

# How I Perform My Medial Opening Wedge HTO



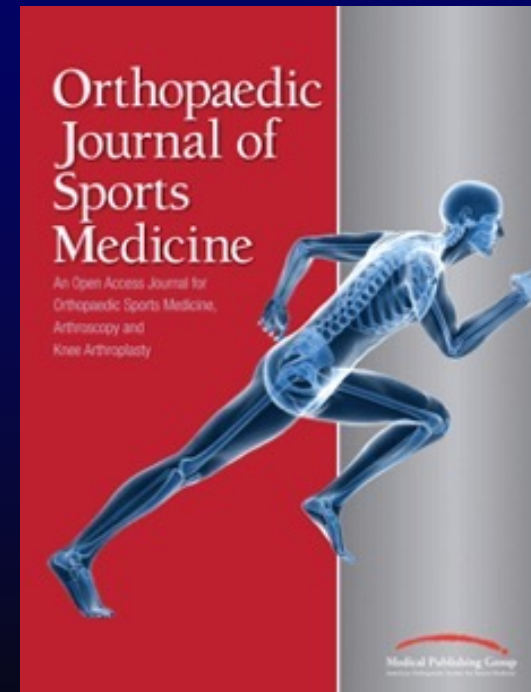
**Daniel C. Wascher, M.D.**

**Department of Orthopaedics  
University of New Mexico**

# Disclosures

- **Fellowship Support**
  - **Arthrex**
- **Editorial Board**
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- **Board of Directors**
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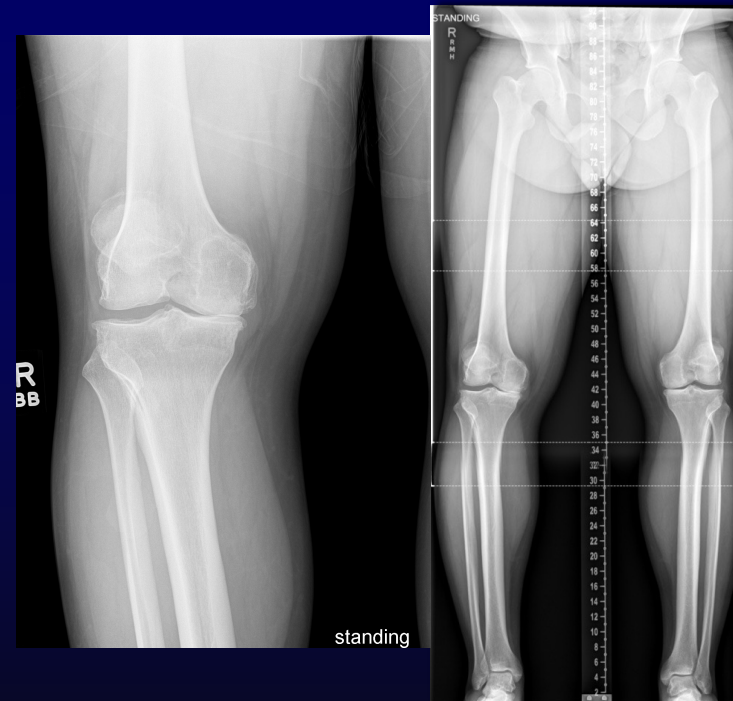
## Associate Editor





# High Tibial Osteotomy

**Most Frequently  
Used to  
Unload Arthritic  
Medial Compartment  
In Younger, Active  
Patients With  
Osteoarthritis**



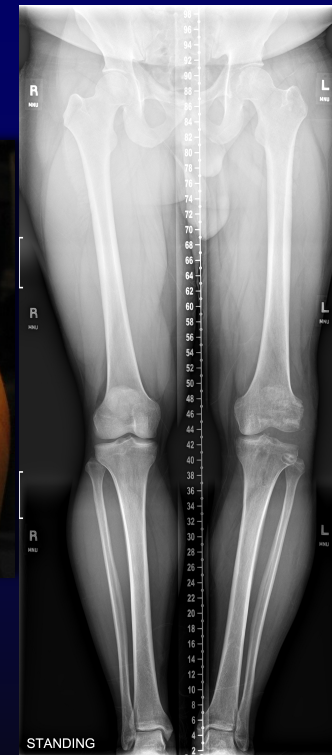
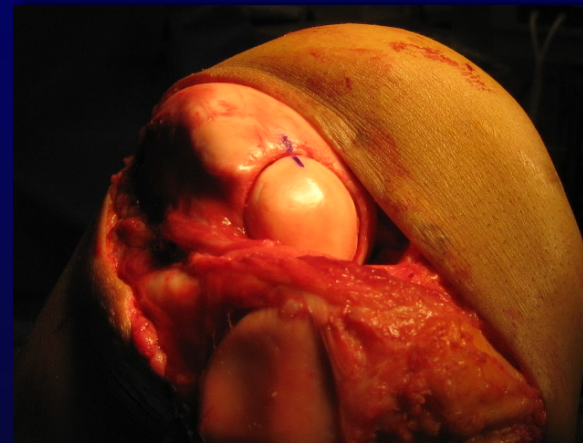
# Other Uses for Osteotomy

**Protect Cartilage  
Procedures**

**ACI, MegaOATS, Meniscal  
Transplant**

**Protect Ligament  
Reconstructions**

**PLC, ACL**



# Advantages of Osteotomy

**Retain Proprioception**

**Preserve Bone Stock**

**Allow High Level of Activity**

**Lower Cost than  
Arthroplasty**



# Ideal Indications

**Age < 60**  
**Localized Pain**  
**Full ROM**  
**Non-Reducible**  
**Normal Ligaments**  
**Normal BMI**  
**High Activity Level**



# Contraindications

**Inflammatory  
Arthritis**

**Flexion Contracture  
> 15°**

**Unstable Knee  
Combined Procedure**





# Advantages of Opening Wedge

**Accurate Correction**

**Avoids Peroneal  
Nerve**

**Can Be Combined With  
ACL Reconstruction**



# Disadvantages

Need For Bone Graft?

Slower Healing

Patella Alta

Leg Lengthening

Tendency to ↑ Slope

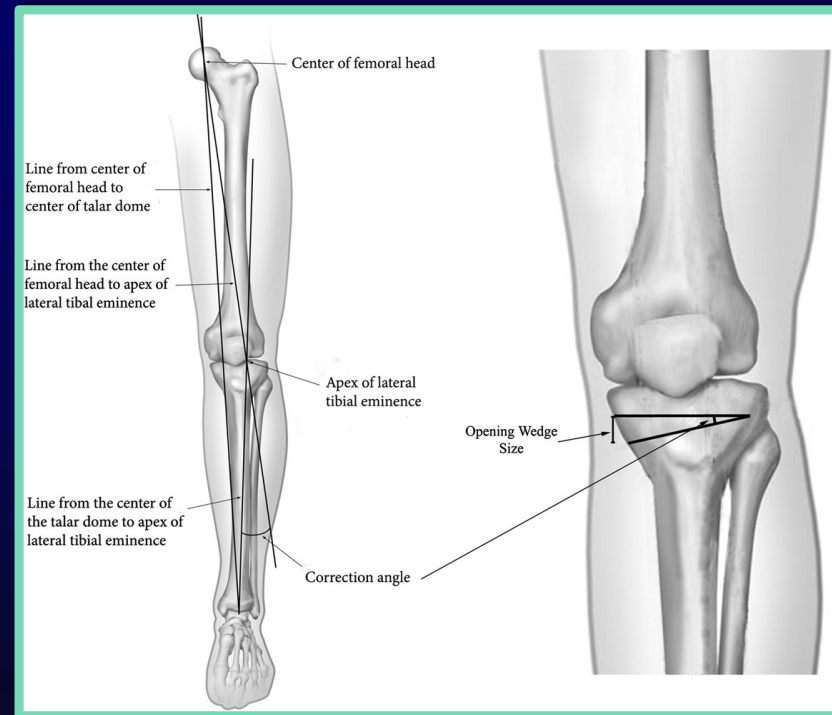


# Pre-Operative Planning

## Long Leg Radiographs

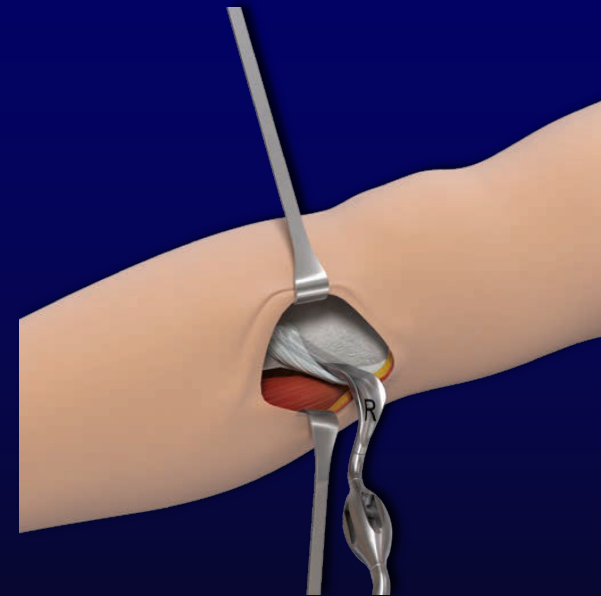
Center Femoral Head  
To 62% of Joint Line  
To Center of Ankle

1 mm Wedge Resection  
= 1° Correction



# Intra-Operative Measures

**Fluoroscopy**  
**Tourniquet**  
**Radiolucent Retractor**  
**Intravenous Antibiotics**  
**Tranexamic Acid**



# Opening Wedge Technique

Incision



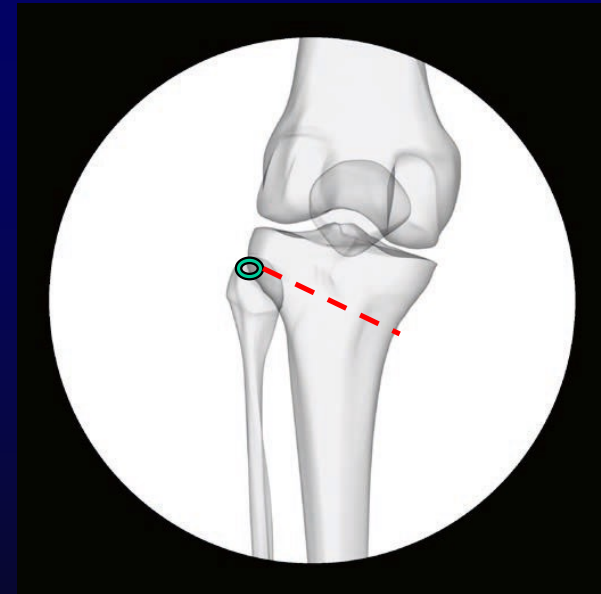
Guide Pins





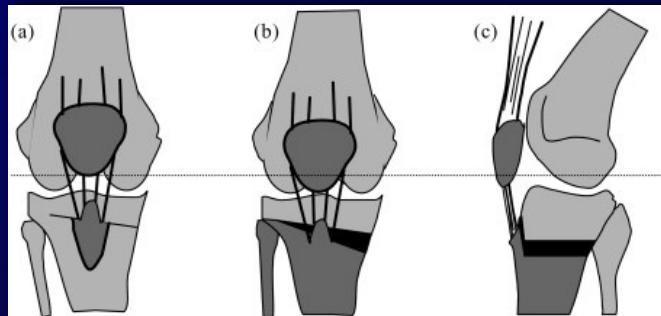
# Plane Of Ostetomy

From Superior Edge  
Of Pes Anserine Tendons  
To Proximal 1/3 Fibular Head  
( $\approx$  1 cm Below  
Lateral Joint Line)  
Stop 1 cm From  
Lateral Cortex

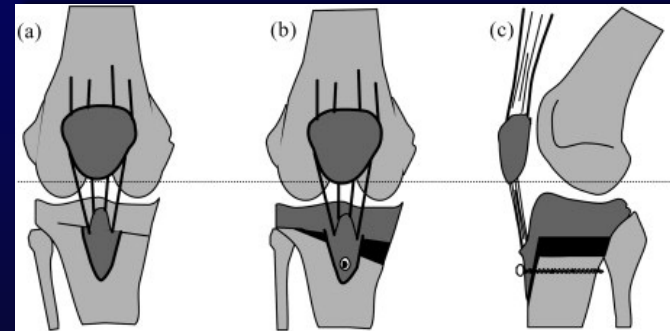


# L Shaped Ostetomy

Lobenhoffer



Monllau



# MOWHTO Technique

Osteotome



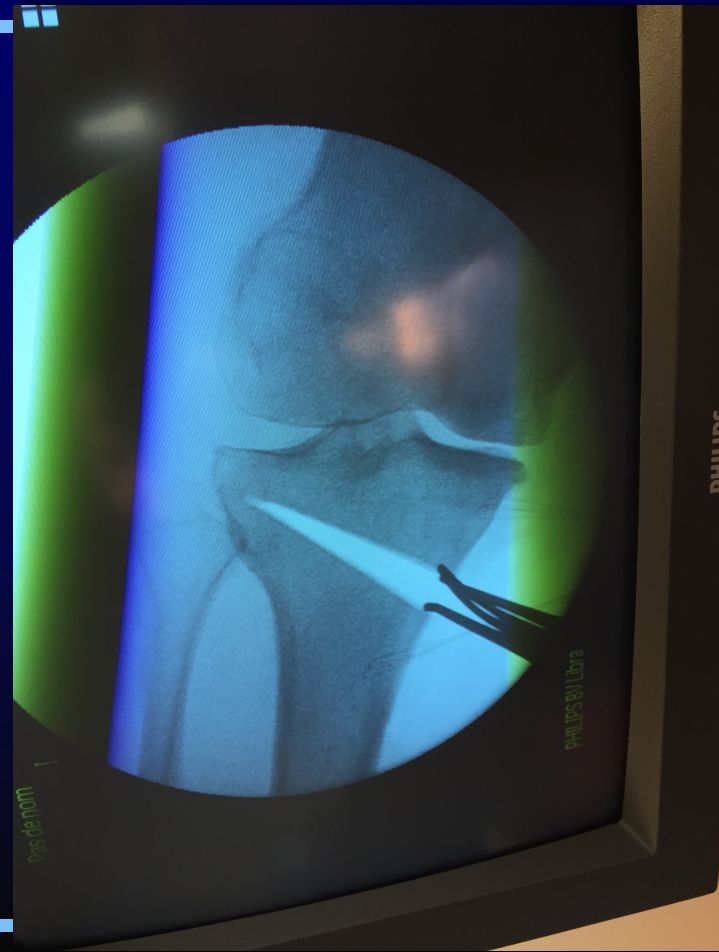
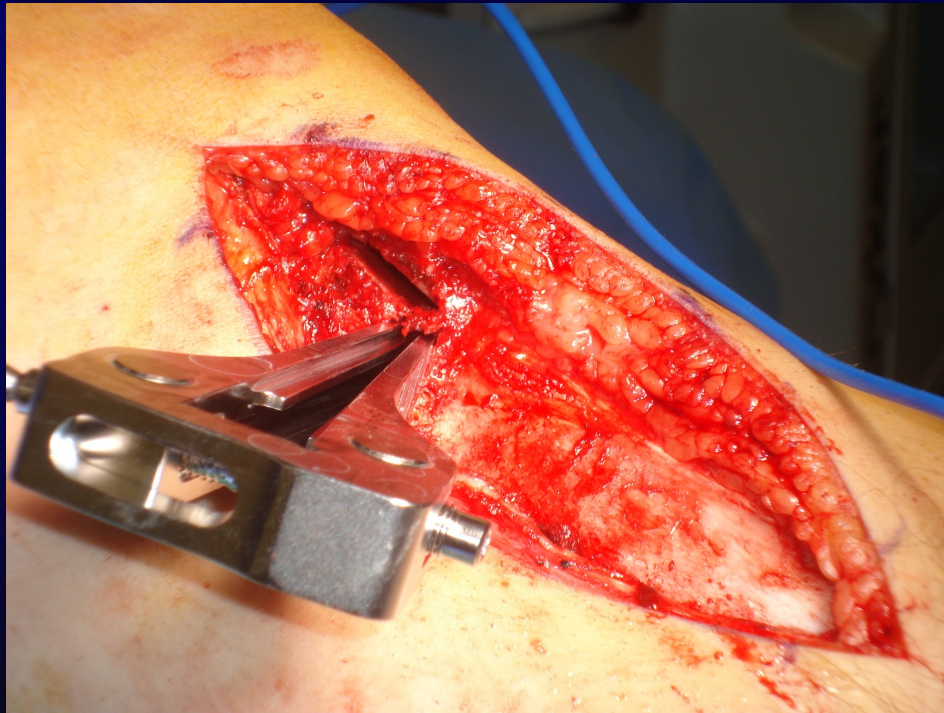
Stacked Osteotomes





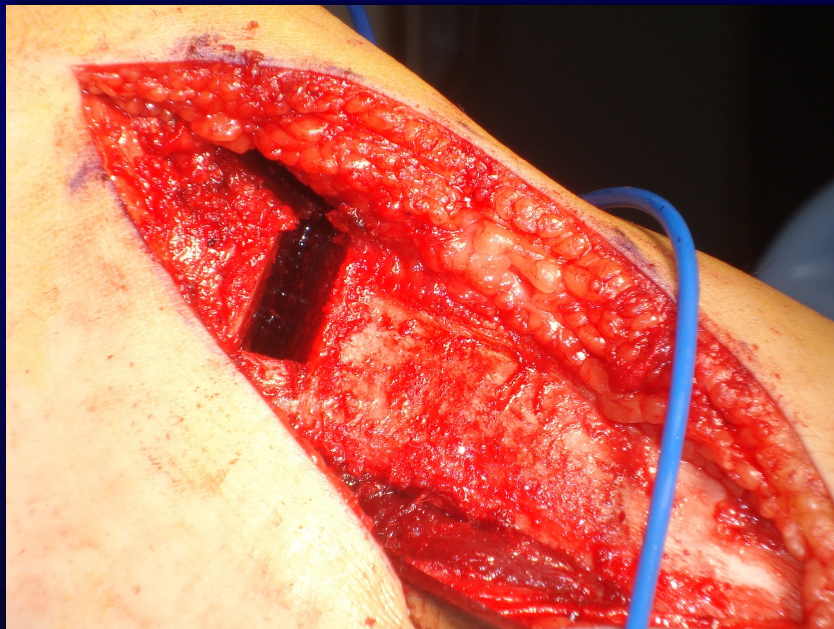
# MOWHTO Technique

## Distraction

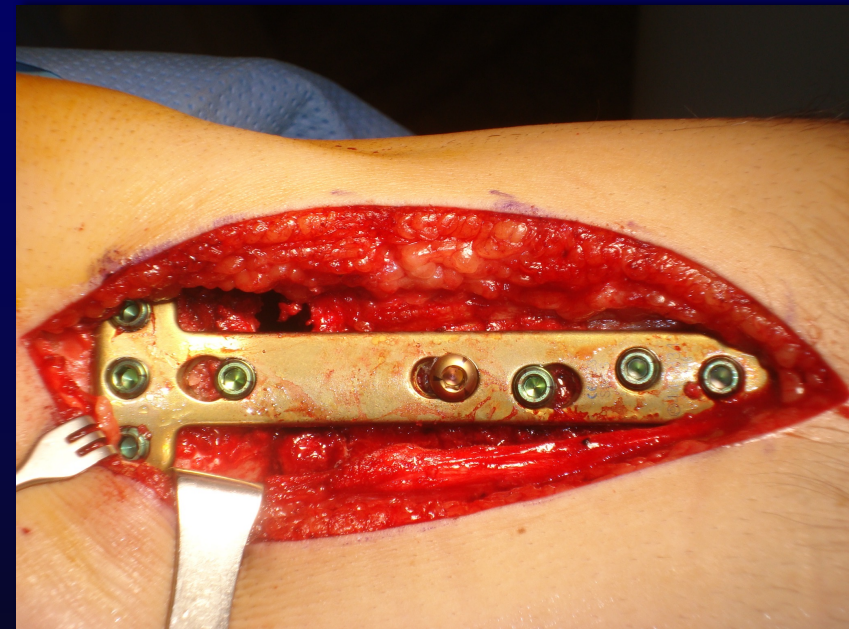


# MOWHTO Technique

**Bone Graft**



**Plate Application**





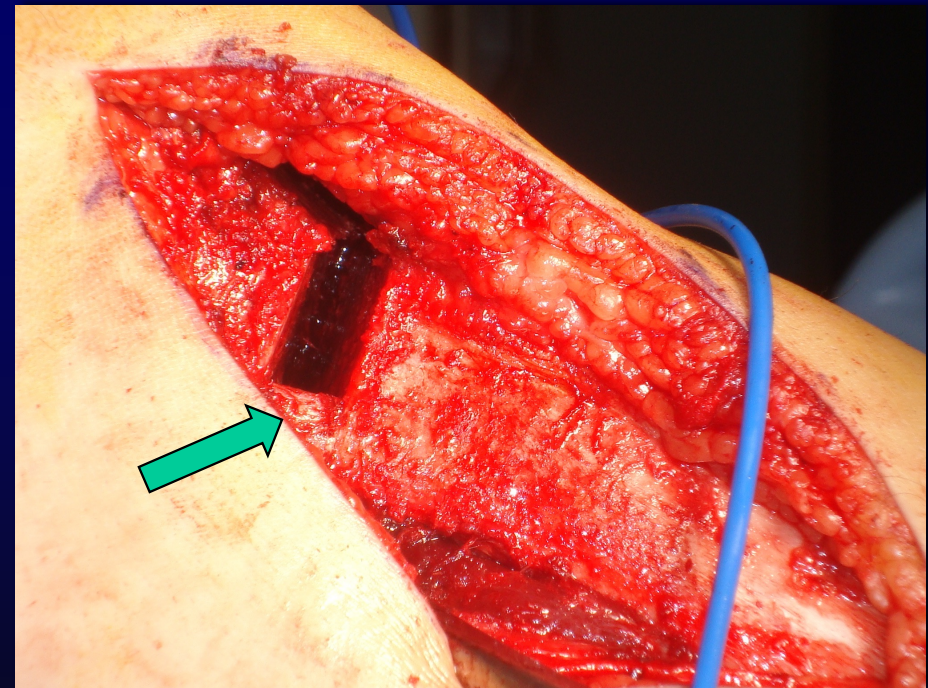
# Graft Option

1. Nothing
2.  $\beta$  Tricalcium Phosphate Wedges
3. Allograft Wedges
4. Allograft Chips
5. Iliac Crest



# My Graft Algorithm

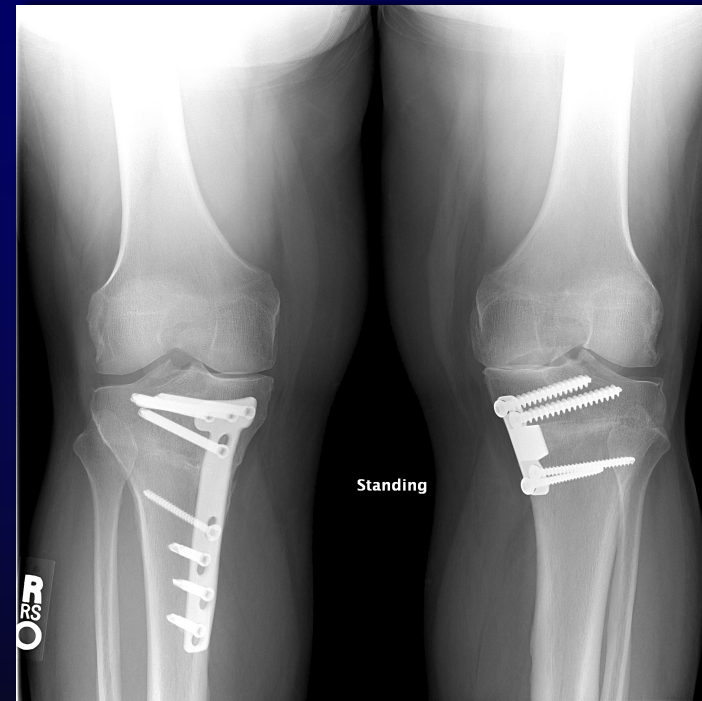
1. Correction  $< 10^\circ$  - **No Graft**
2. Larger Correction - **Cancellous Chips**
3. Larger Correction and Obese or Smoker – **Tricortical Iliac Crest**



# Plate Fixation

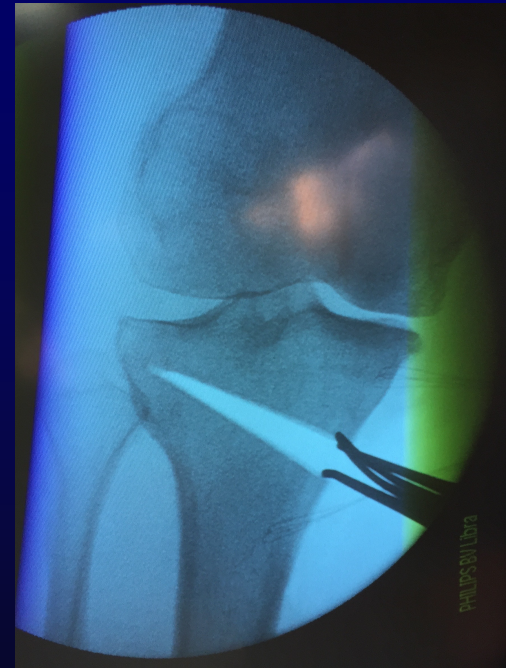
Earlier Plates Had  
Some Failures With  
Delayed Union

Use Sturdy Locking  
Plates



# Tricks to Avoid Increasing Slope

1. Ensure Posterior Cortex is Completely Cut
2. Place Distractor Posterior in Osteotomy Plane
3. Place Lamina Spreader Posterior (and Ensure Posterior Gap is Larger than Anterior Gap)

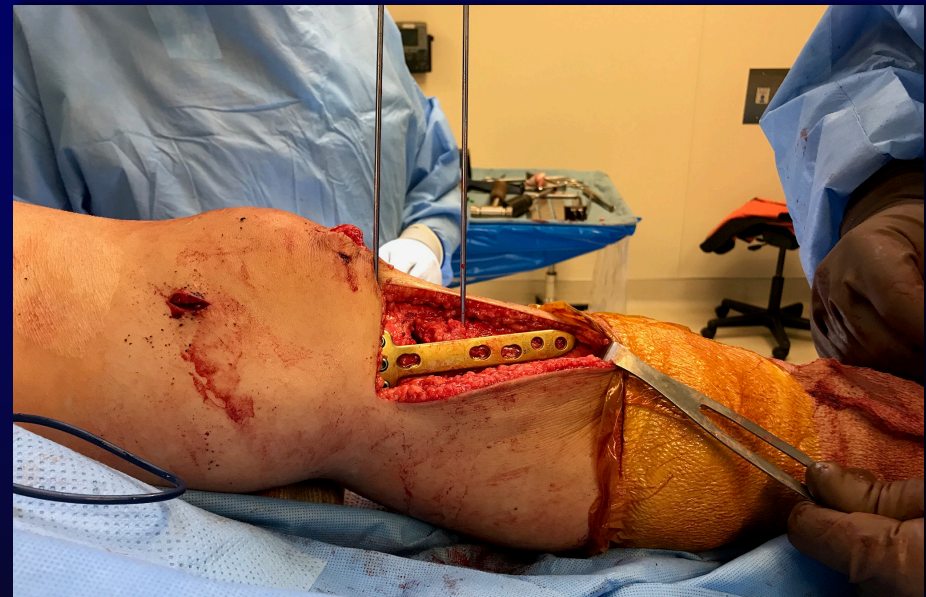




# Tips To Avoid Increasing Slope

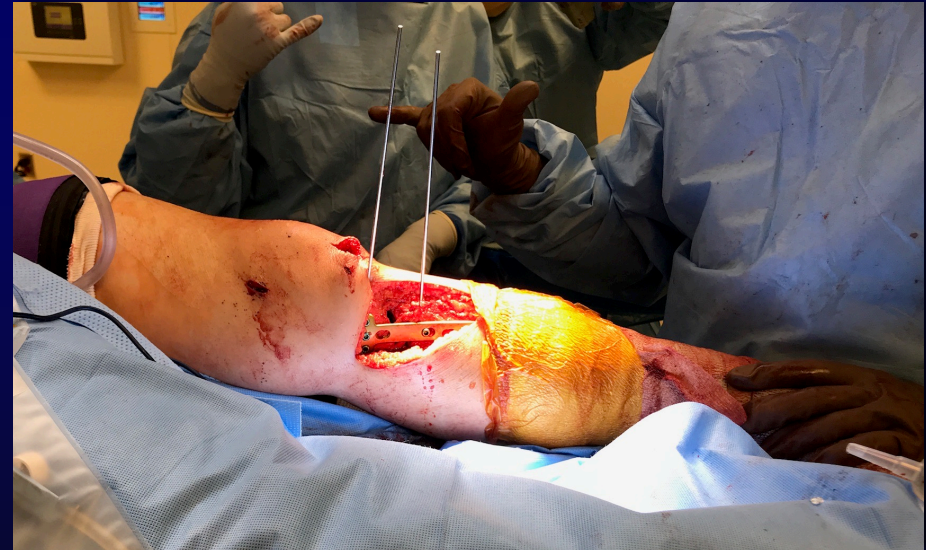
**Fix Plate Proximally  
With Distal Aspect  
Aligned  
Anteriorly**

**Pin Proximal and Distal  
To Osteotomy**





# Tips to Avoid Increasing Slope



# Weight Bearing

**Early weight bearing versus delayed weight bearing in medial opening wedge high tibial osteotomy: a randomized controlled trial**

Joris Radboud Lansdaal<sup>1</sup> · Tanguy Mouton<sup>1</sup> · Daniel Charles Wascher<sup>2</sup> ·  
Guillaume Demey<sup>3</sup> · Sebastien Lustig<sup>1</sup> · Philippe Neyret<sup>1</sup> · Elvire Servien<sup>1</sup>

**No Difference in Union Rates (2%)  
No Difference in Outcomes at 1 Year  
Allows Some Patients a Quicker  
Recovery**

# Complications

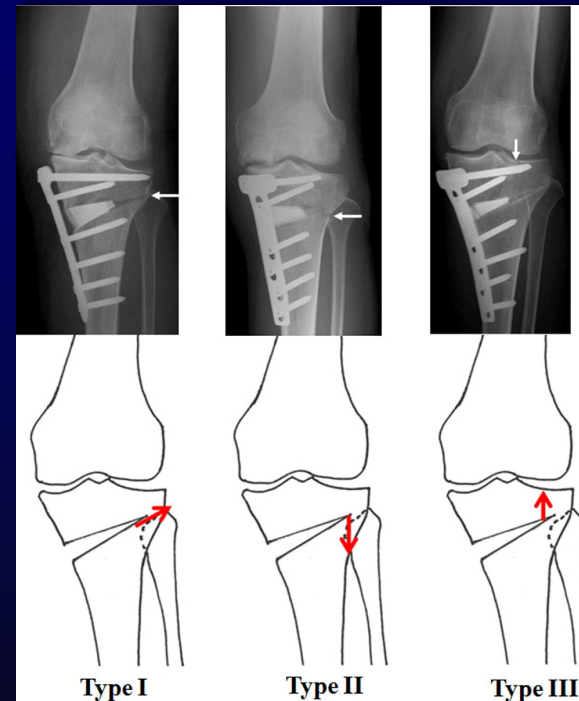
**Undercorrection**  
**Overcorrection**  
**Iliac Crest Pain**  
**Non-Union**  
**Infection**  
**Nerve Injury**  
**Vascular Injury**  
**DVT**



# Lateral Hinge Fracture

Occurs in  
12-25% of  
Reported Series

Type II May Have  
Higher Delayed  
Union Rate



# Lateral Hinge Fracture

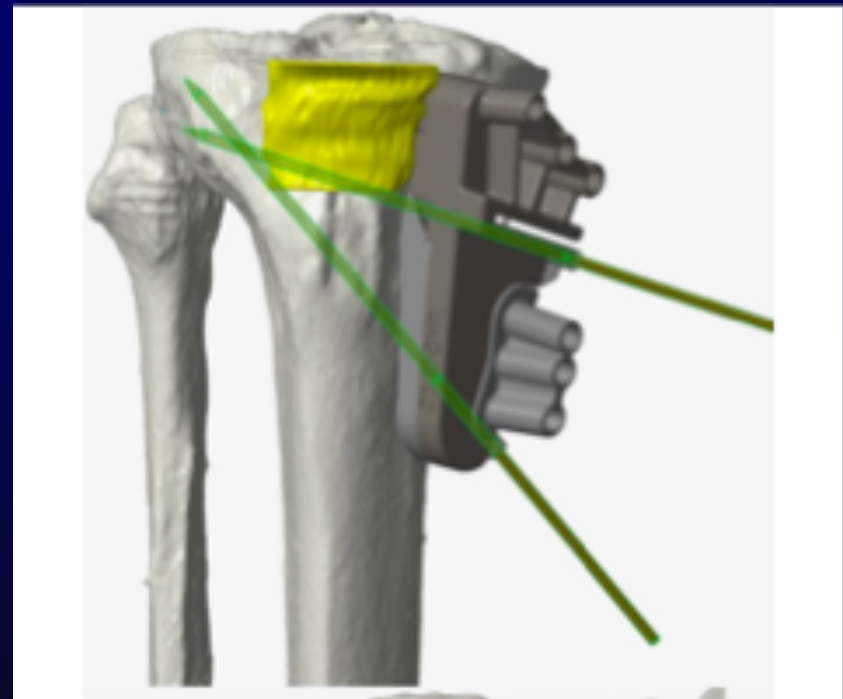
Increased Risk with  
Gap Width  $> 9$  mm  
And If Over or  
Undercut Osteotomy





# Prevention of Lateral Hinge Fracture

**Placing a K-Wire  
Intersecting the  
Cutting Plane at the  
Theoretical Hinge  
Limits Cut Depth  
And Increase Stability  
When Opening**

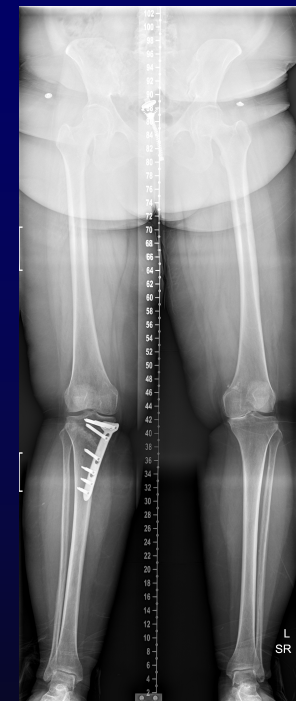
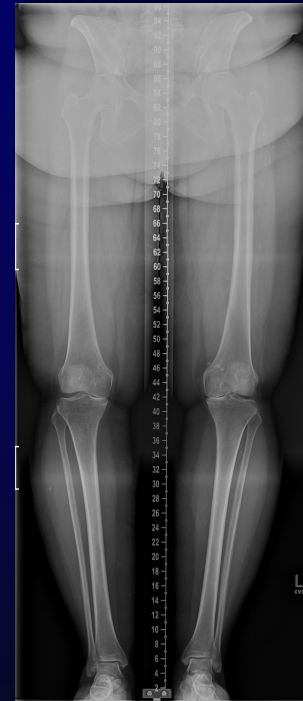


# Slope Change



# Summary

**Good Patient Selection**  
**Pre-operative Planning**  
**Careful Surgical Technique**  
**Rigid Plate Fixation**  
**Graft as Needed**



# Merci !!

