ADVANCED WOUND MANAGEMENT

SUTURING #2: Anesthesia & Equipment
OBJECTIVES

• Understand pharmacological principles of anesthetics used for wound management
• State implications for use of local anesthetics lidocaine and epinephrine in wound management
• Describe proper wound infiltration with local anesthesia
• Describe suture material selection with rationale
Pharmacology of Local Anesthetics

• Diffuses across the neural sheath & membrane
  • Interferes with neural depolarization & blocks impulse transmission

• Pain fibers: thin/unmyelinated
  • Lido 1% easily blocks these fibers

• Pressure fibers: thicker/myelinated
  • Lido 2% blocks these fibers
  • Consider for child & apprehensive adult
Pharmacology of Local Anesthetics

AMIDES

- **Lidocaine (xyelocaine)**
  - Duration 30-120 min; max dose 300 mg or 4.5mg/kg (with epi 500 mg or 7mg/kg)
  - Children 4mg/kg plain; 7 mg/kg lido 1% with epi
- **Bupivacaine (marcaine)**
  - Duration 4-8 hours; max dose 175 mg (with epi 250 mg)
Pharmacology of Local Anesthetics

- Epinephrine Use in Local Anesthesia
  - ADVANTAGES: vasoconstriction, decrease bleeding & toxicity
  - DISADVANTAGES: increases cardiac irritability, B/P, allergic reaction & tissue ischemia
- NEVER use EPI on PENIS, NOSE or EARS. Caution use on areas of potential vascular compromise
Toxicology & Local Anesthetics

• CV Reactions
  • Caused by inadvertent IV injections or OD
    • Hypotension & Bradycardia, symptomatic tx
• CNS Excitatory Effects
  • Caused by inadvertent IV injections or OD
    • Seizure activity, symptomatic tx
• Vasovagal Reaction
  • Secondary to Anxiety & Pain
• The PATIENT SHOULD ALWAYS BE SUPINE!!!!
Anesthetic Allergies

- True Allergies < 1%
  - Usually to Esthers-Novocaine, Tetracaine
- Attempt to identify actual response
  - Epi can cause anxiety
  - Commonly used in dental procedures
- Treat allergic reactions in the standard manner
  - Airway, IV (Benadryl, Pepcid, Solumedrol)
  - SubQ Epi especially if angioedema, hypotension, or wheezing
# Anesthetic Allergies

## BOX 1  Manifestations of Systemic Toxicity

<table>
<thead>
<tr>
<th>Minor (Associated With Low Plasma Levels)</th>
<th>Major (Associated With High Plasma Levels)</th>
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</thead>
<tbody>
<tr>
<td>- Perioral numbness</td>
<td>- Sudden loss of consciousness</td>
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<tr>
<td>- Facial tingling</td>
<td>- Tonic-clonic seizures</td>
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<tr>
<td>- Restlessness</td>
<td>- Cardiovascular collapse</td>
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<tr>
<td>- Tinnitus</td>
<td>- Cardiac arrest</td>
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<tr>
<td>- Metallic taste</td>
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<td>- Vertigo</td>
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<td>- Slurred speech</td>
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Alternative Anesthesia Techniques

- No local in small wounds
- Infiltrate NS in small wounds
- Gentle ice massage over small wounds
- Preservative free preparations
- Infiltrate with 1% Benadryl solution
  - Mix 1cc Benadryl (50mg/cc) & 4cc NS
Decreasing the Pain of Infiltration

• Buffering
  • Add 1cc of Na Bicarb to 9cc of Lido to ↑ pH of solution from 6.49 to 7.38

• Topical
  • Ice massage over area pre-injection
  • Lidocaine soaked cotton balls in wound
  • Ethyl Chloride over site pre-injection
  • EMLA cream
  • L.E.T/T.A.C
Wound Infiltration Methods

- **Packing/Topical**: no needle but soaked gauze/cotton balls packing also tamponades small vessels without distorting tissue, usually 2% lidocaine

- **Local Infiltration**: use 25 g or 27 g needle to inject slowly into wound edges, inject evenly as needle is withdrawn, extra attn. to wound ends

- **Peripheral Nerve Block**: also known as digital block of fingers and toes
Local Wound Infiltration Techniques
Coding for Local Anesthesia

• CPT Codes
  • 01460 Anesthesia for all procedures on integumentary system of lower leg, ankle and foot
  • 01800 Anesthesia for all procedures on integumentary system of forearm, wrist and hand
SUTURING MATERIALS
Suturing Materials

- Proper lighting
- Patient and clinician comfort
- Properly selected anesthetic approach with syringes and infiltration needles
- Suture Kit
  - Contents: STERILE Needle drivers, tissue forceps, scissors, gauze
- Sterile gloves
- Normal saline, betadine, phisohex, or other wound cleansing substance
- Suturing material dropped onto sterile field
Suture Selection

- Suture is numbered by the “O”s, the finer the more zero’s used
- Finer suture leaves less scar
- Choose finest suture possible for the job
  - Face: 6-0
  - Hands & Feet: 5-0, 4-0
  - Extremities & Trunk 3-0, 4-0
- Knot is the weakest point
- Needle size is always shown on package, most common are large and small
  - Most common contour is 3/8 circle and ½ circle
- Nonabsorbable is used for superficial lacerations
  - Ethilon: monofilament nylon
    - < infection risk
    - Some memory
    - Some stretch
- Absorbable is used for SQ, mucosal, episiotomies, under casts, lacs in abrasion
  - Vicryl
  - Chromic Gut: 7-10 day
Remember!

- Understand the pharmacology and potential reactions of any drug you administer and be prepared for adverse reactions.
- Always assess health history, medications, allergies and drug sensitivities before administration.
- Always assess neurovascular status and function *before and after* infiltration.
- Never infiltrate something pulsatile.
- Avoid accidental I.V. route.
- Avoid areas of erythema or infection.