



# *LA FISSAZIONE CIRCOLARE NELLA GESTIONE DEI TRAUMI*

**Dott. Tazio Talamonti**

*ASST Grande Ospedale Metropolitano Niguarda - Milano*  
27-28 Ottobre 2023





*Dr. Talamonti is a paid consultant of Orthofix Srl*

**2023**  
**27-28 Ottobre**  
**MILANO**  
Grand Hotel Villa Torretta  
Milan Sesto  
Via Milanese, 3  
20099 Sesto San Giovanni (MI)

**SIFE**  
SOCIETÀ ITALIANA  
FISSAZIONE ESTERNA

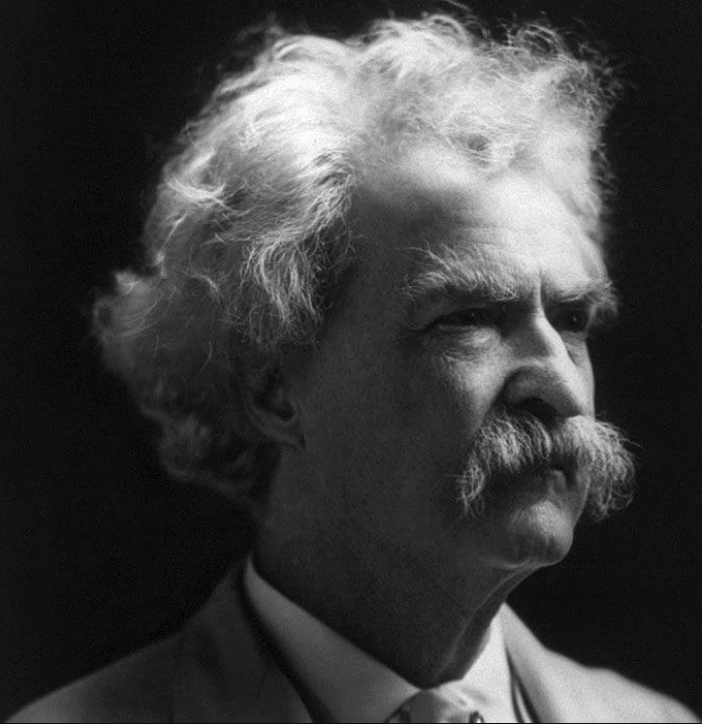
**PROGRAMMA  
PRELIMINARE**

**CONGRESSO NAZIONALE SIFE**  
Rigenerazione Ossea con tecniche di fissazione interna ed esterna.  
Prevenzione e trattamento delle infezioni ossee in traumatologia

Presidente del Congresso  
Dott. Alexander Kirienco  
Istituto Clinico Humanitas - Rozzano

***The secret of getting ahead  
is getting started***

*Mark Twain*





# DCO

- Era del DCO 1993
- Stabilizzare le lesioni ortopediche per migliorare la fisiologia del paziente
- **Parte delle manovre salvavita**
- Diminuire rischio di ipotermia, coagulopatia, acidosi (*second hit*)





## COME FARE DCO

- **Montaggio semplice**  
~~(\$\$\$!!!)~~
- **Rapido (DCO)**
- Pianifica prima il montaggio definitivo...
- Poi metti le fiches dove non le metterai poi
- Stringi 'a morte' i morsetti
- Medica solo i tramiti  
*NO BENDAGGIO*



# Concezione comune della FE in trauma

- **Damage control**

Temporanea

Non intesa per la guarigione della frattura

Stabilizzazione dei tessuti molli



Ottenere stabilità ossea

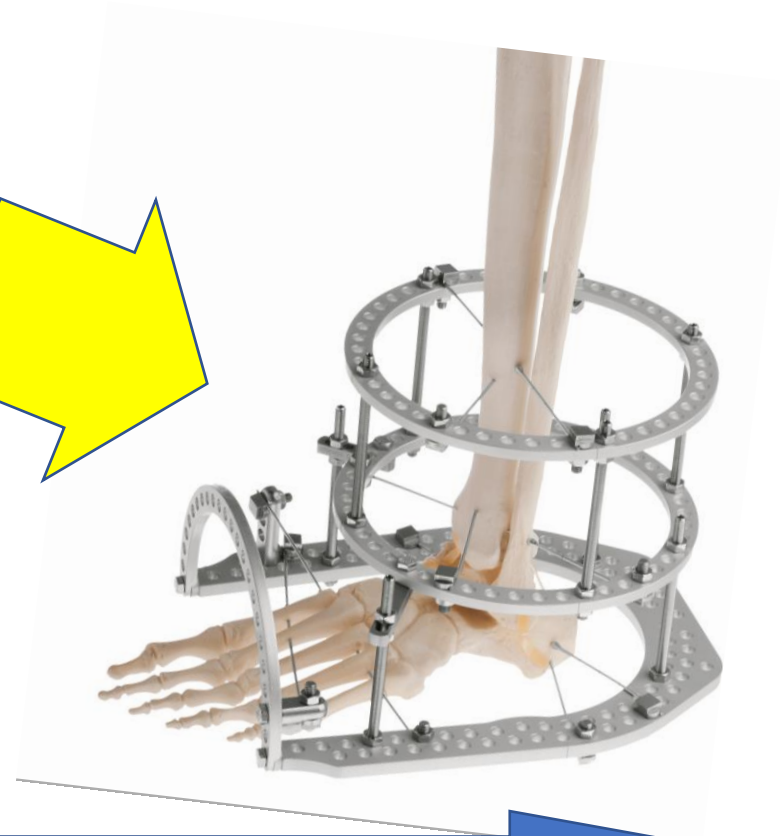
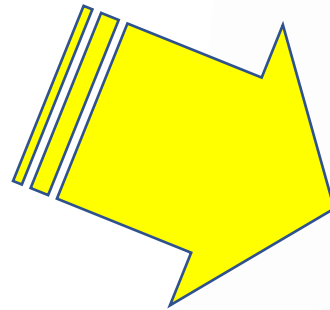
Stabilità primaria della frattura grazie (compressione interframmentaria)

Osteogenesi per distrazione

Neutralizzazione delle forze su una sintesi con viti

# STABILIZZAZIONE DELLA FRATTURA

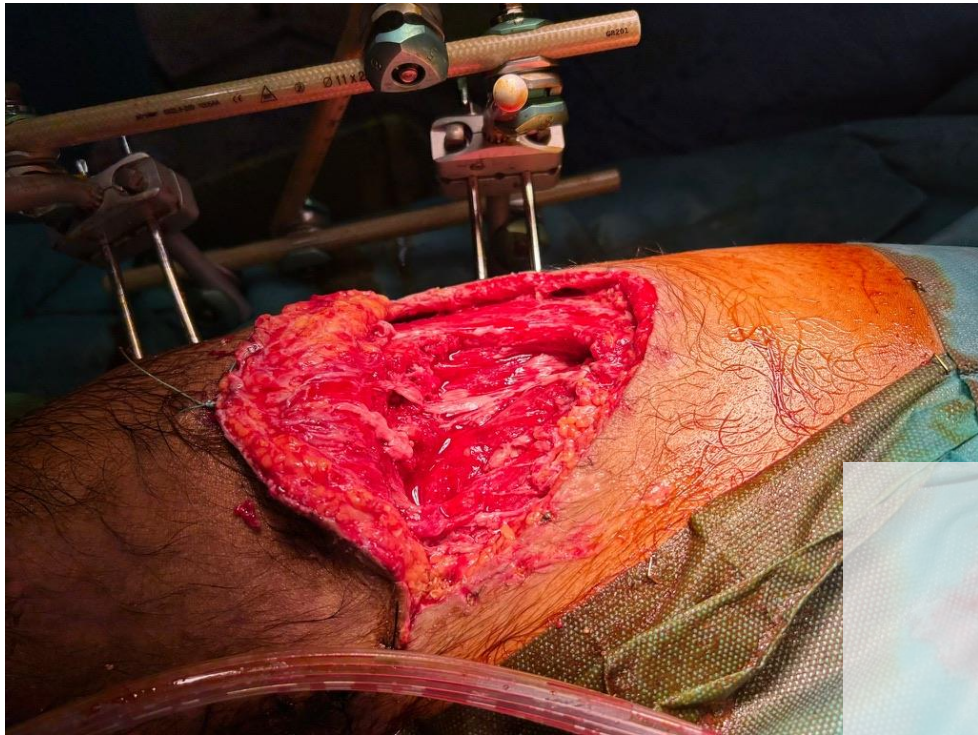
Micromovimenti a livello del focoloia



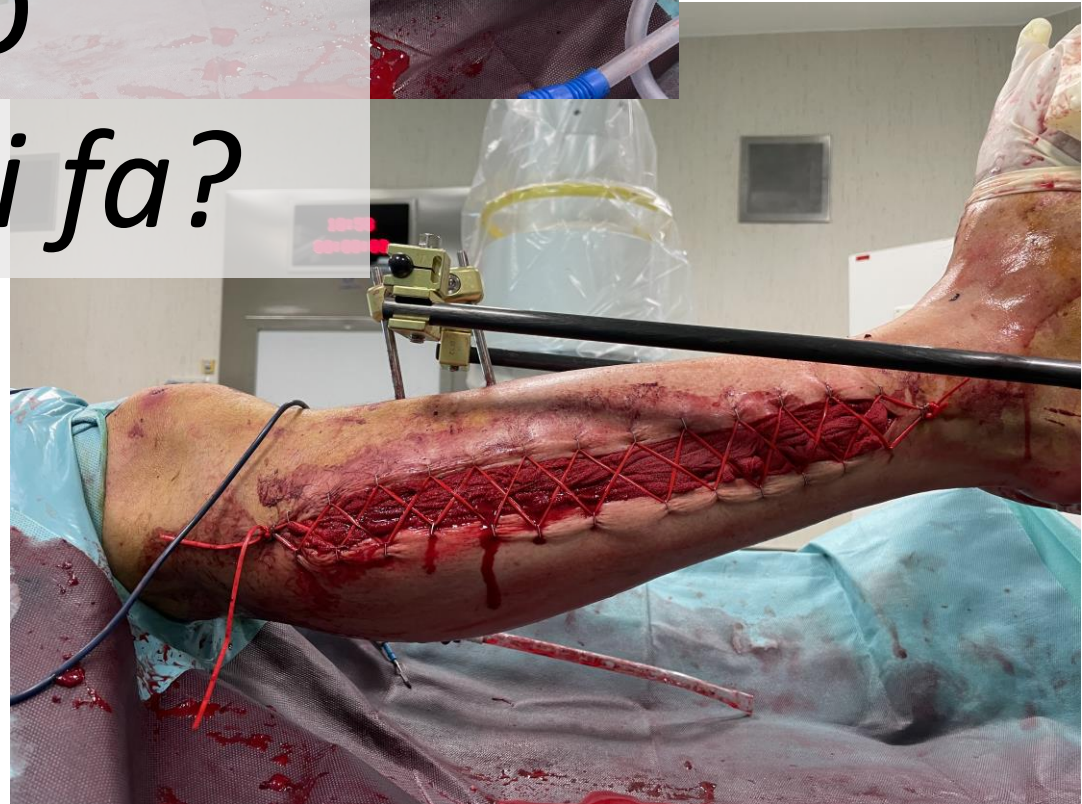
Rigidità del costrutto osso-fissatore







DCO  
*Come si fa?*



### ***Prima fase:***

- Debridement
- Fissazione esterna DCO
- Riparazione delle eventuali lesioni vascolari e nervose
- Se possibile tentativo di salvataggio articolazione (eventuale sintesi a minima)
- Copertura ferita
- Controllo dell'infezione



### ***Seconda fase:***

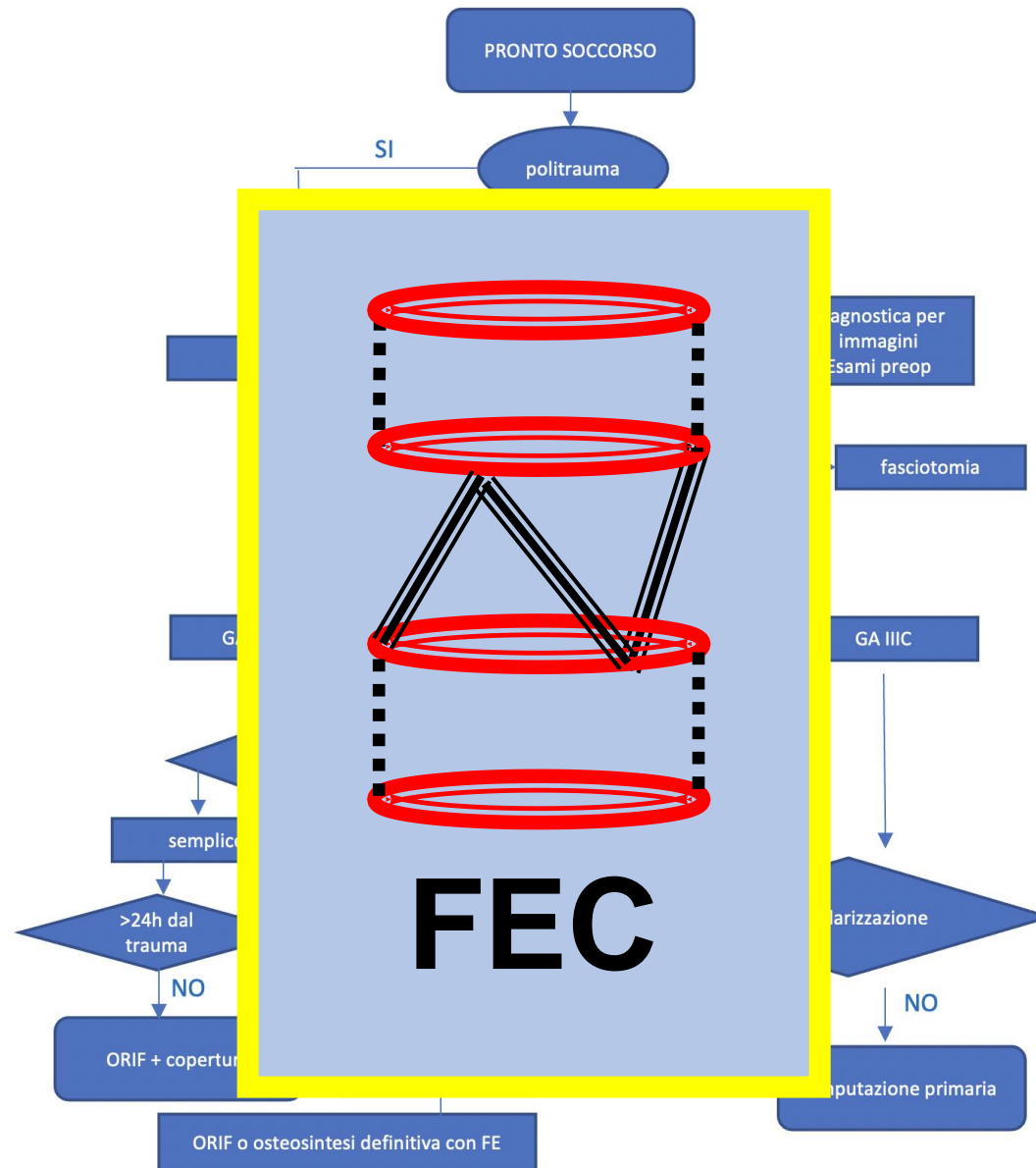
- Tempo chirurgia plastica



### ***Terza fase:***

- Sostituzione del fissatore provvisorio con mezzo di sintesi definitivo
- Graft ossei, ecc.



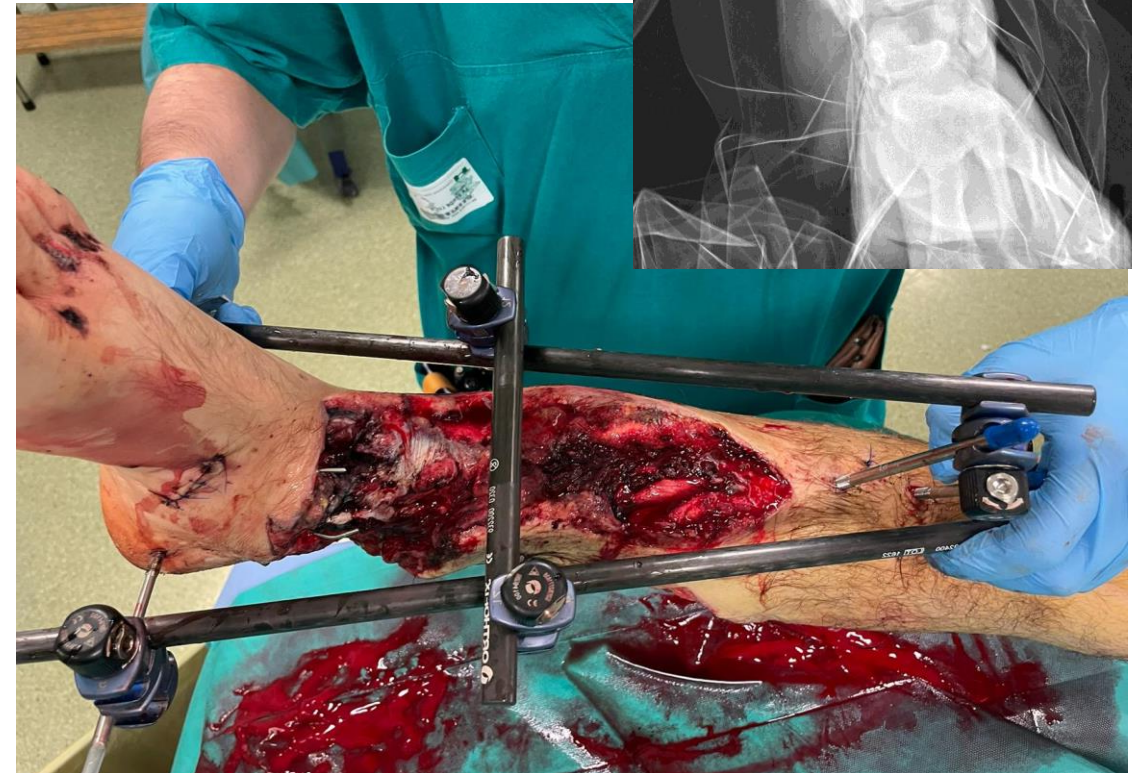




*Esempio:*

## **le fratture di tibia distale Gustilo Anderson III A/B/C presentano un rischio elevato di complicazioni:**

- Fratture articolari con comminazione importante
- Non si ridurranno con semplice ligamentotassi
- Danno capsulare
- Frammenti privi di supporto subcondrale
- La distrazione articolare aiuterà la guarigione



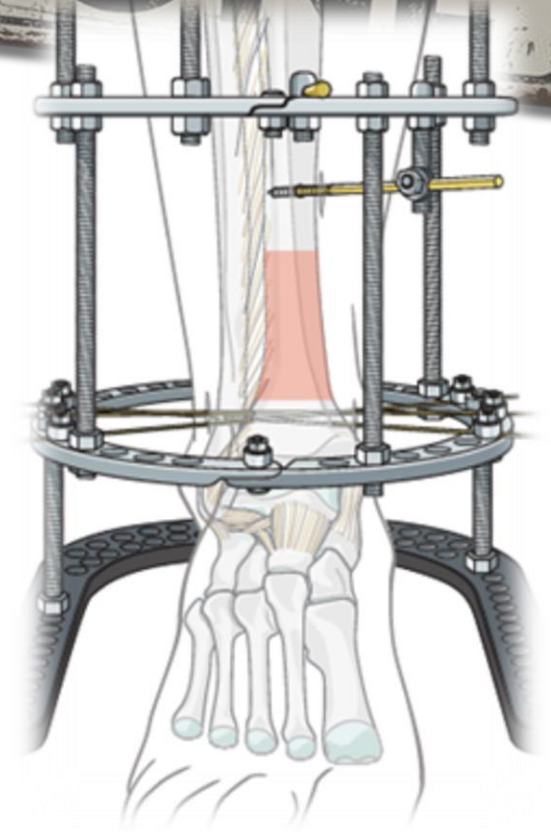
# ZONA metadiafisaria

Regione ipo- o devascularizzata  
(dysvascularized zone)

- Area di scarsa copertura/protezione dei tessuti molli

Sede delle maggiori complicanze

- Pseudoartrosi
- Vizio di consolidazione
- infezione



## Azioni del FEC

manipolazione attiva e progressiva del segmento traumatizzato

- ***COMPRESSIONE***
- ***RIDUZIONE GRADUALE***
  - *ALLINEAMENTO ASSE*
  - *CHIUSURA DEI TESSUTI MOLLI*
- ***GESTIONE DEL DIFETTO OSSEO***




- 50aa, uomo, caduta da 2m
- porcile



- Frattura esposta pilone tibiale GAIIIB
- Importante contaminazione



Courtesy

Dobbiamo pontare una fra  
Compromissione tessuti m  
Dobbiamo sintetizzare i fra  
Frattura articolare commin  
guarigione? 

Il frammento periarticolare  
Perdita di sostanza ossea?  
Rischio che i tessuti molli r

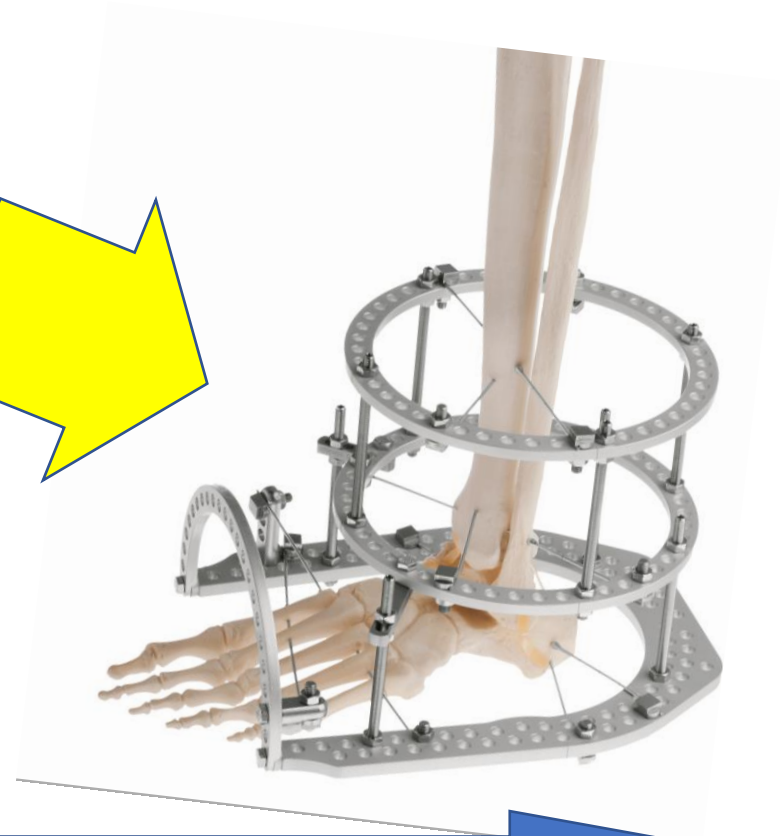
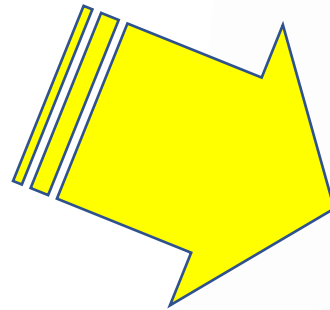


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# STABILIZZAZIONE DELLA FRATTURA

Micromovimenti a livello del focolaio



Rigidità del costrutto osso-fissatore

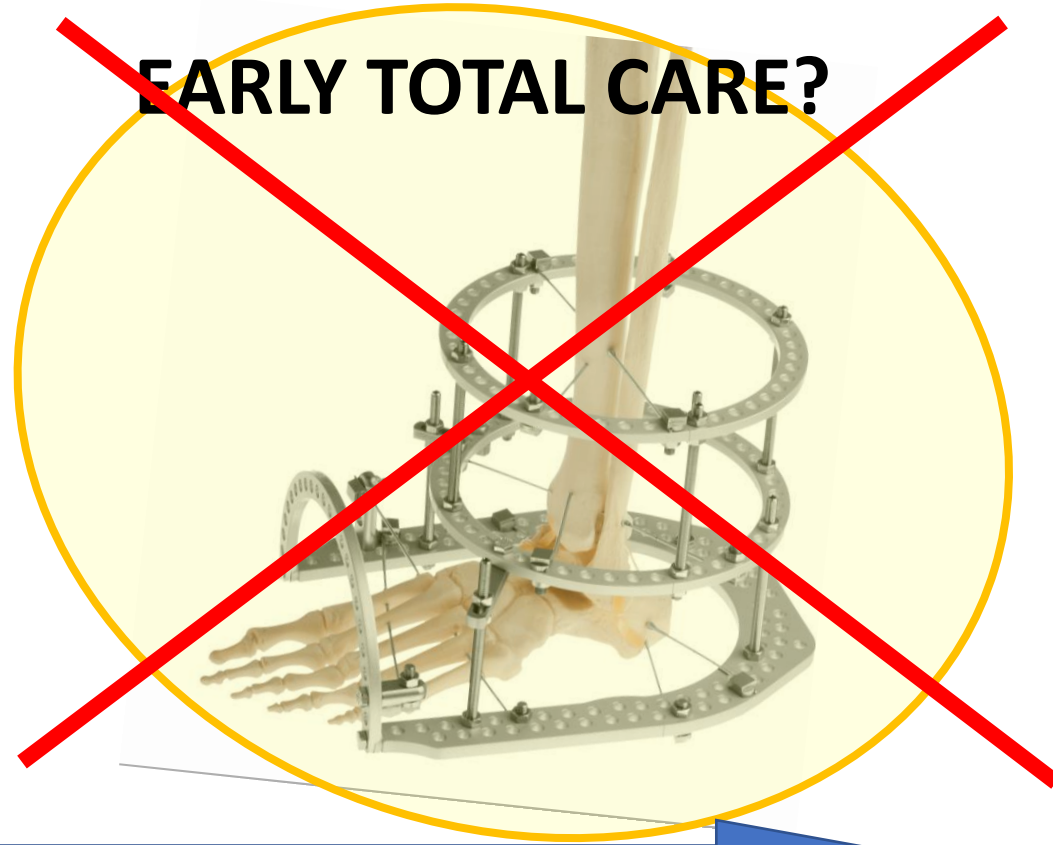
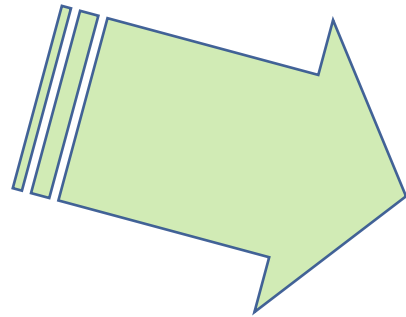


# STABILIZZAZIONE DELLA FRATTURA

Micromovimenti a livello del focolo



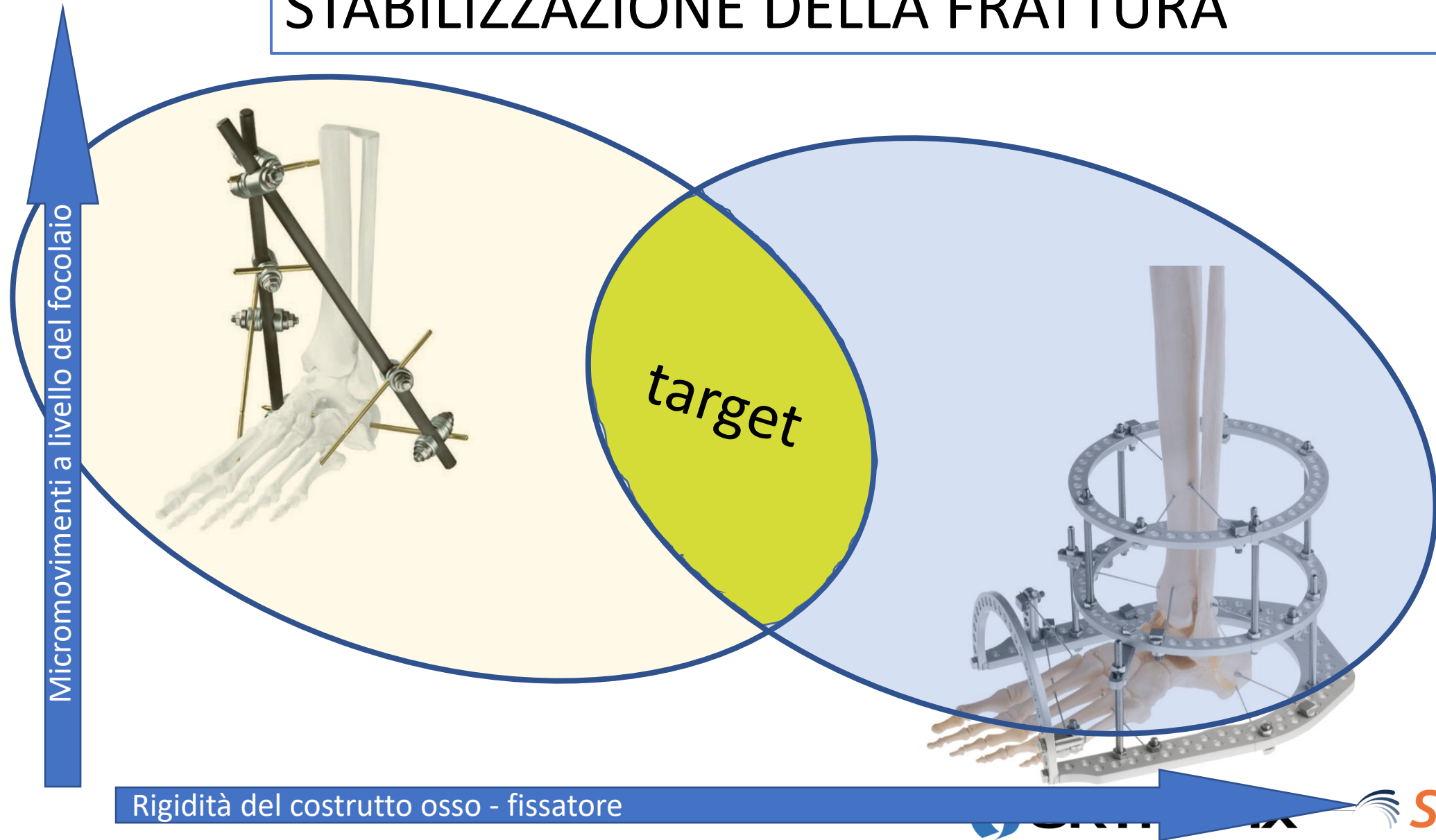
DCO



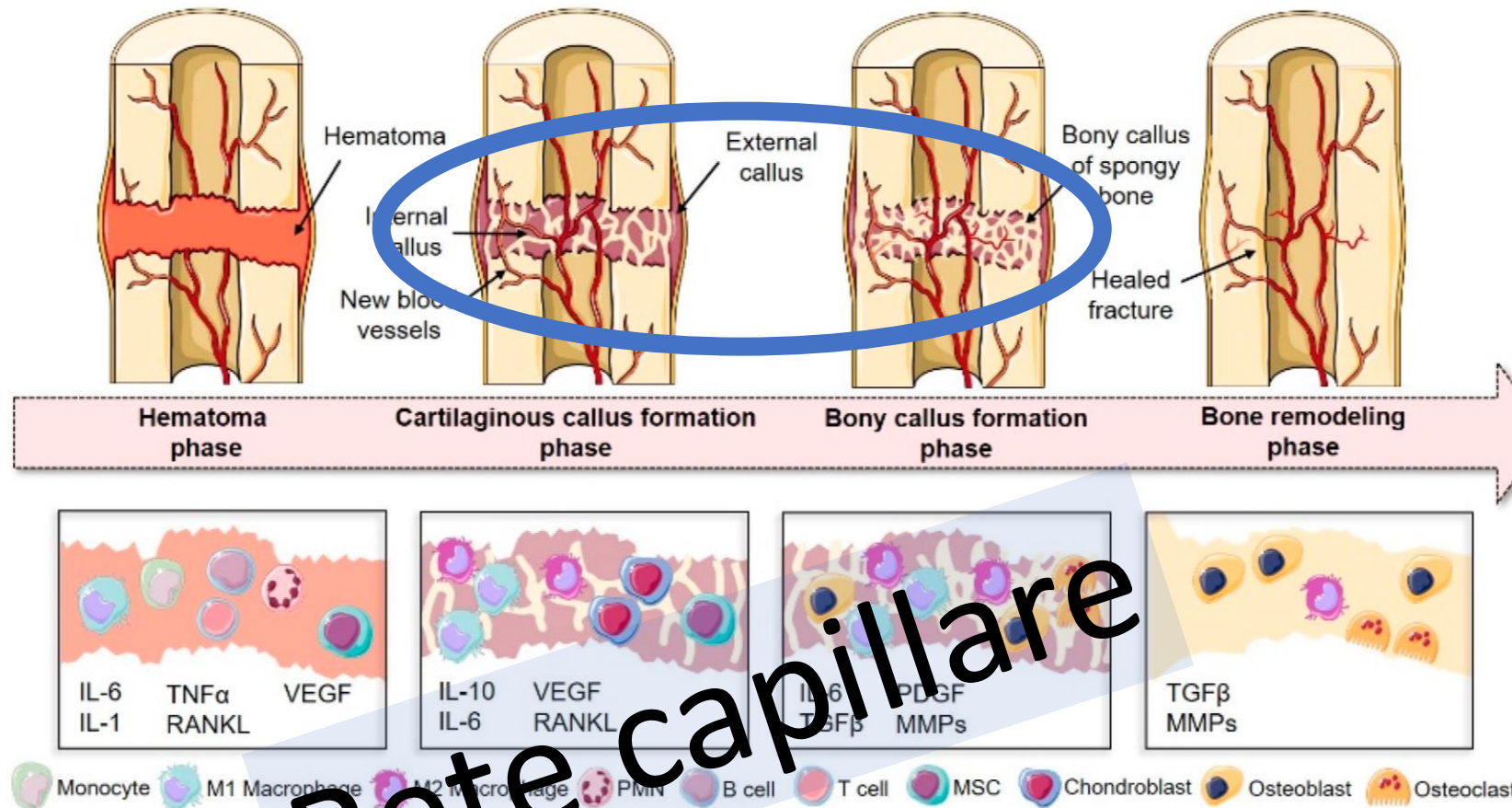
**EARLY TOTAL CARE?**

Rigidità del costrutto osso - fissatore

# STABILIZZAZIONE DELLA FRATTURA



# Fissazione definitiva



Marsh DR, Gang Li 1999. The biology of fracture healing: optimizing outcome. British Medical Bulletin; 55(4):856-69.

Marsell R, Einhorn TA 2011. The biology of fracture healing. Injury; 42(6):551-5.

Qi WC, Feng XR et al. 2020. The development and in vivo validation of an external fixation device with standardized micromotion for accelerating fracture healing. 42<sup>nd</sup> Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC); DOI:10.1109/EMBC44109.2020.9175437.



> [Int Orthop](#). 2019 Dec;43(12):2661-2670. doi: 10.1007/s00264-019-04314-0. Epub 20

# External fixation for primary and definitive management of open long bone fractures: the S war experience

[Abduljabbar Alhammoud](#)<sup>1</sup>, [Bakry Maaz](#)<sup>2</sup>, [Ghalib Ahmed Alhaneedi](#)<sup>1</sup>, [Mason Alnouri](#)<sup>3</sup>

Affiliations + expand

PMID: 30905046 DOI: [10.1007/s00264-019-04314-0](#)

Strat Traum Limb Recon (2009) 4:81–87  
DOI 10.1007/s11751-009-0062-3

ORIGINAL ARTICLE


## External fixation as a primary and definitive treatment for tibial diaphyseal fractures

[Michail Beltsios](#) · [Olga Savvidou](#) · [John Kovanis](#) ·  
[Panagiotis Alexandropoulos](#) · [Panagiotis Papagelopoulos](#)

Orthopaedic Proceedings, Vol. 104-B, No. SUPP\_5 |

The British Limb Reconstruction Society (BLRS) Annual Meeting 2022, Brighton, England, 24–25 March 2022.

## TEMPORARY CIRCULAR EXTERNAL FIXATION FOR SPANNING THE TRAUMATIZED ANKLE JOINT: A COHORT COMPARISON STUDY

 Free Access

[William D Harrison](#), [Franklin Fortuin](#), [Etienne Joubert](#), [Matthieu Durand-Hill](#), [Nando Ferreira](#)

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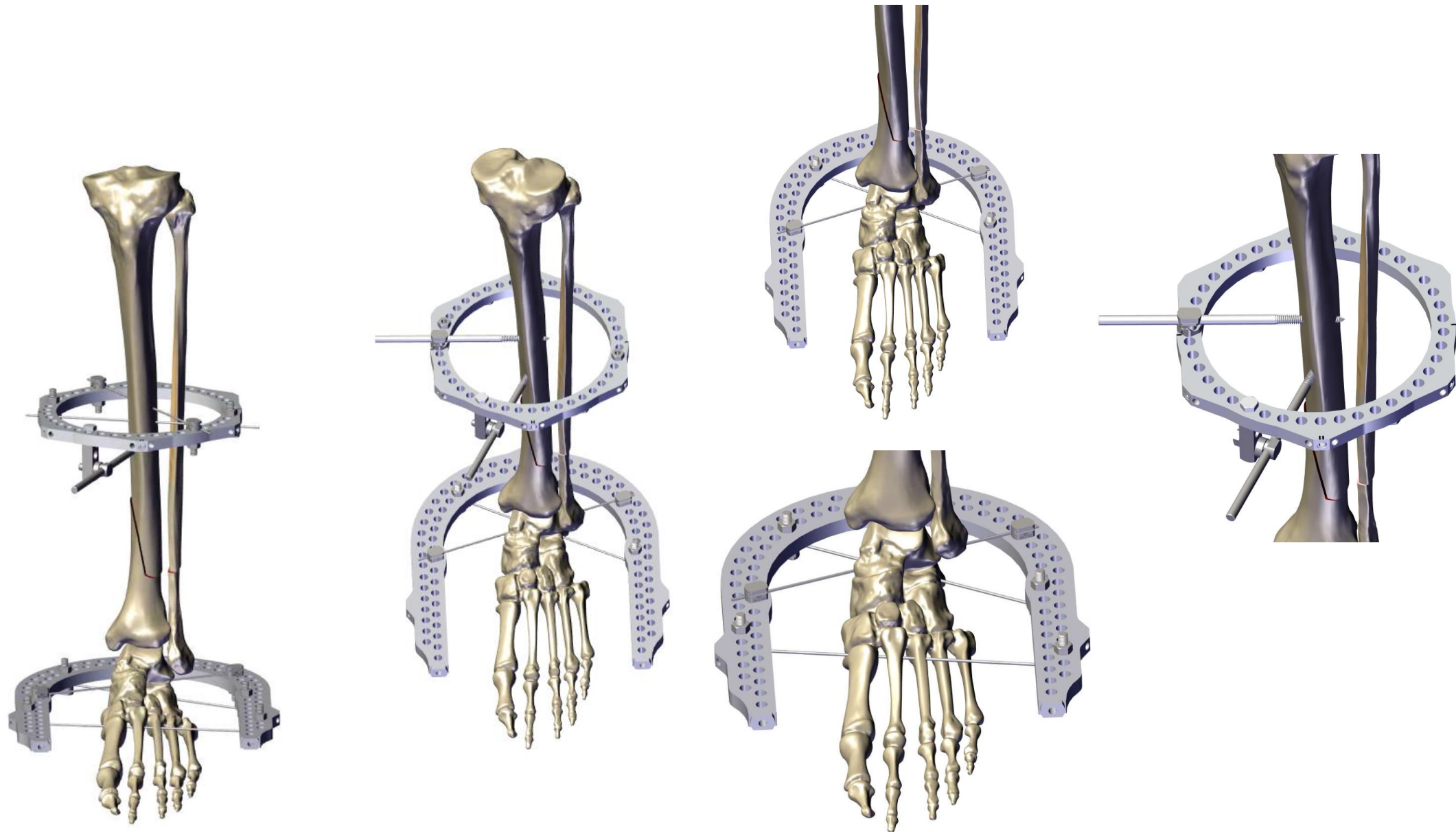
ARTICLES

## Conversion From Temporary External Fixation to Definitive Fixation: Shaft Fractures

[Dougherty, Paul J. MD](#); [Silverton, Craig DO](#); [Yeni, Yener PhD](#); [Tashman, Scott PhD](#); [Weir, Robb MD](#)

[Author Information](#) ⓘ

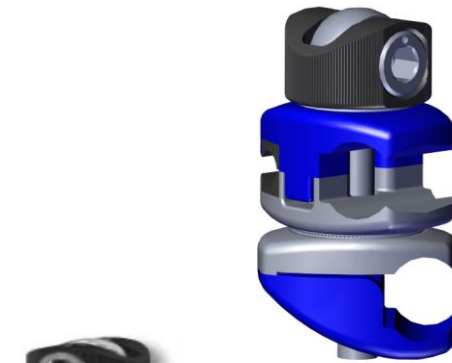
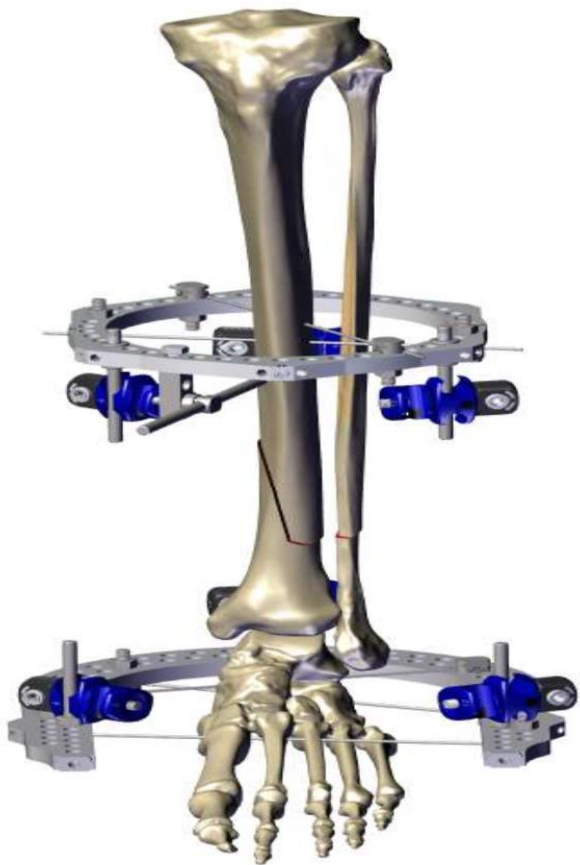






Elementi di presa per gli anelli





Galaxy



11



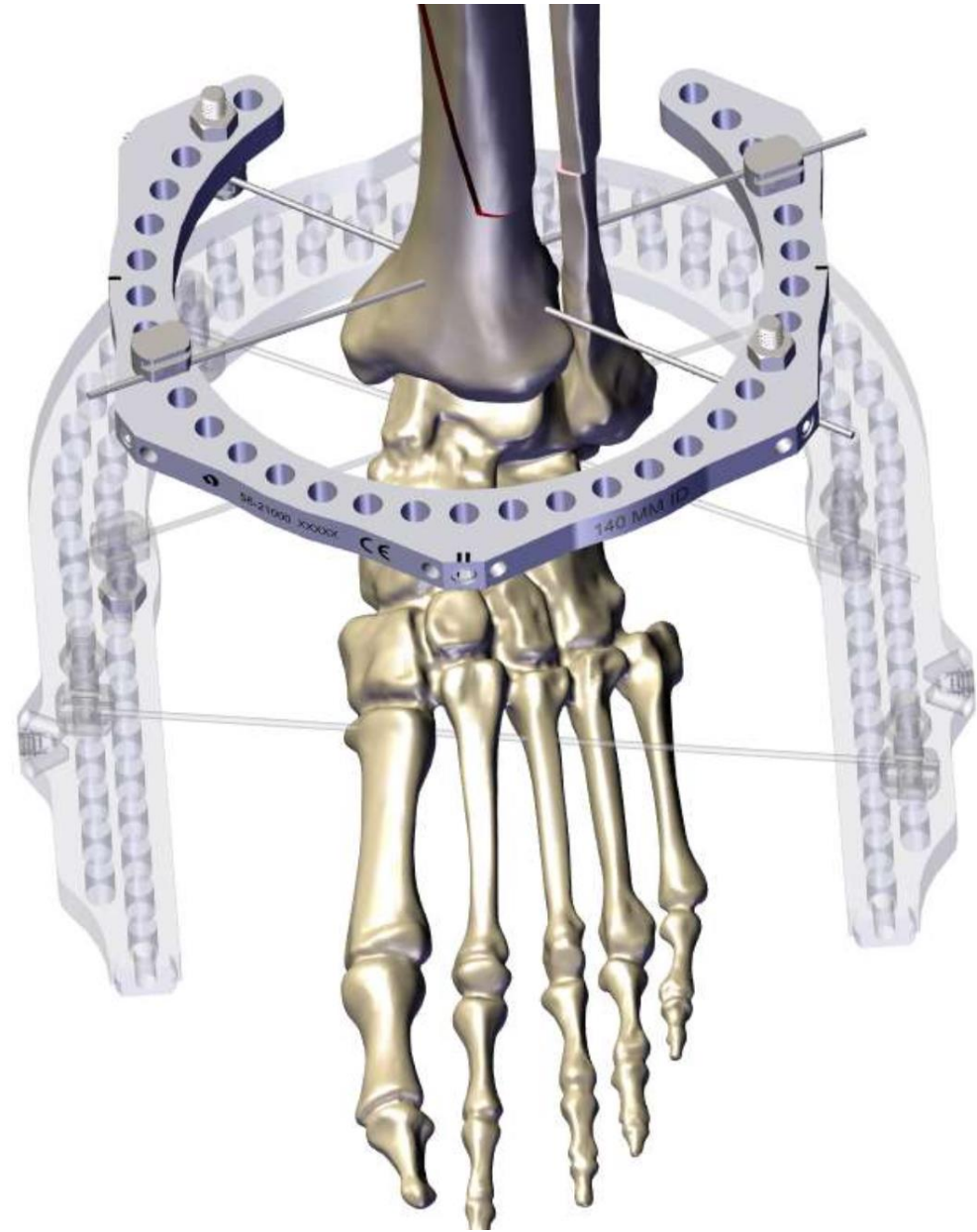
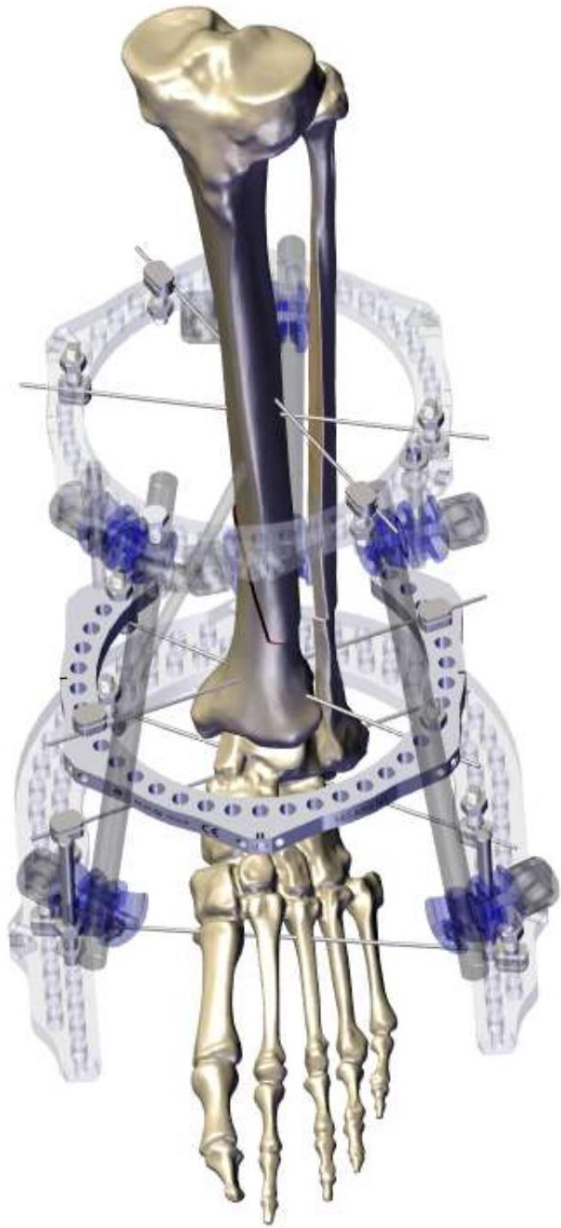
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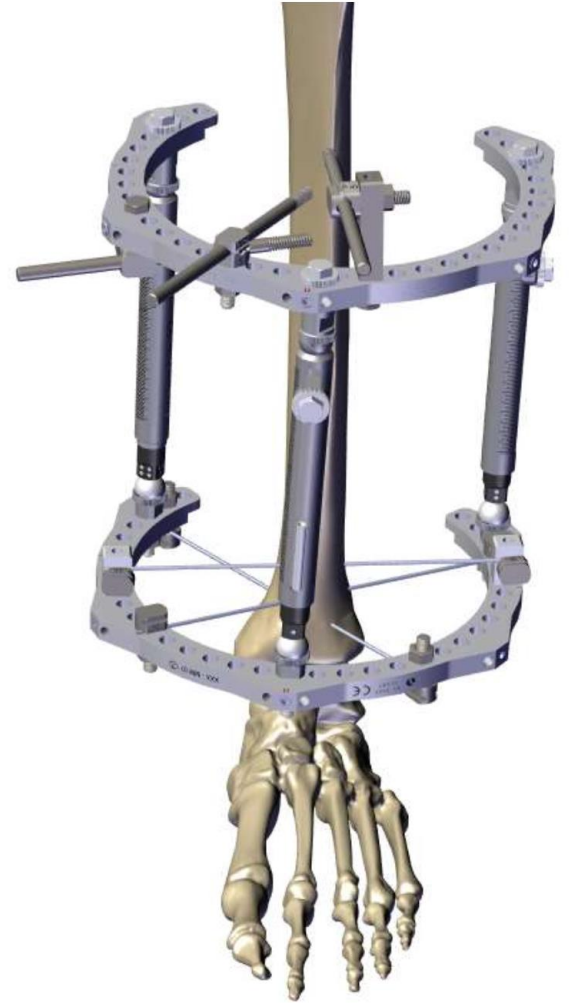
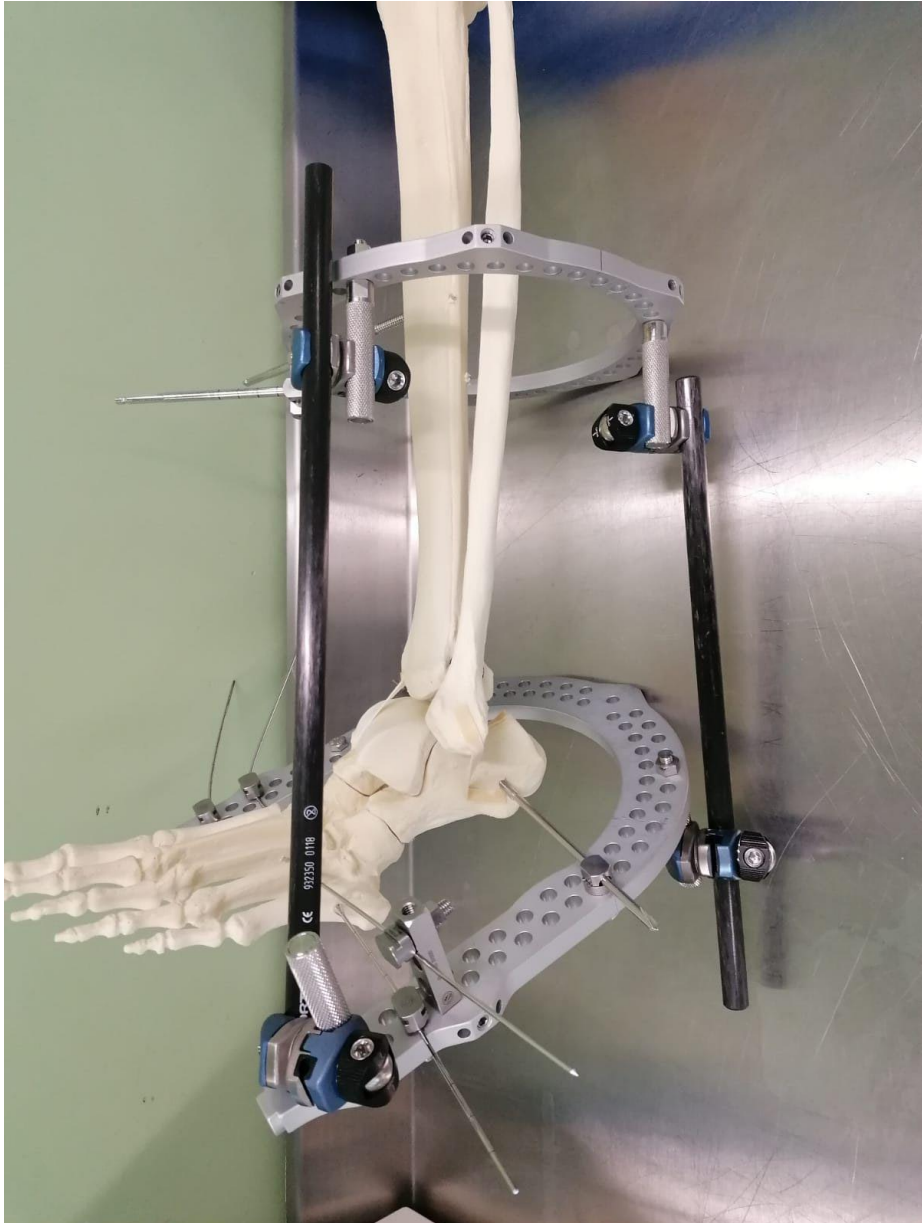
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Galaxy Gemini  
Gemini













# STUDIO

prospettico

*Popolazione:* da 18 anni

*Tipo:* **Frattura di pilone tibiale (43C)  
Gustilo-Anderson 3a, 3b e 3C**

*Materiali:* **TL Hex Trauma** (Orthofix) in  
urgenza, al quale verranno aggiunti  
elementi del sistema **TL Hex** per  
completare un montaggio circolare  
durante il T2 chirurgico

*Durata:* **1 anno**



- *Milano: Dott. T. Talamonti – Dott. F. Bove*
- *Como - Menaggio: Dott. G. Lovisetti*
- *Verona: Dott. T. Maluta*



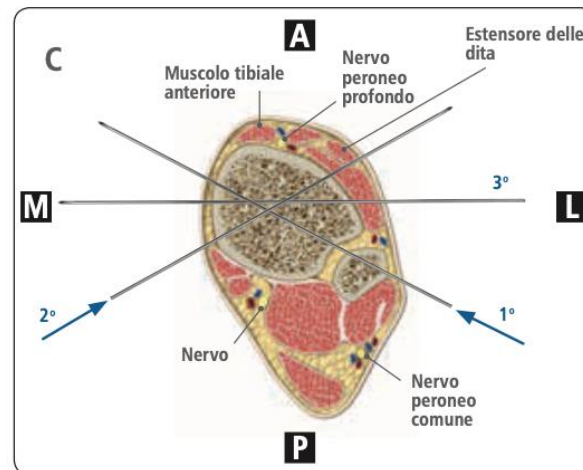


## OBIETTIVI PRIMARI

Fattibilità dell'applicazione corretta di un FEC  
semplificato in CO d'urgenza

anche da parte di Colleghi **NON fissatoristi**

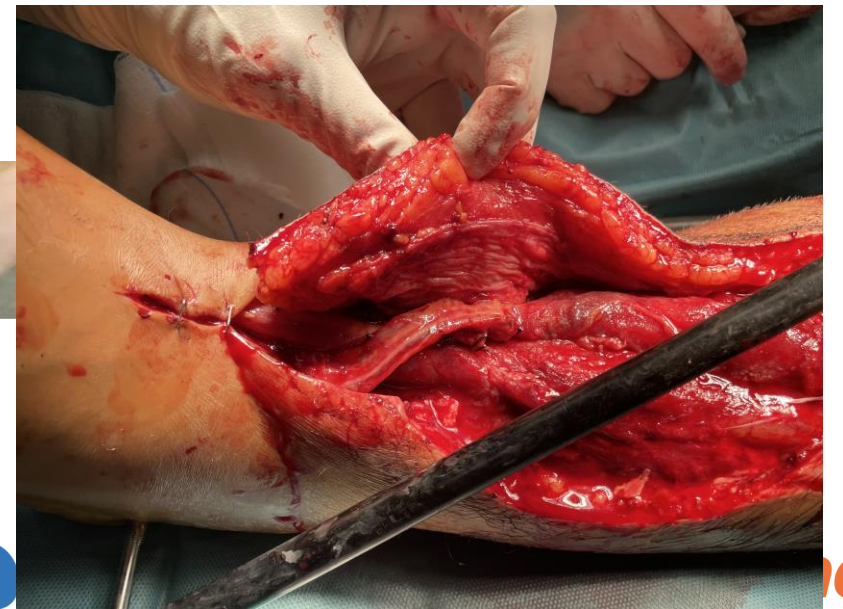
- **Buon posizionamento degli elementi da parte di tutti i chirurghi (anche non fissatoristi)**



THO

## OBIETTIVI secondari

- *Ottimizzare il montaggio per*
  - *Stabilità*
  - *Facilità di applicazione*
  - *Semplicità nella conversione a FEC*
  
- *Facile accesso da parte del chirurgo plastico per eventuali interventi/medicazioni*





 **ORTHOFIX**<sup>®</sup>

 *SeaSpine*



# Caso 1

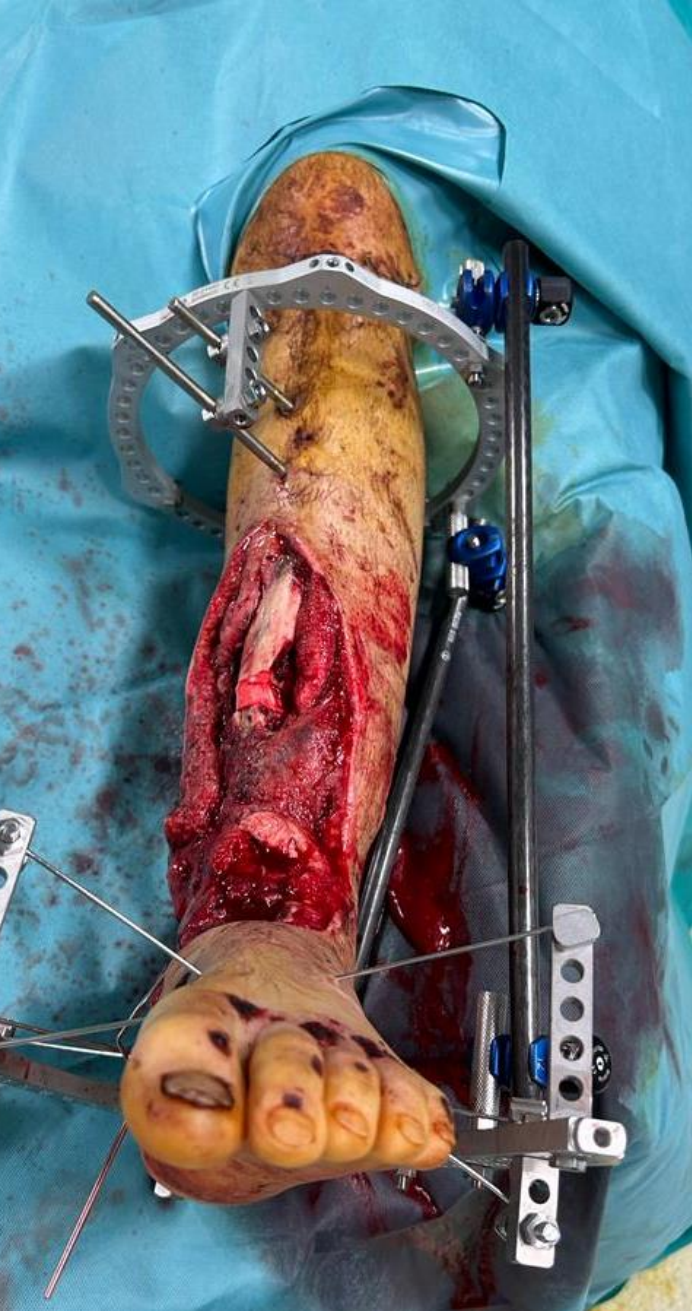
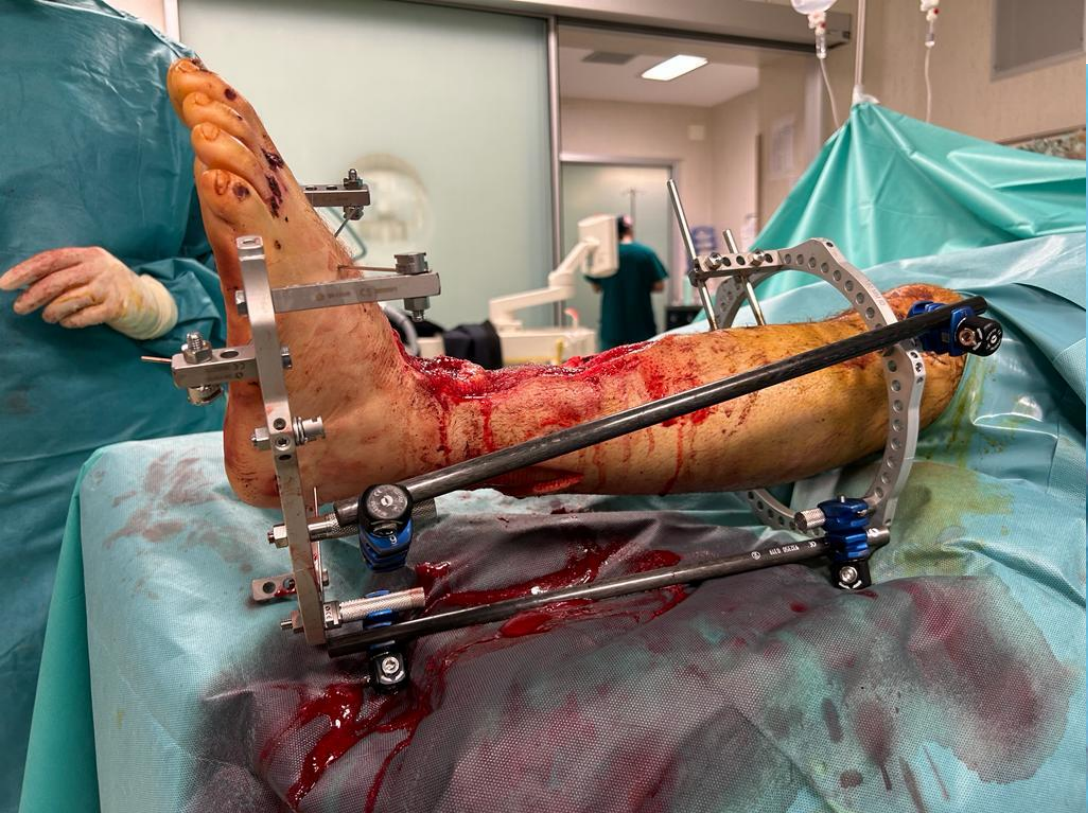
Uomo 29 anni

Incidente motociclistico

Frattura gamba GA IIIB

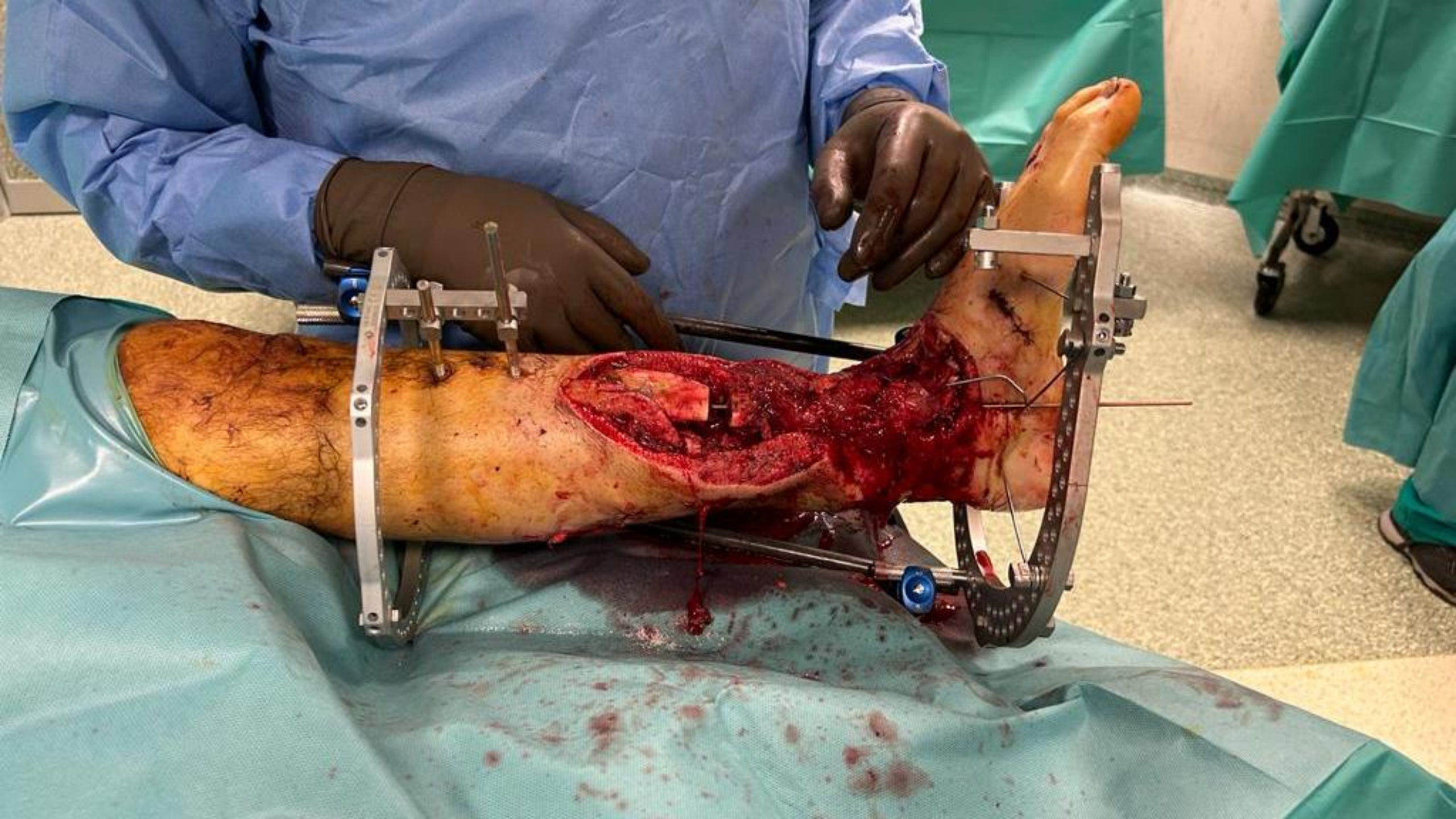








# Planning ortoplastico







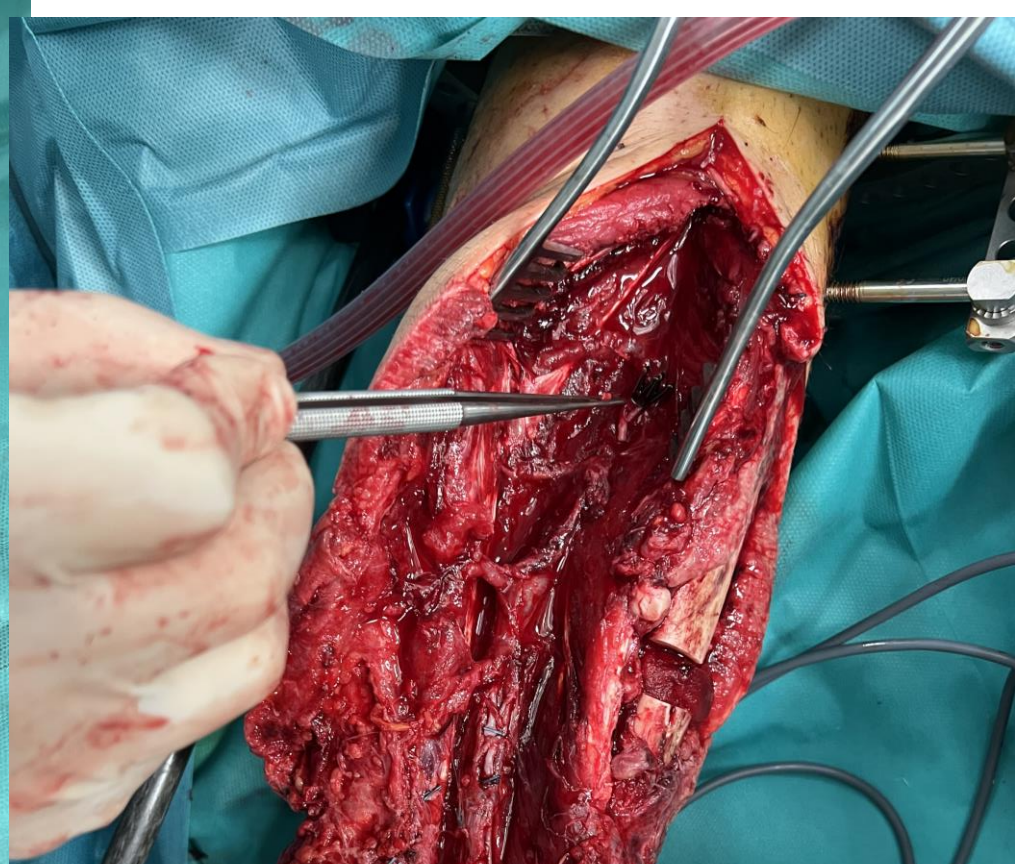




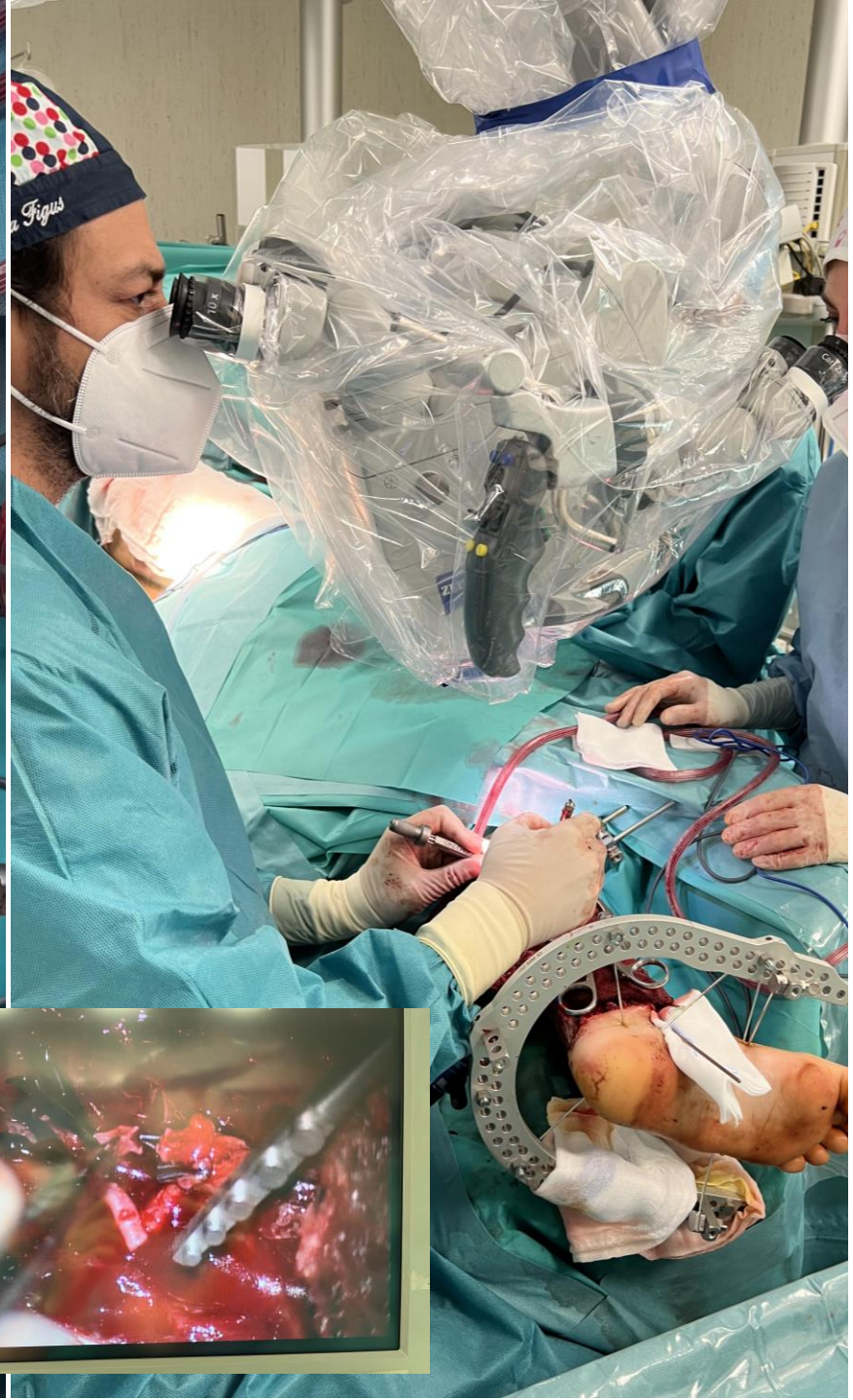
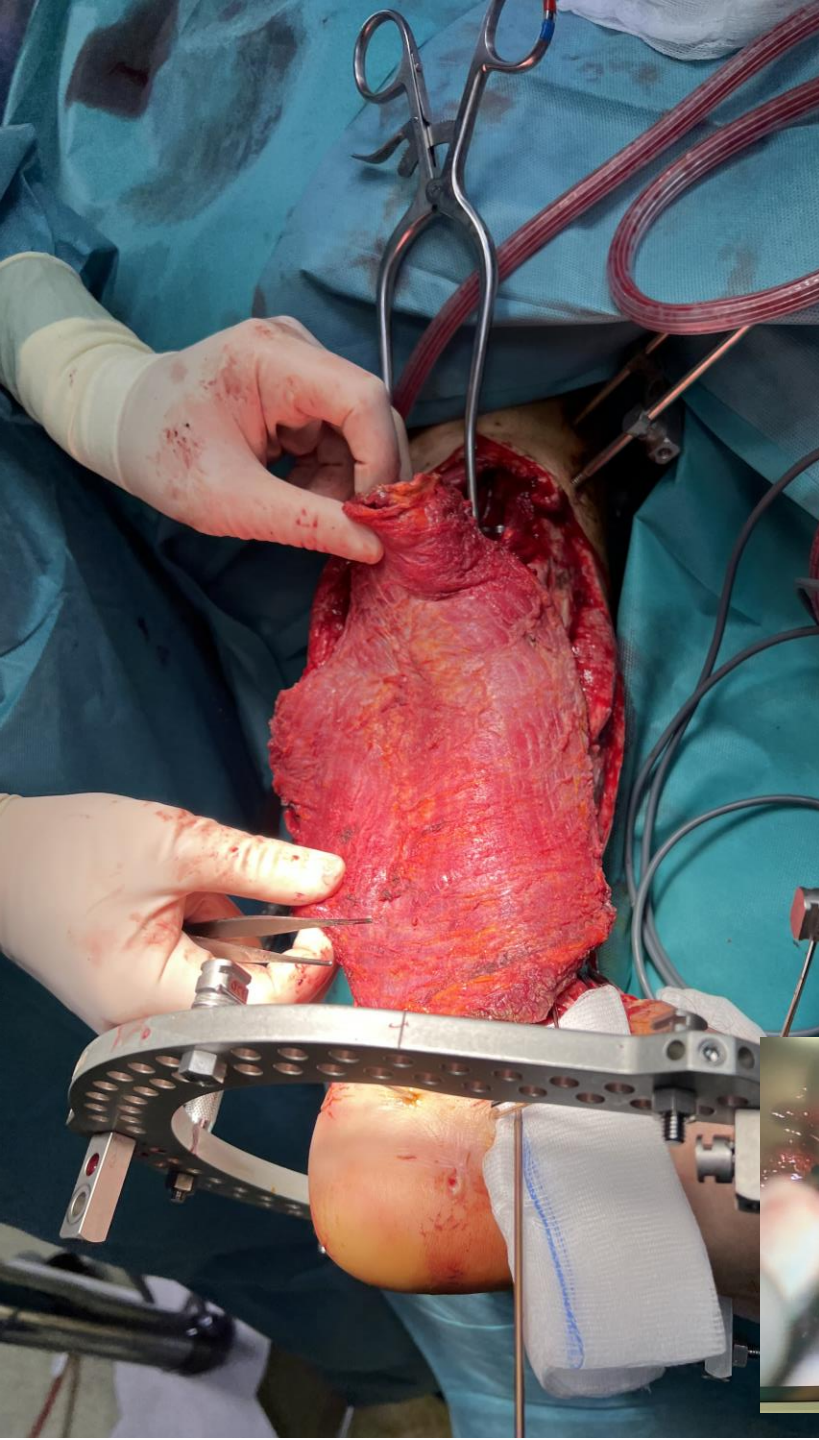
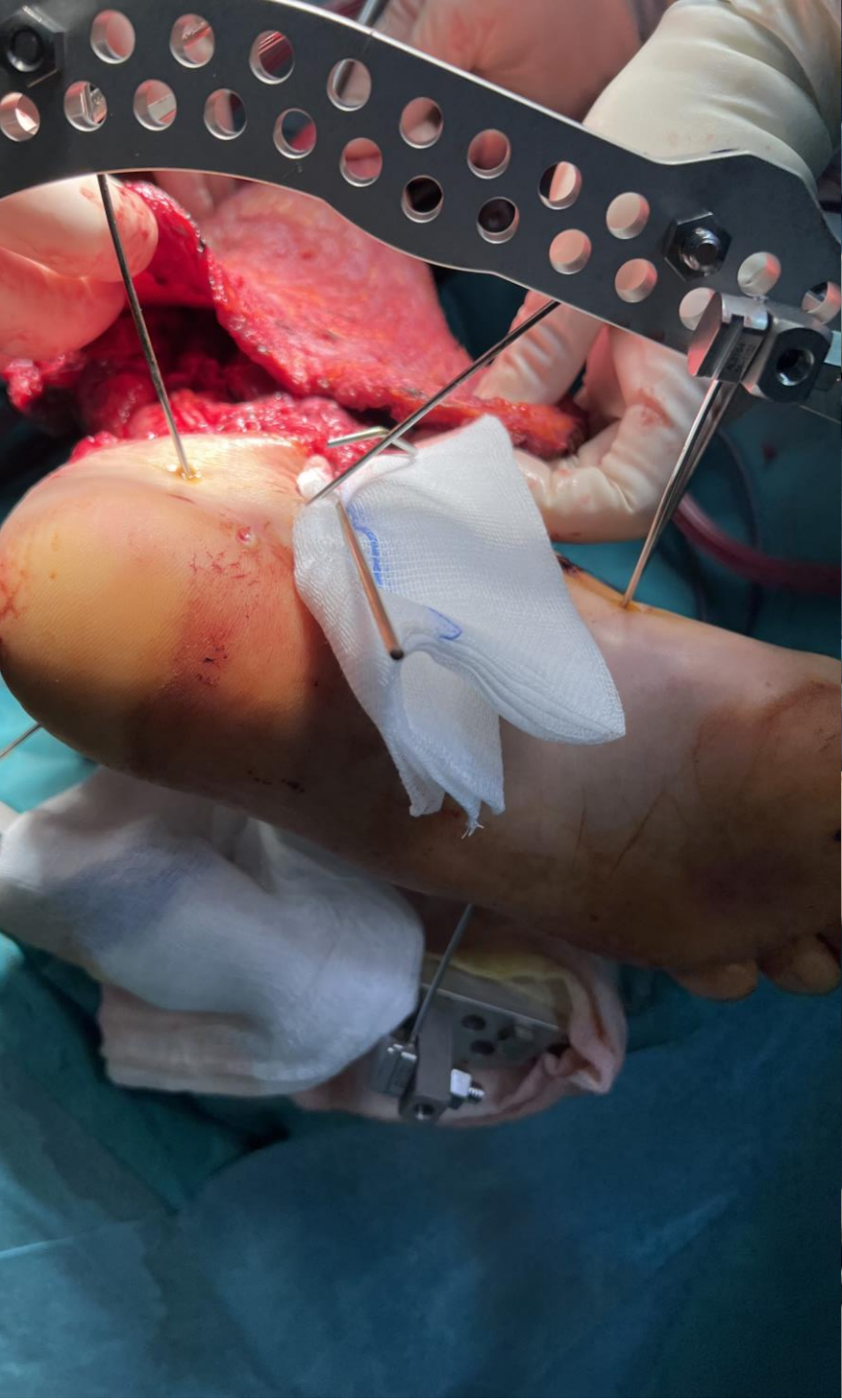








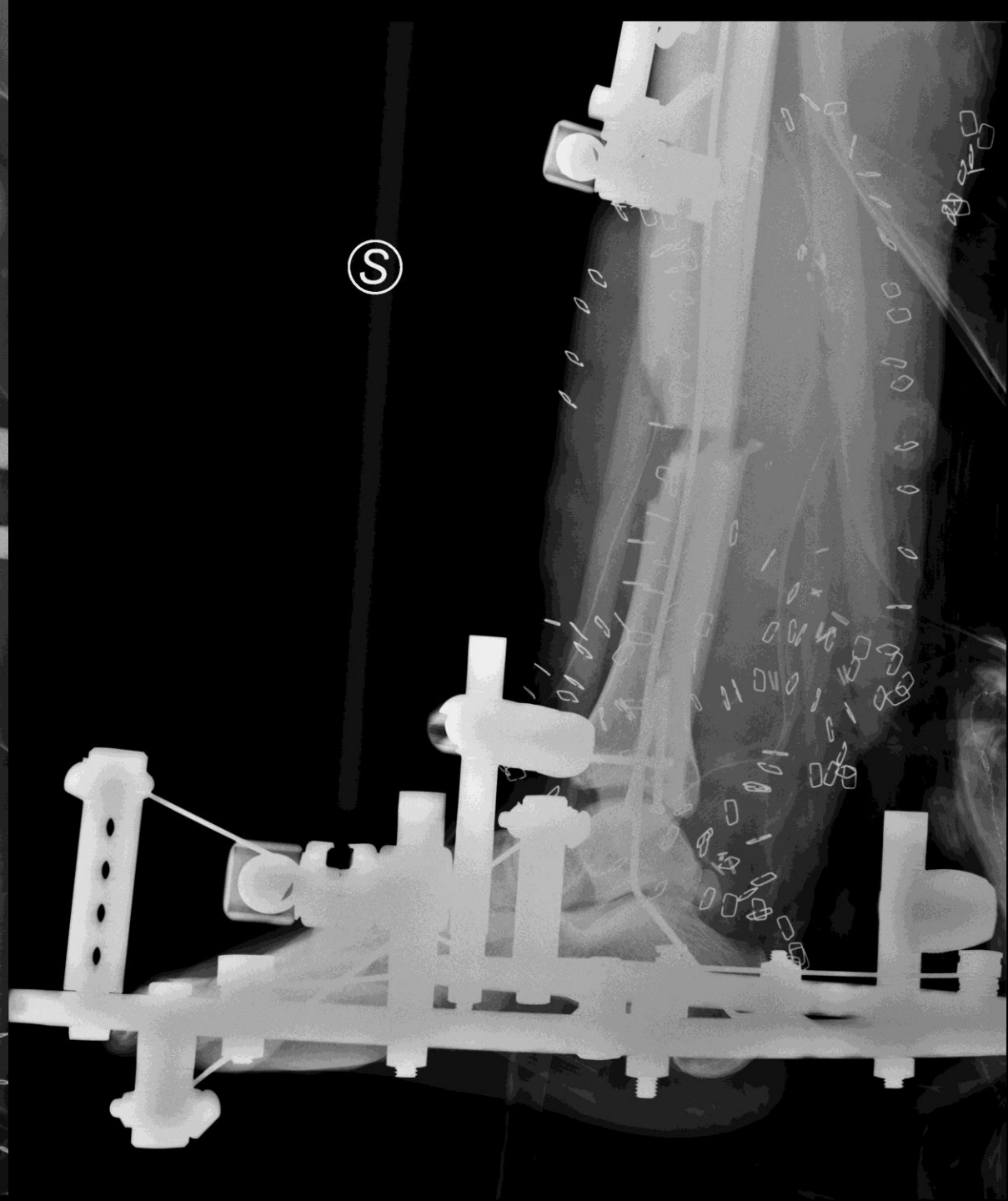








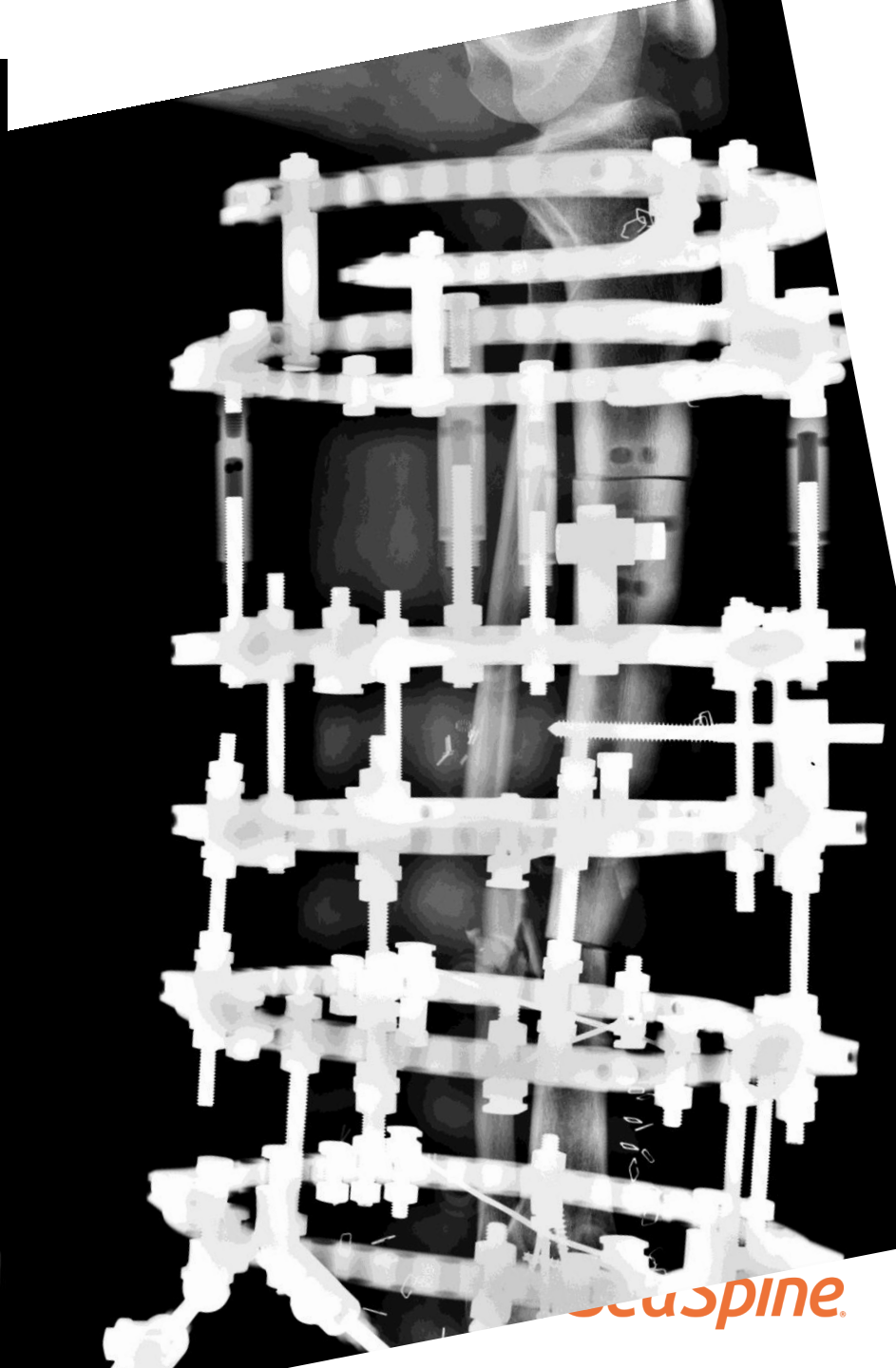
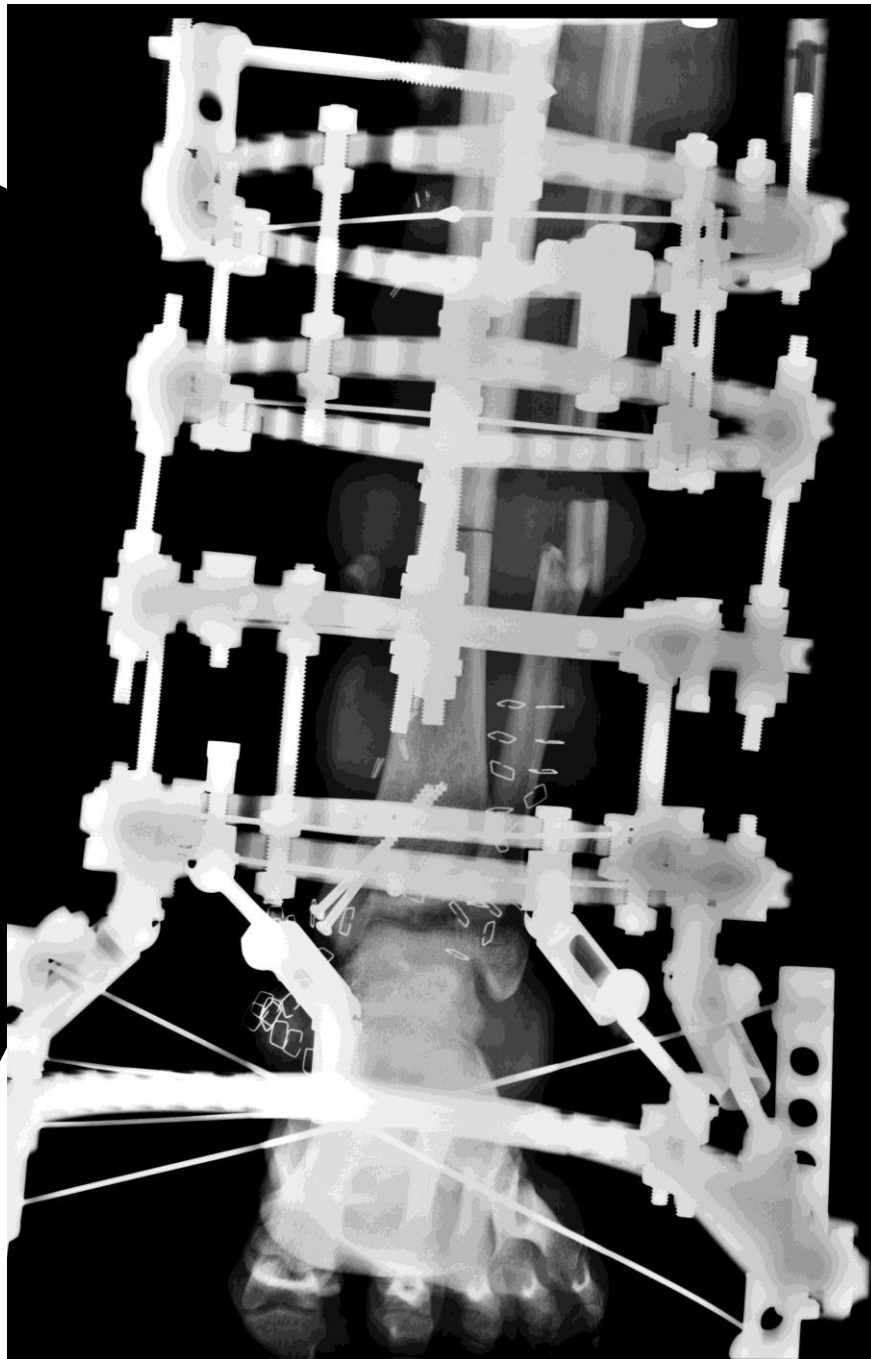
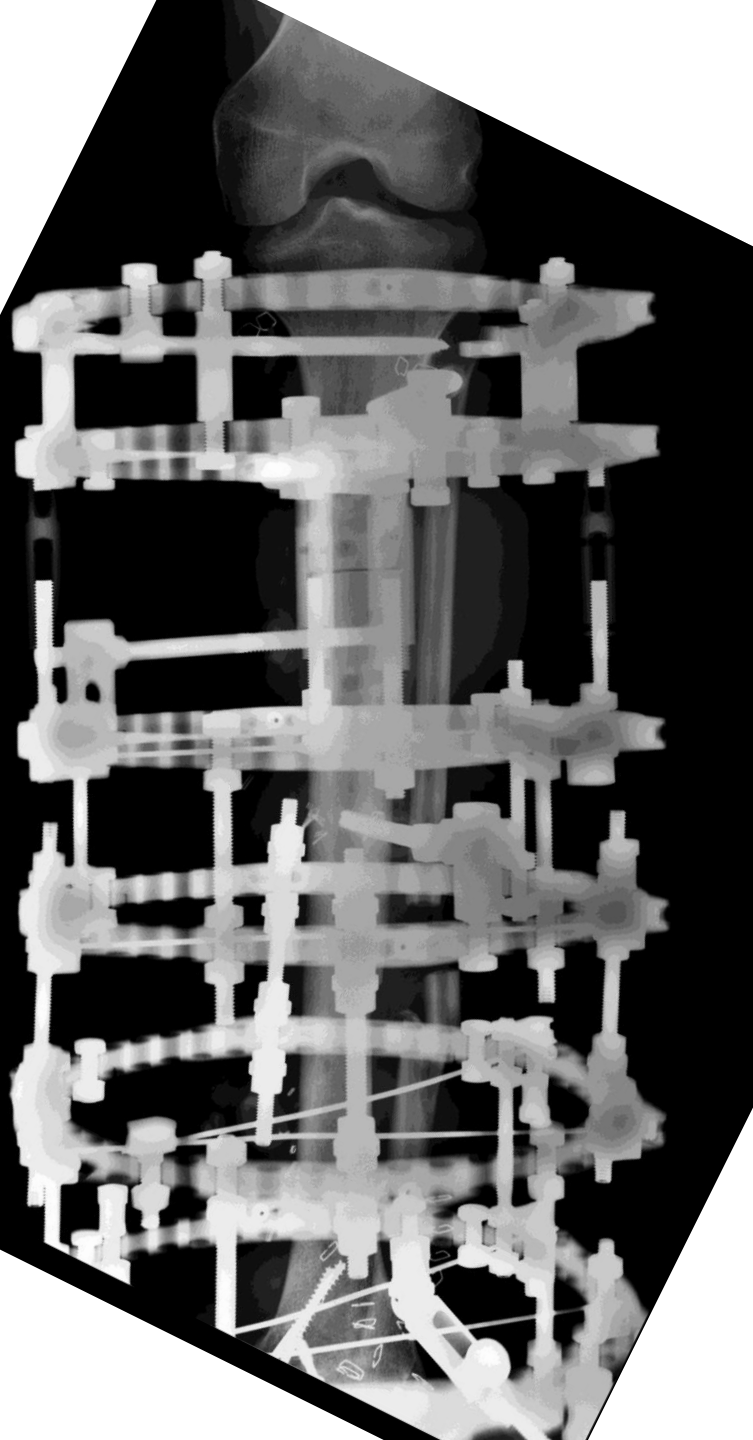




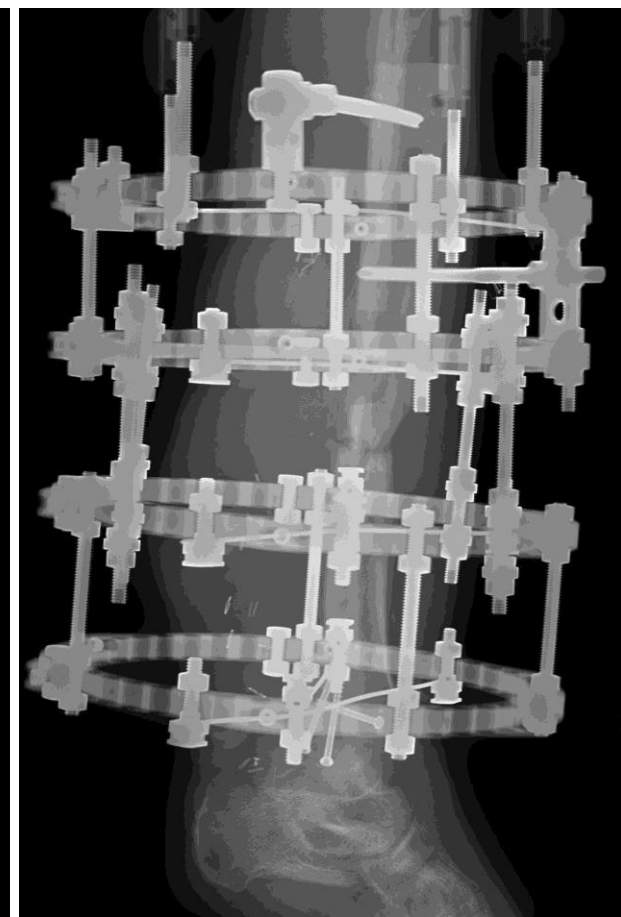
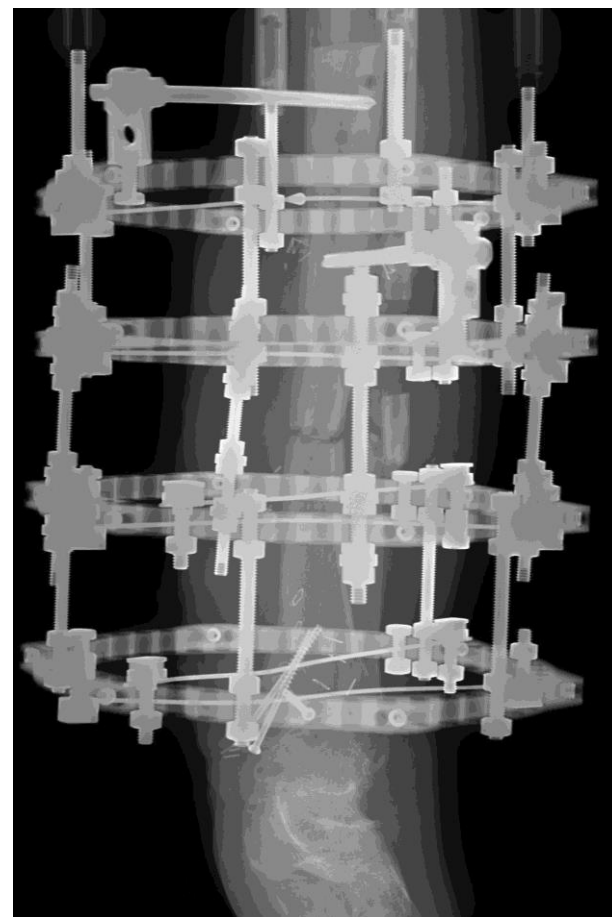
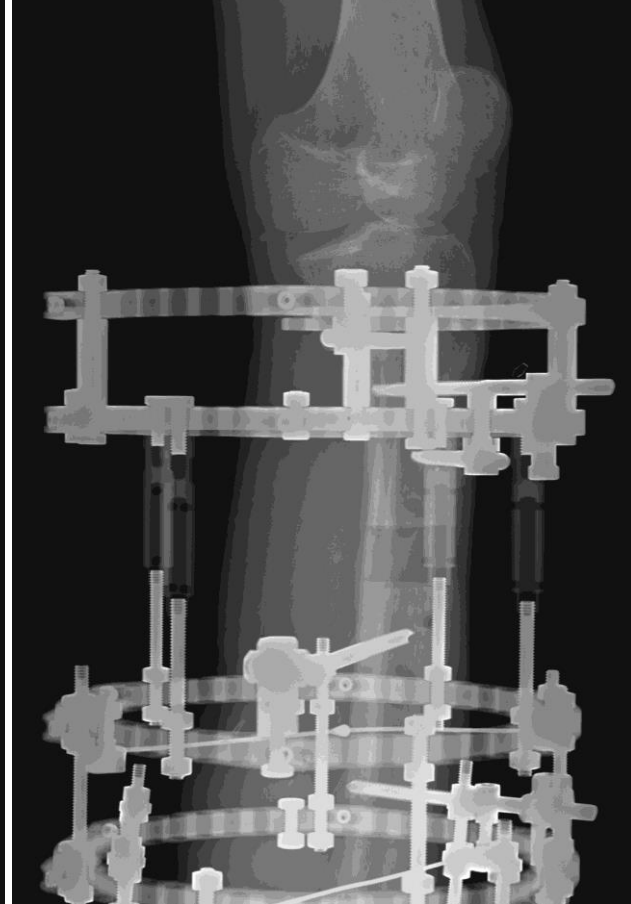
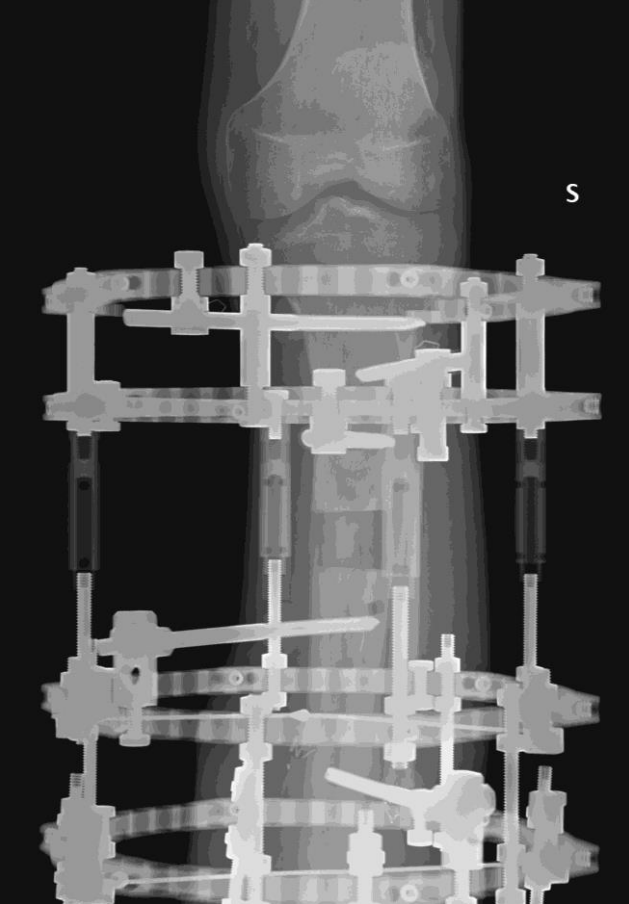








**scaspine.**





# Caso 2

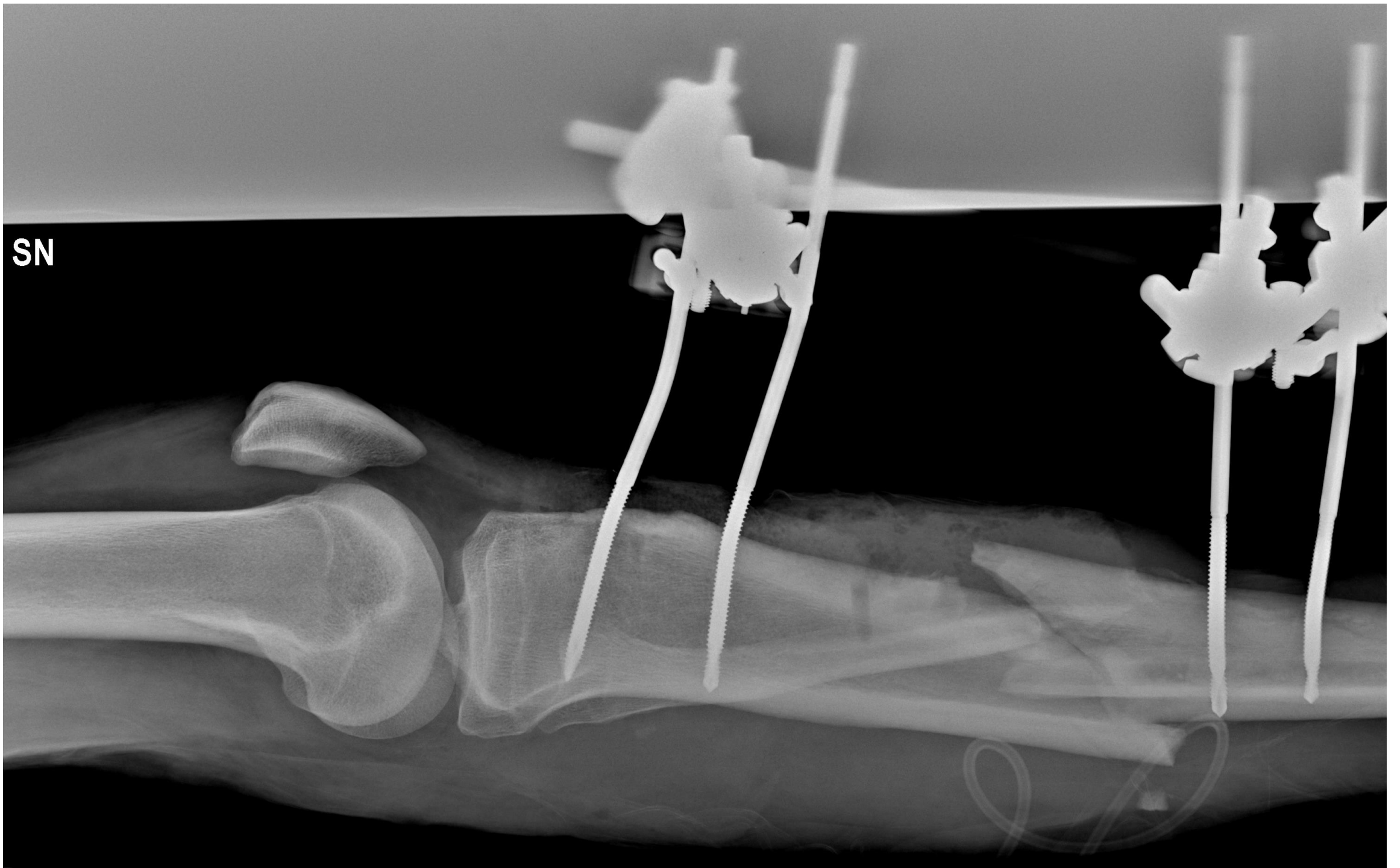
Uomo 35 anni

Incidente motociclistico

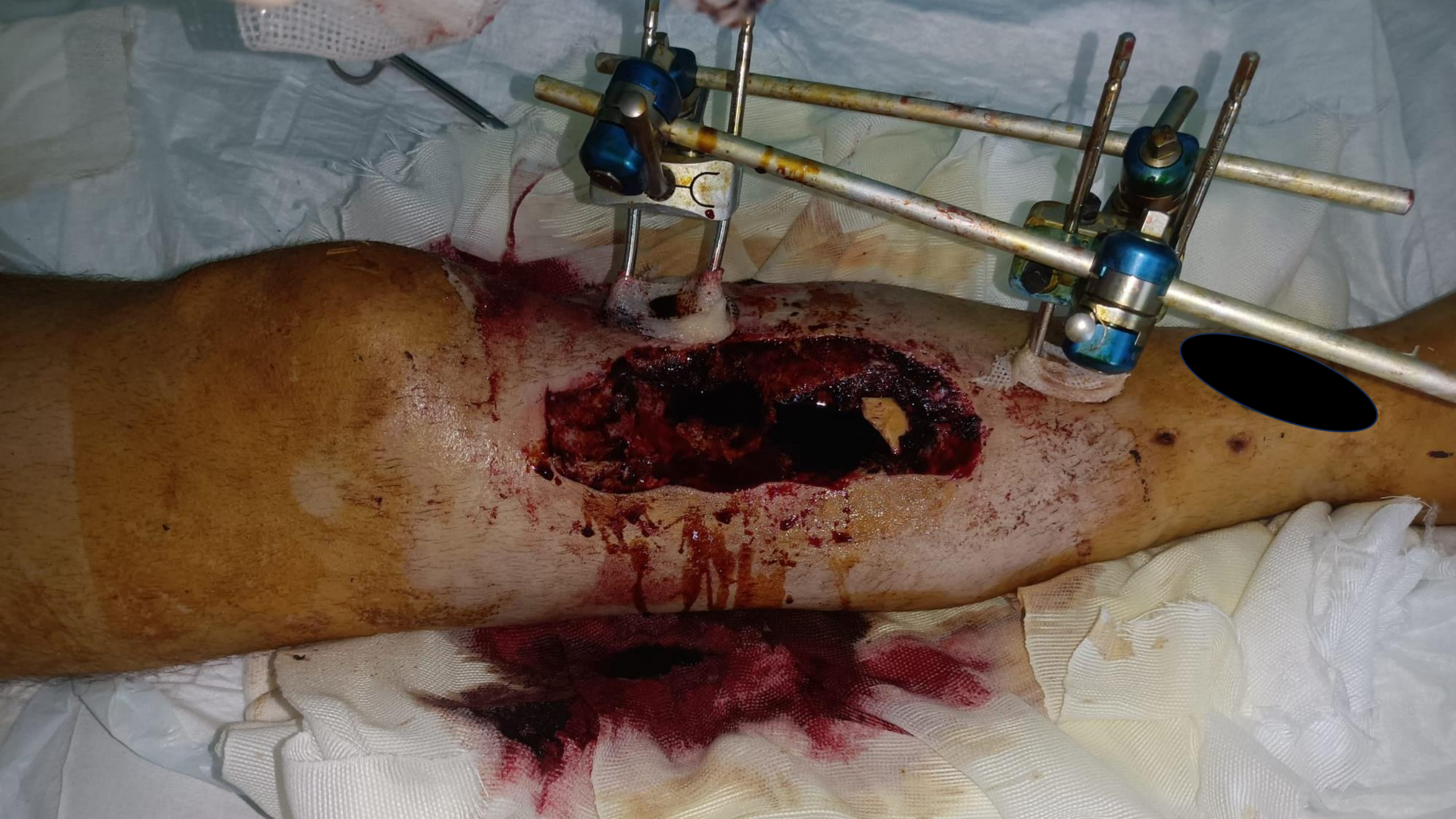
Frattura gamba GA IIIB



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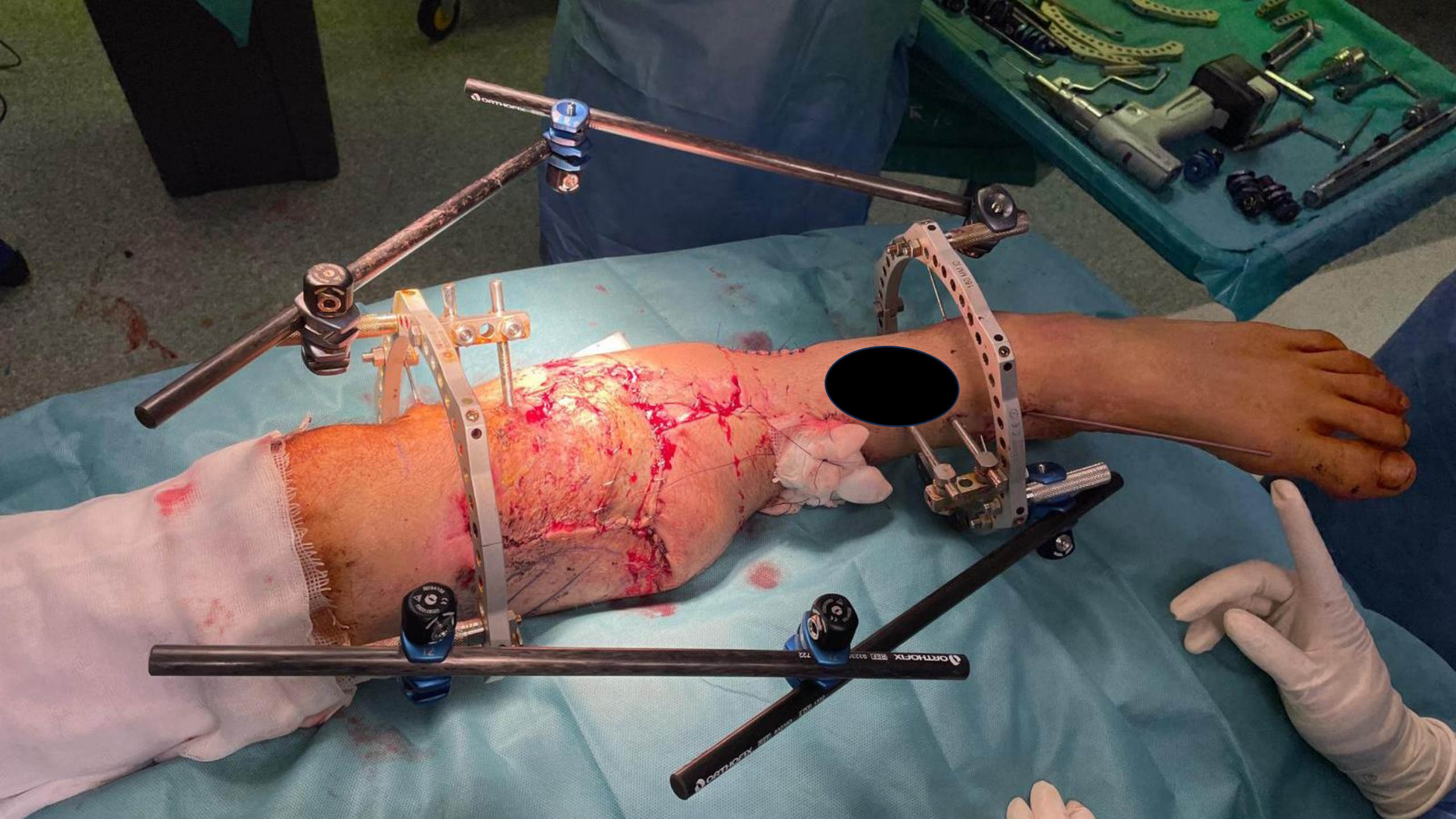












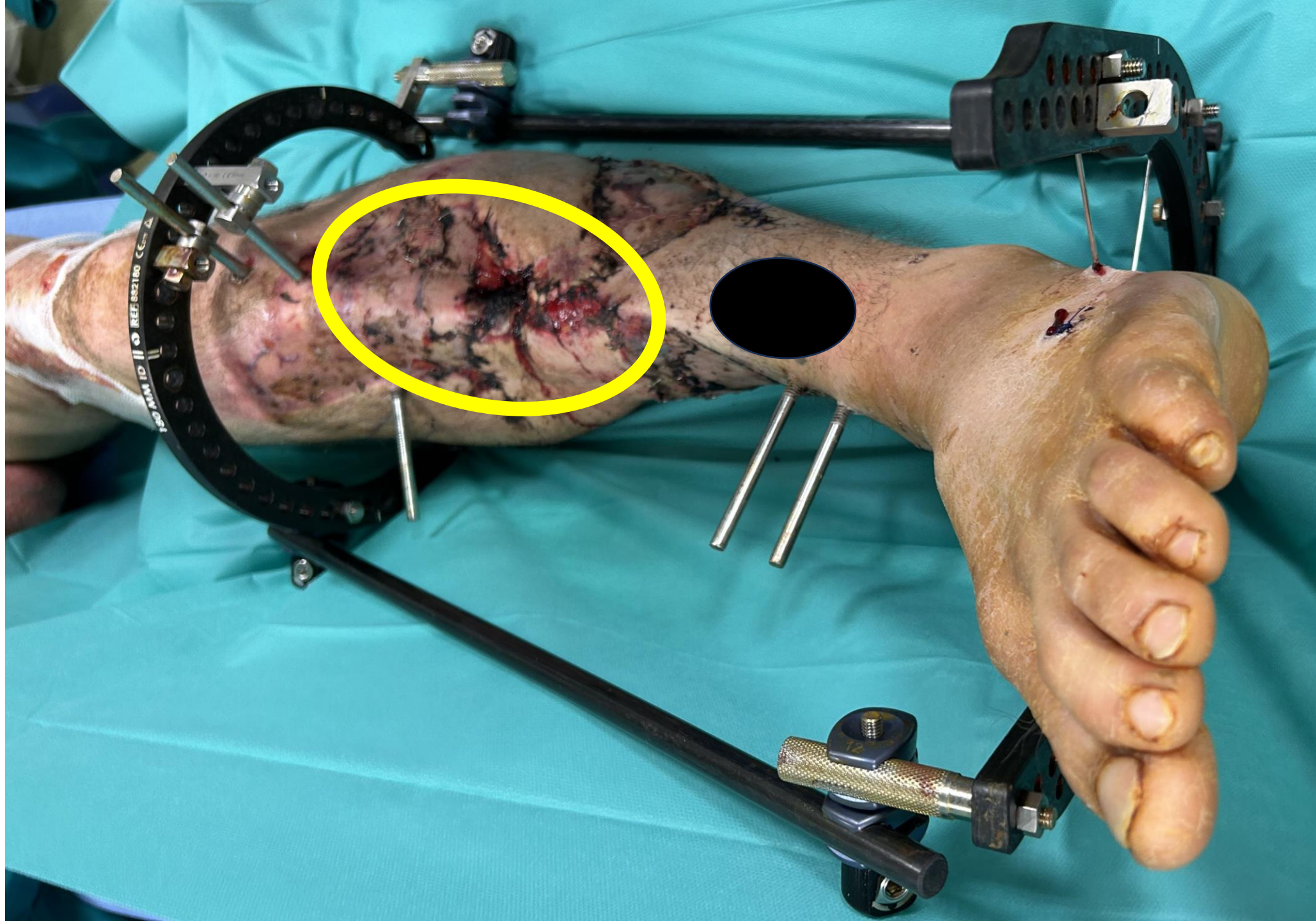










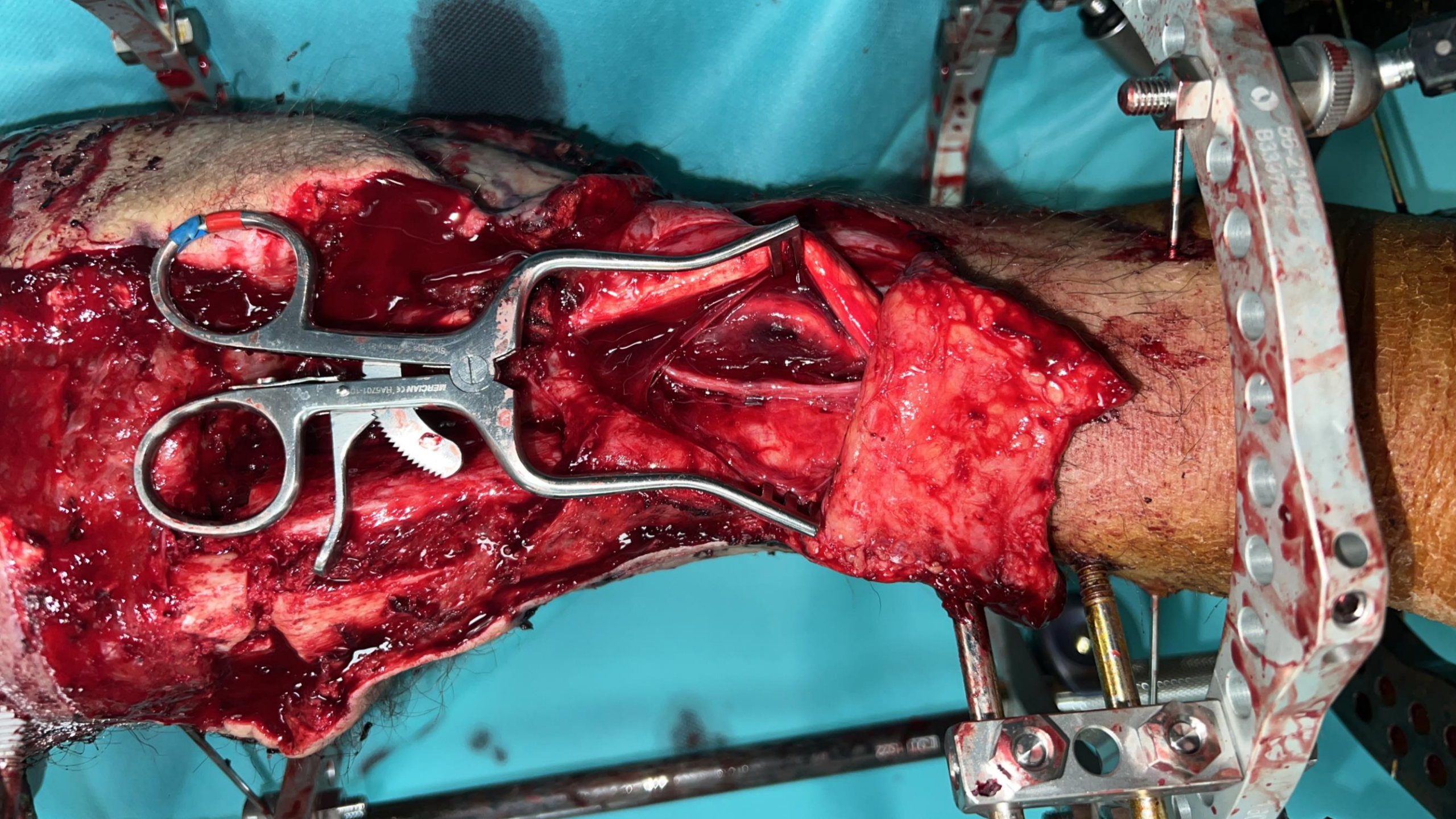




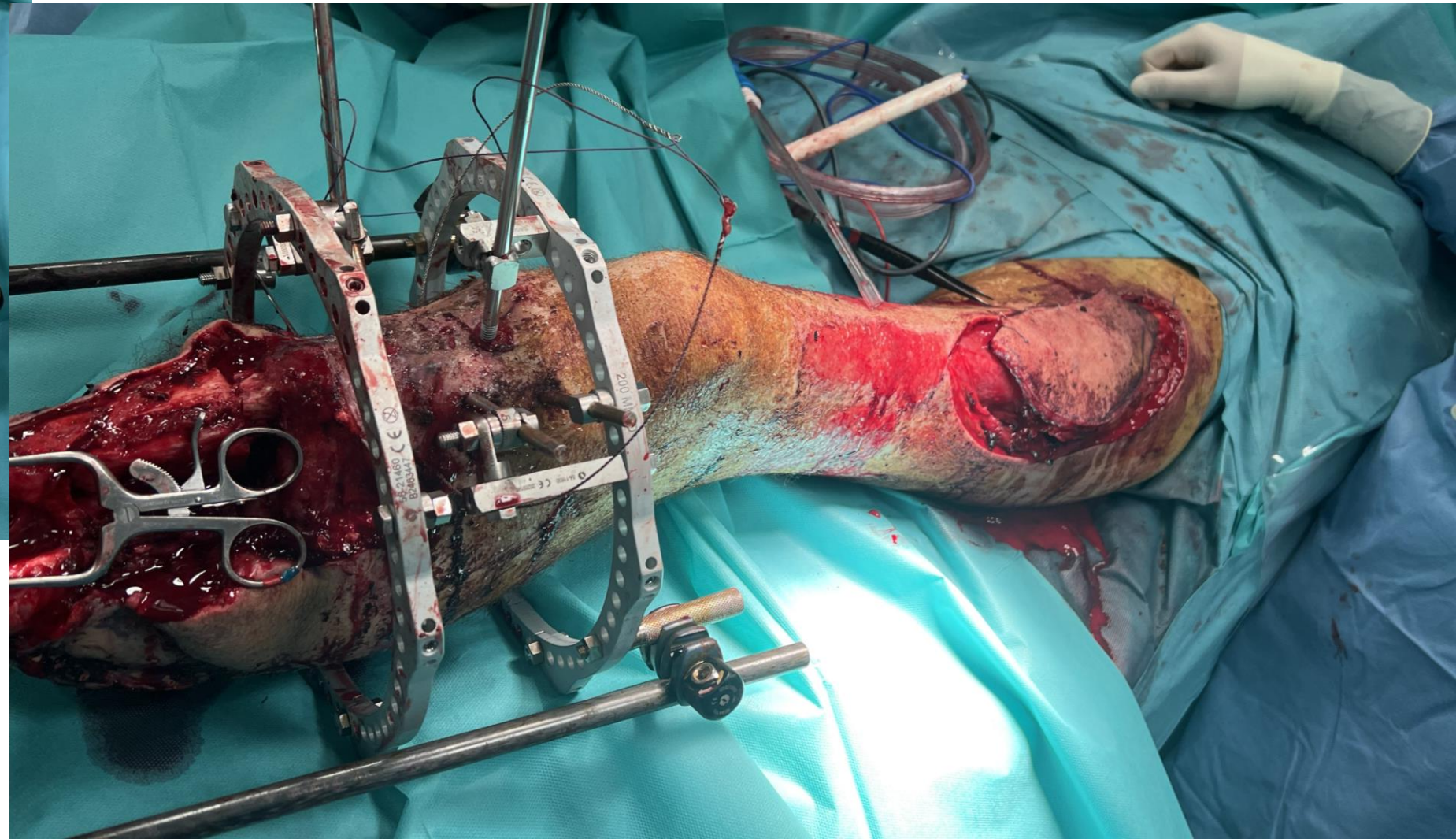
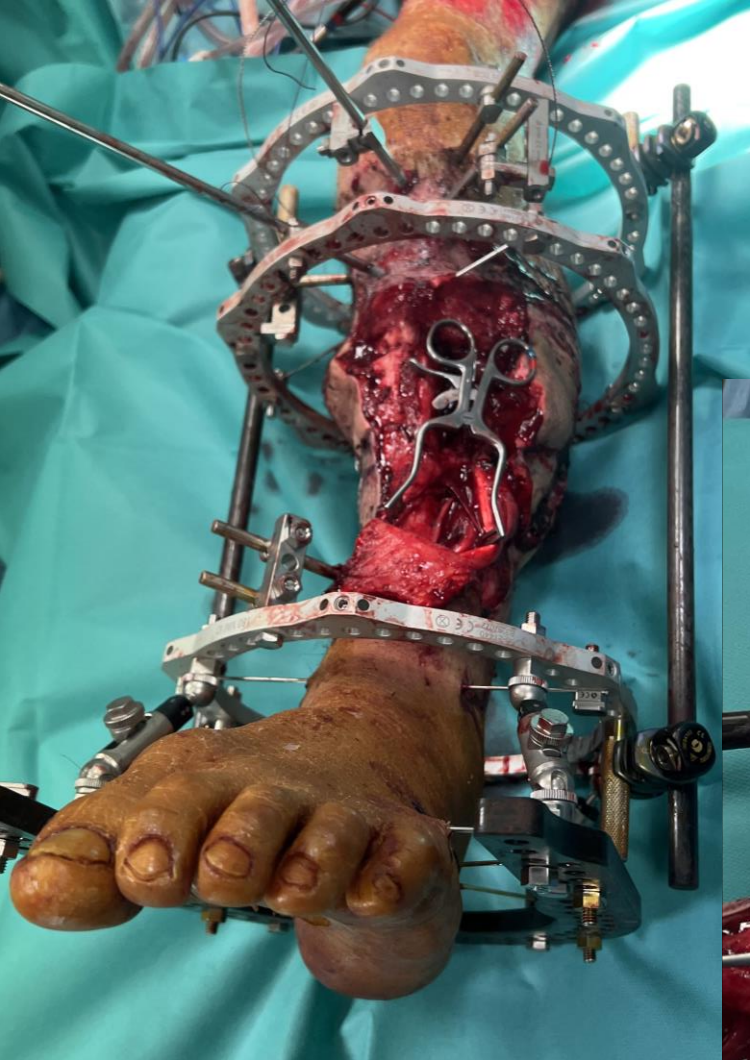


Willett AFTER MICHELANGELO

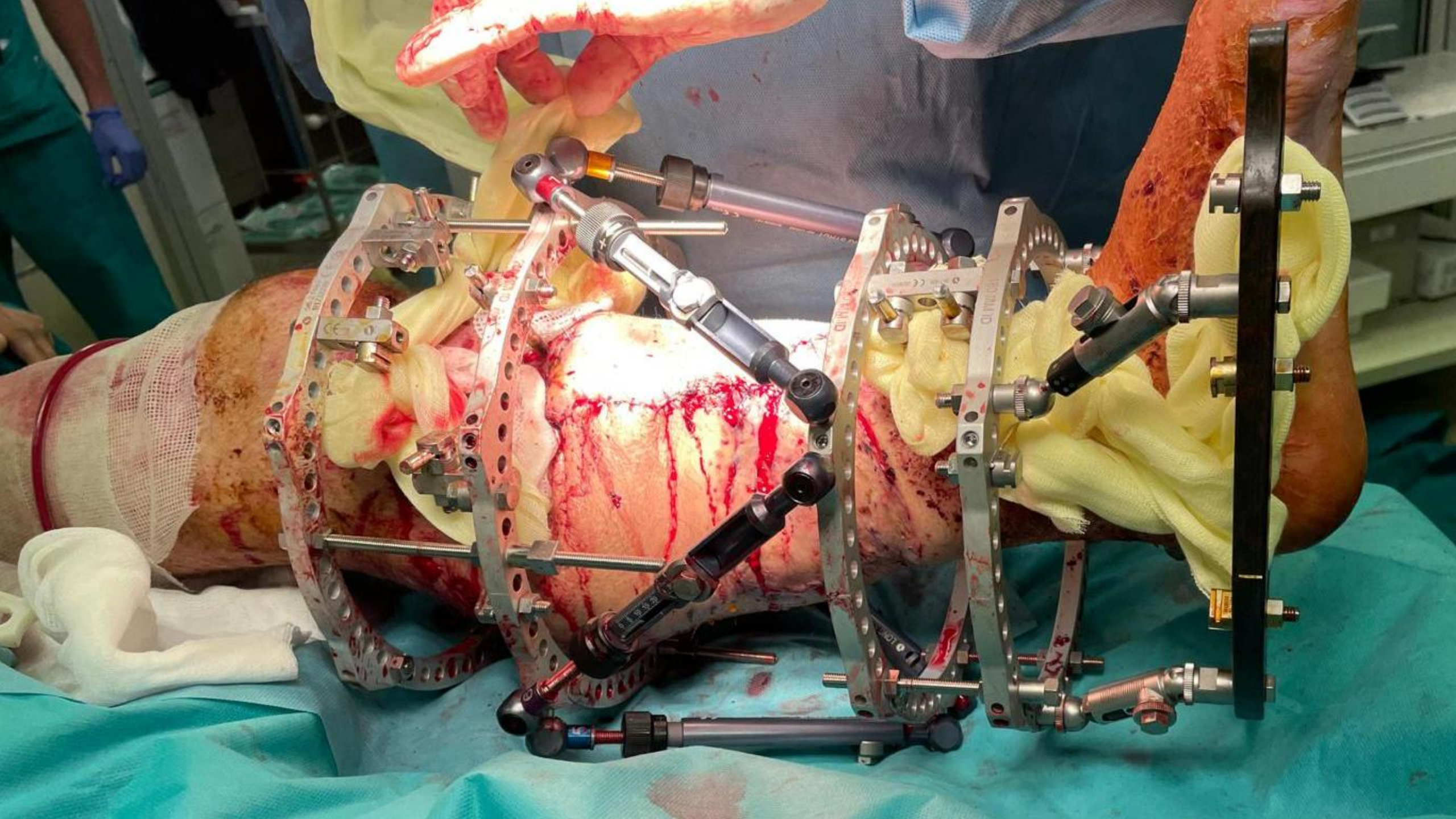




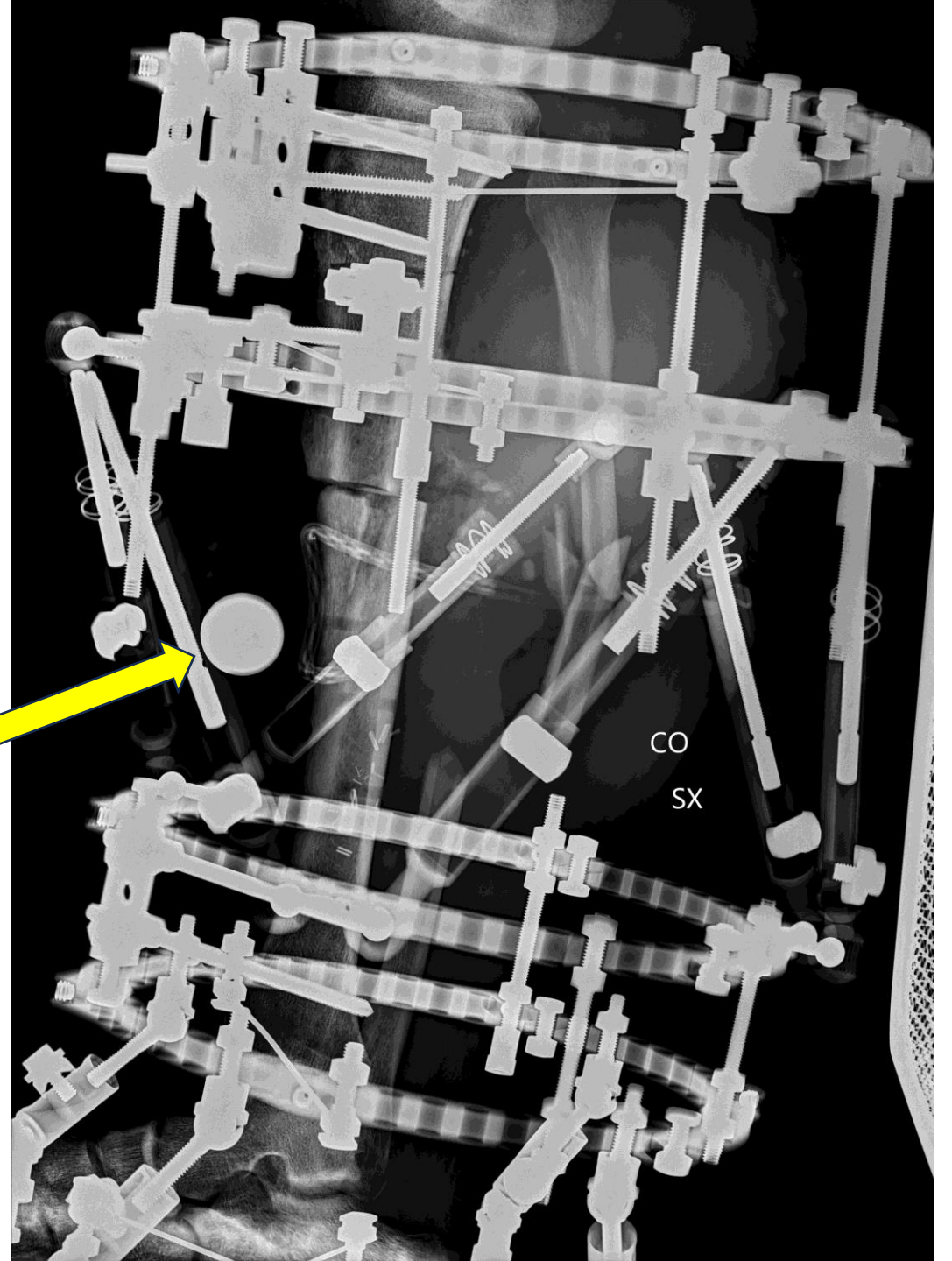
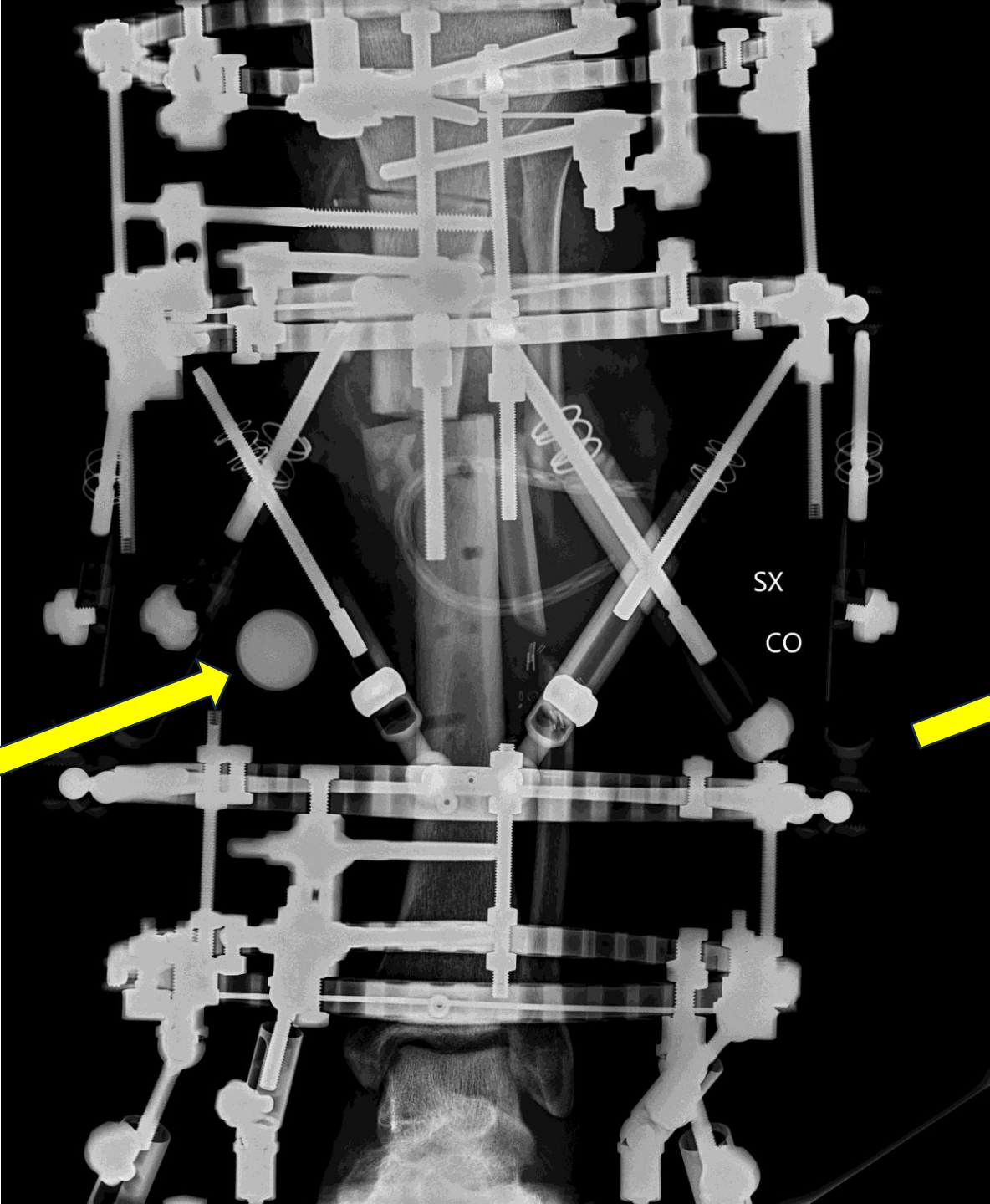




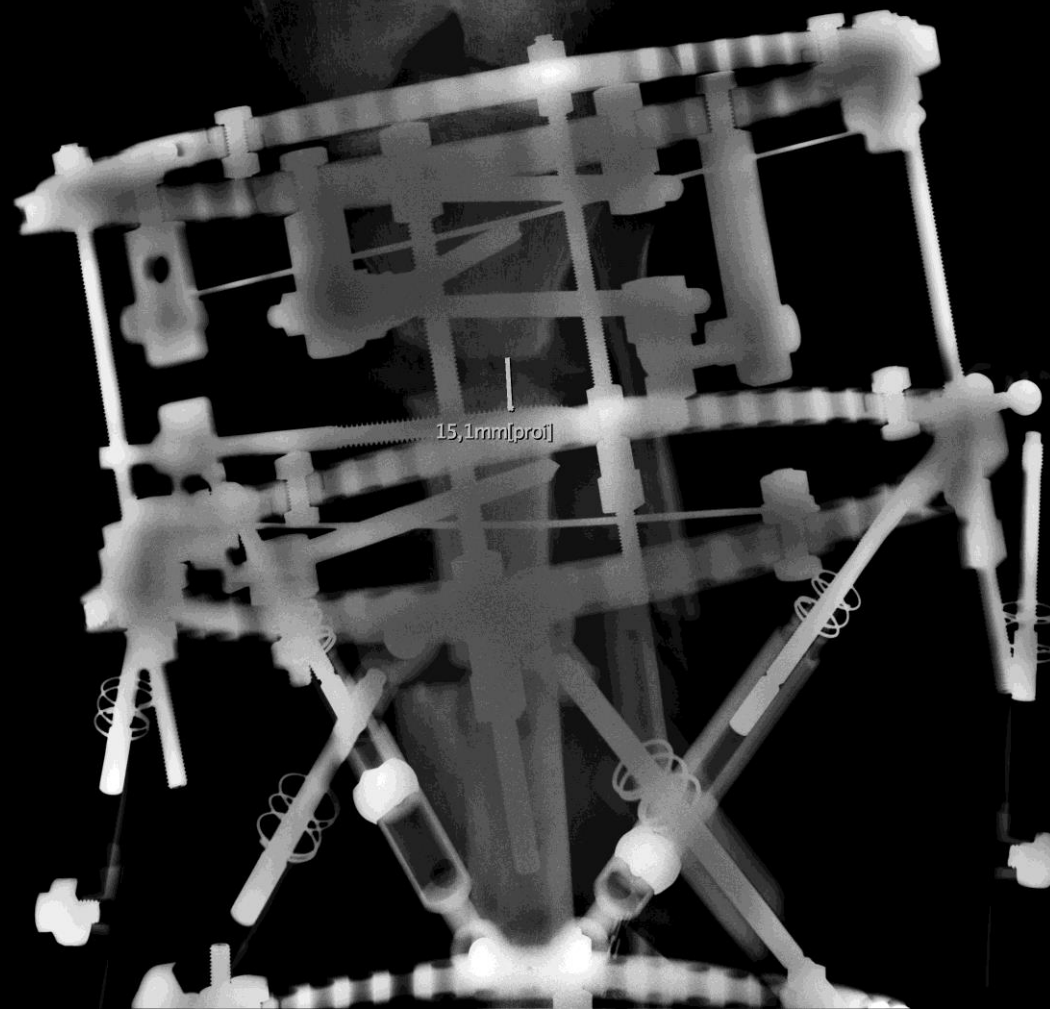




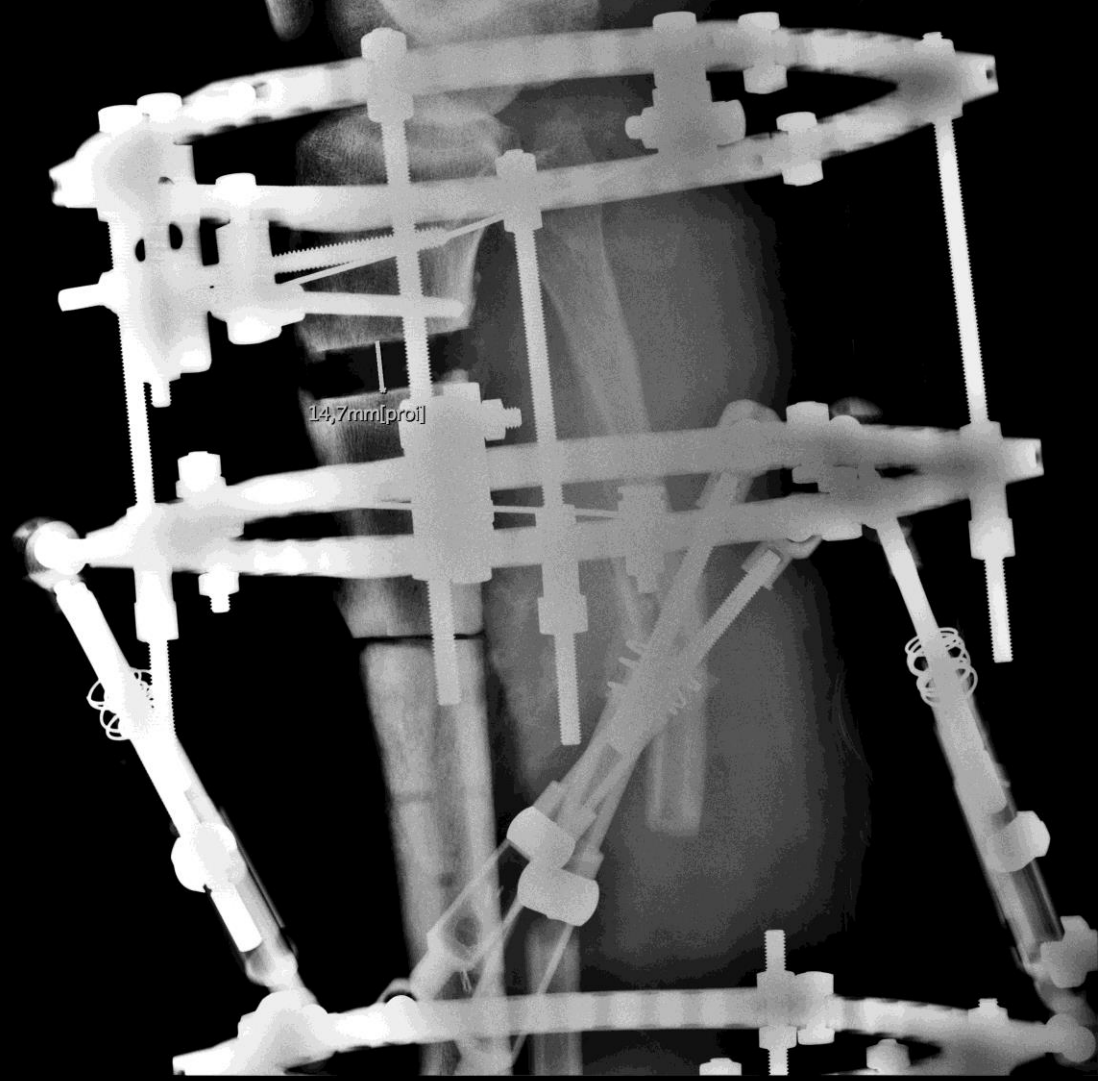




Ⓢ



Ⓢ



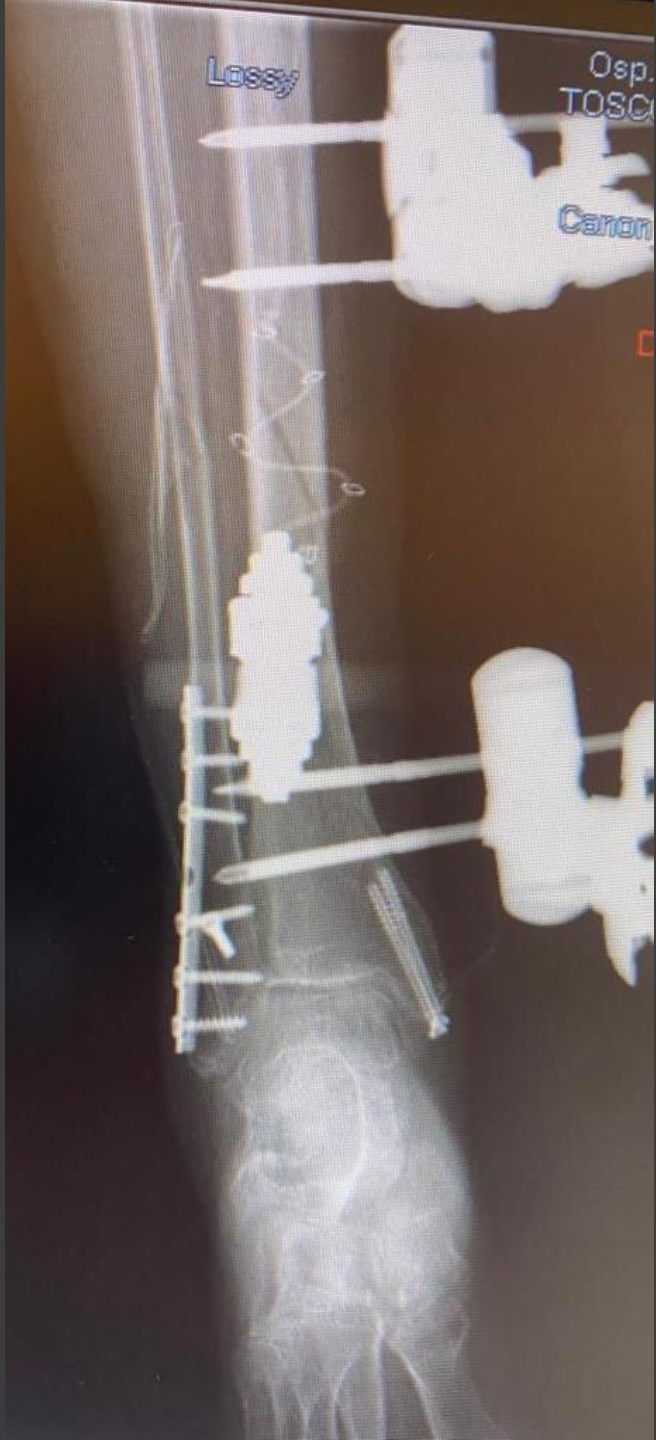


# Caso 3

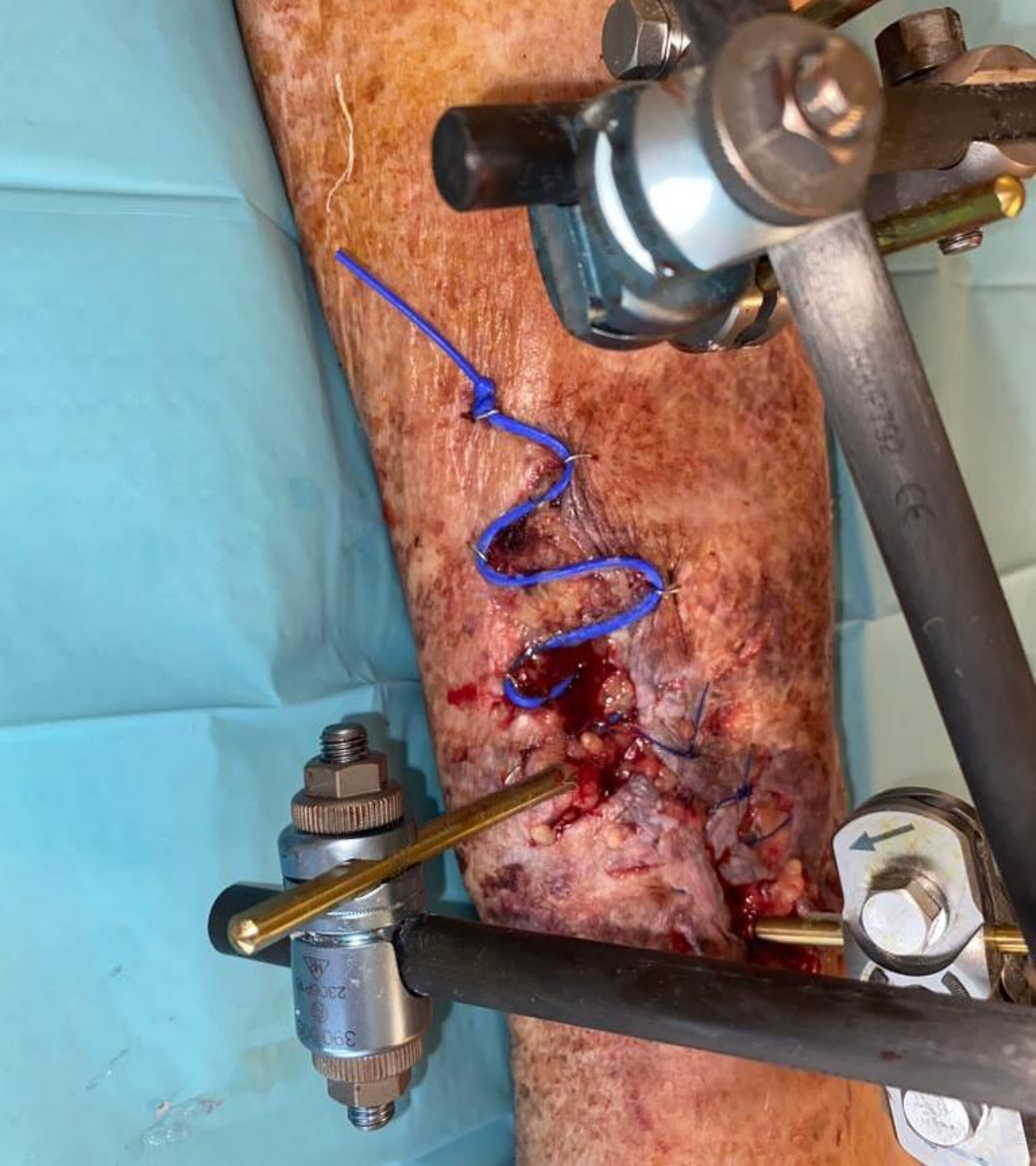
Donna 75 anni

Pedone investito da auto

Frattura gamba GA IIIA



















RX Home

Medico esaminatore : admin



RX Home

Medico esaminatore : adm

N. prest. : RADIO936702



Medico esaminatore : admin

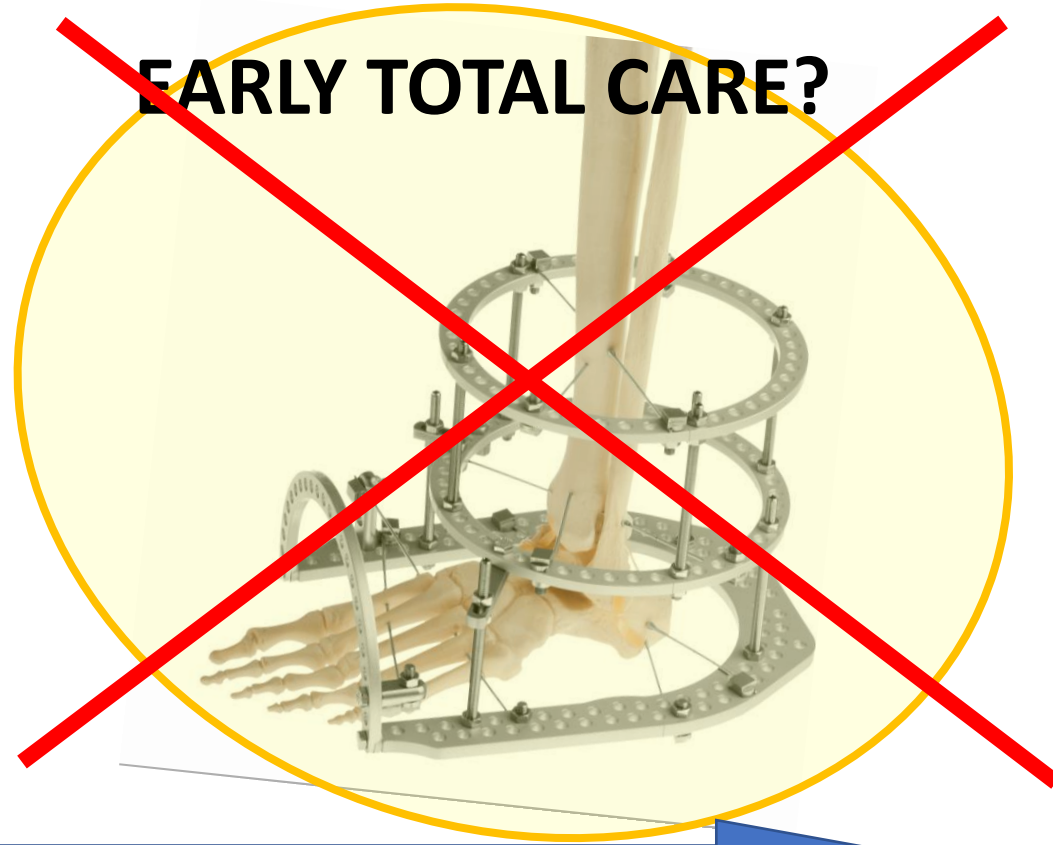
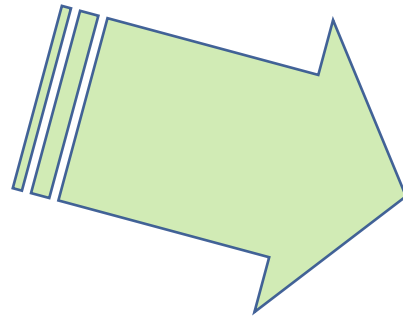


# STABILIZZAZIONE DELLA FRATTURA

Micromovimenti a livello del focolo



DCO



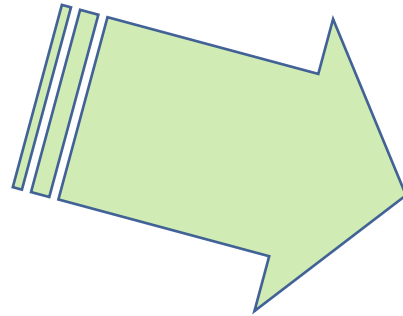
Rigidità del costrutto osso - fissatore

# STABILIZZAZIONE DELLA FRATTURA

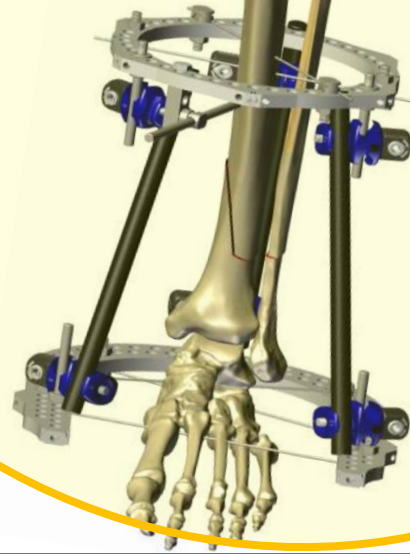
Micromovimenti a livello del focolaio



**DCO**



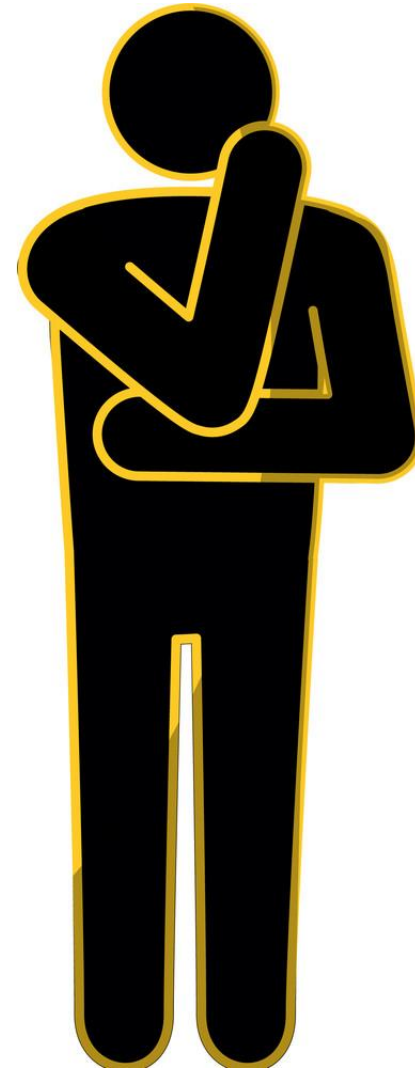
**EARLY EFFECTIVE CARE**



Rigidità del costrutto osso - fissatore



*Osservazioni preliminari*



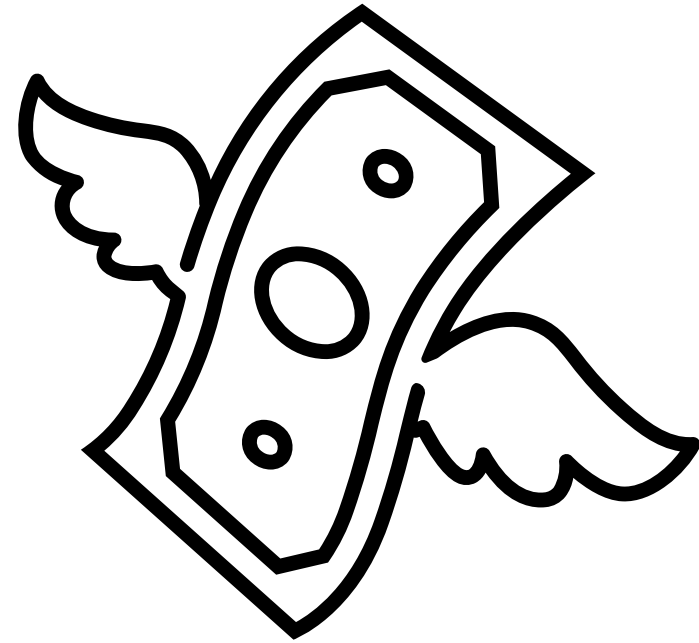
# *Cosa abbiamo osservato*

- Semplice da realizzare
  - Pochi componenti
  - Familiarità con i componenti
- Efficace
  - Stabile subito e per lunghi periodi
- Versatile
  - Implementazione semplice



# Aspetto economico

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- **Effettiva spesa inferiore ?**
  - - **Galaxy (nelle sue diverse declinazioni) poi rimosso e sostituito da FEC**  $$$ + $$$ = 5$
  - - **TL Hex Trauma, elementi conservati aggiunta di componenti f. circolare**  $$$ + $$ = 4$
- - **ridotti tempi complessivi CO:**
  - **T1 leggermente più lungo ma T2 quasi sempre più breve**

A black and white, high-contrast portrait of Mark Twain. He is shown from the chest up, turned slightly to his right, looking off-camera. He has his characteristic wild, white hair and a prominent, bushy white mustache. He is wearing a dark suit jacket, a white collared shirt, and a dark tie. The background is solid black, which makes his features stand out. In the bottom right corner, there is a white text quote.

***The secret of getting ahead  
is getting started***



grazie

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