

Joint Theater Trauma System Clinical Practice Guideline

Extremity Soft Tissue Wound / Amputation Management

1. Goal:

Provide standardization of care for the performance of life saving amputations which provide maximum limb length preservation for optimal rehabilitative function.

2. Background:

The notion of the “zone of injury” is dependent upon the mechanism of injury, i.e. blast, gunshot, and crush injuries, as well as co-morbidities such as severe blood loss with massive resuscitation, burns, compartment syndrome, and tourniquet use which may extend the amount of tissue damage. The wounds will evolve over time and merit frequent wound inspection and evaluation. Indications for amputation include traumatic amputations, vascular injury not amenable to repair, and limb infection with uncontrolled sepsis. Current consensus on battle injured non-salvageable limbs is to preserve limb length, and conserve viable tissue for reconstruction in a definitive level V facility. The former open circular technique eliminates many potential options and should be avoided when possible.

3. Initial Surgical Management:

- a. Thorough inspection of the wounds with liberal use of surgical wound extension to inspect all levels of tissue including examination of fascial planes.
- b. A meticulous debridement of all nonviable tissue including skin, fat, fascia, muscle, and bone should be performed. All gross contamination must be debrided.
- c. The amputation level should be performed at the most distal level which provides viable bone and soft tissues for later closure. If an amputation is completed, but a fracture exists proximally, stabilize this segment with pins or external fixation, and preserve length.
- d. Vascular structures should be ligated proximal to the bone resection and separated from nerves.
- e. Be prepared to accept atypical skin and tissue flaps so long as the tissue is viable.
- f. If the limb distal to the wound is viable, but there is a fracture, this should be preserved and the bone stabilized. This is most often accomplished with an external fixator. If amputation is subsequently necessary, this can be performed at the definite treatment facility.
- g. Avoid open circular, or guillotine amputations if possible. If needed then perform the amputation at the most distal level.
- h. **All wounds must be left open.**

Post Operative Management:

- a. Soft dry dressing should be applied. Circumferential wraps with gauze rolls and ace wraps must be applied in a figure of 8 fashion without excessive compression.

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- b. The limb may be placed in a splint or bivalved cast to prevent joint contractures and provide soft tissue support. There should be simple access for wound inspection.
- c. In the event of the short skin flaps, be prepared to place the limb with skin traction to prevent soft tissue retraction. Alternatively, consider negative pressure dressing when conditions permit.
- d. Avoid placement of pillows under the knee so as to prevent contractures.
- e. Plan on repeat irrigation and debridement generally within 48 hours; however these wounds must be watched closely.
- f. Coordinate dressing changes/repeat debridement with evacuation schedule to avoid extended periods without wound care or inspection.
- g. **Closure is not recommended until arrival at the definitive care facility**