

Open or compound fracture = a broken bone that communicates through skin with environment.

Gustilo and Anderson classification of open fractures

- Grade I: clean wound, <1cm diameter, simple fracture, no skin crushing.
- Grade II: lac>1cm, without significant soft tissue crushing, moderately comminuted #.
- Grade III:
 - A: >10cm lac + crushing/contamination, but adequate soft tissue coverage.
 - B: >10cm lac + crushing/contamination, inadequate soft tissue coverage.
 - C: any open # associated with vascular injury that requires repair.
- Grade IV: Subtotal or total amputation

Management

- Aims: Prevention of infection, ensure healing of the fracture and restoration of function.
- Adequate fluid/blood replacement, analgesia, splinting, antibiotics (cephalosporin + aminoglycoside for Gram neg coverage if Type III) and tetanus prophylaxis are required before surgical treatment.
- Initially irrigate with saline, cover with sterile moist dressing, and keep wound covered until surgery in order to reduce risk of infection.
- Associated injuries may be severe and also require urgent treatment.

Surgical

- Early and complete debridement of non-viable tissue and stabilisation of the fracture.
- Delay in debridement (>6-8hr) is associated with increased infection rates.
- Early wound management generally includes the use of antibiotic-impregnated beads and definitive wound closure within 1wk of injury.

Complications

- Acute wound infection
 - Gustilo grade I: infection rate 0%; amputation rate 0-2%
 - Gustilo grade II: infection rate 0%; amputation rate 2-7%
 - Gustilo grade IIIA: infection rate 7%; amputation rate 2.5%
 - Gustilo grade IIIB: infection rate 10-50%; amputation rate 5.6%
 - Gustilo grade IIIC: infection rate 25-50%; amputation rate 25%
- Tetanus infection.
- Osteomyelitis.
- Neurovascular injury
- Compartment syndrome can occur.