

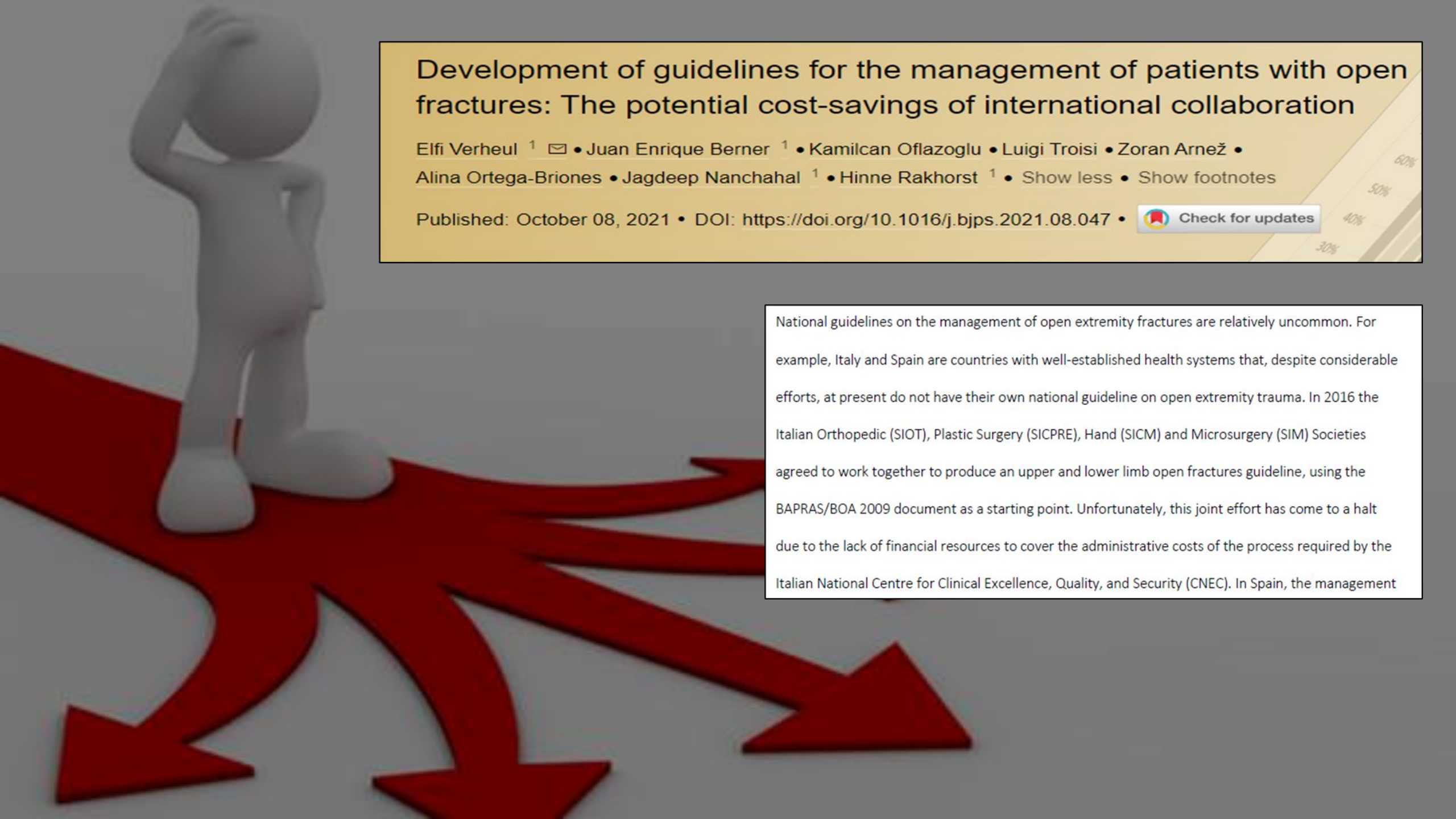


USO DI LEMBI PEDUNCOLATI NEI TRAUMI DELL'ARTO INFERIORE: RUOLO DELL'ORTOPEDICO

M.G.Lettera, G. Antonini, G.Touloupakis, E.Theodorakis
Ospedale San Carlo Borromeo, Milano



UTOPIA O
POSSIBILITÀ?



Development of guidelines for the management of patients with open fractures: The potential cost-savings of international collaboration

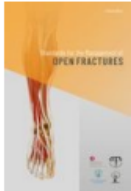
Elfi Verheul ¹ ✉ • Juan Enrique Berner ¹ • Kamilcan Oflazoglu • Luigi Troisi • Zoran Arnež • Alina Ortega-Briones • Jagdeep Nanchahal ¹ • Hinne Rakhorst ¹ • Show less • Show footnotes

Published: October 08, 2021 • DOI: <https://doi.org/10.1016/j.bjps.2021.08.047> •



National guidelines on the management of open extremity fractures are relatively uncommon. For example, Italy and Spain are countries with well-established health systems that, despite considerable efforts, at present do not have their own national guideline on open extremity trauma. In 2016 the Italian Orthopedic (SIOT), Plastic Surgery (SICPRE), Hand (SICM) and Microsurgery (SIM) Societies agreed to work together to produce an upper and lower limb open fractures guideline, using the BAPRAS/BOA 2009 document as a starting point. Unfortunately, this joint effort has come to a halt due to the lack of financial resources to cover the administrative costs of the process required by the Italian National Centre for Clinical Excellence, Quality, and Security (CNEC). In Spain, the management





Standards for the Management of Open Fractures

Simon Eccles (ed.) et al.

<https://doi.org/10.1093/med/9780198849360.001.0001>

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CHAPTER

20 Setting Up an Effective Orthoplastic Service

<https://doi.org/10.1093/med/9780198849360.003.0020> Pages 193–204

Published: August 2020

Operational requirements

1) Facilities:

- ◆ Access to trauma operating lists 24/7 for those fractures requiring immediate surgical intervention, such as the devascularised limb or the highly contaminated wound, or for return to theatre for a complication such as a compromised free flap.
- ◆ Availability of combined operating lists for provision of definitive fixation and potential free flap coverage of open fractures during the week.
- ◆ Weekly clinic for review.
- ◆ Regular multidisciplinary team clinic with orthopaedic and plastic surgeons, physiotherapists, rehabilitation specialist, radiologist, microbiologist/infectious disease consultant.
- ◆ Information technology support.

2) Personnel:

- ◆ Plastic and orthopaedic consultant surgeons with a major commitment to trauma in their job plans and who can provide a full on-call service 24 hours a day, 7 days a week.
- ◆ Specialist nursing teams on the ward who have the skills to care for the complex trauma patient from both an orthopaedic and plastic surgery perspective, in particular with reference to managing the postoperative course for both plastic surgery free tissue transfer and orthopaedic circular frames, external fixators, and pin sites.
- ◆ Consultant microbiologist.
- ◆ Specialist theatre staff for orthopaedic fixation and free flap surgery.
- ◆ Outpatient nursing for dressings.
- ◆ Plaster technicians and orthotic expertise.
- ◆ Physiotherapists for mobilisation and care of the polytrauma patient.
- ◆ Rehabilitation expertise with reference to amputation and prosthetic requirements.
- ◆ Consultant rehabilitation specialists.
- ◆ Dedicated administrative support.



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p. 202

Conclusion

This chapter aims to give insight into the most important prerequisite for the delivery of the Standards: that of the orthoplastic unit. The merits of this set-up have been recognised worldwide, and yet, in the cost-pressured NHS we are yet to achieve this gold standard in all of our major trauma centres throughout England and the rest of the UK.

We have defined what is required, and highlighted the evidence for the need for this combined management. We have highlighted the difficulties encountered. **It can take 5 years or more to achieve this standard of care.** Delivering optimal outcomes in terms of a functional limb and a rehabilitated patient in a cost-efficient manner remains at the heart of service development and delivery.



LA NOSTRA ESPERIENZA

- CENTRO TRAUMATOLOGICO DI ZONA
- NO DIVISIONE DI CHIRURGIA PLASTICA

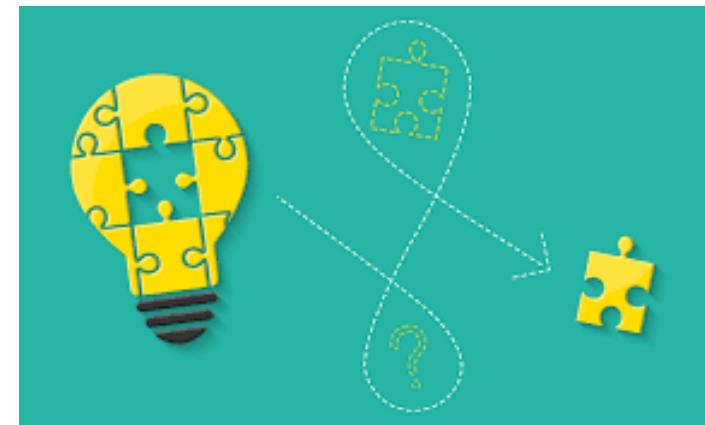
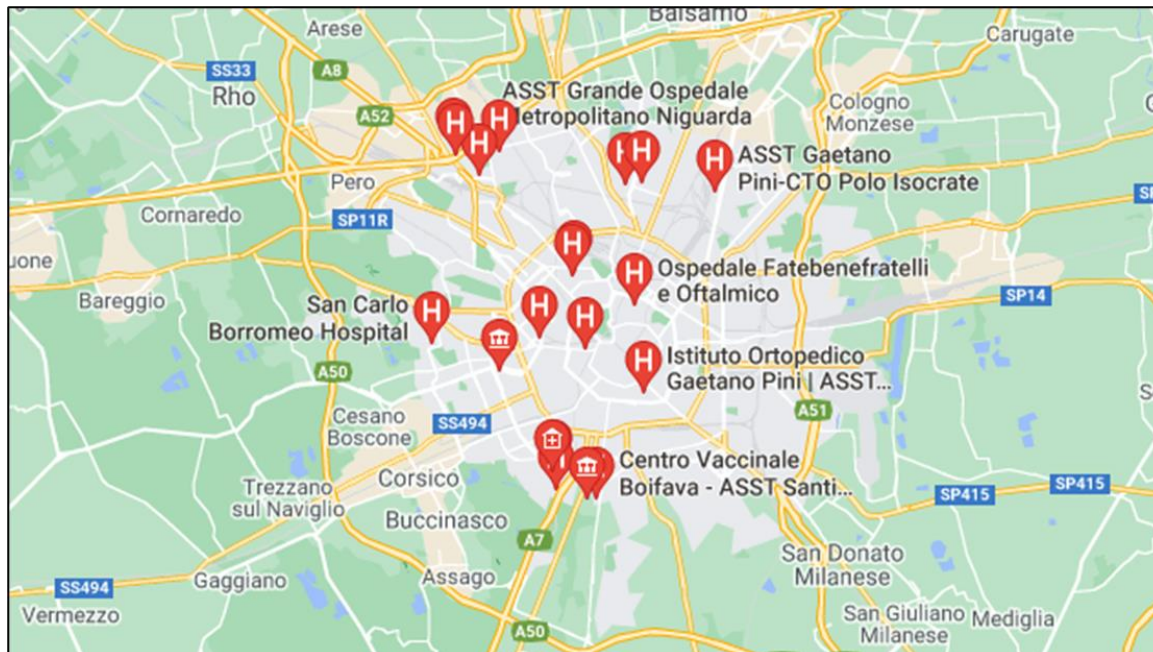


Table 1 The Gustilo grading system of open tibial fibular fractures and treatment^{12,13}

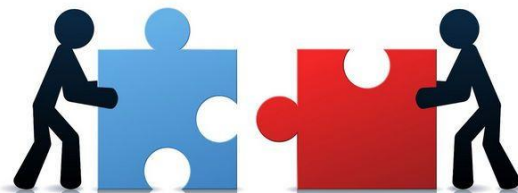
Gustilo grade	Description	Treatment
I	Open fracture, with clean wound <1 cm in length	Irrigation, debridement, ORIF/EF, primary closure
II	Open fracture, with wound > 1 cm but < 10 cm in length without extensive soft-tissue damage, loss, flaps, or avulsions	Irrigation, debridement, ORIF/EF, primary closure
III	Open fracture with extensive soft-tissue lacerations (>10 cm), damage, or loss or an open segmental fracture. Subcategorized as below:	Variable, see below
IIIA	Adequate soft tissue coverage of the fractured bone despite extensive soft-tissue laceration or flaps, or high-energy trauma irrespective of wound size	Irrigation, debridement, ORIF/EF, primary closure or sometimes requires STSG or local soft tissue flap coverage
IIIB	Extensive soft-tissue injury with periosteal stripping and bone exposure. Usually associated with major contamination	Irrigation, debridement, ORIF/EF, often requires free tissue transfer or local muscle flaps or perforator based flaps
IIIC	Open fracture associated with an arterial injury requiring repair, irrespective of degree of soft-tissue injury	Irrigation, debridement, ORIF/EF, vascular repair, often requires free tissue transfer or local muscle flaps or perforator based flaps

Abbreviations: ORIF/EF, open reduction internal fixation or external fixation; STSG, split-thickness skin graft.

PROTOCOLLO DIVISIONALE

- **ANTITETANICA+ANTIBIOTICO e.v. IL PRIMA POSSIBILE (secondo protocollo aziendale)**
- **FE+ LAVAGGIO+DEBRIDEMENT (CON RICLASSIFICAZIONE) ENTRO LE 6-8 h DALL'ACCESSO IN PS**
- **COPERTURA DELLA PDS CON VAC**
- **...E POI?**

DAMAGE CONTROL ORTOPEDICO



TRATTAMENTO DELLA FERITA SECONDO I PRINCIPI CHIRURGIA PLASTICA



	<i>BAPRAS/BOA 2009</i>	<i>NICE 2016</i>	<i>Dutch 2017</i>	<i>BAPRAS/BOA 2020</i>
Prehospital management and transfer	X	Airway management, controlling haemorrhage, pain control, saline soaked dressings, prophylactic antibiotics, and splinting. Transport to major trauma/specialized centre.	Follow Netherlands National Protocol of Ambulance Care and Prehospital Trauma Life Support principles. Saline soaked dressings, align fractures, pressure bandage, and splinting. Transport to specialized centre.	Prehospital Trauma Life Support principles, Antibiotics, splinting, documentation of neurovascular status and saline soaked dressings. Transport to major trauma/specialized centre.
Multidisciplinary approach	Orthopaedic and plastic surgeons in specialized centres.	Orthopaedic and plastic surgeons in specialized centres.	Trauma/orthopaedic and plastic surgeons and rehabilitation physicians in specialized centres.	Orthopaedic and trauma surgeons, medical microbiologists, rehabilitation specialists in specialized centres.
Skeletal stabilisation	Spanning external fixation if immediate definitive fixation and soft tissue cover is not possible.	Definitive skeletal stabilisation and soft tissue cover at the same time as wound excision, if possible. Within 72 hours if soft tissue coverage not possible in first instance.	Spanning external fixation if immediate definitive fixation and soft tissue cover is not possible. Intramedullary nail is the preferred fixation method.	Spanning external fixation if immediate definitive fixation and soft tissue cover coverage is not possible. Definitive internal fixation only if there is minimal contamination and if definitive soft tissue cover can be achieved immediately. Otherwise ideally within 72 hours. Use multiplanar circular fixator if there is significant contamination or bone loss.
Soft tissue reconstruction	<u>As soon as possible, within 1 week.</u> At same time as internal fixation.	Definitive skeletal stabilisation and soft tissue cover at the same time as wound excision (debridement) if possible. <u>Otherwise within 72 hours.</u>	<u>As soon as possible, within 1 week.</u> Should be performed at same time as definitive fixation.	Definitive skeletal stabilisation and soft tissue cover at the same time as wound excision if possible. Otherwise definitive soft tissue coverage within 72 hours. Use local flaps only for patients with limited zone of injury.

Development of guidelines for the management of patients with open fractures: The potential cost-savings of international collaboration

CASI DI FRATTURA ESPOSTA- GUSTILO 3 A/B ARTO INFERIORE 2019-2022



Table 1 - Patient Data Concerning Site of Injury, Type of Flap, Comorbidities and Complications

		Patients (No.)
Sex	Men	11
	Women	6
Comorbidities	Heavy smokers	2
	Diabetes	5
	Alcohol	1
	Raynaud Syndrome	1
Site of injury	Foot	6
	Tibial malleolus	6
	Tibial diaphysis	3
	Peroneal malleolus	1
	Knee	1
Type of flap	Reverse sural flap	6
	Heymans flap	7
	Peroneus brevis flap	3
	Gastrocnemius flap	1
Complications	Hyperkeratosis of the flap	1
	Paresthesia along surgical scars	2
	Partial flap necrosis	1
	Partial necrosis of the skin graft	1



EFORT Anatomical Course
Paris, France: 21-23 January 2019

#EOTEP

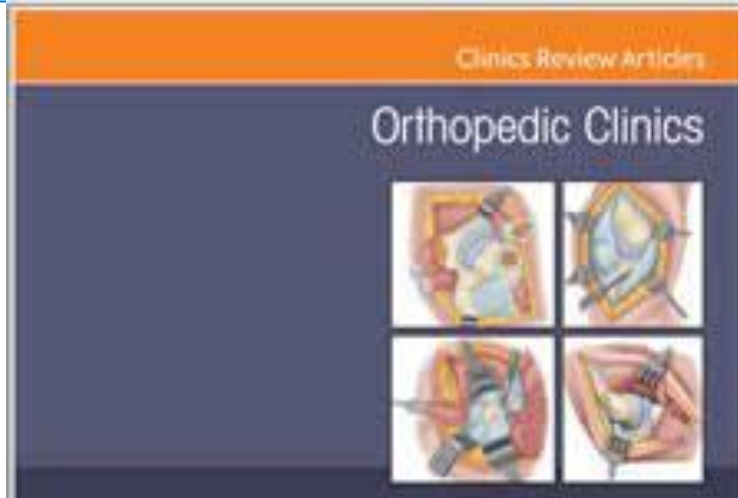


Why this evolution ? (free flaps to pedicled flaps)

- **Micro surgery : technique, not a speciality**
- **Our speciality: orthopaedic surgery**
(a lot of flaps indications: trauma, tumor, infection, knee prosthesis complications..)
- **Few plastic surgery units in Paris**
- **Free flaps are time consuming (failures exist !)**
- **Lab of surgical anatomy in Paris (easy to dissect and to undertake studies)**
- **« spirit » of reconstructive surgery (multissular)**

Posttraumatic Soft Tissue Coverage of the Lower Leg for the Orthopedic Surgeon

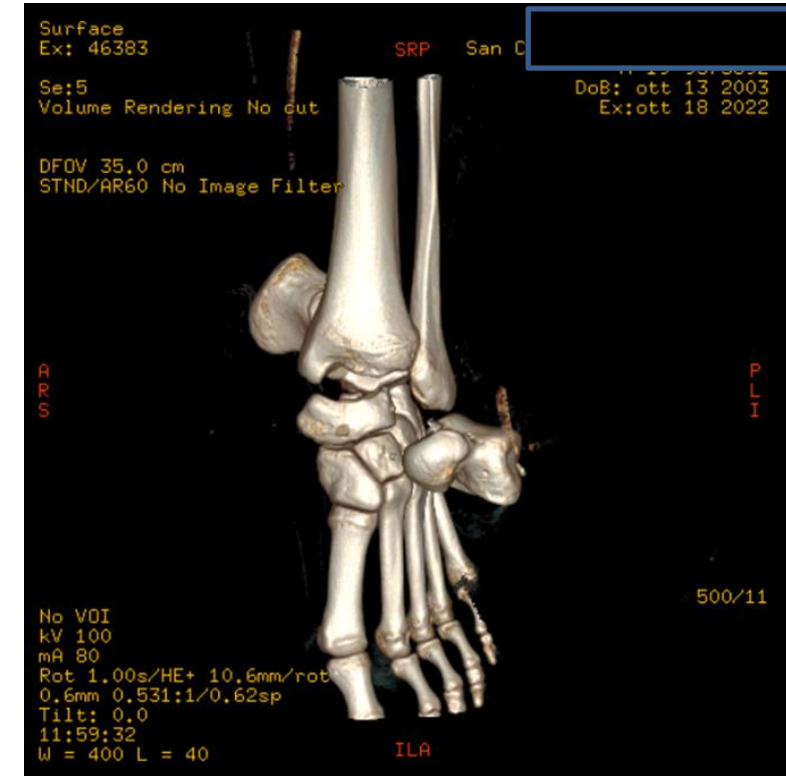
James A. Blair, MD^{a,*}, George A. Punecky, MD^a,
Thomas E. Dickerson, BS^b, Hayden D. Faith, BS^b,
Jana M. Davis, MD^a



- Soft tissue injury is prevalent in lower extremity trauma
- Management of soft tissues adjacent to fracture can dictate patient outcomes
- Orthopedic surgeons can be equipped to care for soft tissue defects
- Coverage of many lower extremity soft tissue wounds does not necessitate vascular or microvascular techniques
- A variety of skin closure methods and rotational flaps are useful tools to the orthopedic surgeon



CASO 1



OTTOBRE 2022

C.M, 18 aa, maschio

APR muta

TRAUMA DA INCIDENTE IN MOTO

PubMed.gov search results for "talar extrusion".

Search: talar extrusion

44 results

Sorted by: Best match

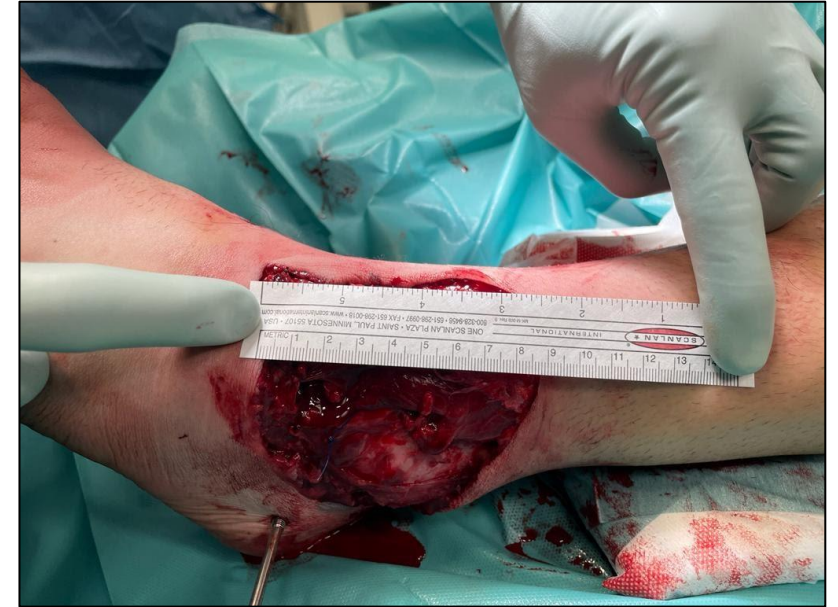
1 Complete **Extrusion of Talar Body Associated With Ipsilateral Floating Knee.**

Moussa MK, Bou Raad R, Ghanem I, Mansour O.
Cureus. 2020 Sep 9;12(9):e10346. doi: 10.7759/cureus.10346.
PMID: 33062470 [Free PMC article.](#)

Its complete detachment from the surrounding ligaments and bone is known as **talar extrusion**, a very rare injury with a complicated treatment course. We report a case of a 43-year-old female patient presenting with a non-retrieved complete left **talar body e ...**

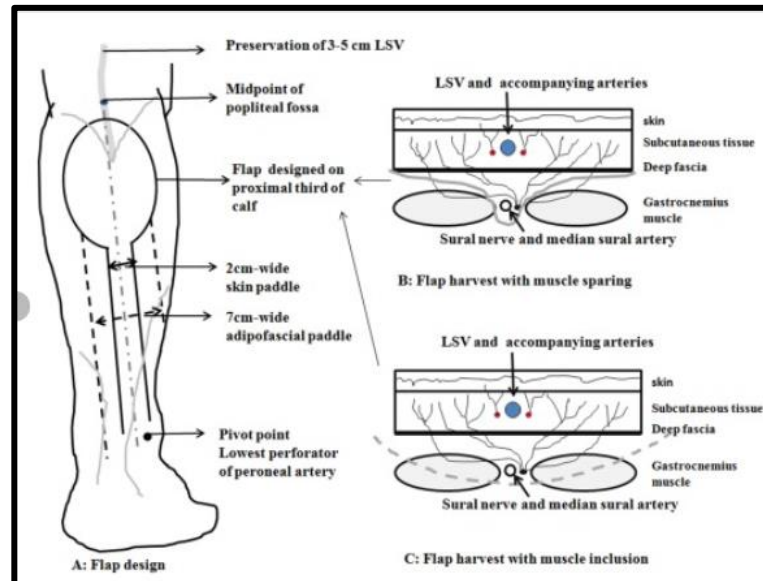
IN URGENZA

- LAVAGGIO
- AMPIO DEBRIDEMENT
- PDS CUTANEA DI CIRCA 14X9 CM CON ESPOSIZIONE ESTENSORI E APICE MALLEOLO PERONEALE
- RIPOSIZIONAMENTO DELL'ASTRAGALO IN SEDE
- FE+FILO PER ARTRODESI PROVVISORIA
- VAC THERAPY



OTTOBRE 2022 (7 GG DAL TRAUMA):

- SURAL ADIPOFASCIAL FLAP REVERSE
- SOSTITUTO DERMICO DOPPIO STRATO FENESTRATO E VAC THERAPY (-50 MM HG)PER 15 GG
- INNESTO +VAC THERAPY PER 5 GG



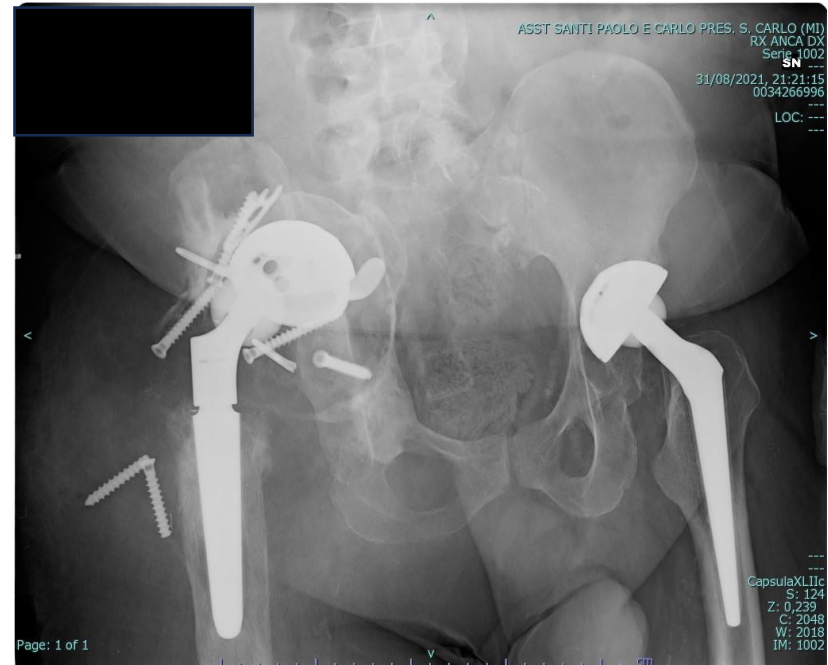
CONTROLO A 1 ANNO (OTTOBRE 2023)

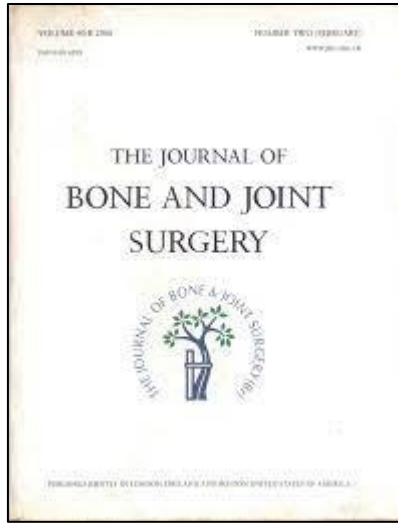


CASO 2

MARZO 2022

- D.G.F, 61 aa, maschio
- A.P.R.
- S. DI CHARCOT-MARIE-TOOTH
- EPILESSIA
- LUSSAZIONE CONGENITA DI ANCA
- DIVERSI INTERVENTI DI REVISIONE PTA DX
(NESSUNA DOCUMENTAZIONE CLINICA)
PZ NON DEAMBULANTE
- FISTOLA CUTANEA(TAMPONE + E.CLOACAE)
- PCR 10.93





Vastus lateralis muscle flap for infected hips after resection arthroplasty

A. J. Suda,
V. Heppert

*From BG Trauma
Centre,
Ludwigshafen,
Germany*

We evaluated the potential of a vastus lateralis muscle flap in controlling infection after resection arthroplasty of the hip. We retrospectively reviewed 119 patients with 120 chronic infections after resection arthroplasty treated with this procedure. The flap was fixed with Mitek anchors in the acetabular cavity. The mean duration of infection after resection before the muscle flap procedure was 6.5 months (2 to 13). The patients had previously undergone a mean of 4.9 operations (2 to 25). In all patients the infected cavity was the origin of the persistent infection. The mean follow-up was for 2.6 years (1.0 to 4.7).

No patient had recurrent infection post-operatively and all had an improvement in the pain and better quality of life.

Variability and reliability of the vastus lateralis muscle anatomy

Salvatore D'Arpa, Francesca Toia, Erich Brenner, Carlo Melloni, Francesco Moschella & Adriana Cordova

Conclusions

Moderate variability exists in both the myological and the neurovascular anatomy of the VL. Despite this variability, the anatomy of the VL always shows a constant segmental pattern, which makes the VL a reliable flap donor. The anatomical details provided can be useful in a broader clinical field.

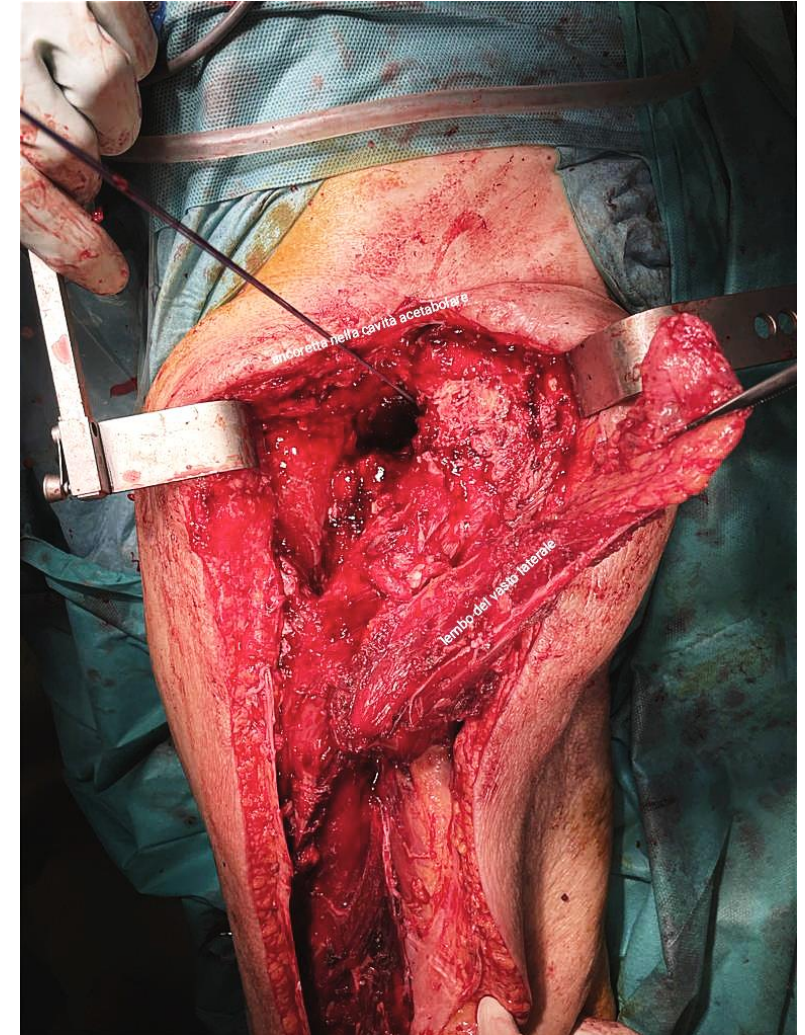
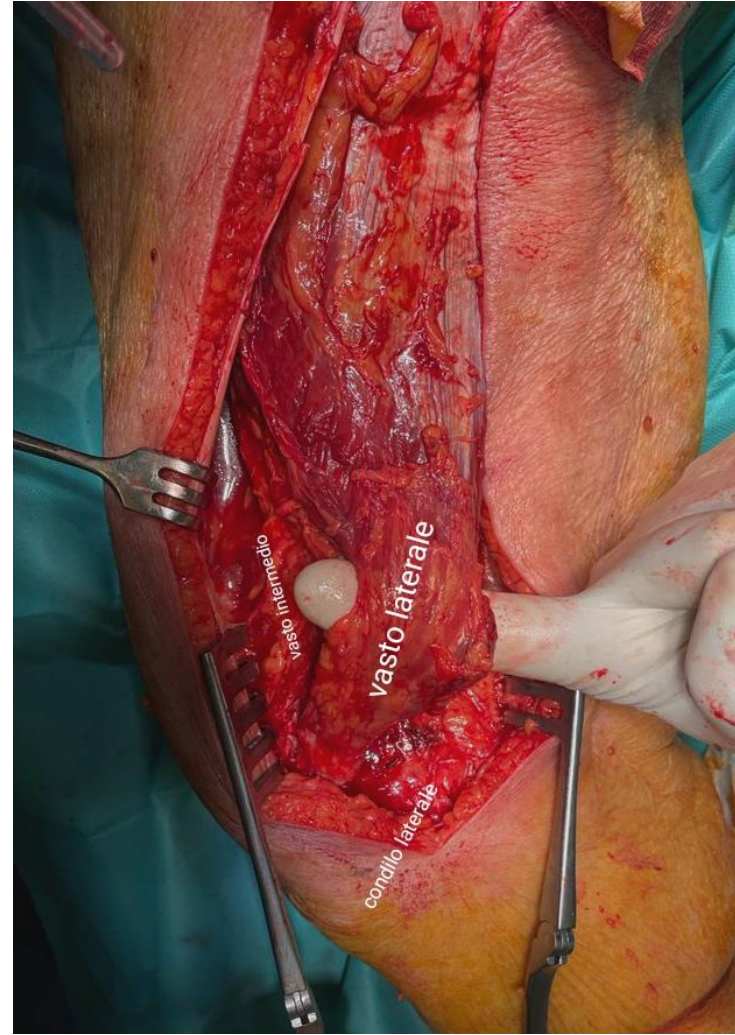
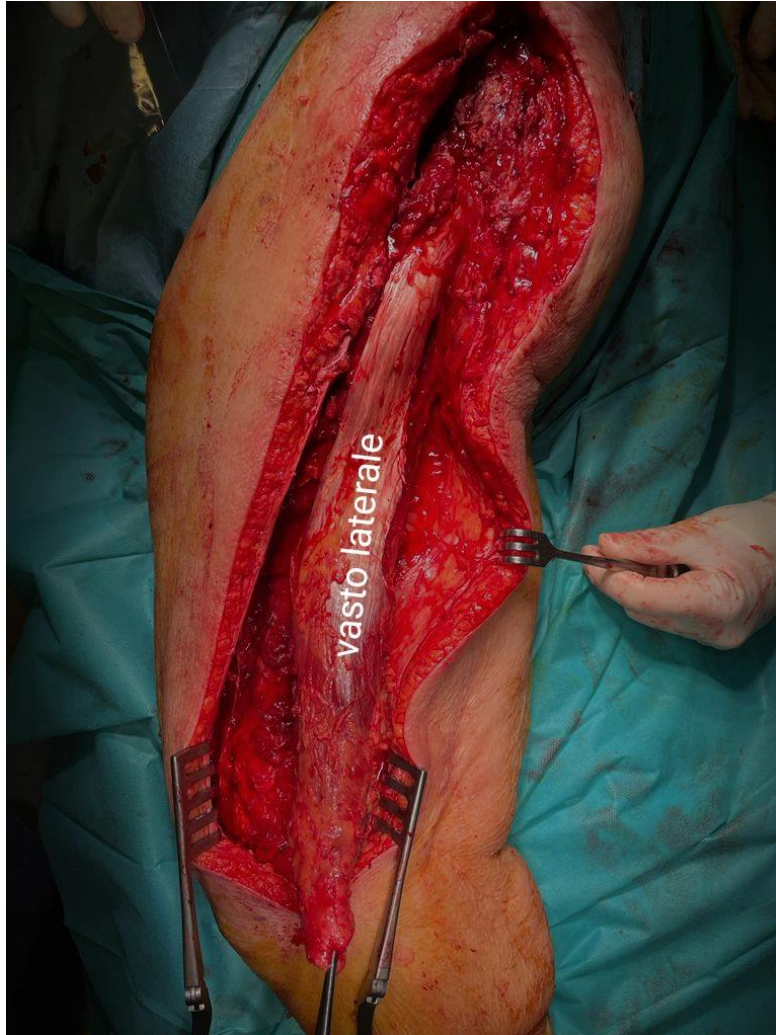


Table 1. The vastus lateralis segmental anatomy.

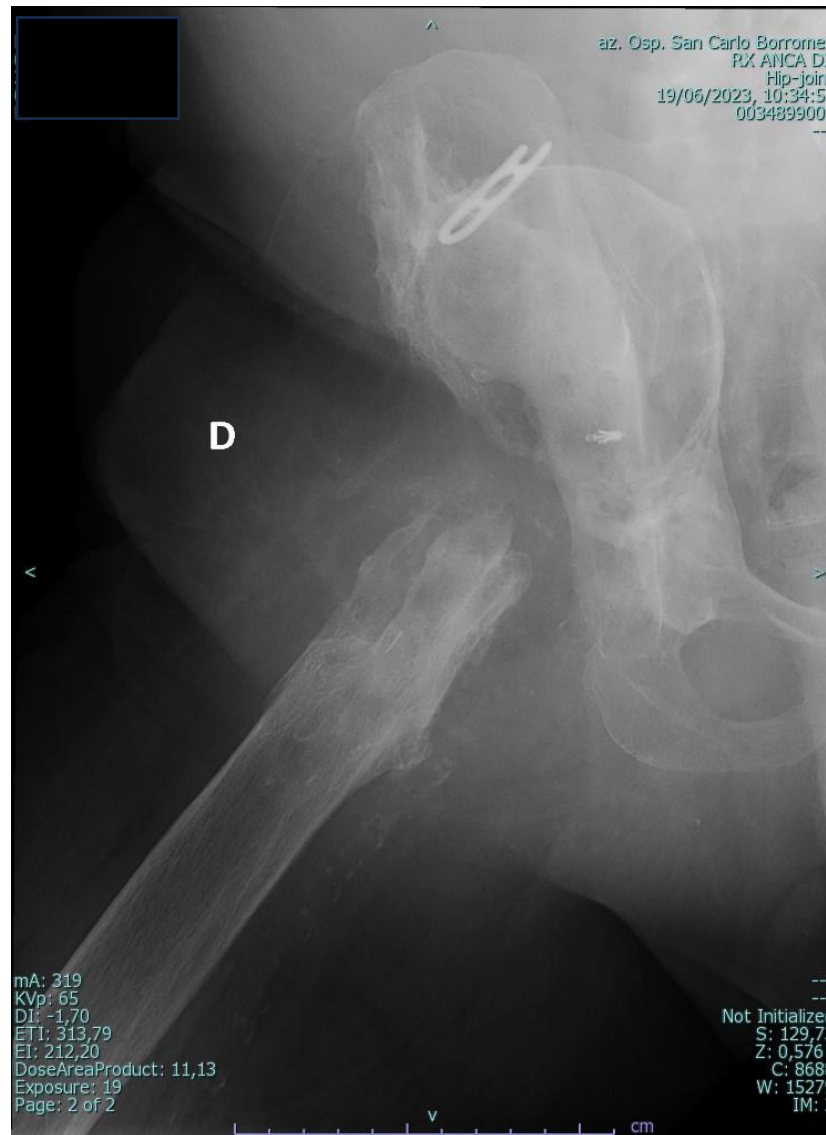
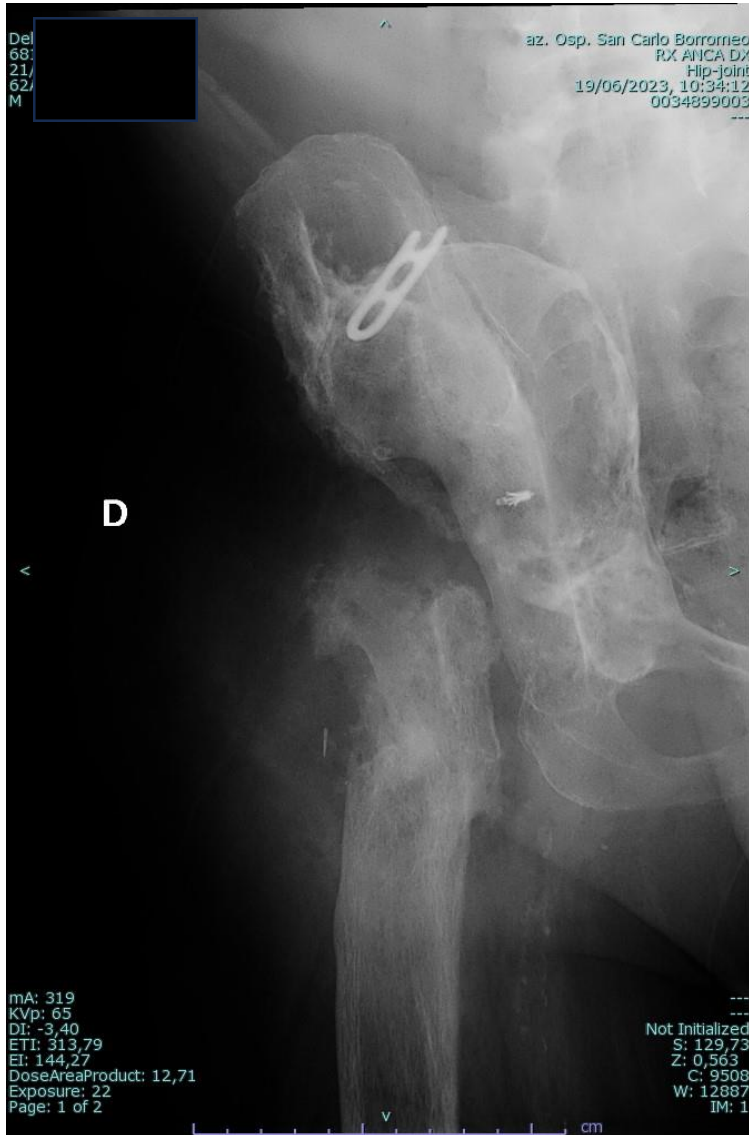
		Origin	Insertion	Blood supply	Nerve supply
Aponeuroses	Superficial aponeurosis	Great trochanter	Superficial Partition		
	Deep aponeurosis	Continuation of the intermediate partition	Base of the patella		
Partitions	Superficial partition	Deep surface of the superficial aponeurosis and lateral intermuscular septum	Deep aponeurosis and lateral border of the rectus femoris tendon	Descending branch of the LCFA	Middle branch of the femoral nerve to the VL
	Intermediate partition	Great trochanter	Patella (through the deep aponeurosis)	Transverse branch of the LCFA	Most lateral branch of the femoral nerve to the VL
	Deep partition	Lateral lip of the linea aspera of the femur and lateral intermuscular septum	VL tendon, lateral border of the patella and lateral retinaculum	Perforating branches of the deep artery of thigh and deep branch of the superior lateral genicular artery	Most medial branch of the femoral nerve to the VL

Origin and insertion of its two intramuscular aponeuroses and three partitions; blood and nerve supply of its three partitions. LCFA: lateral circumflex femoral artery; VL: vastus lateralis muscle.

INTERVENTO CHIRURGICO (APRILE 2022):
GIRDLESTONE+DEBRIDEMENT+SOLFATO DI CALCIO ANTIBIOTATO+VASTUS
LATERALIS FLAP



CONTROLLO A 1 ANNO (AGOSTO 2023)



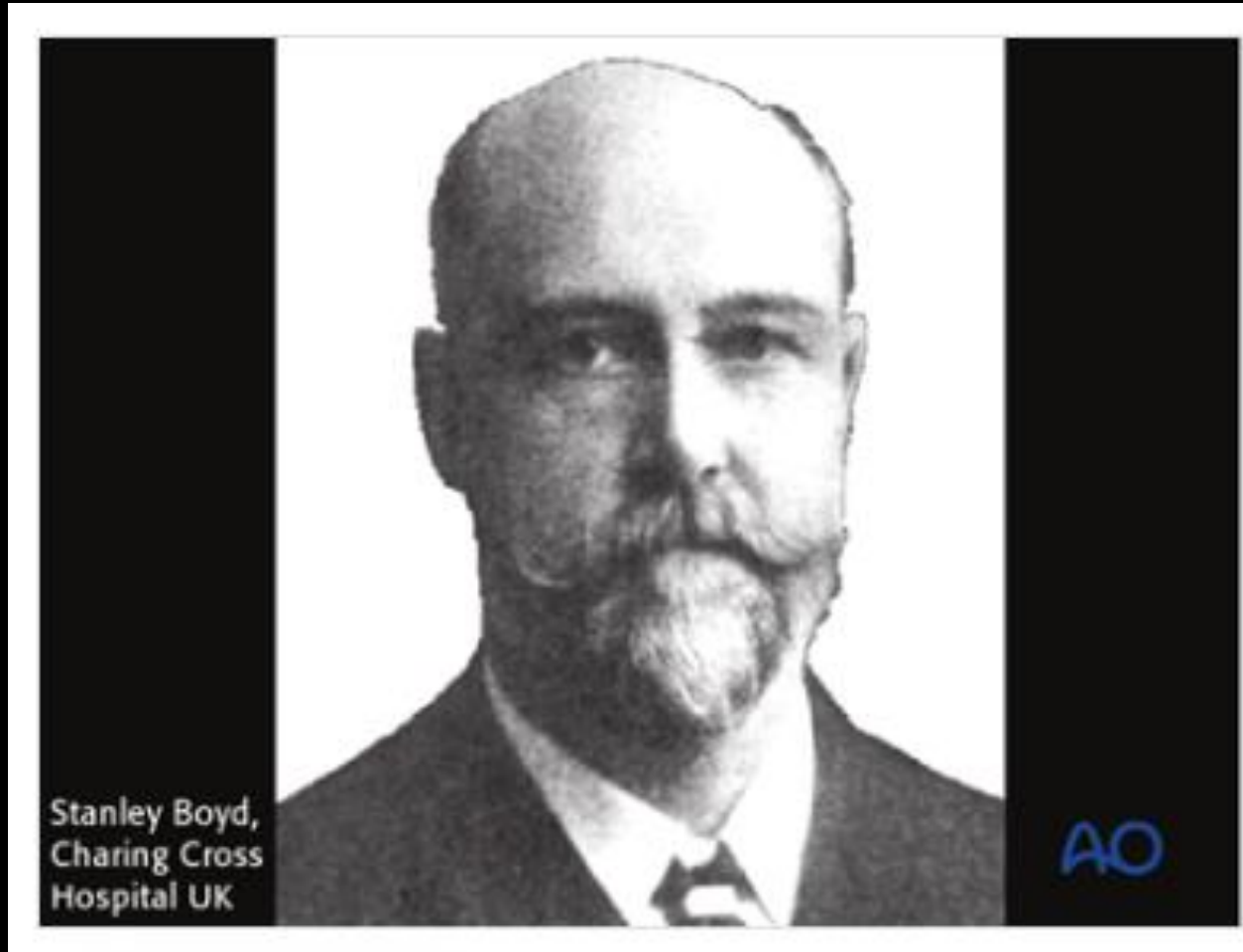
...WHAT I LEARNED FROM...

- LEMBI PEDUNCOLATI E MUSCOLARI:INTERVENTI NON SEMPLICI MA RIPRODUCIBILI,BASATI SU VASI ANATOMICAMENTE COSTANTI-STRUTTURE SACRIFICABILI SENZA IMPORTANTI ESITI FUNZIONALI
- NON NECESSARIO APPROCCIO MICROCHIRURGICO
- RISPARMIO DI ASSI VASCOLARI PRINCIPALI
- UTILI NELLA COPERTURA DELLE ESPOSIZIONI DI PICCOLE/MEDIE DIMENSIONI





YES
WE
CAN



GRAZIE

«THE MOST IMPORTANT DIVISIONS OF FRACTURES-SIMPLE, COMPOUND AND COMPLICATED-ARE BASED UPON CONDITION OF THE SOFT PARTS»

S.Boyd, 1895