

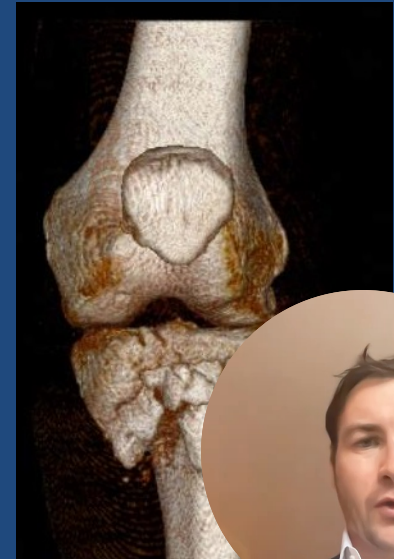
Pr Thomas NERI

MD, PhD



PROXIMAL TIBIAL FRACTURES

CLINICAL AND RADIOLOGICAL ASSESSMENT





Outline

- Epidemiology
- Clinical Assessment
- Radiological Assessment





Outline

- **Epidemiology**
- Clinical Assessment
- Radiological Assessment

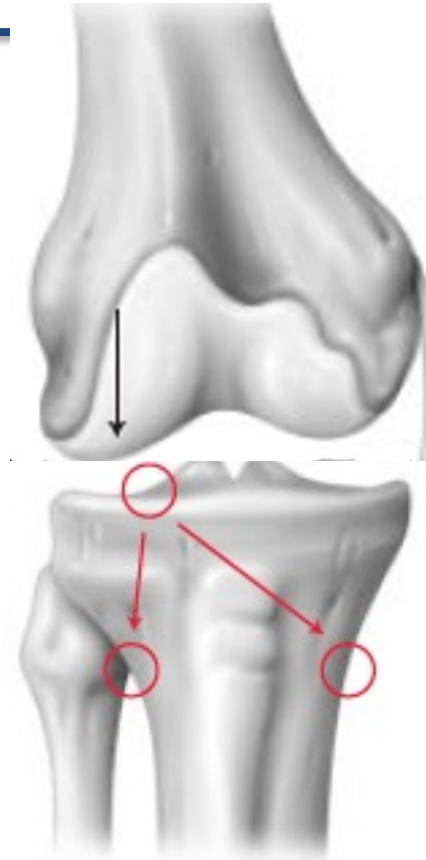


Demographics

- Rare fracture
- 1% of all fractures
- 8% of all fractures in elderly patients

Anatomical Location

- Lateral plateau: 55-70%
- Medial plateau: 10-20%
- Both: 10-30%



Femur = Aggressor / Tibia



Circumstances = Causal Trauma

- **Road Accident**
- **Sports**
- **Fall**
 - From standing height
 - From a high place
- **Crush Injury**



Two Distinct Populations

- With 2 distinct prognoses
- In 2 distinct contexts



Young Patients

- 2nd to 4th decade of life
- Predominantly male (+++)
- High-energy trauma

Circumstances:

- Road Traffic Accident (RTA)
- Fall from a height
- Direct impact trauma
- Crush injury (work-related accident)
- High-risk sports



7th to 9th Decade of Life

- Low-velocity trauma
- Domestic accidents
- Fall from standing height





Outline

- Epidemiology
- **Clinical Assessment**
- Radiological Assessment



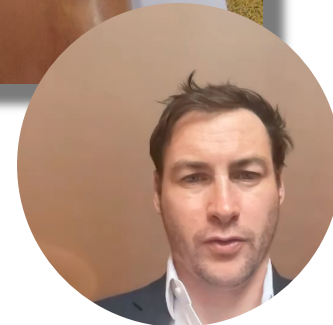
Physical Signs

- Deformity (depending on displacement)
- Hemarthrosis
- Functional consequences:
 - Unable to Walk
 - Limited Range of Motion (ROM)



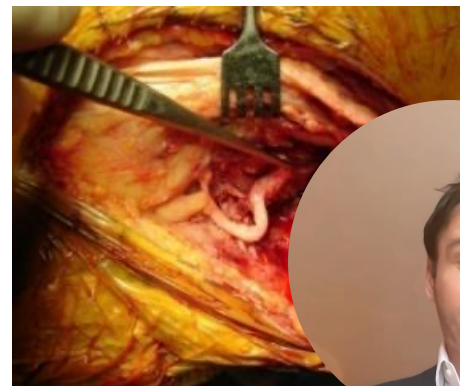
Sometimes the Clinical Presentation is Misleading

- It may resemble a simple sprain, such as an ACL injury, causing the fracture to go unnoticed.



Search Immediate Complications

- **Compartment Syndrome!!**
- **Nerve:** Common fibular nerve injury (2-3%)
- **Vascular:** Soleus Arch
- Presence of a pulse is not always reassuring



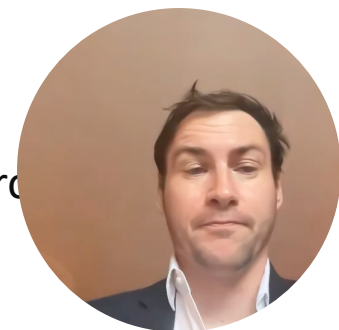
Skin Lesions

- Rapid swelling (++++)
- Contusion: risk of secondary necrosis
- Threatened skin integrity
- Blisters
- Open fractures: 10%



No Immediate Need for Surgery

- Wait for swelling to subside and skin condition to improve
- Can influence the surgical approach and technique.



Search for Ligamentous and Tendinous Injuries

Ligamentous Injuries: sometimes associated with fractures.

- Clinical examination may not always be easy.
- Evaluation must be performed under general anesthesia after fracture fixation to avoid false laxity caused by the fracture

Tendinous Injuries: Extensor apparatus injuries must be investigated.

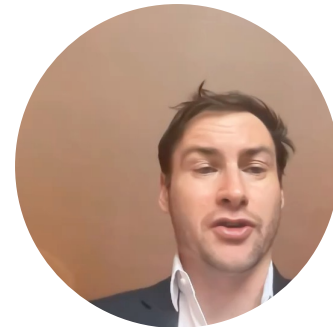
- Evaluate by asking the patient to contract the muscles and perform a straight leg raise test.



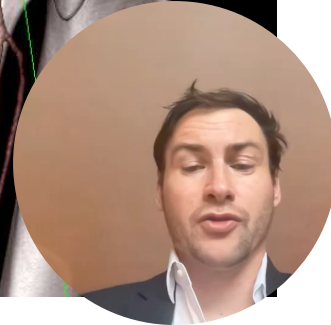


Outline

- Epidemiology
- Clinical Assessment
- **Radiological Assessment**

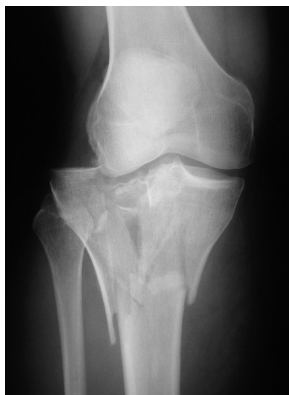


- Radiographs
- CT Scan (+++)
- MRI
- Vascular Examination



- **Radiographs**

- CT Scan (+++)
- MRI
- Vascular Examination



Views:

- Anteroposterior (AP)
- Lateral
- Oblique views ($\frac{3}{4}$): PLC and PMC

Purpose:

- Diagnostic confirmation
- Indirect signs:
- Effusion, fluid levels
- Primarily for **initial evaluation** (“screening”)
- Identifies associated injuries



- Radiographs
- **CT Scan (+++)**
- MRI
- Vascular Examination



Essential!!

2D and 3D Imaging:

- Provides precise diagnosis
- Fragment analysis
- Assessment of depression and comminution
- Visualization of central pivot insertion

Benefits:

- Enhances understanding of the fracture
- Guides surgical strategy
- Helps determine approach and instru



- Radiographs
- CT Scan (+++)
- **MRI**
- Vascular Examination



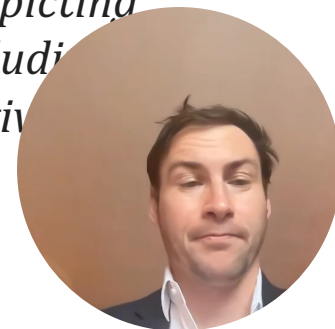
[Home](#) > [Skeletal Radiology](#) > Article

Comparison of CT and MRI in patients with tibial plateau fracture: can CT findings predict ligament tear or meniscal injury?

Scientific Article | Published: 30 November 2006

Volume 36, pages 145–151, (2007) [Cite this article](#)

In the acute setting, CT offers high sensitivity and specificity for depicting osseous avulsions, as well as high negative predictive value for excluding ligament injury. However, MRI remains necessary for the preoperative detection of meniscal injury.



- Radiographs
- CT Scan (+++)
- **MRI**
- Vascular Examination



Review > [Eur J Trauma Emerg Surg.](#) 2023 Apr;49(2):661-679.

doi: 10.1007/s00068-022-02127-2. Epub 2022 Oct 28.

The value of magnetic resonance imaging in the preoperative diagnosis of tibial plateau fractures: a systematic literature review

[Gregoire Thürig](#)^{1 2}, [Alexander Korthaus](#)¹, [Karl-Heinz Frosch](#)^{1 3}, [Matthias Krause](#)⁴

At least one ligament or meniscal lesion is present in 93.0% of TPF cases. More studies with higher levels of evidence are needed to find out in which particular cases MRI adds value. However, MRI is recommended, at least young patients and cases of high-energy trauma.



- Radiographs
- CT Scan (+++)
- MRI

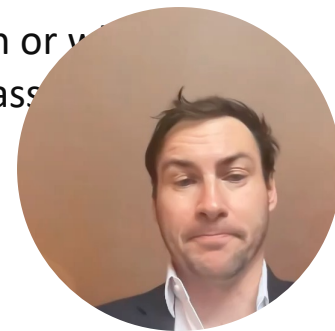
- **Vascular Examination**

In Case of Any Doubt!!

- **Context:** Very high-energy trauma / extensive tissue damage
- **Clinical Presentation:** Clear signs / Pulse asymmetry

- **Imaging:**

- **CT Angiography:** Comprehensive assessment of bones and vessels
- **Arteriography:** For detailed vascular evaluation or when an intervention seems necessary based on clinical assessment





Conclusion



Comprehensive Diagnostic Assessment

- Clinical exam
- X-rays + CT (2D/3D)
- +/-MRI and CT Angiography



Identify Immediate Complications

- Compartment syndrome
- Vascular
- Nerve
- skin injuries



Understand the Fracture

- Depression
- comminution, fragment analysis
- central pivot



Therapeutic Implications

- Surgical strategy
- approach selection & instrumentation
- associated

