Mandibular Anesthesia in Dentistry

Presented by: Kenneth Reed, DMD, FADSA

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Residency Programs in
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Brooklyn, New York
Local Anesthesia - Mandibular Techniques

- September 26, 2002

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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
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)
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.
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.
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.
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
IntraFlow

- Single step intraosseous local anesthesia delivery device
- No “find the hole”
- Fits standard 4-hole Midwest hand piece coupling
IntraFlow

- 1.877.476.4299
- http://www.intraflow.com
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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