

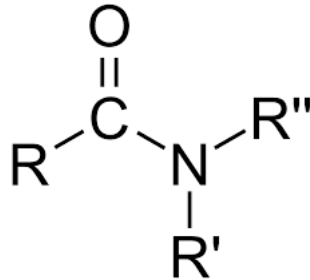
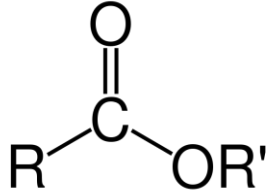
Local Anesthesia

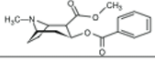
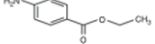
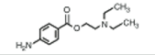
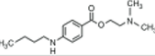
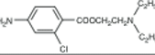
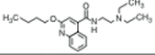
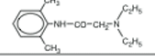
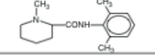
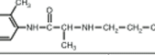
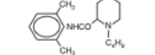
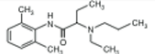
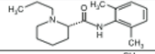
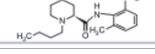


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Local Anesthetics



LOCAL ANESTHETIC	CHEMICAL STRUCTURE	CLASS	DATE
COCAINE		ESTERS	1884
BENZOCAINE			1900
PROCAINE			1905
TETRACAINE			1930
CHLOROPROCAINE			1932
CINCHOCAINE		AMIDES	1952
LIDOCAINE			1947
MEPIVACAINE			1957
PRILOCAINE			1960
BUPIVACAINE			1963
ETIDOCAINE			1972
ROPIVACAINE			1997
LEVOBUPIVACAINE			

One i

Two i

Amides & Esters

AMIDES	ESTERS
Stable composition	Unstable composition
Hepatic metabolism	Blood esterase metabolism
No allergic metabolites	Allergic metabolites (PABA)
low pKa	High pKa

Pharmacology

- Lidocaine 1% or 2% 10 ml ampule
- Marcaine (Bupivacaine) 0.5% 20 ml ampule
- Epinephrine 1:100,000 dilution
- Sodium Bicarbonate 1:10 ratio



Epinephrine

- Causes local vasoconstriction
- Lowers the absorption rate
- Lengthens the time of action
- Lowers the systemic toxicity
- Ampule contains 1 mg in 1 ml
- Epinephrine is diluted in 1:100,000 = 10 mcg of Epinephrine for every 1 ml of Lidocaine
- For a 10 ml ampule of Lidocaine 100 mcg = 0.1 ml of Epinephrine



Lidocaine & Bupivacaine

AGENT	MAX DOSE W/O EPI	MAX DOSE WITH EPI	ONSET	DURATION OF ACTION
Lidocaine	5mg/kg	7mg/kg	Rapid	30-90 min
Bupivacaine	2.5mg/kg	3mg/kg	Slow	6-8 hrs

Advised Combination

Local formula (Sheba Day Surgery):

20 ml Bupivacaine 0.5%

20 ml Lidocaine 1%

4 ml Sodium Bicarbonate

Local Anesthetics Systemic Toxicity (LAST)

Signs and symptoms:

Tinnitus

Metallic taste

Seizures

Ventricular Arrhythmias

LAST Syndrome - Treatment



Topical Anesthetics

EMLA

Lidocaine + Prilocaine

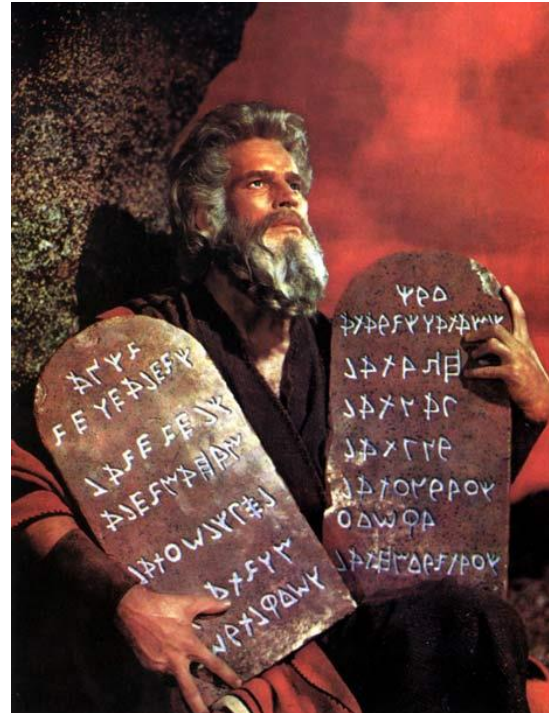


L.E.T

Lidocaine + Epinephrine + Tetracaine



10 Commandment for Painless Local Anesthesia



1. Communication

- Present yourself and be empathic
- Use a calm voice and add a gentle touch
- Use ambient background music
- Close the door and avoid guests
- Avoid conversations with staff
- Explain steps of the procedure



2. Choice of anesthetics

- Start with a pKa low solution
- Add Sodium Bicarbonate
- Use room temperature solutions



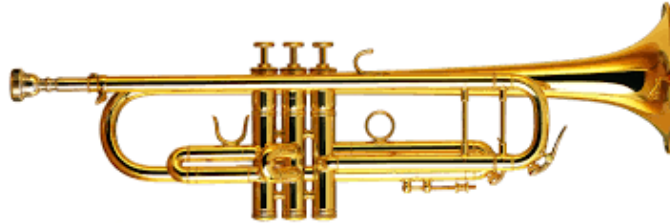
3. Needle Size

Start with a small gage needle to anesthetize a small area, then move to cover a wider area with a bigger needle



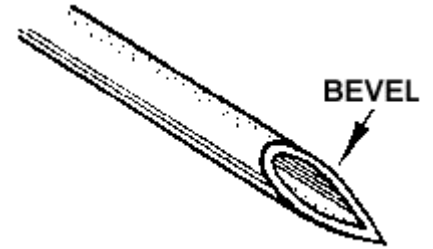
4. Warning

Alert the patient a second before the puncture in a clear and direct call!



5. Injection Technique

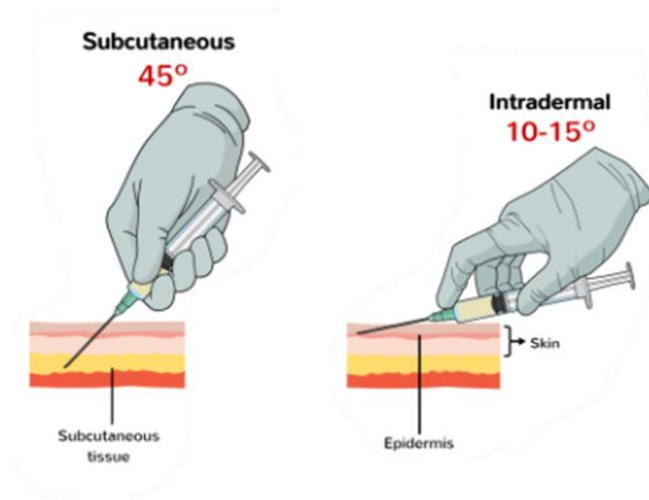
- Retract the skin with the non dominant hand
- Penetrate the skin with a swift movement
- Aim correctly the needle bevel upwards upon penetration
- Bend the needle if necessary in order to move easily in tissue



6. Depth of Injection

Subcutaneous – less pain (effect within minutes)

Intradermal – more pain (effect within seconds)



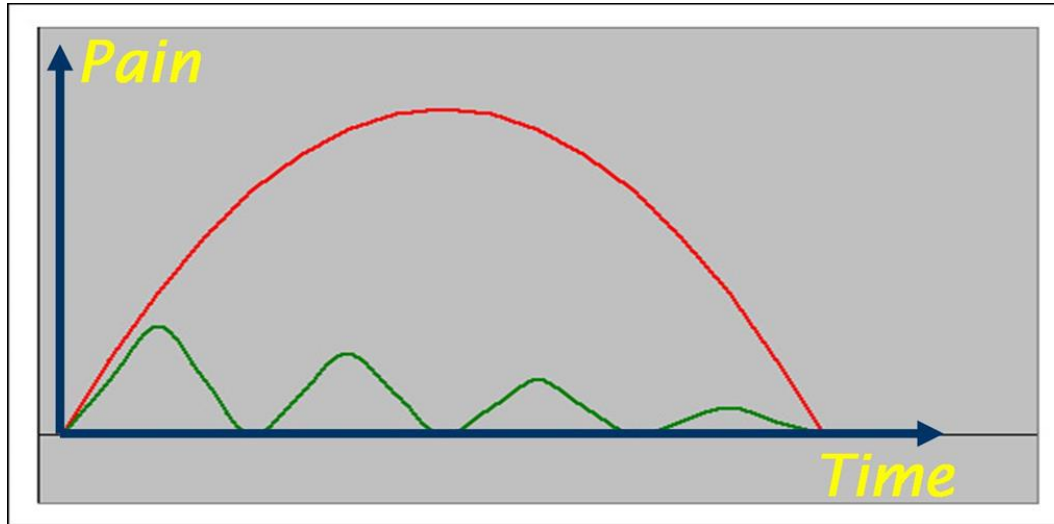
7. Site of Injection

Start injecting from within the edge of the cut and move from the numb site onwards



8. Rate of Injection

Slow rate and in pulses



9. Gate Control

Inject using one hand and tap gently on the skin with the other hand in a steady rhythm close by to the injection site



10. Distraction

Talk to the patient during the procedure about his personal life, family, hobbies etc.

