

JOURNAL

of the California Dental Hygienists' Association

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Local Anesthetic Agents in Review

*A Review of the Current Options
for Dental Hygienists*

Working Pain-Free

The Alexander Technique

PracticePointers

Incisive Blocks – simple, fast and very useful

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JOURNAL

of the California Dental Hygienists' Association

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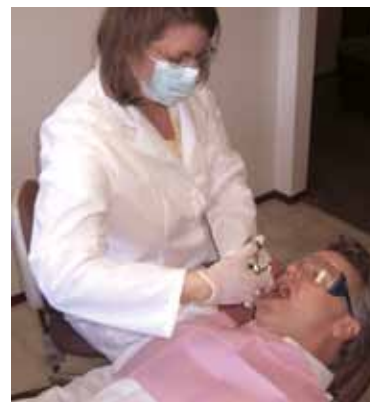


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Painting by Jane W. Ferguson. Artist profile on following page.

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Calendar of Events

August 27, 2011	Summer BOT Meeting, Glendale CA
October 29, 2011	Fall CE Extravaganza San Mateo, CA
October 30, 2011	Fall BOT Meeting San Mateo CA

About the Cover Art: "Reclaimed Land" is from an original acrylic on canvas created by Cupertino artist Jane W. Ferguson. After a long career in nursing, Jane changed direction in 1994 to become a full-time artist. Her artwork can be seen at The Viewpoints Gallery in Los Altos, The Kaleid Gallery in San Jose and at www.janewferguson.com

The Horizontal Incisive Block

Underutilized but Ultimately Useful

Introduction

Are you utilizing all the local anesthetic blocks you learned from your dental hygiene coursework? When you have a maintenance patient with heavy supragingival deposits on the mandibular anteriors over sensitive newly exposed roots, how do you provide pain control? How do you go about making your patient comfortable without giving bilateral inferior alveolar (IA) blocks when you only have one “block” of time to complete the patient?¹

The answer for both questions could be the incisive block! It is simple, fast, and very useful. We all have light bulbs go on when we find ways to provide better patient care. In my case it was with the postal worker who had a history of calculus reformation on the



Figure 1 Heavy calculus formation on malpositioned mandibular anterior teeth

entire mandibular anterior sextant, as well as within the Stillman's clefts, and who still had moderate levels of dentinal hypersensitivity from the initial Non-surgical Periodontal Therapy (NSPT). Even with fair to good homecare and

regular maintenance appointments, the patient still found it hard to keep up with his calculus formation in this area.

In addition, the patient's non-compliance in wearing his retainer/nightguard post orthodontic therapy did not help matters. Mesial drifting had taken over the mandibular anterior sextant due to his nightly bruxing. As a clinician, you could consider using topical desensitizers and alternating unilateral IA blocks but instead, how about achieving pulpal, as well as facial gingival, anesthesia by utilizing a bilateral incisive block?

At the end of a very successful appointment using this expanded pain control protocol, my patient was beaming and ready to show off his smile at our local post office. So, the next time a similar case presents itself to you, expand your repertoire of injection techniques and try the horizontal incisive block.

Review of the Incisive Block

Preanesthetic Anatomy Review

The incisive nerve is an afferent nerve composed of dental branches from the mandibular premolar and anterior teeth. These nerve branches originate in the pulp, exit the teeth through the apical foramina, and join with the interdental branches from the surrounding periodontium, forming a dental plexus in the region.^{2,3} The incisive nerve then merges with the mental nerve, just posterior to the mental foramen.

The incisive nerve is anesthetized by the incisive block at the site of the mental foramen, or with either the Inferior Alveolar (IA) block or Gow-Gates block along with other branches of the mandibular nerve (or division).^{1,4} The incisive nerve goes on to form the inferior alveolar nerve in the mandibular canal before it exits the mandibular foramen. Crossover from the opposite incisive nerve can occur, which becomes an important consideration when administering local anesthesia for the mandibular premolars, anterior teeth and associated tissue.

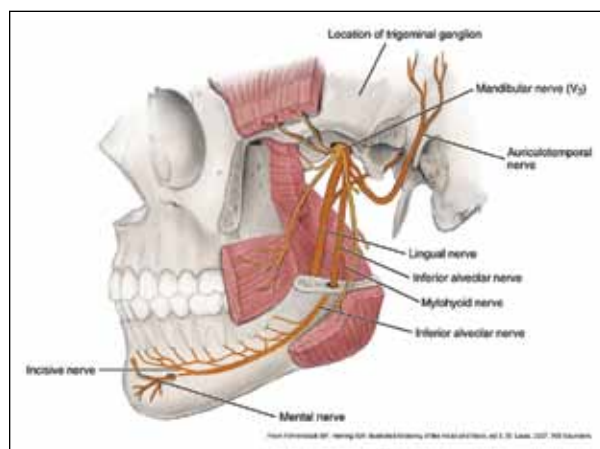


Figure 2: Distribution of the Mandibular Nerve

The target area for the incisive block is anterior to where the mental nerve enters the mental foramen to merge with the incisive nerve and form the IA nerve. The mental foramen is usually located on the surface of the mandible between the apices of the mandibu-

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PracticePointers

lar first and second premolars, an “anatomically safe” region.”⁵ However, studies show that the mental foramen can be as far posterior as the mandibular first molar or as far anterior as the distal surface of the mandibular canine. Therefore, it is wise to start palpating for it at the first molar within the depth of the mucobuccal fold.

The mental foramen can also be located on a radiograph beforehand to allow for a better determination of its position during palpation. To locate the foramen, palpate intraorally with a cotton tip applicator the depth of the mucobuccal fold, between the apices of the mandibular premolars until a depression is felt on the surface of the mandible that is surrounded by smoother bone.



Figure 3: The mental foramen on the mandible



Figure 4: Locating the mental foramen

Pressure in this area may produce sensitivity as the mental nerve is compressed against the mandible. Care must be taken not to apply too much pressure to the site before administering the anesthetic agent.

Indications Review

The incisive block anesthetizes the pulp and periodontium of the mandibular teeth anterior to the mental

foramen, usually the mandibular premolars and anteriors, as well as the facial gingival tissue. One indication for the use of this block is for NSPT on the mandibular anterior sextant as in the private practice case previously presented.¹

The incisive block does not provide lingual soft tissue anesthesia of the anesthetized teeth. An additional supraperiosteal injection may be indicating if necessary for localized lingual soft tissue anesthesia and/or hemostatic control. A local anesthesia textbook can help the clinician with the protocol for this additional injection.¹ Bilateral IA blocks are usually not recommended due to patient discomfort from the deep numbness of the base of the tongue making the bilateral incisive block and lingual supraperiosteal injection is a ready replacement in many situations.

Patients with only the mandibular anterior sextant dentition present are ideal candidates, as well as initial NSPT cases divided into sextant appointments. Finally, in cases where there is incisive nerve crossover, causing the mandibular anteriors to fail to achieve complete anesthesia, a contralateral incisive block may be the perfect solution.

In his recent lectures, Dr. Stanley Malamed, professor of Medicine and Anesthesia at the University of Southern California School of Dentistry, has advised dental professionals to use the incisive block so as to take advantage of the “hole in the bone - the mental foramen”. He feels this block provides a “99.9% guarantee of anesthesia to the mandibular anterior and premolar teeth”.⁵

Procedural Review

The older injection protocol recommends that the clinician sit behind the patient and use a vertical approach with the syringe into the target tissue. Visibility was poor for the clinician to see the target tissue as well as the large window on the syringe to check for negative aspiration. More importantly, the patient was often alarmed at seeing the syringe with needle coming down between their eyes.

With the newly recommended horizontal approach, the clinician sits more along the side of the patient, providing better visibility and obstructing the patient’s line of sight of the advancing syringe and needle.¹ In this position, the needle tip with its bevel toward the bone can gently slide past the periosteum and there is no possibility of injury by scraping the periosteum or going through the lower lip. The injection is “relatively painless, and the landmarks are reliable and consistent”.⁵



Figures 5 and 6: Operator and patient positioning for the horizontal right and then left side incisive block injections

Technique Basic Steps

1. With the patient in a supine or semisupine position, sit at 8 o'clock (right side) or 9 o'clock (left side) for the right-handed clinician. For the left-handed clinician, sit at 4 o'clock (right side) or 3 o'clock (left side) (see figures 4 and 5).

2. Complete the basic preanesthetic procedures for the area to be anesthetized in order to reduce the level on the visual analog scale (VAS) noted by the patient. This will ensure the achievement of a "Velvet Touch"* injection. ^{6, 7, 8, 9}

3. Request that the patient partially close to allow greater access to the injection site.

4. Retract the patient's lower lip outward, using gauze, to pull the tissue taut.

The injection site is anterior to the depression created by the mental foramen in the depth of the mucobuccal fold found earlier by palpation. ¹⁰

5. Using a 27-gauge short needle, direct the syringe barrel from the anterior portion of the mouth to the posterior in a horizontal manner, while resting on the lower lip. This will keep the needle syringe out of the patient's view.

While positioning the syringe, make sure to orient the bevel of the needle towards the bone and large window towards the clinician's line of vision. ¹

6. The needle is advanced without contacting the bony surface of the mandible, with the depth of penetration at 5 to 6 mm. The injection is slowly administered after negative aspiration within two planes.

7. Use between 0.6 to 0.9 mL or one third to one half of the cartridge administered over 30-60 seconds. Calculations will vary depending on the specific anesthetic used.

* "Velvet touch" is a concept created by the author that places emphasis on how the injection is given.

8. Apply gentle pressure to the site intra- and extra-orally following the injection by way of a soothing massage for at least

two minutes. This will help force more local anesthetic agent into the mental foramen, thus anesthetizing the shallow mental nerve and the deeper incisive nerve.

Additional Considerations

If the tissue balloons, the anesthetic is being injected too rapidly. Stop the deposition and remove the needle. ^{6,11}

A vasoconstrictor-laced agent is highly recommended for providing hemostatic control before NSPT due to the usually inflamed and vascular gingival tissue presented. ¹²

It is not necessary to have the needle enter the mental foramen to achieve a successful injection; in fact, the needle cannot enter the mandibular canal using the recommended position of the needle. ^{13,14}

Dr. Malamed suggests that dental professionals consider this a type of "infiltration"

with the addition of pressure to the mental foramen, similar to the way the infraorbital block is administered to the infraorbital foramen. ⁵ Placing the patient in an upright or semiupright position while massaging the anesthetic agent has been shown to promote further diffusion of the solution into the region via gravity. ^{1,3} Anesthesia of the tissue innervated by the mental nerve will precede that of the deeper incisive nerve's tissue; thus the soft tissue anesthesia precedes pulpal anesthesia. The careful clinician waits at least 3-5 minutes for complete pulpal anesthesia before beginning instrumentation.

Summary

So, when considering your next periodontal maintenance case or mandibular anterior sextant patient, or failure when faced with the failure of the IA block to fully anesthetize the mandibular anteriors, try utilizing the incisive block. You may also want to update your technique to include the newer horizontal approach. You and your patient will be pleased with the results!



Figure 7: Syringe position for the incisive block



Figure 8: Massage the injection site for at least two minutes with the patient in a semi-upright or upright position.

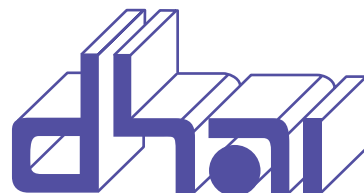
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Margaret J. Fehrenbach, RDH, MS is a dental science writer and dental hygiene educational consultant residing in Seattle, WA. The material in this article has been presented with permission from her private collection and also from her upcoming 4th edition of *Illustrated Anatomy of the Head and Neck* and 3rd edition of *Illustrated Dental Embryology, Histology, and Anatomy* (WB Saunders/Elsevier). Margaret has recently contributed to the general anatomy and technique chapters in the newly published text, *Local Anesthesia for the Dental Hygienist* (Logothetis, DD, WB Saunders/Elsevier, 2012). For more information on Margaret's activities and publications, please visit her website at <http://www.dhed.net>



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