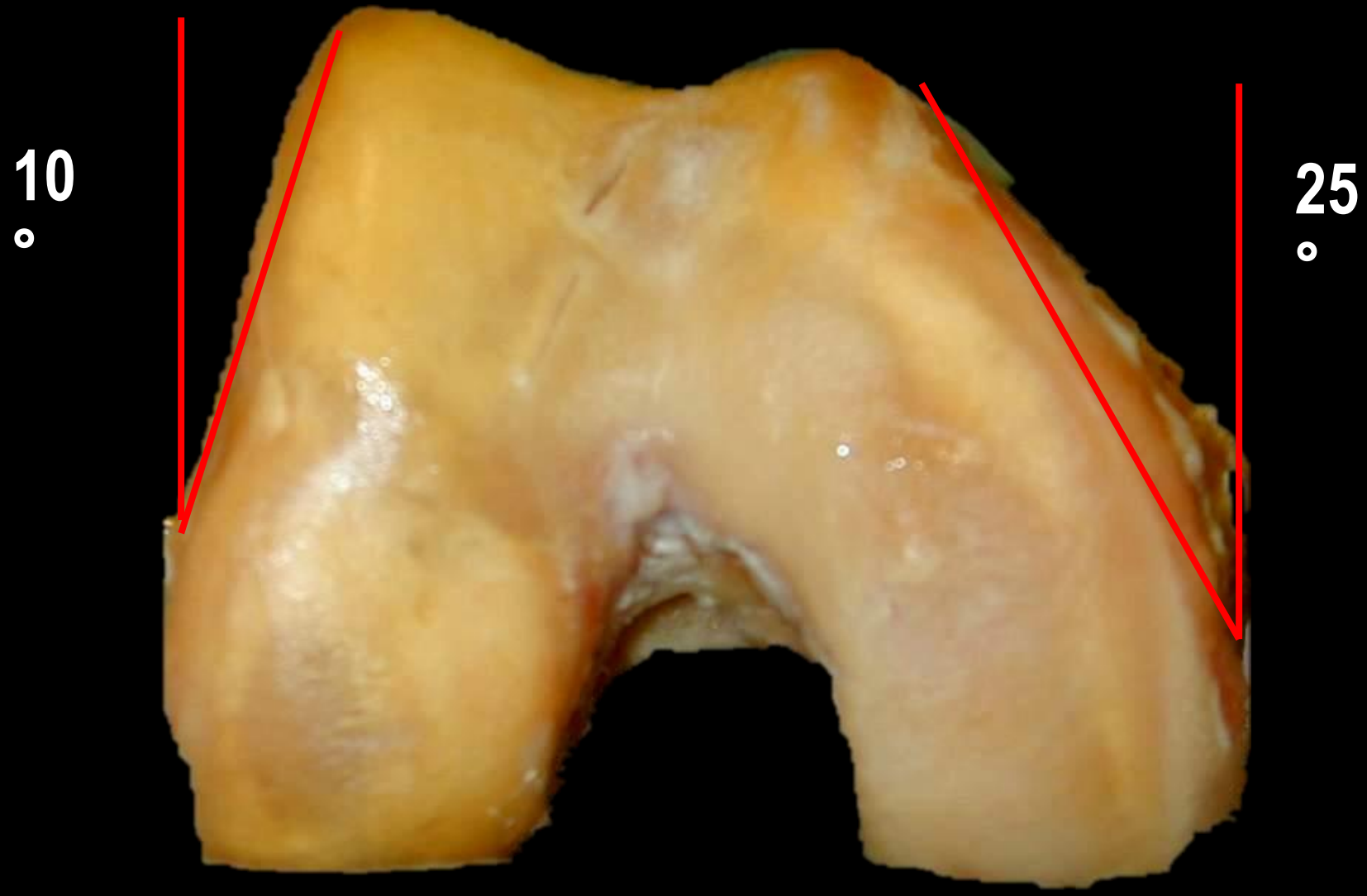
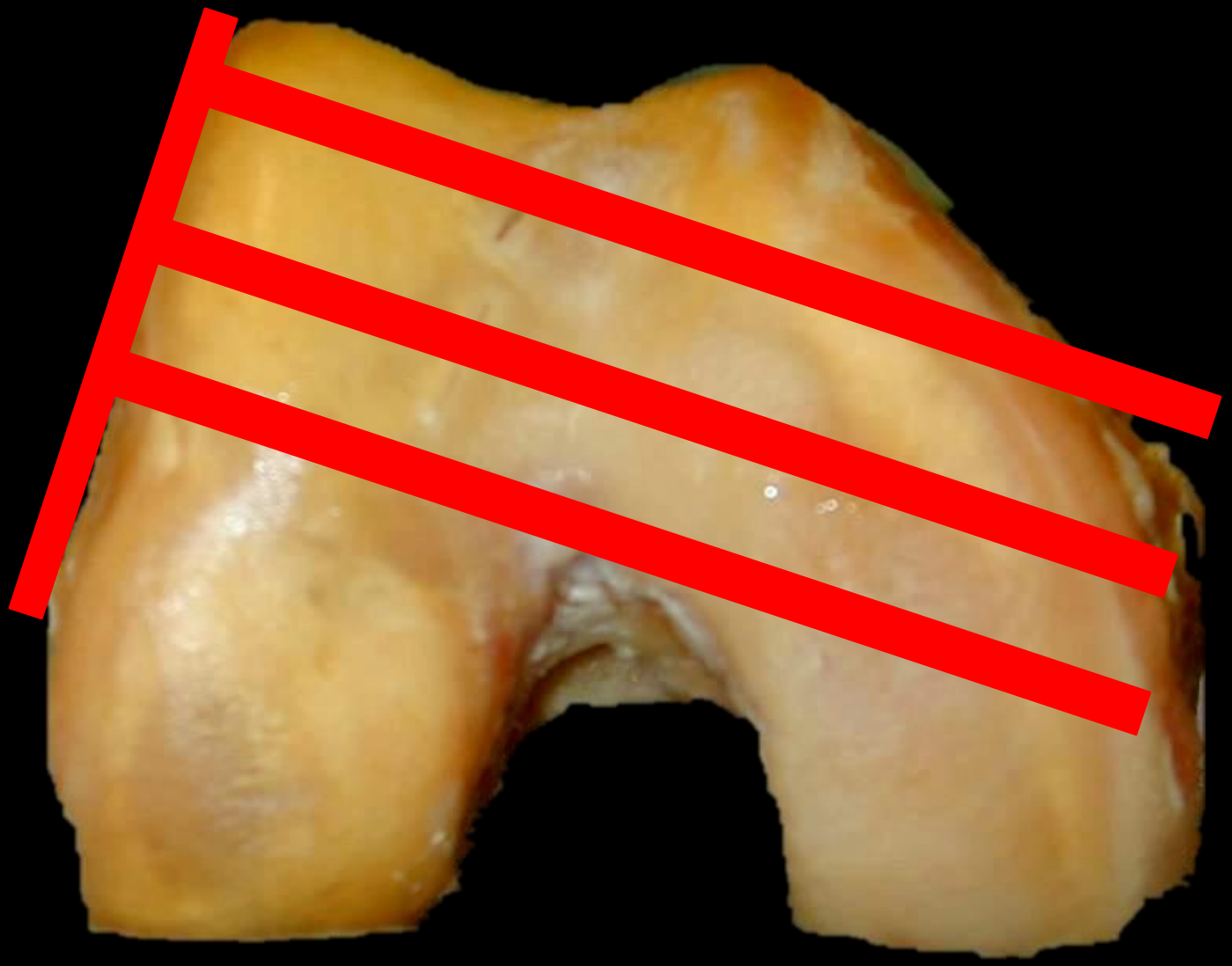
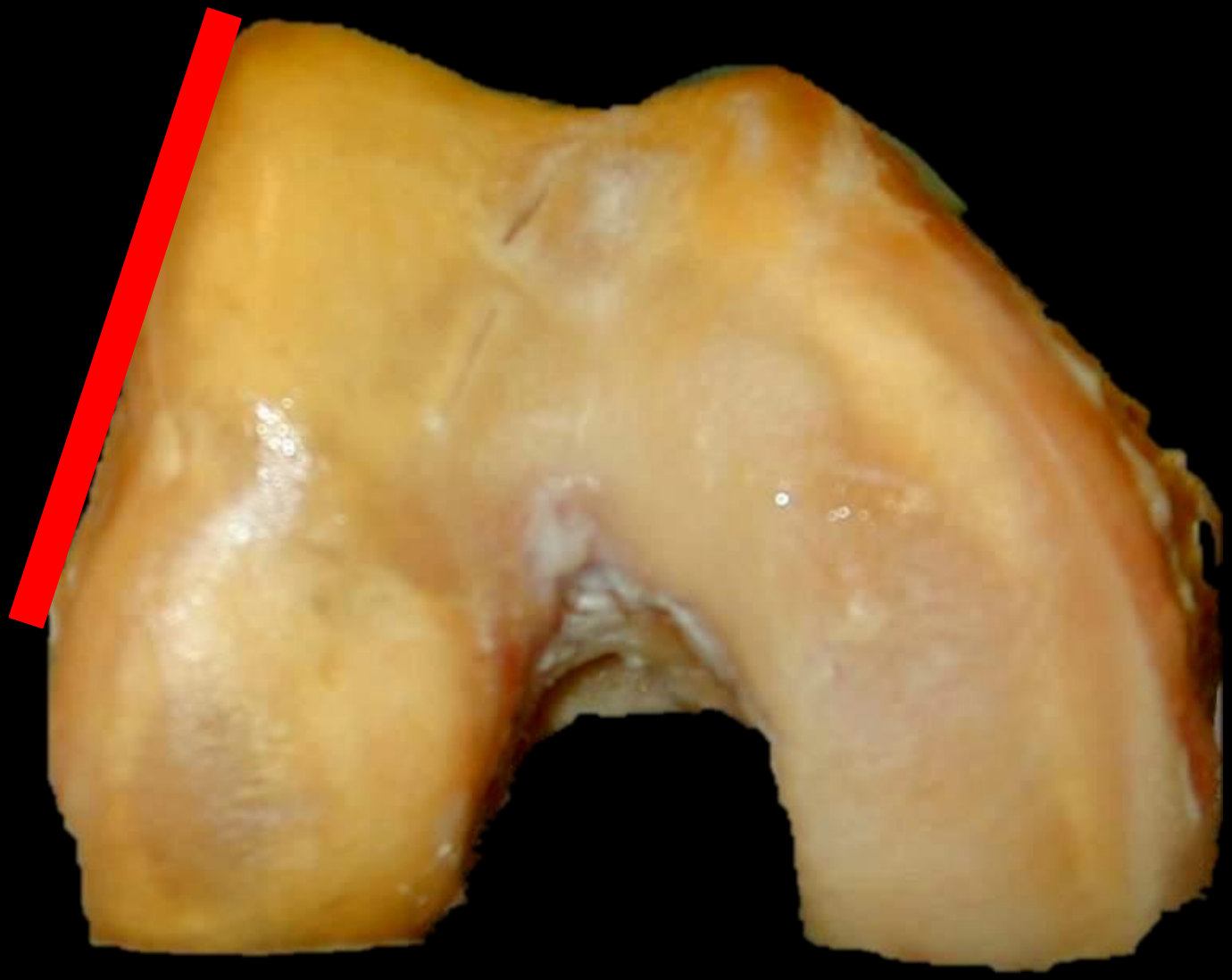
Distal Femoral Anatomy: Trapazoid



Distal Femoral Anatomy: Trapazoid



Distal Femoral Anatomy: Trapazoid



Distal Femoral Anatomy: Trapazoid

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Distal Femoral Anatomy: Cam

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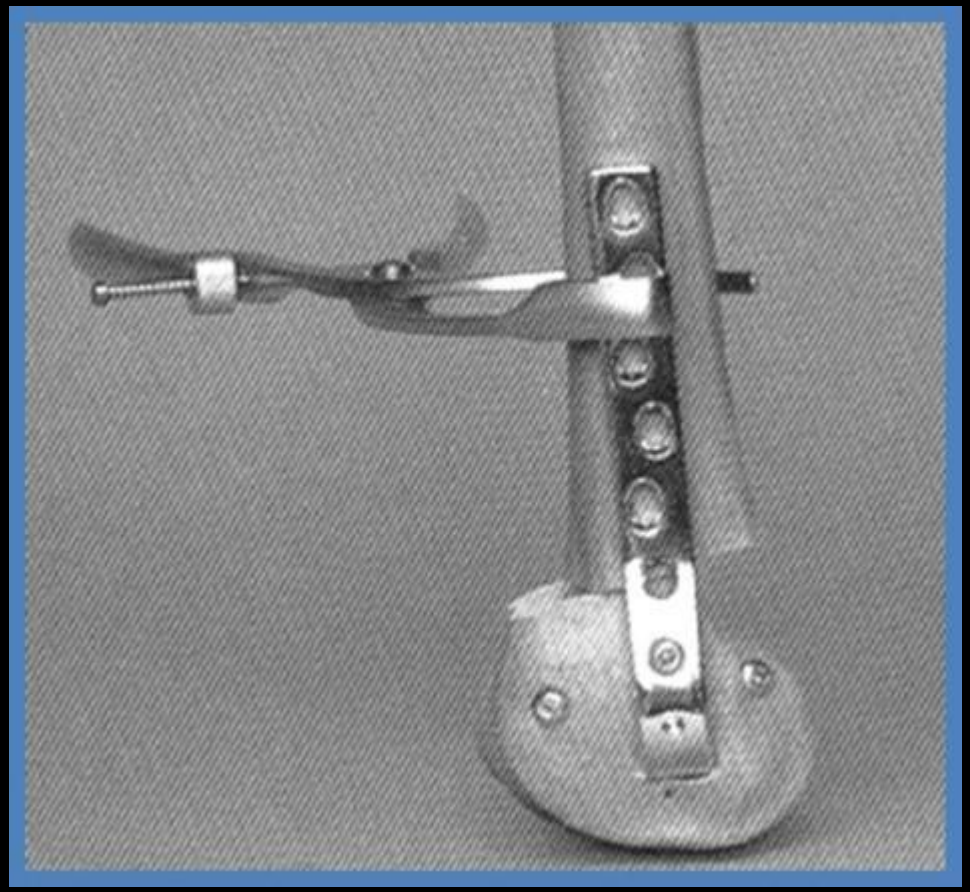
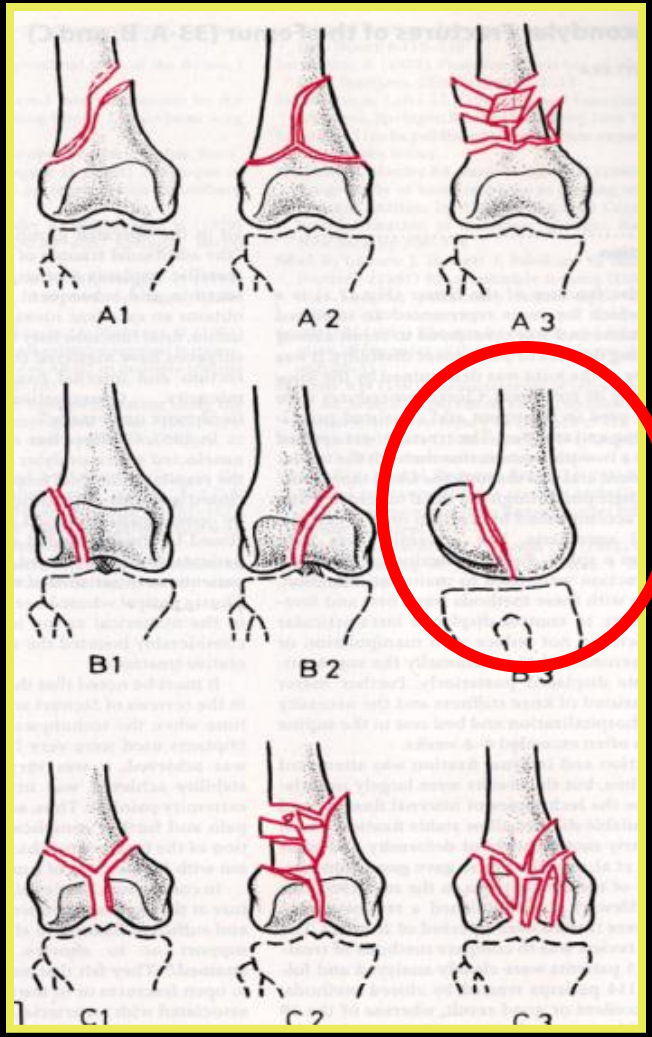


Classification

- Femur: 3
- Distal: 3

- Extra-articular: A
- Partial-articular: B
- Complete articular: C



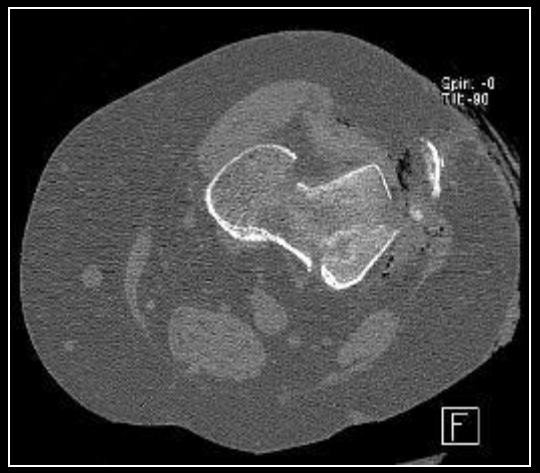
Classification: 33B3

- “Hoffa”
- Nork, JBJS 2005
  - 38%
  - Lateral 85%
  - Only missed in patients without a CT scan

Imaging

Imaging

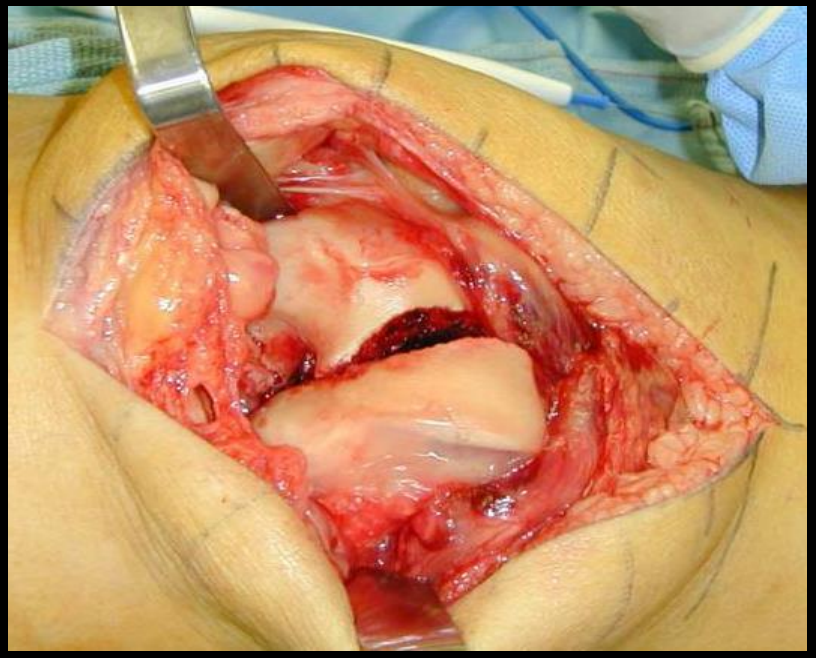
Imaging

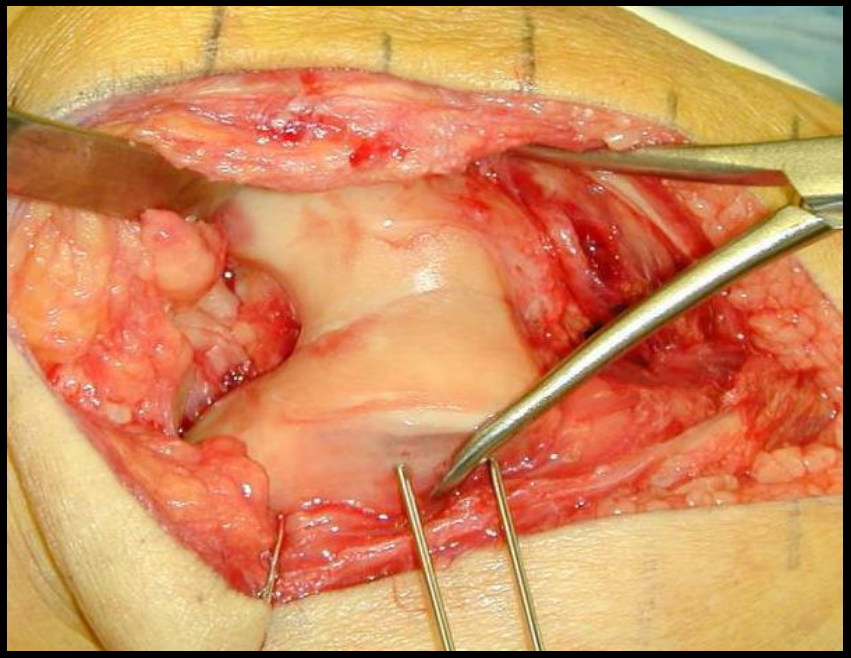


Reduction

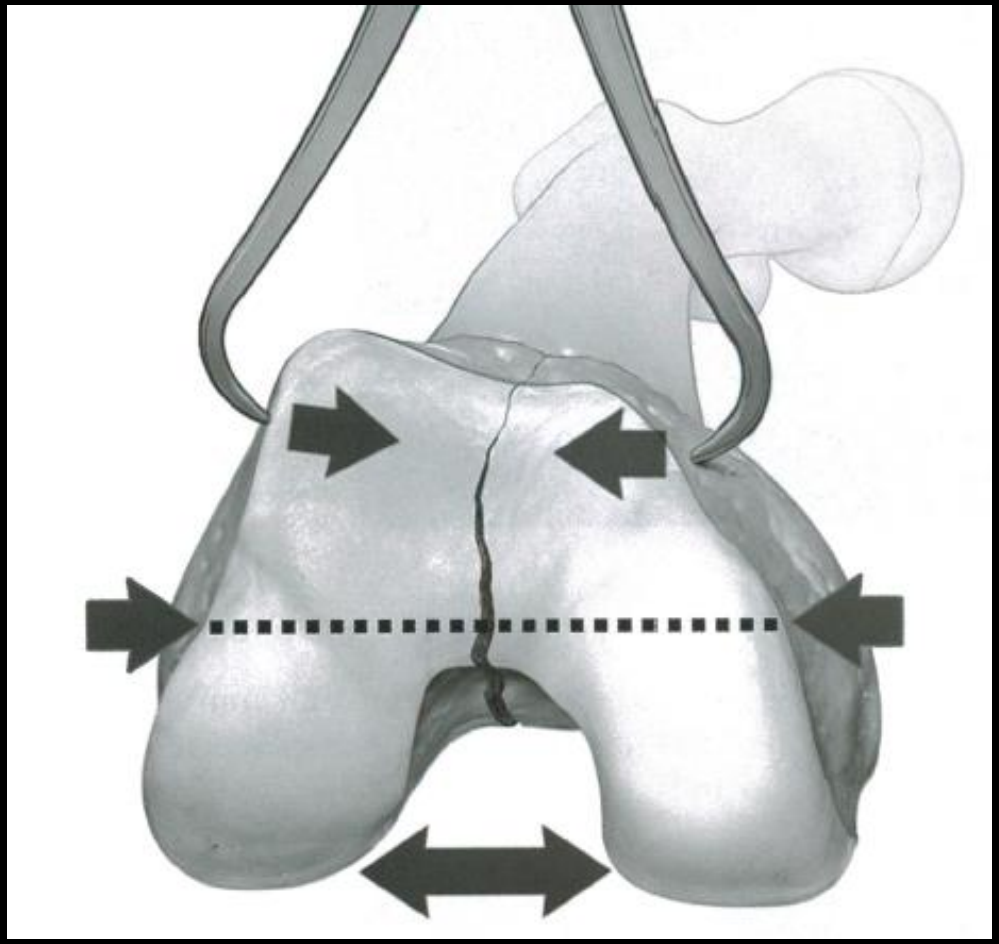
- Articular Surface
  - Direct
  - Anatomic
  - Absolute stability
  - Primary bone healing
- Metaphysis/Diaphysis
  - Indirect
  - Length, alignment, rotation
  - Relative stability
  - Secondary bone healing

Articular Reduction

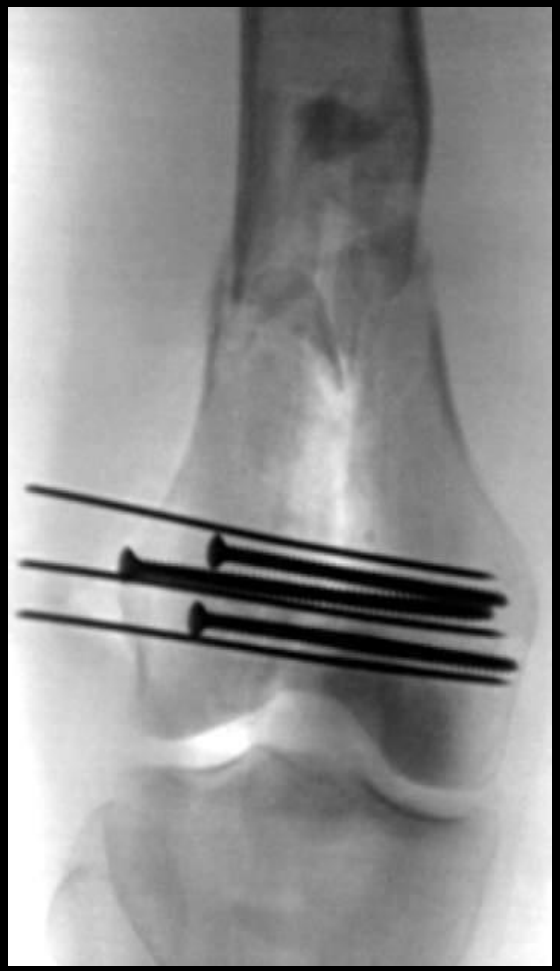




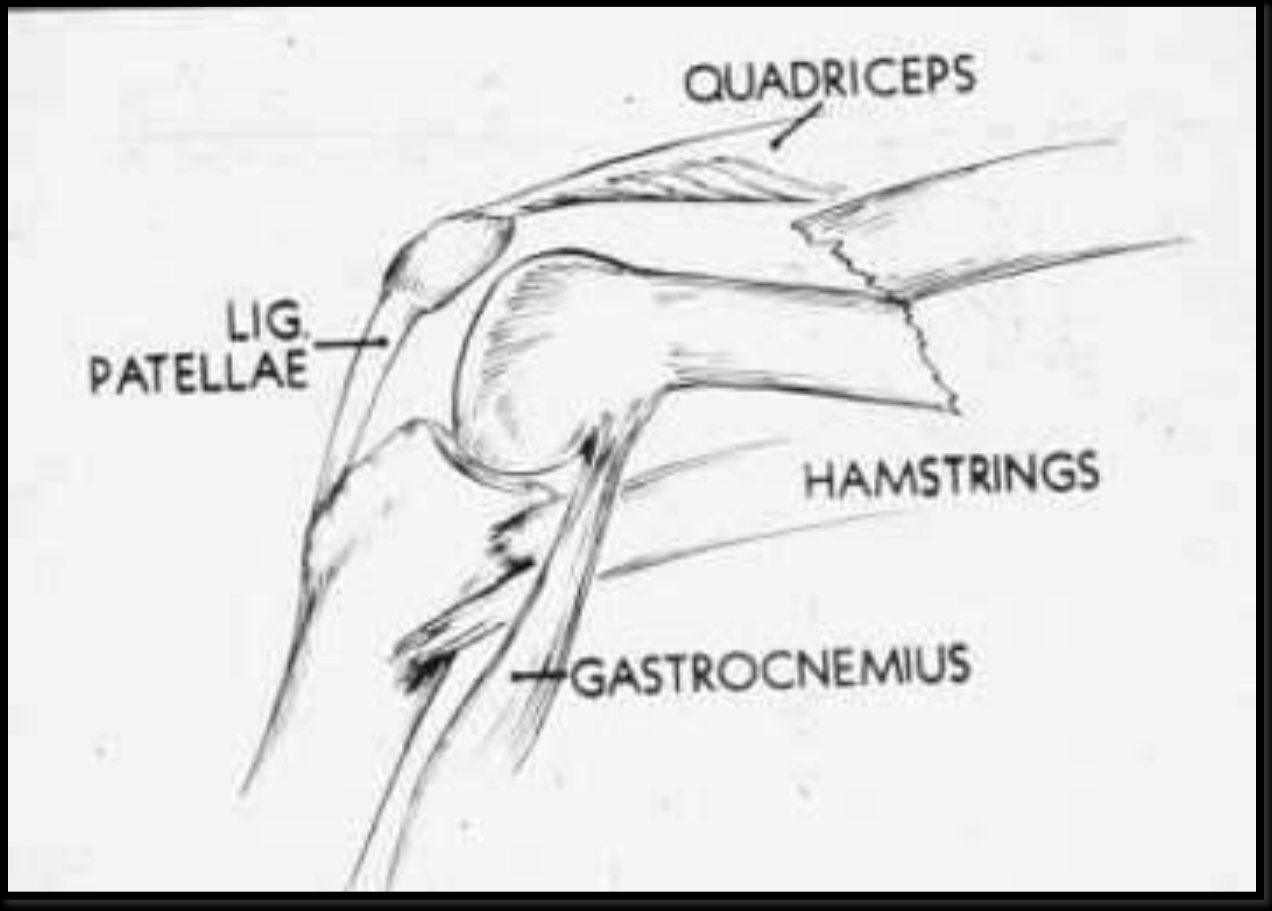
Articular Reduction



Articular Reduction



Metaphyseal Reduction



Metaphyseal Reduction

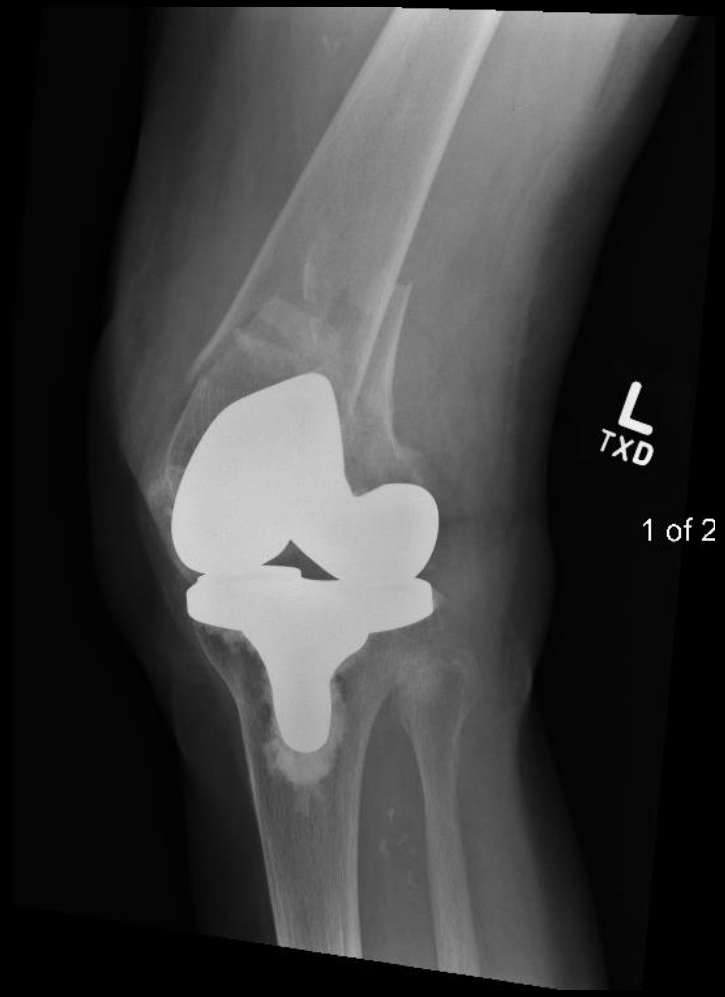
Chemical relaxation

Ex Fix

Large Weber "Point-to-Point" clamp

Plate and Wires

Towel Bump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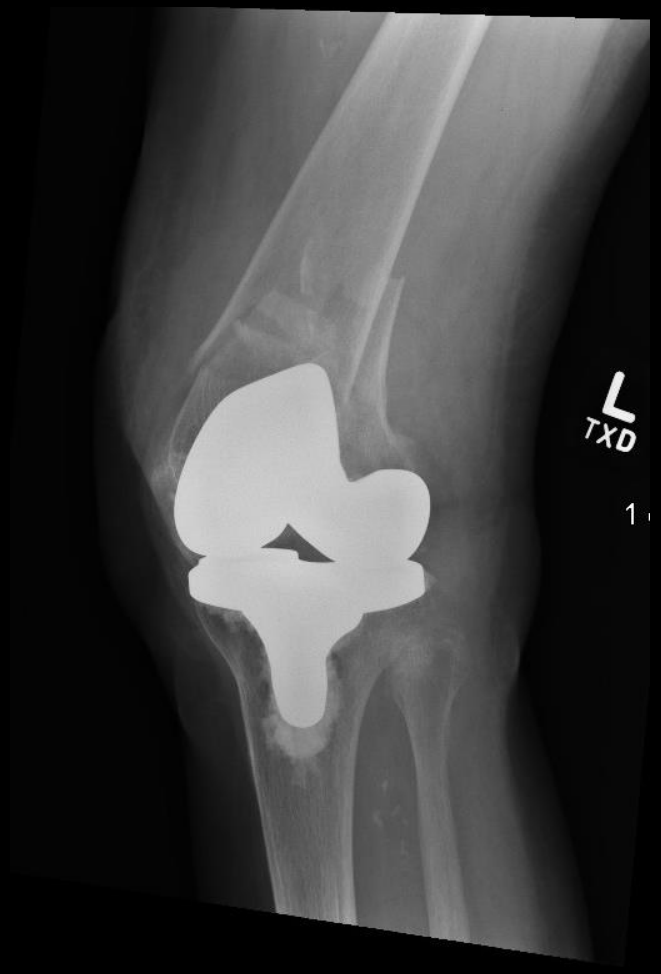
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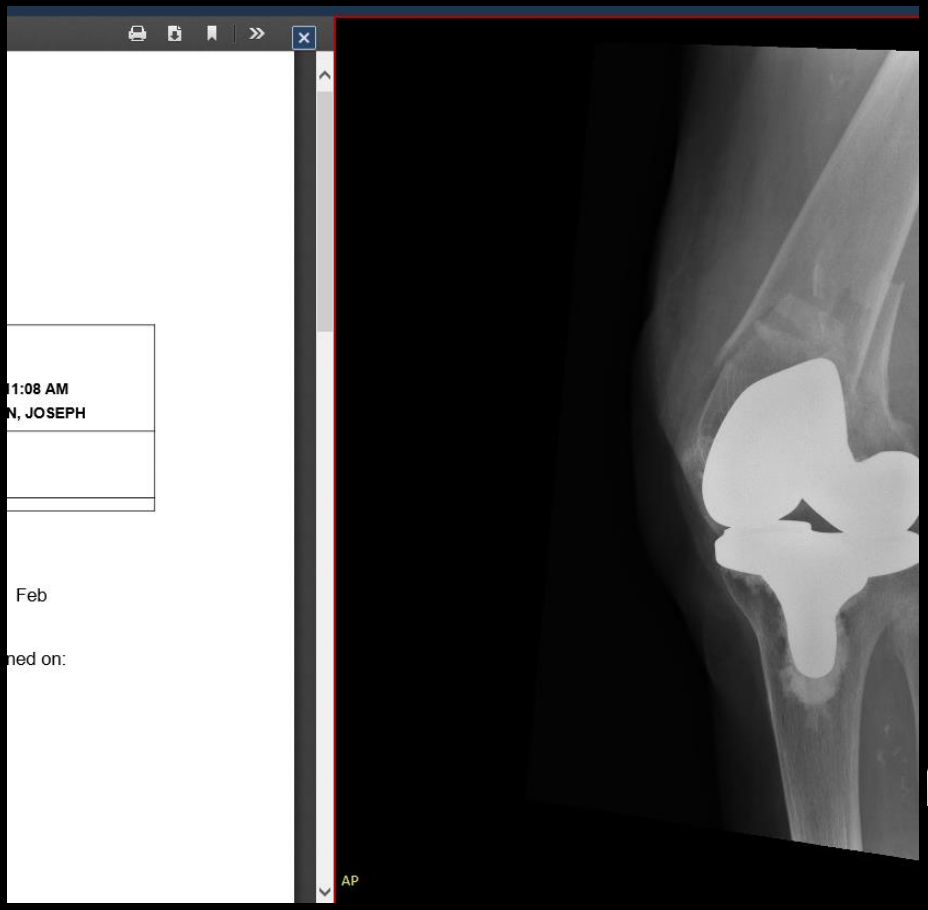
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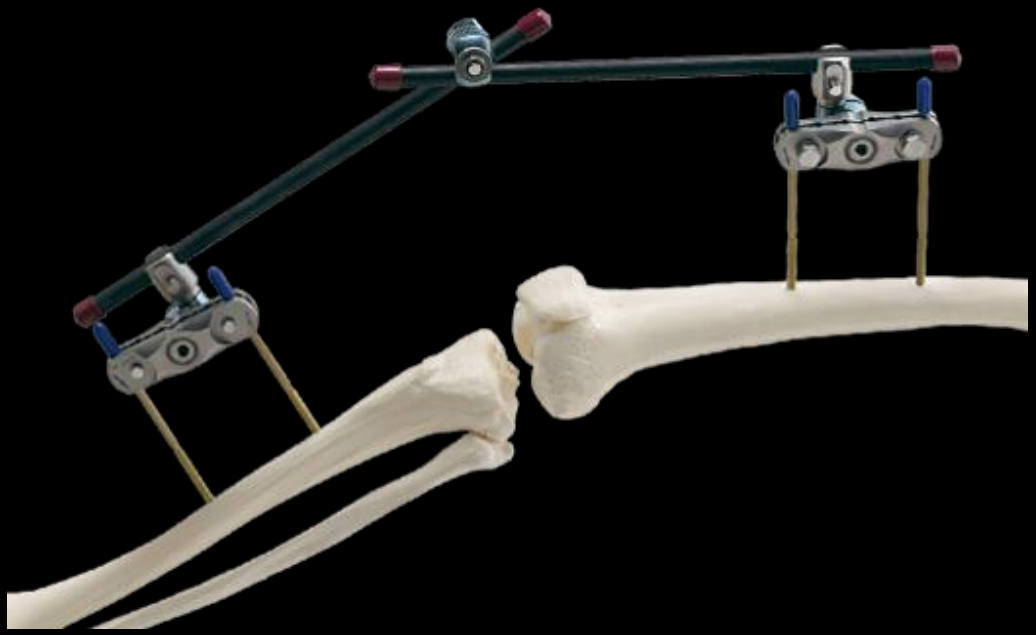


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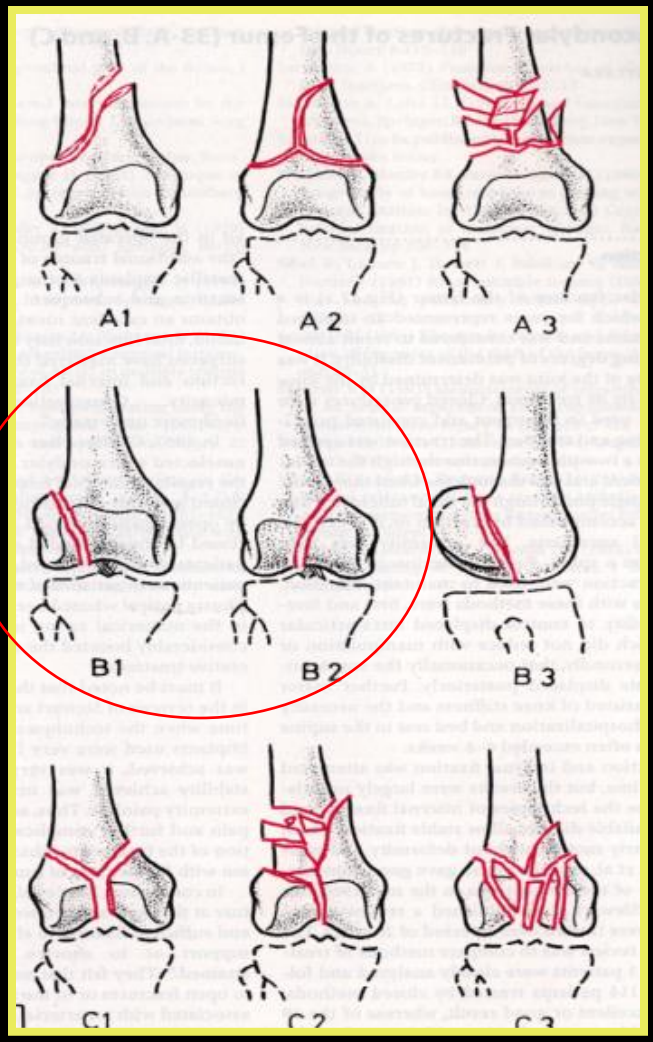
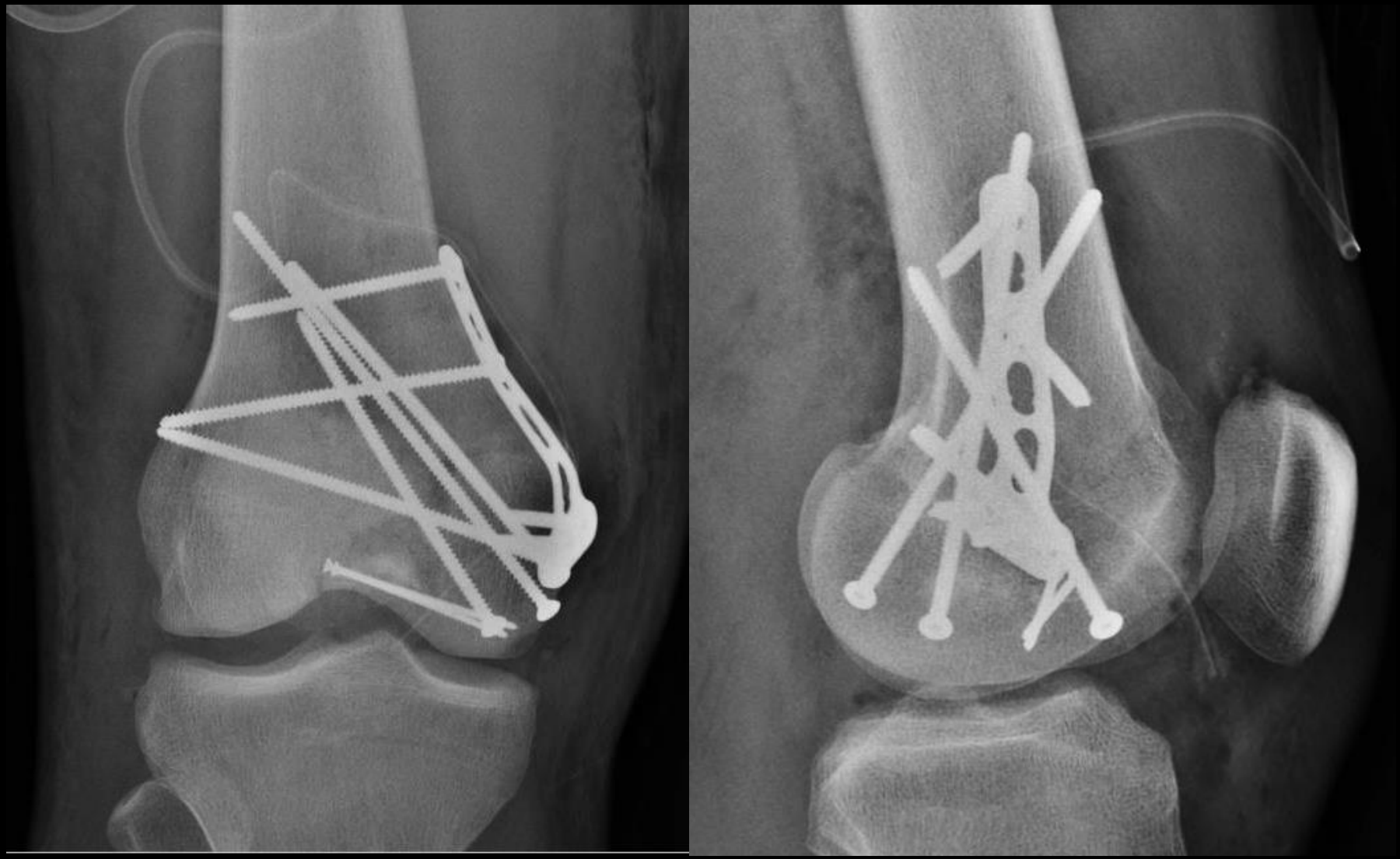
Internal Fixation

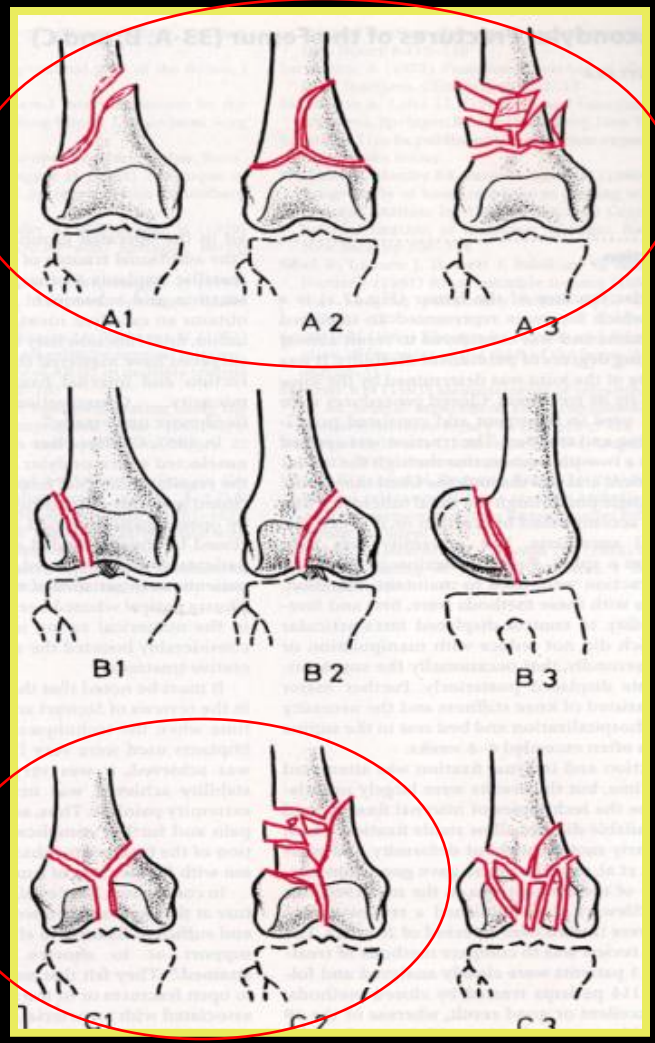
- Conventional plating
  - B = Buttress





Internal Fixation

- Retrograde IMN
  - A
  - Simple C



- Advantages
  - Biological
  - Biomechanical
  - Diaphyseal

- Disadvantages
  - Trans-articular
  - Limited distal fixation
  - Canal/implant mis-match

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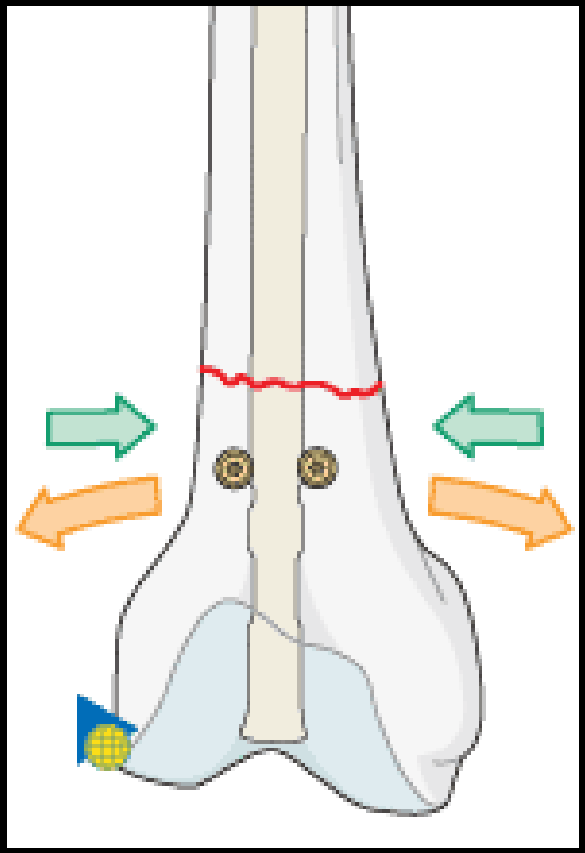
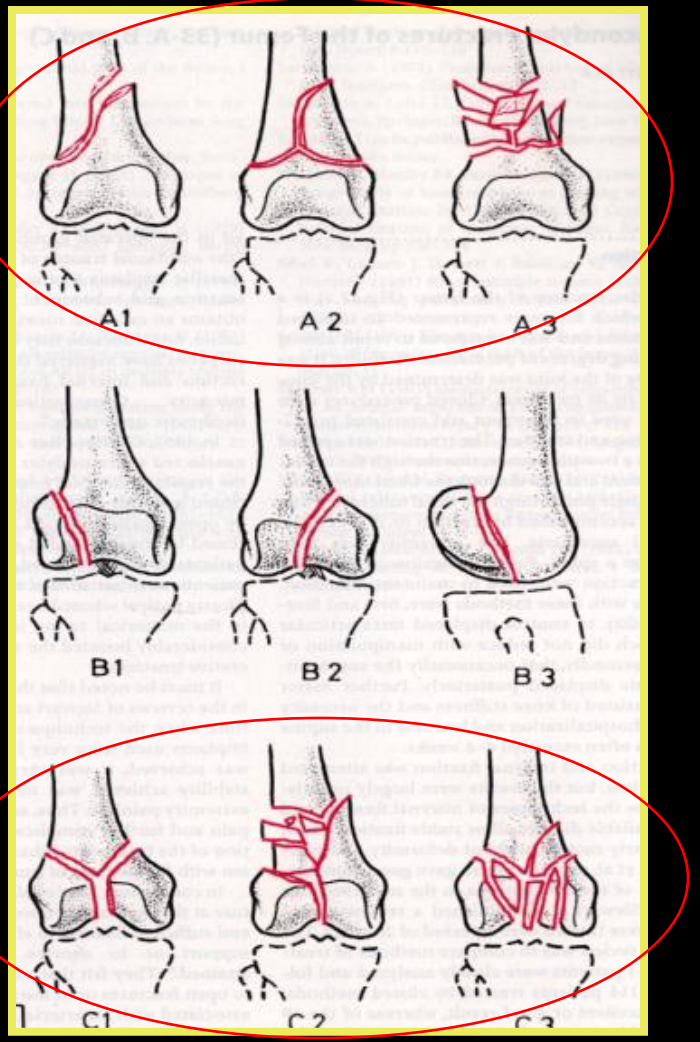


Internal Fixation

- Locked plating
  - A
  - Any C



Case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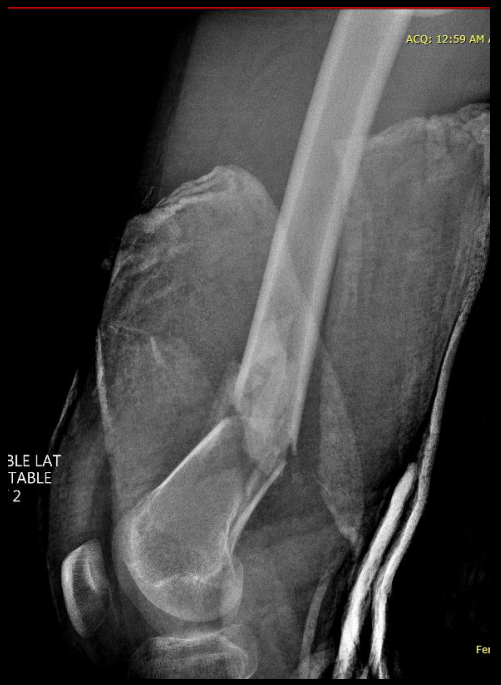
2 of 2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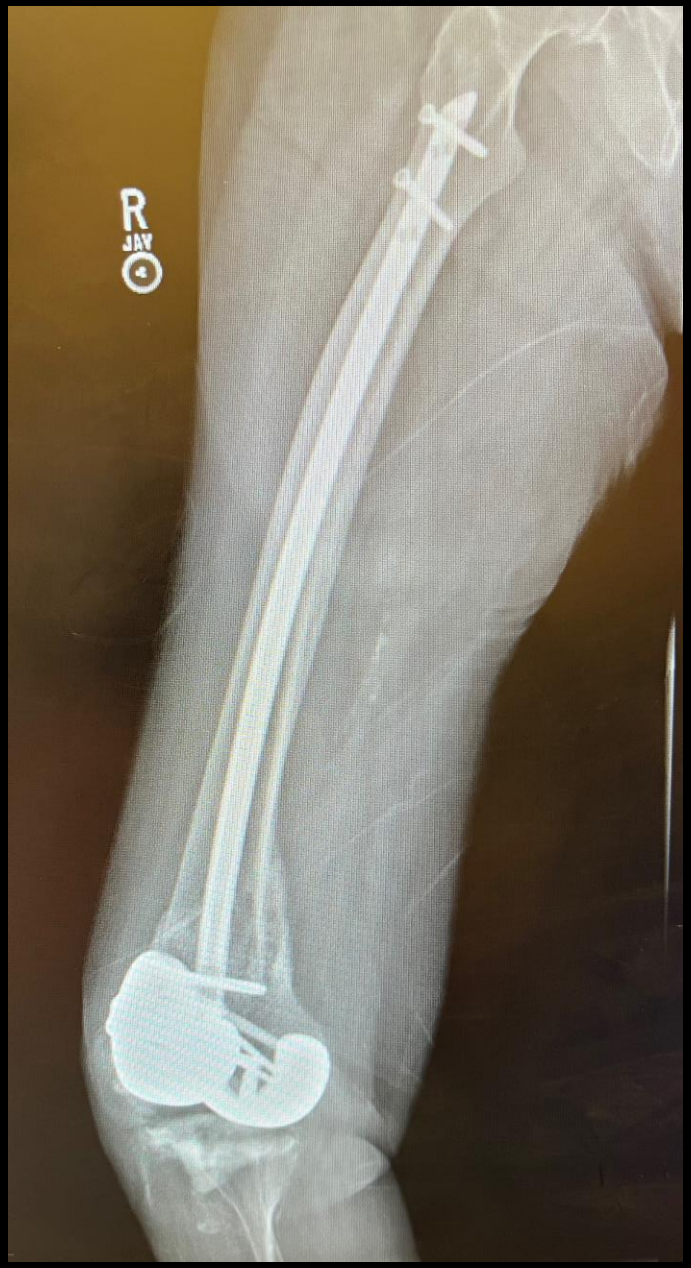
New Implants


R
PORTABLE


PORTABLE


R
JAV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New Trends

Summary

- Distal femoral anatomy
  - Valgus
  - Trapezoid
  - Cam
- Review Classification and Imaging
  - 33
  - ABC
  - Femur films and CT

Summary

- Reduction and healing
  - Articular surface: direct, anatomic, absolute stability, primary healing
  - Metaphysis: indirect, LAR, relative stability, secondary healing
- Pick an implant
  - B = buttress
  - A and simple C = IMN
  - A and any C = locked lateral plating
  - New Implants/New Techniques prn your judgement


Orthopaedic Trauma Institute
UCSF + SAN FRANCISCO GENERAL HOSPITAL

Thank You