# SIM LAB: SUTURING

The goals of wound management are simple:

- 1. Avoid infection
- 2. Wound closure
- 3. Cosmesis

Left untreated, most wounds will heal without any problem, however some may become infected or leave an ugly scar.

# **Tetanus Prophylaxis:**

## **Tetanus Prophylaxis Recommendations**

History of Previous Immunization	Clean, Minor Wounds	Other (Dirty) Wounds
Uncertain or fewer than 3 doses	Give vaccine (Td)	Give vaccine (Td) and immunoglubulin (Ig)
3 or more previous doses	Vaccinate if more than 10 years since last dose	Vaccinate if more than 5 years since last dose

# **Physical Exam:**

Remember that good lighting is key to wound examination. Start with an assessment of neurovascular status distally. Check for capillary refill, motor function and sensation.

# **Wound Preparation:**

## **Anesthetization**

Often given prior to wound cleaning and debridement, as well as repair. Local anesthesia come in two major types: Amides—Lidocaine

Esters—Marcaine

If allergy to both: consider diluted diphenhydramine.

Local infiltration of local anesthetic tends to be painful. Consider:

- -Buffering with sodium bicarbonate at a 1:10 ratio.
- -Warming the solution to body temperature
- -Decrease the rate of injection, injecting through the wound edges instead of through intact skin,
- -Use of smaller guage needles
- -Topical anesthetics prior to injection

## Cleansing

Remove surrounding hair, cosmesis considered. Bacteria normally live in the hair follicles. Consider clipping hair around the wound. Clear nonviable tissue around the wound edge.

Scrubbing a wound may also lead to increased wound infections and increased tissue damage. However, if scrubbing is necessary in highly contaminated wounds, use a highly porous sponge and a tissue surfactant.

Irrigation of most wounds can be done with simple tap water, though normal saline is most commonly used in the emergency room. The optimal pressure of irrigation for most wounds is about 5 to 8 psi, which can be done by squirting the irrigant through a 30 to 60 mL syringe through an 18 ga angiocath. However, delicate areas such as eyelids should not be irrigated under pressure.

#### **Wound Closure:**

Ideally, the best wound closure would be quick, painless, cheap and produce little scarring or infection. The available options include:

- -Sutures
- -Staples
- -Tapes
- -Glue

#### Sutures

- -Nylon has good tensile strength, low tissue reactivity and the knot holds well
- -Polypropylene (prolene) has the best strength but knots slide
- -Silk has the best knot security but the most tissue reactivity
- -Absorbable suture dissolve with time.
  - -Retain strength for about a week to months
  - -Should be used for deeper lacerations to close dead space/relieve skin

## **Adhesive Tapes**

Steri-strips are less reactive than staples; the tincture of benzoin needed to make them stick may increase the risk of wound infections. They do not withstand pressure very well. Shouldn't be used for primary closure of wounds, but can be helpful after sutures have been removed.

#### Tissue Adhesives

Dermabond (2-octylcyanoacrylate) has great utility in small lacerations that are not under tension. It is quick to apply, produces, minimal scarring, painless and has bacteriostatic properties. It should not be applied to wounds which are under tension, near joints, near the eyes or in hair.

When should you close a wound? Usually within 24 hours.

Delayed closure: On initial presentation the wound is cleaned and dressed and closed at a later time. This is usually used in contaminated wounds.

Secondary closure: Allowing the wound to heal on it's own. Reserved for more contaminated wounds, but leaves more unsightly scarring.

## Video Links:

Simple Interrupted: <u>ALiEM Video</u> (3 min)
Corner Suture: <u>ALiEM Video</u> (1 min)
Buried Sutures: <u>ALiEM Video</u> (3 min)
Horizontal Mattress: <u>ALiEM Video</u> (3 min)
Vertical Mattress: <u>ALiEM Video</u> (3 min)

All ALiEM suture videos: <a href="http://www.aliem.com/videos/">http://www.aliem.com/videos/</a>