The management of soft tissue injuries in open tibial fractures: the ‘soft tissue tug test’

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doi 10.1308/rcsann.2019.0051

Background

There are national guidelines that provide an overview on the general management of open fractures. However, a detailed and practical assessment and management of the soft-tissue component of these injuries is not so well documented. The four Cs (colour, consistency, contractility and capacity to bleed) have been mentioned in multiple papers; this concept was developed in 1917 at the Inter-Allied Surgical Conference.¹ From our management of these complex injuries in our level 1 trauma centre, we have updated the four Cs to create a practical and robust system to diagnose and debride devitalised soft tissues.

Technique

Figure 1 outlines the technique.

Figure 2 Open tibial fracture with skin excised prior to commencement of soft tissue debridement. ‘Soft tissue tug test’ performed, removing devitalised tissue.

Figure 1 Flowchart outlining a systematic process for debriding soft tissue in open tibial fractures.

Discussion

The main purpose of debriding wounds is to remove devitalised tissue that can become a locus for infection and sepsis. Myofibre necrosis (myonecrosis) is histologically characterised by swollen, deeply eosinophilic, homogenous myofibres that lack cross-striations.² This is why necrotic tissue is less likely to tolerate tension and separate from healthy muscle.

There is very little literature describing how to perform a thorough and accurate muscle debridement. The 'soft tissue tug test', is the first reported technique that can be used to quickly debride appropriate tissue (Figure 2). We believe that this technique should be used after assessing the colour, capacity to bleed and contractility of

questionable muscle. We therefore present a practical guide that can be used as an adjunct to the national guidance.³

References

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