Basic Principles of Open Fracture Management

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.

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.

The following is a practical approach specific to open fracture management:

- Ensure that you follow the standard bio-hazard precautions guideline (gowns, shoes cover, sterile gloves)
- Obtain informed consent from patient, explaining to him what are you going to do.
- Administer appropriate analgesia.
- Start IV antibiotic based on open fracture initial staging and patient allergy history.
- Consider administration of appropriate Tetanus prophylaxis.

- Initial local wound care
    - Expose the wound and obtain photograph if possible
    - Remove any obvious foreign body from wound (avoid digging deep into wound)
    - Irrigate wound with Normal Saline (1-2 L)
    - Push any prominent fracture fragment gently,
    - Cover the wound with sterile saline-soaked gauzes
    - Wrap the limb with sterile cotton roll
- Check distal neurovascular status.
- Reduction: reduce fracture by applying traction and counter-traction followed by correcting the deformity.
- Immobilization: apply appropriate temporary splint.
- Re-check distal neurovascular status.
- Send patient for appropriate X-rays.
- Book patient for urgent debridement, thorough irrigation and application of external fixation.
- 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.