

# Complex Tibia Plateau fracture – ORIF

**AO Trauma Course—Advanced Principles of Fracture Management**  
April 25–28, 2022 Fredericia, Denmark

# Aims

- Basic understanding of the pathology of tibial plateau fractures
- Indications for plates
- Surgical approaches for plates
- Examples

# Tibial plateau fractures

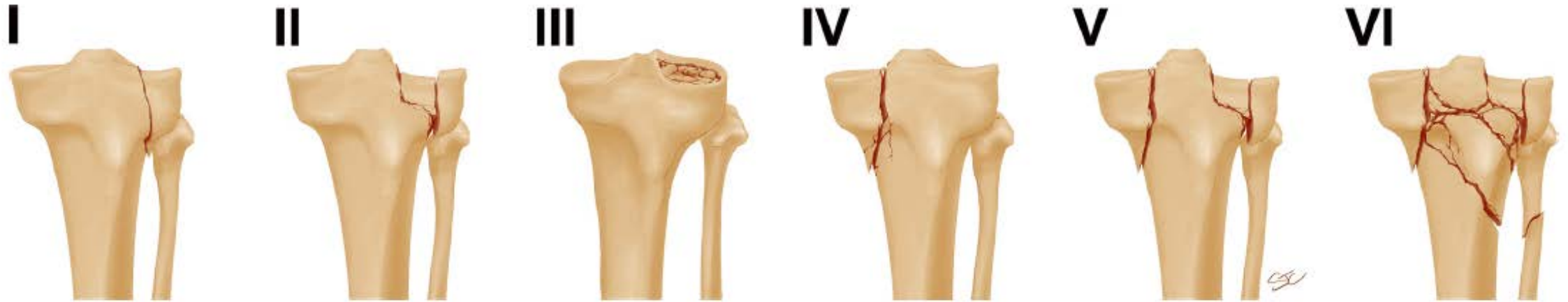
## Classification:

- 3 different fracture types:
  - plateau fractures following axial compression
  - dislocation fractures
  - combinations (comminuted)

Elderly people with osteoporotic bone

Young patients after high impact injuries, ligamentary instability

# Schatzker: focus on impression/depression



Injury, Int. J. Care Injured 49 (2018) 2252–2263



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Injury

journal homepage: [www.elsevier.com/locate/injury](http://www.elsevier.com/locate/injury)



Revisiting the Schatzker classification of tibial plateau fractures

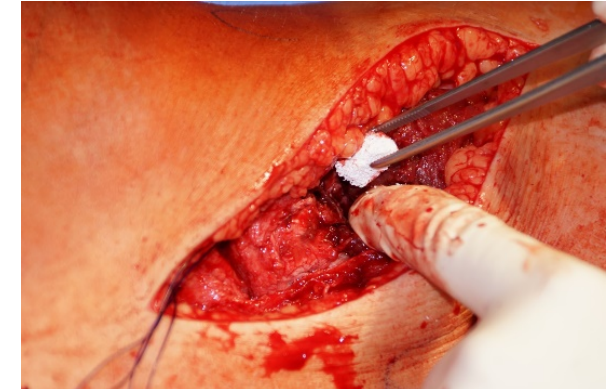
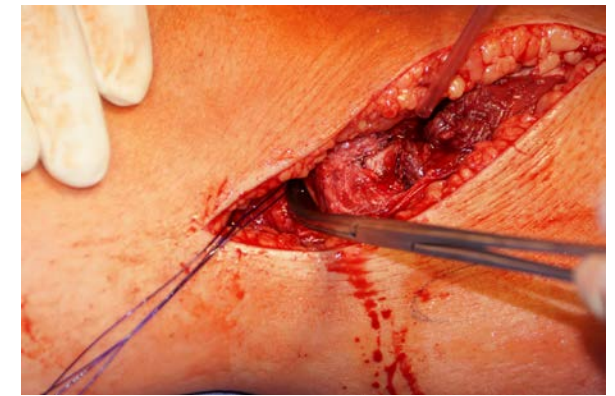
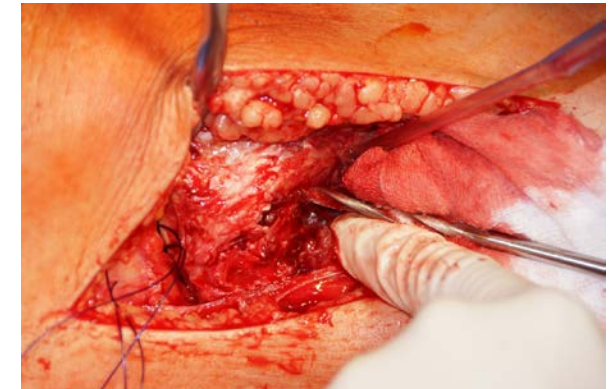
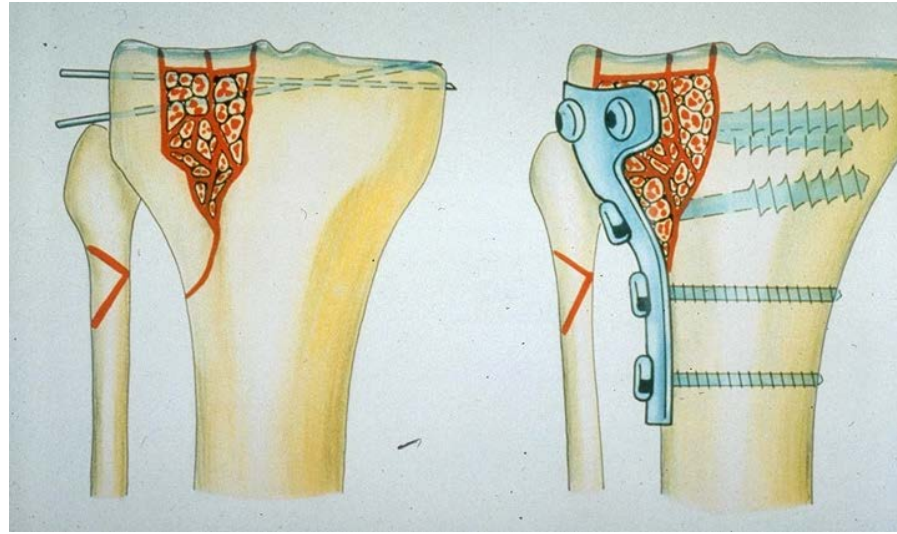
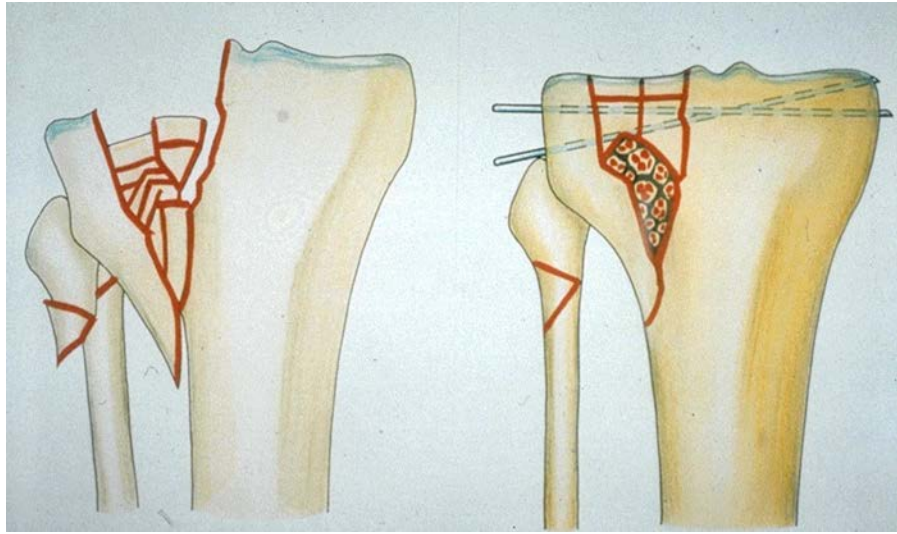
Mauricio Kfuri<sup>a,b,\*</sup>, Joseph Schatzker<sup>c</sup>



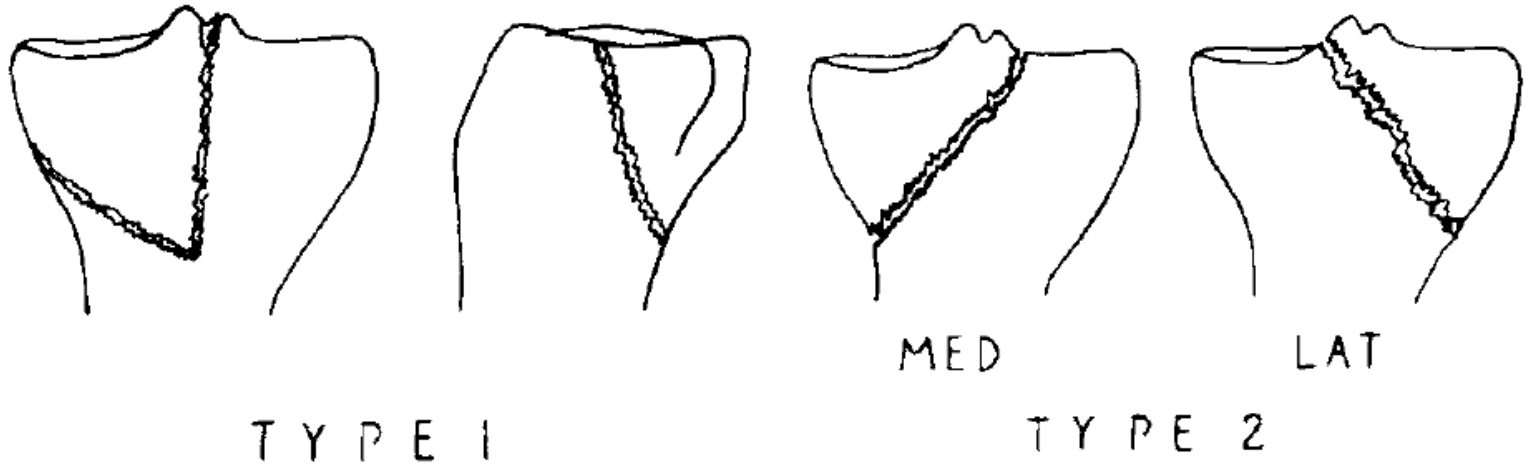
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# Schatzker 3: reduction and using a plate for buttressing

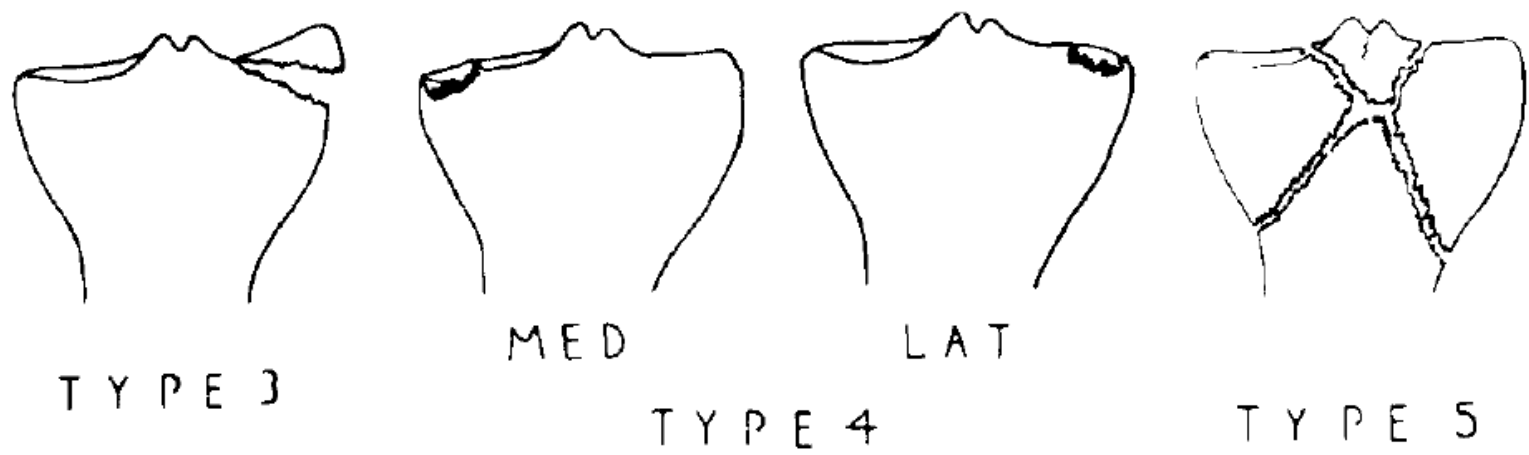


# Moore: focus on ligamentary instability



Fracture-dislocation with **LARGE** fragments is usually fixed with plates.

## Fracture-Dislocation of the Knee

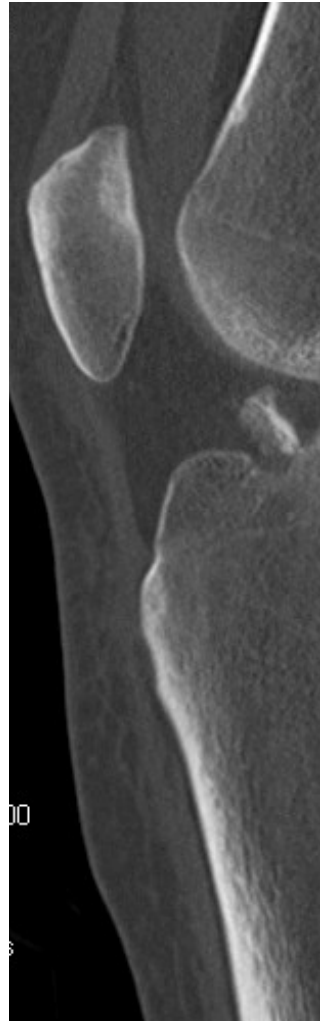


TILLMAN M. MOORE, M.D.

Number 156  
May, 1981



**Not impressive injury.**

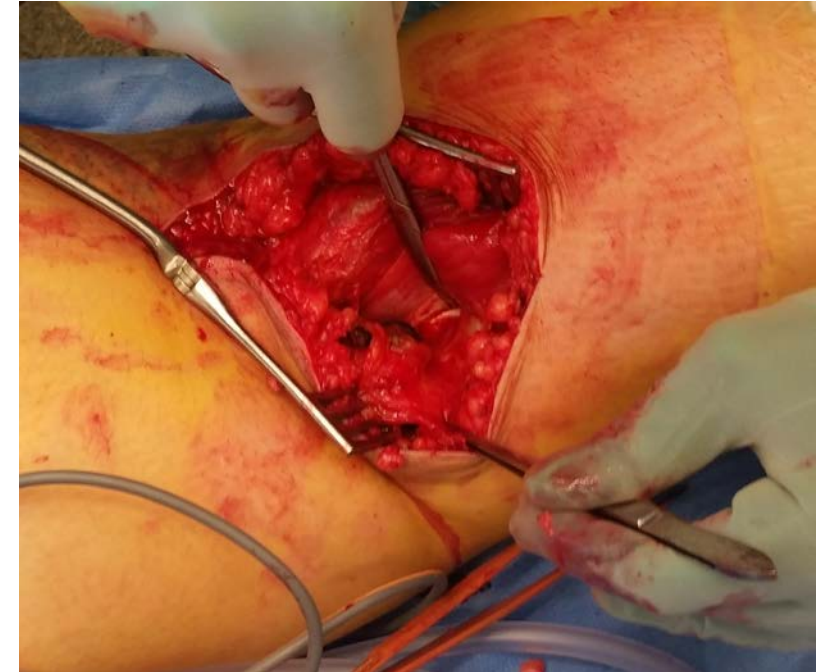


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## Approach and outcome

Scott C. Faucett, M.D., M.S., James Gannon, Jorge Chahla, M.D., Marcio B. Ferrari, M.D.,  
and Robert F. LaPrade, M.D., Ph.D.

*Arthroscopy Techniques, Vol 6, No 2 (April), 2017: pp e391-e395*

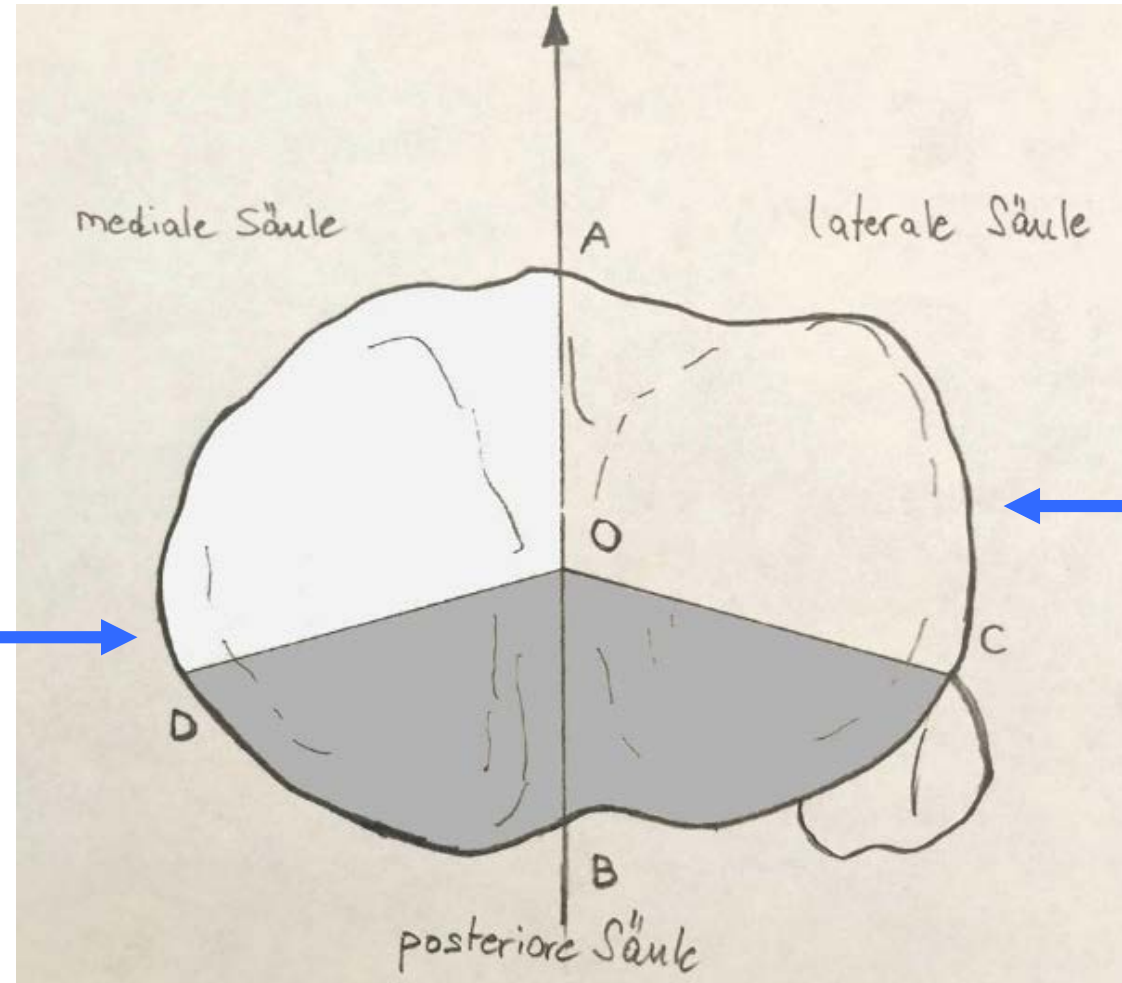
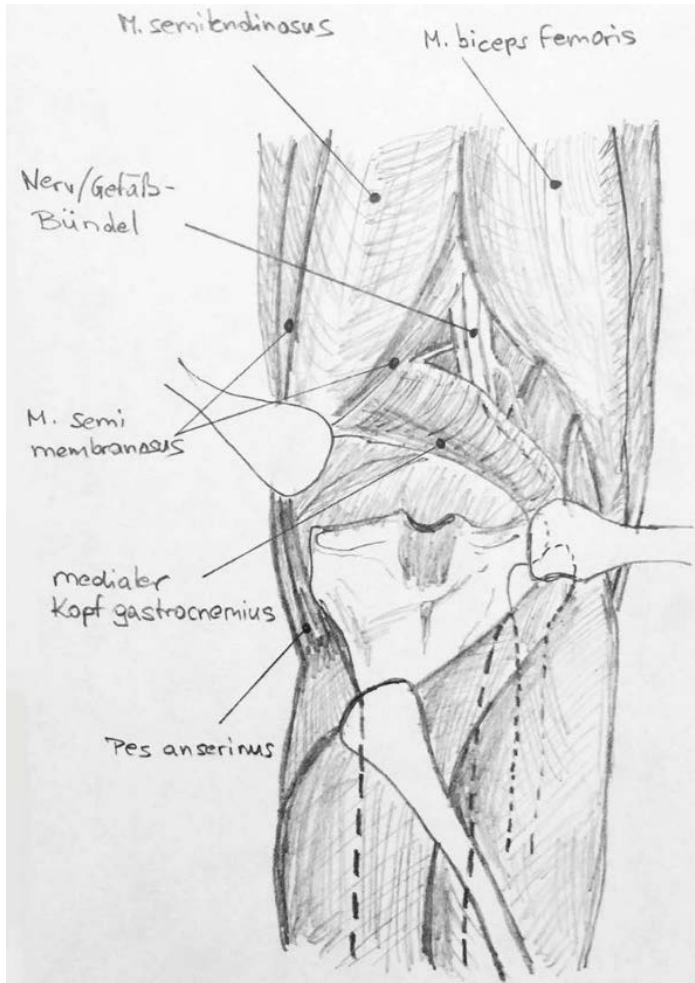


### 3 months:

- Free ROM
- No pain, no medication: SPS 0
- No complains

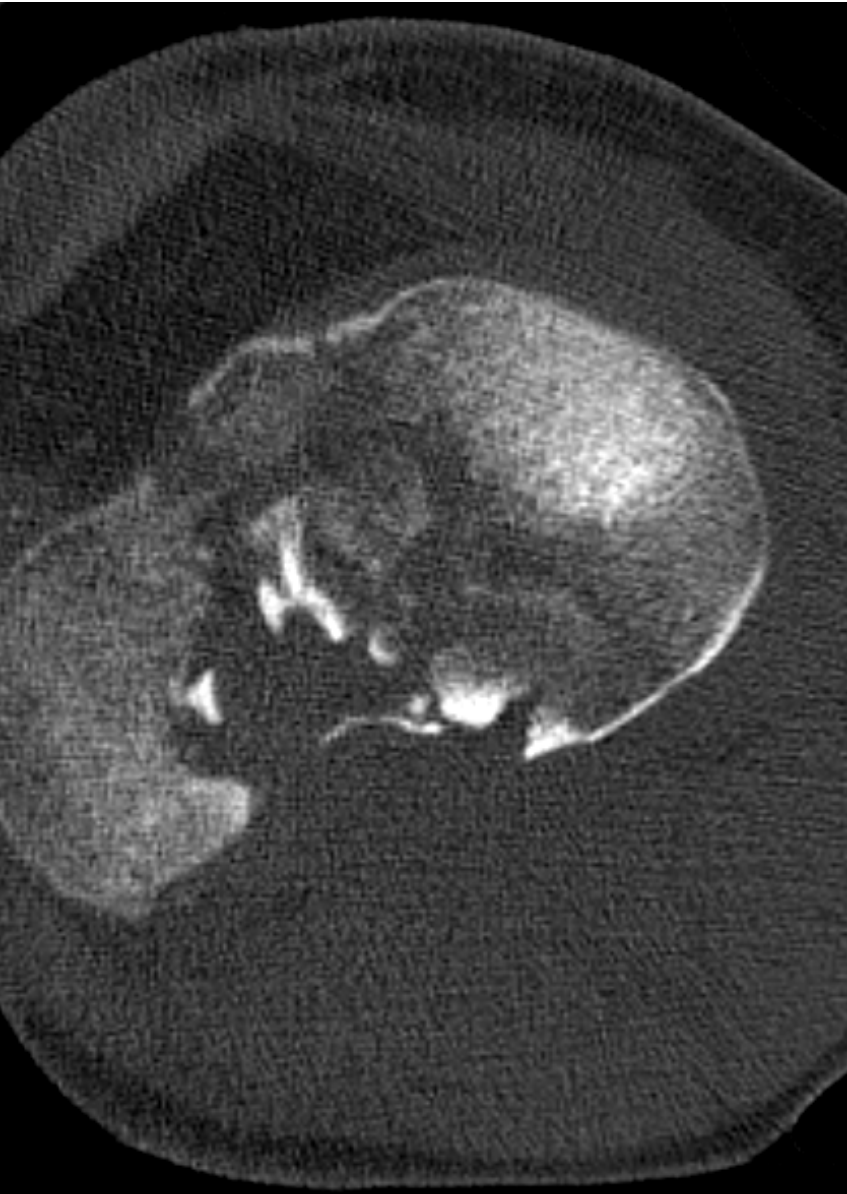


# Which approach do I need



# 48-year-old woman after ski injury

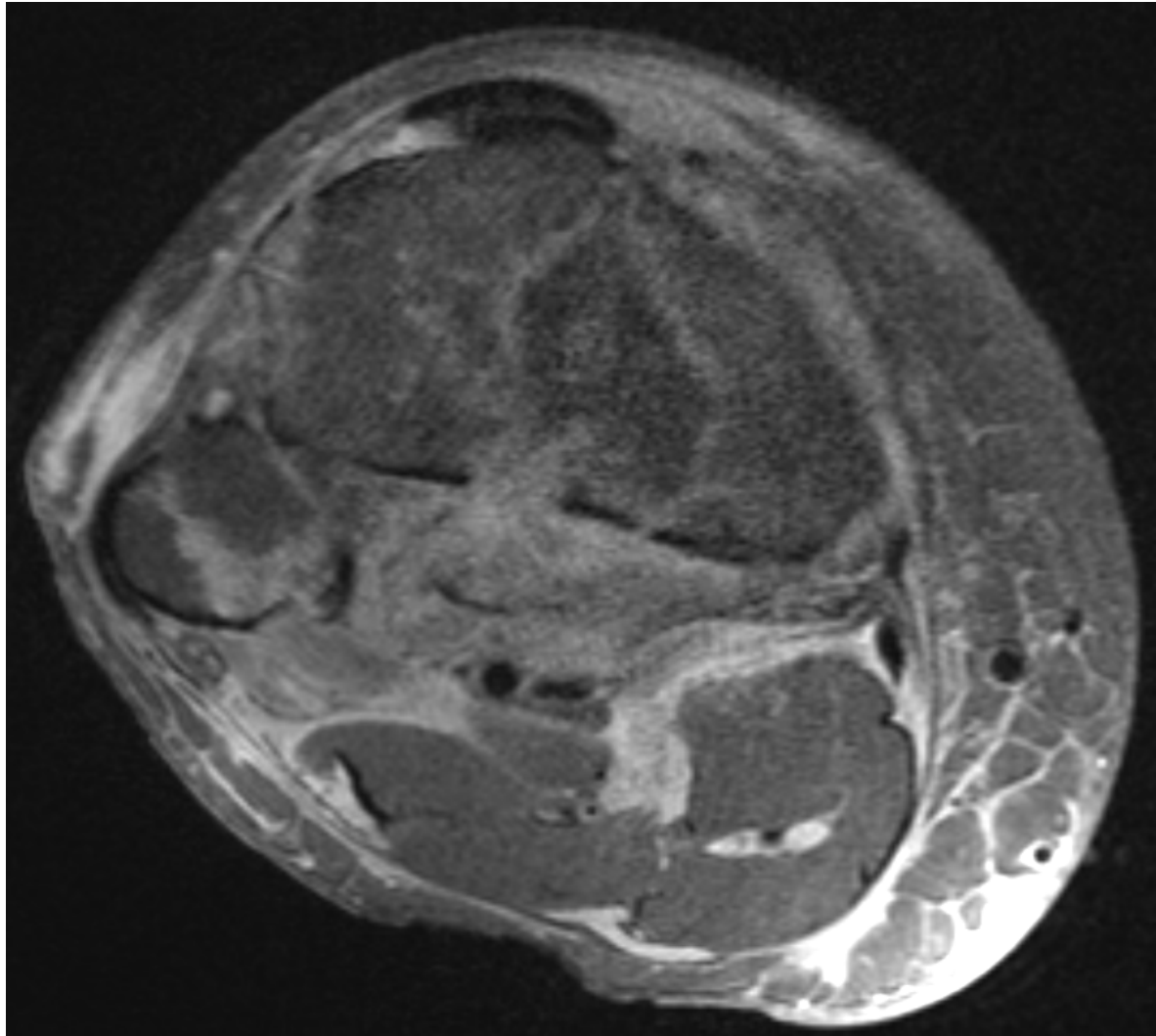




**CT scan: „open book“ fracture of proximal tibia**



## MRI: analysis of ligament injuries



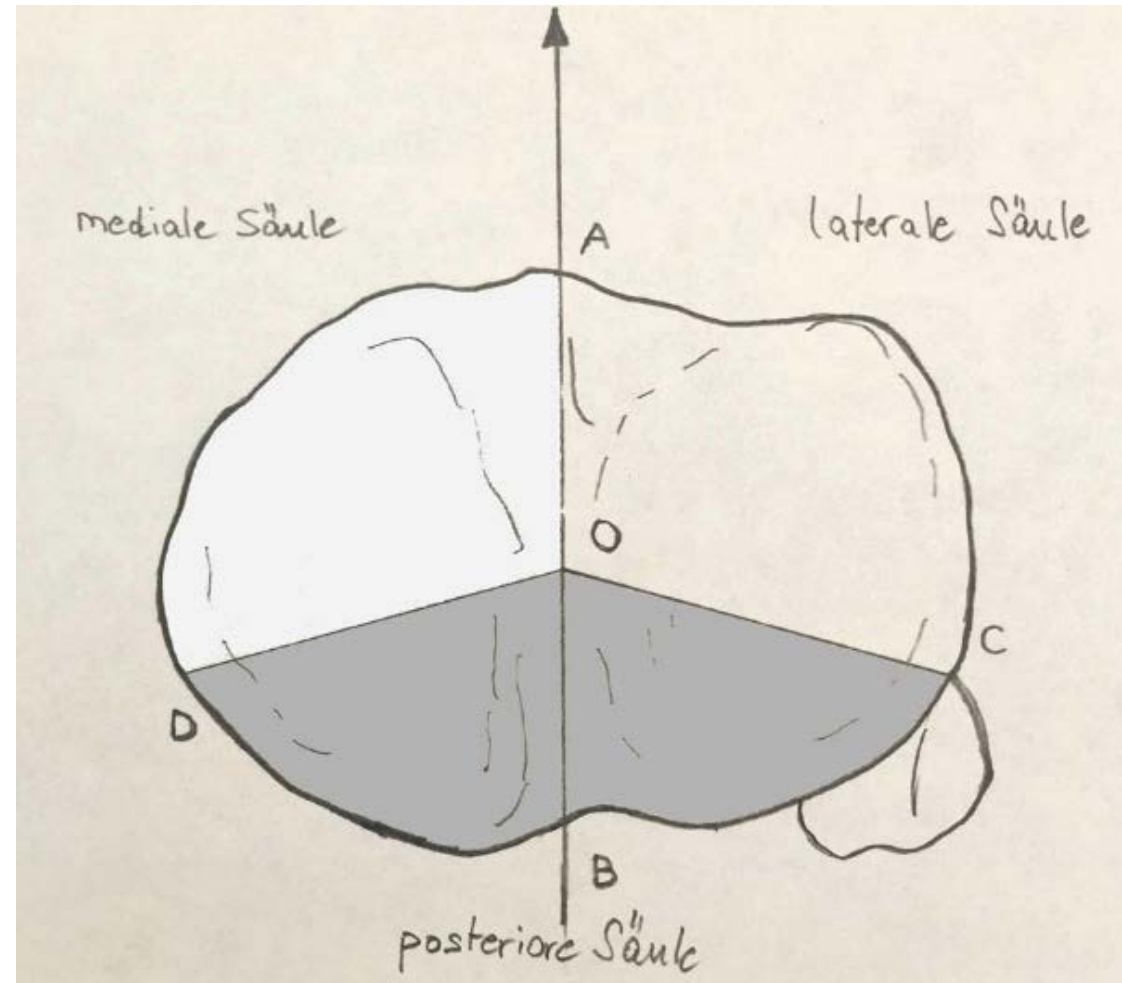
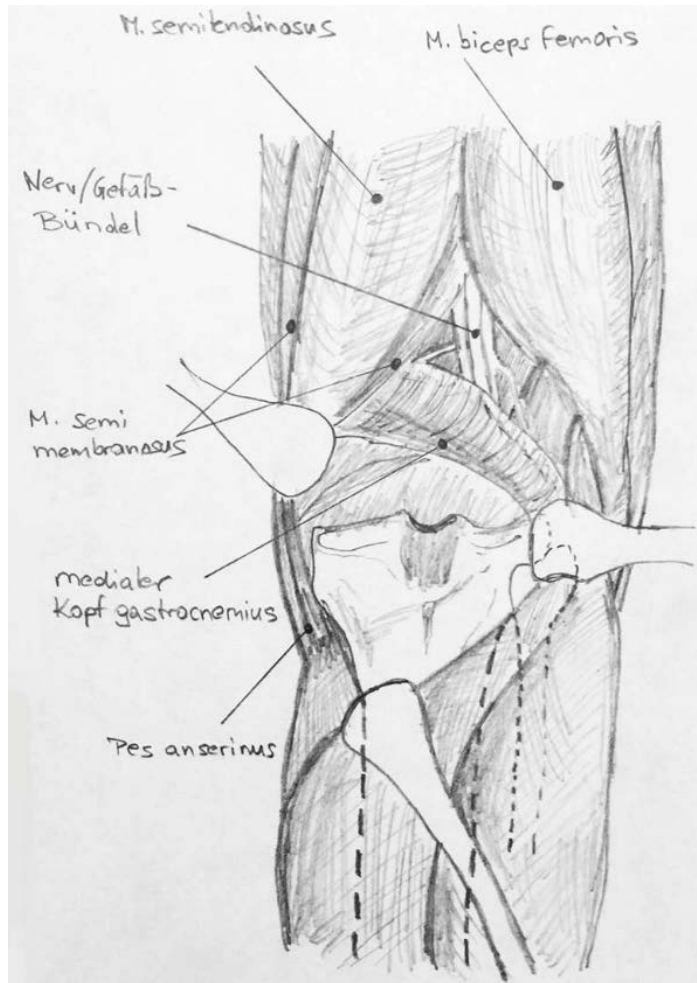


## Fixation using

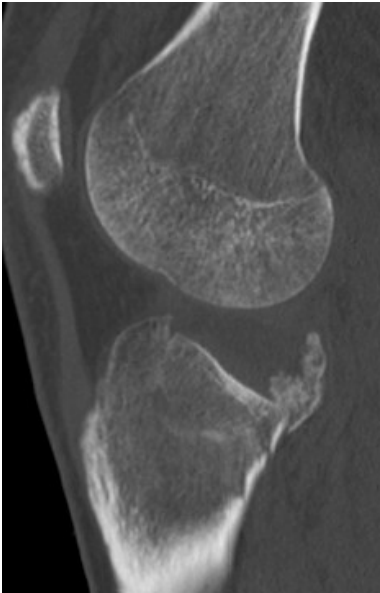
- classical medial and lateral approach
  - osteotomy for exposure of central fragments (completion of fracture)
  - addressing posterior cruciate ligament by screw fixation and
  - the anterior cruciate ligament by suture fixation to the plate
- 



# Do we need postero-medial or postero-lateral approach at all?

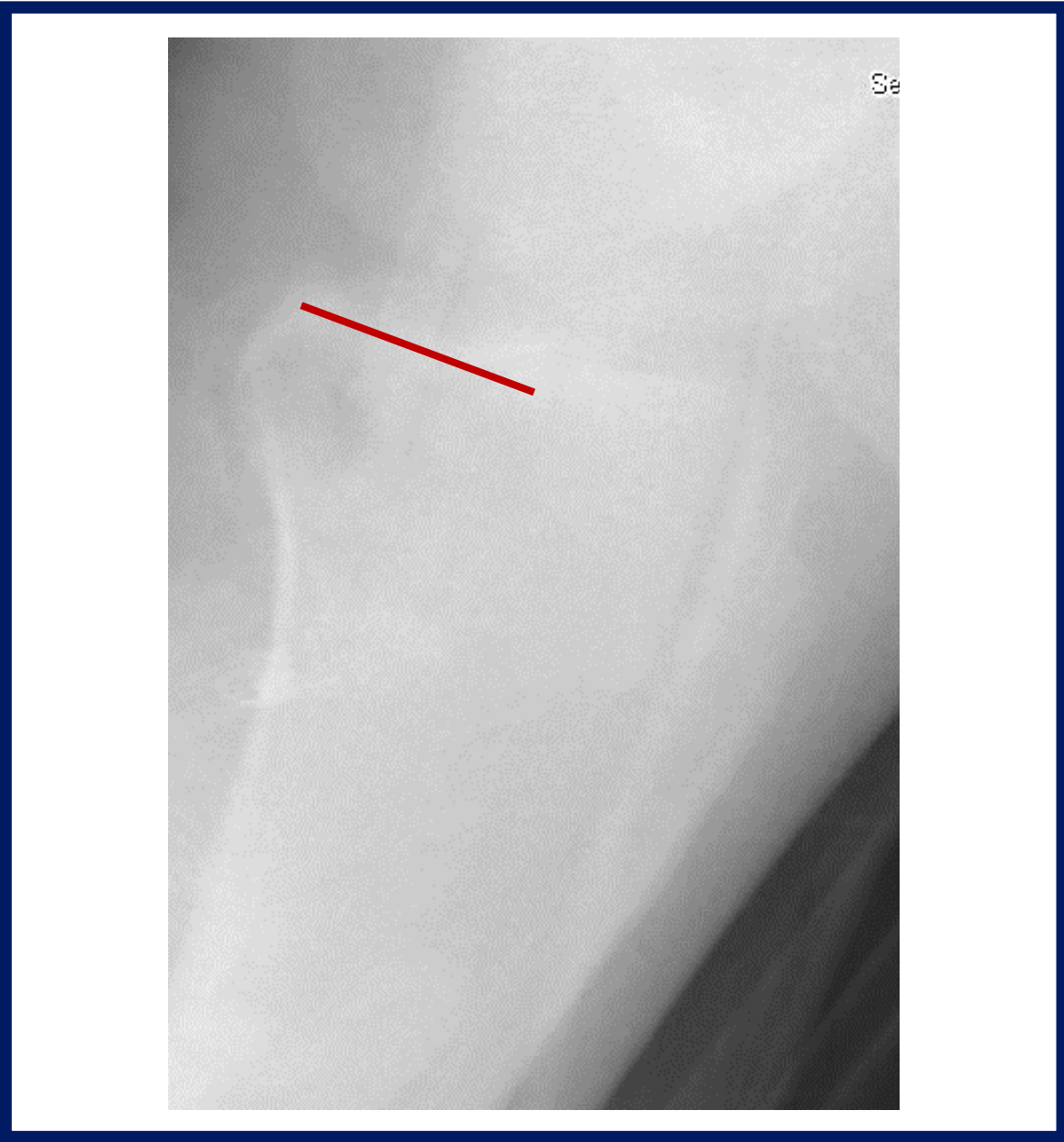
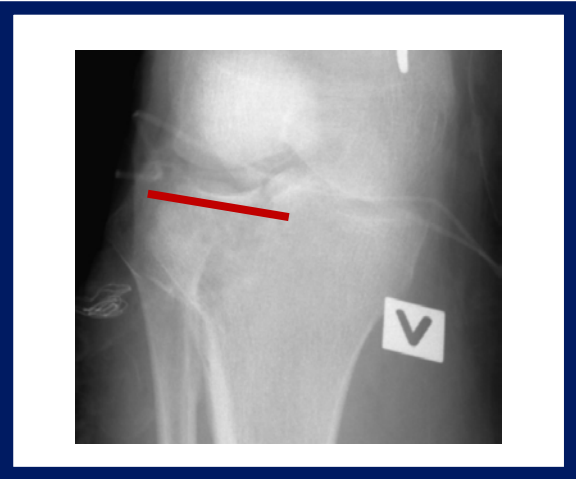
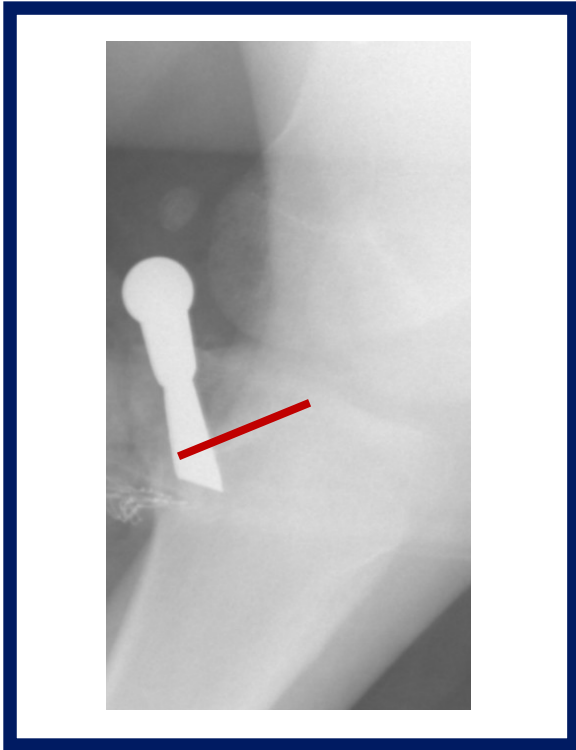


**20-year-old young man**

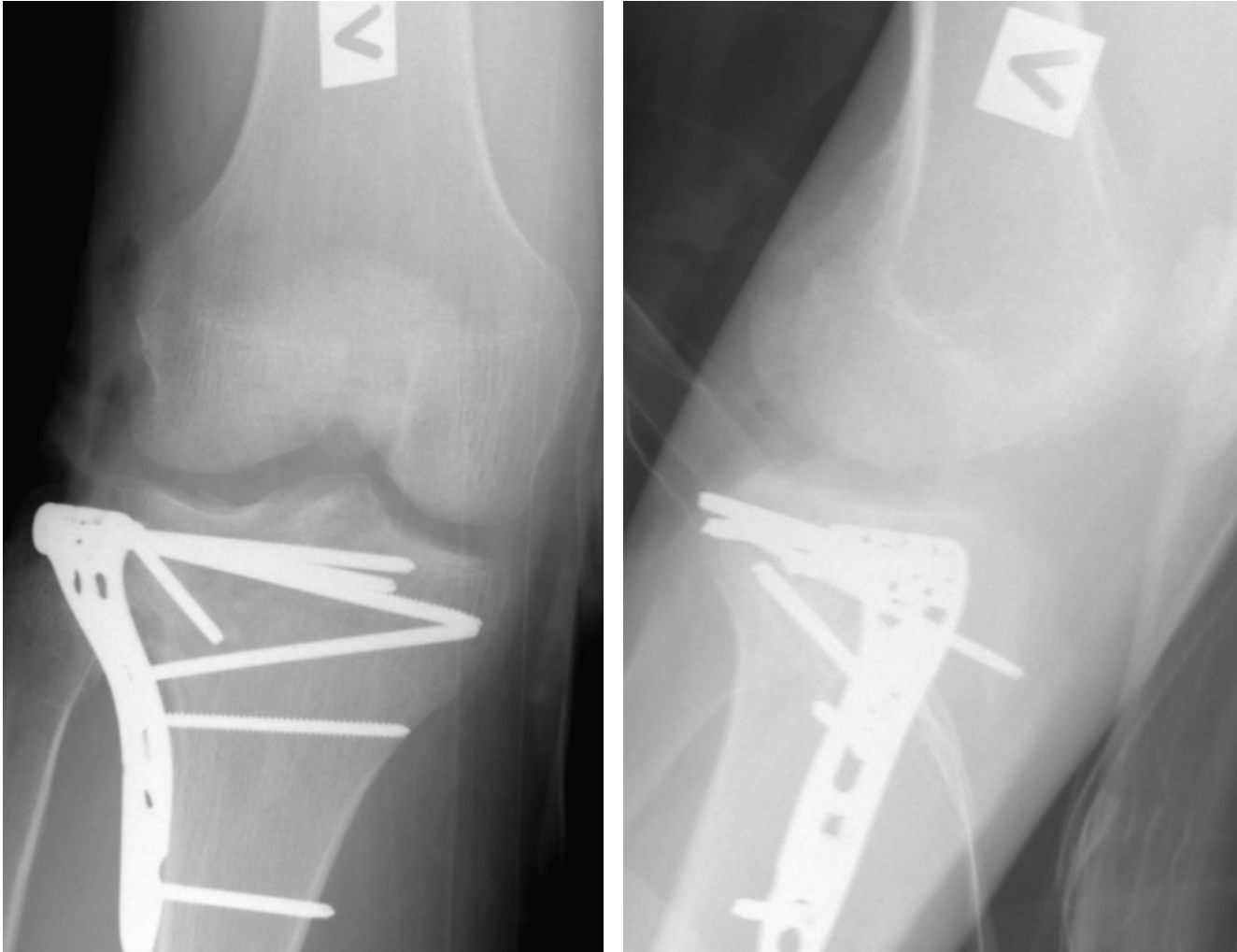


First treatment in Asia non-operatively, came 6 weeks after injury





## How it's done



- Posterolateral approach in lateral position
- Osteotomy and screw fixation from posterolateral
- Fixation with antero-lateral plate

# While there is no real alternative in buttressing and fixation of large fragments in fracture-dislocation (except sometime screws only), in bicondylar fractures and combination with shaft fractures plates compete with other fixation methods.

Berven et al. *Journal of Orthopaedic Surgery and Research* (2018) 13:121  
<https://doi.org/10.1186/s13018-018-0792-3>


Journal of Orthopaedic  
Surgery and Research

RESEARCH ARTICLE

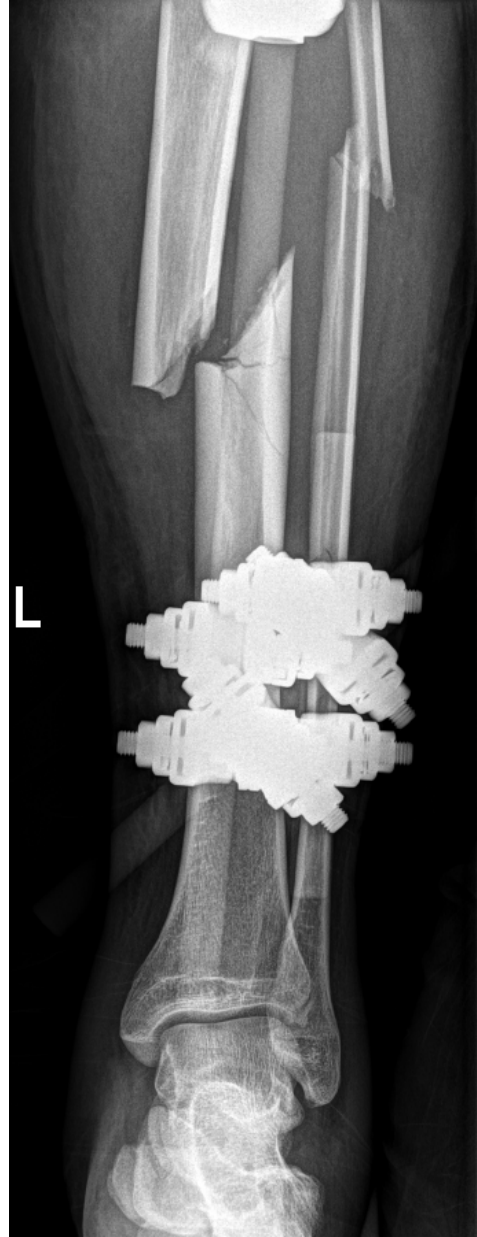
Open Access



Comparing case-control study for treatment of proximal tibia fractures with a complete metaphyseal component in two centers with different distinct strategies: fixation with Ilizarov frame or locking plates

Haakon Berven<sup>1,2</sup>, Michael Brix<sup>1,2</sup>, Kaywan Izadpanah<sup>3</sup>, Eva Johanna Kubosch<sup>3</sup> and Hagen Schmal<sup>1,2,3\*</sup> 

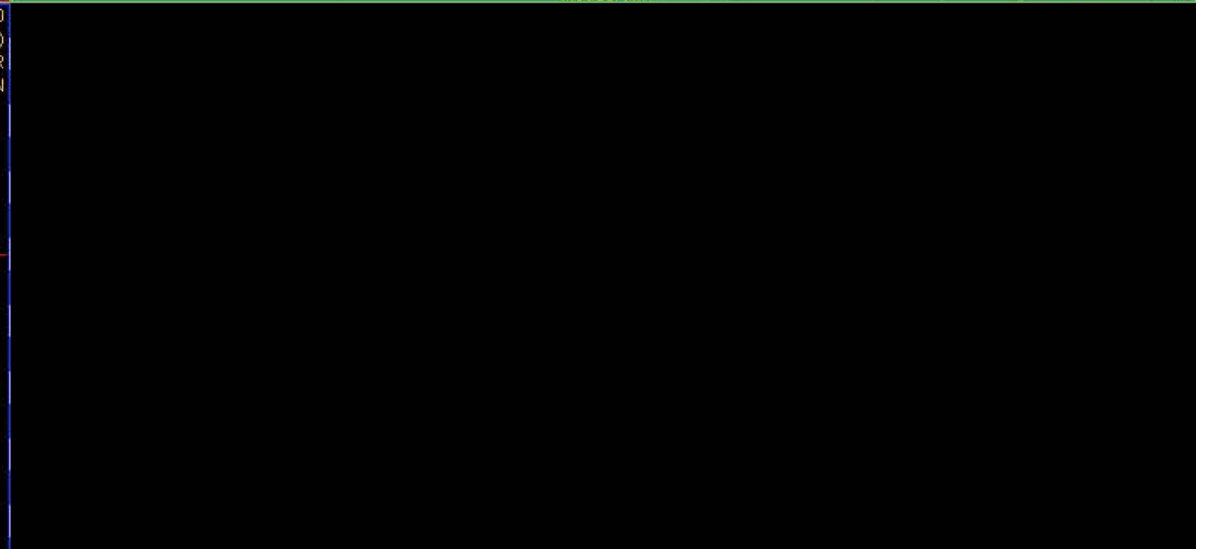
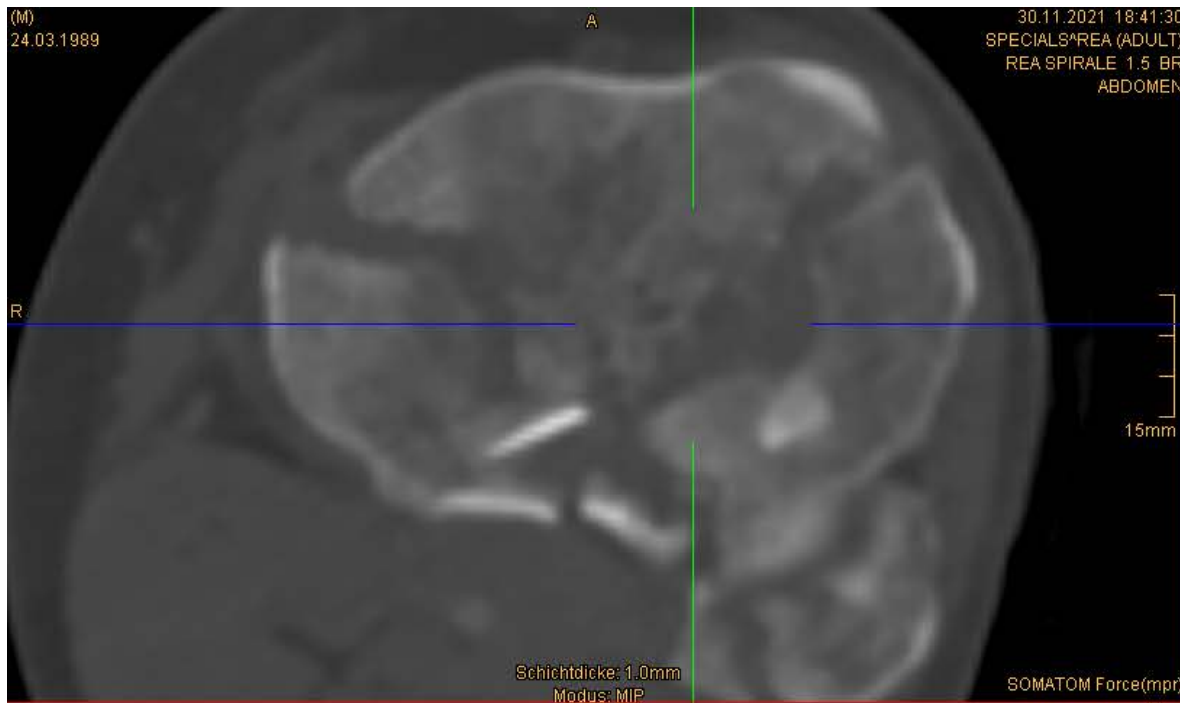
**Conclusions:** Fixation of proximal tibia fractures with plates resulted in a slightly shorter healing time compared to Ilizarov frame stabilization. Furthermore, the complication profiles differ with more heterotopic ossifications and less superficial infections following internal plating.



# Multiple injured 38-year-old man

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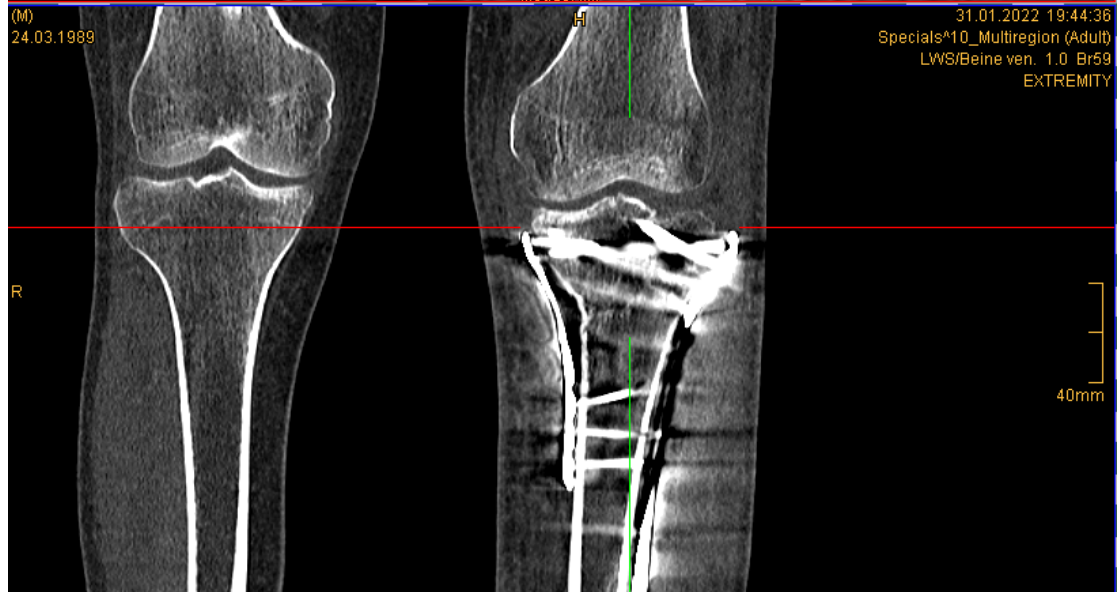
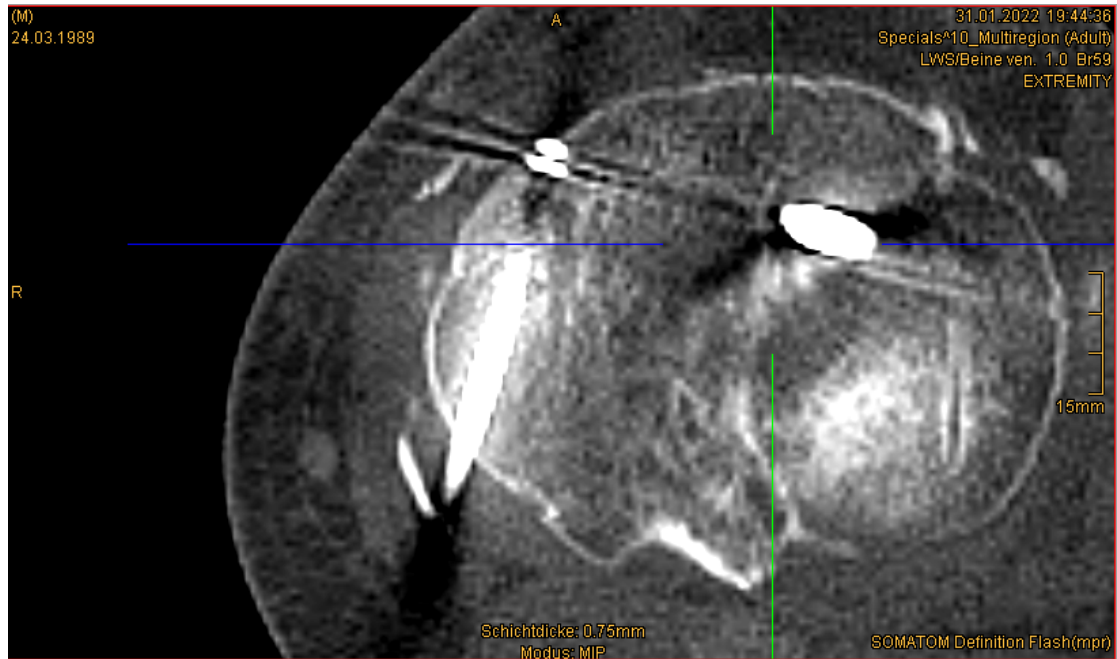


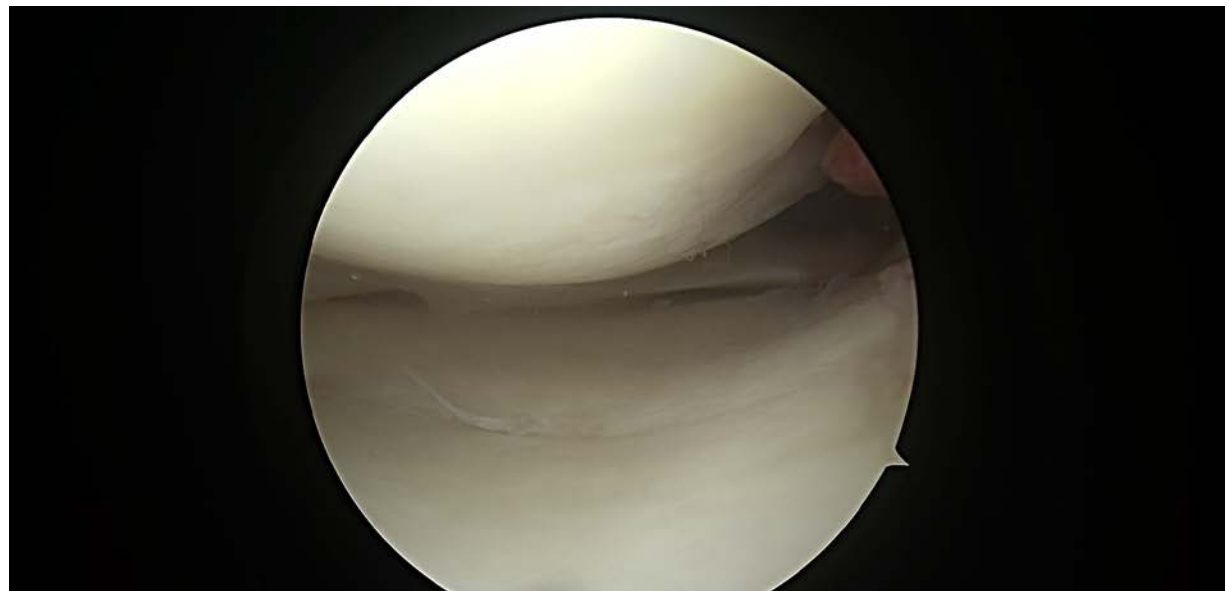
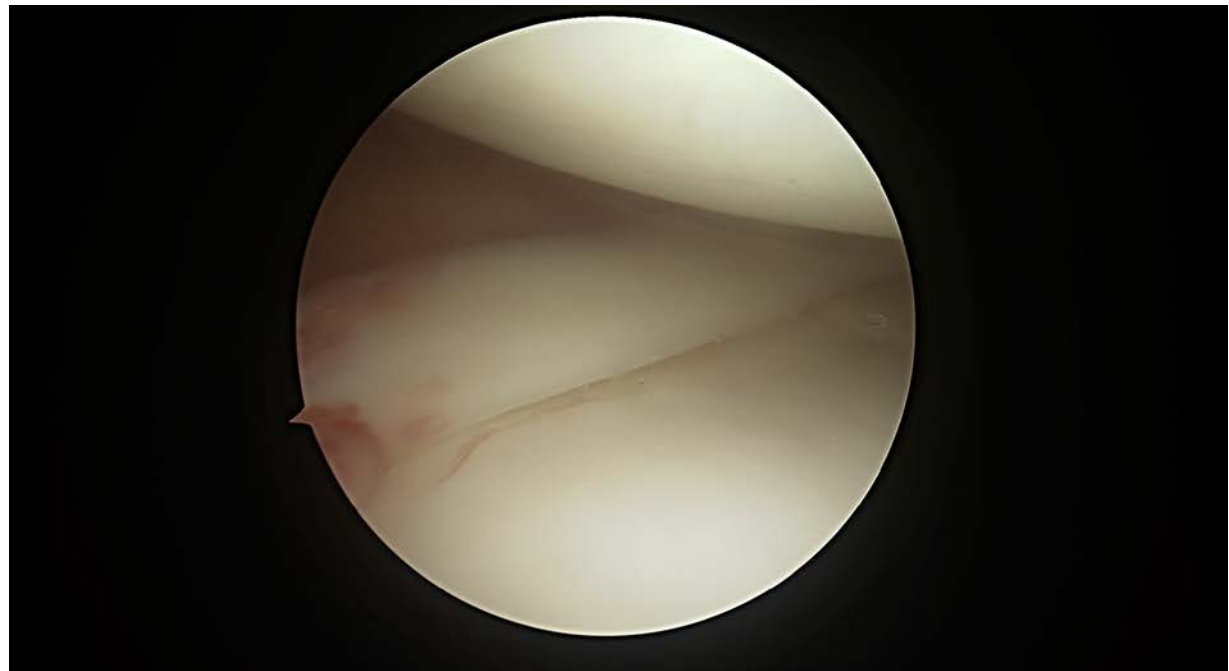






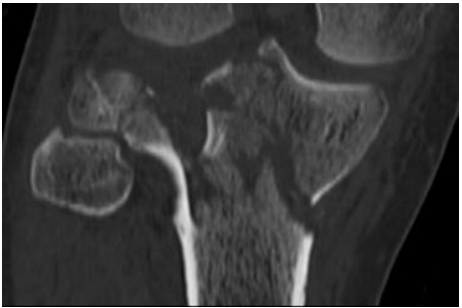
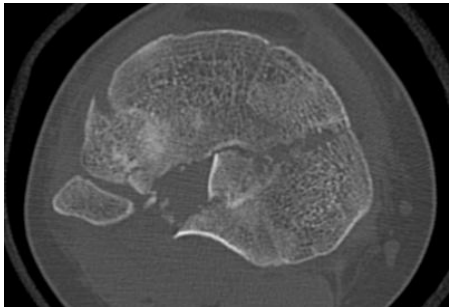
- Initial external fixation
- Then medial and lateral plates using classic approaches
- Fixation of shaft with Tibia-LISS







# If a fragment needs directly to be addressed...



## Take home

- Plates in proximal tibia fractures are mandatory in
  - fractures needing buttressing
- Plates in proximal tibia fractures are preferred in
  - fracture-dislocations with large fragments
- Plates in proximal tibia fractures compete with other fixation methods in
  - bicondylar fractures with relative stable ligament fixation
- Approaches need to address key fragments of all 3 columns (360°)
- Most important is reduction