Evaluation and Treatment of Skin Injuries

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Composition of skin

- Skin consists of four layers
  - Epidermis
  - Dermis
  - Superficial fascia (SQ layer)
  - Deep fascia

Wounds

- Assessment:
  - History of present condition
  - Type of injury
  - Blunt vs. penetrating
  - Extent of contamination
  - Location of injury
  - Time since injury
  - Mechanism of injury
  - Care and treatment after injury
    - Prior to arrival
    - Occurred at work or home
  - Past medical history
  - If hand injury
  - Which hand is dominant
  - Immunizations – tetanus
  - Allergies
  - Medications
  - Alcohol / other drug ingestion
Wound Assessment and Documentation

- Length of wound
- Anatomic location
- Depth of wound
- Foreign body
- Function of area and region distal
- Neurovascular and vascular assessment of the area around and distal to the wound
- Do prior to anesthesia
- Jewelry

Wounds – Physical exam

- Is bleeding controlled?
- Depth, length, width, & nature of wound
- Extent of bruised or necrotic tissue
- Flaps of skin too thin for adequate vascularity
- Obvious skin / wound contamination
- Function preserved or lost in affected part
- Underlying fracture
- Possible foreign body
- The 6 P's of evaluation
  - Pain
  - Pallor
  - Pulses
  - Paresthesia
  - Paralysis
  - Pressure

Closure pearls

- Close all structural layers
- Treat the tissues gently
  - Do not add trauma
- Approximate the dermal – dermal interface
  - This layer is the only wound edge to heal by primary intention
- If area of tension or possible inversion
  - Vertical mattress suture
**Closure pearls**

- Beware of puncture wounds
- Beware of bites
- Particularly human
- Cosmesis a concern
- Close the vermillion border of the lip first
- Use chromic inside of the wet-dry line

**Closing the vermillion border**

**Needle placement**
Simple interrupted

Video on Simple Interrupted

https://www.youtube.com/watch?v=VmaenTlew9w

Running stitch

Running locked stitch
Video on Running Stitch

- https://www.youtube.com/watch?v=xnm5s5N1V4
Subcutaneous (buried) suture

Buried Subcuticular simple

- [https://www.youtube.com/watch?v=Vq7upc.vyFk](https://www.youtube.com/watch?v=Vq7upc.vyFk)

Horizontal Mattress Suture
Horizontal Mattress Suture

- https://www.youtube.com/watch?v=d19i91H1E6A

Vertical Mattress

Vertical Mattress Suture

- https://www.youtube.com/watch?v=6qdB7NKQWIo
Anesthesia- injectable

- Act by diffusing across neural sheaths and interfere with depolarization
- Given subdermal
- Blocks a-fibers only; still have vibration
- Ester (Novacaine, Cocaine)
- Rarely used unless “amides” contraindicated
- Amides (lidocaine, sensorcaine/bupivicaine)
- Most common usage

Pharmacology of Local Anesthetics

- Local anesthetics have a lipid soluble hydrophobic aromatic group and a hydrophilic amide group
- Ester linkage more easily broken than ammide
- Amide is heat stable
- Ester produces para-aminobenzoate (PABA) which causes allergic reactions.
- Work by interfering with sodium influx across the nerve membrane
- High lipid solubility allows for neural sheath solubiity
- Drug passes through lipid membrane if unionized
- Alkaline environment required for drug to be unionized

Injectable Anesthesia

- Lidocaine
  - Tolerated to a dose of 4 mg/kg
  - For 70 kg patient what is a potentially lethal subdermal injection?
  - Small gauge needle
  - Combine with NaHCO3 at 1:10 ratio
  - Can be combined with epinephrine
  - Avoid blood flow sensitive areas
- Toxicity
  - Cardiovascular
    - Myocardial inhibitory effects cause hypotension and bradycardia
  - Excitatory central nervous system
    - Can induce seizures
  - Vaeuvagal syncope
  - Most common reaction
  - Condition transient
  - Patient should lie down during suturing
Digital block

Single injection digital blocks

One injection digital block
Volar Digital Block – one point

https://www.youtube.com/watch?v=G6jyw7l3bZs