

Digital Blocks

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Disclosures

- None

Definition of Local Anesthetic

- **Local anesthetic:** to produce loss of sensation of pain in a specific area of the body without loss of consciousness

Mechanism of Action

- To block voltage-gated sodium channels and then blocking signal conduction
- Works best on small-diameter neurons
 - A α -proprioception (muscle sense)
 - A β -touch, pressure & vibration
 - A δ -fast pain, cold
 - C-slow pain, warmth & itch

• [http:// the painsource.com](http://the-painsource.com) 2016

Precautions

- Diabetes
- Heart Disease
- Peripheral Vascular Disease
- Substantial tissue damage and bleeding
- Infection
 - Do not use epinephrine
- Children

Allergies

- Esters: cocaine, procaine, tetracaine, chloroprocaine and Benzocaine
- Lidocaine is **not** an ester!
- Amines: Lidocaine, mepivacaine, bupivacaine, articone, & prilocaine.
- No documented true allergy to amines that did not contain preservatives.
- Preservative usually bisulfite.

Allergic Signs & Symptoms

- Generalized body rash or skin redness
- Itching, urticaria
- Bronchospasm
- Swelling of the throat
- Asthma
- Abdominal cramping
- Irregular heartbeat
- Hypotension
- Angioedema
- Anaphylaxis

Local Anesthesia Agents

- **Lidocaine (Xylocaine)**
 - Plain 0.5%, 1%, 2%
 - Administer in small amts.
 - Max. in adult is 300mg
 - Onset 1-5 minutes
 - Duration 1-2 hrs.

Local Anesthesia Agents

- **Lidocaine With Epinephrine:** 1:100,000 or 1:200,000
 - Advantages of epinephrine: longer retention of anesthesia, less bleeding with vasoconstriction
 - Don't use on extremities: eyes, ears, nose fingers, toes, penis, scrotum & labia
 - Limit: 5mg/kg total not to exceed 500mg
 - Onset 1 minute
 - Duration: 2-6hrs.
 - Avoid or use minimal amt. with uncontrolled HTN, uncontrolled hyperparathyroidism, angina, recent MI, certain beta-blockers & tri-cyclic antidepressants, & cocaine abusers.

Local Anesthesia Agents

- **Lidocaine with Bicarb**
 - Minimizes pain with injection
 - Shelf life only 1 wk. (10days if refrigerated)
 - 9 parts of Lidocaine (1-2%) to 1 part of Na Bicarb (8.4%)
- **Bupivacaine (Marcaine) (Sensorcaine)**
 - Lasts longer than Lidocaine
 - 0.25%, 0.5%, 0.75%
 - Max. adult dose is 175mg per procedure
 - Onset: 2-5 minutes
 - Duration: 4-8hrs

Local Anesthetics-Toxicity

- **Tissue toxicity-Rare**
 - Can occur if administered in high enough concentrations
 - Usually related to preservatives added to solution
- **Systemic Toxicity-Rare**
 - Related to blood level of drug secondary to absorption site of injection
 - Range from lightheadedness, tinnitus, seizures, & CNS/CV collapse

Digital Nerve Block

- **Advantages:**
 - Relatively small dose of local anesthetic to cover large area;
 - Rapid onset
- **Disadvantages:**
 - Technical complexity
 - Neuropathy



Contraindications

- Compromised digit circulation
- Infected injection site
- Known allergy to anesthetic
- Anticoagulants or bleeding disorders

Digital Block Indications

- Large irregular lacerations
- Lacerations involving the nail or the nail bed
- Ingrown nails
- Felon or paronychia
- Trephination of subungual hematoma
- Digit dislocations or fractures

Examples



Pt. Education

- Explain procedure
- Importance of not moving during procedure
- Risks and benefits



Equipment



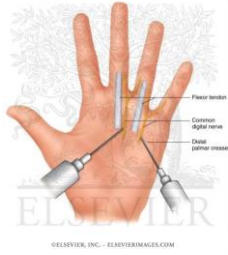
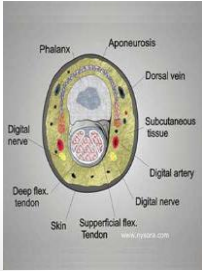
- Sterile gloves
- Normal saline
- Antiseptic soap or betadine
- 25 gauge needle for injection
- 18 gauge needle to draw up solution
- Appropriate size syringe
- Sterile towels

Remember!

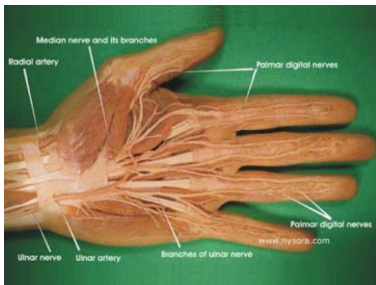
- No epinephrine for fingers, toes, ears, noses, scrotum, penis and labia



Anatomy



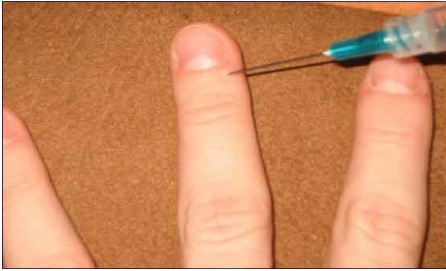
Nerves & Arteries



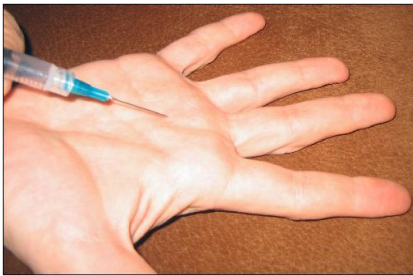
Web-Block



Wing-Block



Transthecal Block



Modified Transthecal Block



Toes



Toes



Reasons why local is not working

- Joint Hypermobility Syndrome
- Ehler-Danlos Syndrome
- Influence of Alcohol or Alcoholic
- Didn't penetrate nerve
- Aciditic tissue
- Variations of nerve distribution from person to person
- Anxiety?

Serious pain with injection



- Hitting a nerve
- Injection into artery

After Local-Possible effects

- Prolonged pain, Numbness or paresthesia
- Feeling of nervousness
- Fast heart rate or head rush



ICD 10 & CPT codes

- 64450- injection of anesthetic agent
- Finger paronychia-L03.019
- Toe paronychia- L03.039
- Subungual hematoma: thumb S60.112A, toe-S90.222A, finger-S60.10XA
- Finger dislocation-unspecified: S63.259A, interphalangeal- S63.299A,metacarpal S63.268, metacarpophalangeal S63.29A
- Finger laceration S65.518883.0, avulsion-S61.300A, complicated S65.519A
- Finger fracture-(phalanx)-S62.608 Crush injury-finger-S67.10X

Videos & Websites

- <http://www.proceduresconsult.com/medical-procedures/>
- <http://www.nysora.com>
- <http://www.dieutridau.com/en/pain-management/nerve-block>

References

- Edmunds Mayhew- Procedures for Primary Care Practitioners.
- David Brown- Atlas of Regional Anesthesia.
- Margaret Fitzgerald- Ambulatory Care Procedures for the Nurse Practitioner.
- Achar & Kundu, Principles of Office Anesthesia: Part 1 & 2 Am.FamPhysician 2002, Jul 1;66(1) 91-95, 99-102.
- Shannon Billingsley, Digital Nerve Block, NP's & PA's Vol. 15 (3) 21.
