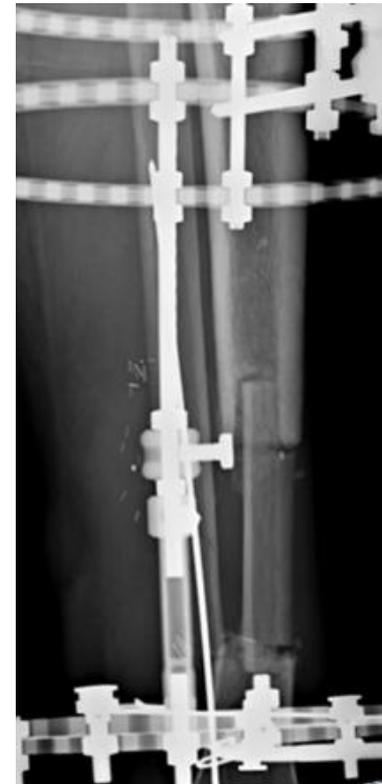


Multifragmentary Open Tibia Fractures

Different Approaches in Treatment with Circular External Fixation



Giovanni Lovisetti
Luigi Lovisetti



Emergency

- Intravenous antibiotic prophylaxis
- Splinting fracture alignment
- Cleansing with antiseptic solution
- Extensive irrigation
- Hand Doppler Sonography (CTA if needed)
- Neurologic Checking
- Photographic documentation
- Sterile wound dressing

Operating Room (within 24 h)

- Extensive isotonic saline irrigation
- Checking of tissue vitality
- Excision of necrotic areas
- Temporary External Fixation
- Permanent monitoring of the circulatoru situation
- Continuous Compartment monitoring
- NPWT

- Secondary surgical exploration 24/48 h
- Delayed definitive soft tissue coverage (within 7 days)
- Definitive osteosynthesis



- La grave compromissione delle parti molli e l'estesa contaminazione condizionano negativamente il potenziale di guarigione nelle fratture tibiali esposte Gustilo III
- La frammentazione ossea peggiora ulteriormente la prognosi
- Approccio conservativo o resezione immediata seguita da tecniche ricostruttive?

Fissazione Esterna

Accorciamento acuto e/o angolazione

Resezione immediata

Interposizione di cemento antibiotato

Trasporto osseo

Fibula vascolare

Fratture esposte tibiali extraarticolari 50/223 (22.4%%)

			ETA'		GUSTILO		TIF WKS	CL	RX	
1	1	M	57	42A3	I	SI	21	5	4	
2	2	M	25	42A2	I	SI	15	5	4	
3	3	F	32	42B2	II	SI	16	5	3	
4	14	M	16	42A3	II	SI	23	5	5	
5	15	M	45	41C2/42C2	II	SI	26	5	5	
6	20	M	29	42C3	IIIA	SI	56	5	5	
7	21	M	18	42B1	II	SI	26	5	4	
8	22	M	30	42C2	IIIA	SI	31	5	5	
9	30	F	55	42C3	I	SI	20	5	5	
10	85	M	43	42C1	II	SI	20	5	4	
11	117	M	25	42C1	IIIA	SI	25	4	5	
12	125	F	75	43A1	IIIA	SI	23	5	5	
13	131	F	51	43A2	II	SI	29	5	5	
14	156	M	63	42B2	I	SI	21	5	4	
15	171	M	29	43A3	II	SI	16	5	5	
16	183	M	38	43A3	II	SI	40	5	5	
17	226	M	27	43A1	II	SI	31	4	3	VARO 8°P
18	254	M	38	42C3	IIIB	SI	18	5	5	
19	264	M	44	42B1	I	SI	14	5	5	
20	300	M	69	42C1	I	SI	13	5	5	
21	301	F	43	41A3/41A1	II	SI	19	4	4	
22	324	M	51	43A3	II	SI	28	5	5	
23	325	M	35	42B3	II	SI	33	5	5	
24	326	M	21	42A2	IIIB	SI	20	5	5	
25	332	M	31	43A3	IIIB	NO	41	5*	5*	CED DS
26	336	M	45	43A3	IIIA	NO	41	3*	3*	VARO 10°P

			ETA'		GUSTILO		TIF WKS	CL	RX		
27	344	M	42	42B3	II	SI	18	5	5		
28	347	M	43	42A3	II	SI	22	5	5		
29	357	M	15	43A2	IIIA	SI	15	5	5		
30	385	M	18	42C3	II	SI	20	5	5		
31	391	M	55	41C3/43A3	IIIC	SI	26	5	4		
32	396	F	67	42A1	II	SI	11	5	5		
33	398	M	19	43A1	II	SI	17	5	5		
34	413	M	35	42A3	IIIA	SI	25	5	5		
35	414	M	70	42C3	IIIA	SI	16	5	5		
36	416	M	44	42B3/43A1	IIIA	SI	81	5	5		
37	431	M	31	42A1	I	SI	12	5	5		
38	444	M	18	42C3	II	SI	18	5	5		
39	460	M	46	42B2	IIIA	SI	34	5	5		
40	468	M	49	42B3	IIIC	SI	51	5	4		
41	492	F	27	42B2	I	SI	25	5	5		
42	493	M	46	42C3	IIIA	SI	31	5	5		
43	494	M	38	42C3	IIIC	SI	24	5	5		
44	495	M	17	42C3	IIIB	SI	29	5	5	LEMBO PLASTICO	
45	497	M	35	42C3	IIIA	SI	14	5	5		
46	499	M	31	43A3	IIIA	SI	41	5	4		
47	500	F	69	41C1/43A1	II	SI	19	5	5		
48	506	M	42	42A1	I	SI	24	5	5		
49	507	M	76	43A3	II	SI	36	4	3	VARO 10°	
50	520	M	65	42C3	IIIB					PERONE VASCOLARE	

Età media 40.6 a TIF medio 25.5 sett

Consolidazione *

49/49 (100%),

Risultati clinici ottimi/buoni

48/49 (97.9%)

Risultati radiologici definitivi ottimi/buoni

46/49 (91.8%)

* In 2 pazienti dopo secondo trattamento con fissazione circolare per cedimento asettico

Fratture esposte del pilone tibiale 17/91 (18.7%)

	SERIE	ETA'		TIF	CONSOLIDAZIONE	CURAZIONE	RX 1	RX 2			
1	17 M	42	43C31	II	17 SI		3	3	VARIZZAZIONE		
2	18 M	67	43C22	II	9 SI		4	4			
3	98 M	38	43C22	IIIA	57 SI		5	5			
4	110 M	66	43C22	II	30 SI		2	2	ARTRODESI SPONTANEA TT		
5	121 M	55	43C32	I	34 SI		4	2	FUMO		
6	153 M	44	43C33	II	38 SI		5	5			
7	270 F	70	43C33	IIIA	14 SI		4	4			
8	330 M	48	43C33	II	28 SI		2	2	VARIZZAZIONE		
9	339 M	57	43C22	II	28 SI		4	4			
10	374 F	90	43C22	IIIA	14 SI		3	2	VARIZZAZIONE		
11	418 M	45	43C3	IIIA	29 SI		5	5			
12	474 F	72	43C3	IIIB	59 NO, SEPSI				ARTRODESI TT CON ALLUNGAMENTO		
13	477 F	53	43C3	III A	18 NO, SEPSI				ARTRODESI TT CON ALLUNGAMENTO		
14	496 F	68	43C3	II	13 SI		5	5			
15	498 M	52	43C3	III A	24 SI		5	4			
16	503 F	56	43C22	II	16 si		5	5			
17	514 M	48	43C3	IIIA	18 SI		5	5			

Età media 57 a TIF medio 26 sett

Consolidazione

15/17 (88%),

Risultati clinici ottimi/buoni

11/17 (64.7%)

Risultati radiologici definitivi ottimi/buoni

10/17 (58.8%)

Fratture esposte tibiali extraarticolari

		GI	GII	GIIIA	GIIIB	GIIC
casi	49	9	20	13	4	3
consolidazione	49*					
Risultati clinici ottimi/buoni	48	9	18	12	4	3
Risultati radiologici Ottimi/buoni	45	9	17	12	4	3

Fratture esposte del pilone tibiale

		GI	GII	GIIIA	GIIIB	GIIC
casi	17	1	8	7	1	
consolidazione	15	1	8	6	0	
Risultati clinici ottimi/buoni	11	1	5	5		
Risultati radiologici Ottimi/buoni	10	0	5	5		

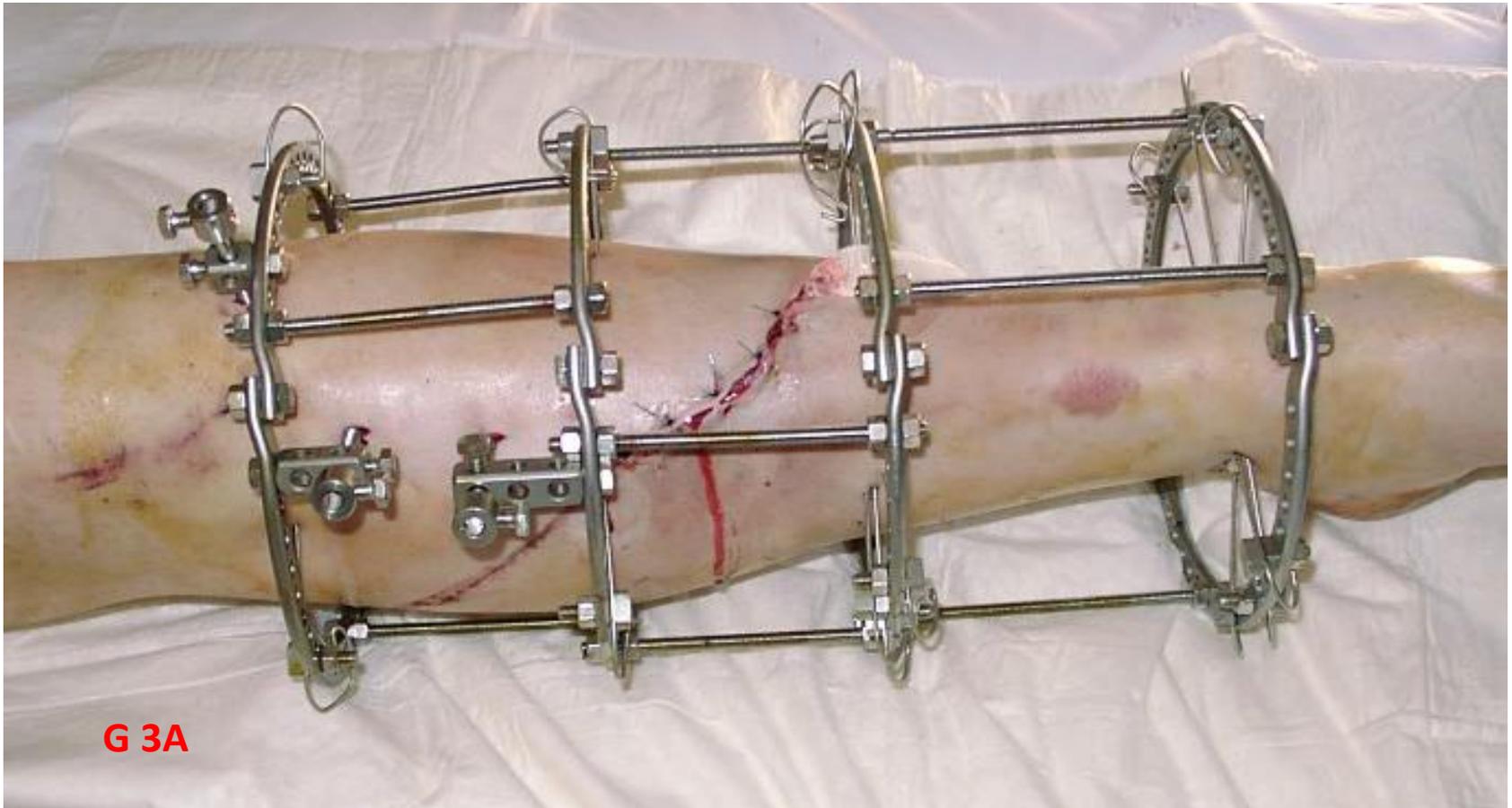
ROMA



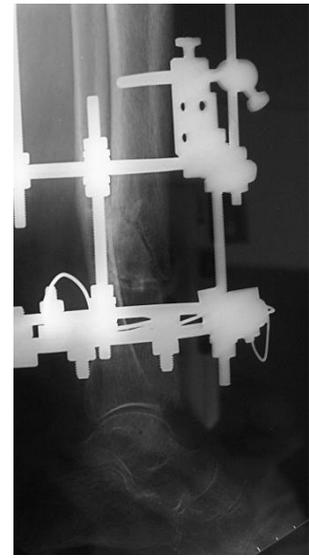
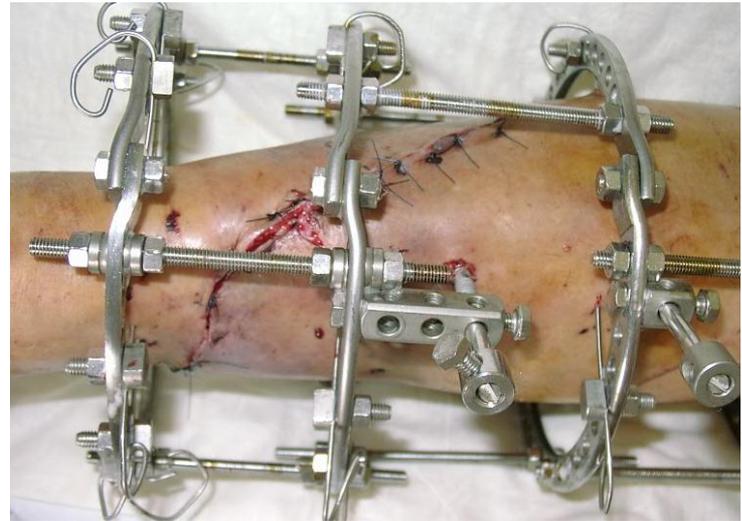
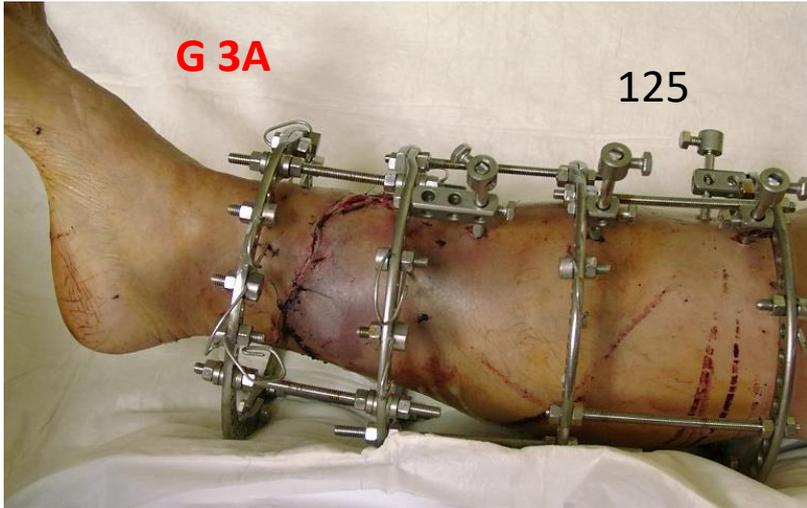
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SOCIETÀ ITALIANA
FISSAZIONE ESTERNA



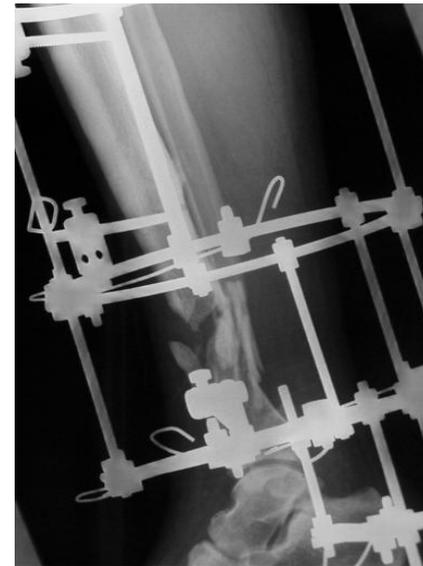
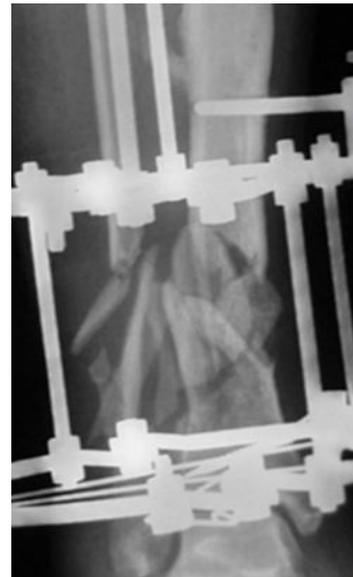
16-17 MAGGIO 2025



G 3A



Fratture multiframmentarie esposte: approccio conservativo



G 2



Fratture multiframmentarie esposte: approccio conservativo

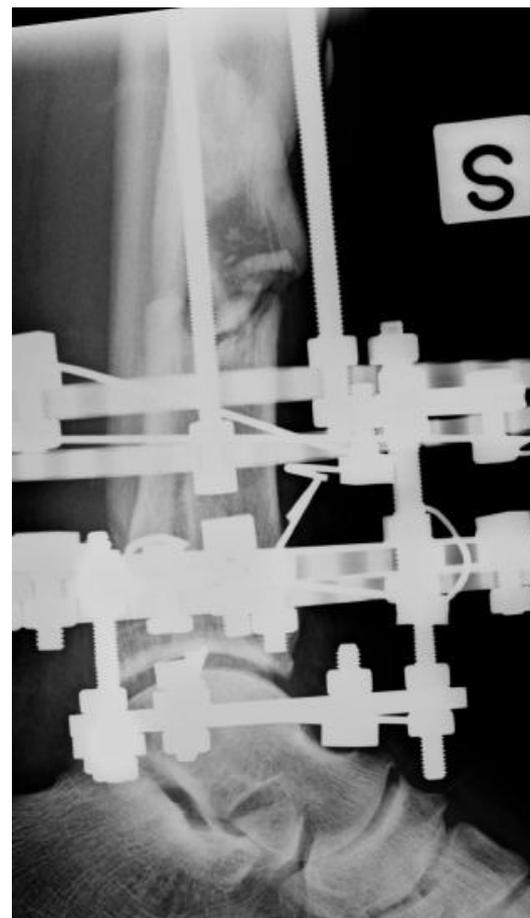
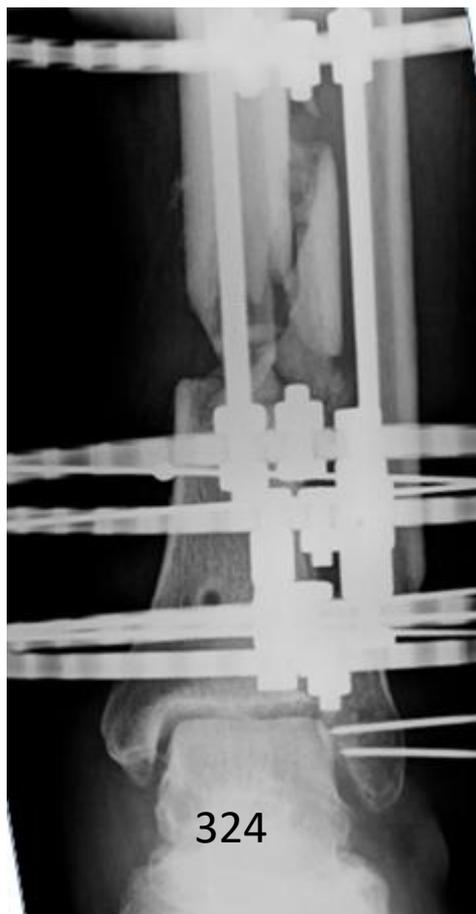


40 wks

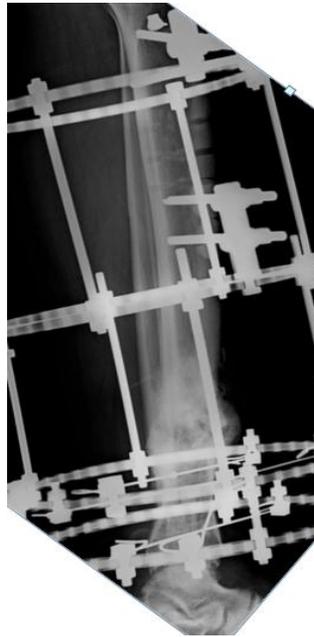
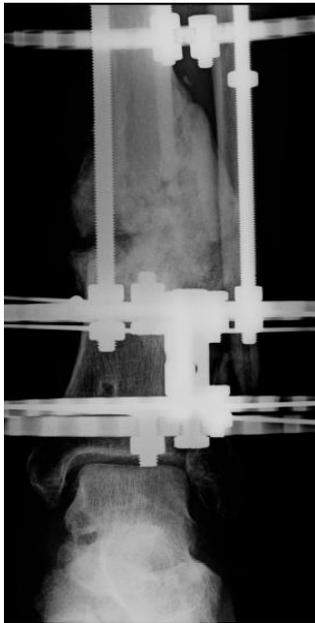
Fratture multiframmentarie esposte: approccio conservativo



Fratture multiframmentarie esposte: approccio conservativo

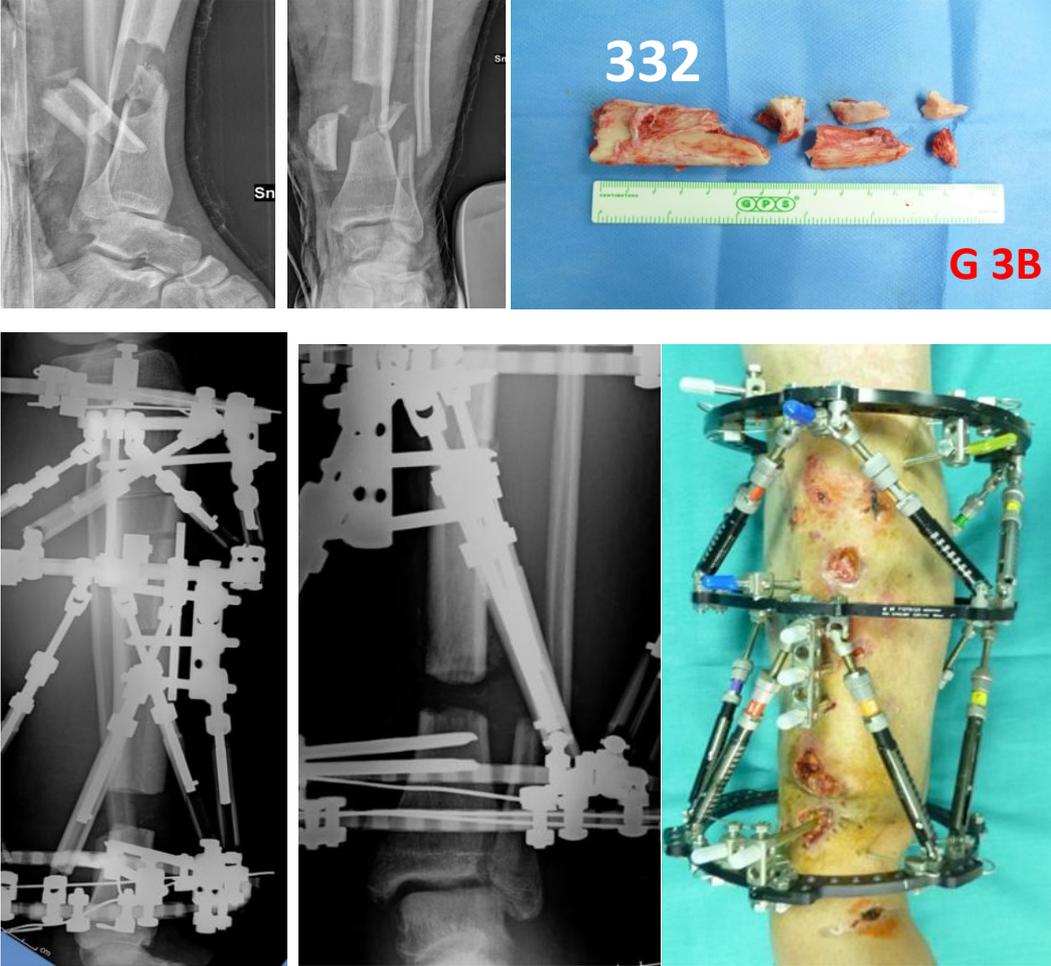


Fratture multiframmentarie esposte: approccio conservativo



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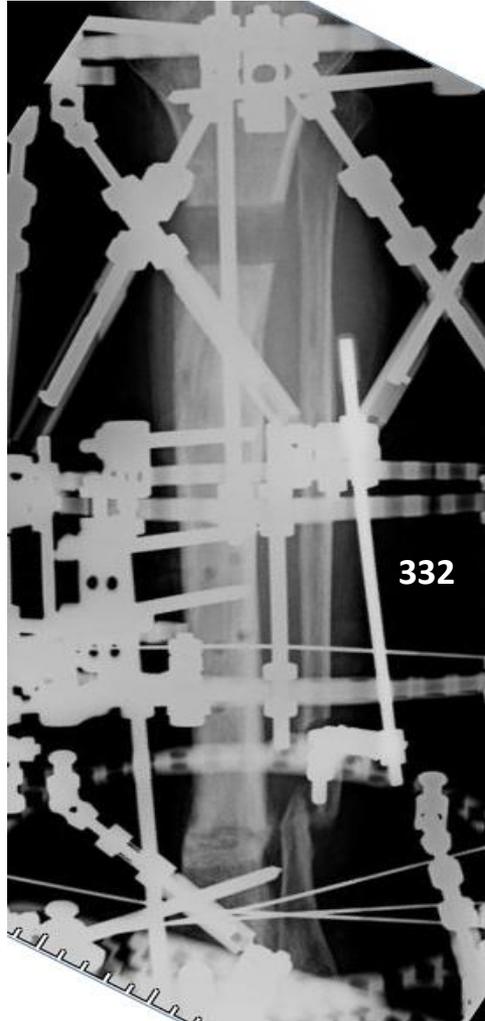
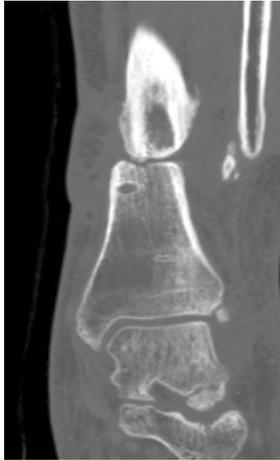
Fratture multiframmentarie esposte: resezione immediata



Fratture multiframmentarie esposte: resezione immediata



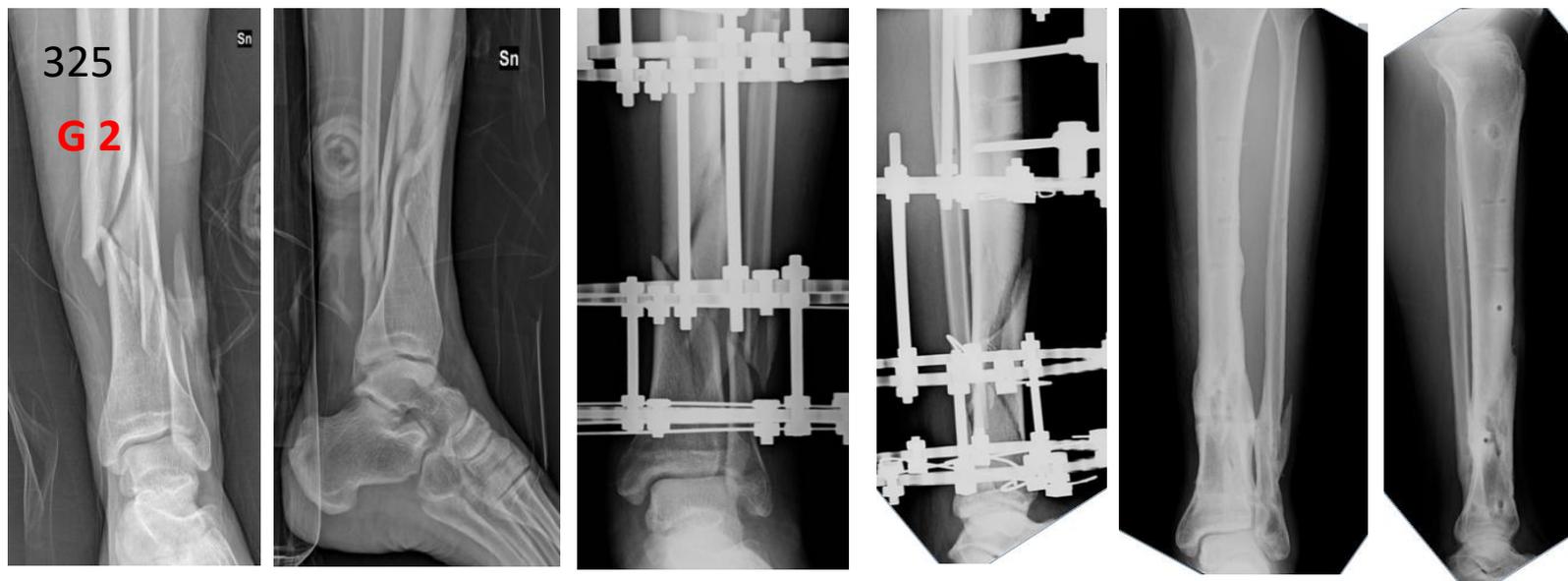
Fratture multiframmentarie esposte: resezione immediata e trasporto osseo



41 + 32 WKS



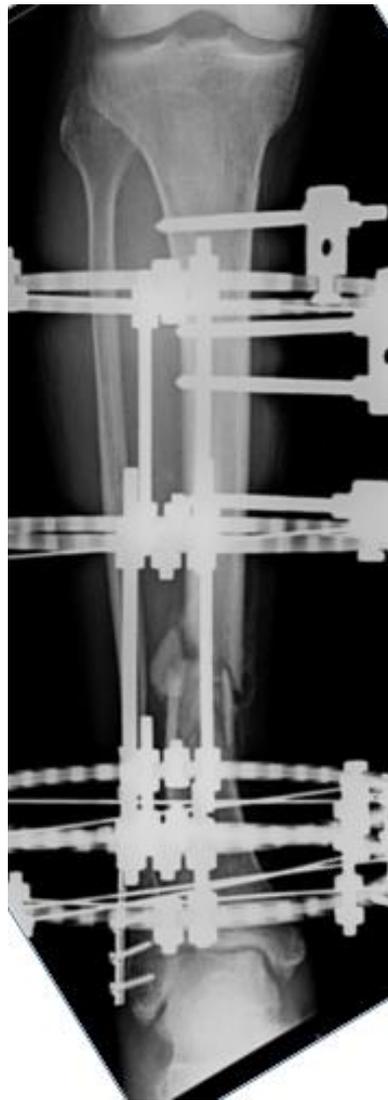
Fratture multiframmentarie esposte: approccio conservativo



Fratture multiframmentarie esposte: approccio conservativo



Fratture multiframmentarie esposte: approccio conservativo



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Fratture esposte complesse





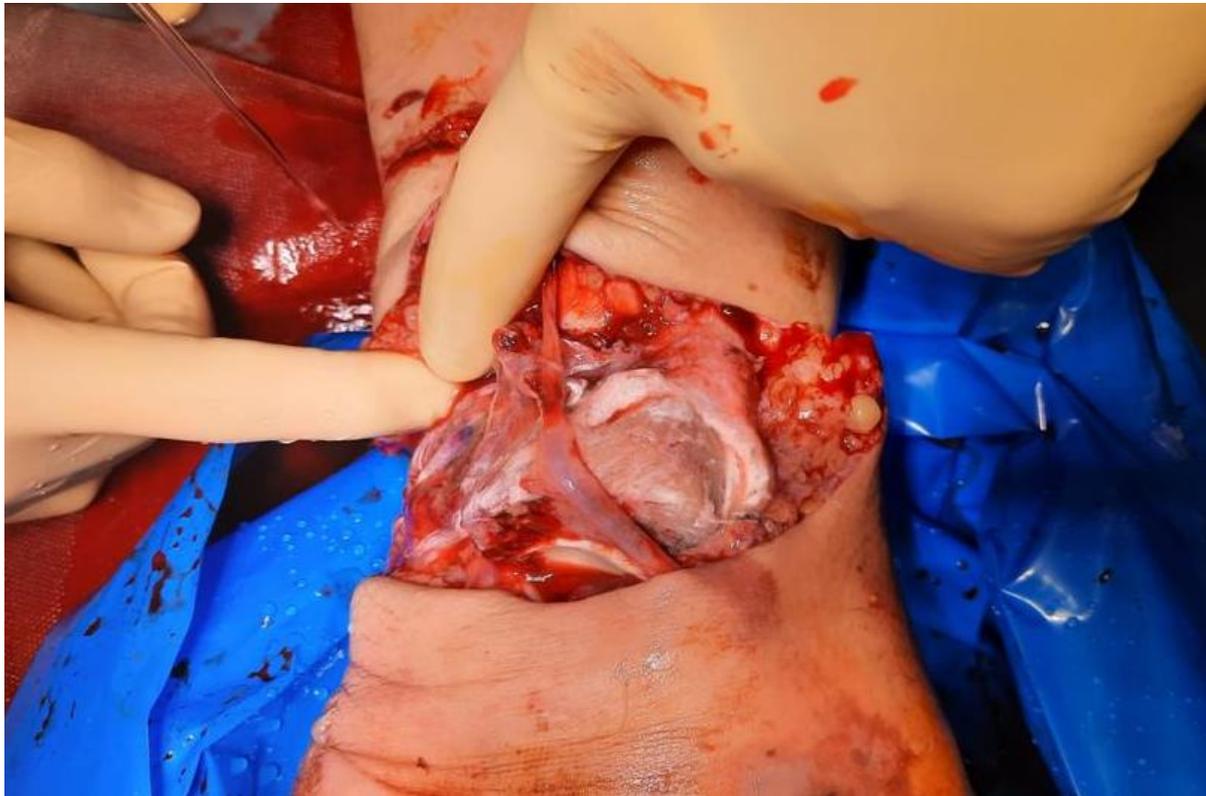
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G 3B

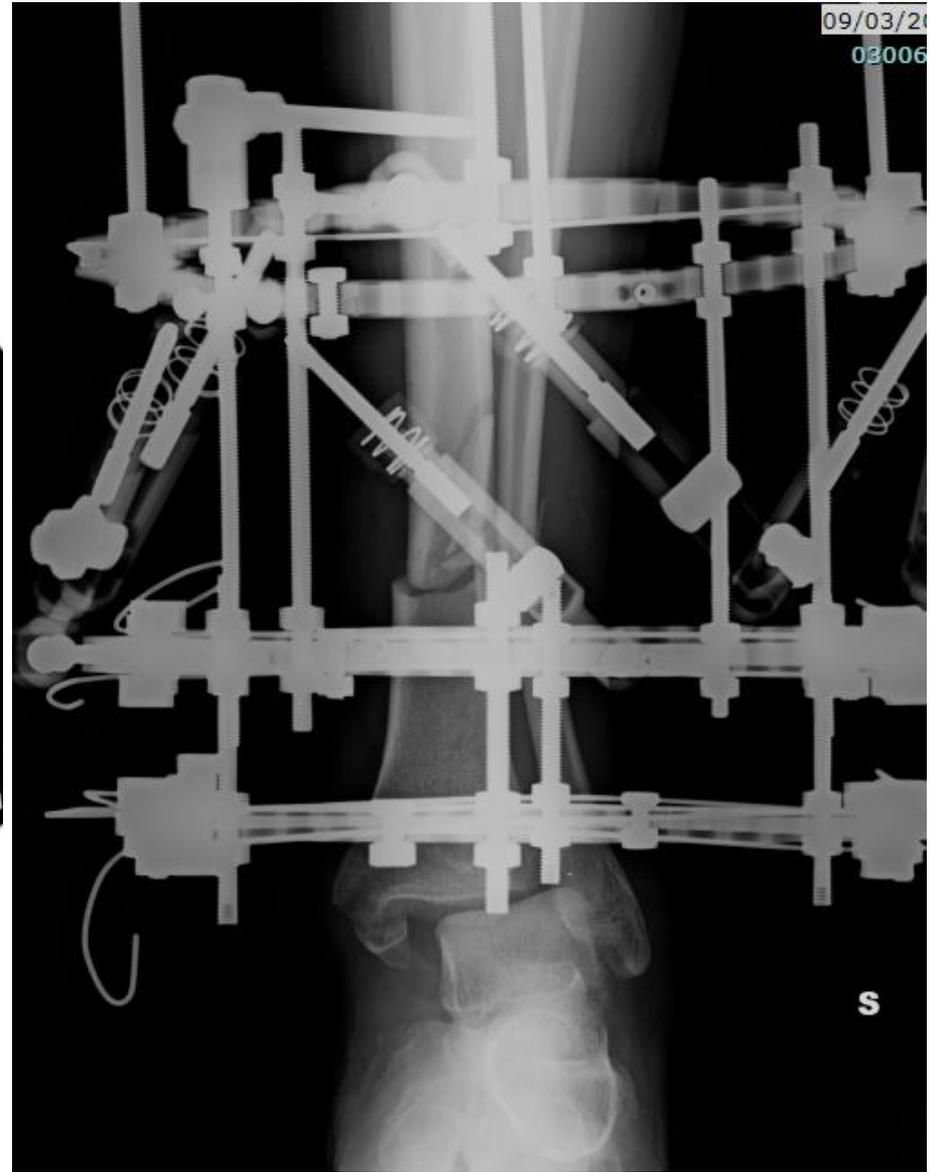
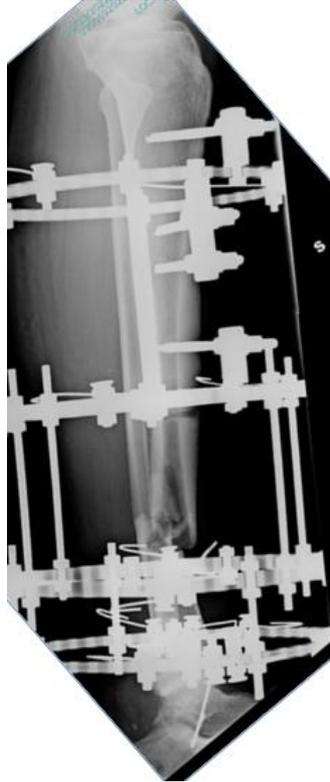
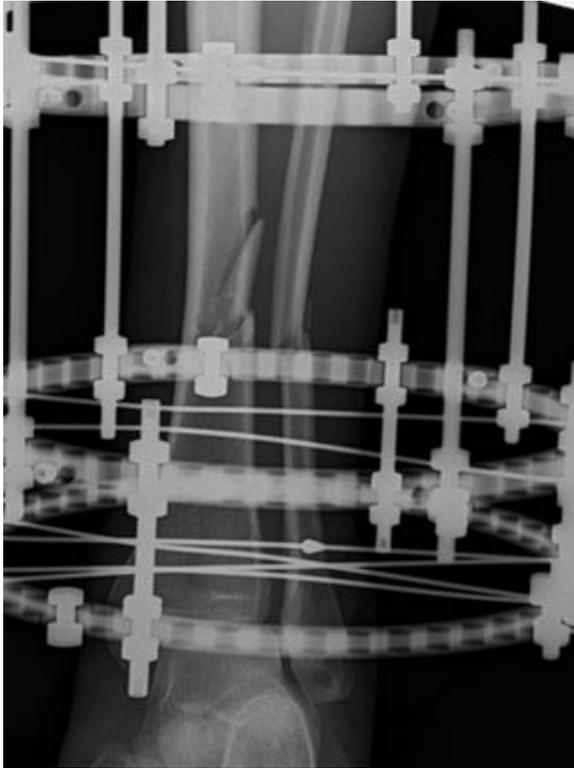




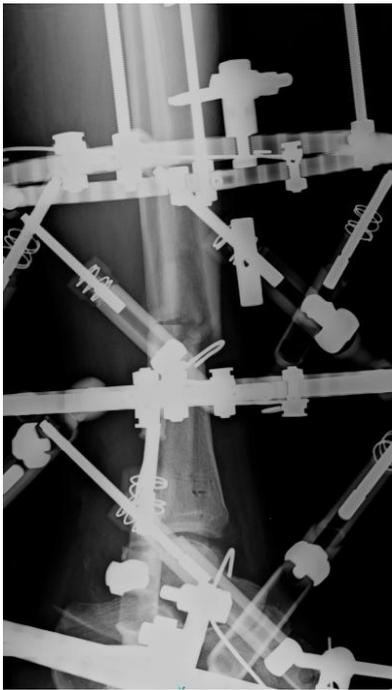
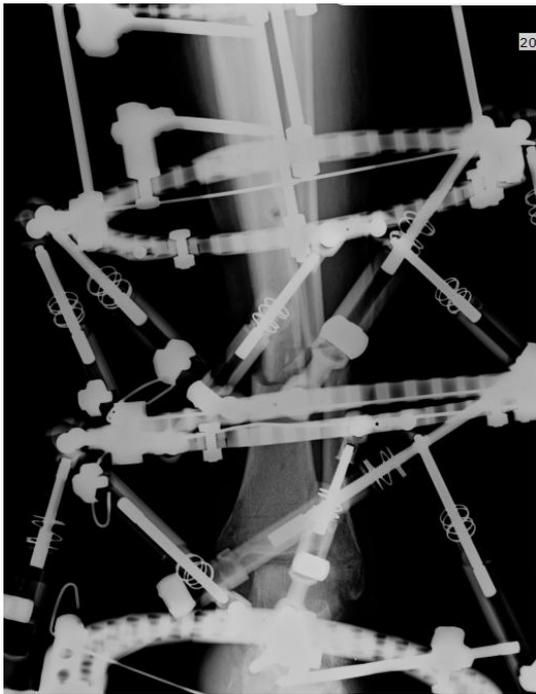
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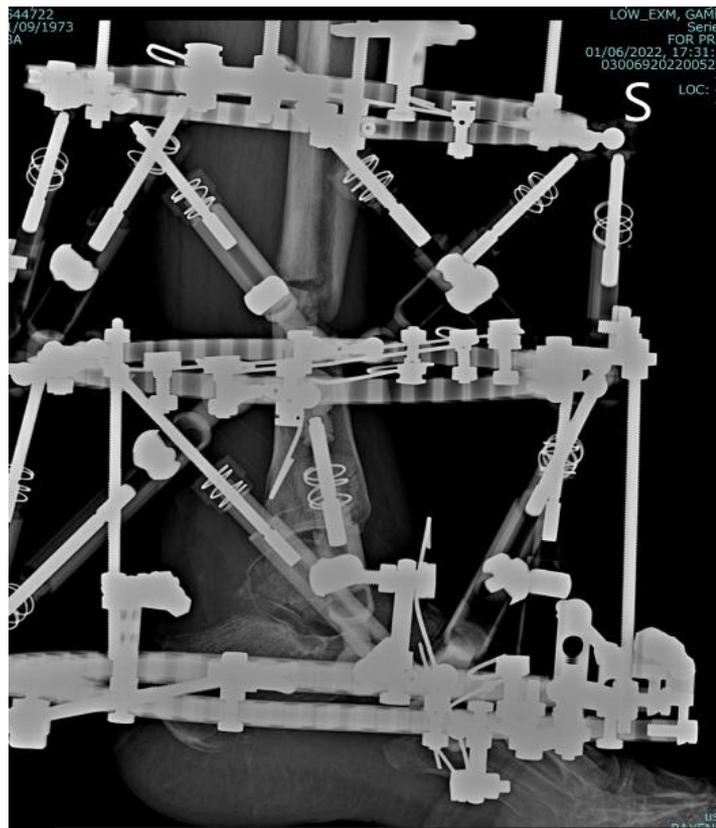
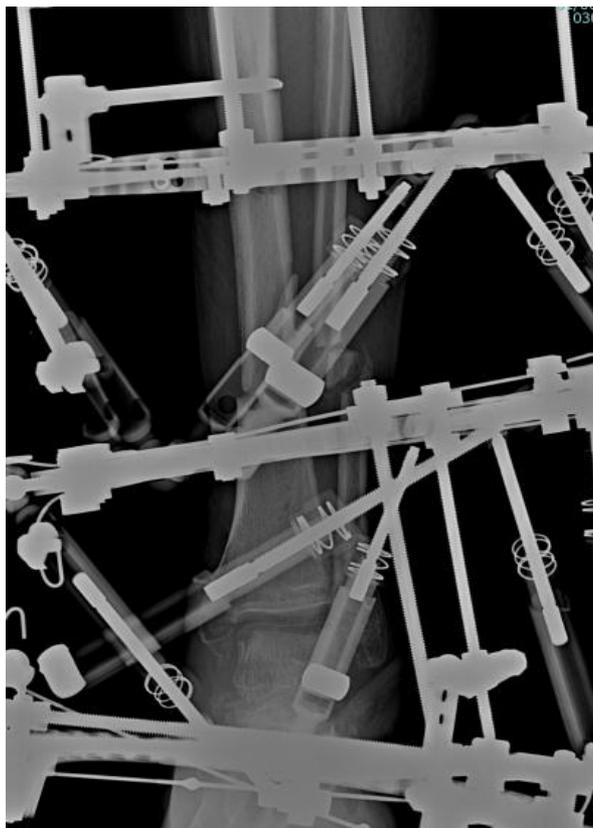


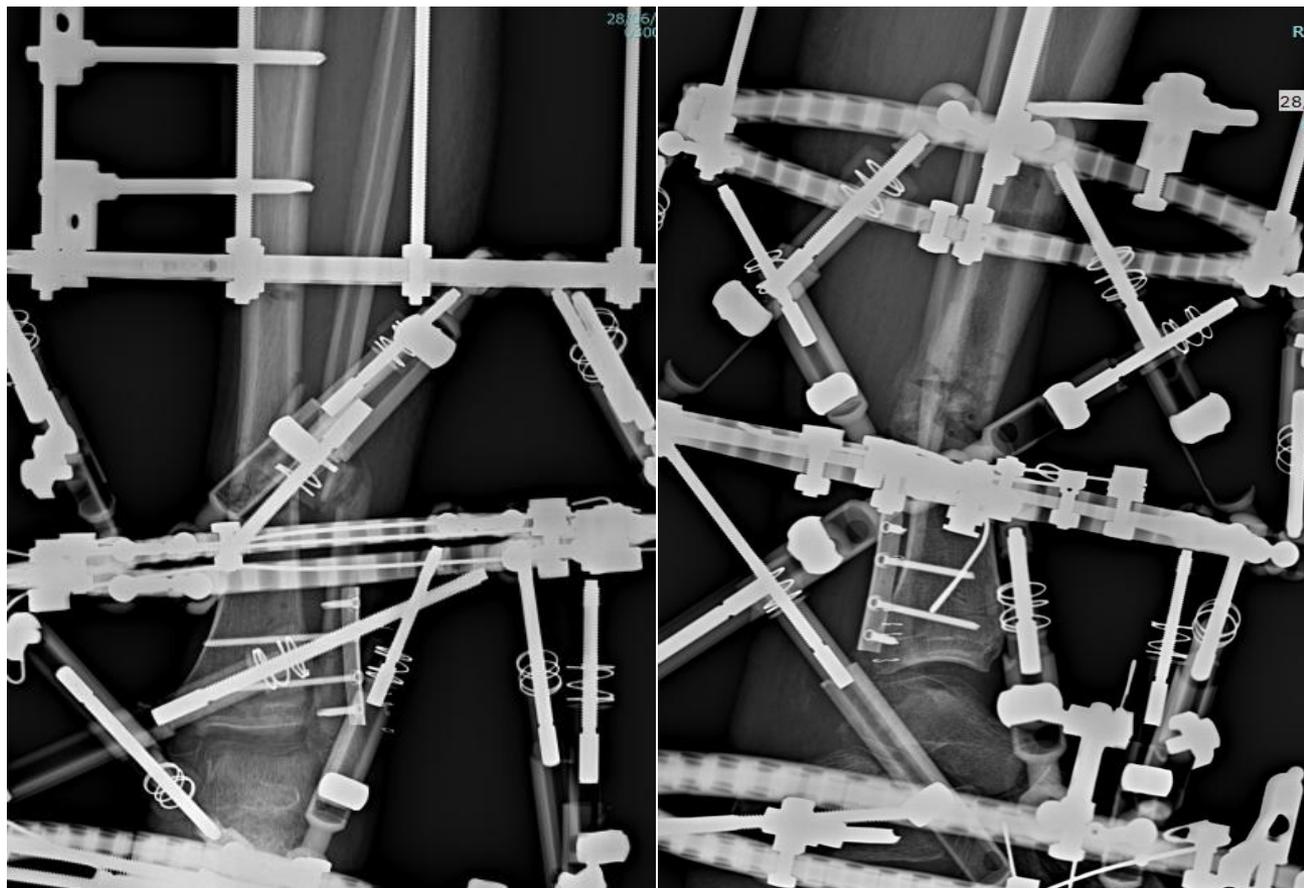


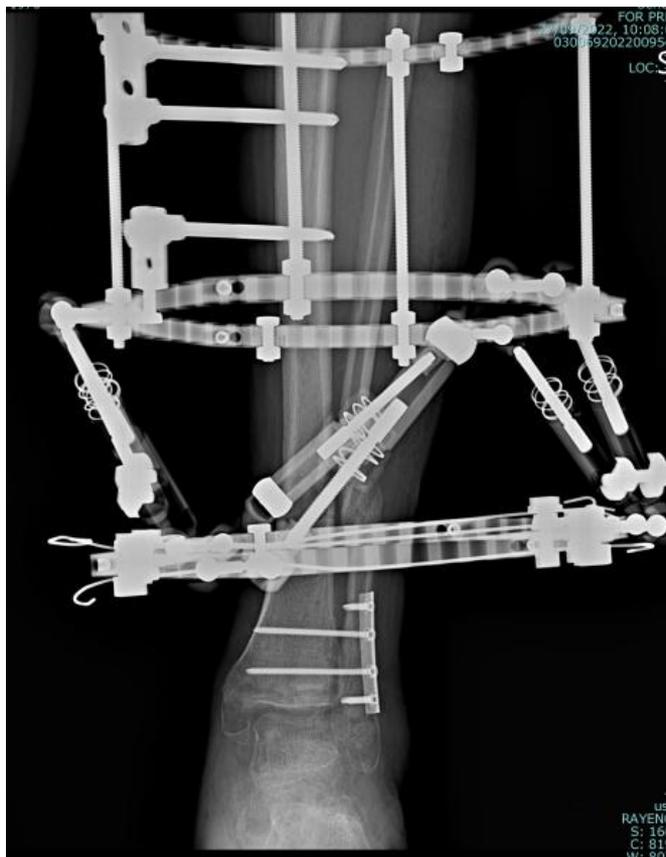


Fratture esposte complesse



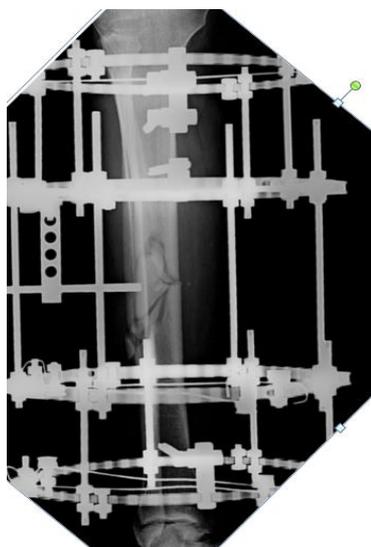






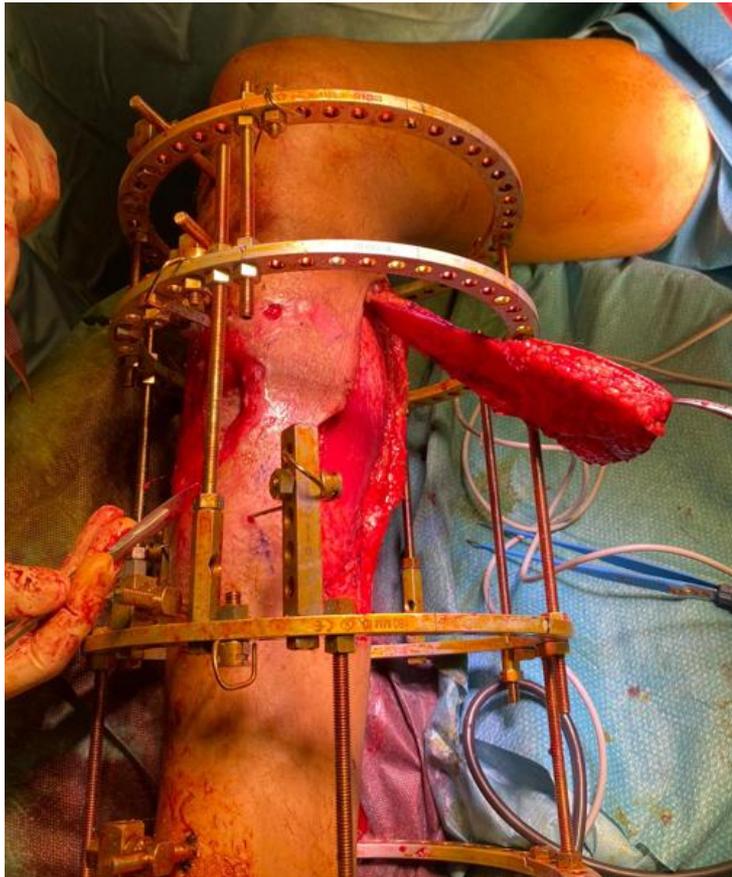


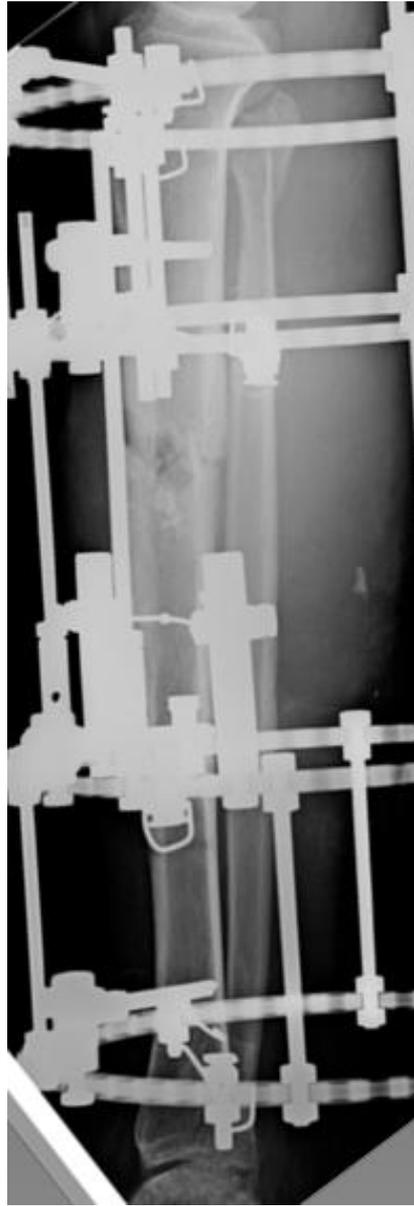
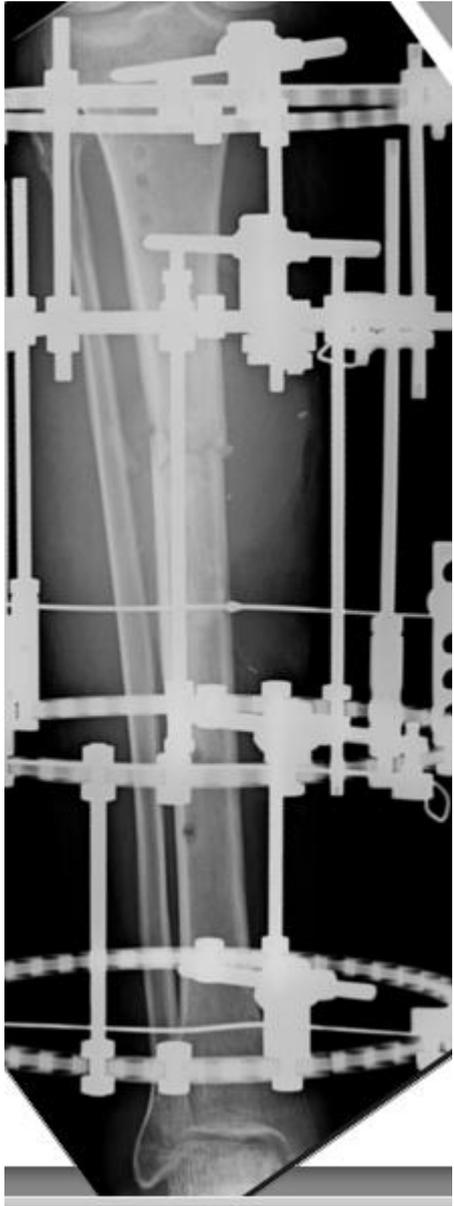
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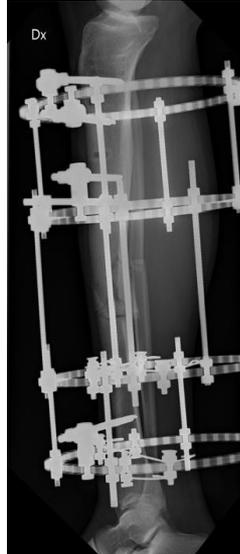
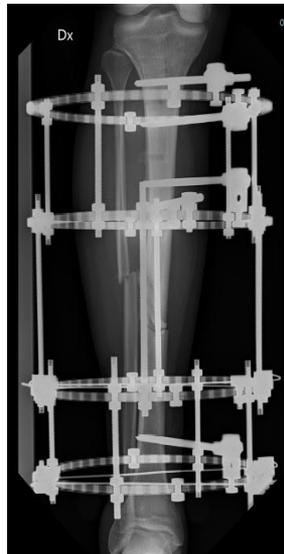


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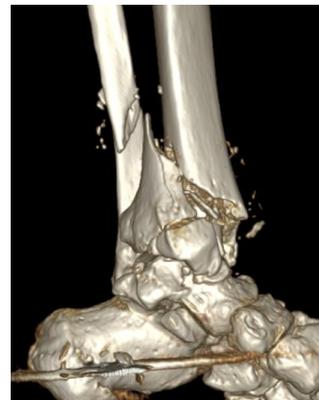
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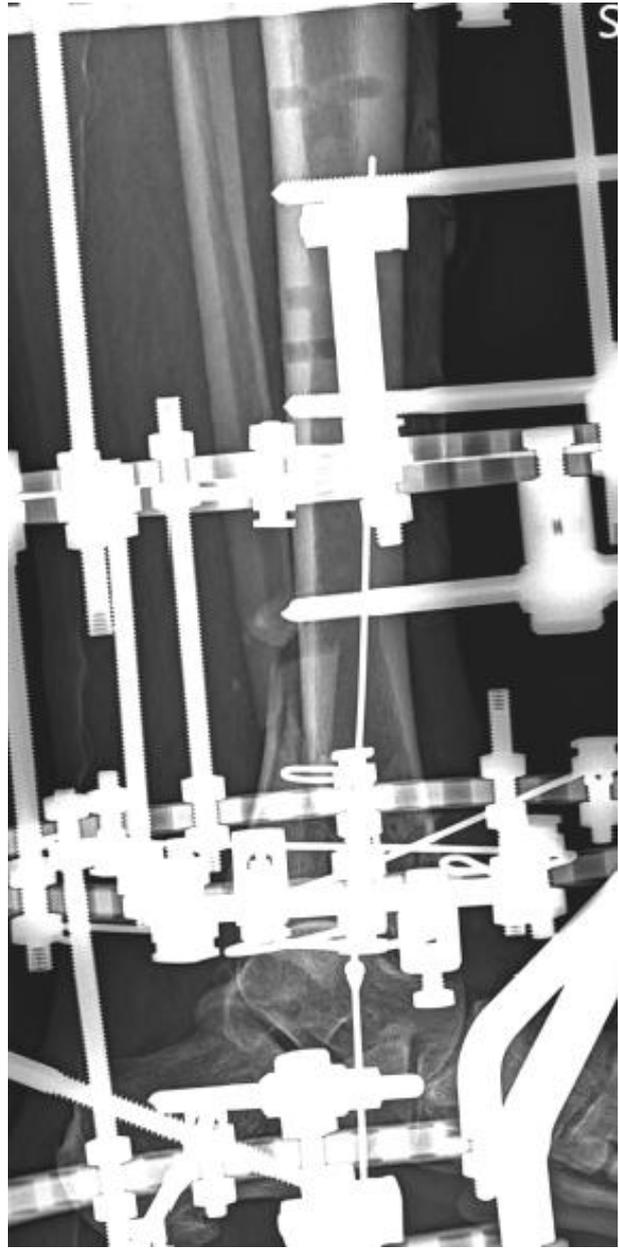






Fratture esposte multiframmentarie: accorciamento acuto

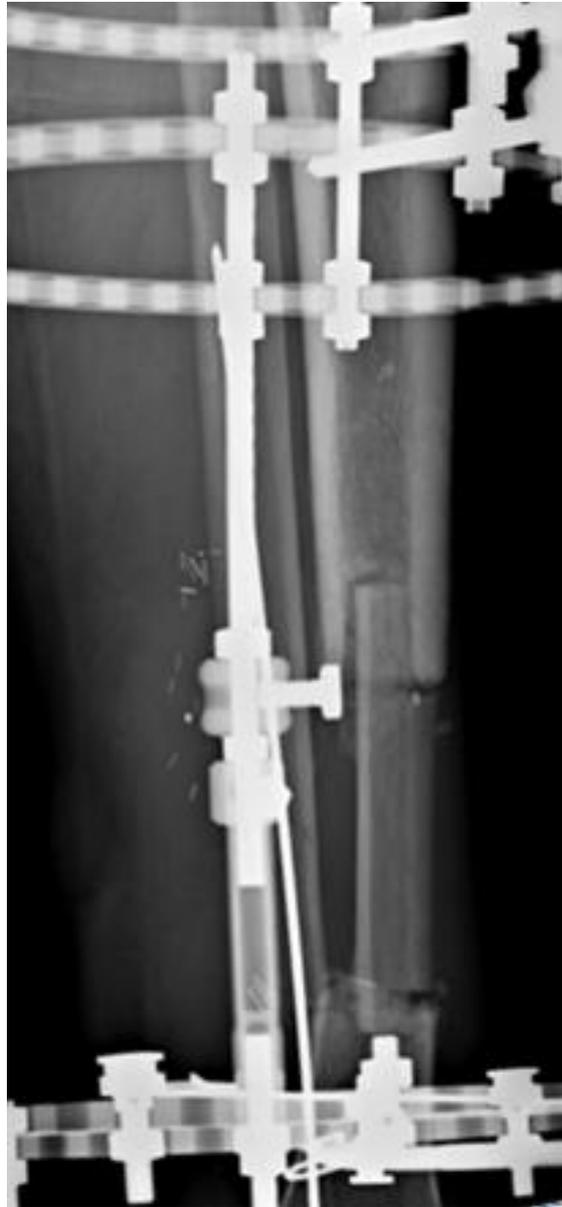






Fratture multiframmentarie esposte: resezione immediata e fibula vascolare





Considerazioni

- La multiframmentarietà riduce ulteriormente il potenziale di guarigione nelle fratture tibiali esposte
- Il grado di compromissione delle parti molli può condizionare la scelta tra il mantenimento in sede dei frammenti ossei o la loro immediata rimozione
- Nelle lesioni di tipo G 2 un approccio conservativo ha portato a consolidazione in tutti i casi
- Nelle lesioni G 3 B il gap osseo di resezione può essere colmato da trasporto osseo o trapianto di fibula vascolare
- La fissazione circolare è risultata adeguata per garantire una stabile osteosintesi della fibula vascolare senza comprometterne la perfusione.