Tips for Laceration Repair in the Pediatric Patient

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Repairing Lacerations

- A human being has approximately 3000 skin injuries during a lifetime.
- Wound closure is a criterion for survival for all living organisms.
- Restoring of the outer surface to protect the individual from infection and dehydration.
- Skin laceration repair is an important skill for a pediatrician.

Normal Wound Repair
How to Evaluate a Laceration?

- Bleeding? Direct pressure.
- Hx
  - Mechanism and time.
  - Personal info
  - Allergies
- Careful exploration. **Neurovascular and functional status.**
When to Get Help?*

- Deep wounds of the hand or foot.
- Full-thickness lacerations of the eyelid, lip, or ear.
- Lacerations involving nerves, arteries, bones, or joints.
- Penetrating wounds of unknown depth.
- Severe crush injuries.
- Severely contaminated wounds requiring drainage.
- Wounds leading to a strong concern about cosmetic outcome.

*Surgical consultation should be considered for these wounds; however, referral decisions are ultimately based on the physician’s level of expertise, experience, and comfort with managing the laceration.

Laceration evaluation

- Local anesthesia.
- Sedation- IV, Oral or intranasal.
- Large laceration with exposed underlying tissue -> repair.
- Smaller simple hand laceration <2cm may heal with conservative management.

Minimizing the Pain of Local Anesthesia Injection

- Lidocaine and Epinephrine.
- Buffer the Lidocaine and Epinephrine.
- Warm the Local Anesthetic.
- Smaller diameter and use fresh needles.
- Look away.
- Distraction.
- Topical and cooling with ice.
Local Anesthesia Injection

Goals of Laceration repair

- Hemostasis.
- Avoid infection. Optimal time?
- Restore function to the involved tissues.
- Achieve optimal cosmetic results with minimal scarring.

Wound Preparation

- Copious wound irrigation with normal saline or tap water.
- Warmed irrigation solution¹.
- Povidone-iodine solution, hydrogen peroxide and detergent should not be used².
- Visible foreign material and devitalized tissue should be removed with sharp debridement.
- Local hair can be clipped (not shav
Laceration Repair Techniques

- Sutures, tissue adhesives, staples, and skin-closure tape.
- Sutures is the preferred technique for laceration repair.
- Areas with low skin tension, such as on the face, shin, and dorsal hand, may be effectively repaired with tissue adhesives, especially in children.
- Aseptic techniques must be used.

Surgical technique

- Atraumatic technique
- Minimizing tension
- Skin eversion
- Perfect apposition
- Use of natural skin tension

“Smaller surgical scars are achieved with meticulous approximation of corresponding wound edges, no skin edge trauma, and less resultant inflammation”

Laceration Repair

<table>
<thead>
<tr>
<th>Wound localization</th>
<th>Suture material</th>
<th>Closure technique</th>
<th>Suture removal (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scalp</td>
<td>6-0 or 8-0 nonabsorbable, monofilament</td>
<td>Simple, running stitches</td>
<td>7-12</td>
</tr>
<tr>
<td>Face</td>
<td>4-0 or 5-0 synthetic absorbable or 6-0 nonabsorbable, monofilament</td>
<td>In layers, in case of full-thickness wound, running or single sutures</td>
<td>3-5</td>
</tr>
<tr>
<td>Eyelid</td>
<td>5-0 or 6-0 nonabsorbable, monofilament</td>
<td>Single-row stitches or horizontal mattress sutures (secured with Steri-Strip for 10 days)</td>
<td>5</td>
</tr>
<tr>
<td>Lip, oral cavity</td>
<td>4-0 or 5-0 absorbable for musculomucosal defects, 6-0 nonabsorbable for skin</td>
<td>In layers, mucosa, muscle, skin, single stitches</td>
<td>3-5</td>
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## Laceration Repair

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<tr>
<td>Neck</td>
<td>0-0 absorbable, 5-0 nonabsorbable, monofilament</td>
<td>Simple interrupted, concertina, Vicryl, running, intracutaneous sutures</td>
<td>5-6</td>
</tr>
<tr>
<td>Abdomen, back</td>
<td>3-0 or 4-0 absorbable, 5-0 nonabsorbable, monofilament</td>
<td>Single or multiple interrupted, horizontal mattress sutures</td>
<td>8-12</td>
</tr>
<tr>
<td>Limbs</td>
<td>3-0 or 4-0 absorbable, 5-0 nonabsorbable, monofilament</td>
<td>Single or multilayered sutures; intracutaneous, running sutures</td>
<td>6–12</td>
</tr>
<tr>
<td>Hands and feet</td>
<td>6-0 or 8-0 nonabsorbable, monofilament</td>
<td>Allgöwer / Donati stitches; splints for joint-crossing wounds or wounds with high mechanical tension</td>
<td>7–12</td>
</tr>
</tbody>
</table>

### Suturing techniques

**A**

**B**

**C**

**D**

**E**

**F**

**G**

**H**
After...

- Clean wound with saline.
- Dressing?
- Tissue adhesives?
- Laceration over joints → splint.
- Keep dry for 24 hrs?
- Antibiotic or white petrolatum ointment?
- Removal depends on wound location.
- Tetanus.

Summary

- Sutures, tissue adhesives, staples, and skin-closure tapes are options.
- The sting of local anesthesia injections can be lessened by using smaller gauge needles, administering the injection slowly, and warming or buffering the solution.
- Tap water is safe to use for irrigation.
- White petrolatum ointment is as effective as antibiotic ointment in postprocedure care.
- Wetting the wound as early as 12 hours after repair does not increase the risk of infection.

Thank you!!

Q&A
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