ADVANCED SUTURES AND WOUND REPAIR FOR THE FAMILY DOCTOR

OBJECTIVES:
1. Improve understanding of the Physiology of Advanced Wound Repairs
2. Approaches to Advanced Skin Repairs
3. Practical Tips to promote the best wound Closures

DENNIS LARAVIA, M.D.
BASIC SUTURING: A REVIEW

- General Suture and Repair Concepts
- Cleansing and Irrigation
- Anesthetic Choices
- Suture Selection
- Healing Considerations
- Suture Removal Considerations
- Post-op Discussion

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General Suture and Repair Concepts

- Thorough Debridement and Cleansing
- Appropriate Anesthesia
- Proper Selection of Suture
- Good closure techniques:
  - Approximation, not strangulation
  - Mild eversion, no inversion
  - Suture not too close to skin edge
General Suture and Repair Concepts (cont)

- Rules of Halves

Arrow denotes Suture
General Suture and Repair Concepts

- Rule of Thirds:

Arrow denotes site of suture

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Basic Closure: Continued

- Followup
- Suture Removal Timing
- Long-term skin care
- Wound Healing:
  - 0–5 Days = Initial Lag Phase
  - 5–14 Days = Initial Healing Phase
  - 14–365 Days = Complete Healing
Understand Patient Expectations

- Patient Education
  - Basic Healing Explanation
  - Options for Patient to consider
- Patient Expectations
  - Make sure communication is occurring!
Discuss Options/Choose Option

- Develop options for treatment with the patient
- Develop Best Plan with patient’s agreement
- Discuss details of approach
- Discuss, in general, post-op and healing expectations
Perform the “Right” Procedure Correctly

- Review anatomy of region
  - Underlying structures
- Preparation of the Wound
- Type of anesthesia
- Type of suture
  - Take care to place the right suture in the right place (set a high standard)
Perform the Procedure Correctly—Review Anatomy

- Facial Areas
- Neck Areas
- Wrist and Hand
- Knees and Elbows
- Other areas with significant deep structures to the wound or lesion
- The Anxious Patient
Perform the Procedure Correctly—Preparation of Wound

- Antiseptic/Aseptic Prep
  - Betadine ^^^
  - Alcohol **
  - Soap Cleanser
  - Other Preps
- Site and individual Dependent

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Perform the Procedure Correctly—Preparation of Wound (cont)

- Anesthetic
  - Block
  - Local
  - Topical / EMLA
  - Buffered Solution: Why?
    - 1:10 Dilution of Sodium Bicarbonate to Anesthetic with Epinephrine
  - Choice of materials
    - Lidocaine
    - Mepivacaine
    - With or without epinephrine
## Anesthetic Concentrations:

<table>
<thead>
<tr>
<th>Equivalent Concentration</th>
<th>Local Anesthetic</th>
<th>Onset</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1% minutes</td>
<td>Lidocaine</td>
<td>1 min</td>
<td>45–60</td>
</tr>
<tr>
<td>1%</td>
<td>Lidocaine w/epi</td>
<td>1 min</td>
<td>2 – 6 hours</td>
</tr>
<tr>
<td>1% minutes</td>
<td>Mepivacaine</td>
<td>3–5 mins</td>
<td>45–90</td>
</tr>
<tr>
<td>.25%</td>
<td>Bupivacaine (Marcaine)</td>
<td>5 mins</td>
<td>2–4 hours</td>
</tr>
<tr>
<td>.25%</td>
<td>Bupivacaine w/epi</td>
<td>5 mins</td>
<td>3–7 hours</td>
</tr>
</tbody>
</table>
## Sutures

<table>
<thead>
<tr>
<th>Suture/Types</th>
<th>Tissue Reaction</th>
<th>Absorption Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorbable Sutures:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gut/Plain</td>
<td>Moderate</td>
<td>70 days</td>
</tr>
<tr>
<td>Gut/Chromic</td>
<td>Moderate</td>
<td>90 days</td>
</tr>
<tr>
<td>Polyglycolic/Mono (Dexon)</td>
<td>Mild</td>
<td>40% 7 days</td>
</tr>
<tr>
<td>Polyglactic/Braided (Vicryl)</td>
<td>Mild</td>
<td>60–90 days</td>
</tr>
</tbody>
</table>

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Post–Op Care & Instructions

- Patient Responsibilities:
  - Clean–Daily?
  - Dry or wet–Antibiotic ointment?
  - Covered or not
    - Site Dependent
    - Individual Dependent
  - Return time
  - Call/Come In for departures from the expected
Post–Op Care (continued)

- Physician Responsibilities:
  - Suture Removal—When?
    - ✓ Face, Scalp, and Neck—5 to 7 days
    - ✓ Hands, Arms, and Feet—9–12 days
    - ✓ Trunk—12 to 14 days
    - ✓ Legs—12 to 21 days
  - Post–op evaluation
  - Individual care
  - Return Appointments

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Plastic Repairs

- Lines of Langerhans

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Lines of Langerhans cont’d
This process allows us to move tissue more easily. Generally the Burow’s Triangles are removed, but we will discuss specific applications in “hands-on” workshop!
Undermine?

- Why undermine?
  - Changes the lines of tension
  - Allows “creep effect”
  - Provides reduction in scar potential
- How to undermine
- Burow’s Triangle—What is the purpose?
Advanced Closures and The CREEP PHENOMENON

- CREEP Effect: This is the skin expansion phenomenon that was first reported by the Japanese, but witnessed by many of us doing plastic procedures. This gradual expansion/extension of the skin is genetically designed by our Creator to allow healing of large defects and ulcers under good healing conditions. This genetic tendency is absolutely essential for the good results of plastic and flap repairs.

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CREEP PHENOMENON

- Skin Mechanics or hysteresis is the movement and pliability of skin and known as “Creep Phenomenon.” Studies have shown that the use of ethanol topically can decrease the extensibility of the outermost layers of epidermis.
- Glycerin, Water, and Paraffin oil have a positive effect on hysteresis or Creep Phenomenon.
The proper and ideal closure should be planned on a 1:3 RATIO Height to Width Minimum; many times the closure can be completed even more easily with a 1:4 or 1:5 Ratio, particularly when skin is not loose!

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The proper and ideal closure should be planned on a 1:3 RATIO Height to Width Minimum; many times the closure can be completed even more easily with a 1:4 or 1:5 Ratio, particularly when skin is not loose! Mark out the outline of the ellipse to include the lesion to be removed and the Burow’s Triangles. **THE WIDTH SHOULD BE FIGURED USING THE INSIDE OF THE BUROW’S TRIANGLES, NOT THE OUTSIDE OR END OF THE ELLIPSE.**
M-Plasty
M-PLASTY
FROM POINT 4 TO PART 5 SHOULD BE IDEALLY 3 TIMES LONGER THAN THE HEIGHT OF THE LESION REMOVED, Particularly when loose skin is not readily available

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M–Plasty

- Good choice for:
  - Scalp
  - Face
  - Arm
  - Leg
  - Foot
  - Ankle
  - Almost anywhere (especially where there is limited skin to flap)
QUESTIONS ????

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