

# Alles onder de knie

Jan Bernard Sintenie  
traumachirurg

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1



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MHH



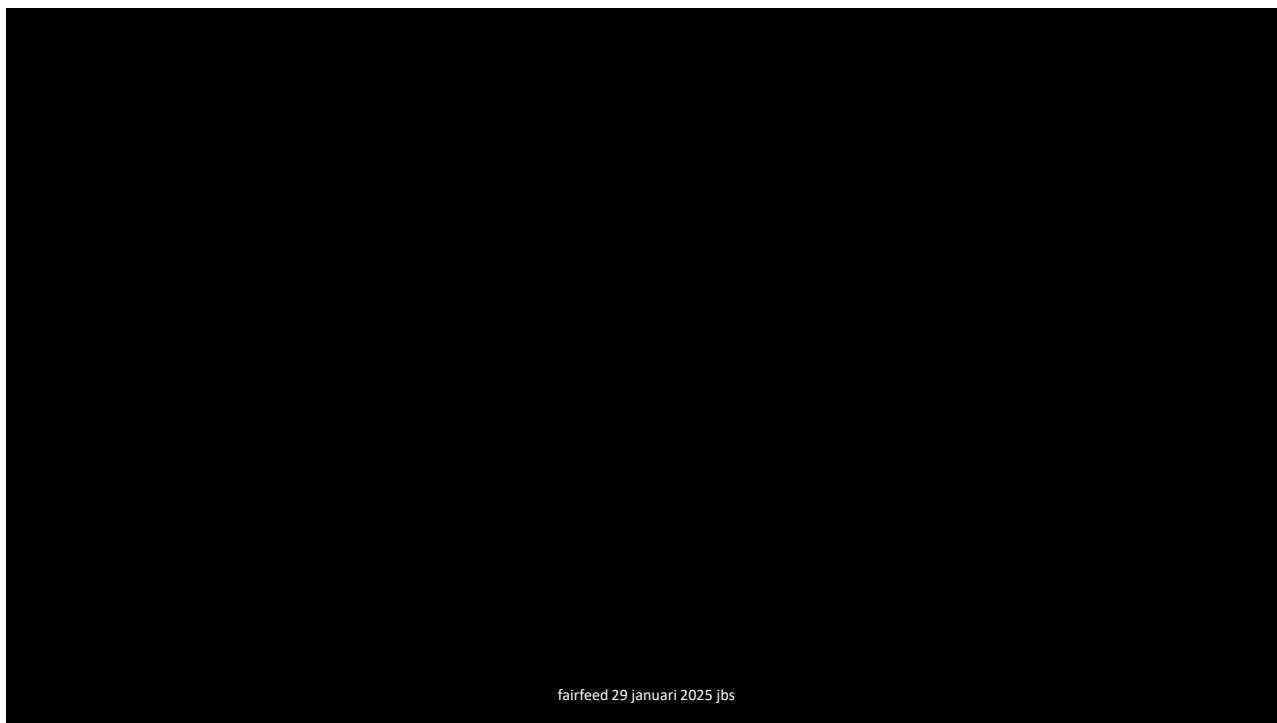
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Hannover

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# Gevallen met ramen lappen



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# The key to successful management of tibia plateau fractures is consideration of the mechanism of injury

Joseph Schatzker 1974

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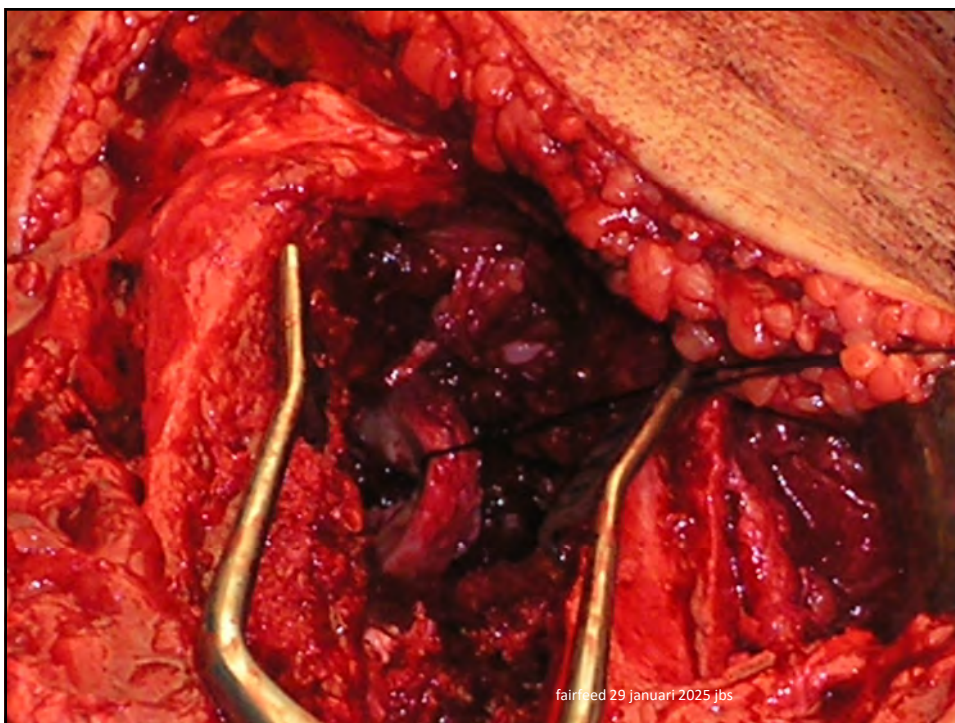


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12

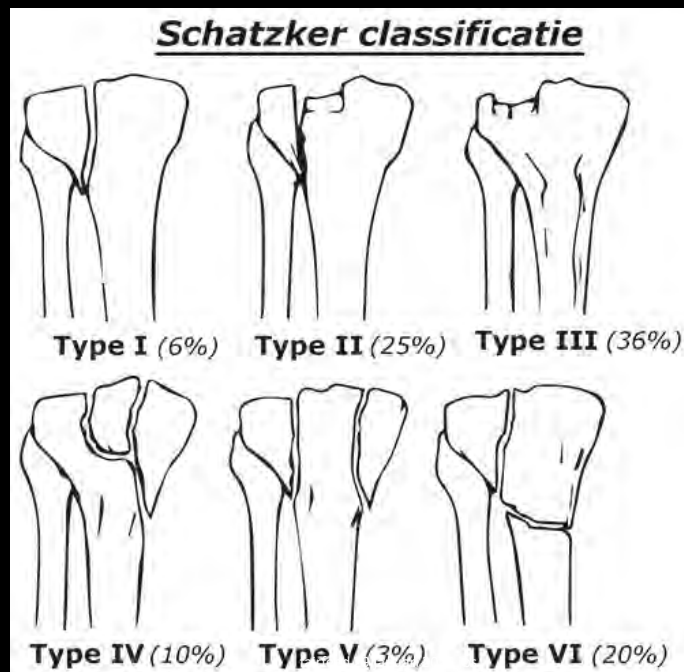


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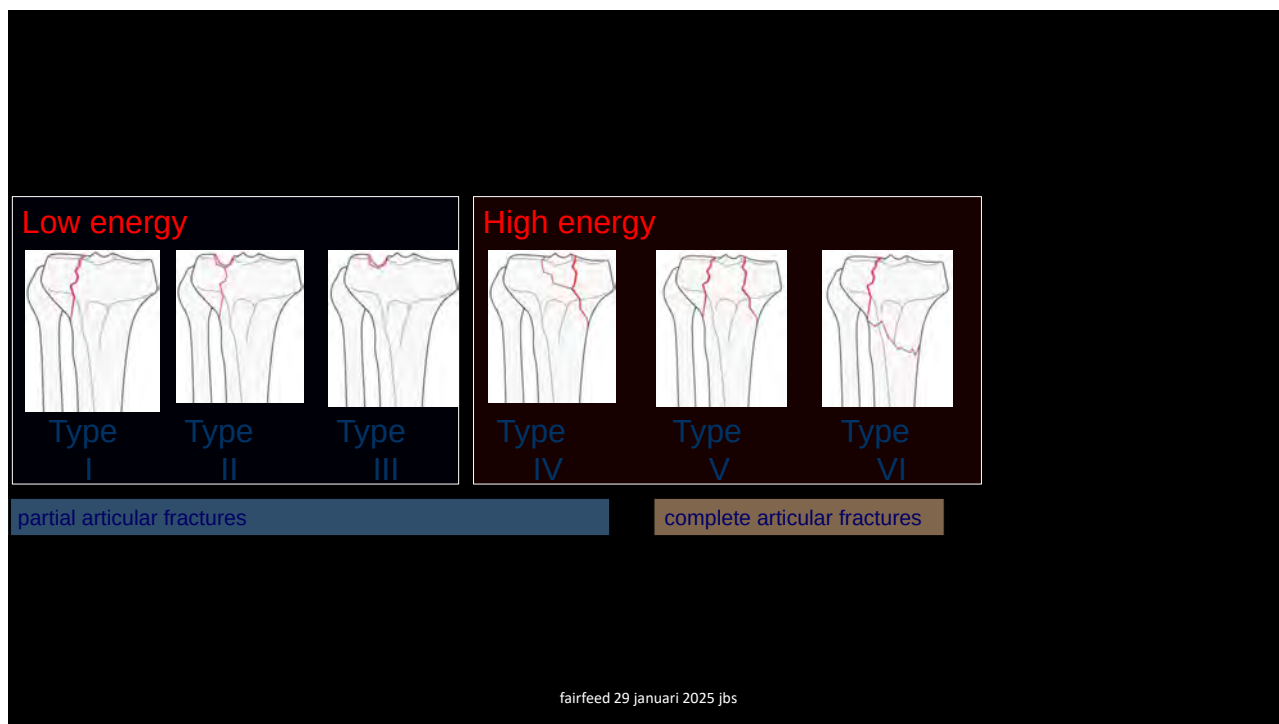
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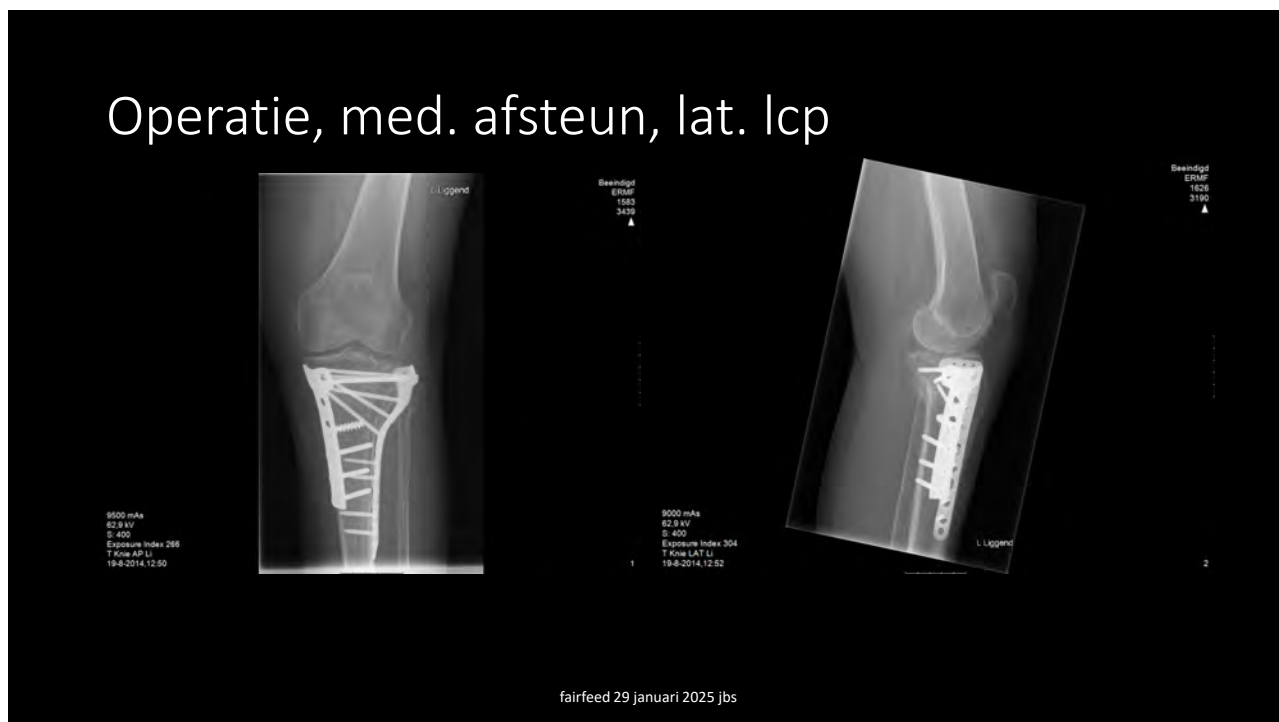
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Let op de details!!



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Valgus beenas!

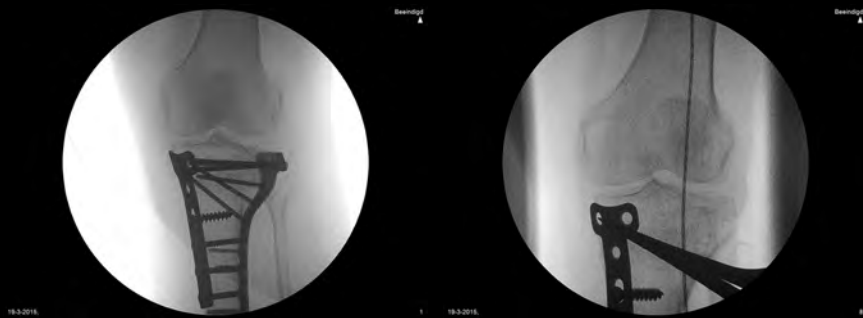


28-1-2015, 12:01

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20

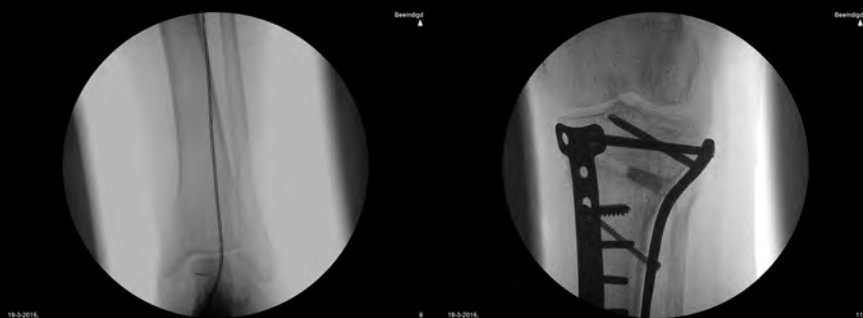
## Vervolgoperatie: correctie beenas belangrijk!



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## Open wig lateraal, correctie alignment !



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Goed resultaat, tevreden patient na jaren nog



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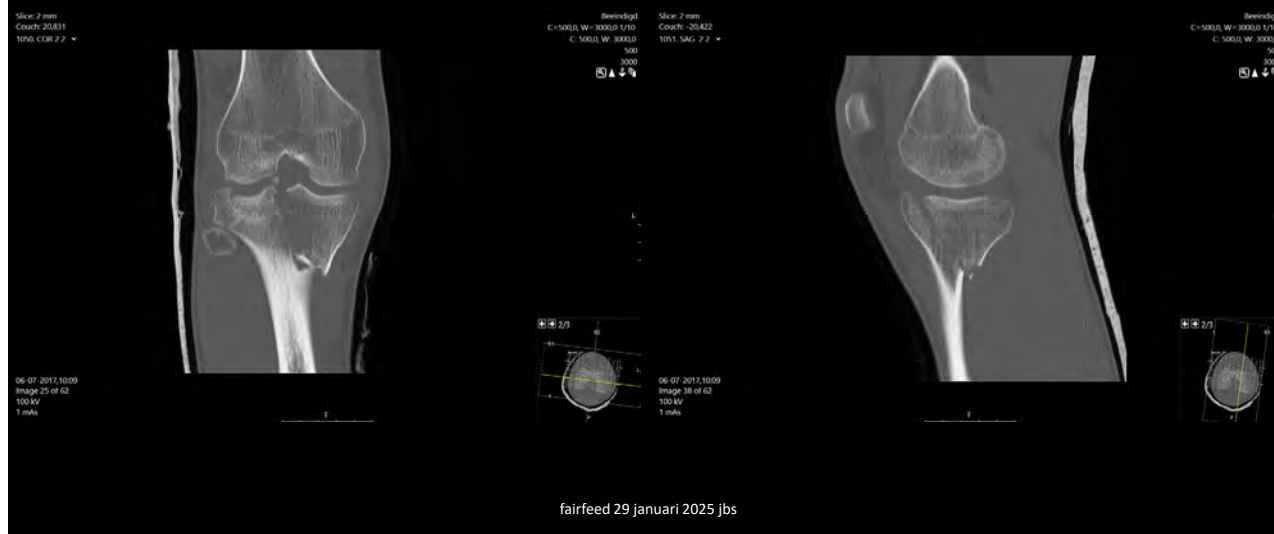
24

## 17 jr. scooter, letsel met name achterzijde



25

## CT coupes coronaal en sagittaal



26

## Plaatosteosynthese dorsaal en lateraal nodig



Beëindigd 2. X Onderbeen LAT Re



4500  $\mu$ As  
51.8 kV  
Relative X-Ray Exposure 371  
20-06-2018,10:44

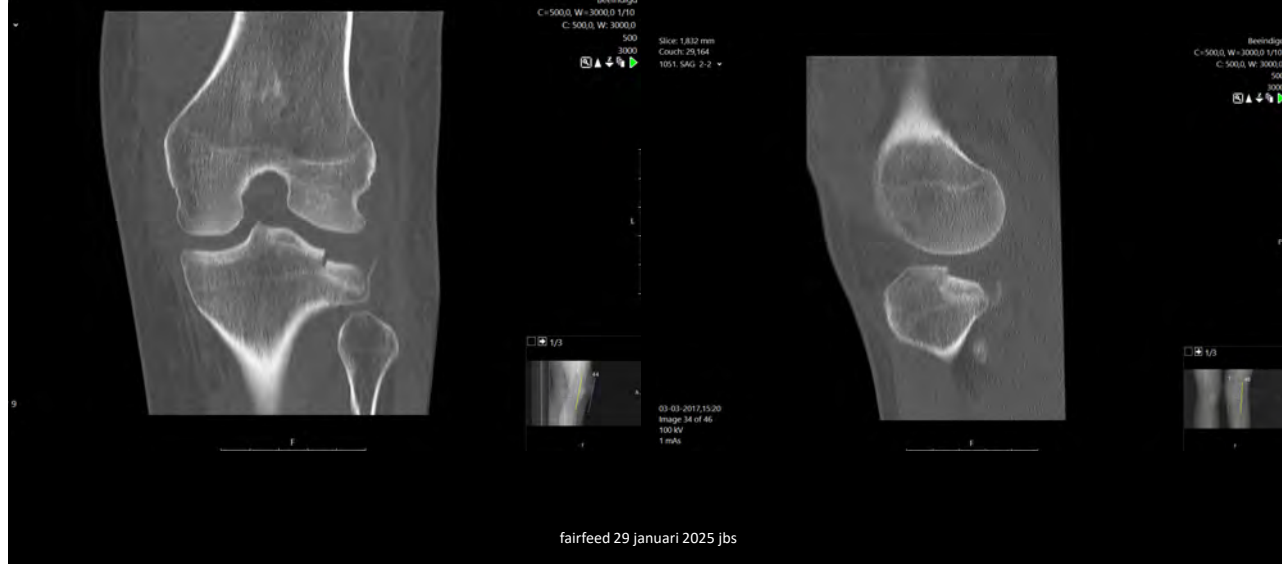
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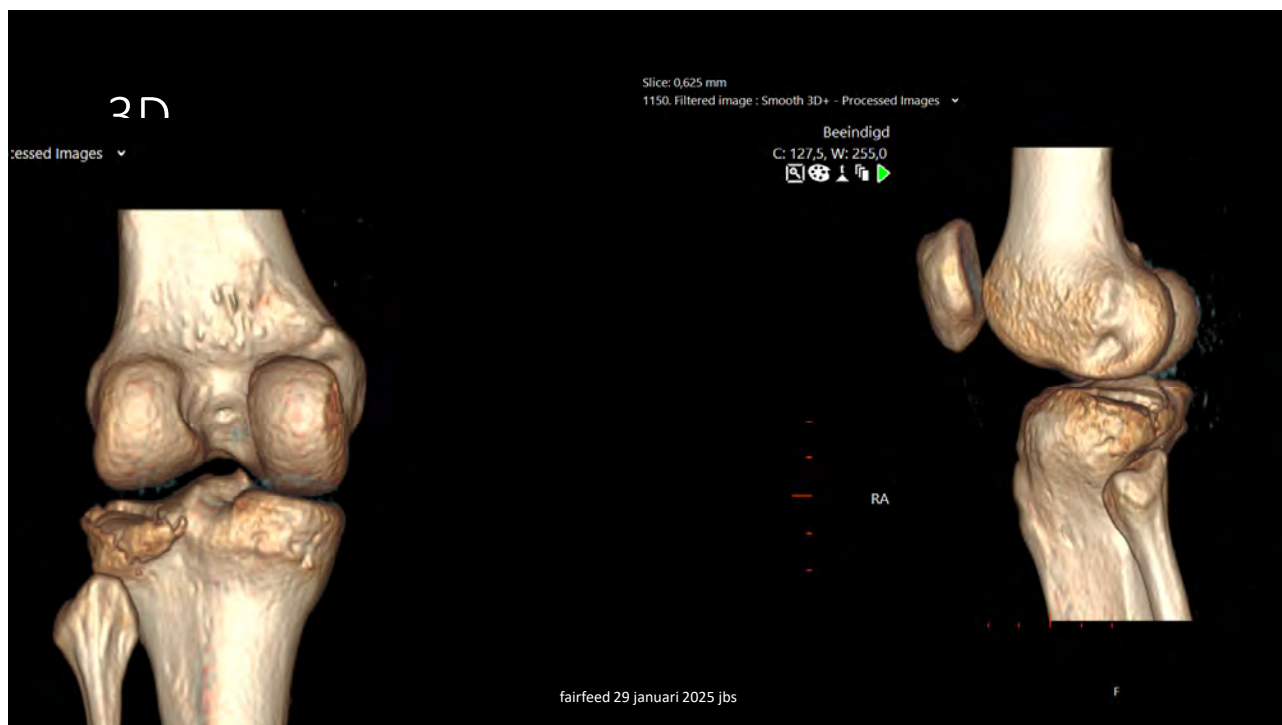
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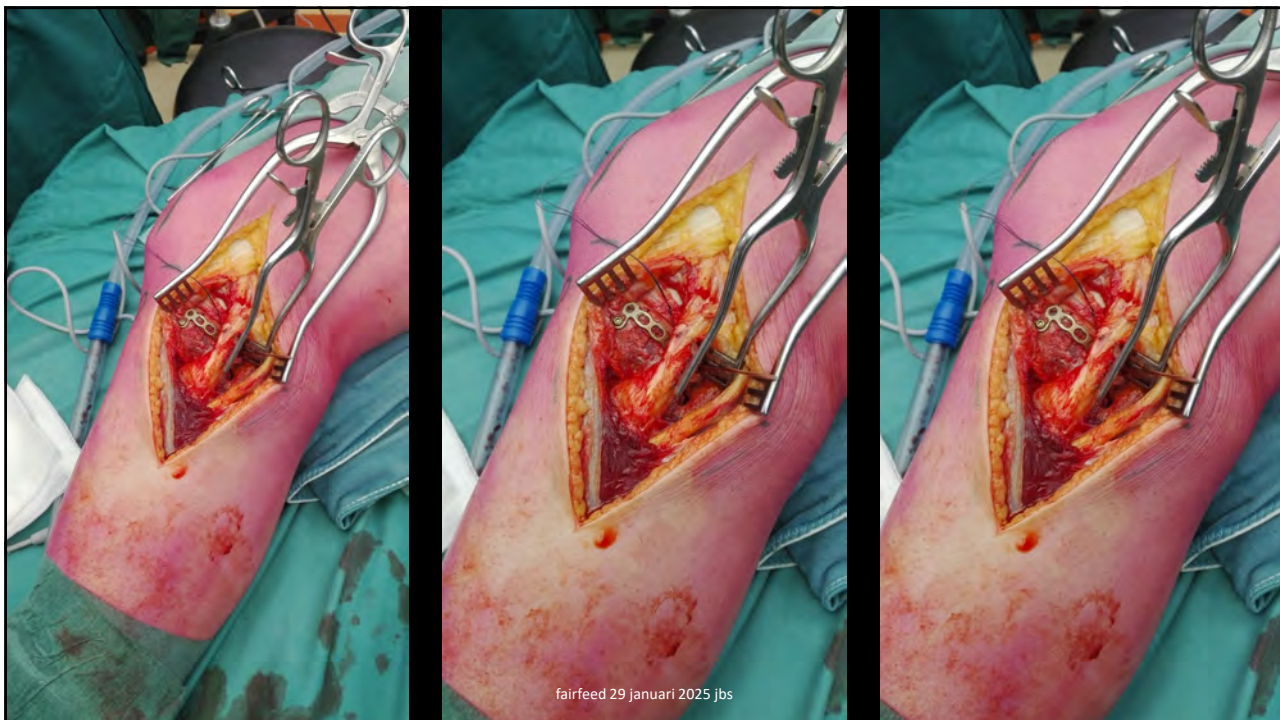
Vrouw 38 jaar, ski-accident, posterolateraal!



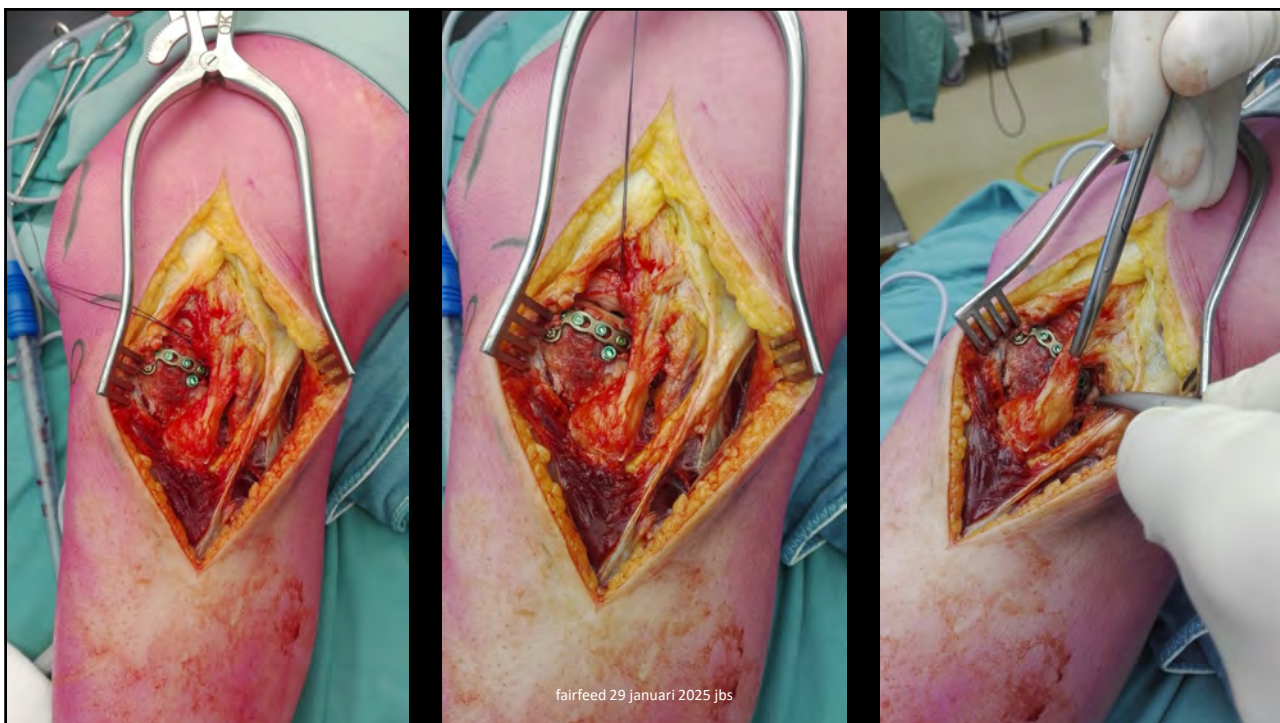
29



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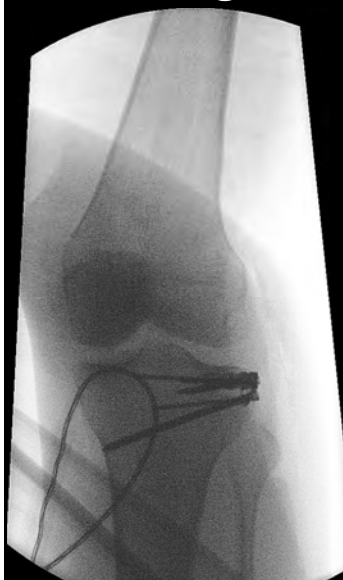


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## Rontgen controle peroperatief



Beeindigd  
▲ □

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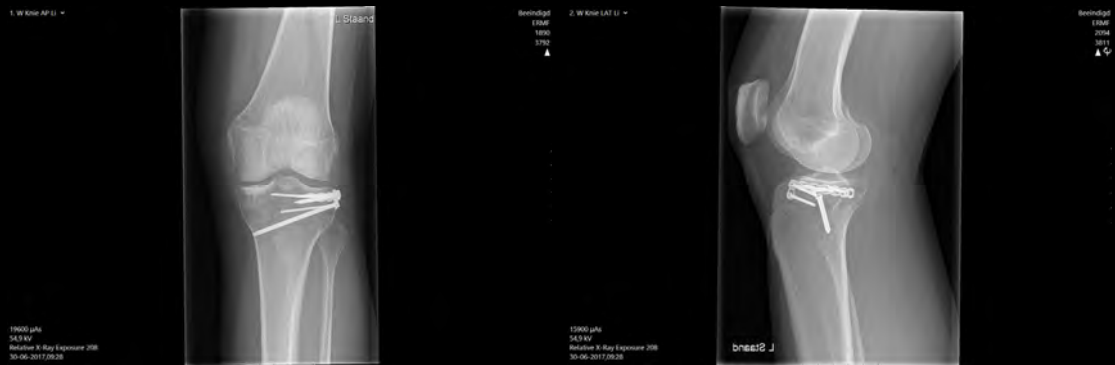
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34

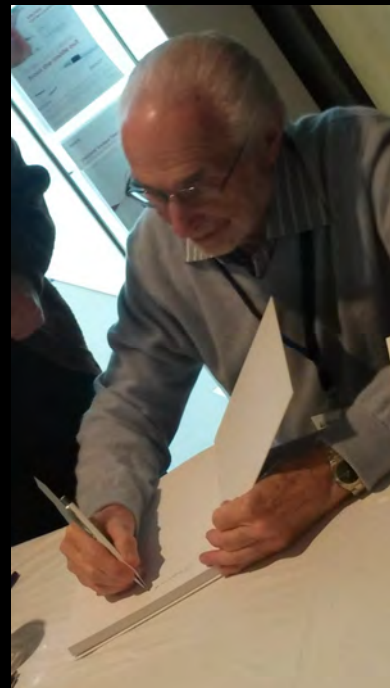
## 3 maanden, goed resultaat



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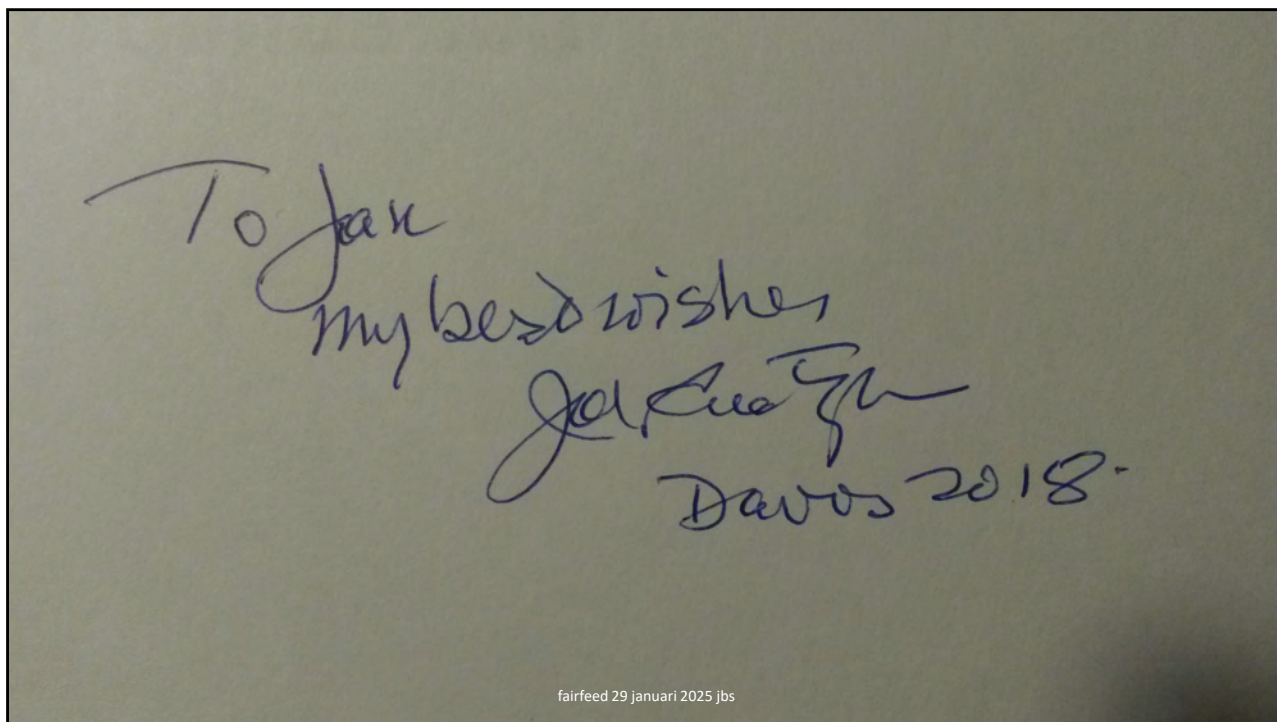
35

## Joe Schatzker

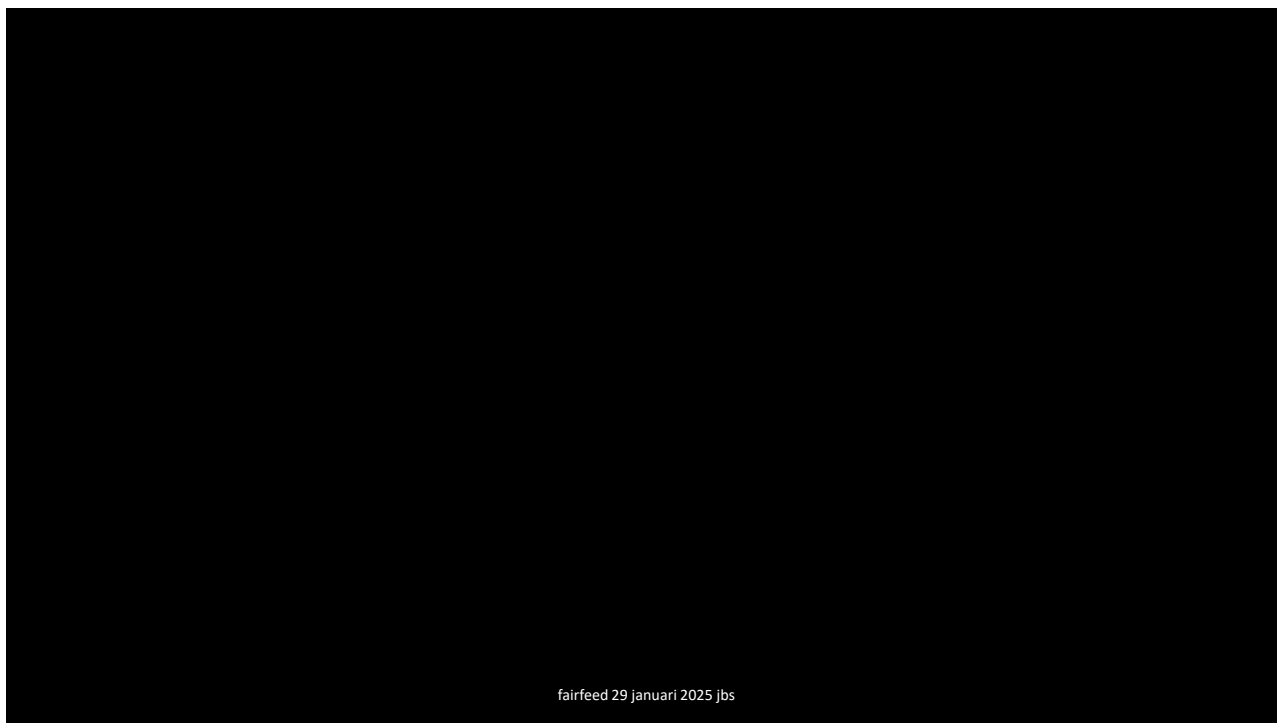


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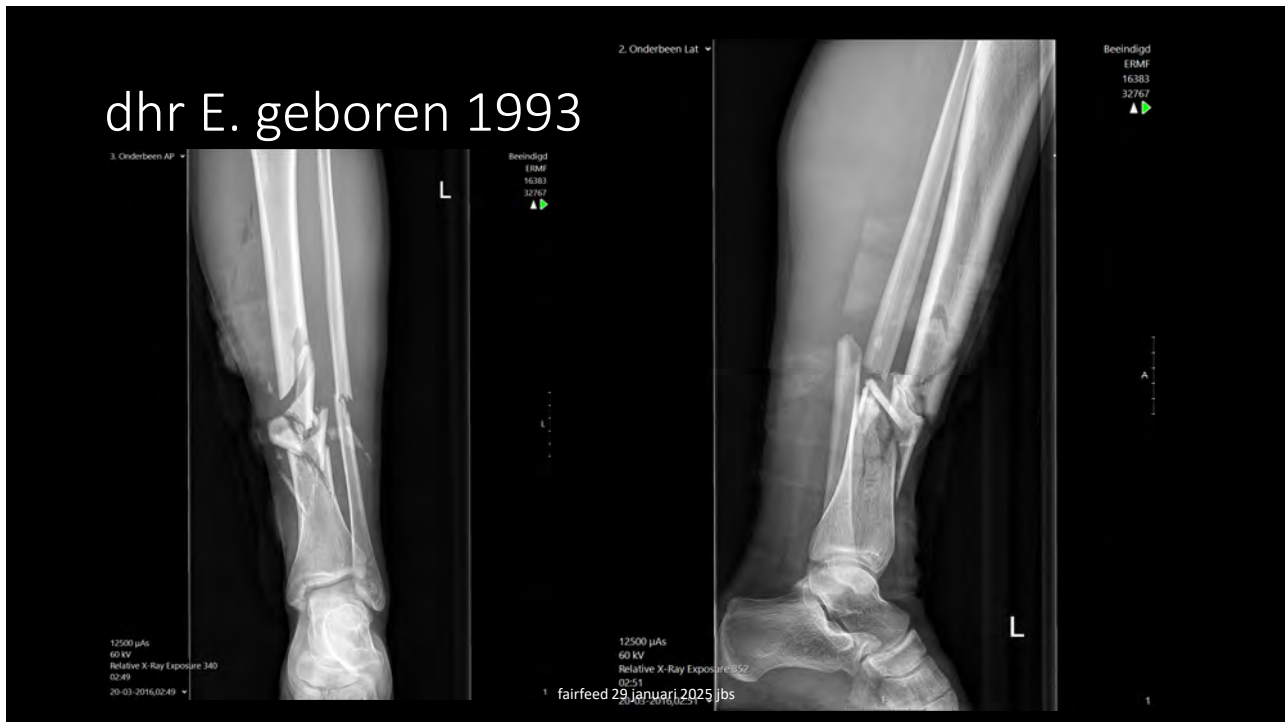
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# overplaatsing

- Klinische gegevens: schroeven infectie pseudarthrose onderbeen, overname uit  AB:geen\,br
- MATERIAAL orthopedisch materiaal schroef
- Algemene bacteriële kweek + Staphylococcus aureus
- Kweek op anaeroben negatief
- ANTIBIOGRAM
  - 1
  - amoxicilline/clavulaanzuur S
  - flucloxacilline S
  - cefuroxim S
  - gentamicine S
  - trimethoprim/sulfamethoxazol S
  - erytromycine S
  - clindamycine S
  - rifampicine S
  - tetracycline S
  - fusidinezuur S
- Legenda
  - 1. Staphylococcus aureus
  - S=sensitief - R=resistent - I=intermediair - X=ongeschikt, intrinsiek resistent - N=negatief - P=postief

4500 µAs  
55,9 kV  
Relative X-Ray Exposure 288  
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22-10-2016,09:00



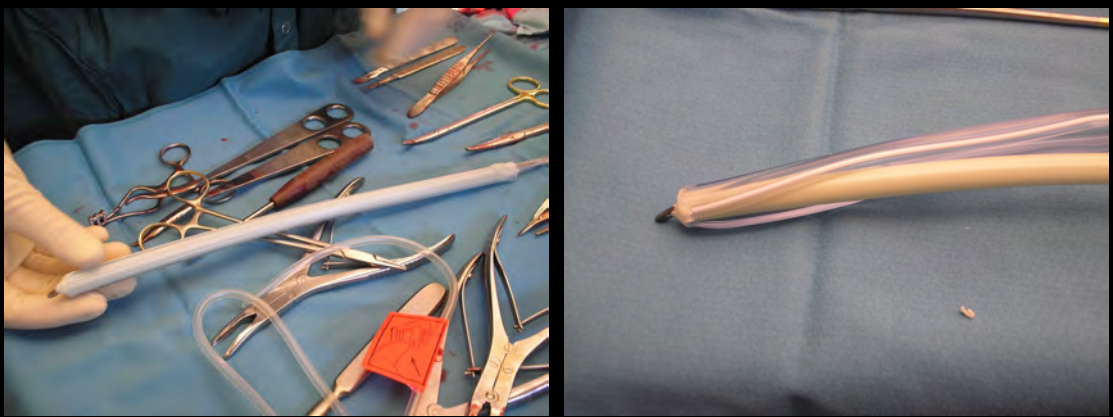
1. X Onderbeen AP Li

Beeindigd  
ERMF  
1688  
2952

1

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# huisvlijt



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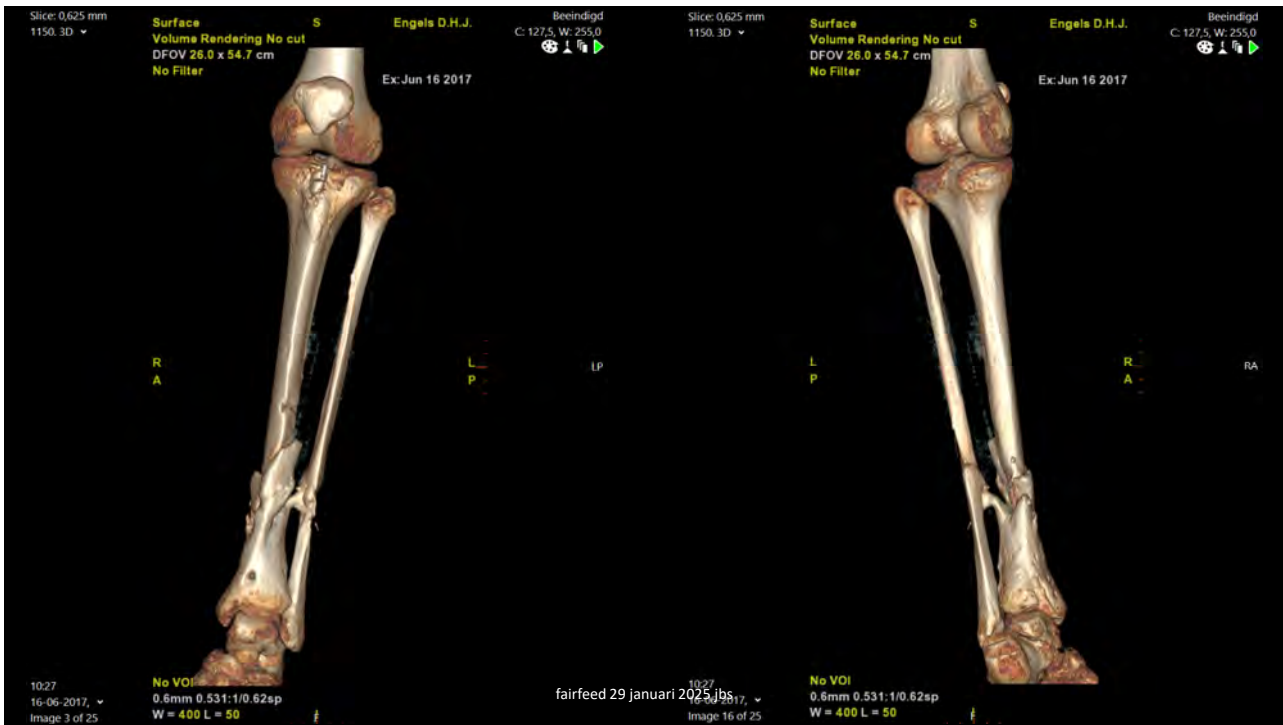
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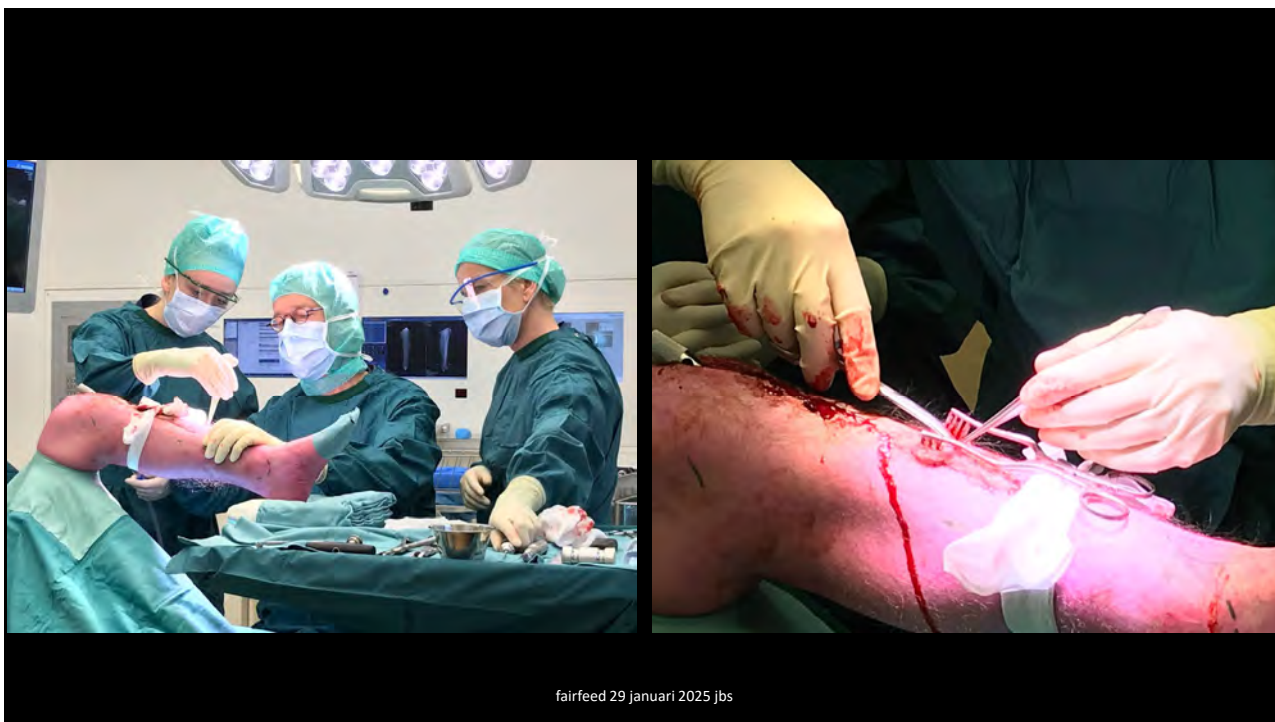
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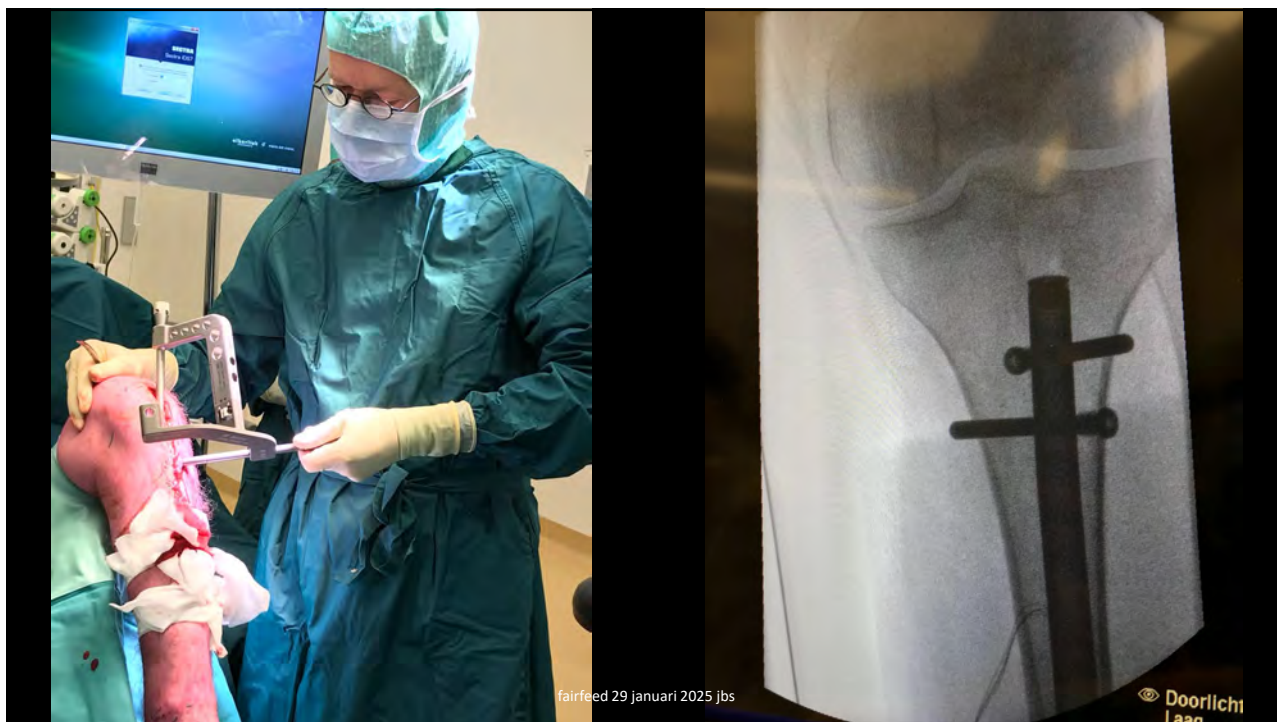
48



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infectie  
pseudarthrose  
verkorting

posttraumatisch geen stress

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## Pilon tibiale fracturen

- Val van hoogte en verkeersongevallen, obesitas
- Hoog energetisch letsel
  - axiale compressie !
- Weke delen letsel staat voorop!
  - strakke en slecht gevasculariseerde weke delen envelope
- Dus primair “do no further harm”
- Talus impacteert het plafond, implosie

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## Anatomie en pathofysiologie

- Typering fractuur
- Zuiver axiale compressie of:
  - Compressie zijde
  - Tension zijde

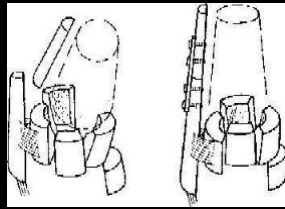


Waar zit de comminutieve zone, waar zit de “cortical read”?

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Problematiek van pilonfractuur  
is impactie botdelen



Principe van ligamentotaxis,  
effect van tractie op pijlers.

Geen effect op impactie!



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**Dit moet voorkomen worden!!!**



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# Span, scan and plan

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## Take Home Message Pilon tibiale fracturen

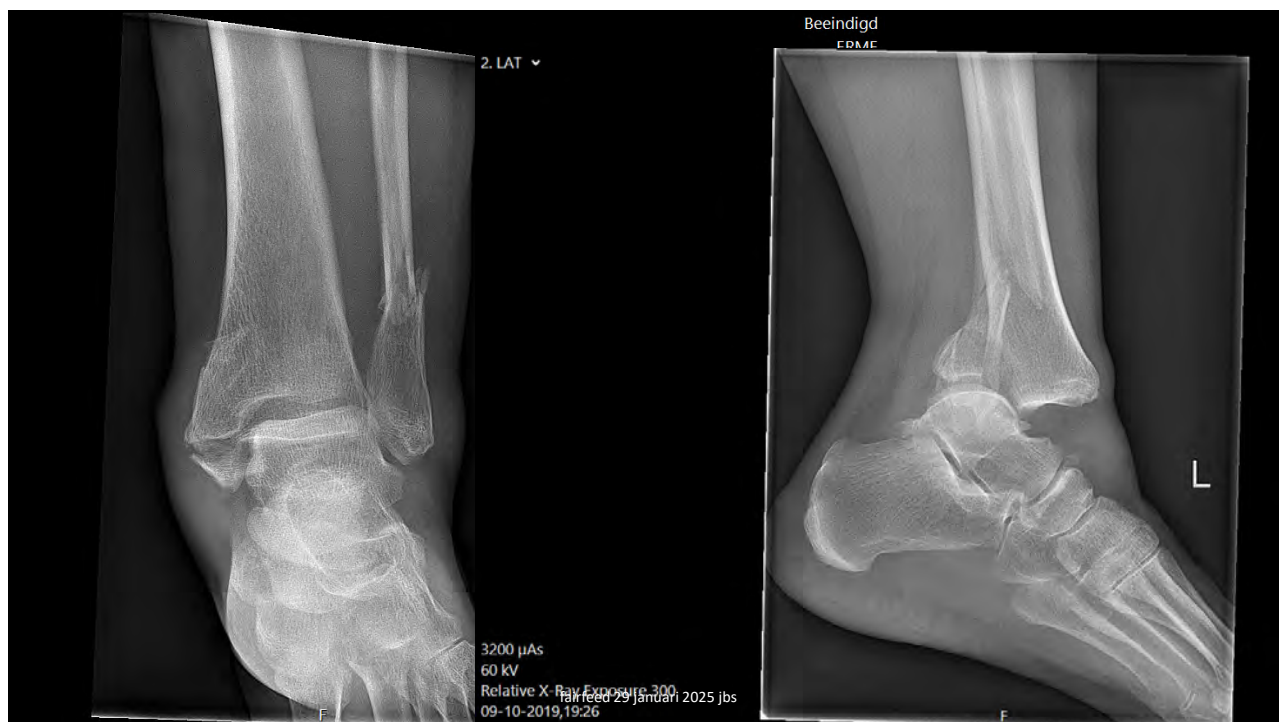
- Ernstig letsel
- Weke delen !
- Tijdelijke overbrugging
- Gefaseerde aanpak: scan, span and plan
- Definitieve anatomische reconstructie
- Prognose: kraakbeenschade !

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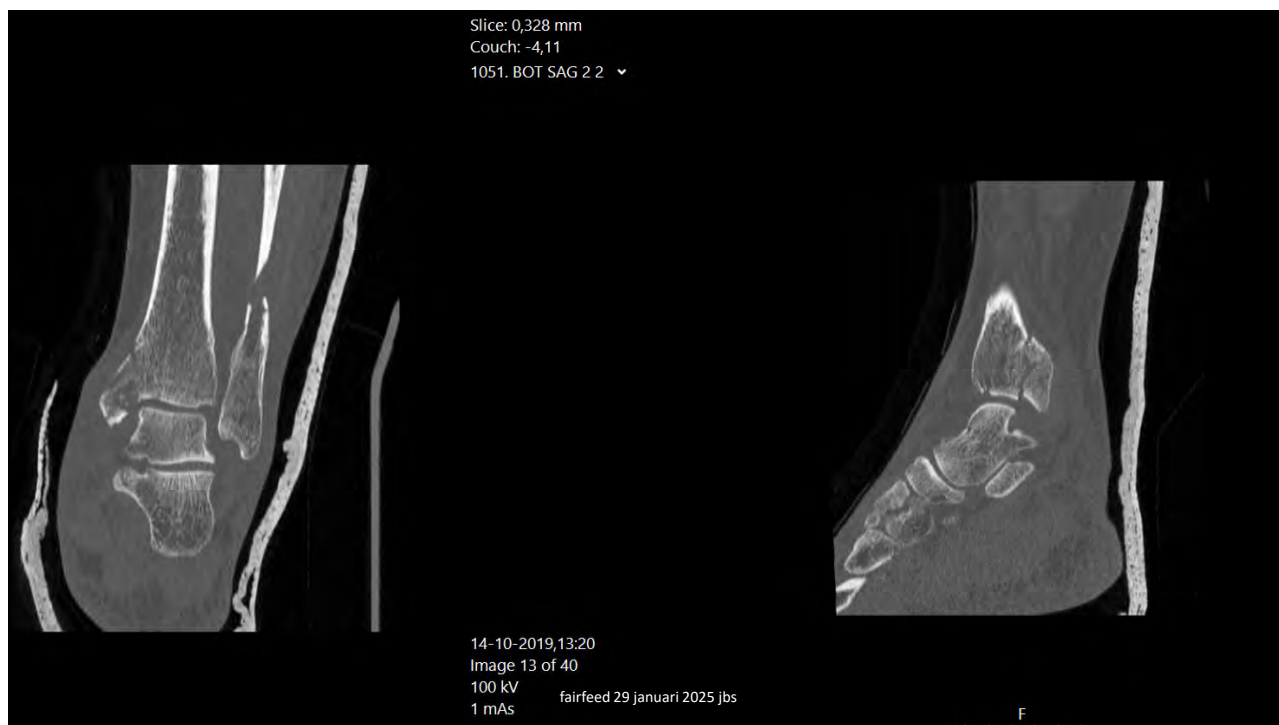
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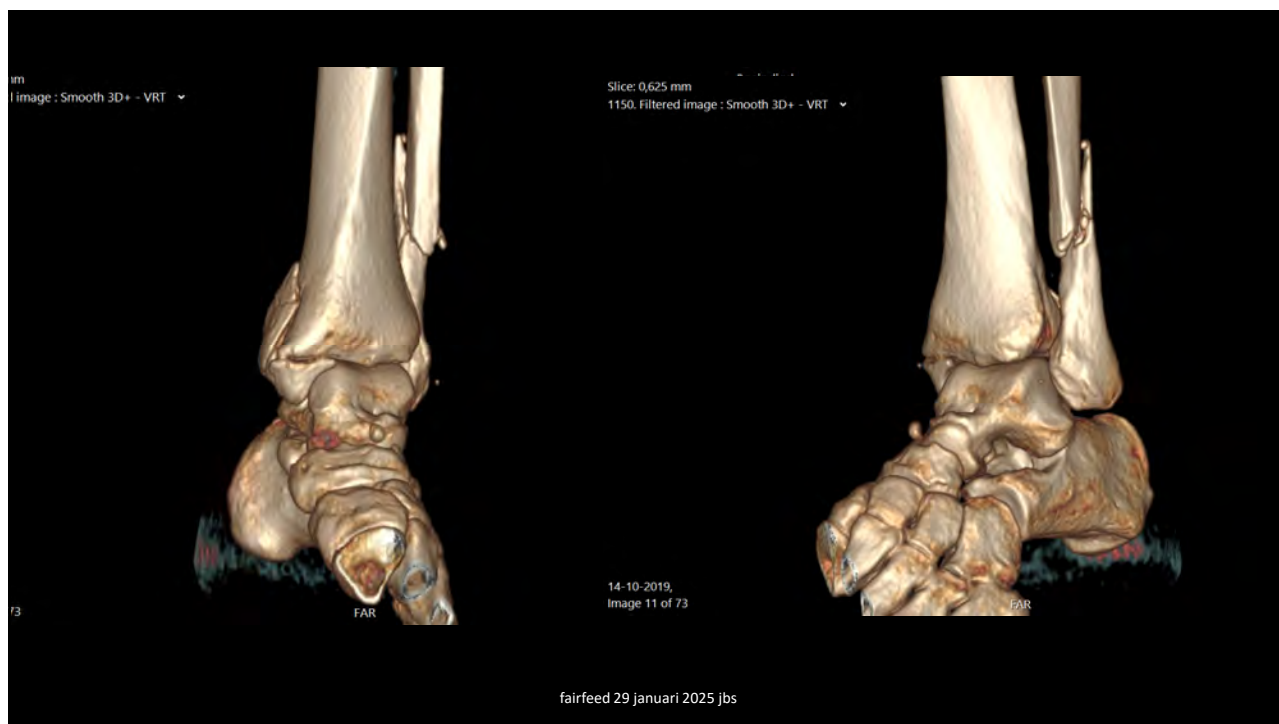
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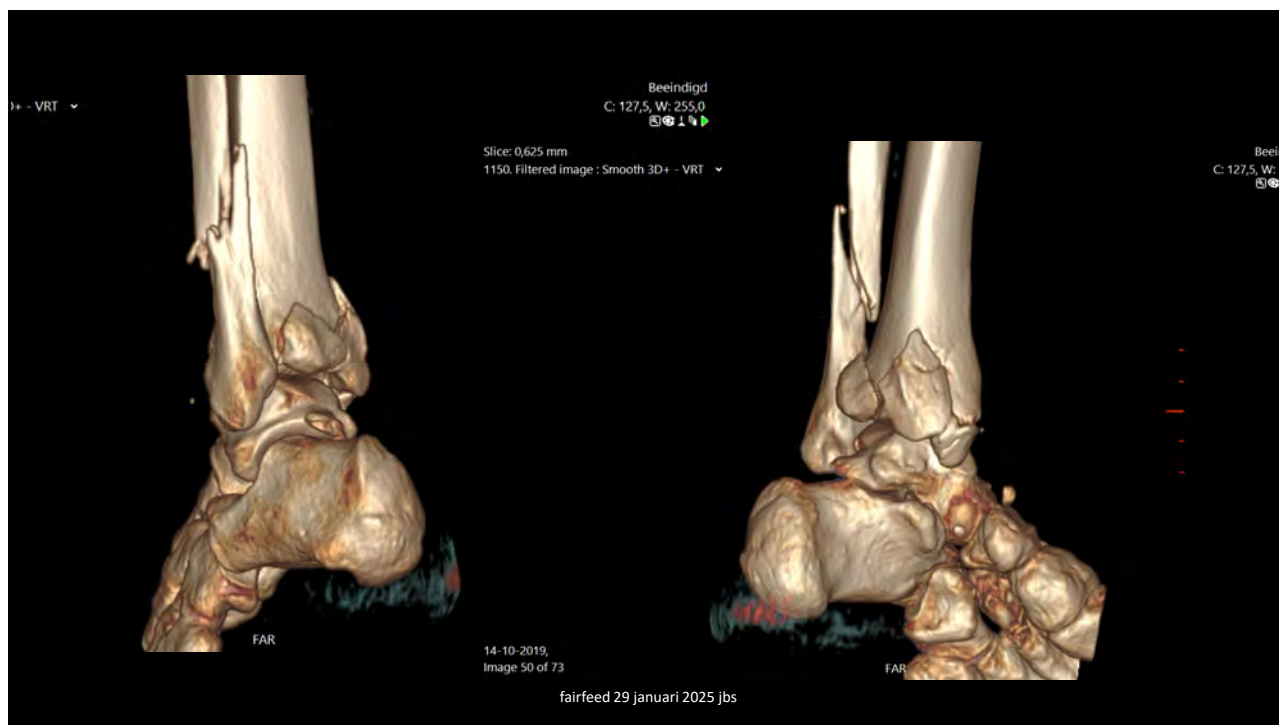
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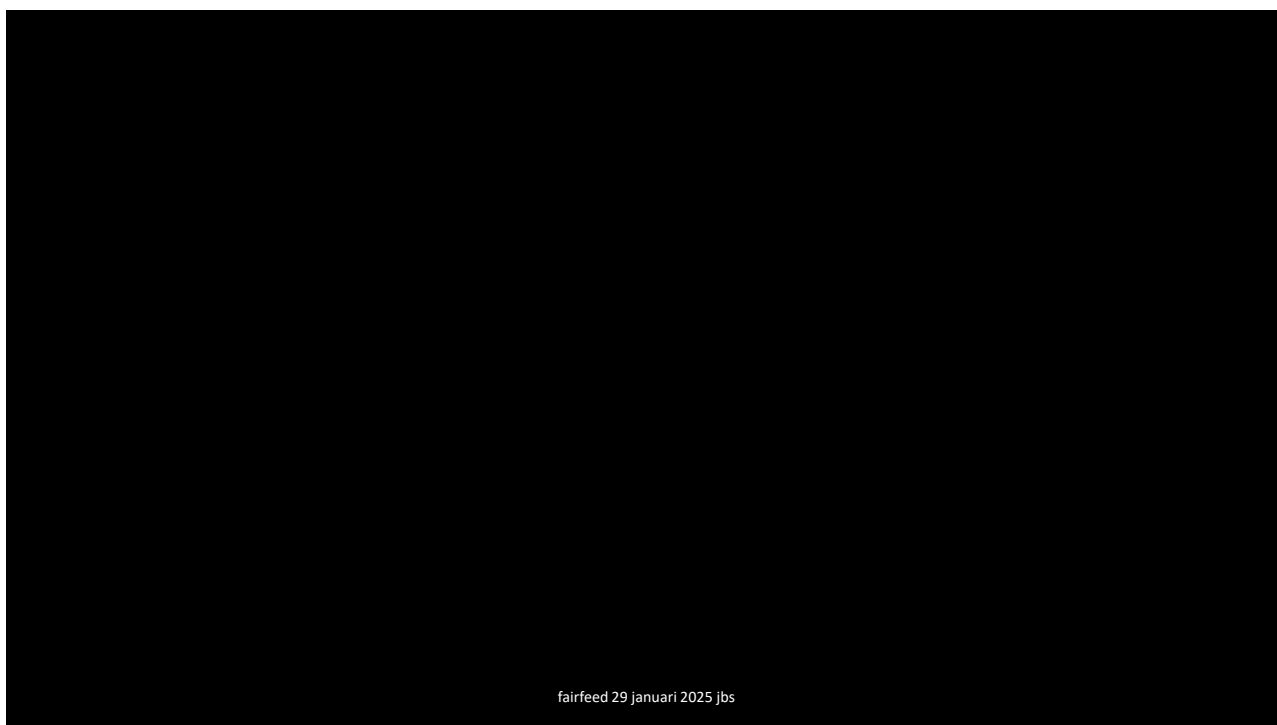
77



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## Stelschroeven Maisonneuve #



Beeindigd  
ERMF  
2047  
4095  
▲ □



21-5-2013,

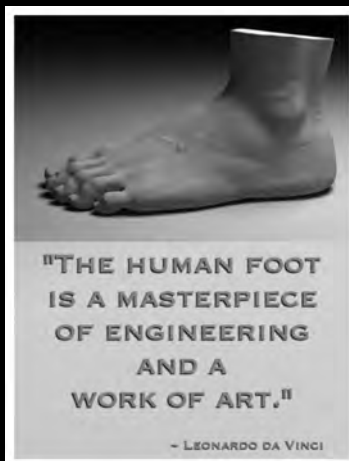
1

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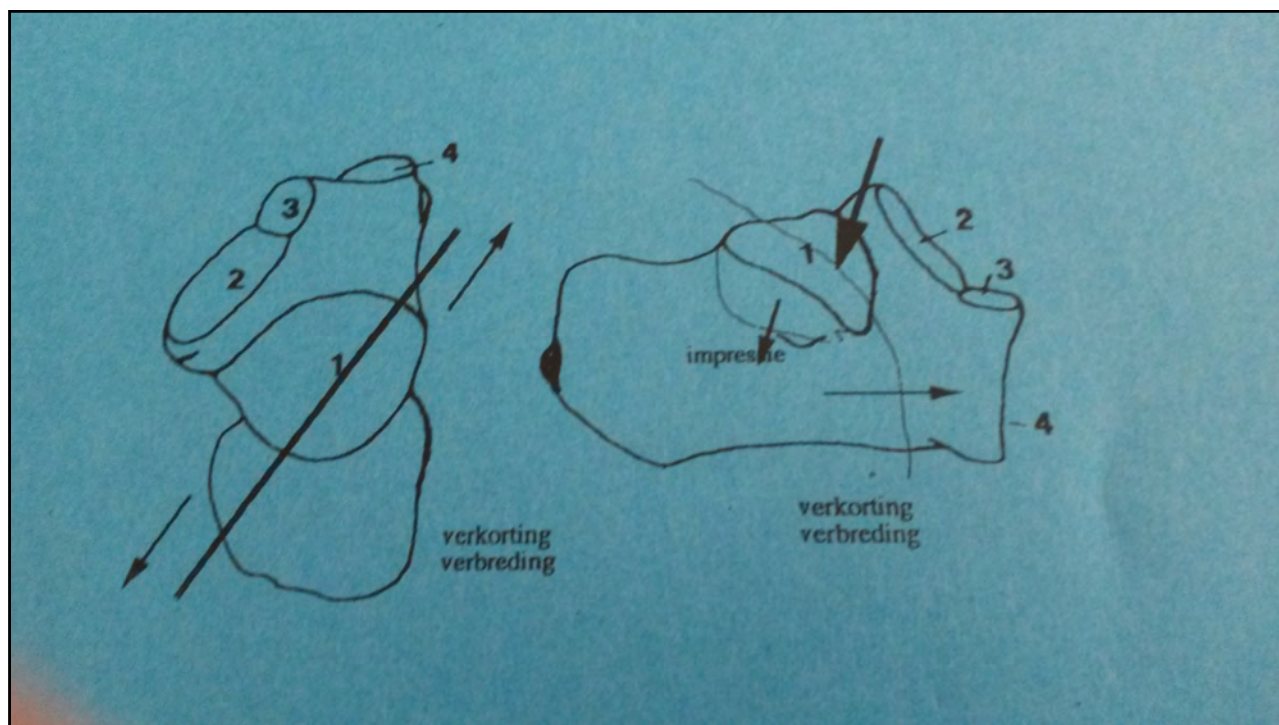
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## Calcaneusfractuur, joint depression



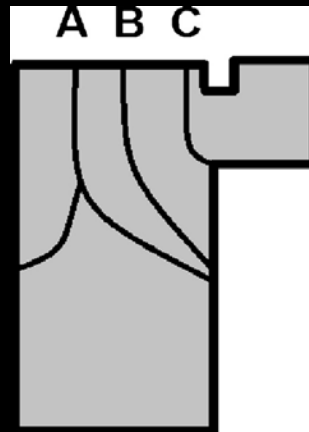
85



86

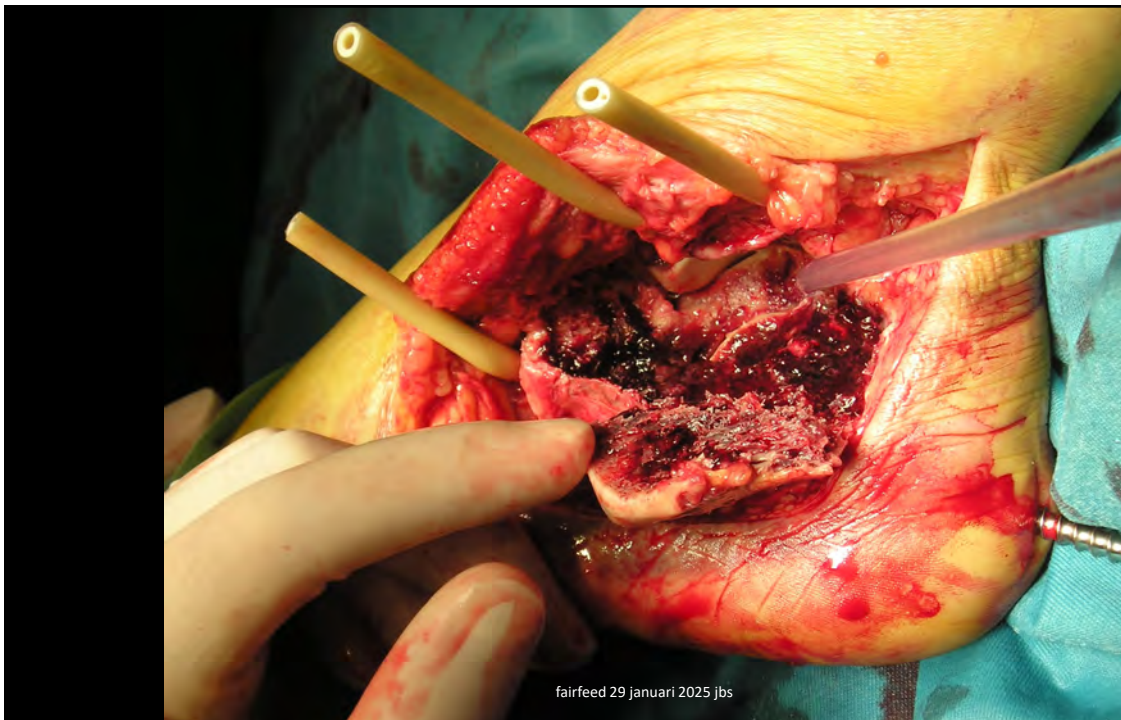
Sanders classification:  
(CT semi coronaal)

- I <2mm
- II 1 fractuurlijn
- III 2 fractuurlijnen
- IV >2



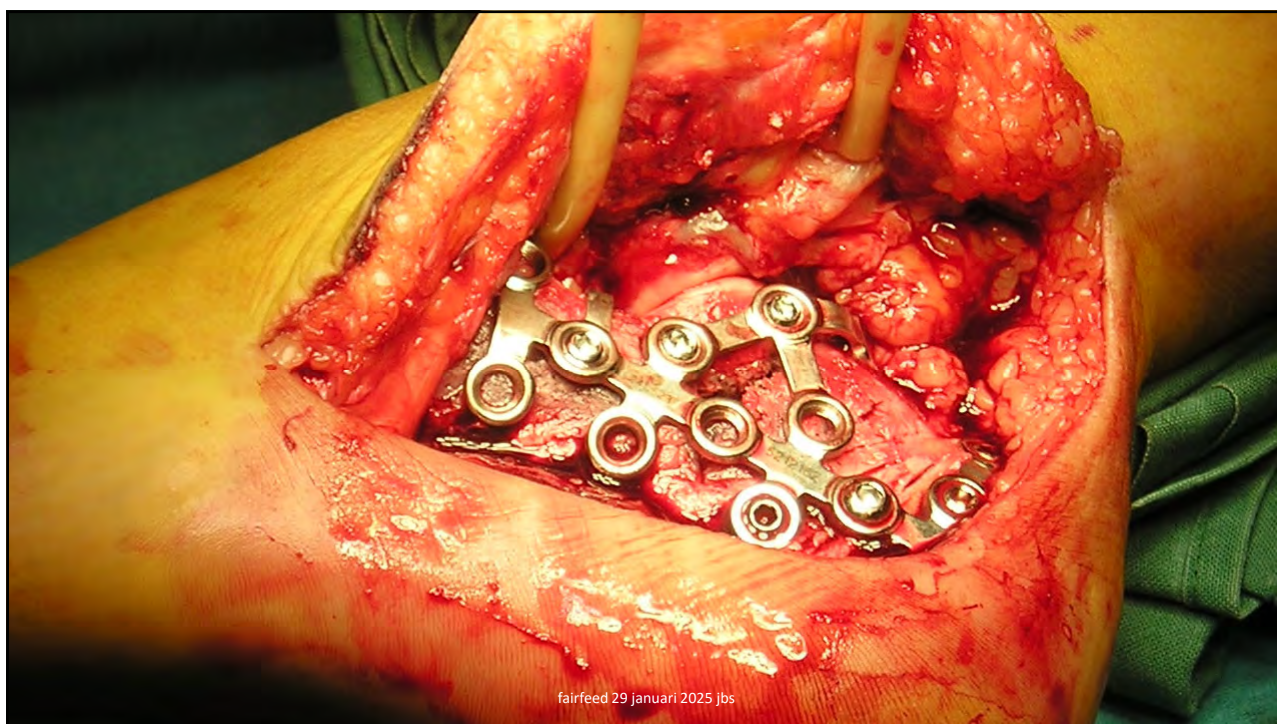
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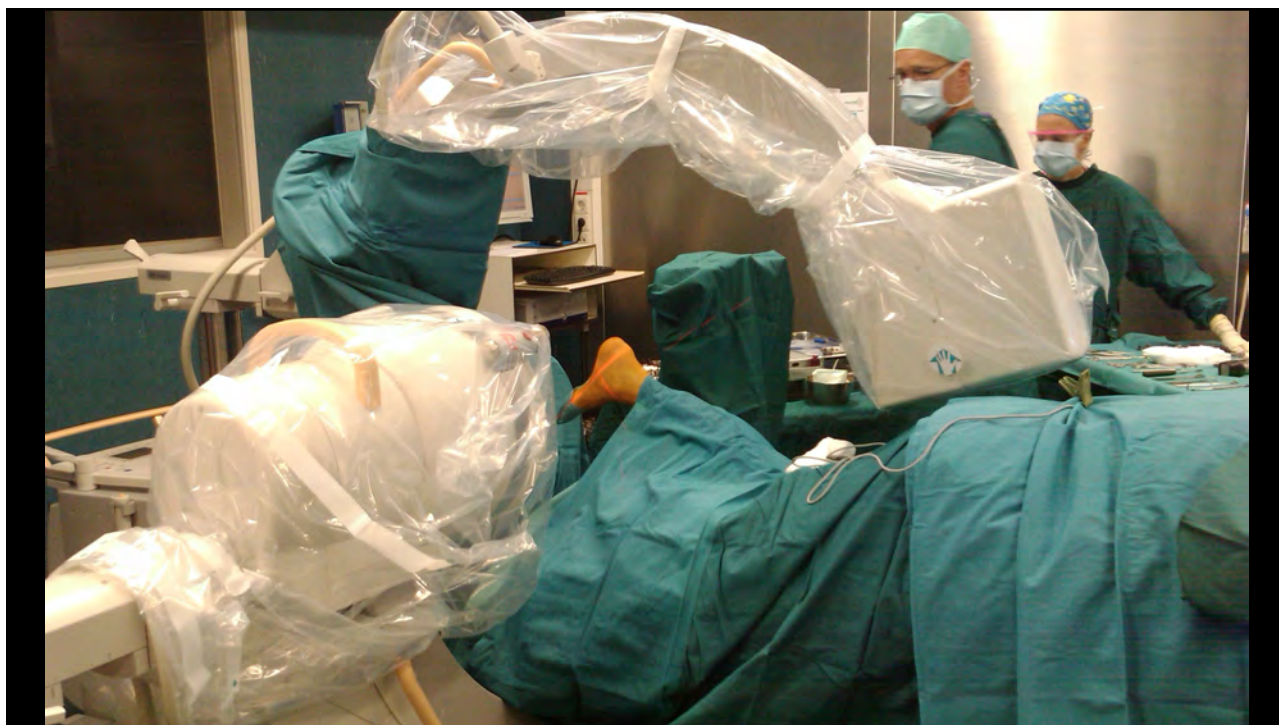


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Tongue-type of eendebek#, wel spoed !



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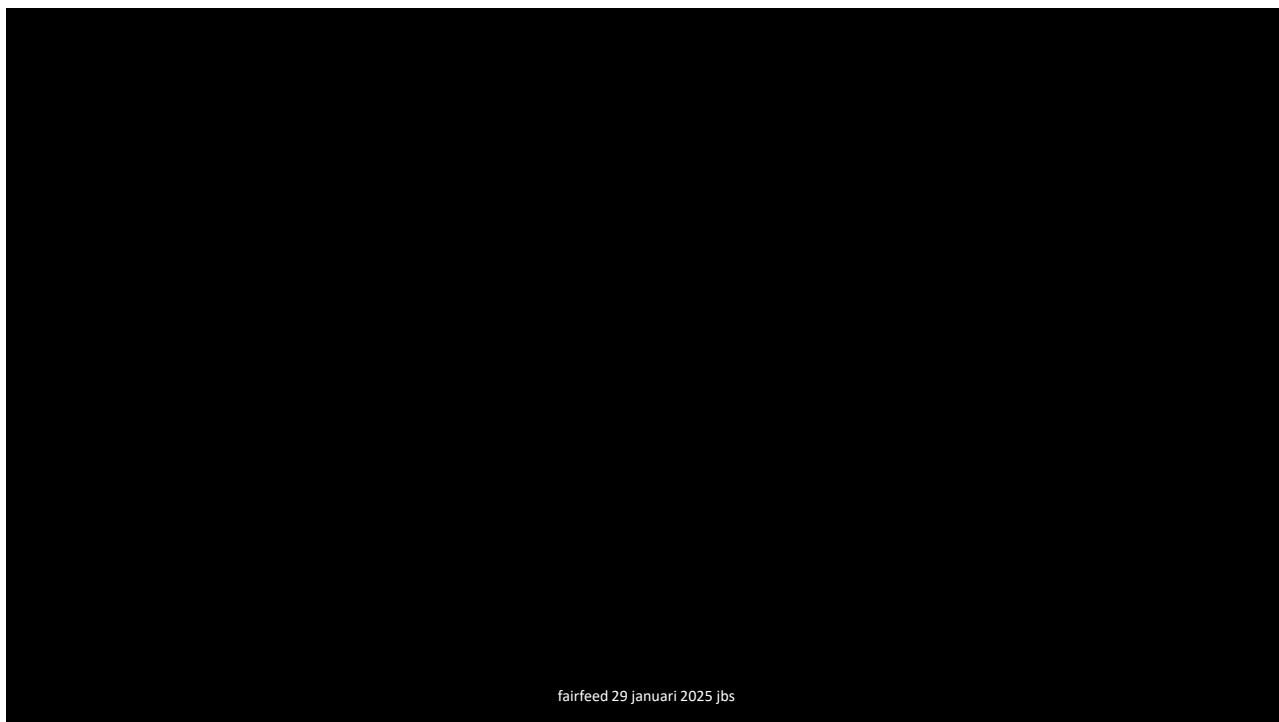
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## Lisfranc - onderzoek



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- Diastase MT I – II
- X: Fleck sign
- AP: C2 en M2 niet in lijn
- Bij twijfel CT
  - Echter 30% fout-pos en fout-neg



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## Jacques Lisfranc ( Loire 1790 - Paris 1847 )

1815: Nouvelle methode operatoire (dite de Lisfranc) pour l'amputation partielle de pied dans son articulation tarsometatarsienne .



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## Amputatielijn ! Oorzaak : stijgbeugels cavaleriezedel



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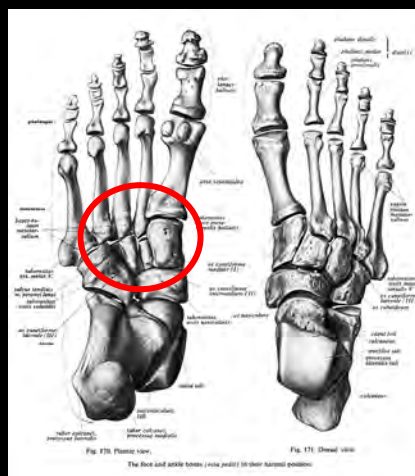
## MMT



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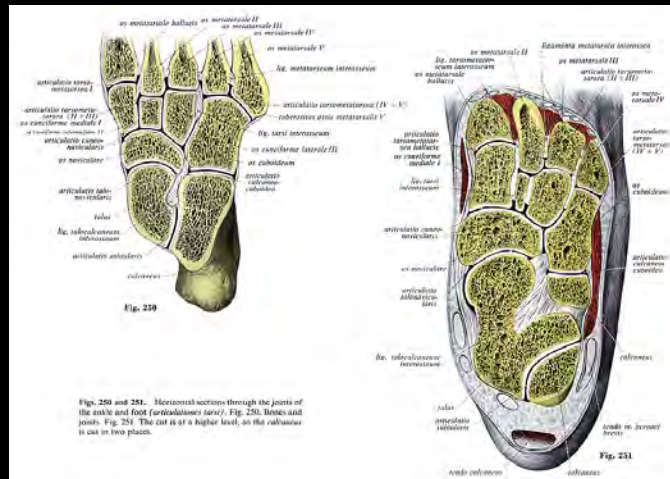
## anatomie



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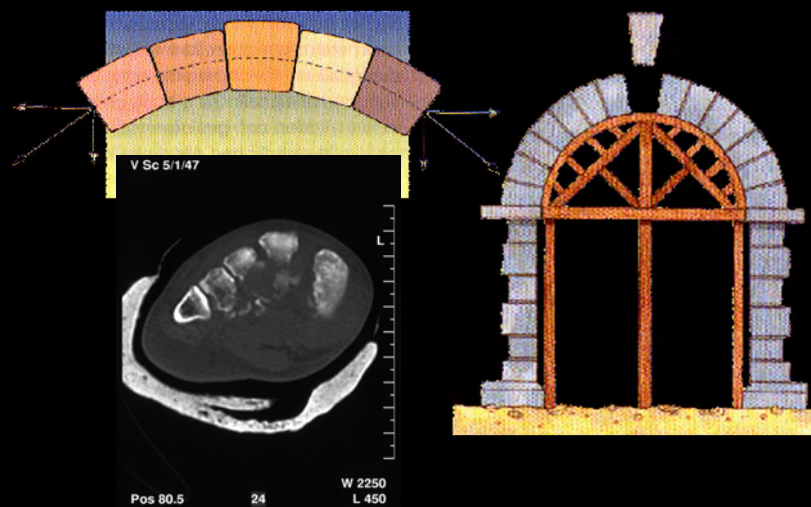
# Functionele anatomie



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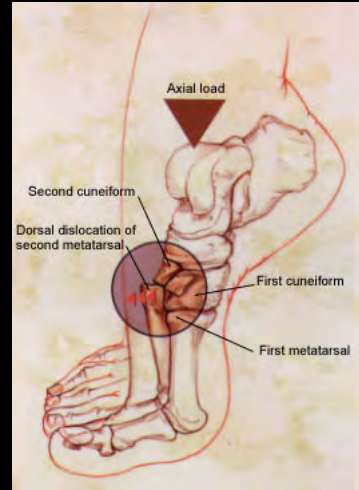
## Anatomie : bouwstenen



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## ongevalsmechanisme



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## Röntgendiagnostiek

X: AP, lateraal en  $\frac{3}{4}$

(hulplijn mediaal 2 en 4). Eventueel belast.

Eventueel stressopname



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## Behandeling

? Conservatief: indien geen dislocatie: COBG

! Operatief : anatomische repositie ! (cave interpositie)

stabiele fixatie : Kirschner draden ( uit na 6 wkn )

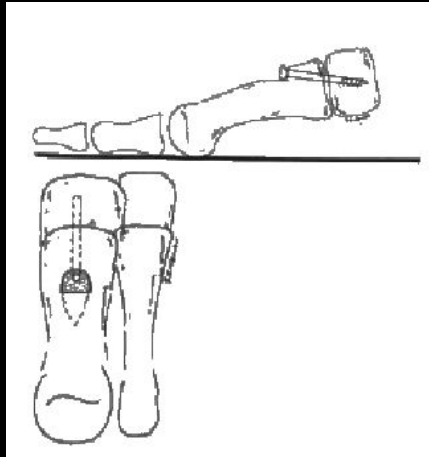
schroeven ( uit na 3-6 mnd )

stelplaten

primaire arthrodesse, mn straal 1,2,3

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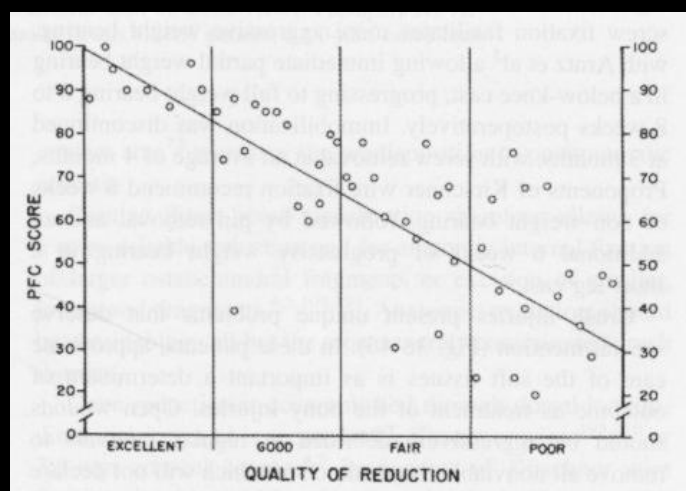
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## Myerson , Foot and Ankle 1986



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# Approach, meestal niet zo

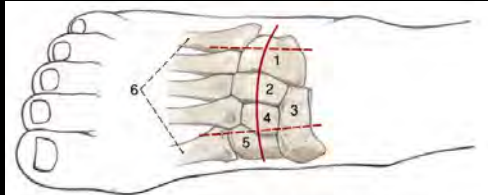


Abb. 348 Der dorsale Zugang zum Mittelfuß. Es können eine quere Inzision oder mediale und laterale Längsinzisionen (gestrichelte Linien) verwendet werden (rechtes Bein).

- 1 Os cuboideum
- 2 Os cuneiforme laterale
- 3 Os naviculare
- 4 Os cuneiforme intermedium
- 5 Os cuneiforme mediale
- 6 Ossa metatarsalia I–V

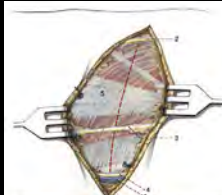


Abb. 349 Nach Mobilisierung der Subkutis nach proximal und distal wird die Faszia parallel zur Hautfalten bei Schonung der langverlaufenden Nervenfasern gespalten.

- 1 Os cuboideum
- 2 Os cuneiforme laterale
- 3 Os naviculare
- 4 Os cuneiforme intermedium
- 5 Os cuneiforme mediale
- 6 Ossa metatarsalia I–V

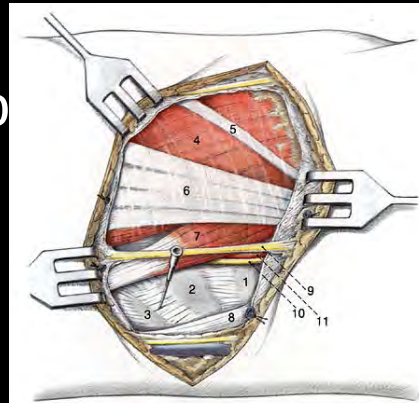
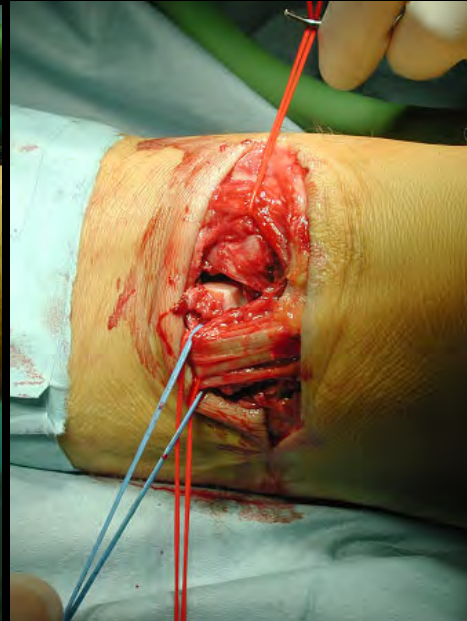


Abb. 350 Darstellung der langen und kurzen Zehenstrecker sowie des N. peroneus profundus und der A. dorsalis pedis medial des M. extensor hallucis brevis. Lokalisation des Gelenkspaltes mit einer feinen Nadel.

- 1 Os naviculare
- 2 Os cuneiforme intermedium
- 3 Os metacarpale II
- 4 M. extensor digitorum brevis
- 5 Tendo m. peronei tertii
- 6 Tendines m. extensoris digitorum longi
- 7 M. extensor hallucis brevis
- 8 Tendo m. extensoris hallucis longi
- 9 N. cutaneus dorsalis medialis
- 10 N. peroneus profundus
- 11 A. dorsalis pedis

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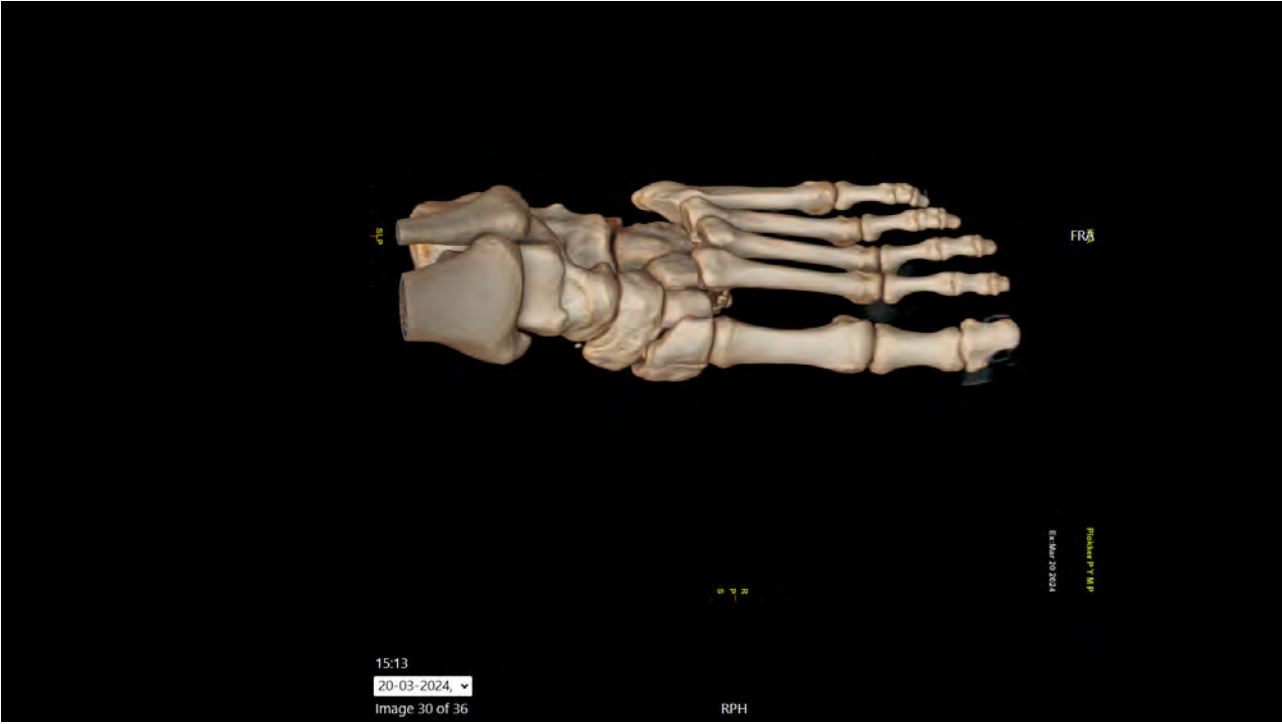


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## Conclusie Lisfranc luxatiefracturen

Ernstig letsel

Vaak gemist

Open repositie meestal beter

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## Degloving injury



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