SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai

DEPARTMENT: ALLIED HEALTH SCIENCES

COURSE NAME: OBG

Topic: Open fracture

Introduction

DEFINITION

An open fracture, also called a compound fracture, is a fracture in which there is an open wound or break in the skin near the site of the broken bone. Most often, this wound is caused by a fragment of bone breaking through the skin at the moment of the injury.

The principles of open fracture management are to manage the overall injury and specifically prevent primary contamination becoming frank infection. The surgical management of these complex injuries includes debridement & lavage of the open wound with combined bony and soft tissue reconstruction.

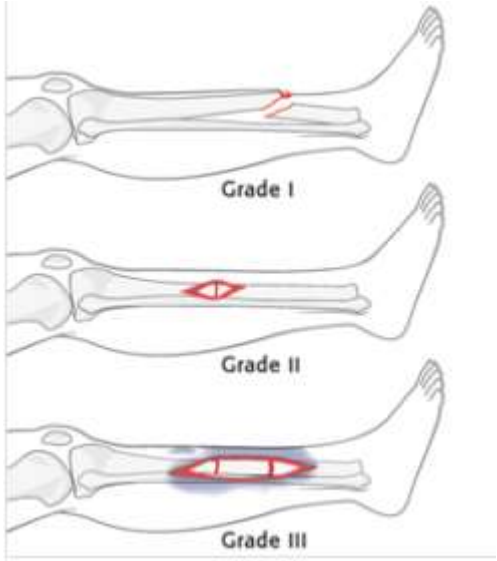
ETIOLOGY

High-energy trauma, such as a motor vehicle accident

Low-velocity trauma that pierces the skin with sharp bone fragments

Classification of open fracture

Classification	Description
Type 1	Puncture wound of less than or equal to 1.0 cm with minimal soft tissue injury
Type 2	Wound is greater than 1.0 cm in length Moderate soft tissue injury Soft tissue coverage of the bone is adequate Comminution is minimal
Type 3A	Extensive soft tissue damage Includes massively contaminated, severely comminuted or segmental fractures as well as farm injuries Soft tissue coverage of the bone is adequate
Type 3B	Extensive soft tissue damage with periosteal stripping and bone exposure Severely contaminated and comminuted Flap coverage is required to provide soft tissue coverage
Type 3C	Associated with an arterial injury requiring repair for limb salvage



Complications

- Infection
- Nonunion
- Compartment syndrome
- Neurovascular injuries
- Malunion
- Delayed union
- Increased amputation rate
- Prolonged morbidity and mortality.

Diagnosis

History collection- mode of injury

Physical examination- examine the wound and fracture site.

- damage to soft tissues, nerves, and circulation.
- the color and temperature of the skin.
- pulse and blood pressure.

Imaging tests

- X-rays will show the number of breaks in the bone, as well as the position and degree of separation between the bony fragments.
- CT scans use X-ray beams to capture detailed images of the bone, surrounding soft tissue, muscles, and blood vessels.
- MRIs provide further detail of bone and soft-tissue injury.

Treatment

- cleaning the wound
- setting the broken bone and
- preventing infection.

First line management

- Stop bleeding by applying pressure to the wound with a sterile bandage or clean cloth
- Keep the injured area from moving
- Apply ice packs to reduce swelling and pain
- Treat for shock

1. Suspected Open Fracture arrives in ED
2. Immediately administer Ancef 2 gram loading dose
3. (If allergic to penicillin analogues: Give vancomycin 15mg/kg)
4. If wound is larger than a puncture wound (greater than 1cm): add Gentamycin 5mg/kg. If farm injury suspected, add PCN G
5. After initiation of antibiotics: may then proceed to further imaging and discussing case with orthopedic surgery

Surgical management

- **Debridement and irrigation**: Remove damaged tissue and foreign material, and wash the wound with saline to prevent infection
- **Internal fixation**: Insert metal plates, rods, or screws into the broken bone to hold it together
- **Antibiotics**: Administer antibiotics as soon as possible to prevent infection

Cont....

Antibiotics

Administer antibiotics as soon as possible to prevent infection

Immobilization

- Wear a sling, cast, or splint to keep the injured limb immobile

Pain management

- Take medications as directed and as needed
- Medications such as Paracetamol or Ibuprofen will relieve aches and discomfort

Infection prevention

- Avoid repetitive uncovering of the wound, which increases infection rates
- Thoroughly debride devitalized tissue to prevent deep infection