ROMA
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The use of exFix and Bone Transport nail.
How and when to choose them.
Our experience

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Quocumque modo faciemus

Fondazione IRCCS San Gerardo dei Tintori

Sistema Socio Sanitario
Regione Lombardia

CASE 1:
06/12/23 (+0) Trauma

L.L. , 17 y.o. , male
Motorcycle accident

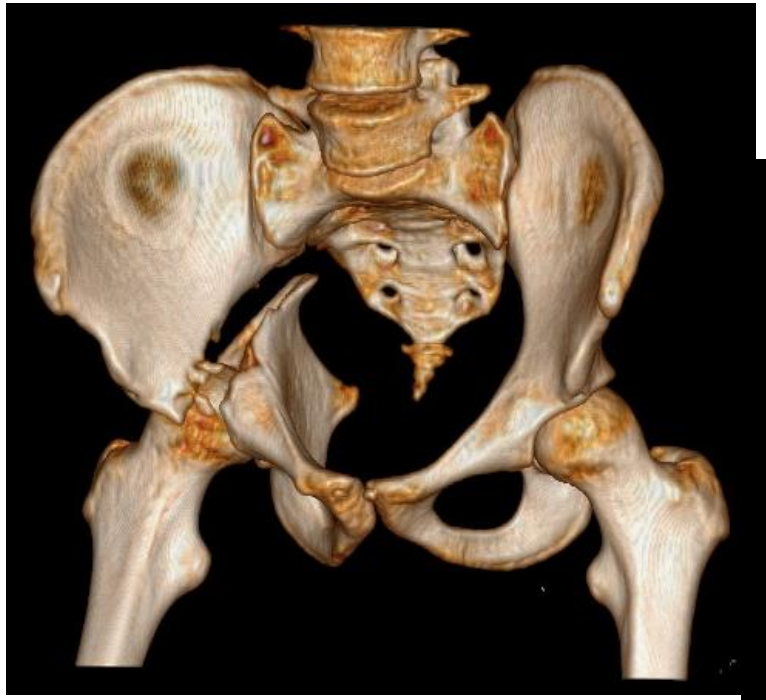
Emergency room, intubation on trauma site

Orthopaedic POV:

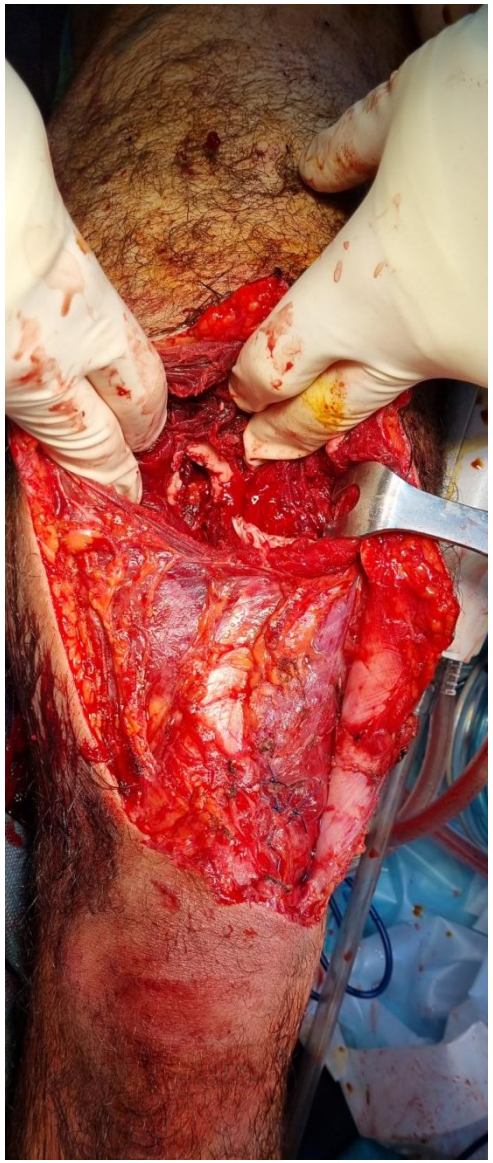
- Exposed GA2 right radius and ulna diaphiseal fracture
- Closed right radial head fracture
- Closed right elbow luxation
- Closed right 1° metacarpal fracture
- Right hand warm but pulseless

- Closed right acetabulum fracture
- Exposed GA3A right femur fracture
- Right thigh suprapatellar wound

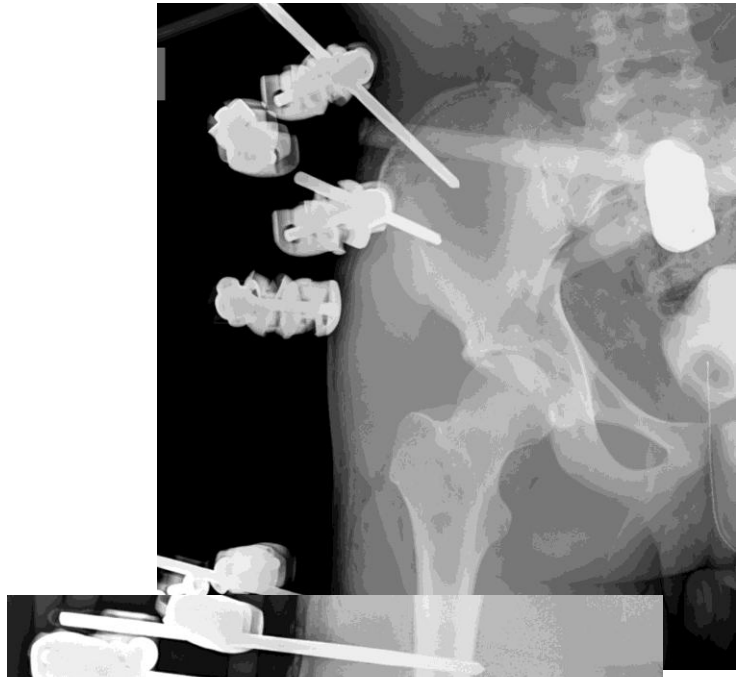
06/12/23 (+0) Trauma

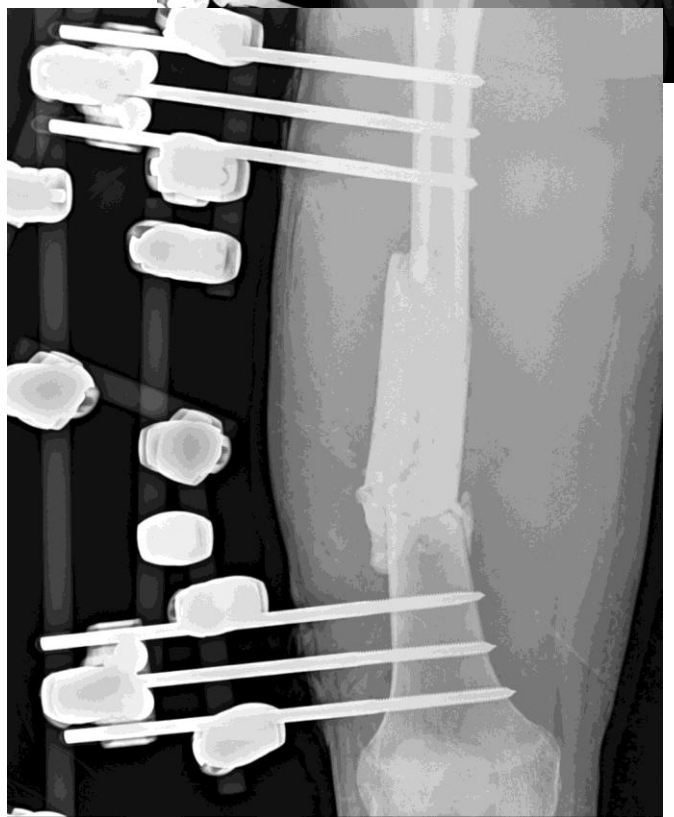


06/12/2023 (+0)

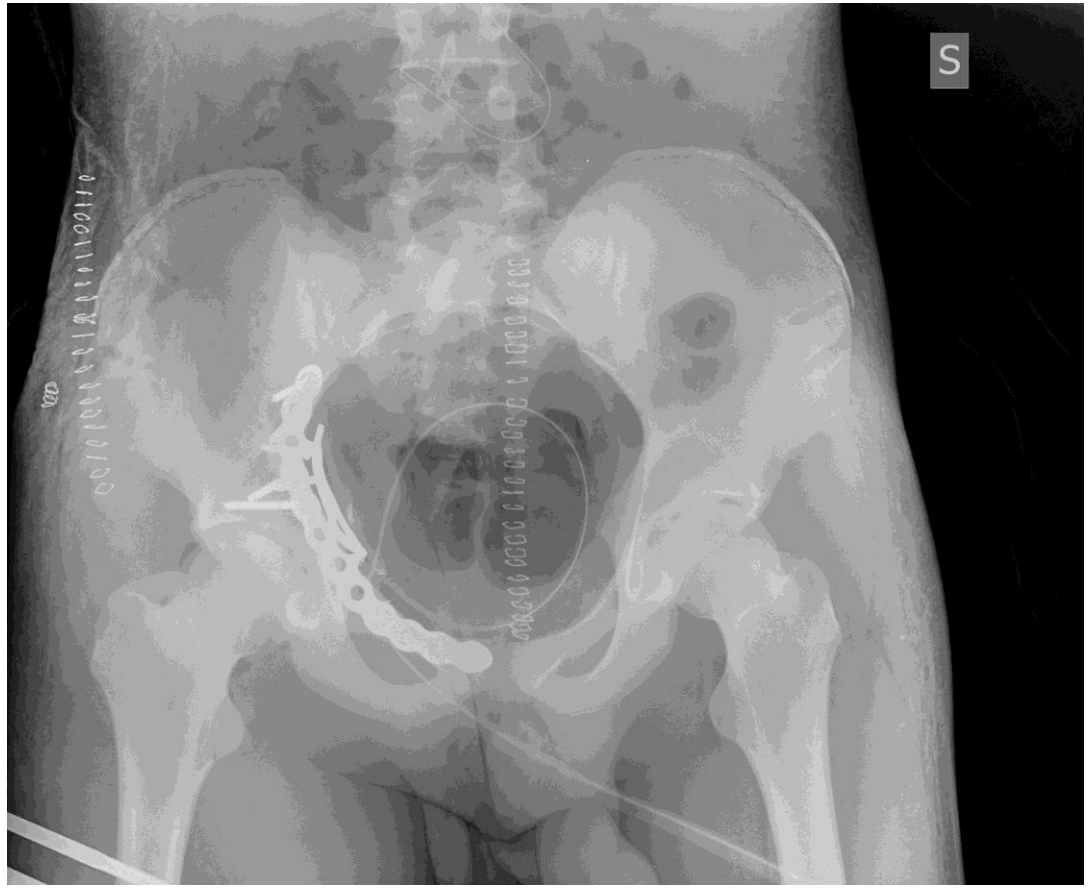


06/12/23 (+0) EAC





20/12/23 (+15) Definitive surgery right elbow
26/12/23 (+21) Definitive surgery pelvis



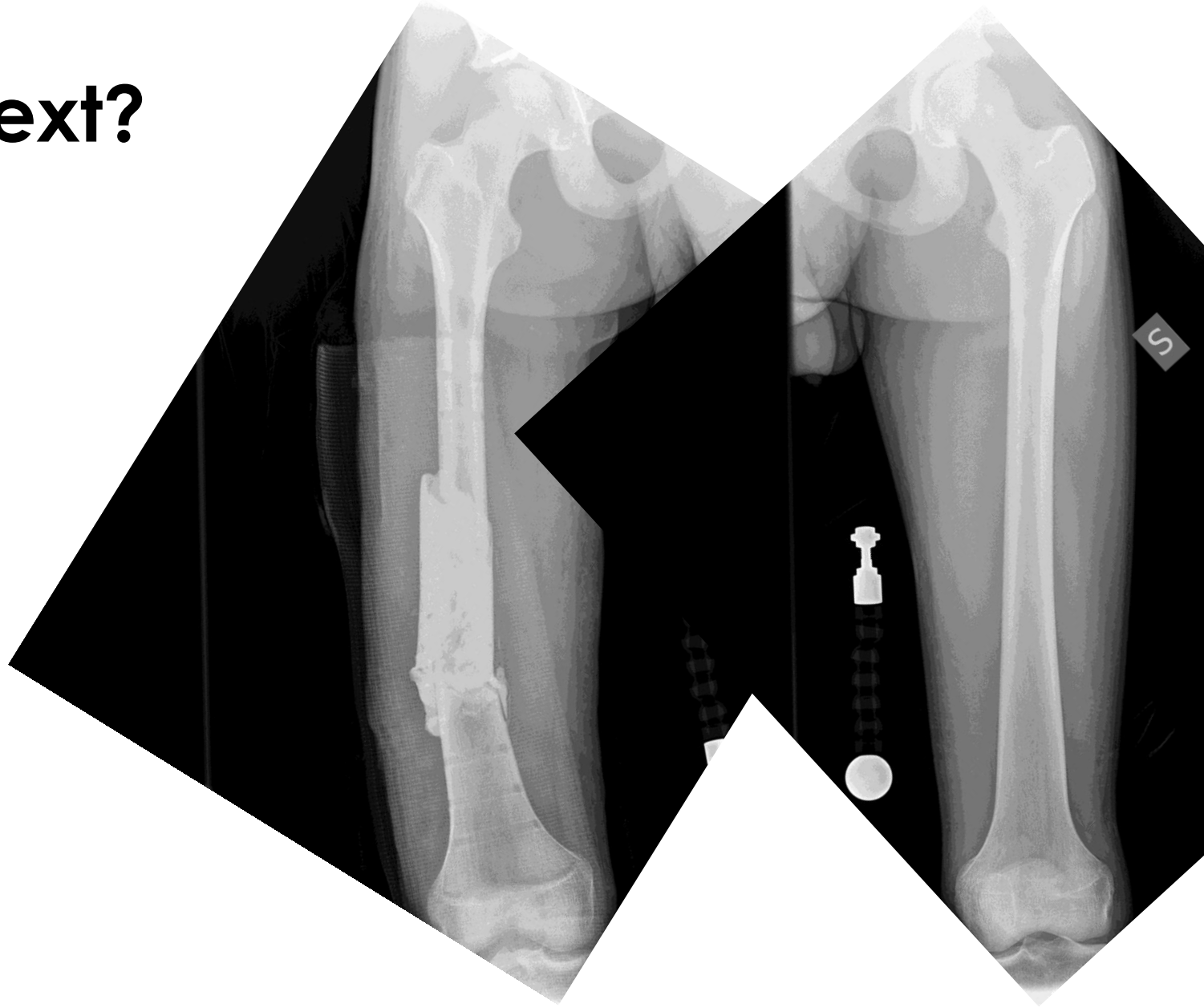
…what to do next?

Manage the bone loss

→quantify: 10 cm

Possibilities:

- Masquelet
- Bone transport
- …both?



…and about the patient?

Young
Healthy
Weight 58kg
Non smoking

Low compliance
Low hygiene
History of psicological trauma

…father «almost» too present

BONE TRASPORT WITH NAIL

ADVANTAGES:	LIMITATIONS:
High level of postoperative functionality	Inability to correct limb length discrepancies
Early return to daily activities without the need for external fixators	Bone loss < 10cm
Easier management and care during healing	No infenctions bone
Increased rate of bone trasport	High cost

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https://doi.org/10.1007/s00590-020-02854-5

UP-TO DATE REVIEW AND CASE REPORT

Bone transport with magnetic intramedullary nails in long bone defects

Selina Summers[1] · Matija Krkovic[2]

Received: 16 October 2020 / Accepted: 14 December 2020 / Published online: 24 December 2020

REVIEW Open Access

Innovative strategies for the management of long bone infection: a review of the Masquelet technique

Vivek Chadayammuri[1], Mark Hake[2] and Cyril Mauffrey[3*]

BONE TRASPORT WITH EXFIX

ADVANTAGES:	LIMITATIONS:
More ability to manage Bone infections	Discomfort in daily life activites for the patient
More ease to correction of bone deformities	Deformities of regenerate are most frequent
Surgical technique is more easy	Education of patient on fixator management
Low cost	

Ilizarov segmental bone transport of infected tibial nonunions requiring extensive debridement with an average distraction length of 9,5 centimetres. Is it safe?

Hakan Kinik · Mahmut Kalem

Affiliations & Notes Article Info

Distraction of Longitudinally Split Fragments Using the Ilizarov Method: A Series of Clinical Cases of Treating Partial Bone Defects

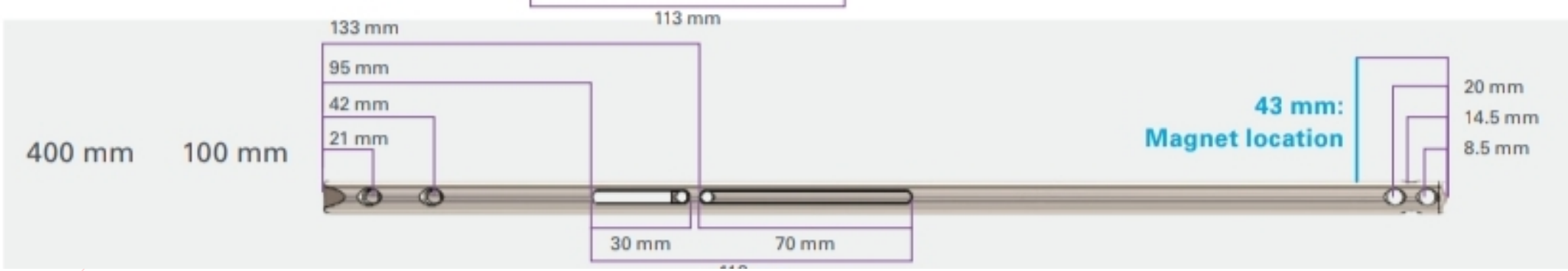
Filippo Vandenbulcke[1,2], Emiliano Malagoli[1], Alexander Kirienko[1]

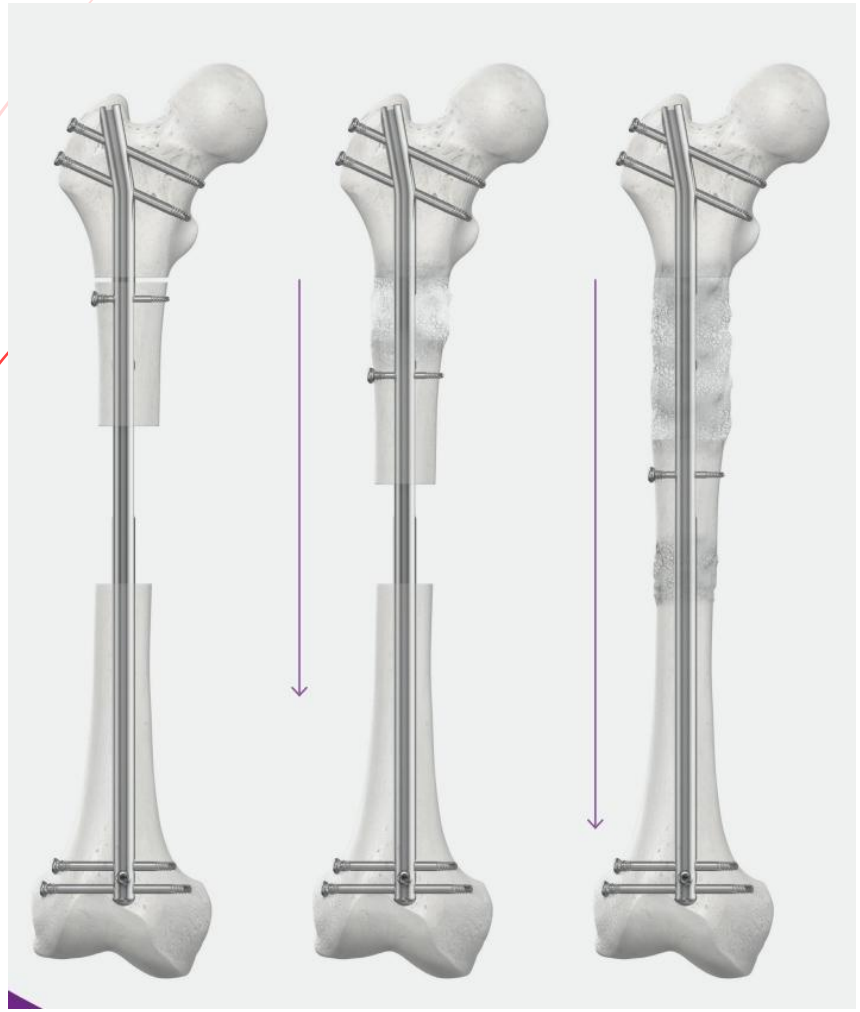
ORIGINAL ARTICLE

Retrospective Study

Ilizarov bone transport combined with the Masquelet technique for bone defects of various etiologies (preliminary results)

Dmitry Y Borzunov, Sergey N Kolchin, Denis S Mokhovikov, Tatiana A Malkova





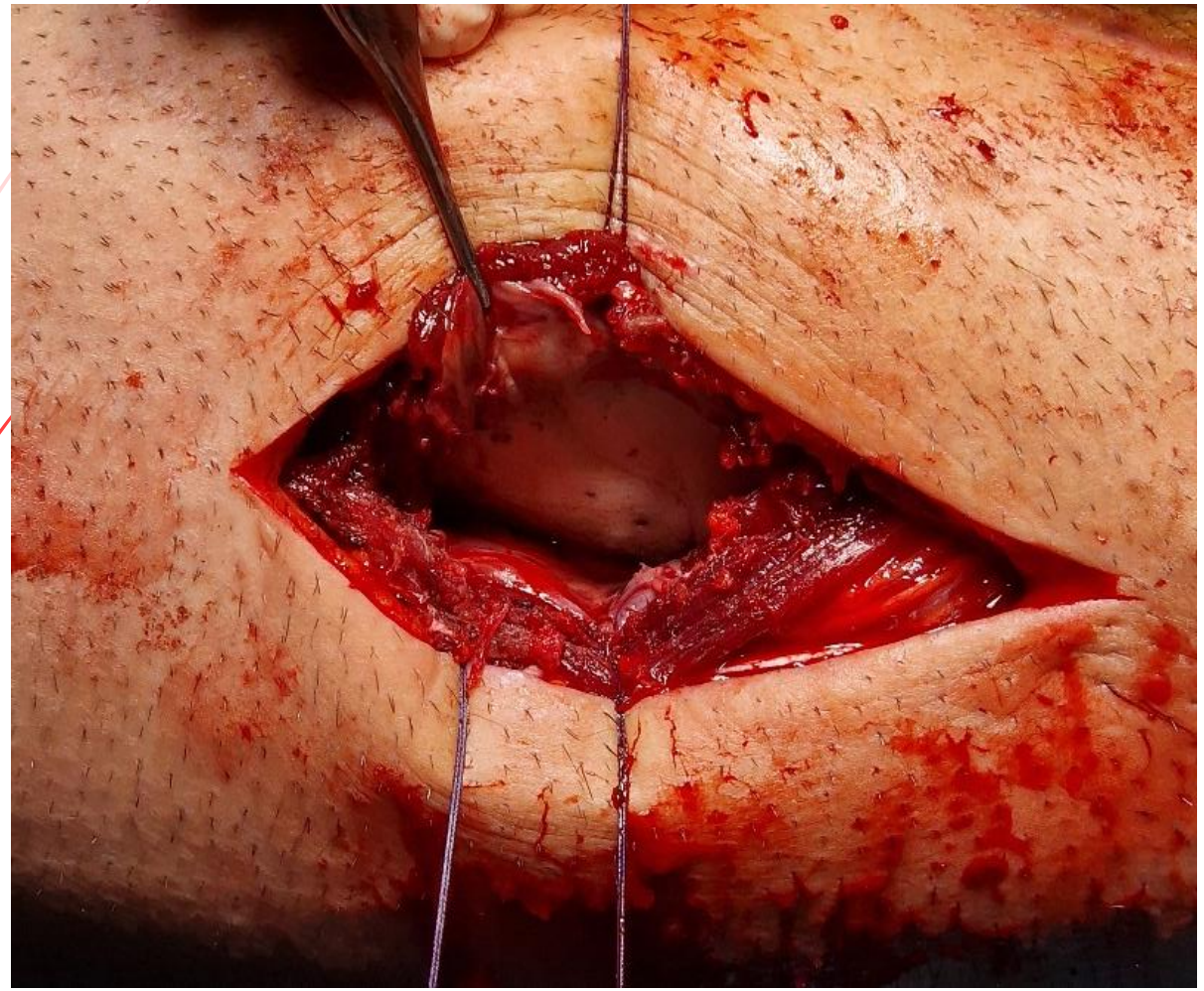
Device diameter	With partially threaded screws	With fully threaded screws
10 mm	25 lbs/11 kg	25 lbs/11 kg
11.5 mm	190 lbs/87 kg	125 lbs/57 kg
13 mm	250 lbs/114 kg	125 lbs/57 kg

We opted for the transport nail

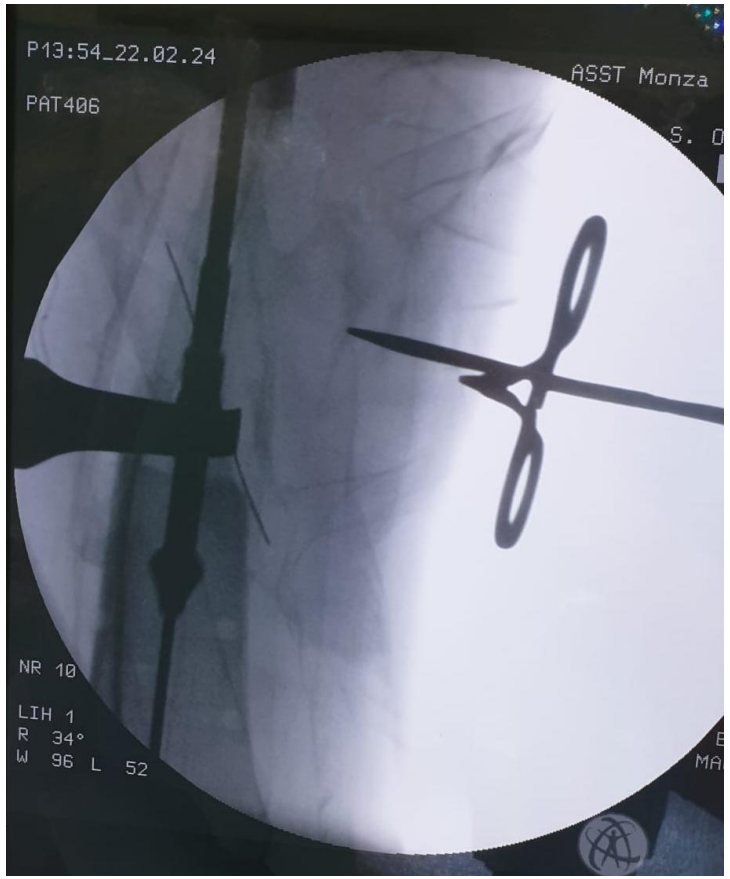
- No external device
- No evidence of infection
- They are prone to the option, management will be easier

Combination with Masquelet tecnique will shorten treatment time?

22/02/24 (+78 **+0**) Cement removal, Microbial exams: negative, RIA, Nuvasive® Transport Nail



22/02/24 (+78 **+0**) Cement removal, Microbial exams: negative, RIA, Nuvasive ® Transport Nail



RIA in the chamber after nailing, only partial filling

22/02/24 (+78 **+0**) Postop

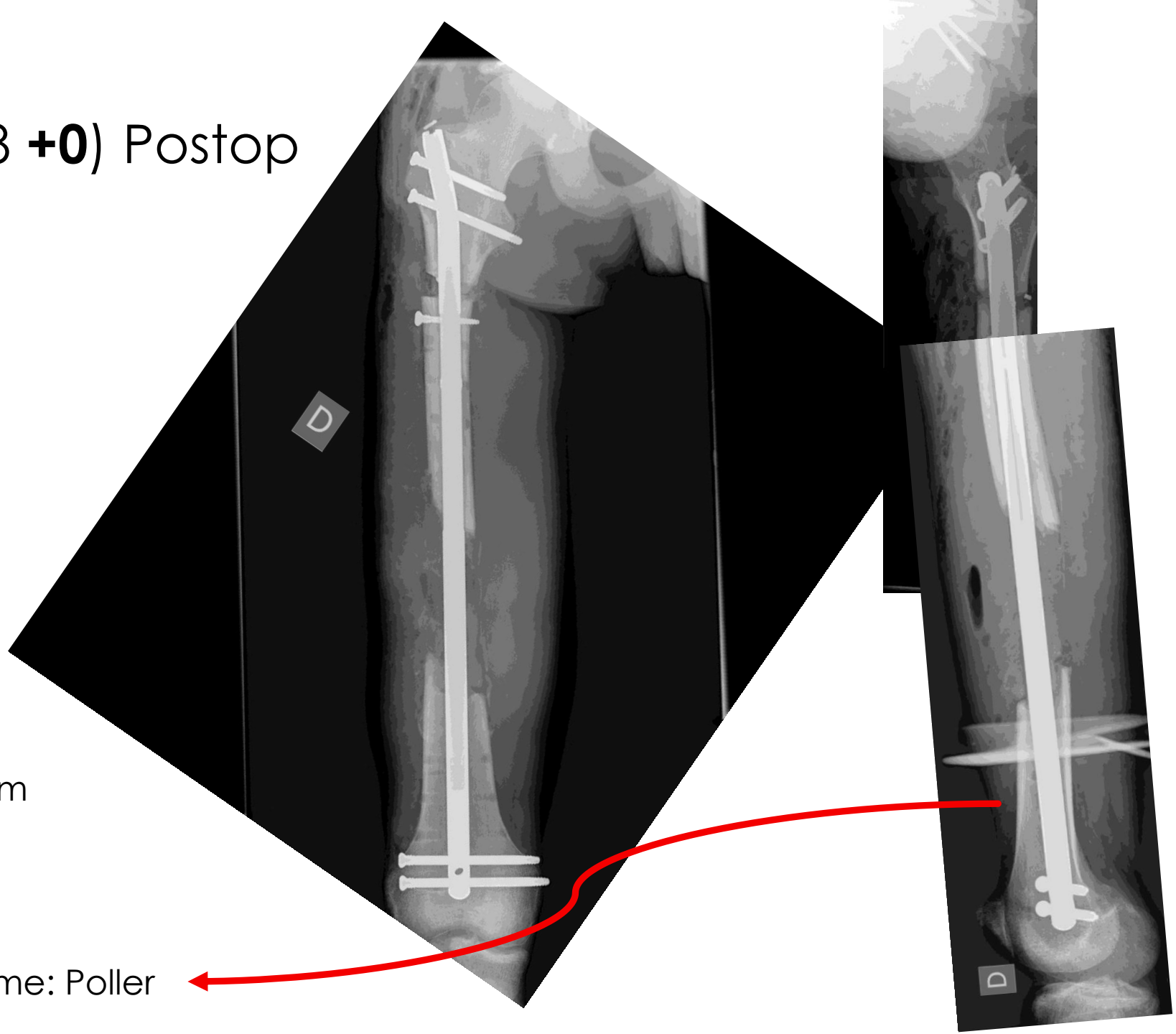
Precice Bone
Transport Nail
400mm x 11,5mm

RIA 11.5mm
all the way

Proximal ream 13mm

Distal line-to-line

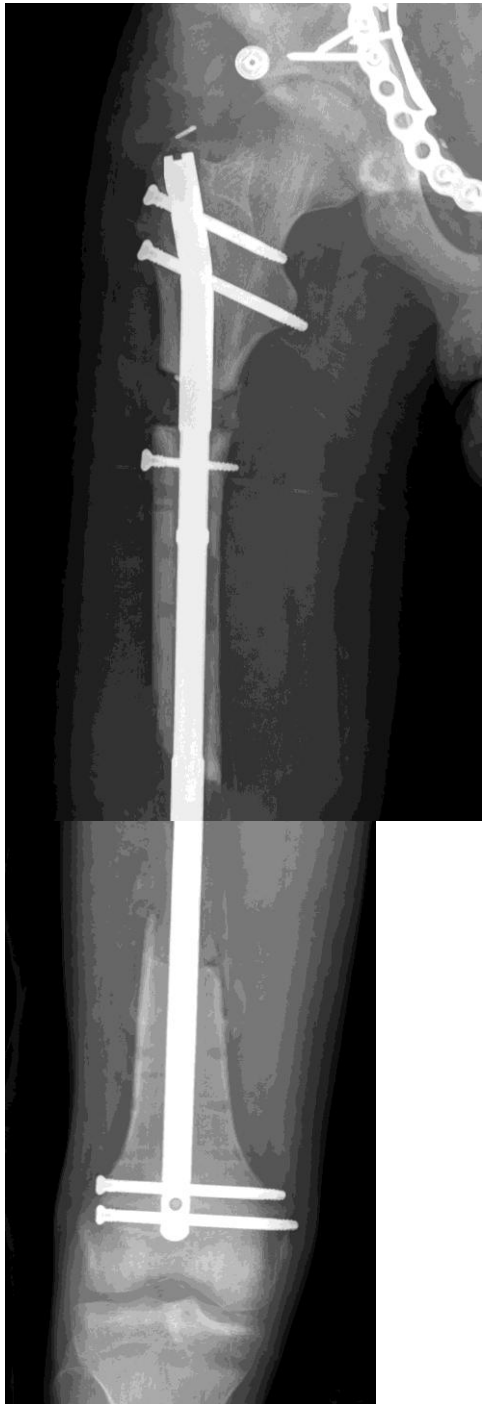
…next time: Poller



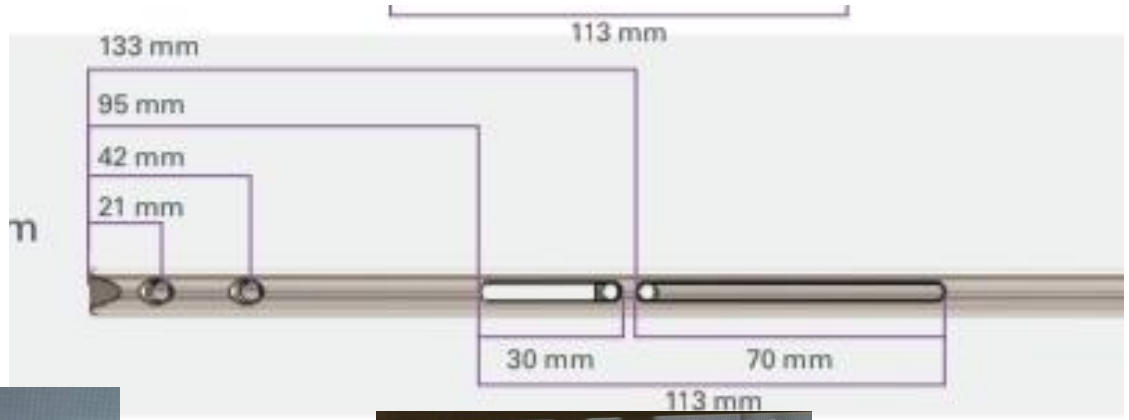
12/03/24 (+97 **+19**) Transport in progress

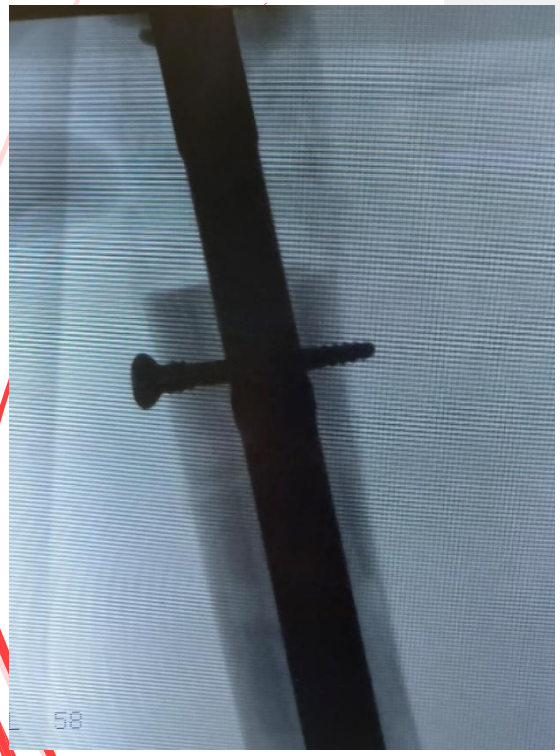
Transport started after 7-days delay

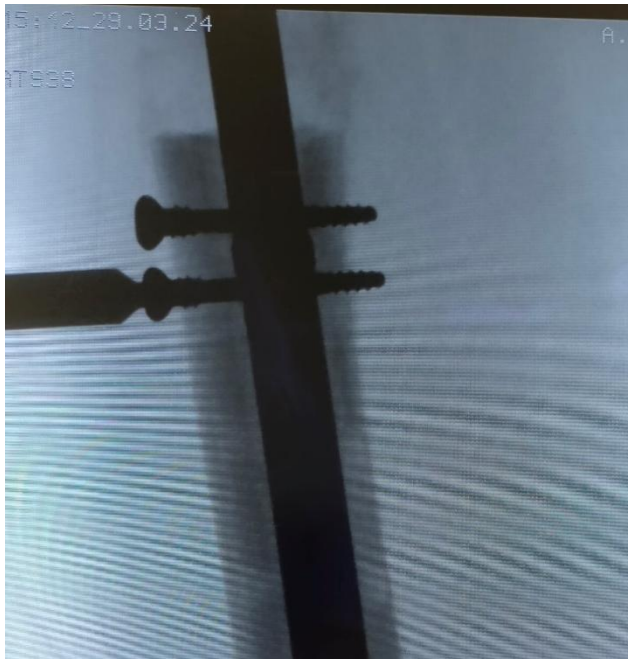
0,5mm
Twice a day



29/03/24 (+114 **+36**) 3cm done, screw slot switch







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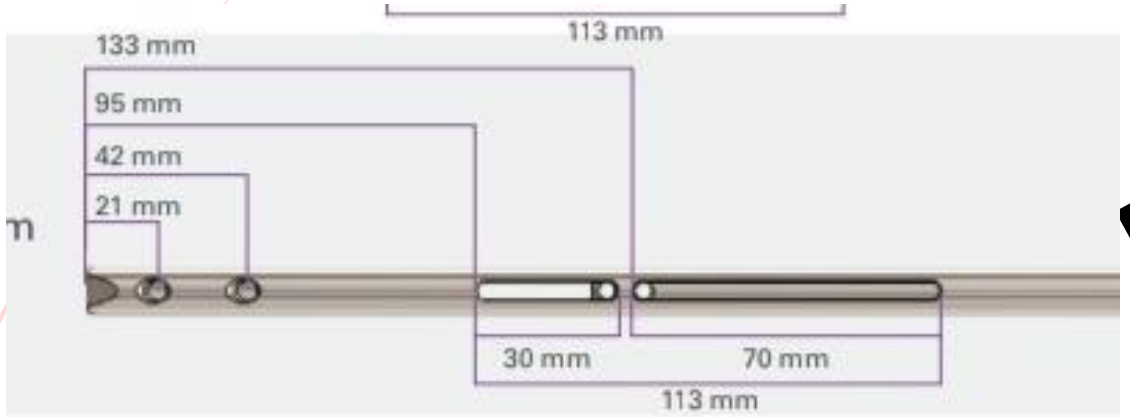
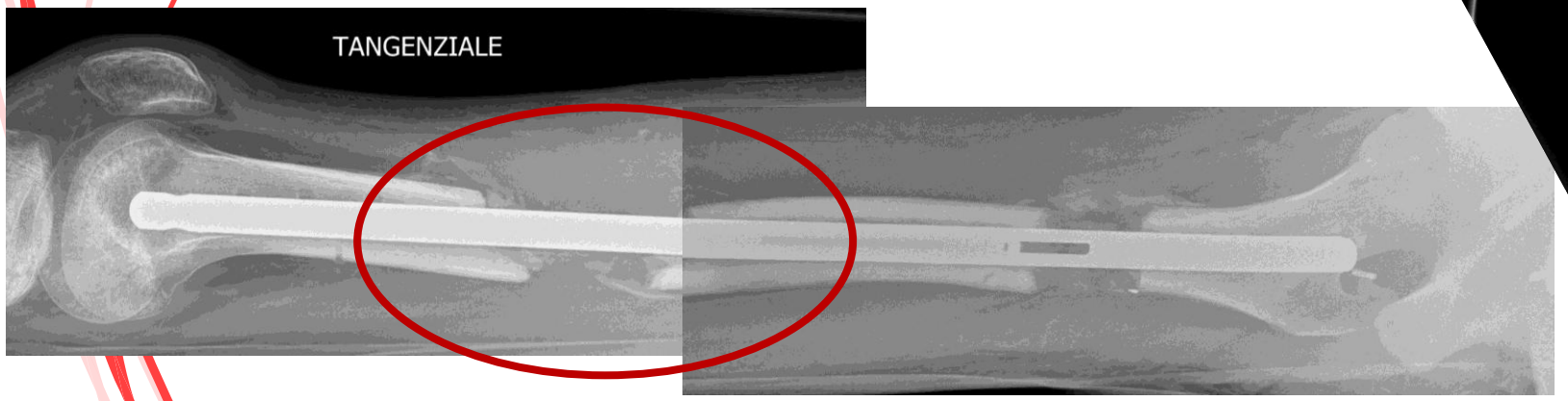
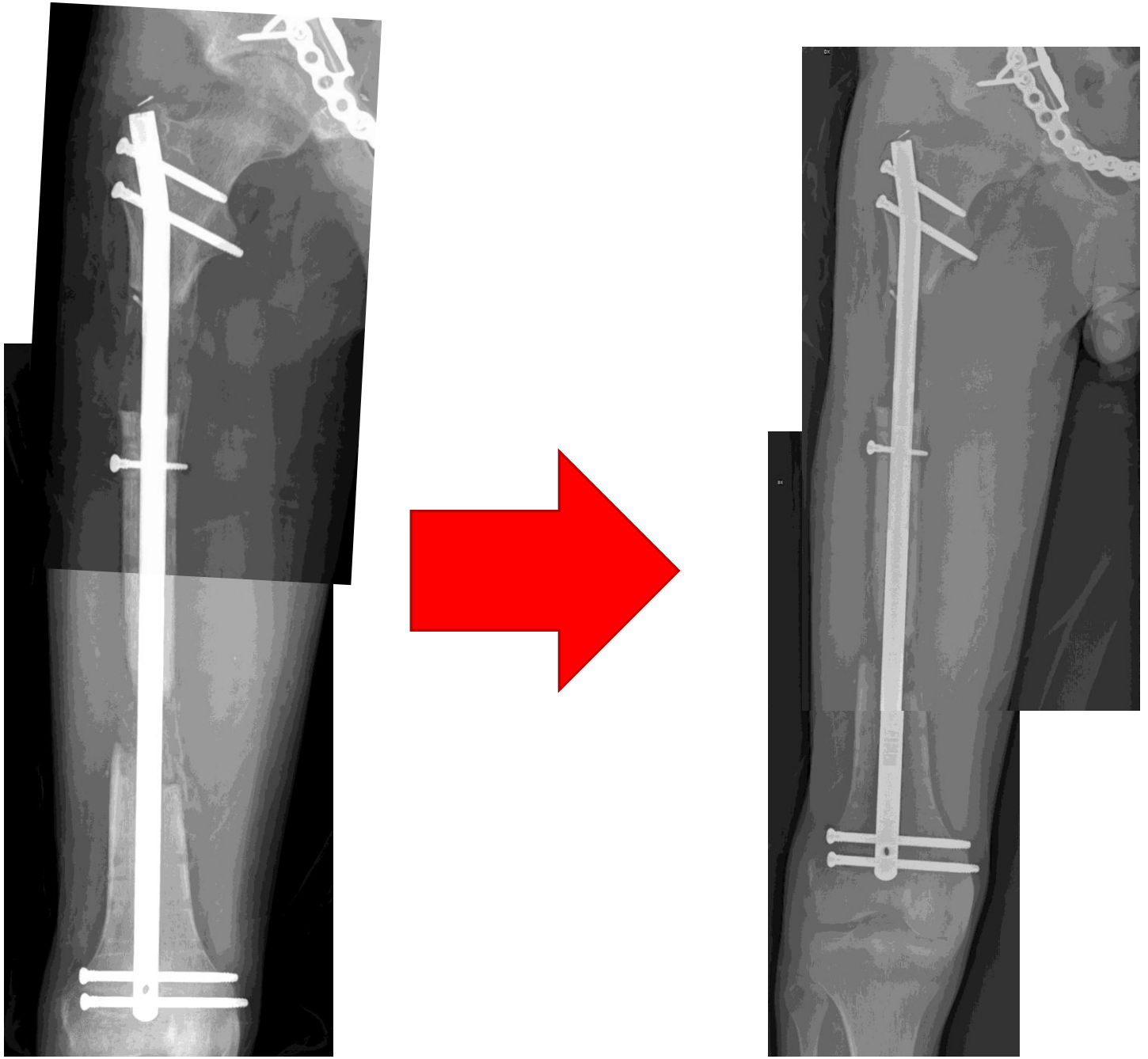






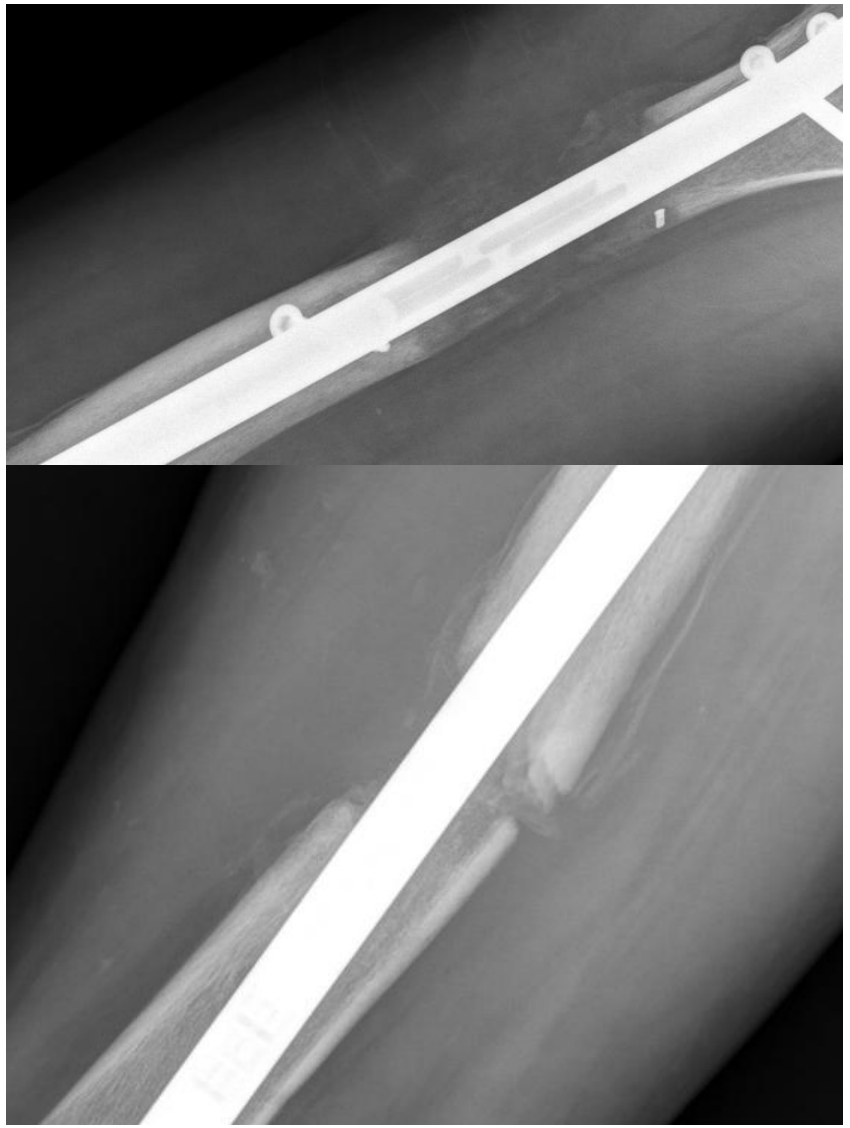
07/05/24 (+153 **+75**)

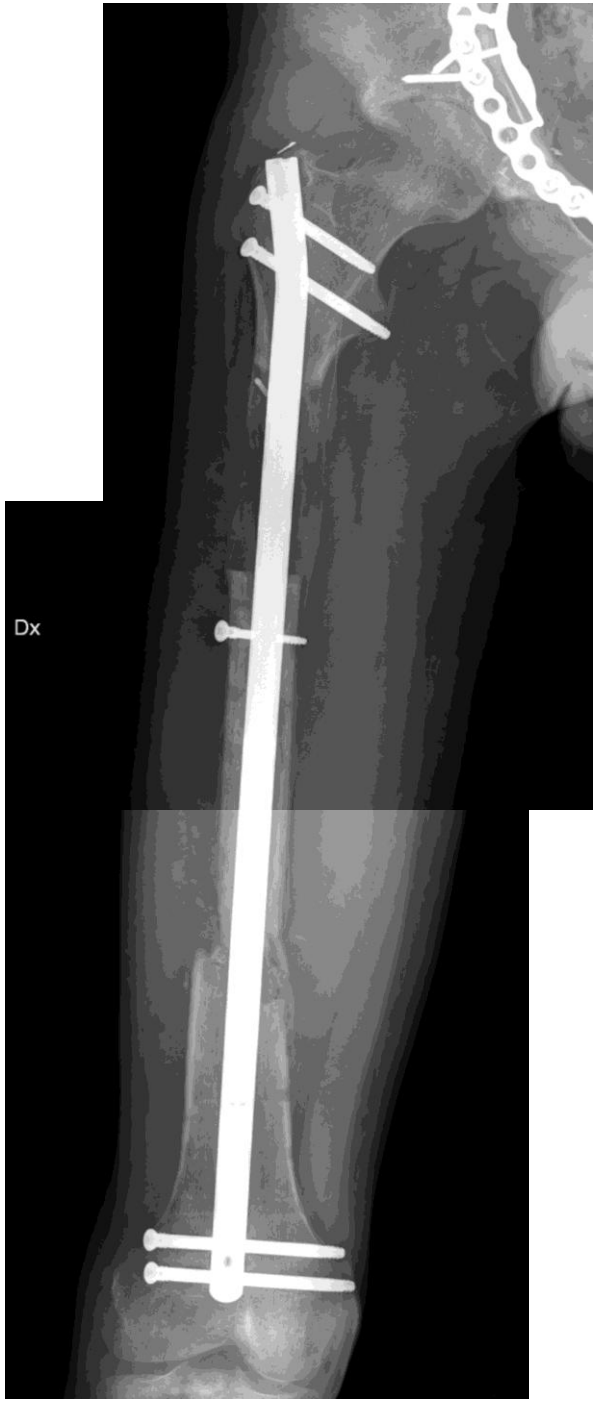
Regenerate ok

Docking and chamber seems ok, ¾ cortex (anterior healing)

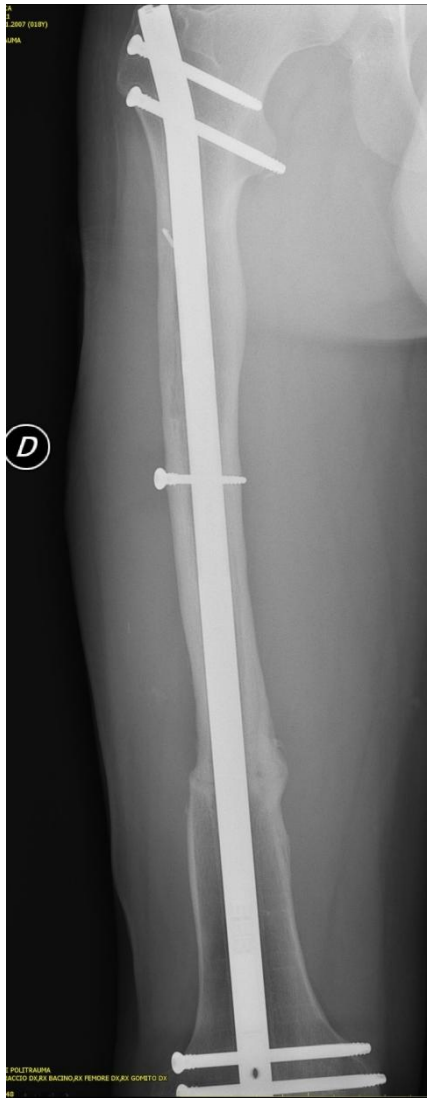
Starting to feel pain while lenghtening (are we there?)

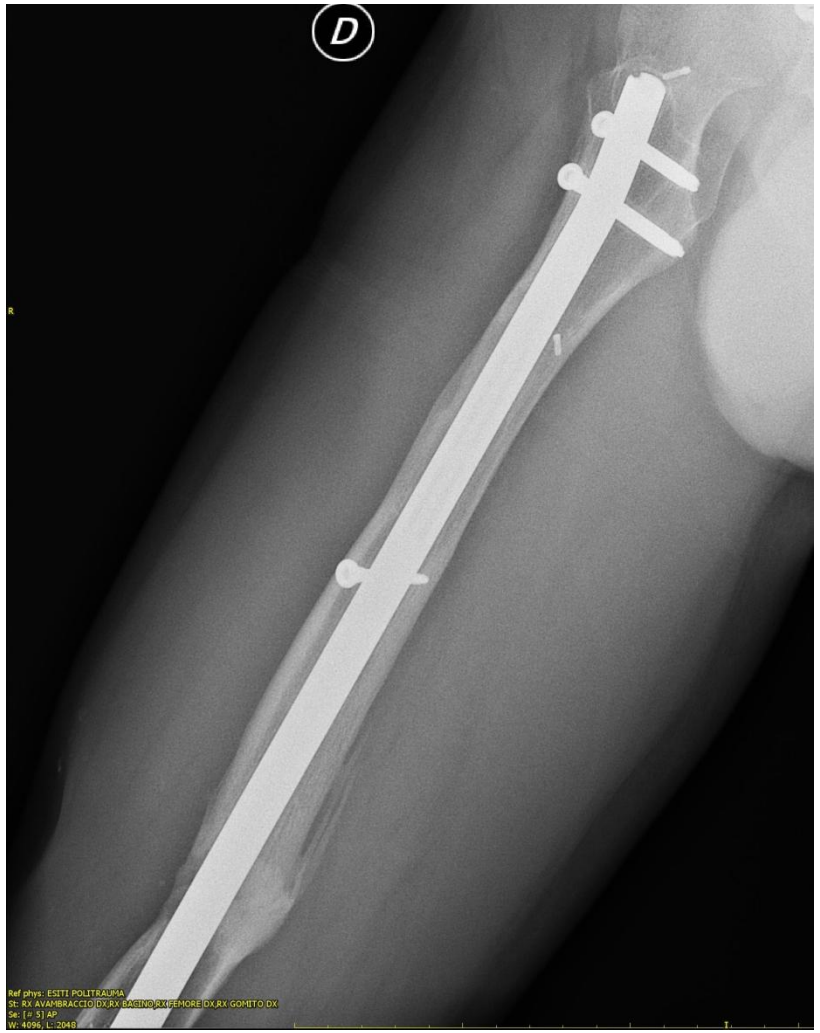
→ STOP
...AND WAIT



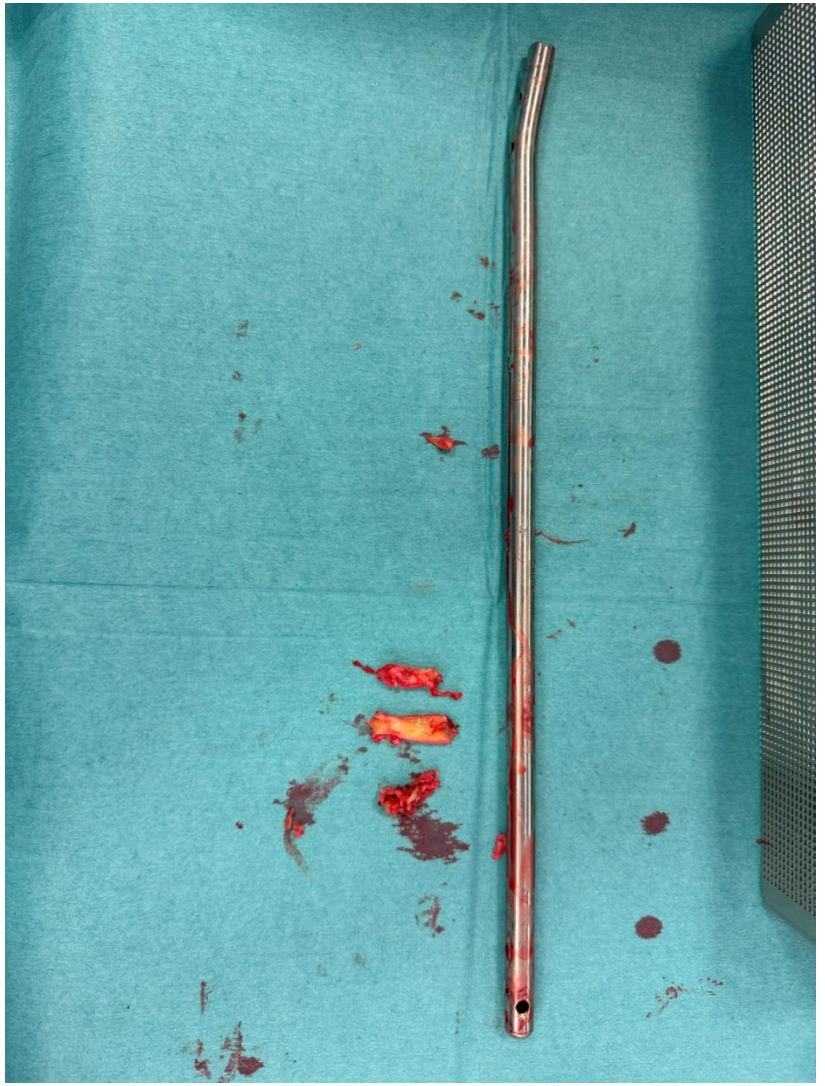


18/02/25 (+78 **+362**)

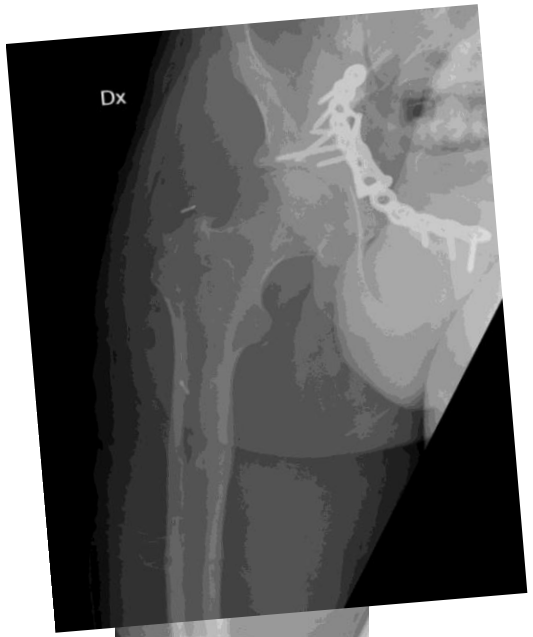




18/03/25 (+78 **+392**)



18/03/25 (+78 **+392**) nail remove



CASE 2:
23/11/2023 (+0) Trauma

L.S.M., 37 y.o., male

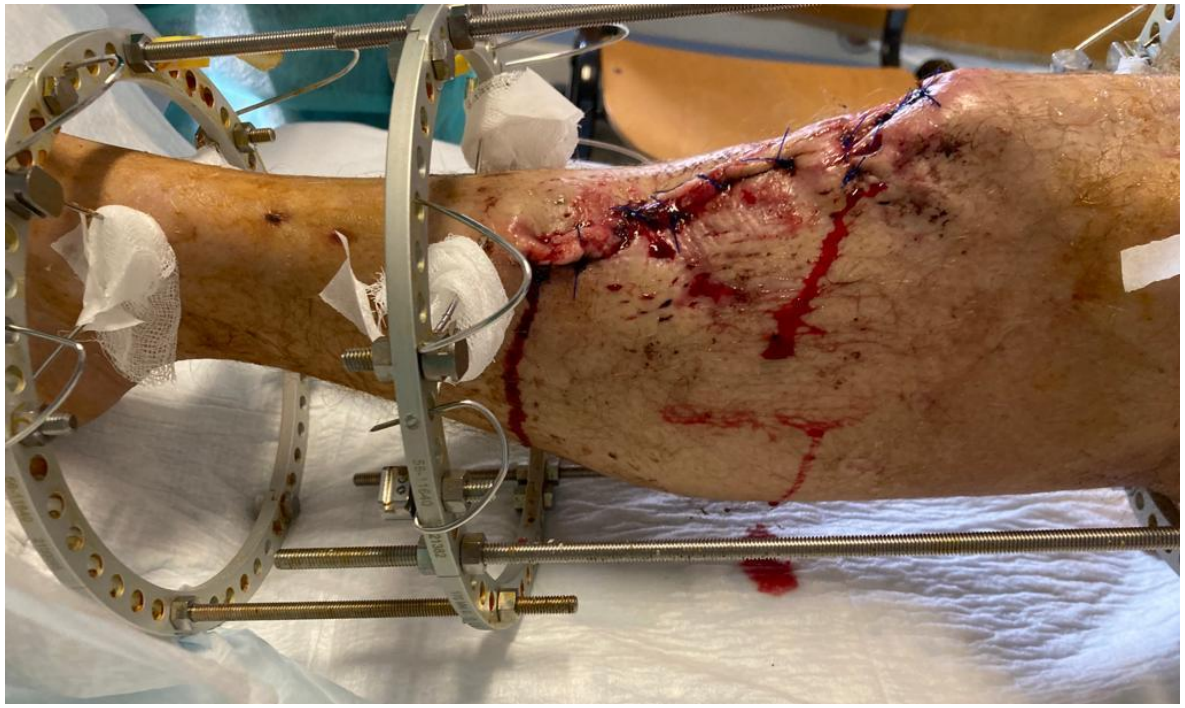
Frontal accident between cars.

He is transported and treated at another hospital.

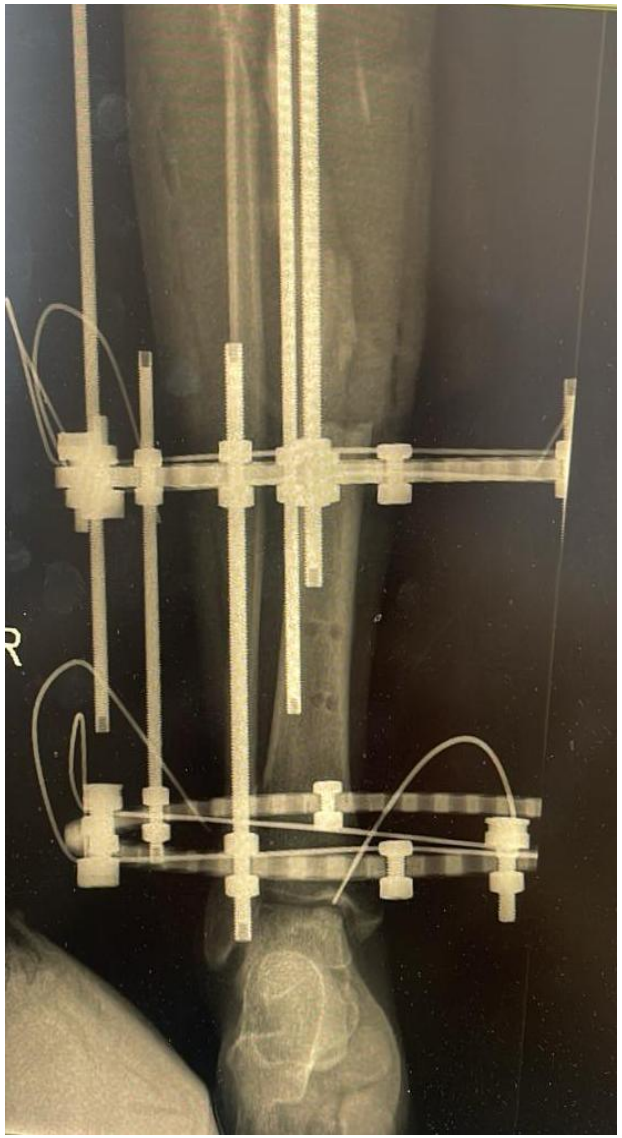
Orthopedic injuries:

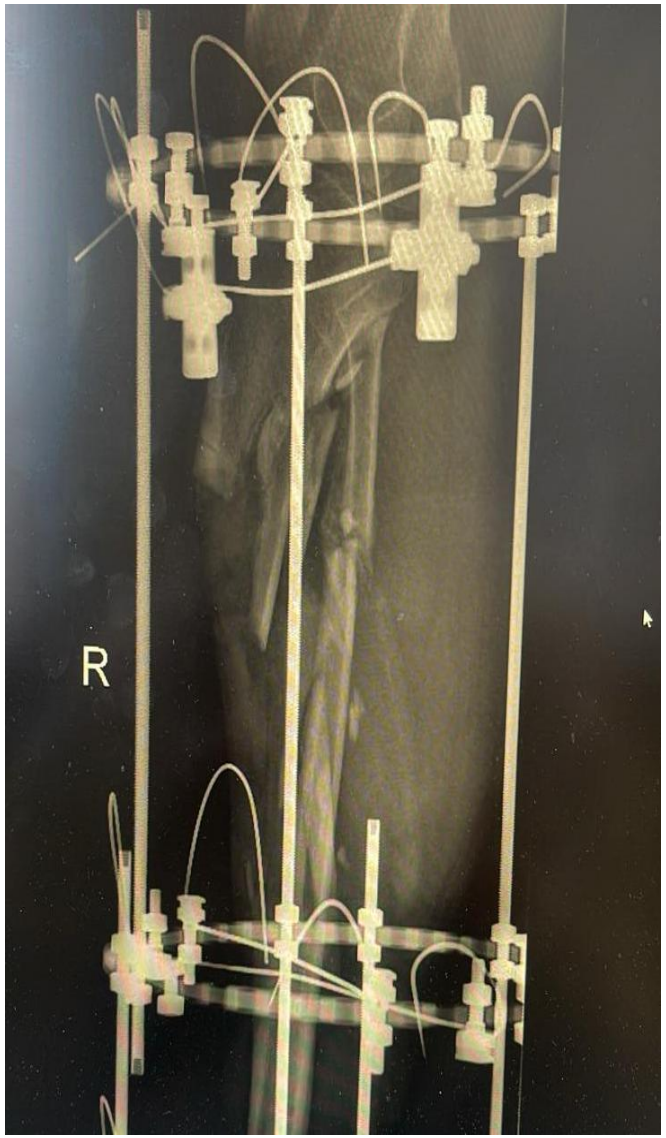
- Posterior arch fracture C4
- Open fracture (GA3) bothbone right leg (DCO)
- Lisfranc dislocation with base fracture 2-3 (KW)
- Dislocation of left patella with distal intercondylar fracture of the left femur (Plate and screws)

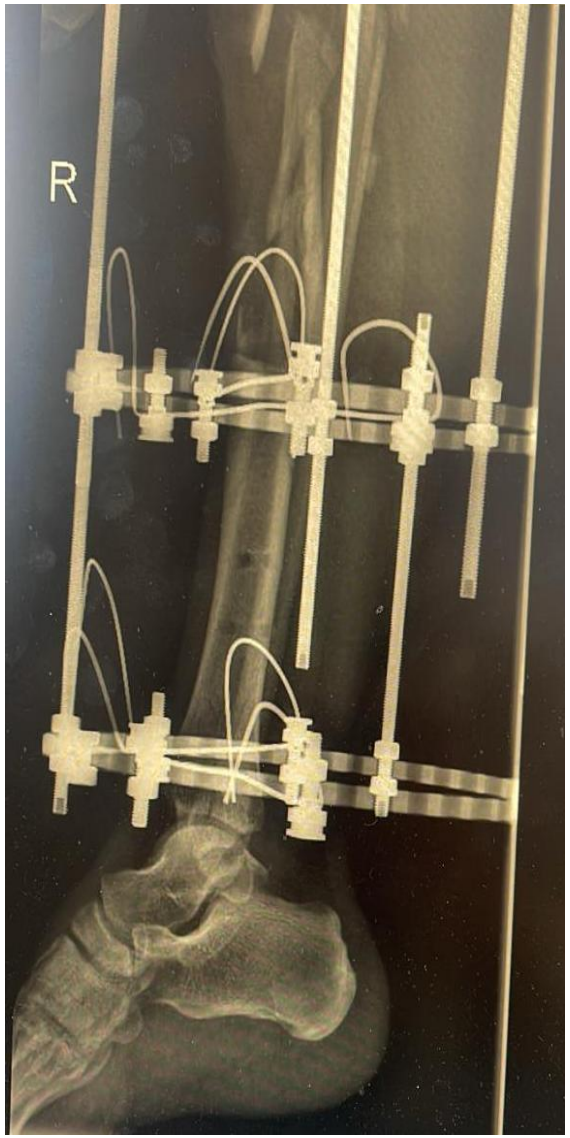
(+83) Patient at our Hospital



(+83) RX pre op



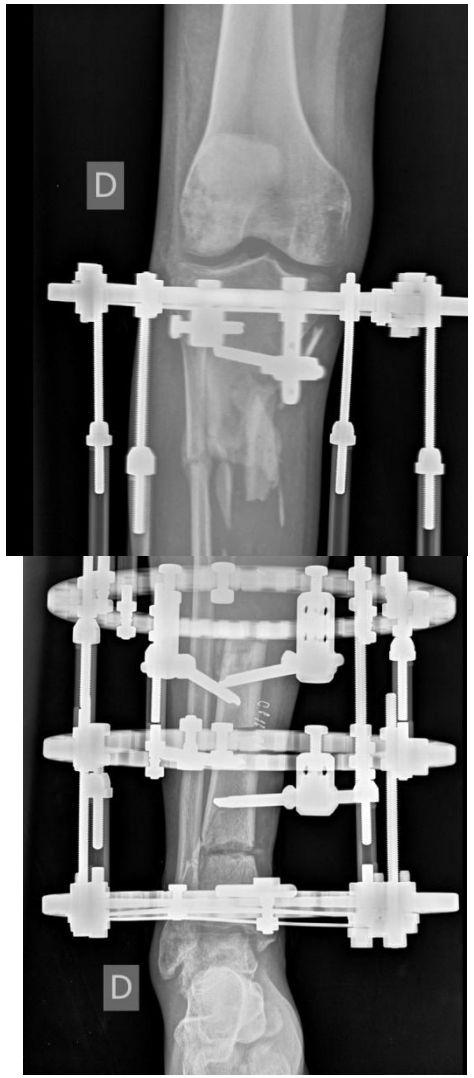


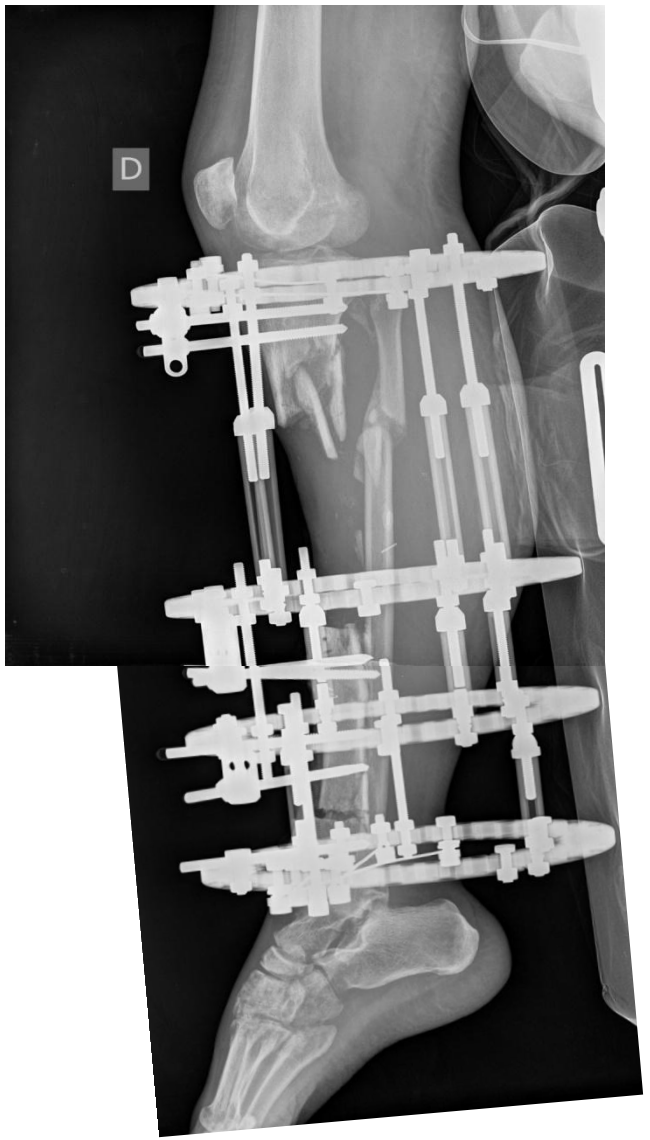


(+83) Debridement of bone + application of new FEC

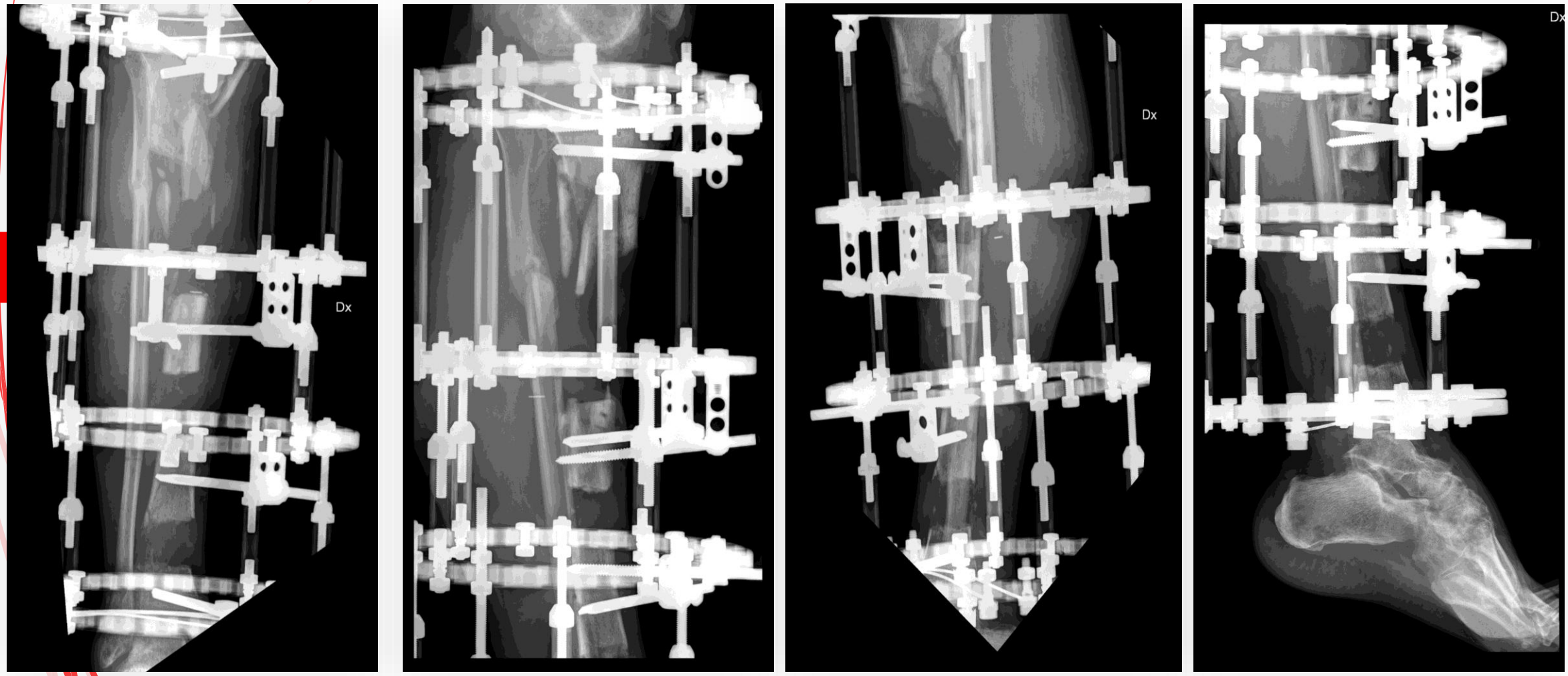
BONE LOSS 11CM

(+99): FEC +bifocal osteotomy of distal tibia for retrograde bone transport

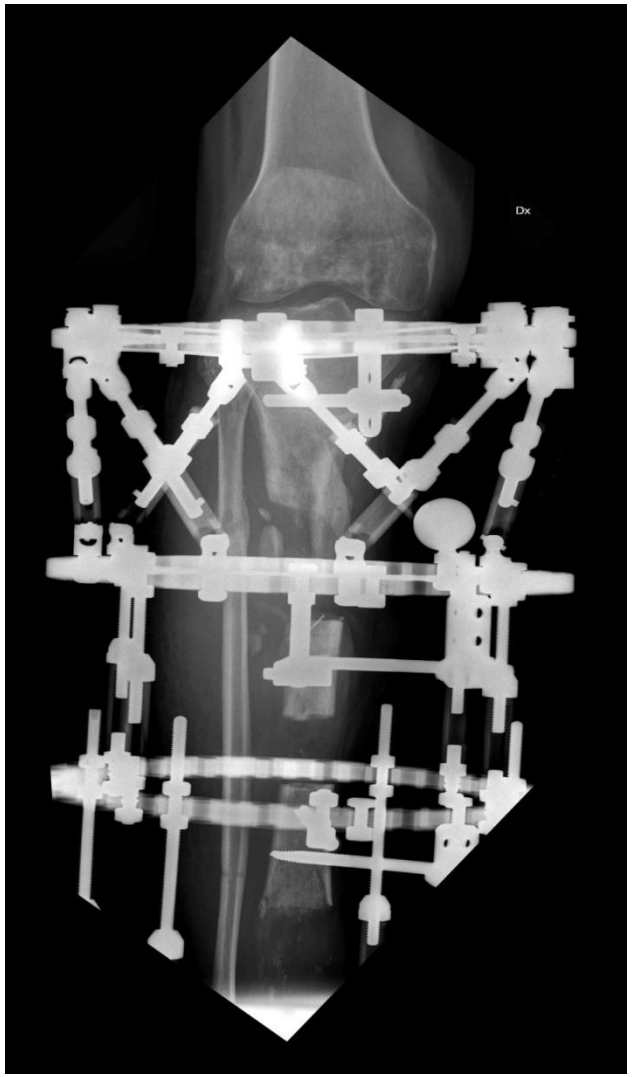


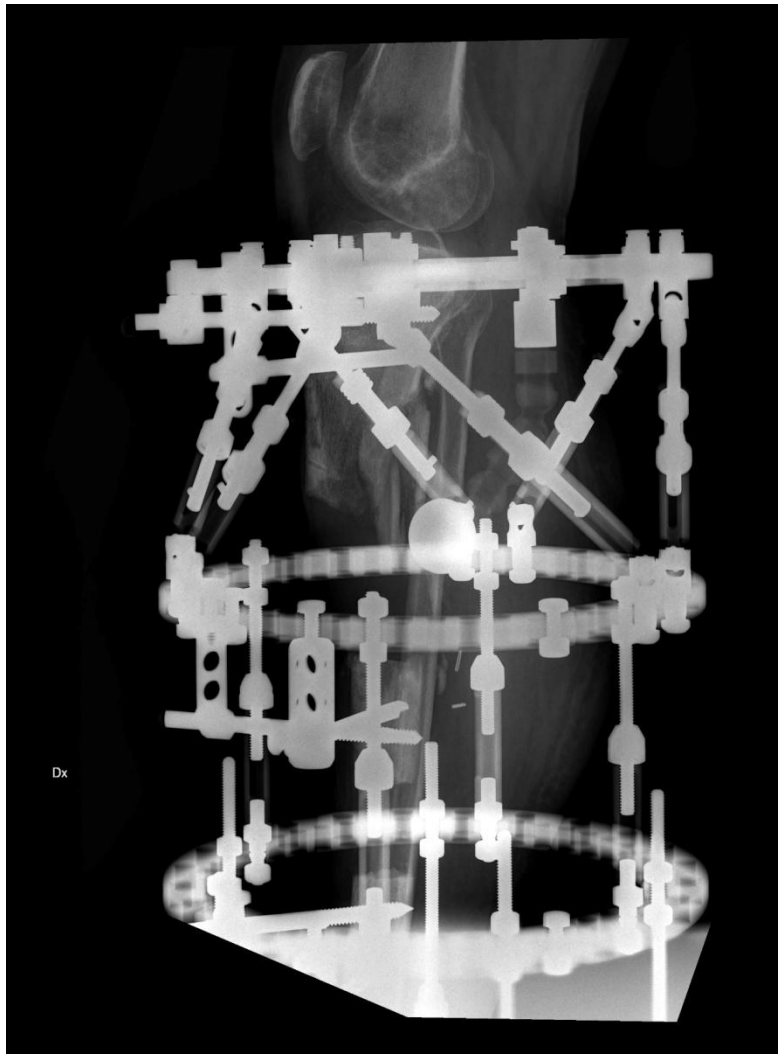


(**+111**) Start of retrograde bone transport
(**+145**) Control X-RAY

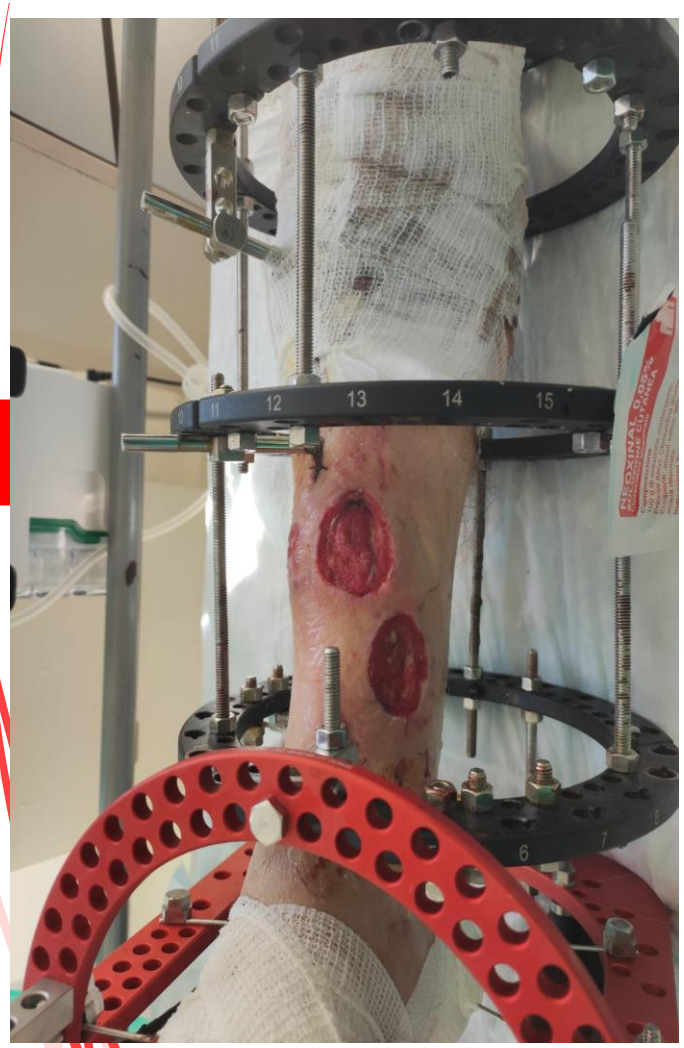


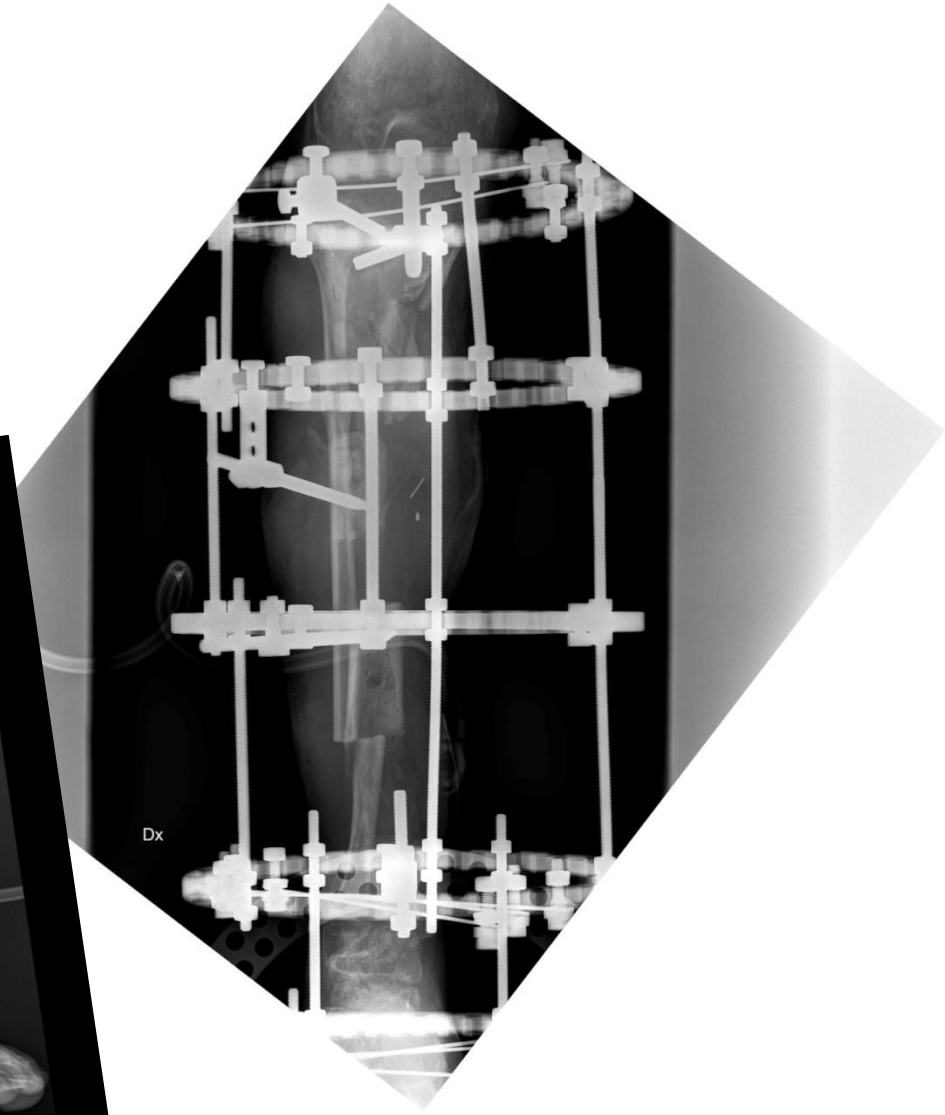
(+166) Proximal ESA for correction of tibial deformities and internal rotation of the foot.



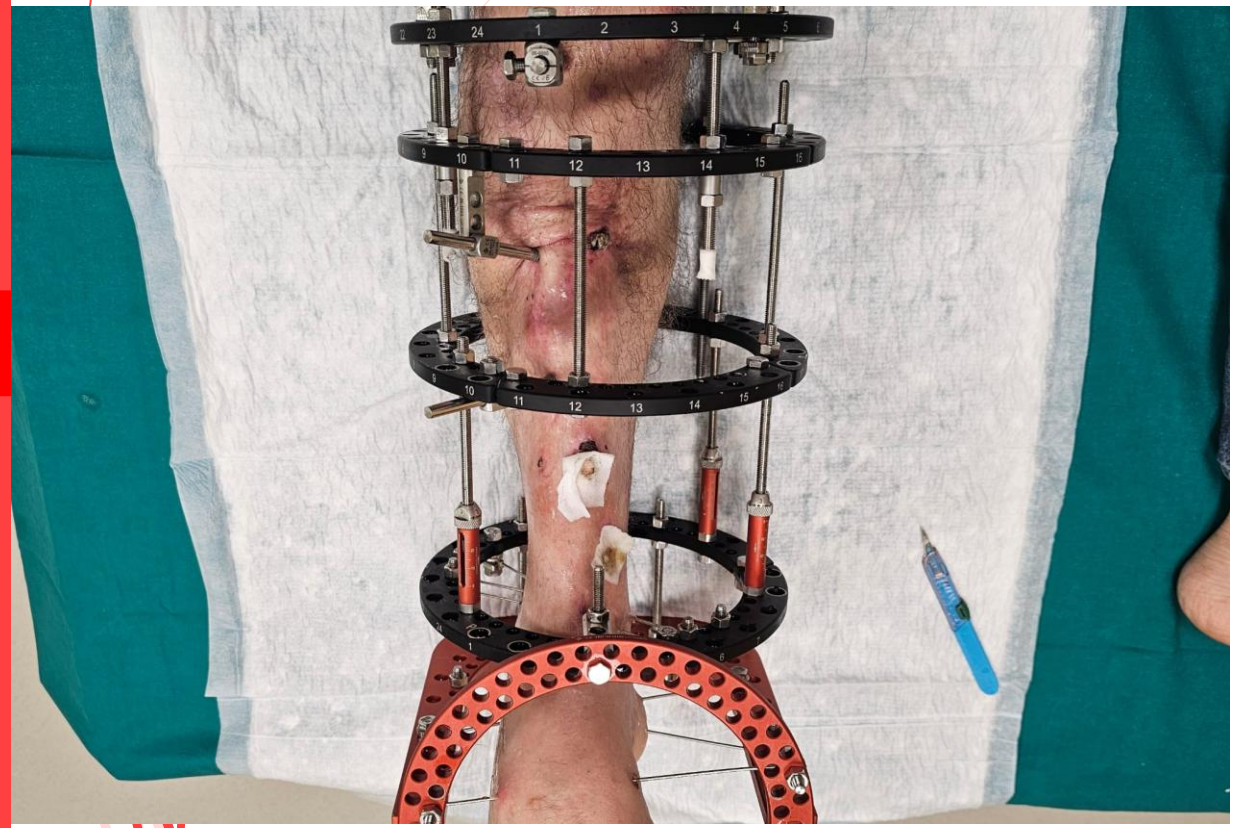


(**+211**) :Surgical revision, foot plate, fibula osteotomy and positioning of NPWT.

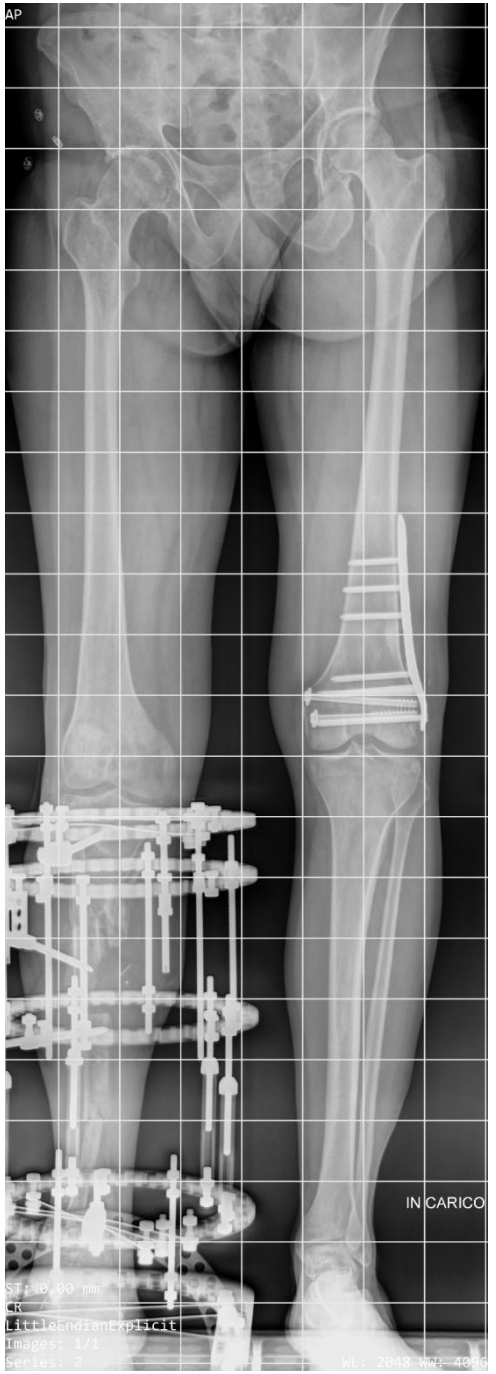




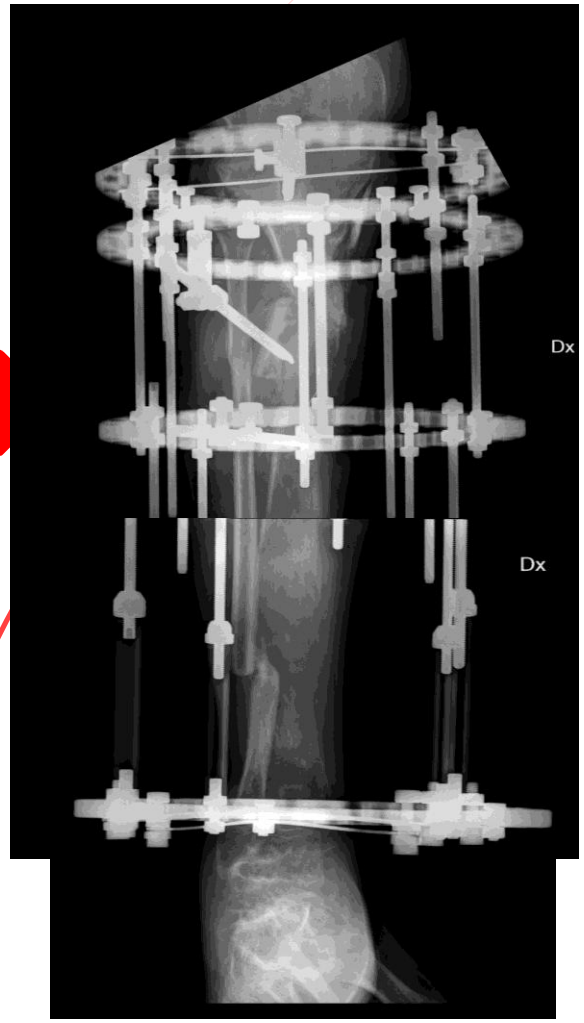
(**+251**) :Resolution of cutaneous issues and restart of bone transport

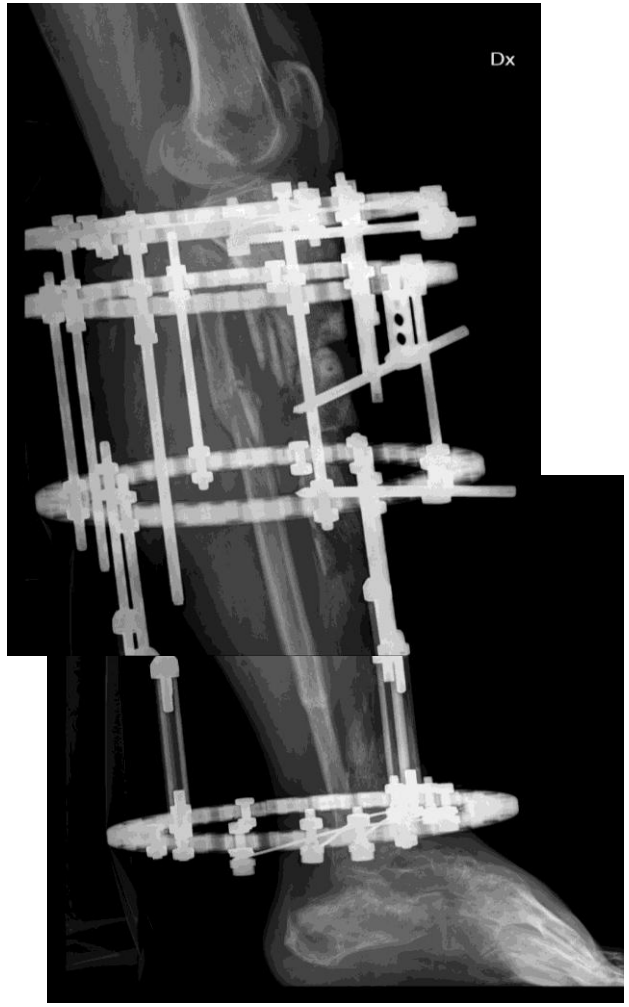


(+293) The radiographic imaging shows a right-sided limb length discrepancy (hypometria) of approximately 3 cm; therefore, lengthening will continue for 45 days.

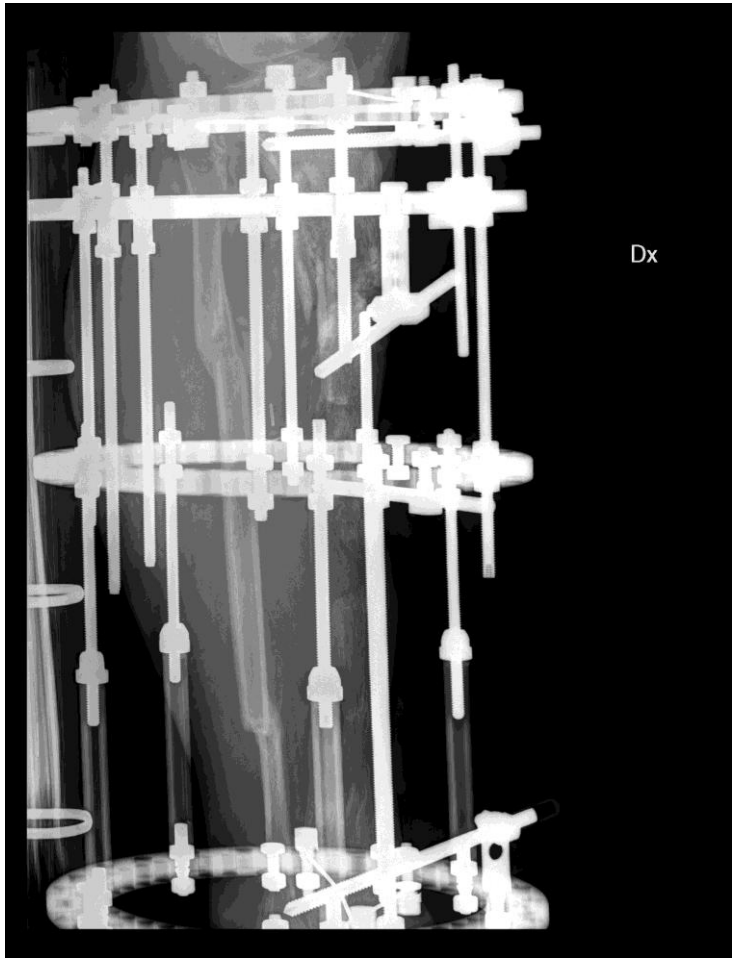


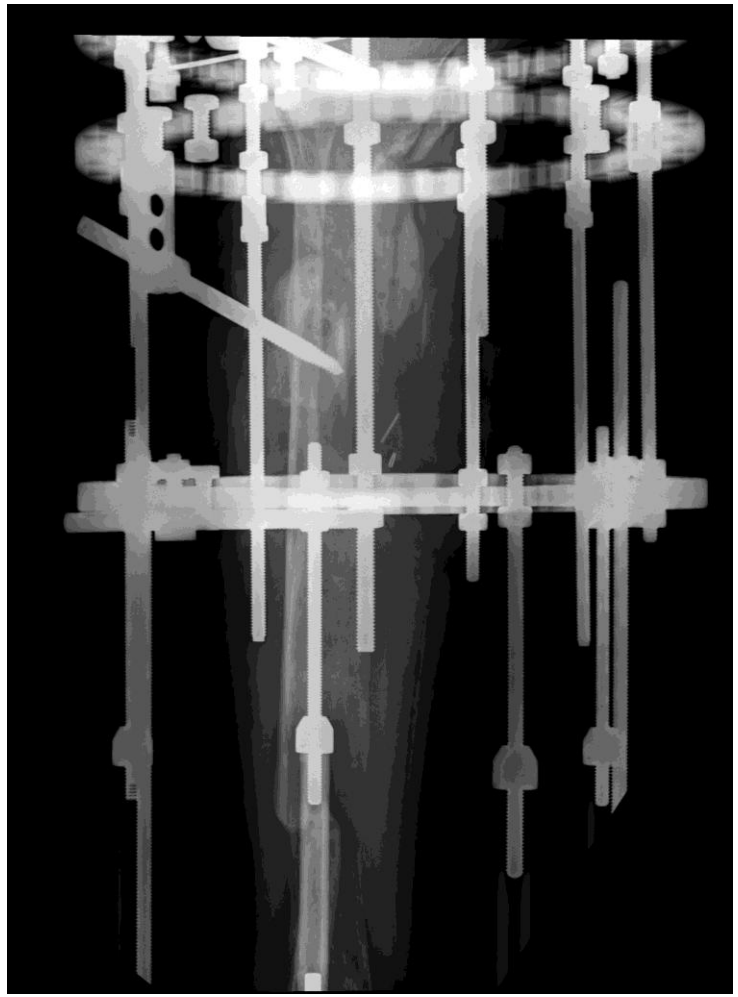
(+351) Footplate removal, revision of the proximal docking site, injection into the tibial regenerate of bone concentrate from the ipsilateral iliac crest.



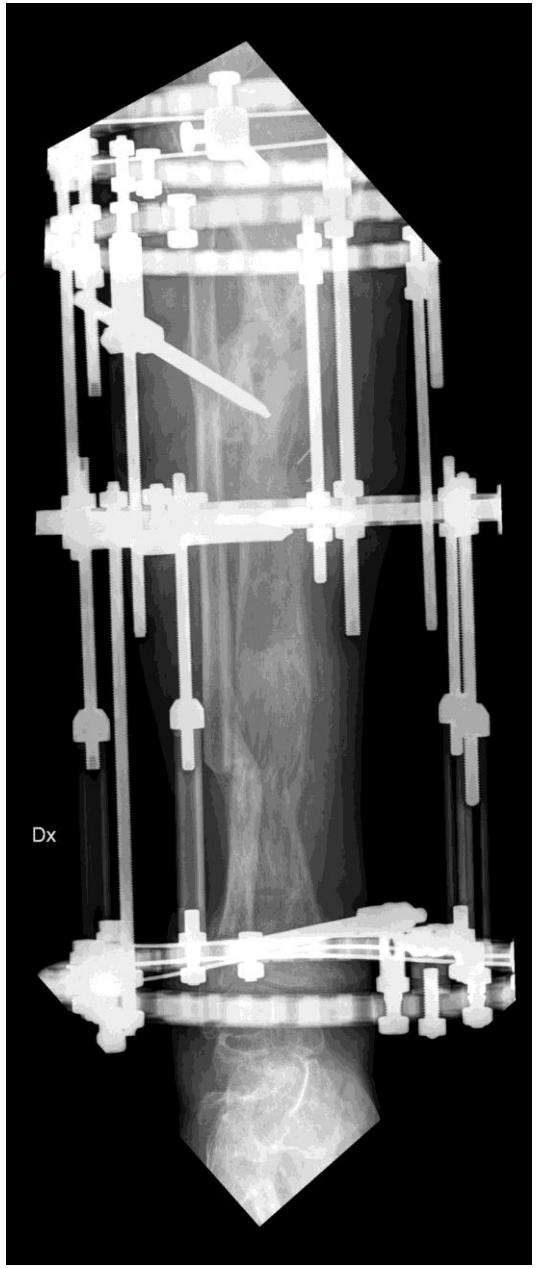


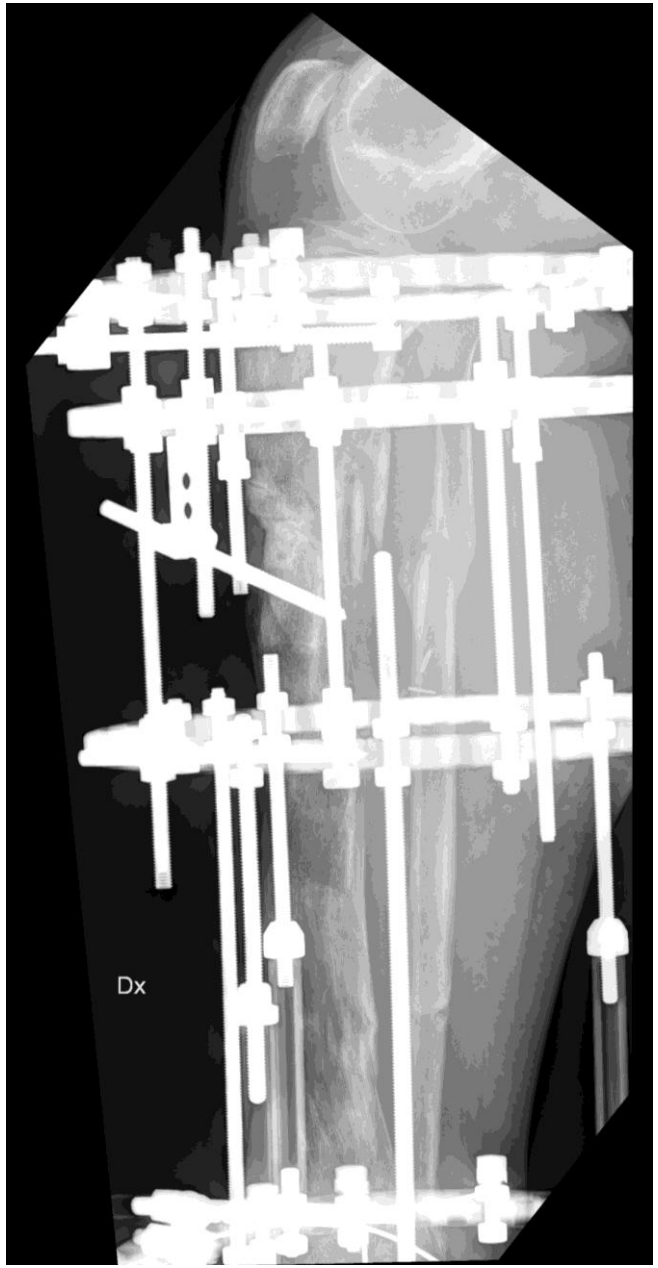
(+386): a new injection into the tibial regenerate of bone concentrate

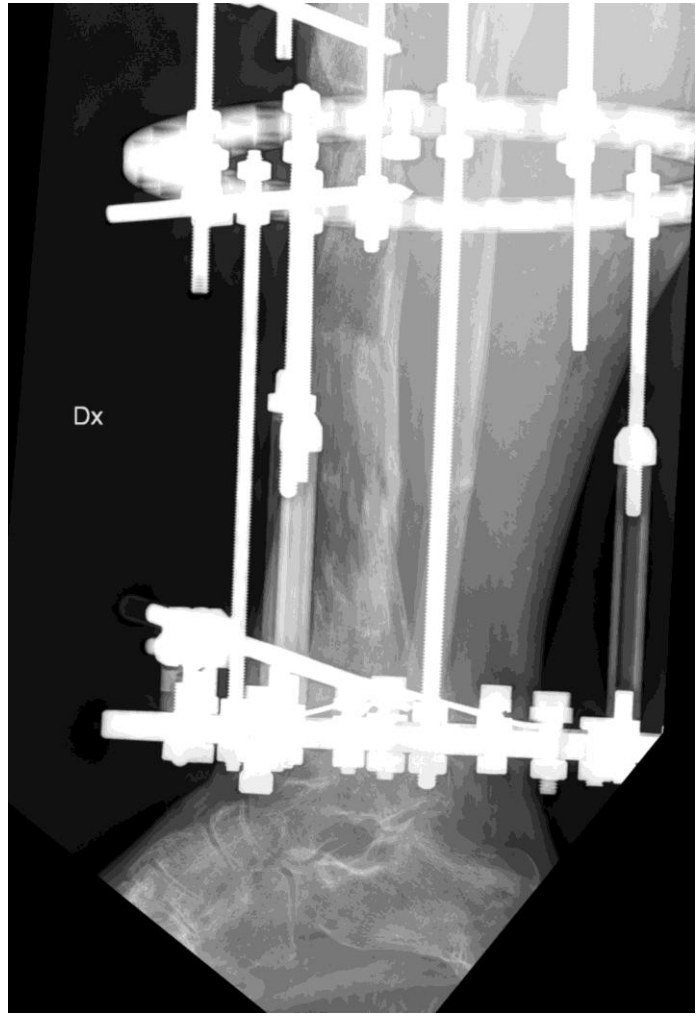




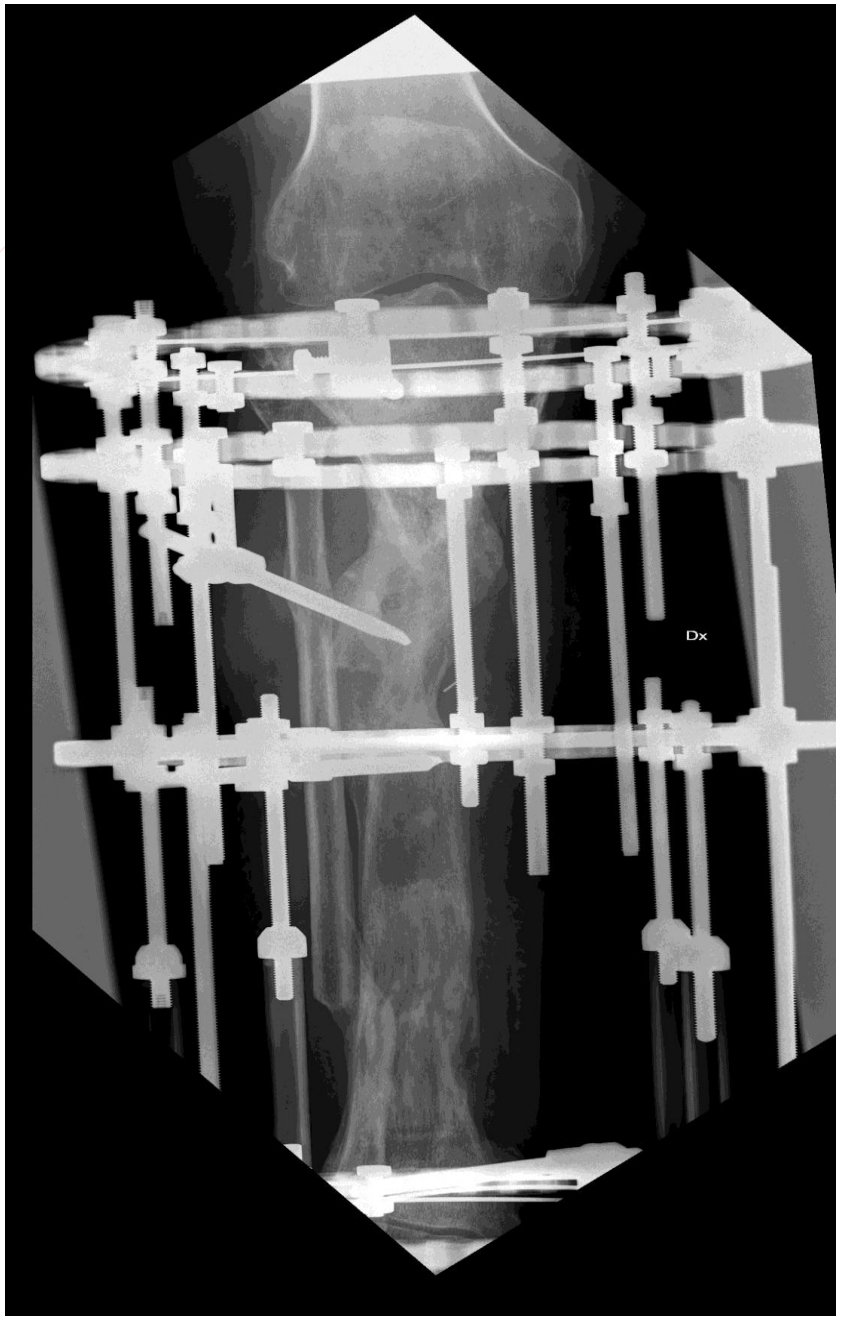
(+453)

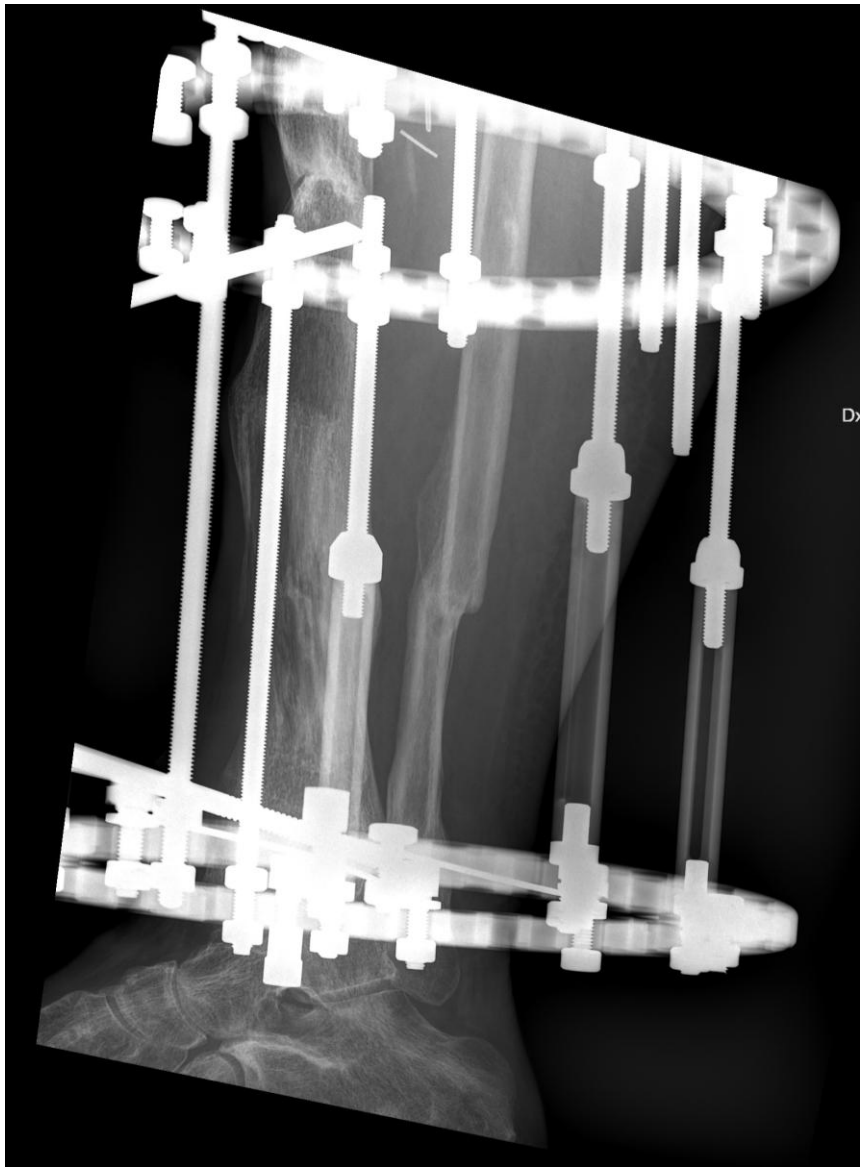






(+531)





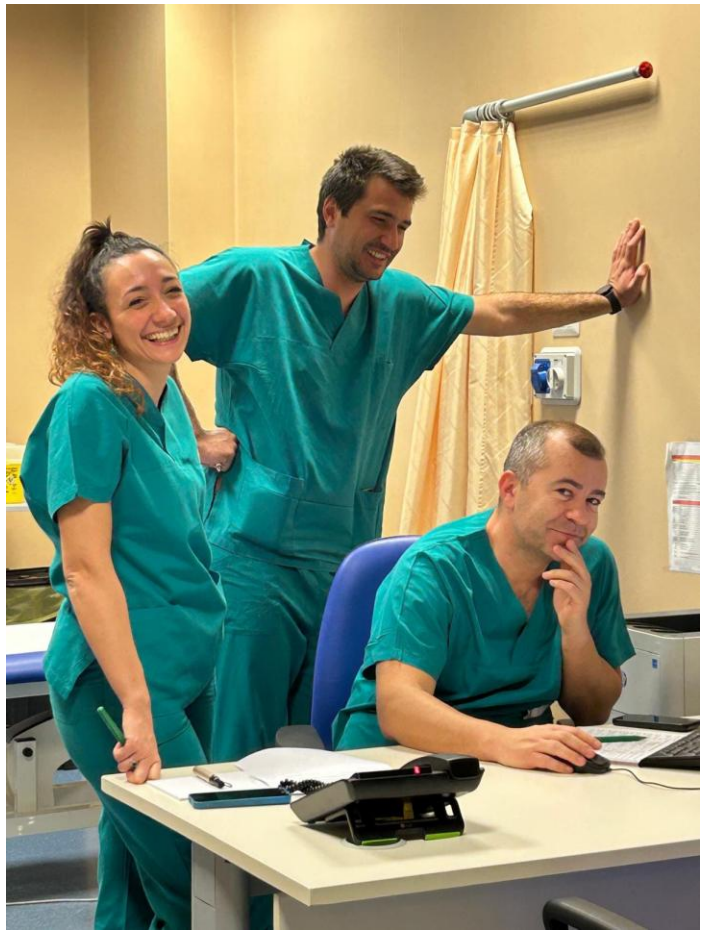
(**+540)** Removal of external fixator

(**+540)** Removal of external fixator

CONCLUSION

- **External fixation** remains the **gold standard.**
- **Magnetically actuated intramedullary nails** represent a **viable alternative** for selected patients.
- The **magnetic intramedullary nail does not completely replace** the use of external fixators.
- Both techniques have shown **comparable functional outcomes**.

Thanks for your attention!



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