Mandibular Anesthesia in Dentistry

Presented by: Kenneth Reed, DMD, FADSA

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Residency Programs in
Pediatric Dentistry
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Brooklyn, New York

Local Anesthesia - Mandibular Techniques

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Topics

- Needle Gauge
- Advanced Techniques

Needle Gauge

- Positive aspiration is directly correlated to needle gauge
- Larger gauge needles do not deflect
- Larger gauge needles do not break

Needle Gauge

- Patients cannot tell the difference between 25, 27 and 30 gauge needles
- Stanley Malamed has been involved in 33 lawsuits that have gone to court concerning needle breakage
- 32 of them were 30 gauge needles

Needle Dimensions

- Length:
- Short => 20 mm
- Long => 32 mm

Needle Dimensions

- Outside diameter:
- 30 gauge => 0.3 mm
- 27 gauge => 0.4 mm
- 25 gauge => 0.5 mm

Akinosi

- First described in 1977
- Anesthetizes:
- Inferior alveolar
- Lingual
- Long buccal

Akinosi

- Useful for treating:
- uncooperative children
- patients with trismus.

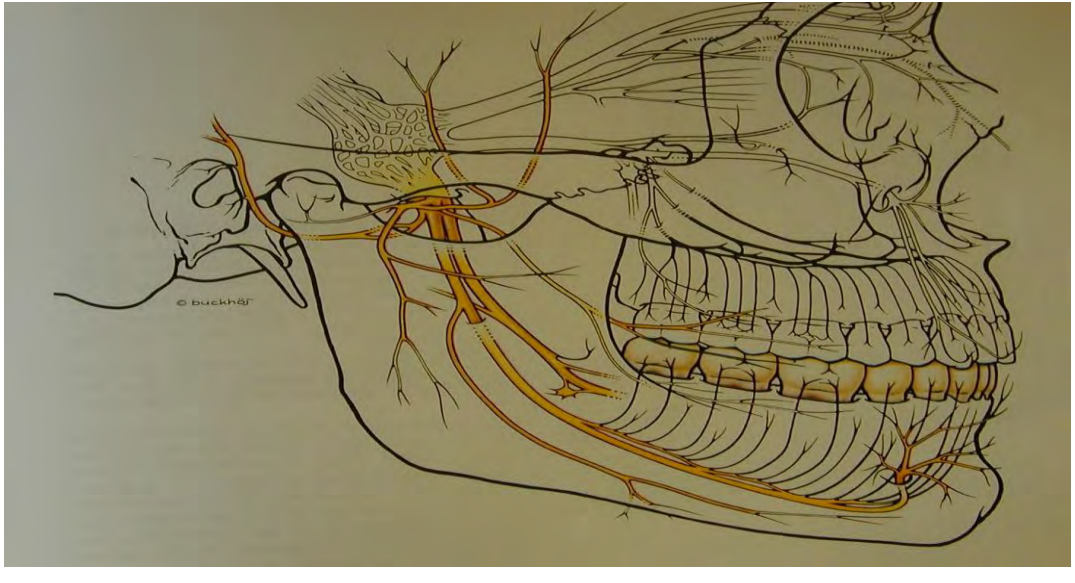
Akinosi

- A long needle is inserted parallel to the maxillary occlusal plane at the level of the maxillary buccal vestibule.
- The depth of penetration is approximately half the mesiodistal length of the ramus.
- - about 25 mm in adults
- - proportionately less in children

Akinosi

- This endpoint is just superior to the lingula.
- The injection is performed “blindly” because no bony end point exists.
- In adult patients, a rule of thumb is that the hub of the needle should be opposite the mesial aspect of the maxillary second molar.

My Mandibular Block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My mandibular block

- Anatomical location of the lingula:
- At or below 1.0 cm above the mandibular occlusal plane 84% of the time
- At or below 1.5 cm above the mandibular occlusal plane 96% of the time
- 60% distally of the mesiodistal length of the ramus

My mandibular block

- Approach from the contralateral premolars
- 1.5 cm above the mandibular occlusal plane - and parallel to it
- With a needle endpoint 60% of the mesiodistal length of the ramus, distally

My mandibular block

- Advance a 25 gauge long needle until you hit bone (required)
- - withdraw 1 mm
- - aspirate
- - inject 3/4 of the cartridge of local anesthetic over two minutes

My mandibular block

- - withdraw the needle 1/2 way (~ 10 - 15 mm)
- - aspirate
- - slowly inject the lingual nerve
- - save a few drops of anesthetic for the long buccal (PRN)


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Gow-Gates

- First described (in the literature) in 1973
- Originally, the technique involved only extraoral landmarks
- Anesthetizes:
- - inferior alveolar
- - lingual
- - auriculotemporal
- - mylohyoid nerve
- - long buccal (75% of the time)

Gow-Gates

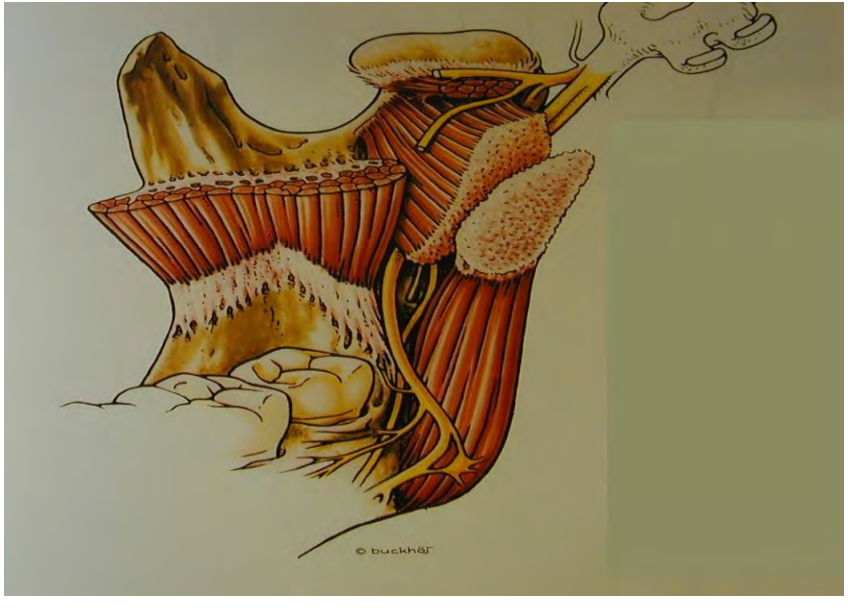
- The needle end point is the lateral aspect of the anterior portion of the condyle
- - just inferior to the insertion of the lateral pterygoid muscle.
- The injection is performed by having the patient open the mouth as widely as possible to rotate and translate the condyle forward.

Gow-Gates

- The condyle is palpated with the fingers of the left hand while the cheek is retracted with the thumb.
- Beginning from the contralateral canine, the needle is positioned so that a puncture point is made approximately at the location of the distobuccal cusp of the maxillary second molar.

Gow-Gates

- The needle is inserted slowly to a depth of 25 to 30 mm.
- The end point is inferior and lateral to the condylar head.
- The injection must not be performed unless bone is contacted which prevents injection into the capsule of temporomandibular joint.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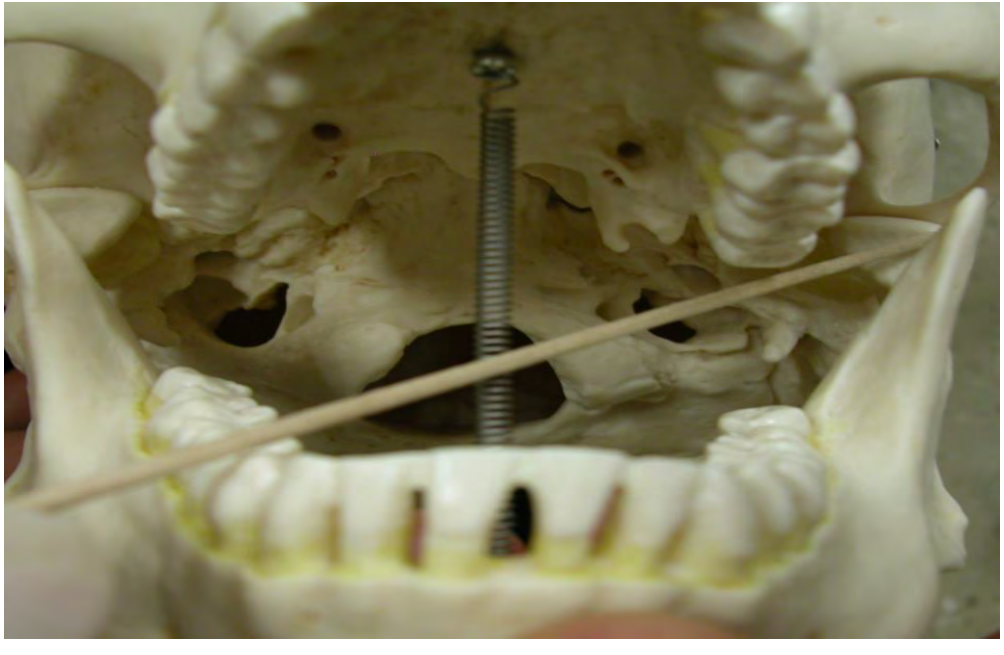
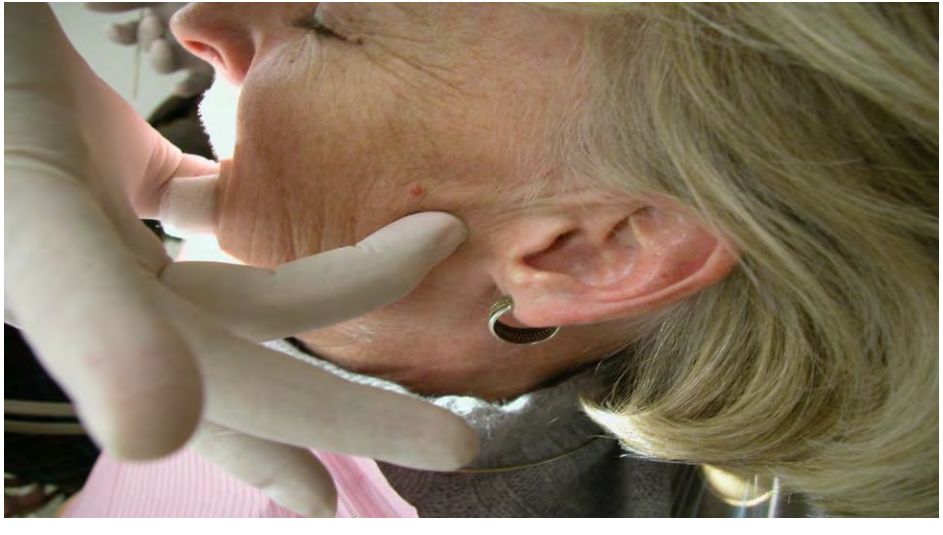
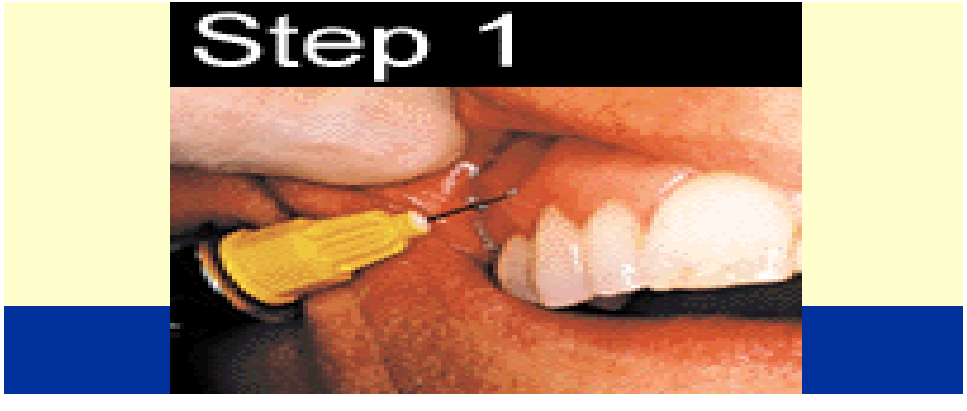
Gow-Gates

- The needle is withdrawn slightly.
- This injection is unique among intraoral injections because the operator does not attempt to get as close as possible to the nerve to be anesthetized.
- The needle tip should be approximately 1.0 cm directly superior to the nerve, in the superior aspect of the pterygomandibular space.



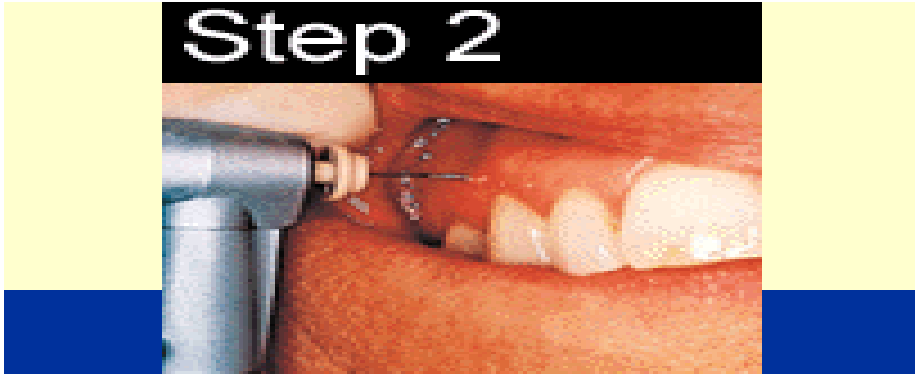


Stabident



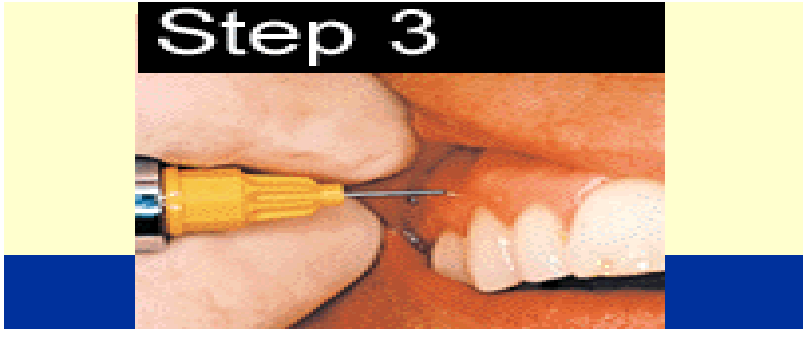
- Anesthetize the attached gingiva
- One or two drops of anesthetic will be sufficient to anesthetize a small area of the attached gingiva over the proposed point of perforation.
- A blanched area appears.

Stabident



- Perforate the cortical plate
- - this is painless because cortical bone does not contain any nerve endings.
- Cancellous bone will be entered within two seconds of drilling time.
- There will be an unmistakable feeling of "give" or "breakthrough" as you pass from the cortical to the softer cancellous bone.

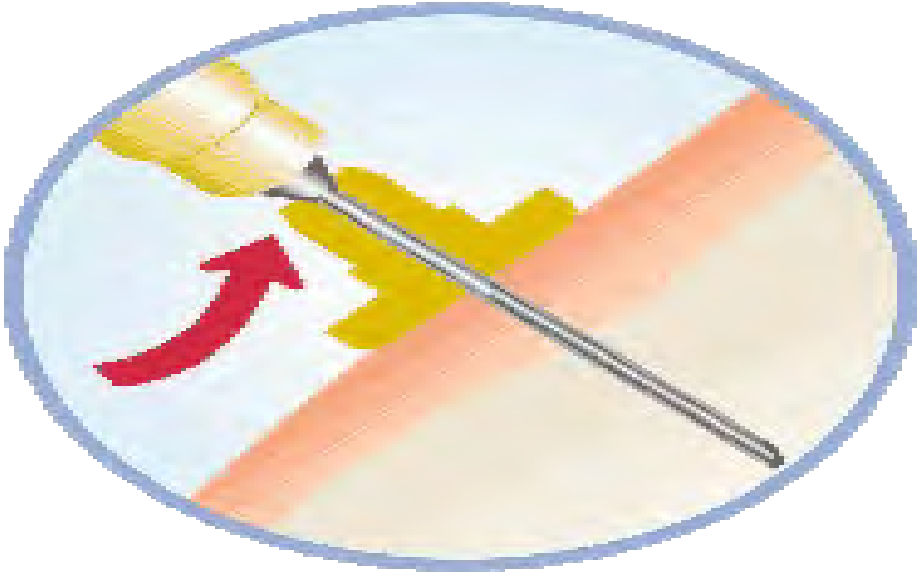
Stabident



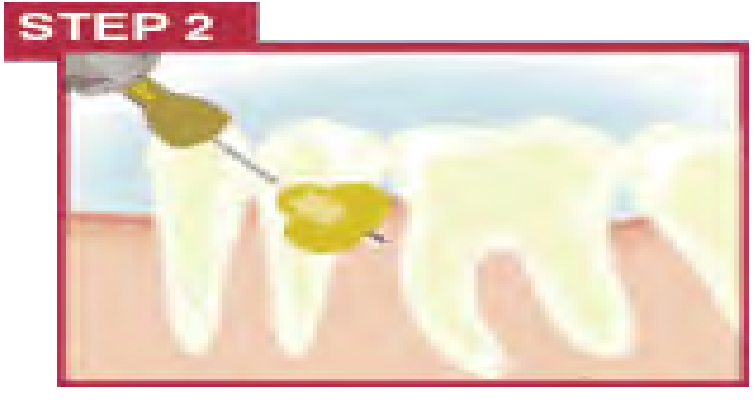
- Inject into cancellous bone
- The needle supplied with the kit is inserted in the perforation
- Not more than one cartridge of anesthetic is used per visit.
- Your normal syringe is used.
- The anesthetic is injected slowly and gently.
- Almost instantly there will be deep pulpal anesthesia.

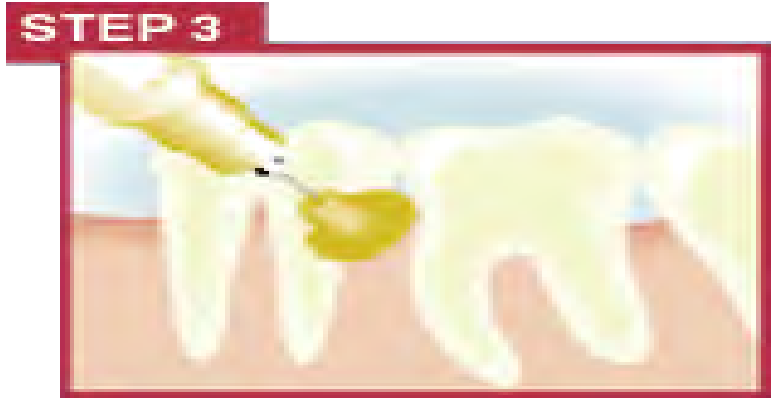
X-Tip

X-Tip



X-Tip





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- No “find the hole”
- Fits standard 4-hole Midwest hand piece coupling

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- At 1:30 pm, J.O. arrived in the dental office for an appointment during which he would have multiple procedures performed.

- The treating dentist administered five cartridges of mepivacaine 3% over a five minute period via bilateral inferior alveolar nerve blocks and multiple maxillary infiltrations.

- Treatment began at 1:45 pm and was progressing well when at 1:55 pm the patient became rigid for a few seconds, followed by a mild seizure lasting 15 seconds.
- Dental treatment was stopped and the patient was evaluated.

- Three minutes later a stronger seizure occurred, lasting for one minute.
- At the termination of the seizure the dentist carried the patient down the hall to the office of a physician.

- The patient was noted to be unconscious, apneic, and had no palpable carotid pulse.
- Basic life support was started and EMS summoned, arriving within six minutes.
- BLS was continued and the patient transferred to a local hospital where he was declared dead two days later.

- Postmortem examination stated that death was due to cerebral anoxia, secondary to cardiac arrest, produced by an overdose of the local anesthetic, mepivacaine.

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