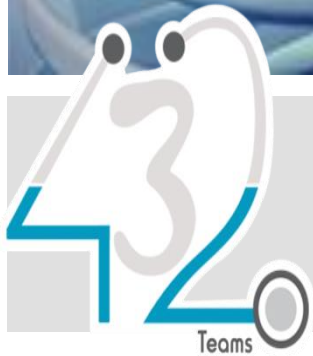


# Orthopedics

## OSCE - Open Fracture Management



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**Color Code:**

**Slides**

**431 team work**

**Sessions' Notes**

**Arabic Words**

**Team Notes**

**Books' notes**

**Important**

**Other Sources**

# Basic Principles of Open Fracture Management

## The management in ER then OR

### Introduction:

- Open fractures: fractures that are exposed to the external environment. The amount of soft tissue destruction is related to the level of energy imparted to the limb during the traumatic episode.
- Open fracture can be an isolated entity or part of high energy multiple trauma injuries. Approach should be always toward saving patient's life, safe patient's limb then save limb's function.
- Most likely the trauma that cause open fracture it is high energy (e.g RTA) so u need first to stabilized the patient by ATLS whenever pt stable move to the limb

### Classification:

Open fractures are commonly described using the Gustilo grading system:

- Type 1: small (<1cm), clean wounds, minimal injury to the musculature and no significant stripping of periosteum from bone
- Type 2: large (> 1 cm but < 10 cm) wounds, no significant soft tissue damage
- Type 3:
  - A: large wounds those are associated with extensive injury of soft tissue but adequate viable soft tissue present to cover the bone
  - B: large wounds those are associated with extensive injury of soft tissue without adequate viable soft tissue present to cover the bone
  - C: Open fractures associated with Vascular injury Open fracture can be an isolated entity or part of high energy multiple trauma injuries. Approach should be always toward saving patient's life, safe patient's limb then save limb's function.

**To Know whether it is 3B Or 3C Check for pulse.**

**The following is a practical approach specific to open fracture management:****1-in ER:**

- 1) WIPE: Ensure that you follow the standard bio-hazard precautions guideline (gowns, shoes cover, sterile gloves), **dressing pads, normal saline**
  - Obtain informed consent from patient, explaining to him what are you going to do
- 2) Administer appropriate analgesia.
- 3) Start IV antibiotic based on open fracture initial staging and patient allergy history. **According to doctor judgment (1st cephalosporin is used always then according to the wound and doctor judgment he can add other antibiotics).**
- 4) Consider administration of appropriate Tetanus prophylaxis.
- 5) Initial local wound care
  - 1/ Expose the wound and obtain photograph if possible **(take a picture to avoid opening the wound again. Also, as medicolegal documentation)**
  - 2/Remove any obvious foreign body from wound (avoid digging deep into wound) **(e.g. glass, clothes or dust)**
  - 3/Irrigate wound with Normal Saline (1-2 L)
  - 4/Push any prominent fracture fragment gently,
  - 5/ Cover the wound with sterile saline-soaked gauzes
  - 6/Wrap the limb with sterile cotton roll
- 6) Check distal neurovascular status & **check for compartment syndrome: wooden skin and painful big toe traction).**
- 7) Reduction: reduce fracture by applying traction and counter-traction followed by correcting the deformity.
- 8) Immobilization: apply appropriate temporary splint.
- 9) Re-check distal neurovascular status.
- 10) Send patient for appropriate X-rays. **( Do X-ray 2 views and 2 joints (distal and proximal joint ) When patient stable take him to OR**

**2-in OR:**

**Book patient for urgent debridement, thorough irrigation and application of external fixation.**

**A- In debridement start with damaged skin:** Then remove dead muscles (how to know if this muscles is dead or not? Look to: Color, capability to bleed, contractions by stimulate the muscle using forceps or electrical cutlery, muscle consistency. Then bone: any free bone is removed except intraarticular pieces.

**B- Irrigation:** using gravity method to prevent further contamination to the wound.

**C-Reduction then fixation (external fixation):** We will not close the wound from the first look we need to keep it open and do 2nd look.

**We may need 2nd debridement.**

Whenever the wound become clean close it and the definitive Tx will be IM nail.

**Second look surgery after 48-72 hours; Wound debridement and possible closure can be considered.**

- ❖ Refer to your lecture for antibiotic selection.
- ❖ Refer to your lecture for tetanus prophylaxis.

#### Dressing pads



### Summary

- Open fracture: A Fracture that at some point communicated with the environment.
- The Bone could be visible within the opening wound at time of presentation or not
- You have to keep in mind that any wound close to a fracture is potentially an open fracture until proven otherwise!!!
- If a small wound continuously oozing blood + you see fat droplet within the blood, it is an open fracture for sure.
- If Poly trauma apply ATLS
- If Isolated take full Hx (time since injury, past surgical/medical history, allergy, drugs, smoking, when was the last meal)
- Remember To check neurovascular status on arrival, post reduction, and after
- Splinting, before OR, and after OR. Document everything.
- Grade 1 Give 1<sup>st</sup> generation cephalosporin (gram +ve) Ex: cefazolin
- Grade 2 cover both gram -ve and +ve by adding Gentamicin
- Grade 3 add penicillin to cover for anaerobes such as clostridium
- **Tetanus Vaccination (depends on the wound):**
  - **Clean wound:** if booster less than 10 years do nothing, if more than 10 years or patient does not know or unconscious give 0.5 ml Td
  - **Other wounds:** if booster less than 5 year Do nothing, more than 5 years give 0.5 ml Td. If not known or patient unconscious give 0.5 ml + TIG 250U (immunoglobulin)