

Local Anesthetics

Topical Agents

- Limited usefulness (primarily for children)
- Longer time to onset of action

Injectable Agents

- Local infiltration is preferable for surgery on intact skin, large wounds and when immediate anesthetic effect is required
 - Relatively quick onset of action (2-10 minutes) depending on agent
 - Duration of action 30 minutes to 6 hours depending on agent
 - Generally administered as an intradermal or subcutaneous injection blocking pain transmission from the free nerve endings in the epidermis and dermis; intradermal injection is more painful
 - Most injectable agents are weak bases with a pH of 8-9. Any physiologic acid potentially neutralizes the local reducing or eliminating effect or duration of action.

Local Anesthetics

Amides

- Lidocaine (most commonly used agent)
- Mepivacaine
- Bupivacaine/Marcaine

Esters

- Procaine/Novocaine
- Tetracaine
- Cocaine
- Benzocaine

Local Anesthetics

Lidocaine

Onset fast, 2-5 min

- Max does 5mg/Kg
- Max with epi 7mg/Kg
- Allergy rare
- Toxicity: dizziness, tinnitus, metal taste, seizure coma, ↓BP, ↓HR death

Bupivacaine

- Onset slower 5-10 min
- Max does 2mg/Kg
- Max with epi 3mg/kg
- IV injection can cause refractory asystole.

Local Anesthetic

- Lidocaine causes a blockade of voltage-gated sodium channels
- This will interfere with the neural depolarization and transmission of impulses along axons

Reduce pain of injection

- Inject through wound edges not directly into skin
- Injected slowly to reduce pressure
- Can buffer 10cc of local with 1 cc of NaHCO₃ (Sodium Bicarbonate)

Dosage of Lidocaine

Lidocaine 1%

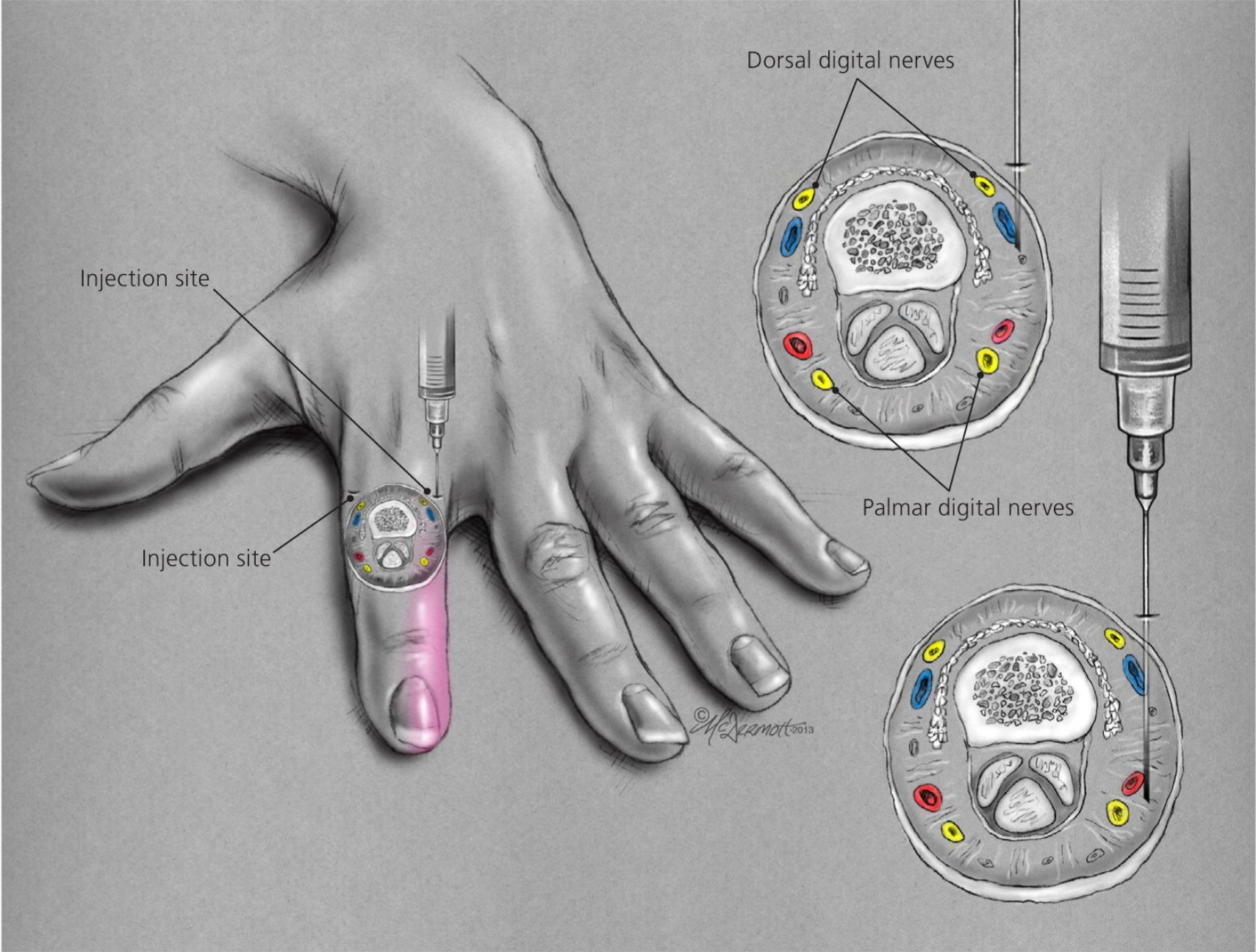
- 4.5mg/kg
- 30 ml for adult (70 kg)

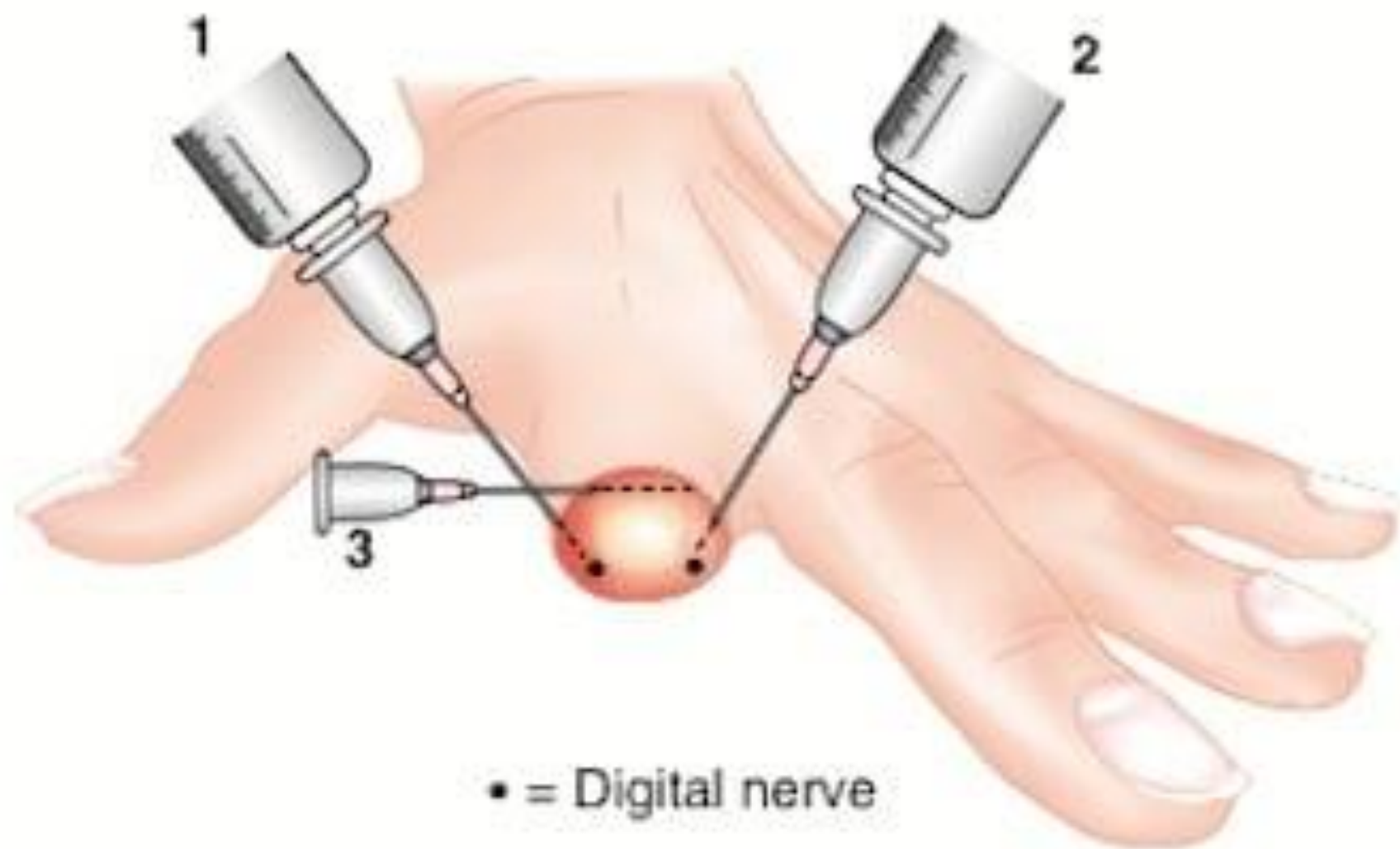
Lidocaine with epinephrine 1%

- 7 mg/kg
- 50 ml for adult (70 kg)

	Dorsal Web Space	Transthecal	Volar Subcutaneous
Also known as...	Traditional Finger Block	Flexor Tendon Sheath Block	Tumescent Block
Use for	Fingers or Toes	Fingers only	Fingers only
Success rate (%)	60-92	94-100	89
Volume of anesthetic (assuming 1% lidocaine)	1-3mL per aspect (2-6mL total)	1.5-3mL	2-3mL
Onset of action (min)	3.9-4.5	2.8-7.2	1.6-3.3
Advantages	Enhanced anesthesia to dorsal digit and nail bed	Single injection only, reduced risk of neuromuscular injury or compression	Single injection only, easier to perform, patient preferred (less procedure related pain)
Disadvantages	Two injections, increased rate of anesthesia. Higher	Potential increased risk of post-procedural pain 2/2 tendon	Reduced dorsal anesthesia

• Volar Subcutan







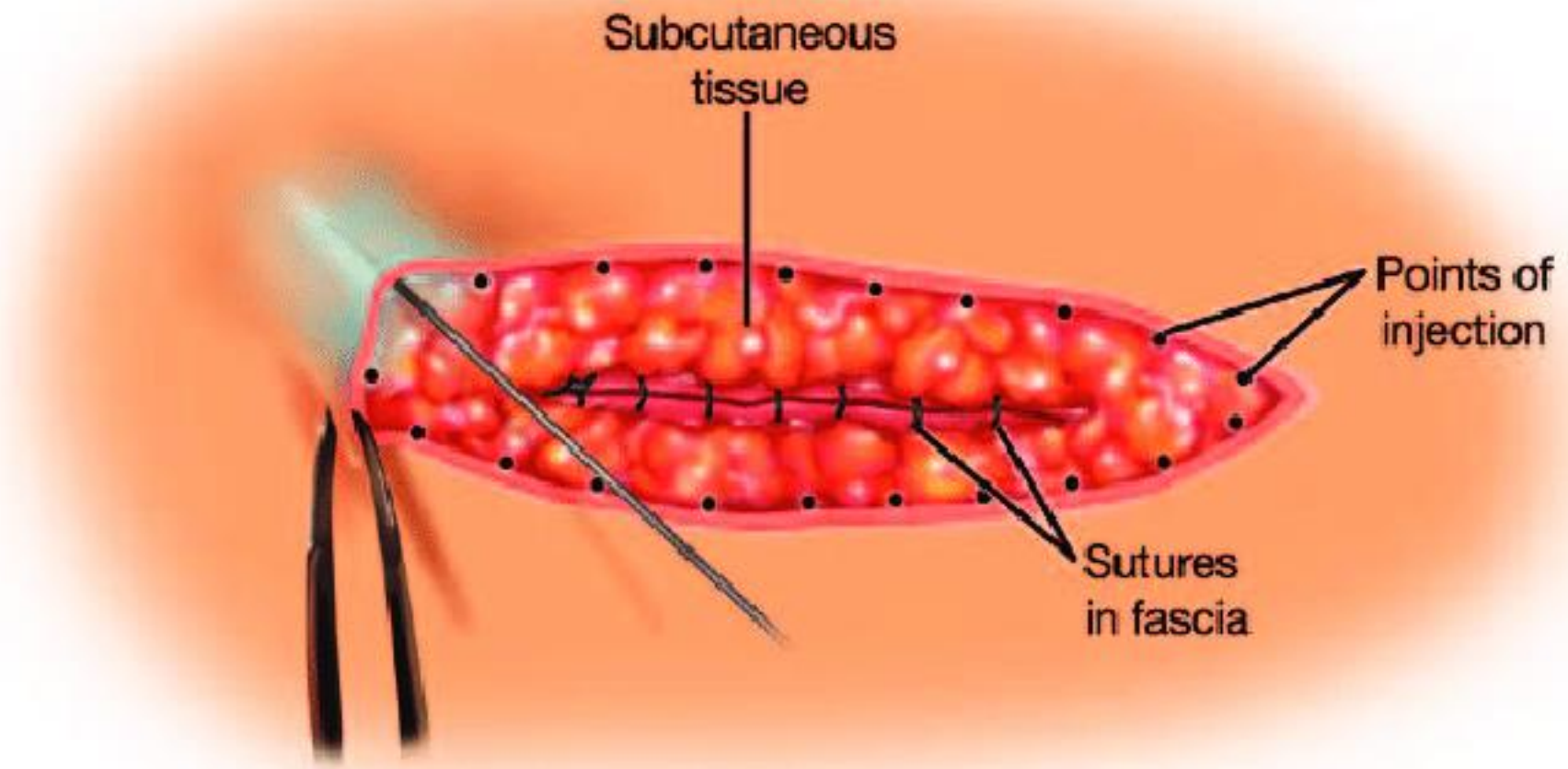


(a)



(b)

<https://journalfeed.org/article-a-day/2022/lets-get-digital-how-to-do-five-digital-blocks/>



Subcutaneous
tissue

Points of
injection

Sutures
in fascia

