SIFE
SOCIETÀ ITALIANA
FISSAZIONE ESTERNA

CONGRESSO NAZIONALE SOCIETÀ ITALIANA FISSAZIONE ESTERNA

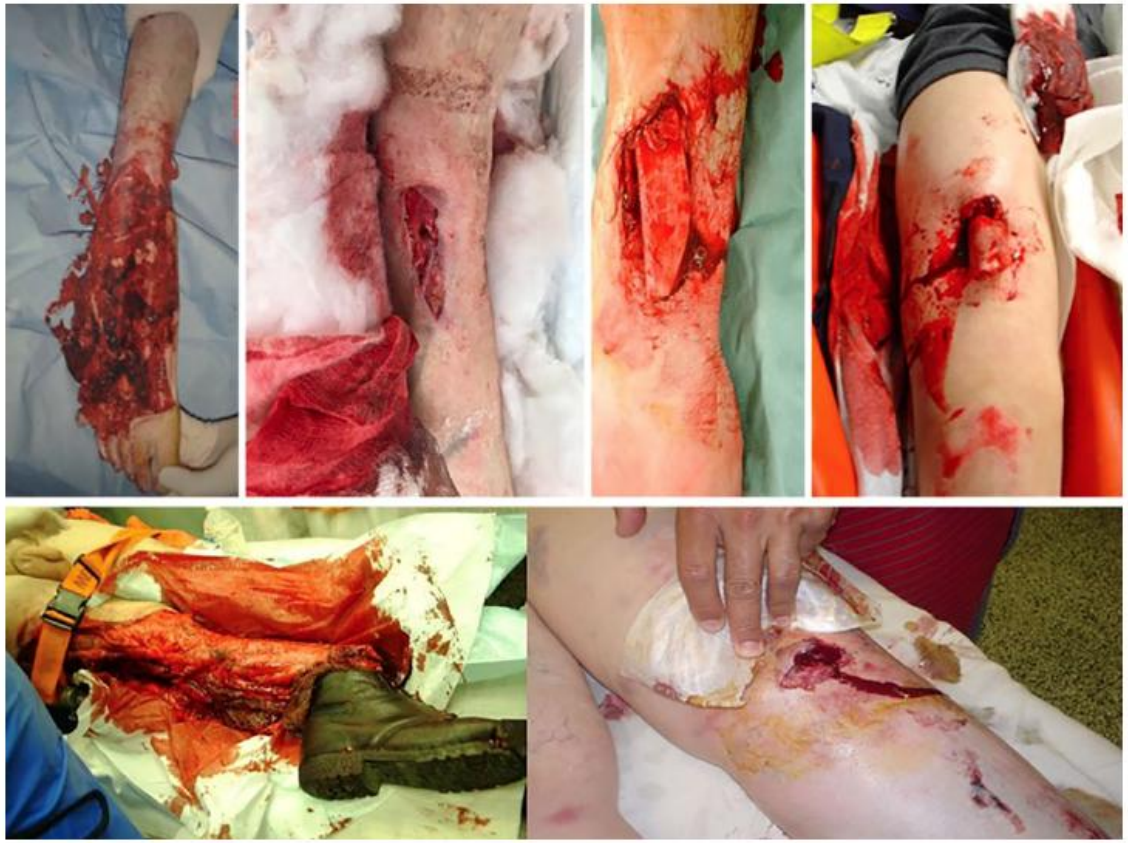
Fissazione esterna nel trattamento delle emergenze e traumi militari, tecniche di ricostruzione degli arti e trattamento degli esiti postraumatici

ROMA

2025

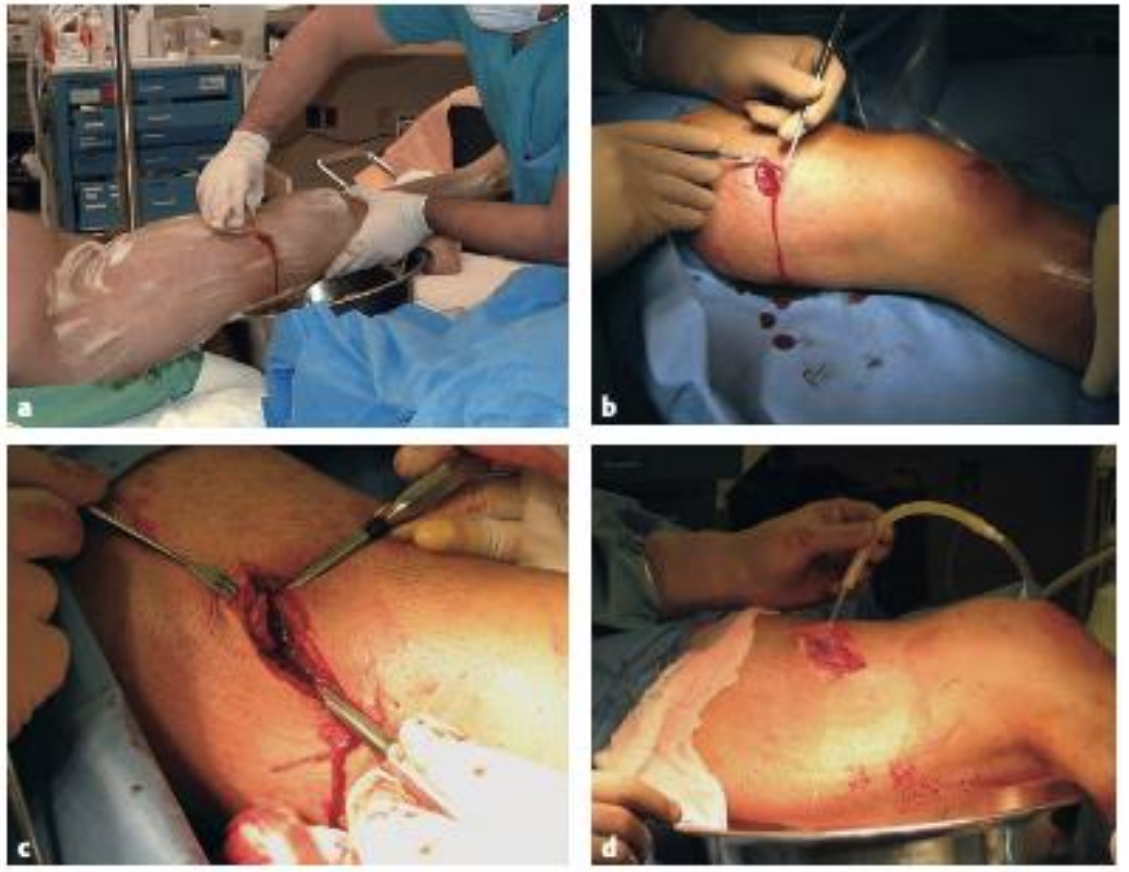
16-17 MAGGIO 2025

- ***Le fratture esposte di tibia rappresentano una sfida chirurgica e clinica***
- ***Incidenza delle fratture di tibia 8.1-37/100.000 casi all'anno, il 25% sono fratture esposte***
- ***Rischio elevato di infezione e complicanze***
- ***Scelta del metodo di stabilizzazione ossea influenzata dallo stato dei tessuti molli***



Corona P. et al - Outcomes of two circular external fixation systems in the definitive treatment of acute tibial fracture related infections - Injury 53 (2022) 3438–3445

- *History and mechanism of injury*
- *Vascular and neurological status of the extremity*
- *Size of the skin wound*
- *Muscle crush or loss*
- *Periosteal stripping and bone vascularity*
- *Fracture pattern, fragmentation, and/or bone loss*
- *Contamination*
- *Compartment syndrome*

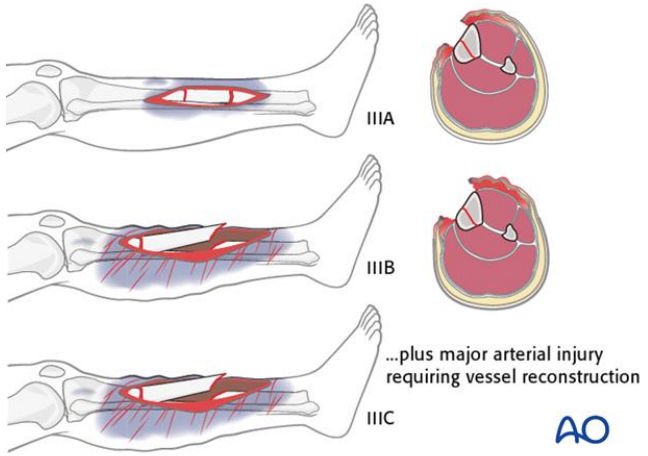


- EFORT Open Rev 2018;3 DOI: 10.1302/2058-5241.3.170072

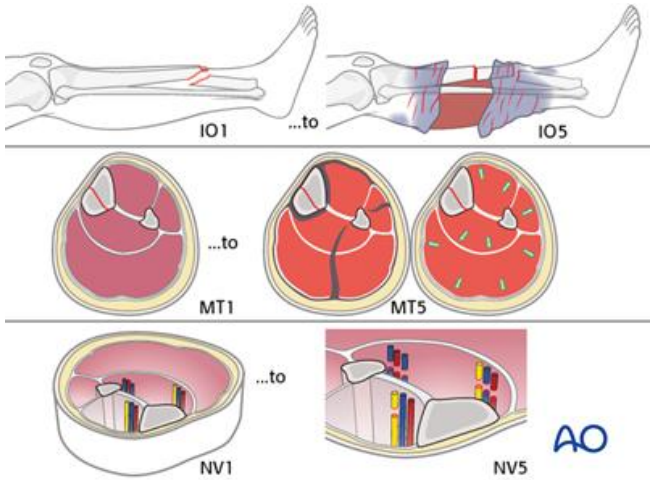
Classificazione di Gustilo-Anderson

Type	Description
I	Skin wound less than 1 cm
	Clean
	Simple fracture pattern
II	Skin wound more than 1 cm
	Soft-tissue damage not extensive
	No flaps or avulsions
	Simple fracture pattern
III	High-energy injury involving extensive soft-tissue damage
	Or multifragmentary fracture, segmental fractures, or bone loss irrespective of the size of skin wound
	Or severe crush injuries
	Or vascular injury requiring repair
	Or severe contamination including farmyard injuries

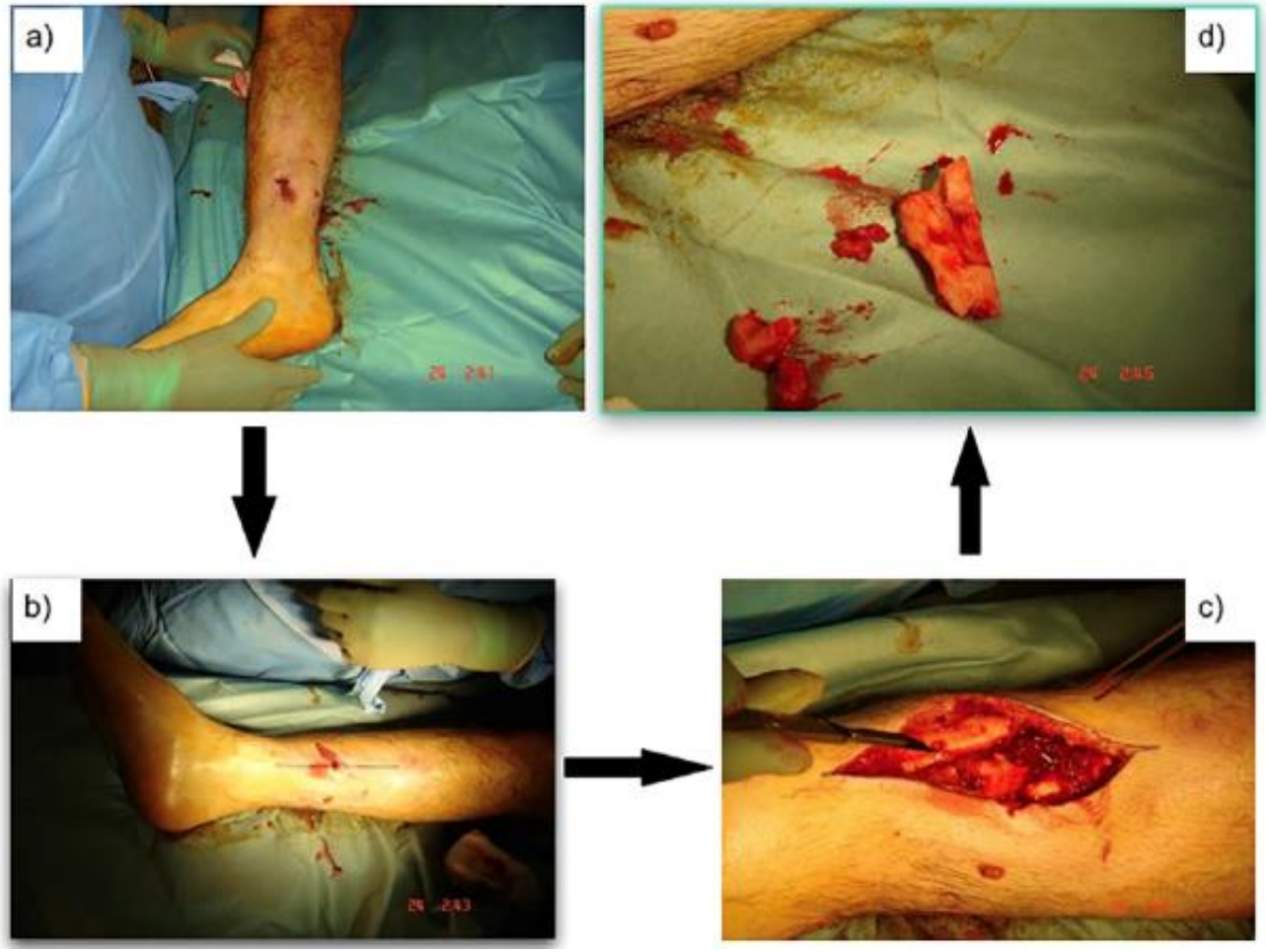
AO



Classificazione di Tscherne



….The change in terminology from ***debridement*** *to* ***wound excision*** *then encourages the concept that completion of the process relies on more than just lavage and dilution of contaminants…..*

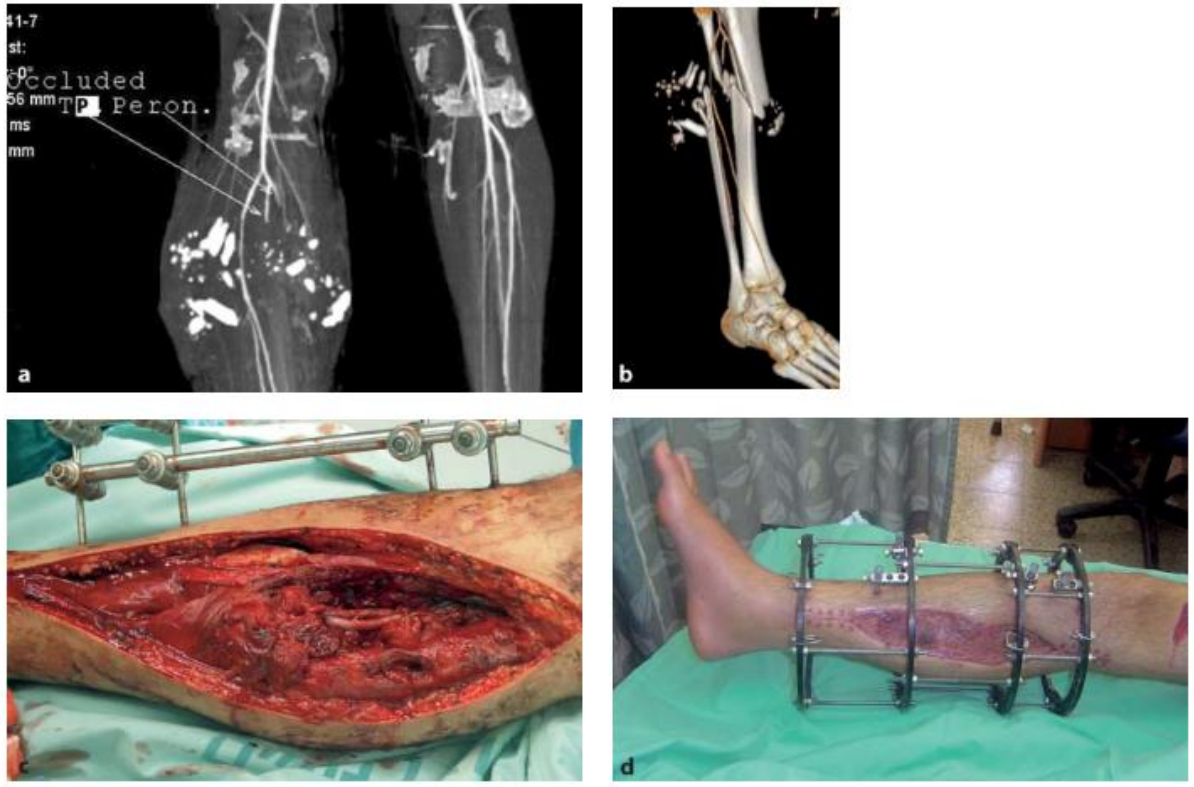


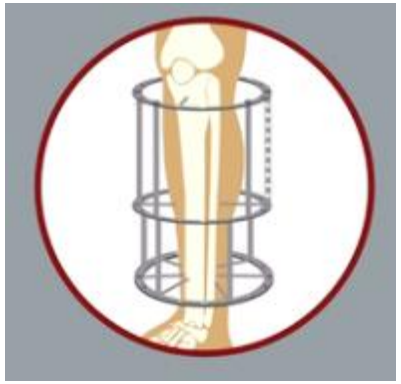
BAPRAS
British Association of Plastic Reconstructive and Aesthetic Surgeons

British Limb Reconstruction Society

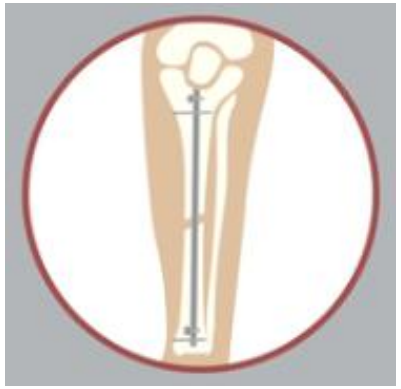
- EFORT Open Rev 2018;3 DOI: 10.1302/2058-5241.3.170072

- ***La compromissione delle parti molli e l'estesa contaminazione condizionano la scelta del metodo di fissazione e negativamente il potenziale di guarigione soprattutto nelle fratture esposte Gustilo III***





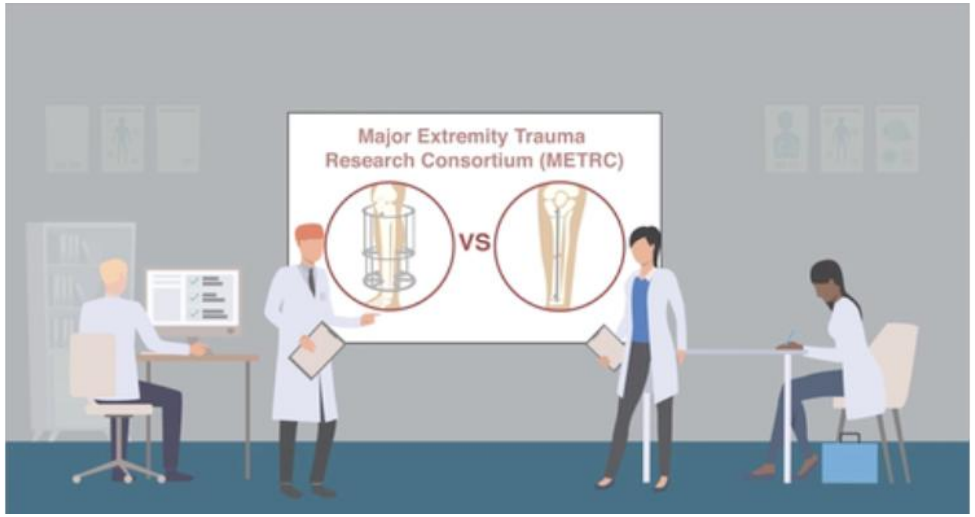
VS



- Treatment of type IIIA open fractures with Ilizarov external fixator vs unreamed tibial nailing
- Tipo: Studio prospettico su 61 pazienti
- Confronto diretto tra UTN e IEF per fratture Gustilo IIIA

- Pin-tract infection (IEF): 5 pazienti (Grade 3)
- Osteomielite: 2 in IEF, 3 in UTN
- Malunion simili in entrambi i gruppi (~4 pazienti)
- Contratture articolari solo in IEF

Inan et al.Arch Orthop Trauma Surg (2007) 127:617–623

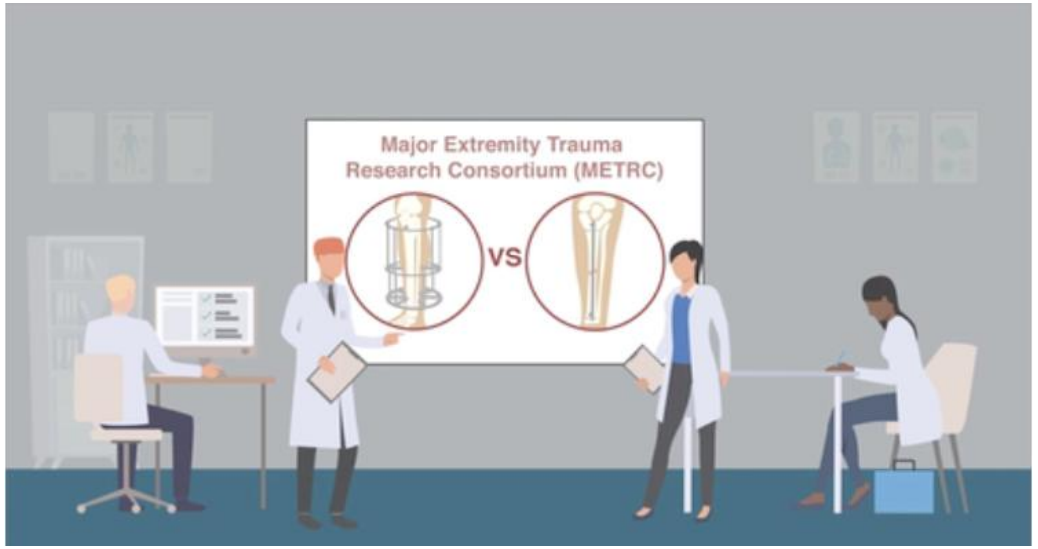


"A Prospective Randomized Trial to Assess Fixation Strategies for Severe Open Tibia Fractures: Modern Ring External Fixators Versus Internal Fixation (FIXIT Study)"

- Numero di pazienti: 127 con fissazione esterna, 133 con fissazione interna
- Tipo di fratture: IIIA e IIIB

- Complicanze maggiori: 62,1% nel gruppo FEC vs 43,7% IMN (p=0,005) (infection,flap failure, amputation, non-union, malunion)
- Perdita di riduzione/fallimento dell'impianto: rischio aumentato del 14,4% con fissatori esterni (p=0,002)
- Altre complicanze: nessuna differenza significativa (follow up 12 mesi)

O'Toole et al. - J Orthop Trauma 2017;31:S10–S17



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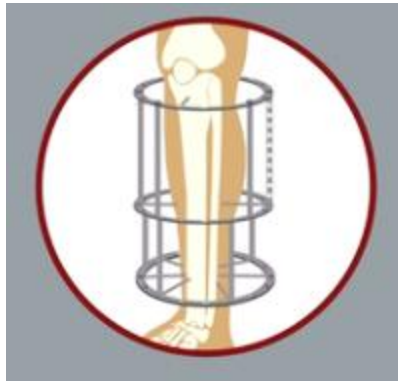
- Tipo di fratture: IIIA e IIIB

- Non si può generalizzare che tutti gli impianti interni siano superiori
- Necessità di analizzare sottogruppi specifici (IMN vs placca)
- Esperienza dei chirurghi coinvolti (expertise > 5 frames)
- Non fornisce prove definitive sulla superiorità di placca o IMN rispetto alla fissazione esterna

O'Toole et al. - J Orthop Trauma 2017;31:S10–S17



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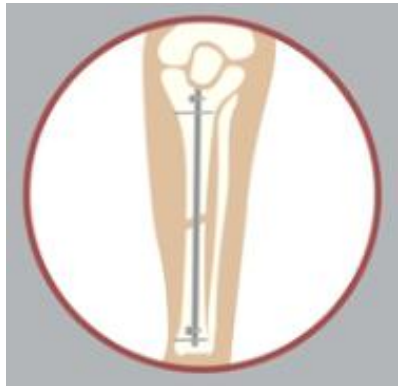
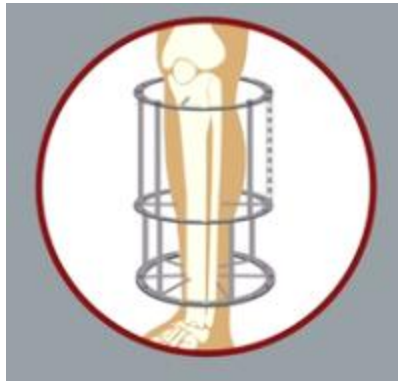


"External fixation versus intramedullary nailing for the treatment of open tibial shaft fractures: A meta-analysis of randomized controlled trials"

- IM nailing is recommended I-IIIA open tibia fractures.
- No significant difference between IM nailing and external fixation in the treatment of IIIB fractures.

Z. Chen et al. Health Sciences Review 10 (2024) 100152



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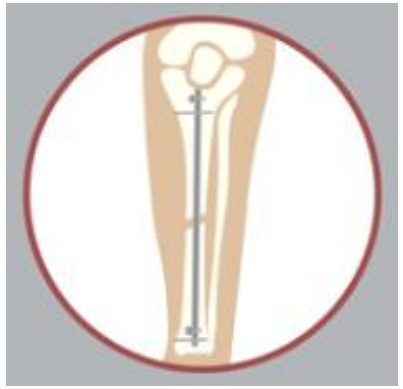


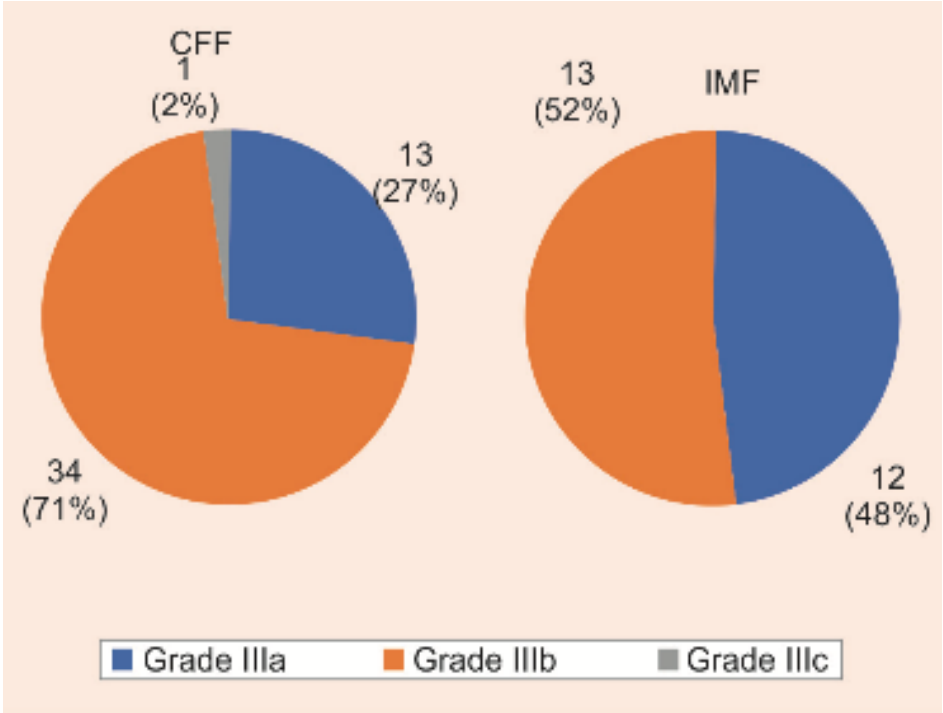
"Outcomes and Incidence of Deep Bone Infection in Grade III Diaphyseal Open Tibial Fractures: Circular Fixator vs Intramedullary Nail "

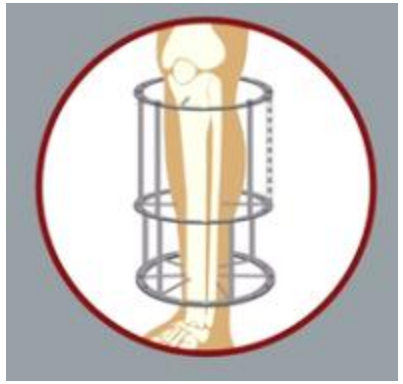
Studio retrospettivo dal 2006 al 2016

Numero di pazienti : 48
Grado III A, B e C

Gruppo CFF (81% TSF)
Gruppo IMF

Obiettivo : Incidenza DBI





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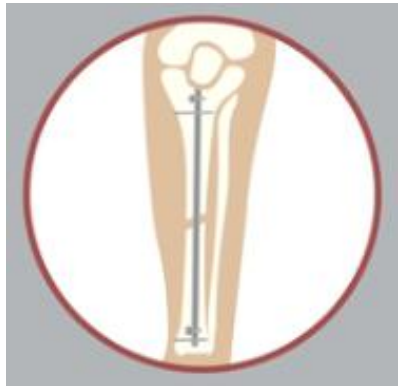

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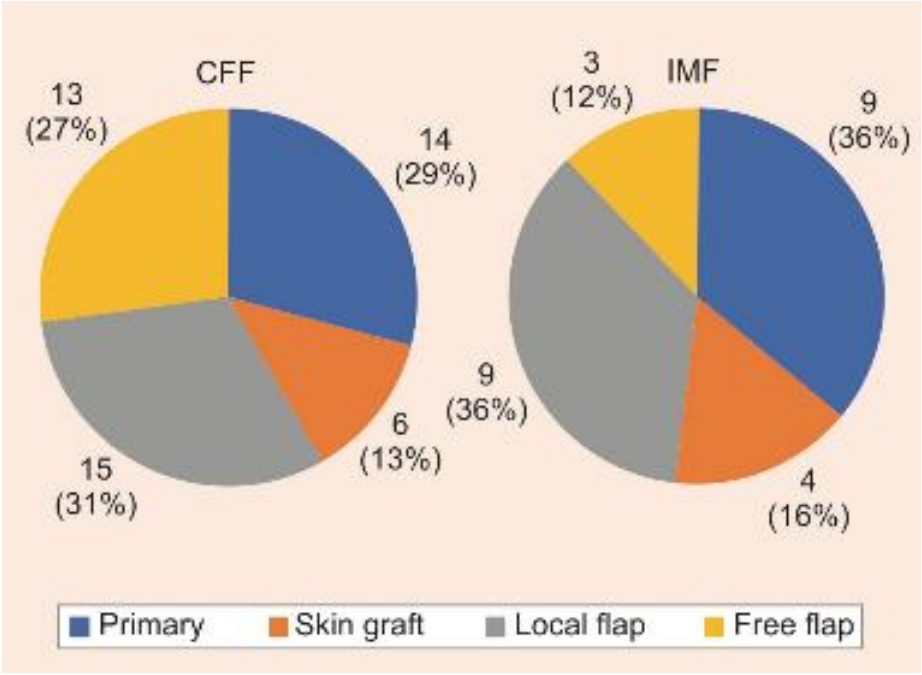

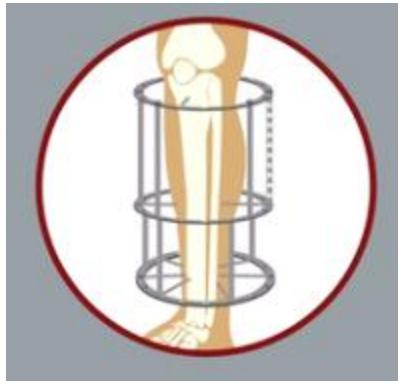

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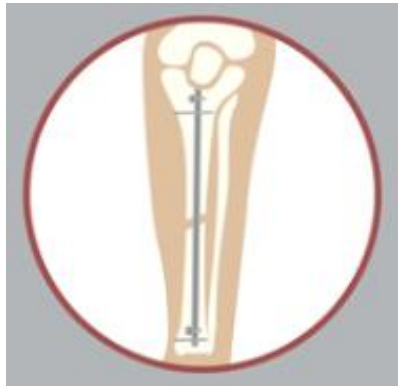


“Outcomes and Incidence of Deep Bone Infection in Grade III Diaphyseal Open Tibial Fractures: Circular Fixator vs Intramedullary Nail “

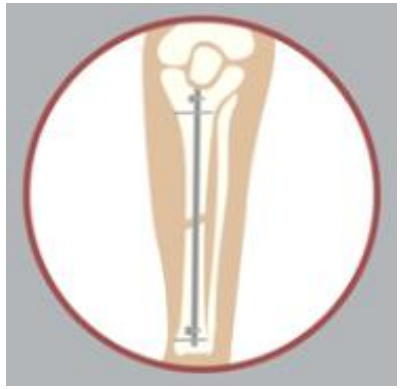
Table 2: Limbs with and without DBI stratified by fixation type, GA grade, and soft tissue reconstruction

Type of fixation	*CFF*						*IMF*					
GA grade	*IIIa*		*IIIb*		*IIIc*		*IIIa*		*IIIb*		*IIIc*	
Soft tissue cover	*Flap*	*No flap*	*Flap*	*No flap*	*Flap*	*No flap*	*Flap*	*No flap*	*Flap*	*No flap*	*Flap*	*No flap*
Limbs without DBI	0	12	27	7	1	0	1	10	8	2	0	0
Limbs with DBI	0	1	0	0	0	0	0	1	3	0	0	0

Table 3: Secondary procedures for DBI, delayed or non-union, and limb length discrepancy in both groups (some limbs had more than one type of procedure)

	CFF		*IMF*		
	No. of limbs (%)	*No. of procedures*	*No. of limbs (%)*	*No. of procedures*	*FET*
Debridement of DBI	1 (2)	1	3 (12)	3	$p = 0.11$
Removal of infected metalwork	1 (2)	1	3 (12)	3	$p = 0.11$
Bone grafting for delayed or non-union	12 (25)	14	1 (4)	1	$p = 0.03$
Bone grafting for post-osteomyelitis debridement	0 (0)	0	1 (4)	1	$p = 0.34$
Bone grafting for primary bone loss	3 (6)	3	1 (4)	1	$p > 0.99$
BMAC/Exogen	4 (8)	5	2 (8)	2	$p > 0.99$
Dynamisation	—	—	3 (12)	3	—
Redo circular frame	2 (4)	2	—	—	—
Exchange nail	—	—	1 (4)	1	—

VS



"Outcomes and Incidence of Deep Bone Infection in Grade III Diaphyseal Open Tibial Fractures: Circular Fixator vs Intramedullary Nail "

- The rate of delayed union was higher in the CFF group (25%) compared to the IMF group (16%)
- CFFs are done by experts. IMF is undertaken by a wider surgical group including trainees in 40% of cases, without consultant supervision

Sharma et al. - Strategies in Trauma and Limb Reconstruction, Volume 16 Issue 3 (2021)

Conclusioni

- FEC vs IMN: scelta personalizzata, entrambi validi
- Raccomandato approccio ortoplastico multidisciplinare
- La fissazione esterna circolare utile nei casi complessi, ma con comp
- UTN è associato a osteomielite e reinterventi più frequenti
- Fissazione interna rimane preferita quando fattibile
- Decisione clinica deve essere caso-specifica

….grazie dell'attenzione