

Trauma Clinical Management Guideline: Open Fracture

Page 1 of 2

- **Effective:** July 18, 2017
 - **Original:** July 18, 2017
 - **Reviewed:** n/a
-

Purpose: To define guidelines for early clinical management of open fractures with aim to:

1. Define a standard approach for evaluation, triage and early management of open fractures.
2. Reduce the development of infection and osteomyelitis
3. Provide optimal environment for bony union and functional recovery.

Definitions:

Gustilo Open fracture Classification:

Type I: Wound often < 1 cm; minimal contamination, comminution, and soft-tissue damage, low energy.

Type II: Wound usually > 1 cm; moderate soft-tissue damage, minimal periosteal stripping, moderate energy wound.

Type III: These are high-energy and/or severely contaminated injuries. Shotgun wounds, barnyard injuries as well as segmental open fractures by definition are Type III injuries. These are sub-divided into three sub-classifications:

- IIIA: Severe soft-tissue damage and substantial contamination; coverage adequate
- IIIB: Severe soft-tissue damage and substantial contamination; coverage inadequate
- IIIC: Arterial injury requiring repair.

Guidelines

1. Patients will be evaluated and treated according to the Advanced Trauma Life Support guidelines. Extremity fractures, especially open, may be addressed if there is significant bleeding during the primary/secondary survey.
2. Orthopedic Surgery will be consulted as soon as the open fracture is identified.
3. The limb must be immediately grossly aligned, and splinted if possible. This is best done with a member of the orthopedic team present.
4. When the patient is stabilized, the fracture will be examined (preferably with a member of the orthopedic team present). Complete distal neurovascular exam of the limb should be documented.

5. Gross contamination should be removed by irrigation with sterile saline and all wounds covered with a dressing dampened with saline only.
6. Initial radiographs should be in both the AP and lateral planes with no coning down, and should include the joint above and below the fracture.
7. Tetanus prophylaxis should be updated if last booster more than 5 years ago.
8. Antibiotics should be started as soon as the open fracture diagnosis is made. Although an optimal regiment is undefined, a suggested course includes Cefazolin 1 gram IV q8hours for Type I and II fractures with consideration of gram negative coverage with an aminoglycoside or a fluoroquinolone for type III fractures. Clindamycin may be used if the patient has a Penicillin or Cephalosporin allergy. High-dose penicillin may be added to the antibiotic regiment when there is concern for fecal/Clostridial contamination such as in farm related injuries.
9. Early operative debridement should be performed on most open fractures. The urgency of open fracture debridement is determined by the Orthopedic specialist with consideration of the severity of the fracture, the significance of soft tissue injury and the level of contamination. For polytrauma patients, determination for time to OR is made in conjunction with the Trauma Surgeon, based on the stability of the patient and concomitant injuries. Decision making for timing of surgical debridement (or decision to not debride) should be documented in the medical record.
10. Low velocity gunshot wounds without extensive soft tissue injury may, in most cases, be treated as closed fractures with the addition of antibiotic therapy per surgeon discretion.

Approval: Trauma Peer Review Committee 7/18/17