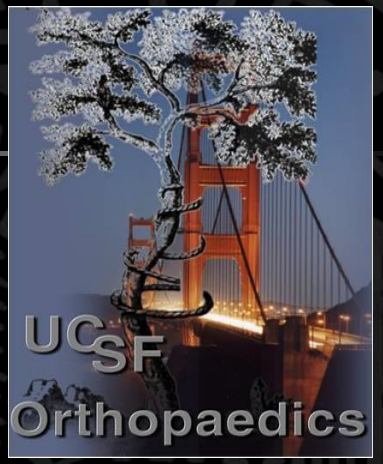


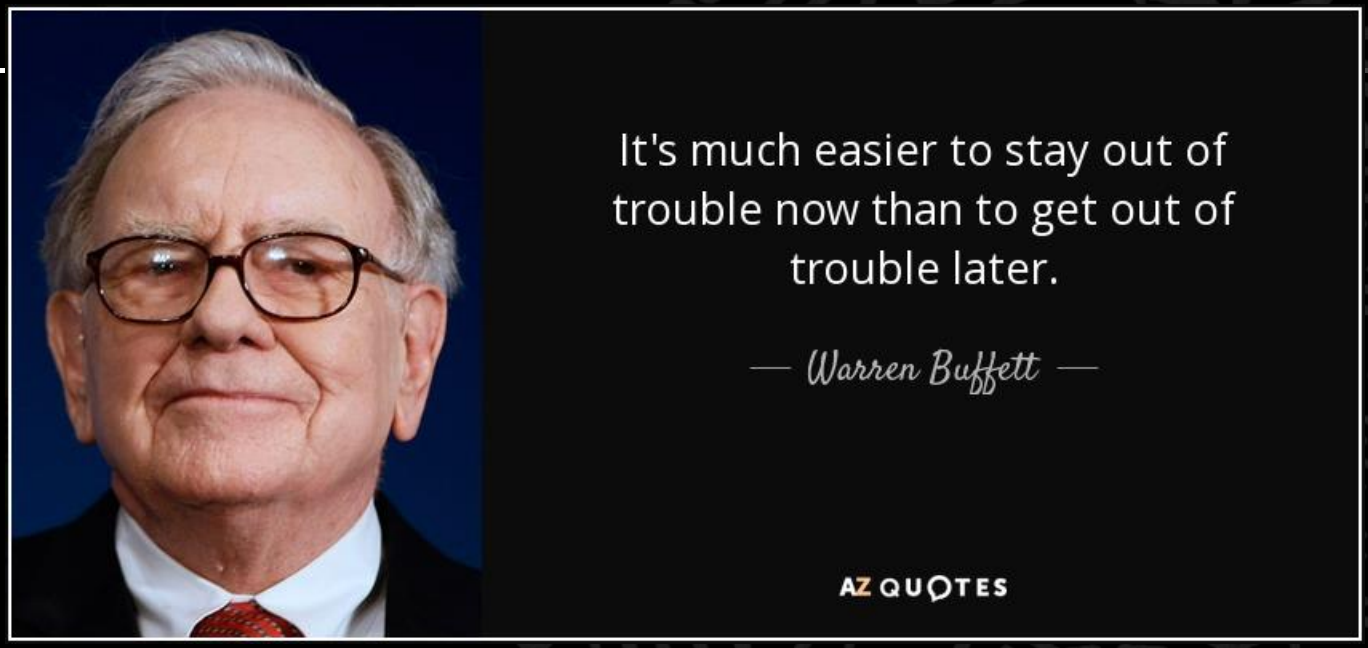
TKA: Tips and Tricks

COA Meeting 2021

Erik Hansen MD
Associate Professor
Department of Orthopaedic Surgery
University of California, San Francisco

Disclosures

- **Corin- Product Development**



HOW TO STAY OUT OF TROUBLE

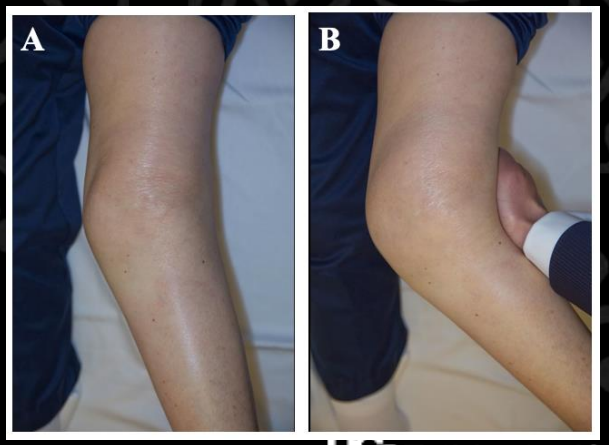
Outline

- **Pre-op**
- **Intra-op**
- **Post-op**

PRE-OPERATIVE

Clinical Exam

- **Coronal deformity**
- **Sagittal issues**
- **Stiffness**
- **Prior incisions**



Sagittal Issues

Flexion Contracture

Extensor Lag

Recurvatum

Stiffness

Flexion Contracture

Limited Flexion

Best predictor of postop ROM is preop ROM

Radiographic “red flags”

- **Joint space ’widening’**
- **Patella baja**
- **Patella subluxation**
- **Diminutive patella**
- **Retained hardware**
- **Fracture malunion**
- **Severe osteopenia**
- **Charcot arthropathy**

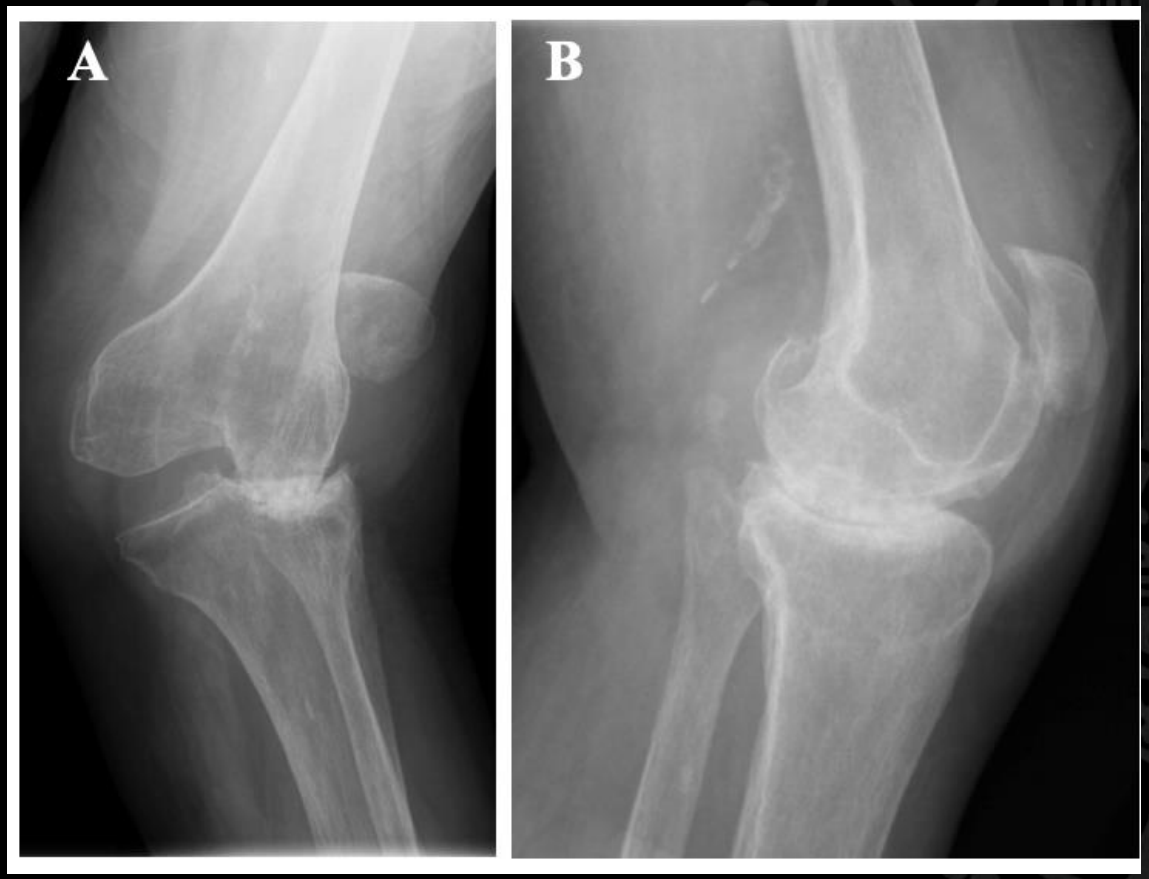
Joint Space "Widening"

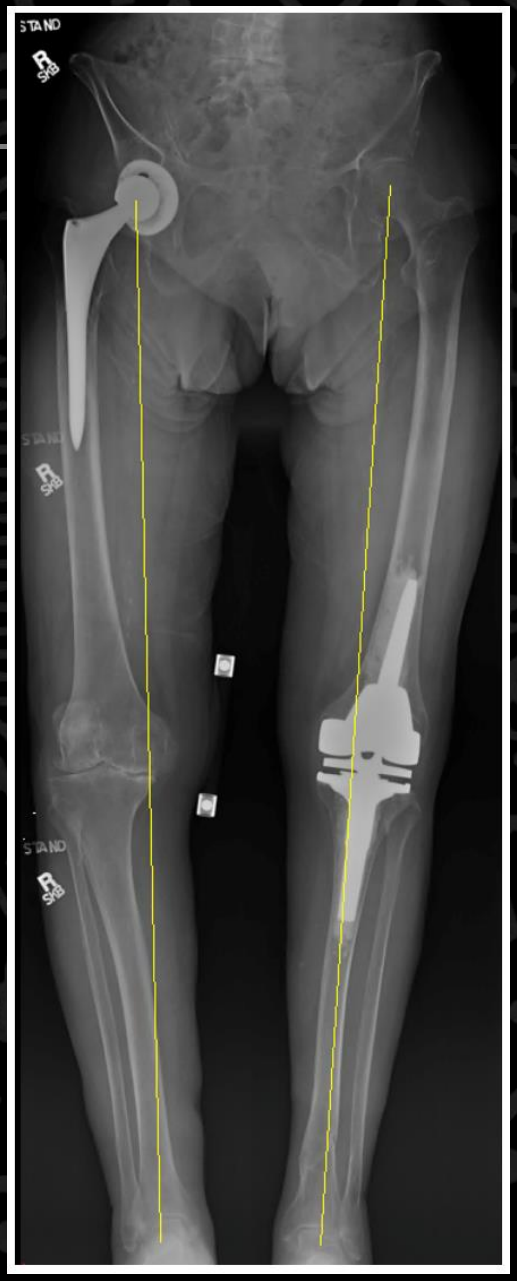
VS

Level of constraint?

Joint Space ”Widening”

Joint Space ”Widening”





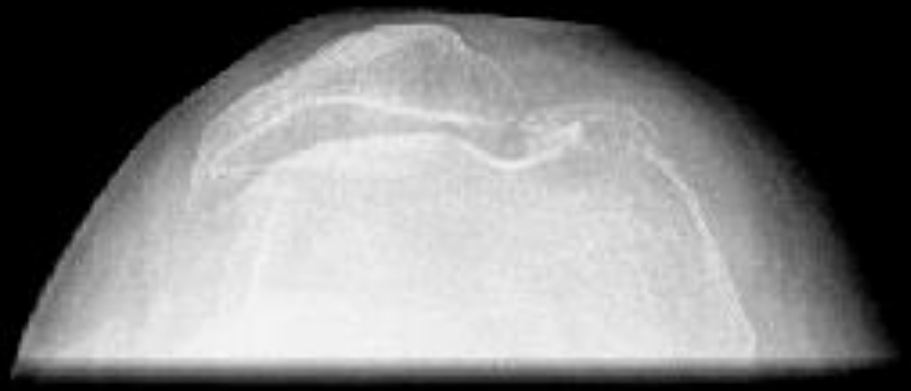
Patella Baja

Exposure strategies
Patellar tracking

Patella Subluxation

Optimizing Q angle

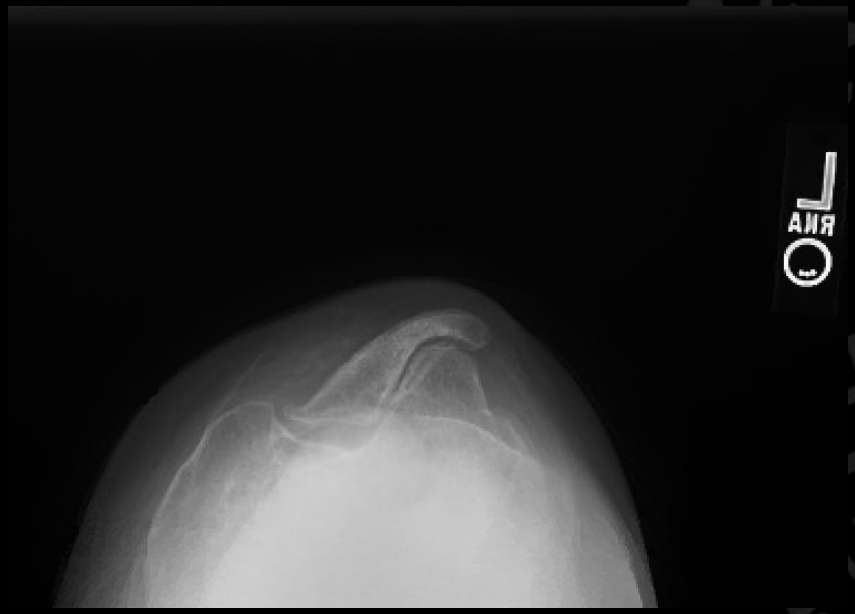
Diminutive Patella

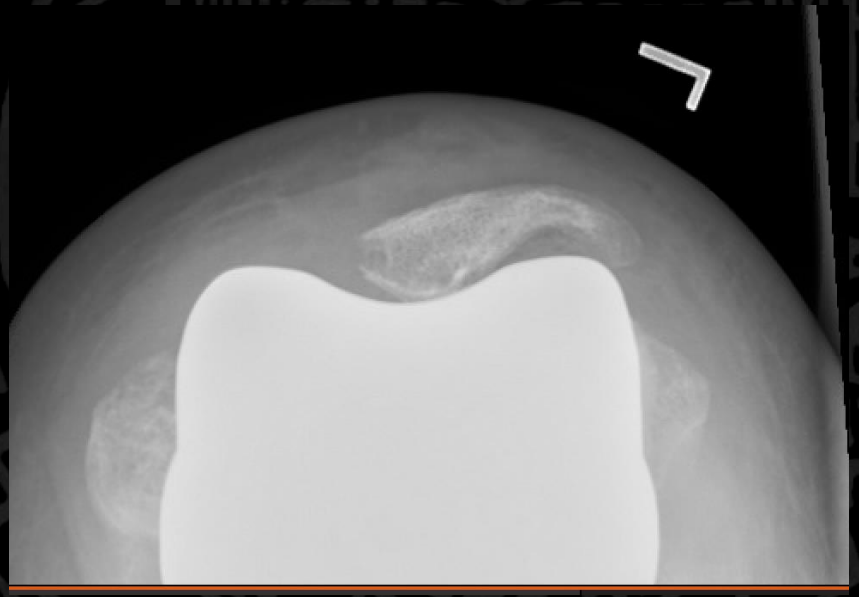


Resurface or not?

Diminutive Patella

Diminutive Patella





Bony Malunion

Correcting alignment
Through/distal to joint?

Retained Hardware

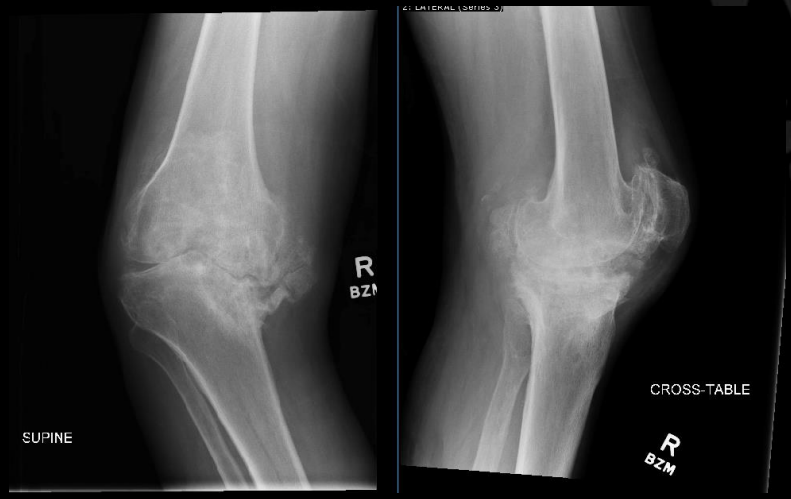
Need for removal?
Distal femoral cut?
Implication for ligamentous stability?

Osteopenia

Risk of ppx fracture
Fixation of implant

Charcot Arthropathy

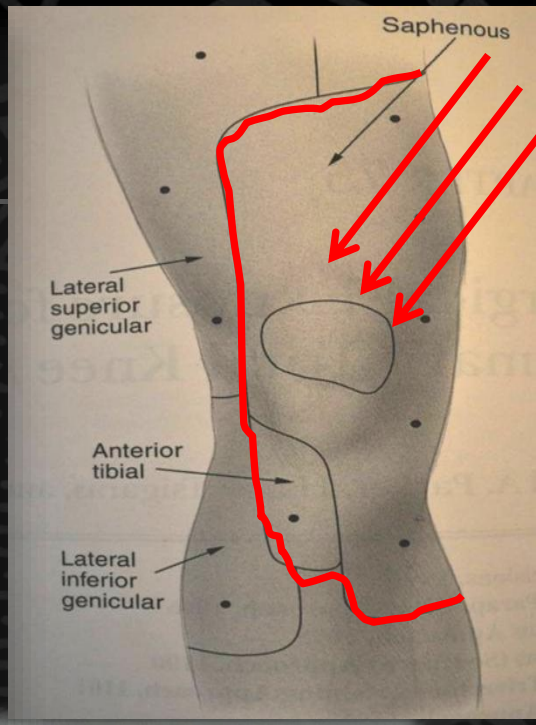
TKA or not?
If so, then hinge

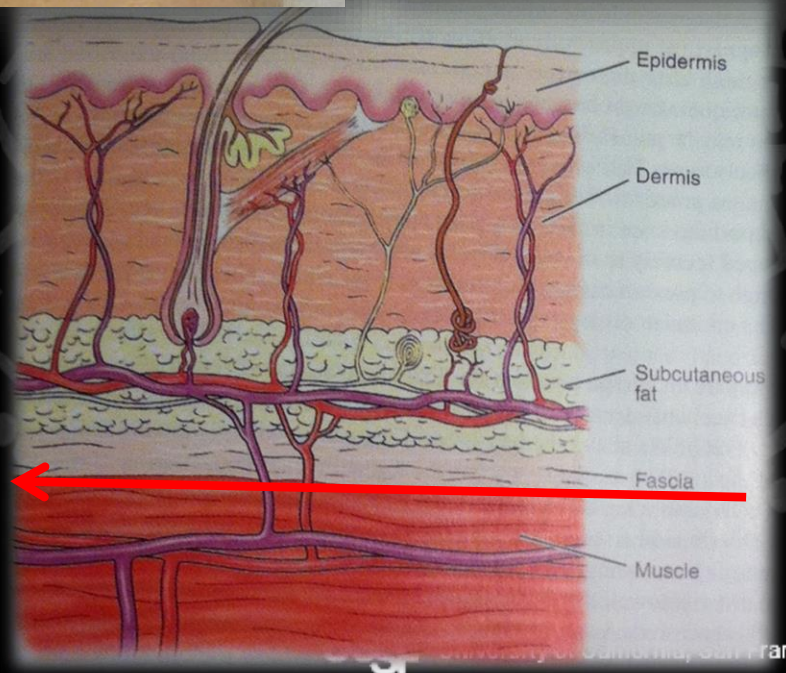


INTRA-OPERATIVE

Exposure

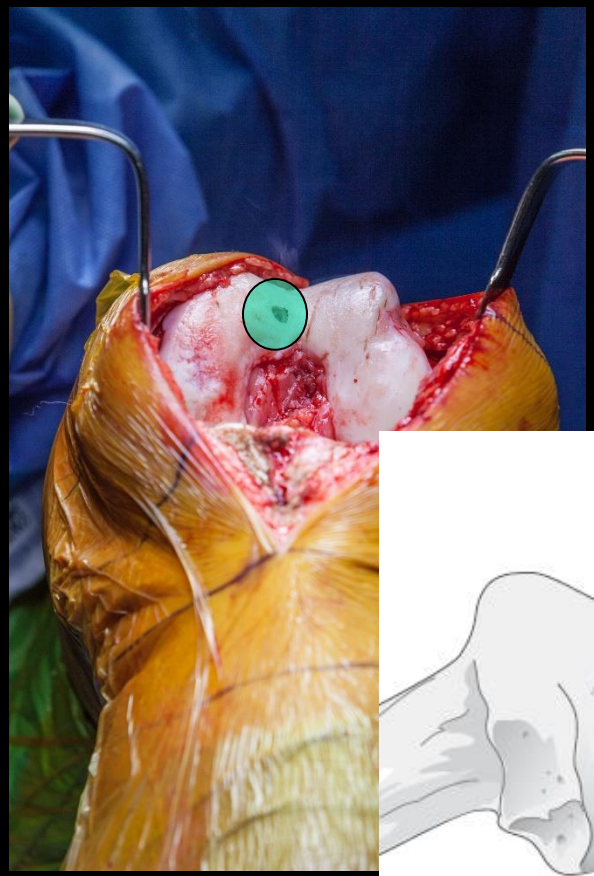
- **Use prior incision**
  - **lateral most preferred**
- **If unable to use prior incision, leave > 6cm skin bridge**
- **Full thickness flaps**
  - **“no fat left on fascia”**

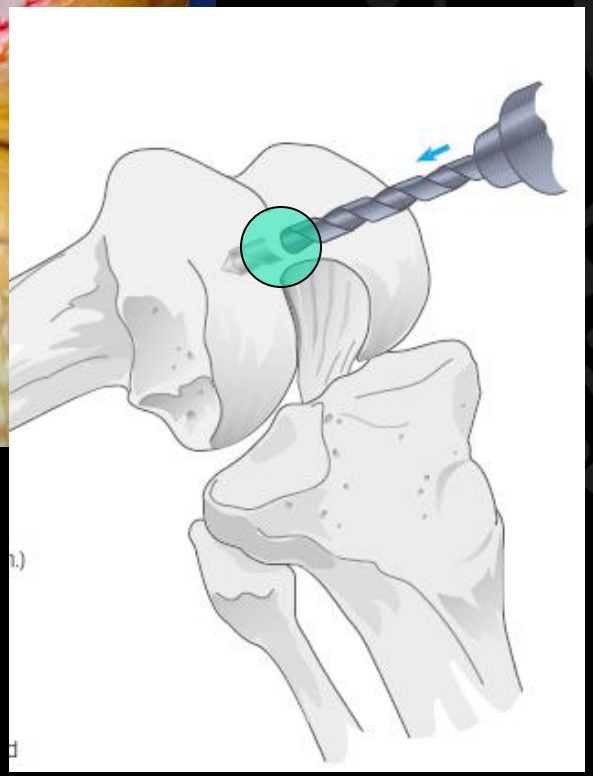




Incisions

Distal Femoral Cut

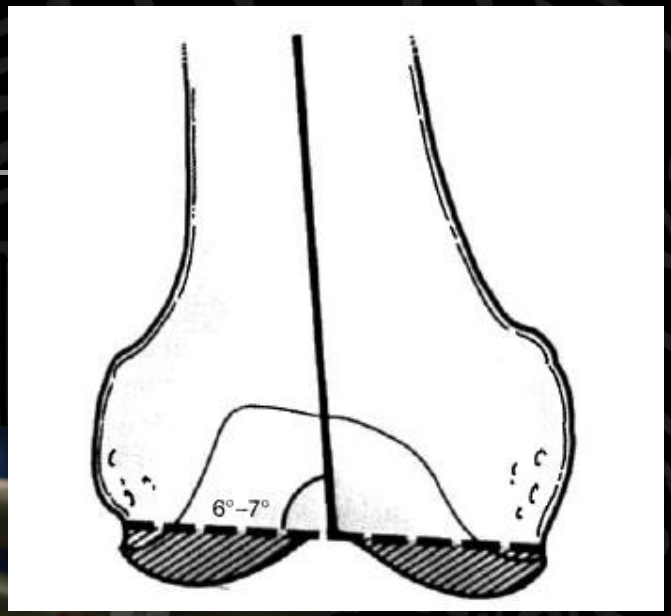


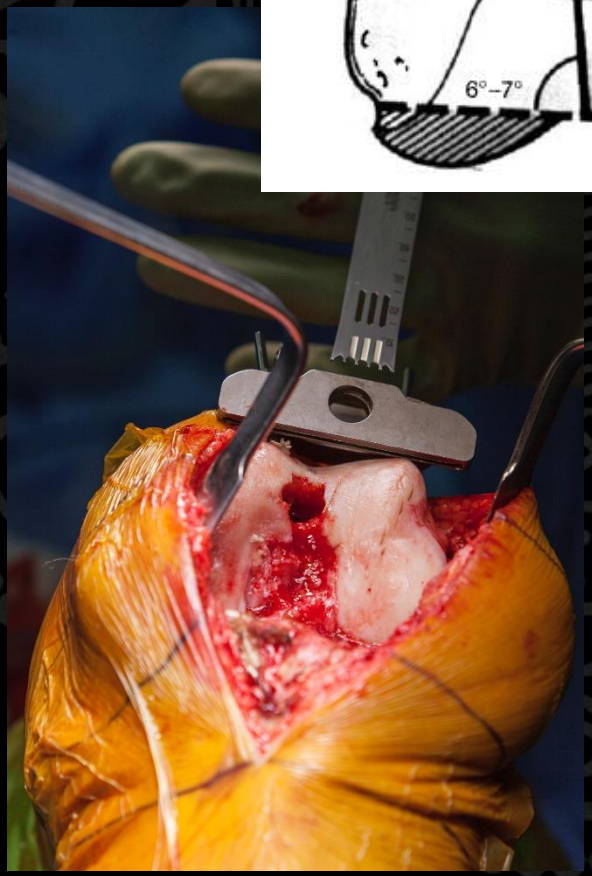


- Entry point
- “Over-drilling”
- Irrigation/evacuation
- 5-7’ Valgus

Distal Femoral Cut

- **Protect collaterals**
- **Start less sclerotic side**
- **Sulcus of distal femur**

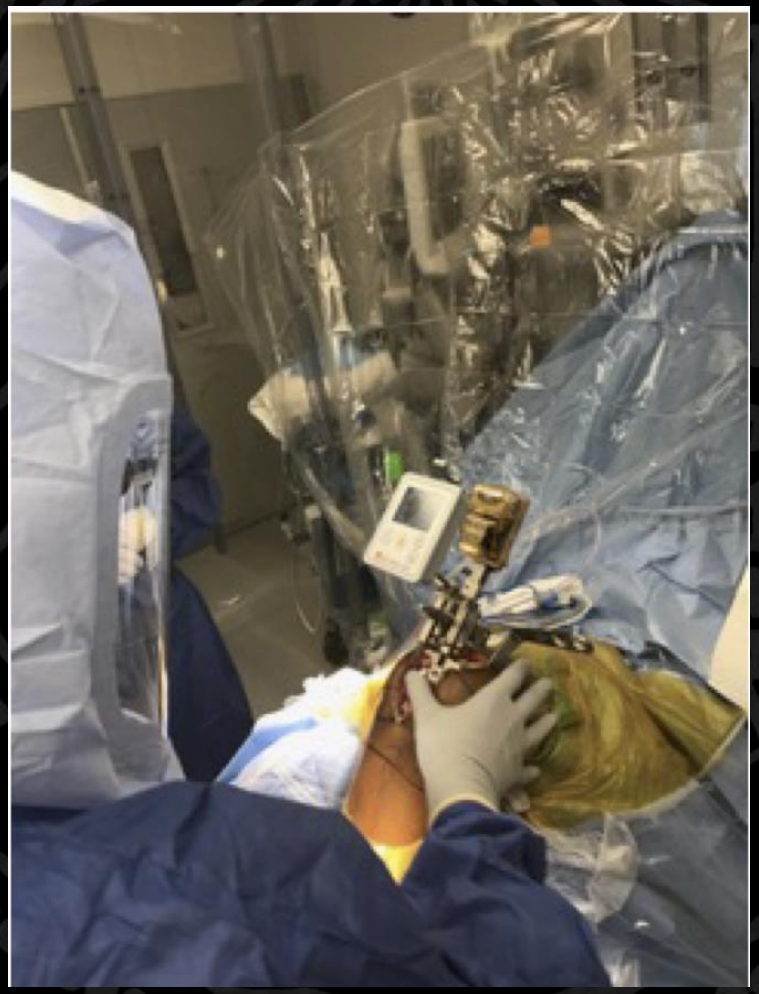




- **Flexion contracture- extra distal femur**
  - **Mindful of raising joint line**

When an IM nail isn't feasible

- **Accelerometer**
- **Custom cutting blocks**
- **Navigation**
- **Robots**
- **Extramedullary alignment (historical)**



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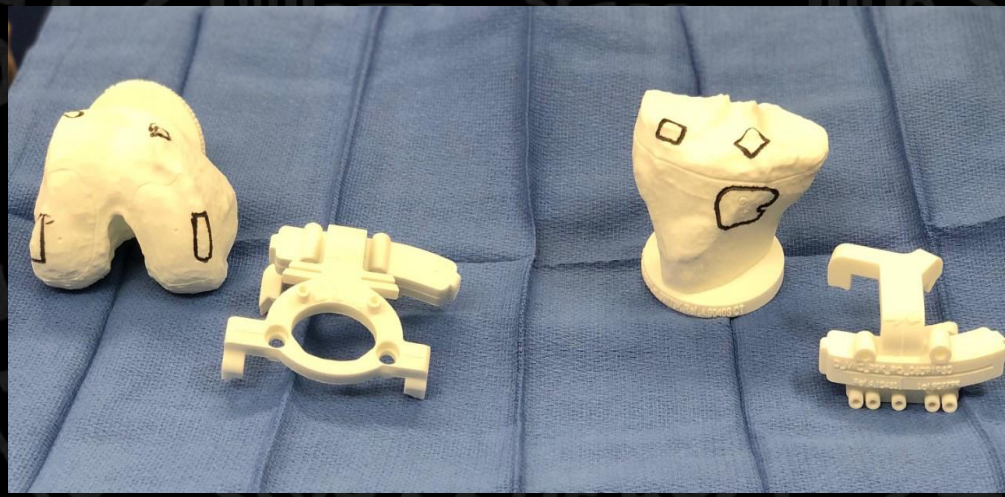

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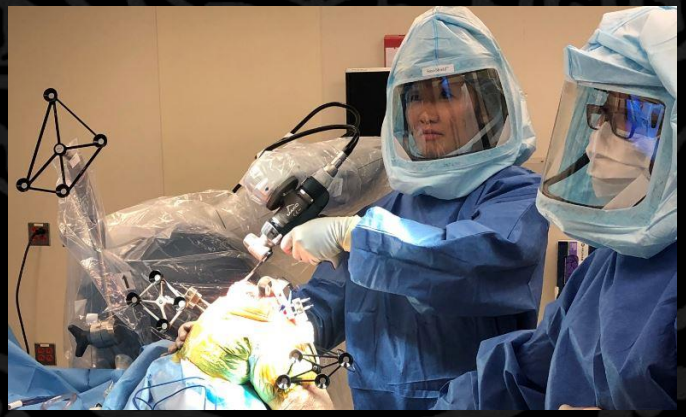
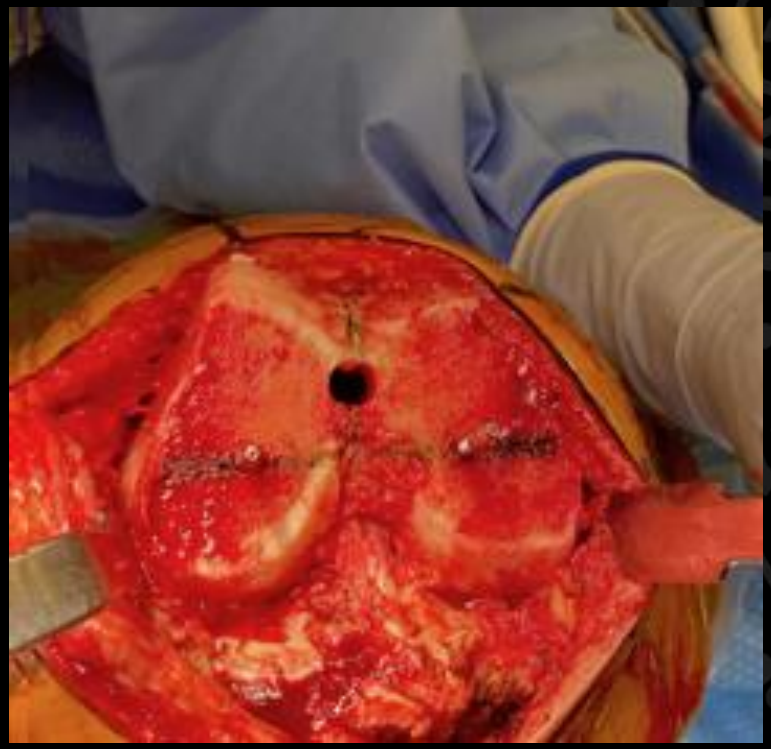
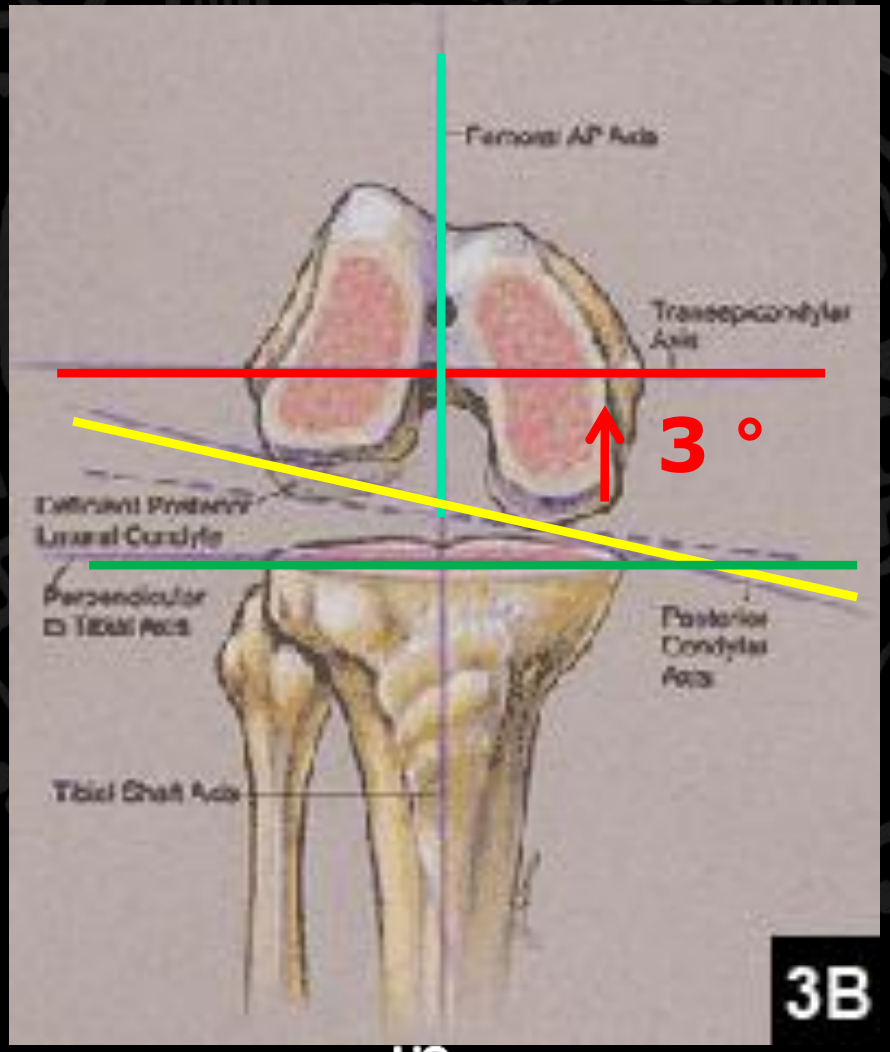


Setting Rotation: Drawing the Axes

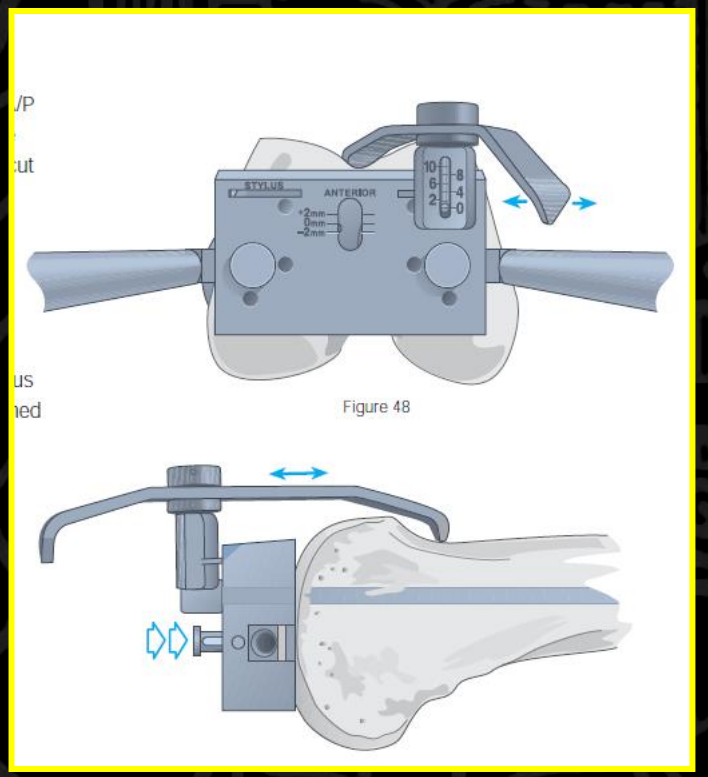




Sizing/ Rotation

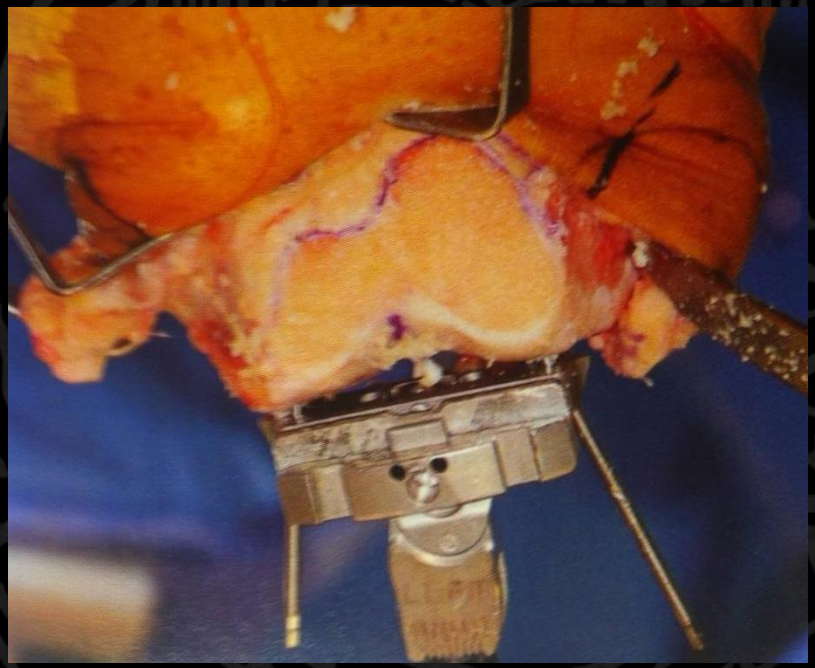
- **Reference the anterolateral femur "high side"**

- **In between sizes?**
  - **Upsize initially**
  - **~3mm/ size**



The ”Grand Piano” Sign

- **Proxy for appropriate rotation**



- **Preventing ”Notching”**
  - **Start cut medially**
  - **Stop short**
  - **”not the end of the world”**

The ”Grand Piano” Sign

- **Proxy for appropriate rotation**
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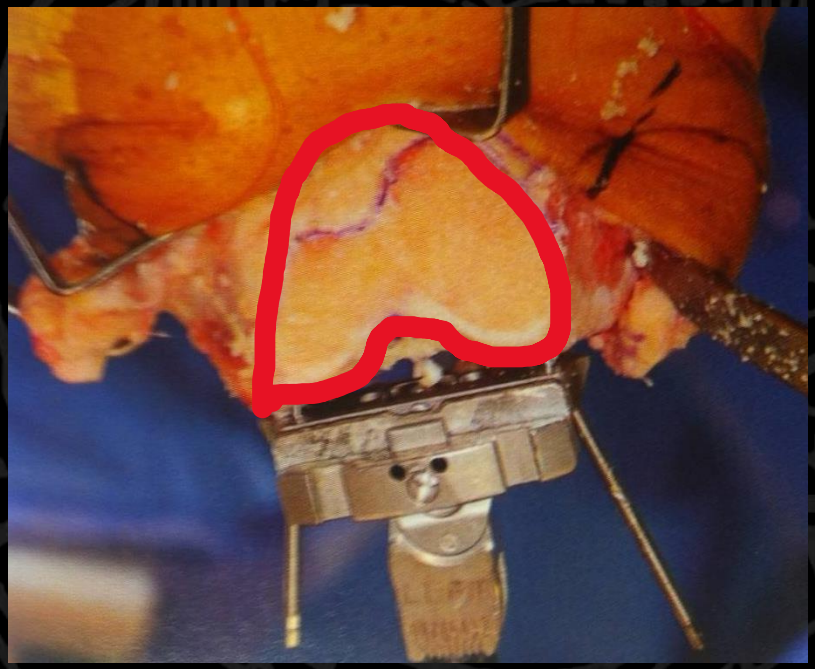
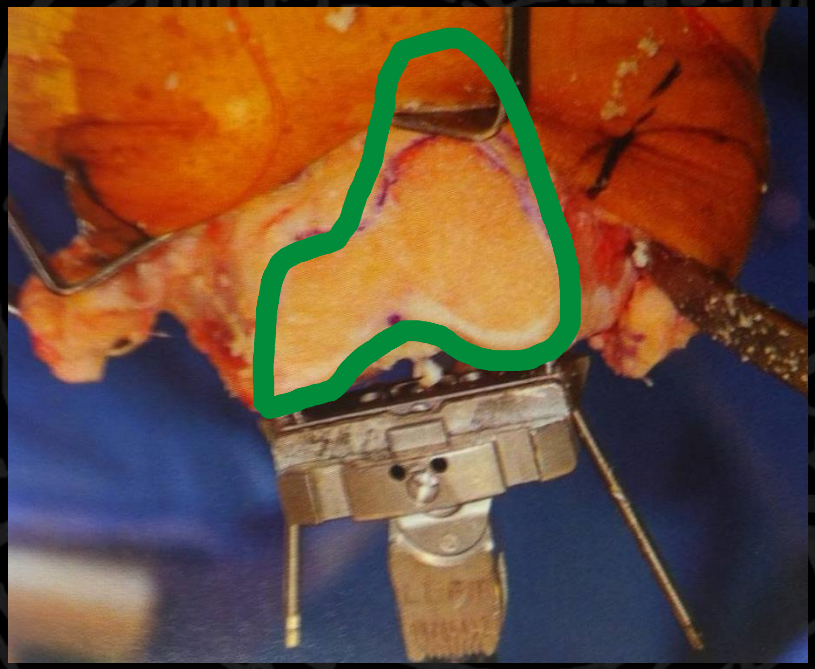


Internal Rotation

The ”Grand Piano” Sign

- **Proxy for appropriate rotation**

- **Preventing ”Notching”**
  - **Start cut medially**
  - **Stop short**
  - **”not the end of the world”**



External Rotation

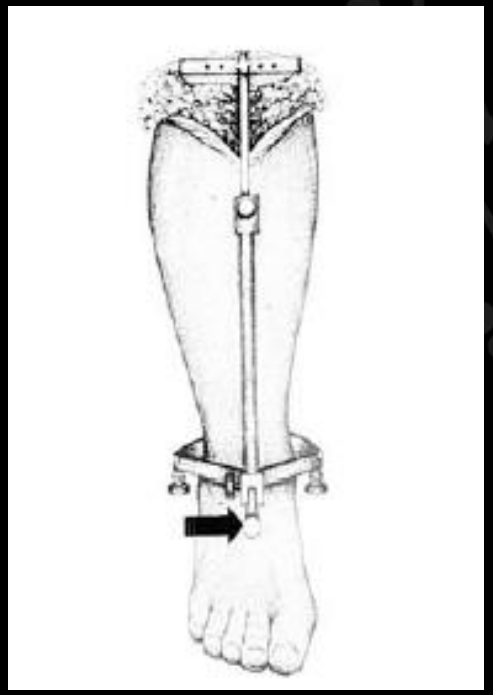
Proximal tibial cut

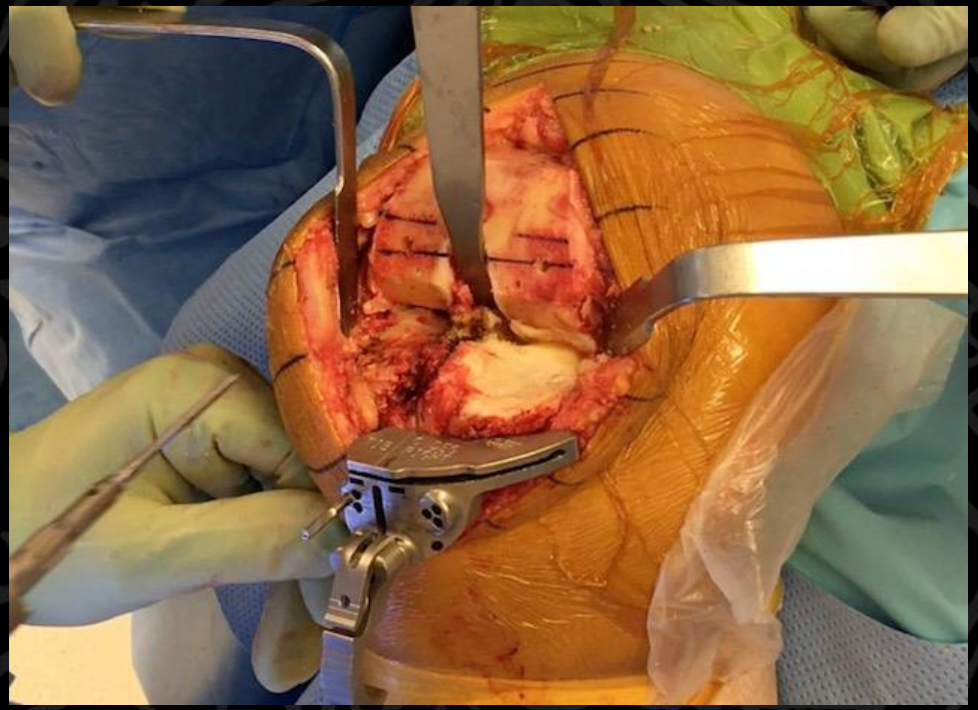
- **“Measure Thrice, cut Once”**
  - **Coronal**
  - **Sagittal**
  - **Depth**

- **“Double Check”**
  - **Inspect bony resection**
  - **Drop rod**

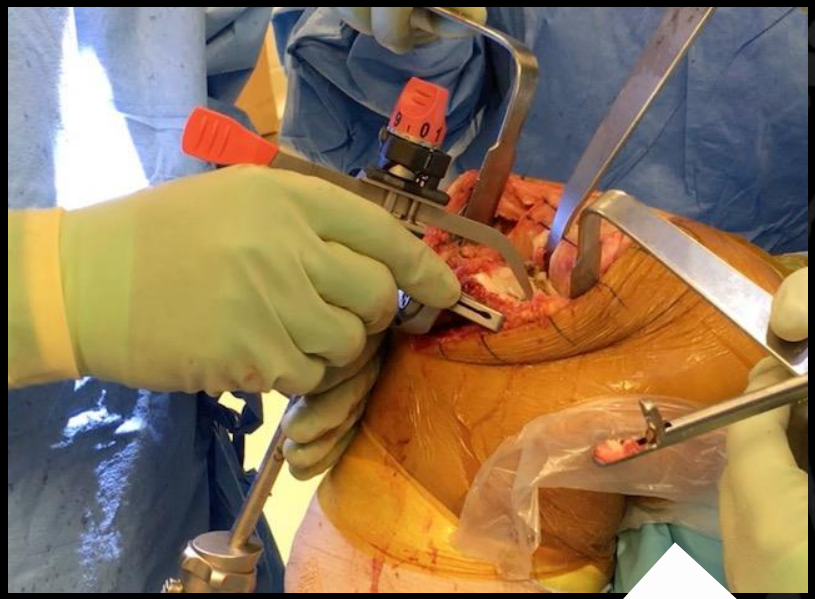
1. Coronal Alignment

- **Draw AP axis**
- **Perpendicular to mechanical/ anatomic axis**





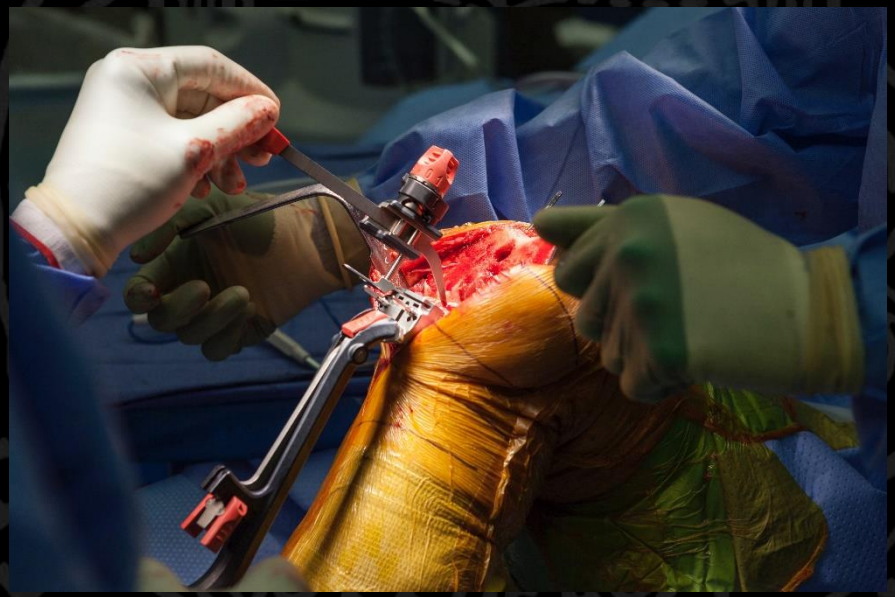
2. Sagittal Alignment



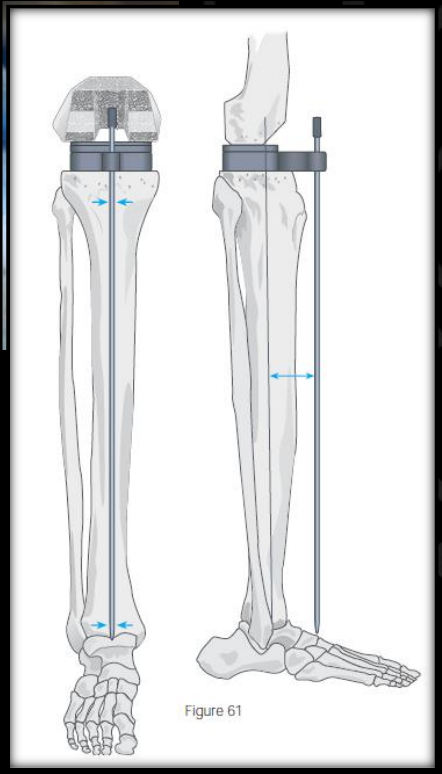
- First, check Lateral X-rays for native slope
- Determine your goal
  - PS vs CR
- Swoosh the proximal tibia
  - Caution w/ 3-2 finger technique

3. Depth of Resection

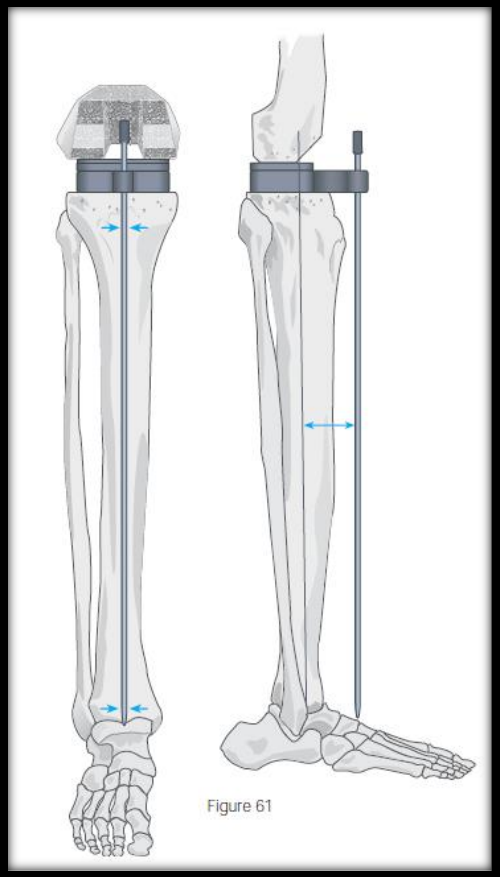
- **2 / 9mm stylus**
- **Varus- 9mm laterally**
- **Valgus- 9mm "floated" medially**
- **Severe deformity- consider 2mm off affected side**

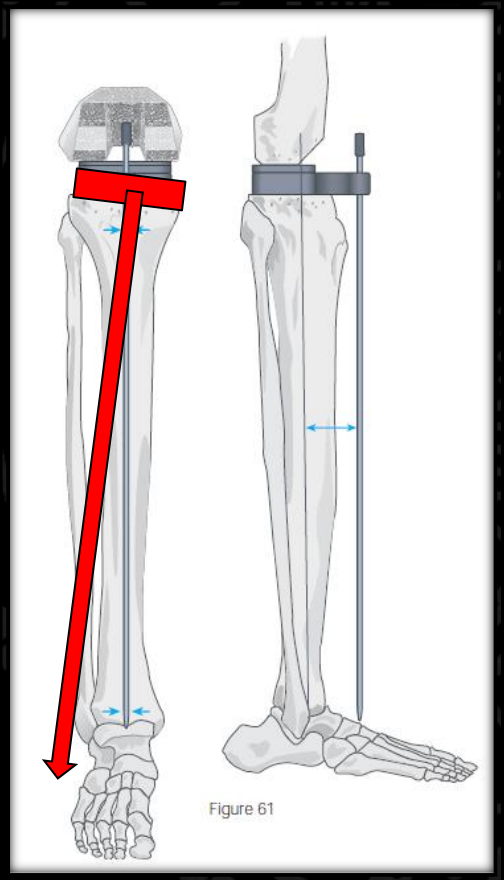


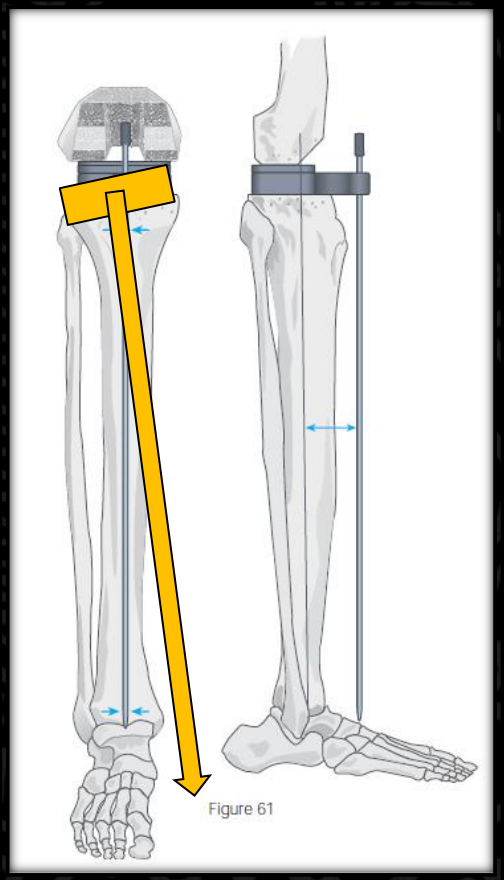
Checking Proximal Tibial Cut



Coronal Malalignment- Tibia Cut







Neutral **Varus** **Valgus**

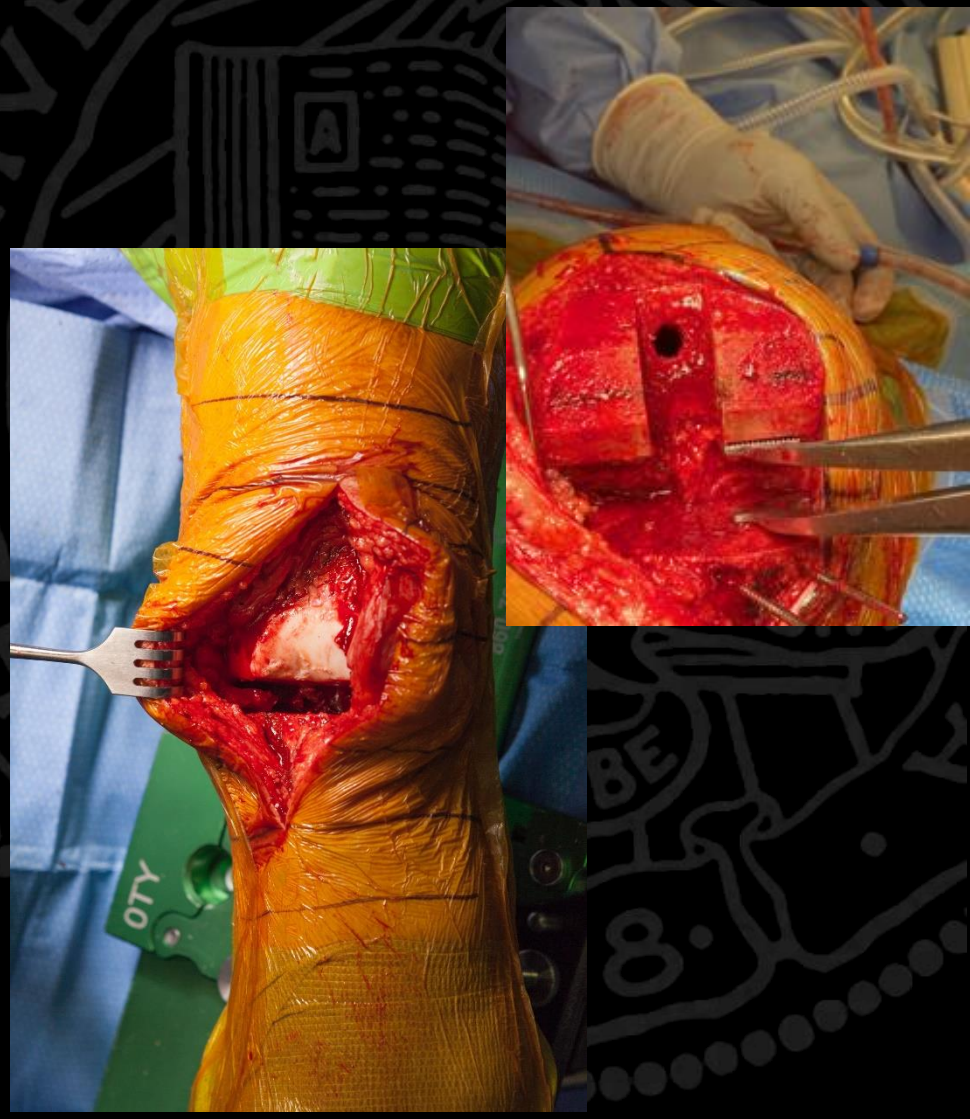
Flexion/ Extension Gap Assessment

- **Spacer block assessment**

- **Rectangle vs trapezoid?**

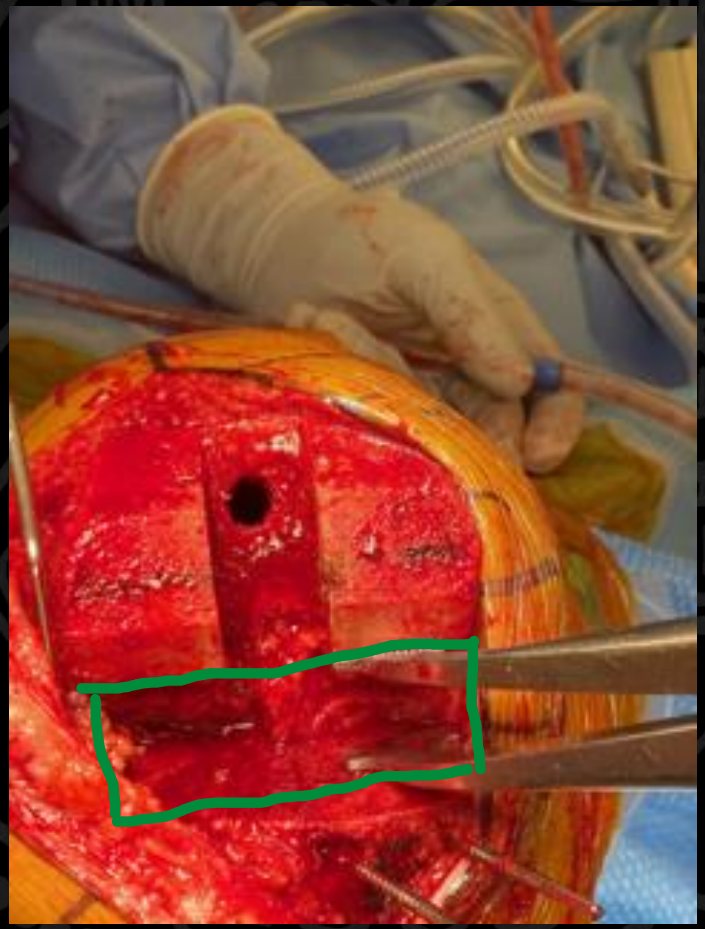
Flexion/ Extension Gaps

- **Goal is symmetric rectangular gaps**
- **Accommodate >/= minimum construct thickness**



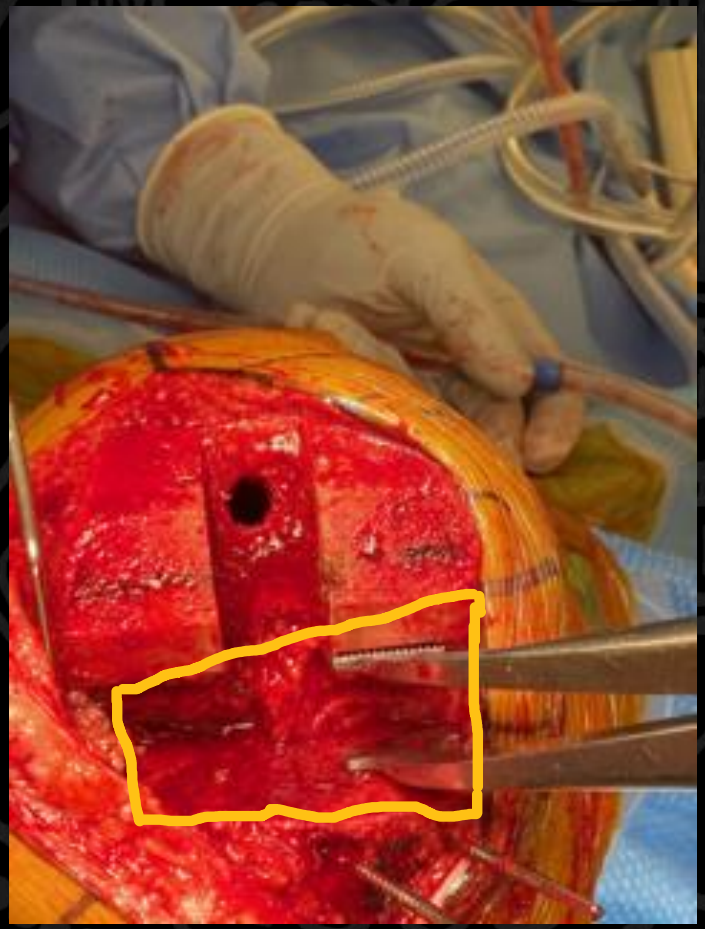
A Trapezoidal Gap- What might it indicate?

- **Bony issue**
  - **Femur**
  - **Tibia**
- **Soft tissue issue**
  - **Preop deformity**
  - **Iatrogenic injury**



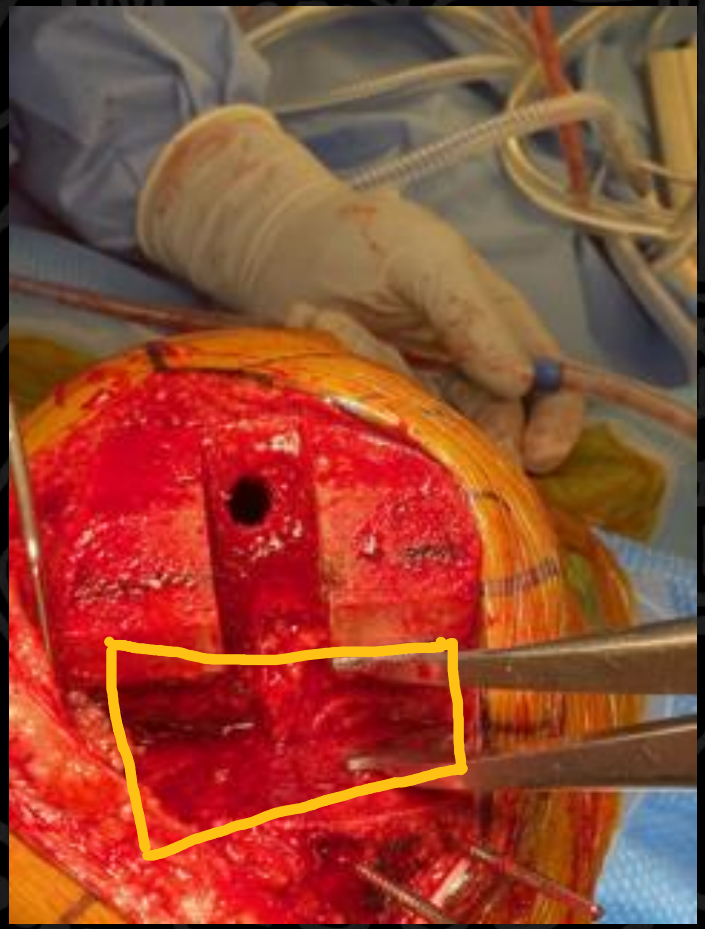
A Trapezoidal Gap- What might it indicate?

- **Flexion: Medial> Lateral**
- **Bony issue**
  - **Femur- ↑ ER**
    - **Exaggerated Grand Piano?**
  - **Tibia- Varus cut**
    - **Drop rod falls lateral?**
- **Soft tissue issue**
  - **Preop deformity**
    - **Valgus knee?**
  - **Iatrogenic injury**
    - **Varus knee?- anterior MCL**

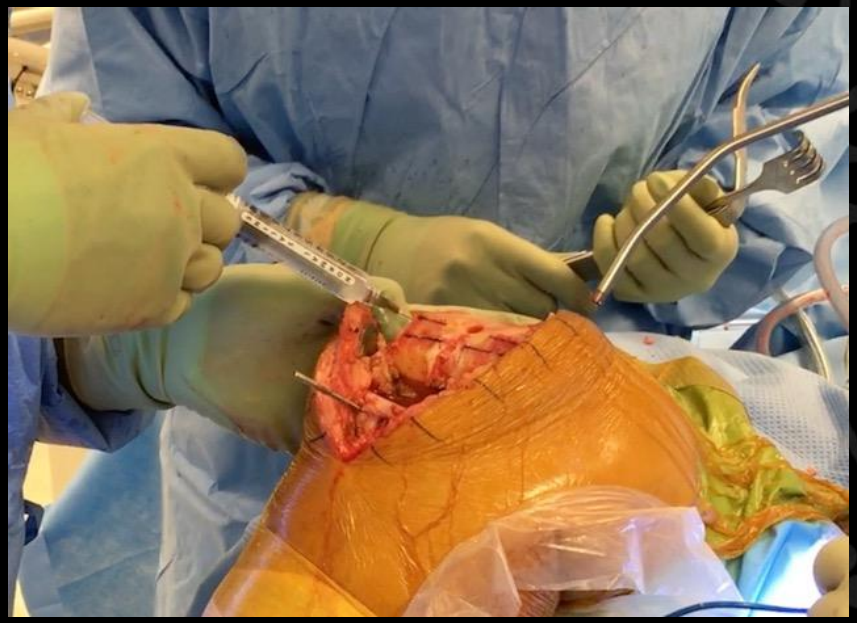


A Trapezoidal Gap- What might it indicate?

- **Flexion: Lateral> Medial**
- **Bony issue**
  - **Femur- ↑ IR**
    - **Symmetric anterior cut?**
  - **Tibia- Valgus cut**
    - **Drop rod falls lateral?**
- **Soft tissue issue**
  - **Preop deformity**
    - **Varus knee?**
  - **Iatrogenic injury**
    - **Valgus knee?- popliteus**



Periarticular Injection



- **Cocktail?**
  - **ropivacaine 5mg/mL (49.25mL), epinephrine 1mg/mL, (0.5mL), ketorolac 30mg/mL (1mL), clonidine 100mg/mL (0.8mL), and normal saline (48.45mL) for a total volume of 100mL. (Dalury 2011)**
- **Technique**
  - **Periosteum**
  - **Posterior knee- important, but beware**
- **Timing?**
  - **Throughout case**
  - **While cement curing**

Patellar Resurfacing

- **Restore composite thickness**
- **Symmetric resection**
- **Removing lateral facet**
- **Tracks laterally?**

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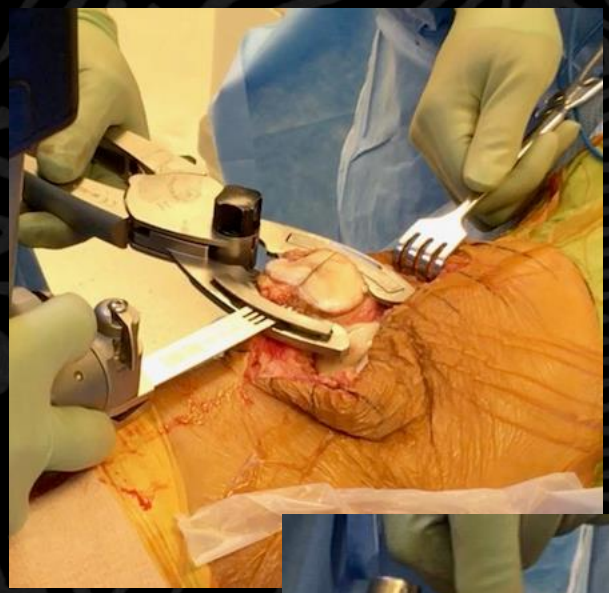

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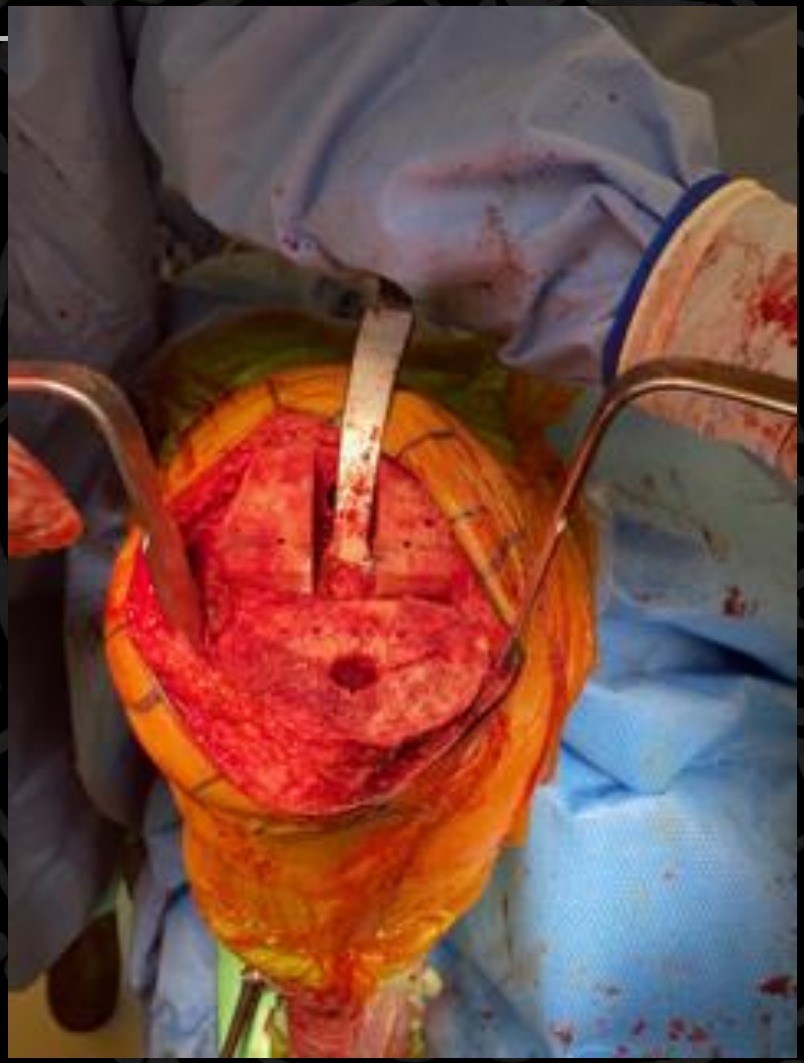
Cementing

- **Clean, dry bony surfaces**
- **Finger pressurize cement into bone**
- **Coat implants**
- **Avoid putting cement on posterior femoral condyles**



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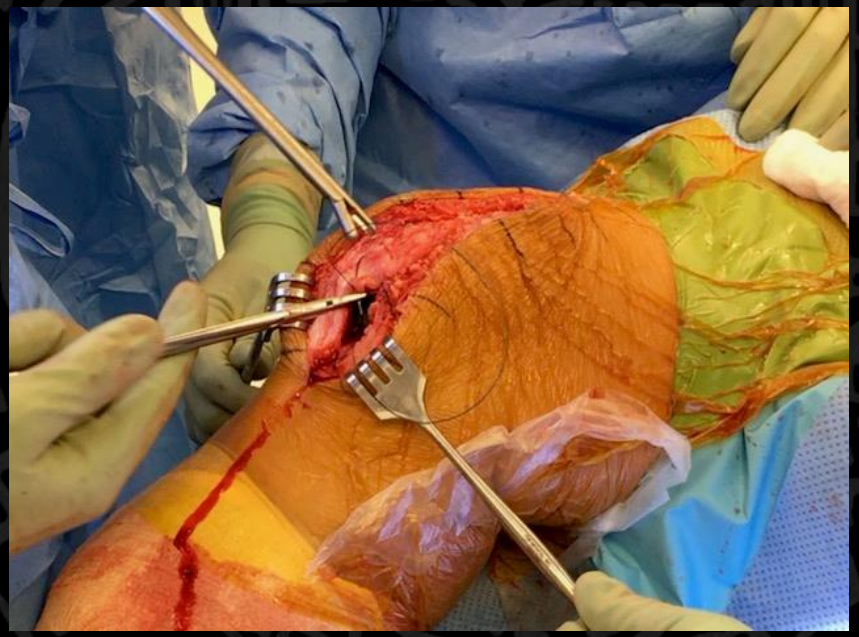
Closure

- **Multilayer closure**
  - **Combo interrupted/ running barbed**
- **Consider subcuticular /skin glue**
- **Dressing in hyperflexion**



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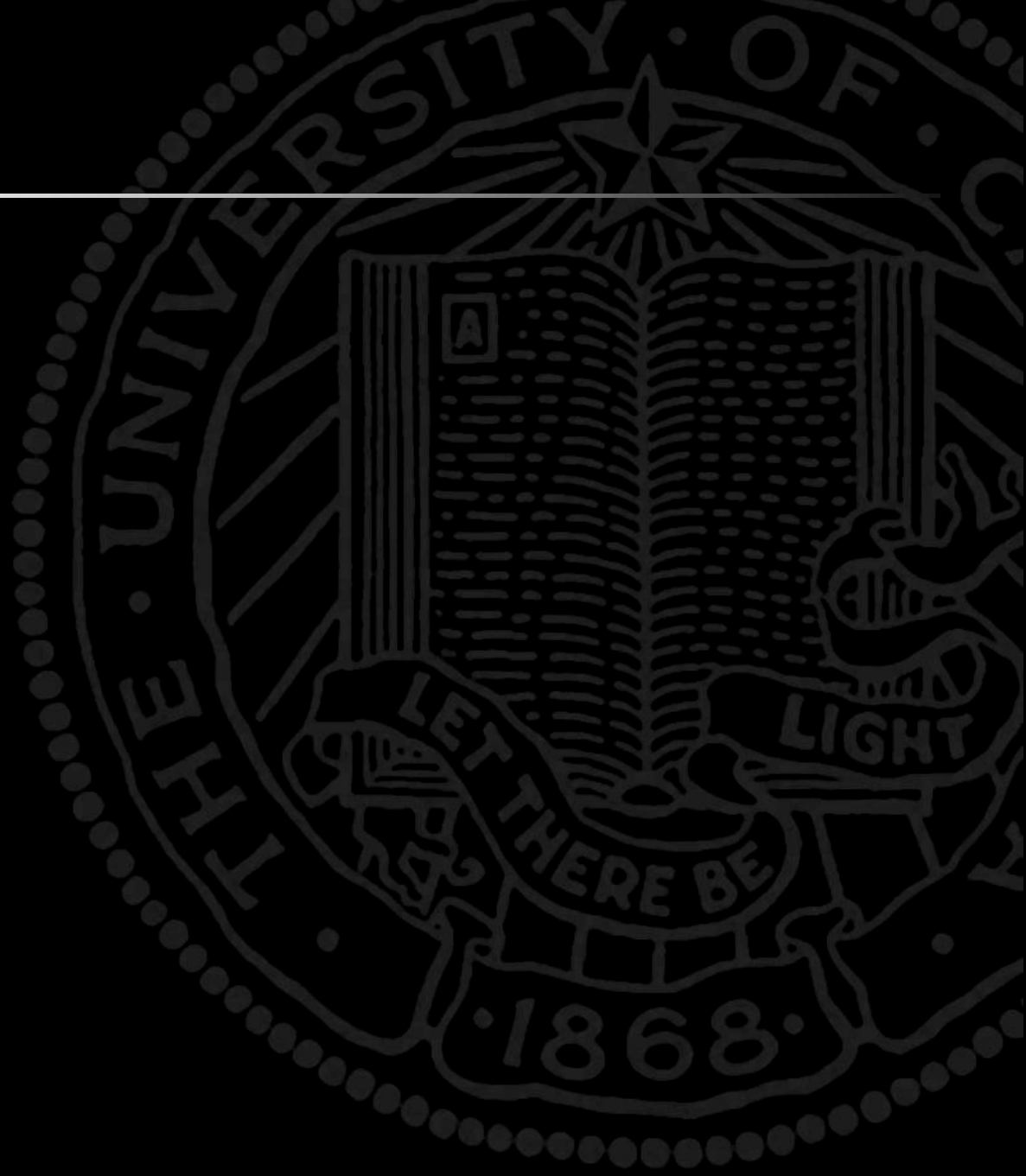
POST-OPERATIVE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THANKS for your attention!