Elderly Open Lower Limb Trauma: How to Salvage the Unsalvageable

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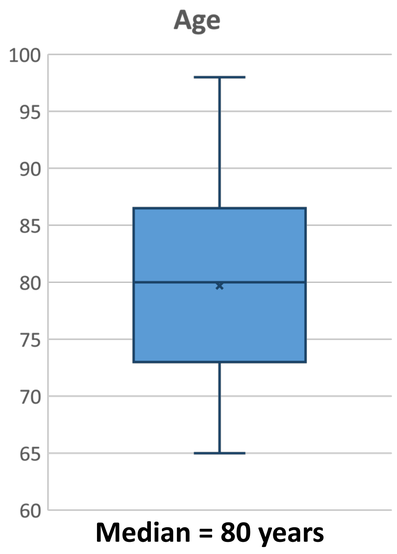
Background

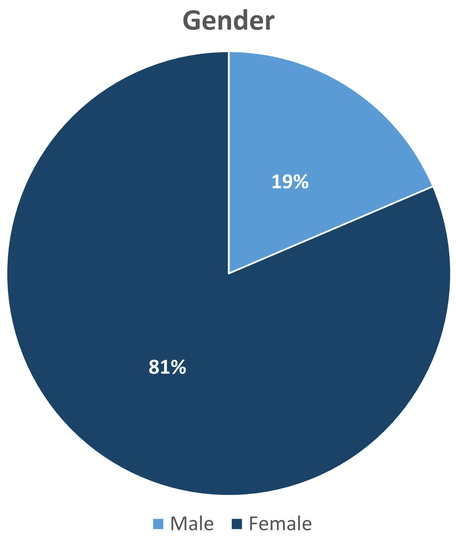
- Low energy, open lower limb fractures represent an increasing problem in current Orthopaedic practice.
- Traditional open fracture management algorithms involving aggressive debridement and staged reconstruction may not be appropriate in elderly patients with multiple co-morbidities. Moreover, poor bone and soft tissue quality make managing these injuries difficult
- This study evaluates the management of elderly open ankle fractures and offers strategies to aid limb salvage in this challenging patient group.

Methods

- Low energy, open ankle (AO44) and tibia (AO41-43) fractures in patients over 65 years of age were eligible for inclusion in this study.
- Data was collected through retrospective case notes review conducted at two UK Major Trauma Centres over a 5-year period (2015 – 2020).
- All patients received combined Orthopaedic and Plastic Surgical in accordance with UK open fracture guidance.
- Outcomes measured included infection, fracture union, limb salvage, return to theatre and 30-day mortality.

Results

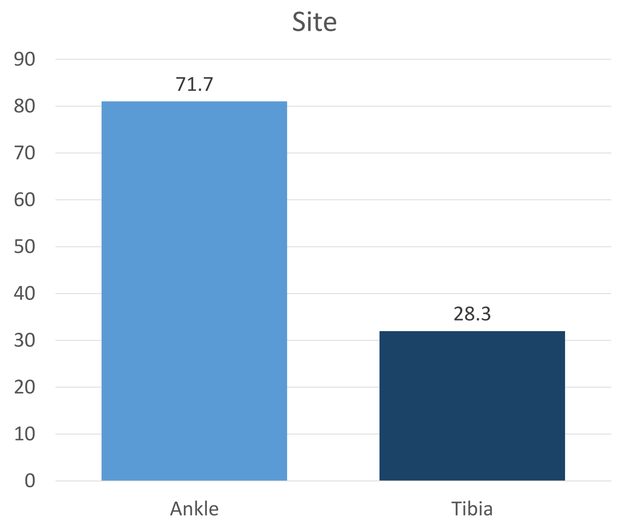




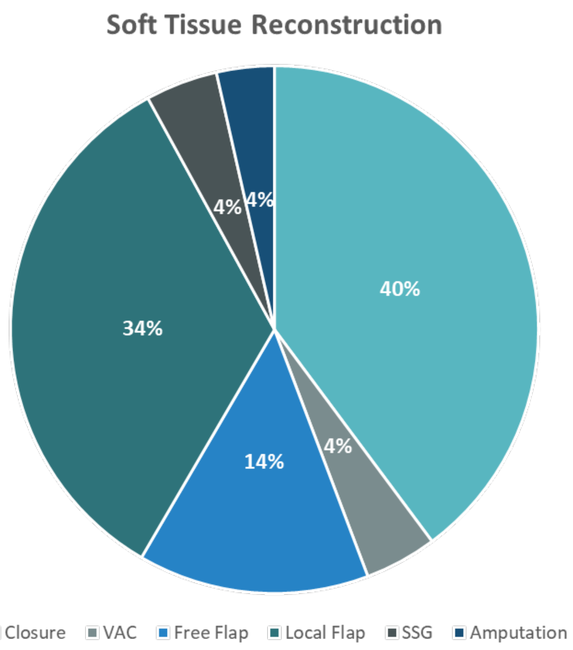
Demographics of the included population in terms of age and gender

Follow-up (months)	
Mean	40.7
Median	38
Range	12 – 83

Co-morbidities (CCI)	
Mean	4.88
Range	0 – 12



Summary of follow-up, co-morbidities and fracture site. Co-morbidities were calculated using the Charlson Co-morbidity Index (CCI)



Methods of soft tissue reconstruction for open lower limb injuries

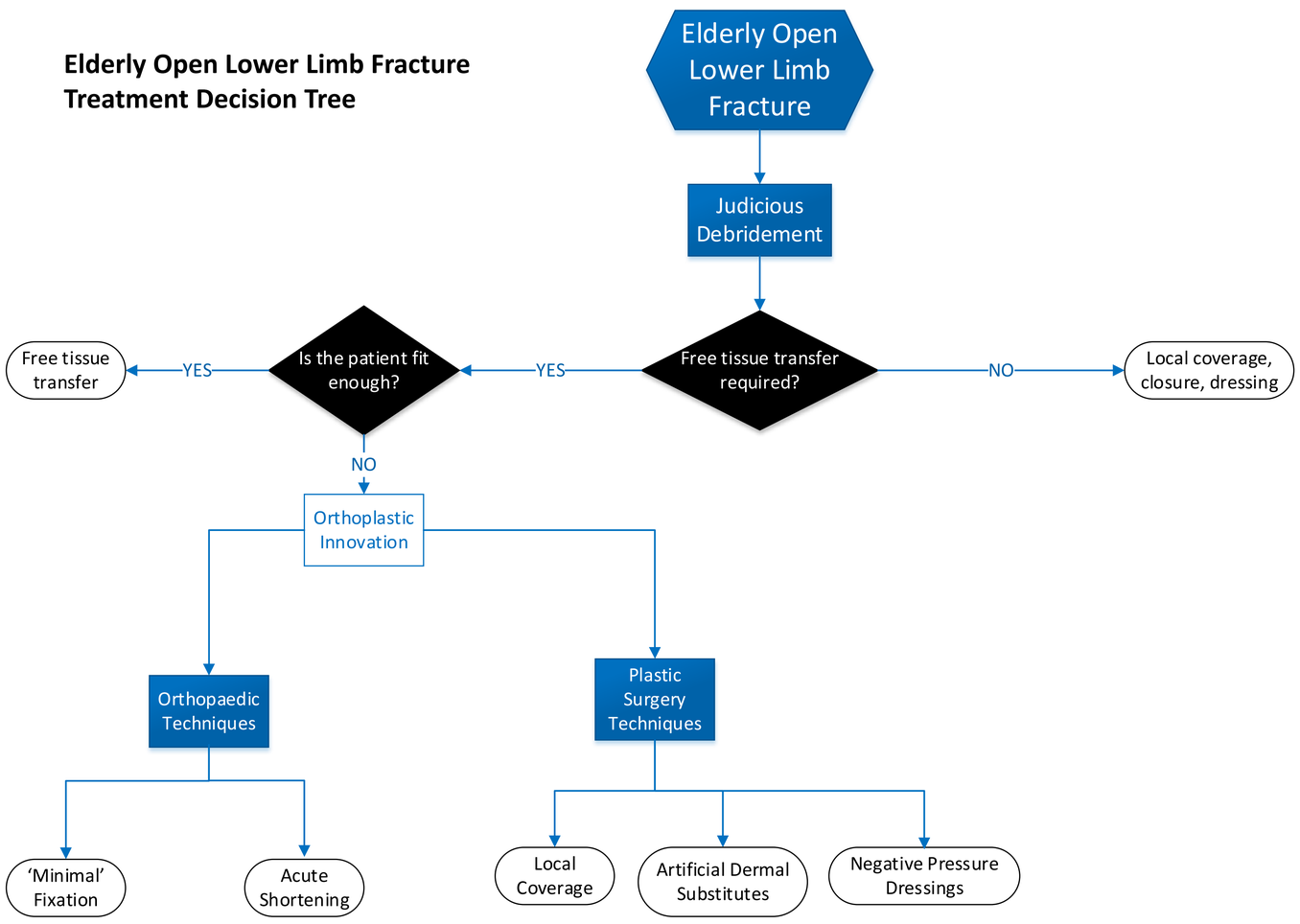
Reconstruction	CCI	Significance
Closure/local coverage/dressing	5.0	p = 0.013
Free Tissue Transfer	3.9	

Differences in co-morbidities between patients receiving free tissue transfer and those who did not

Outcome	All (%)	Local coverage/ closure/dressings (%)	Free Tissue Transfer (%)	Significance
Complications	14 (12.4)	11 (11.3)	3 (20.0)	0.49
Infection	5 (4.4)	4 (4.1)	1 (6.7)	0.70
Non-union	2 (1.8)	2 (2.0)	0	0.56
Soft tissue failure	2 (1.8)	1 (1.0)	1 (6.7)	0.14
Mortality (30-day)	5 (4.4)	4 (4.1)	1 (6.7)	0.38
Mortality (All)	9 (8.0)	8 (8.2)	1 (6.7)	0.76

Comparative outcomes between patients who did and did not receive free tissue transfer. Statistical significance calculated using Fisher exact test.

Elderly Open Lower Limb Fracture Treatment Decision Tree



Decision tree designed to be applied to patients >65 years with an open lower limb fracture as a result of a 'low energy' mechanism

Conclusions

- Elderly patients with open lower limb injuries should be treated differently. Low energy injuries, in particular, do not require aggressive debridement and a judicious approach must be taken.
- Age alone should not dictate the decision around the use of free tissue transfer.
- In high-risk patients unsuitable for extensive and lengthy surgery, novel Orthoplastic procedures such as acute shortening, minimal fixation, local coverage or dermal substitutes may be used.
- A combined, Orthoplastic approach is essential in treating these complex injuries.

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