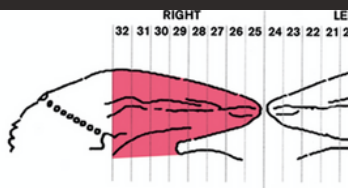
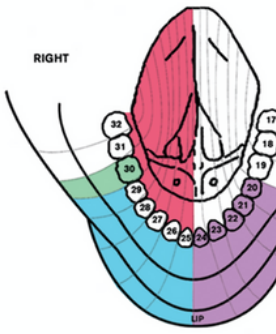
Lingual





Lingual
(Alone)

Penetration Site: Same as Inferior Alveolar Block

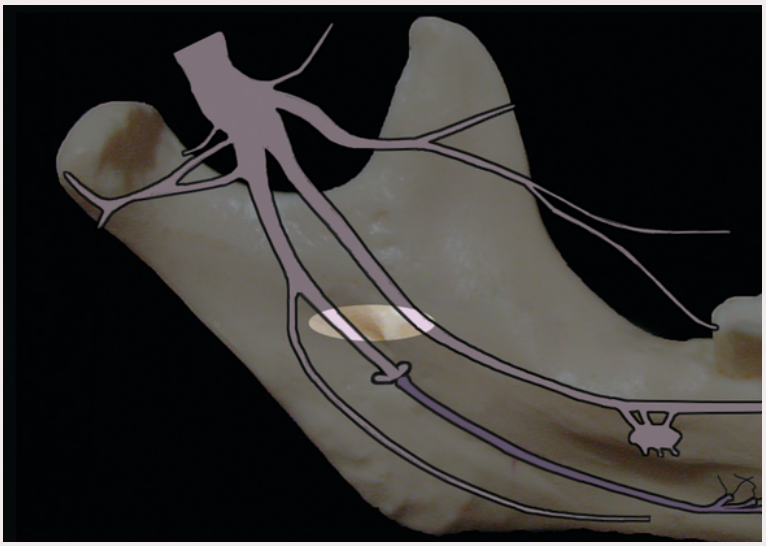
Deposition Site: Halfway point between the ramus and the penetration site for the Inferior Alveolar Block, medial and anterior to the Inferior Alveolar Nerve.

Procedure: Depth is ½ the length of the Inferior Alveolar Block, approximately 10-13mm. Approximately one stopper-ful is budgeted for the Lingual.

Common Causes of Injection Failure: overlap of contralateral lingual nerve fibers. Complication: risk of paresthesia.

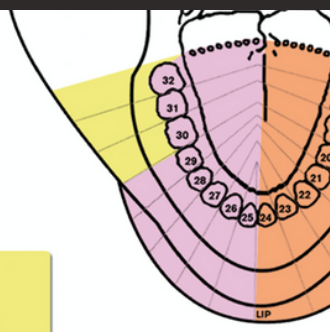
Troubleshooting

- In 60% of cases, the mylohyoid nerve provides accessory innervation.
    - The mylohyoid nerve branches from the mandibular nerve and may be subject to anatomic obstructions such as the pterygomandibular fascia and sphenomandibular ligament



NOTES:

Buccal



Buccal

Teeth anesthetized:

none

Periodontium/Soft tissues:

buccal to molars

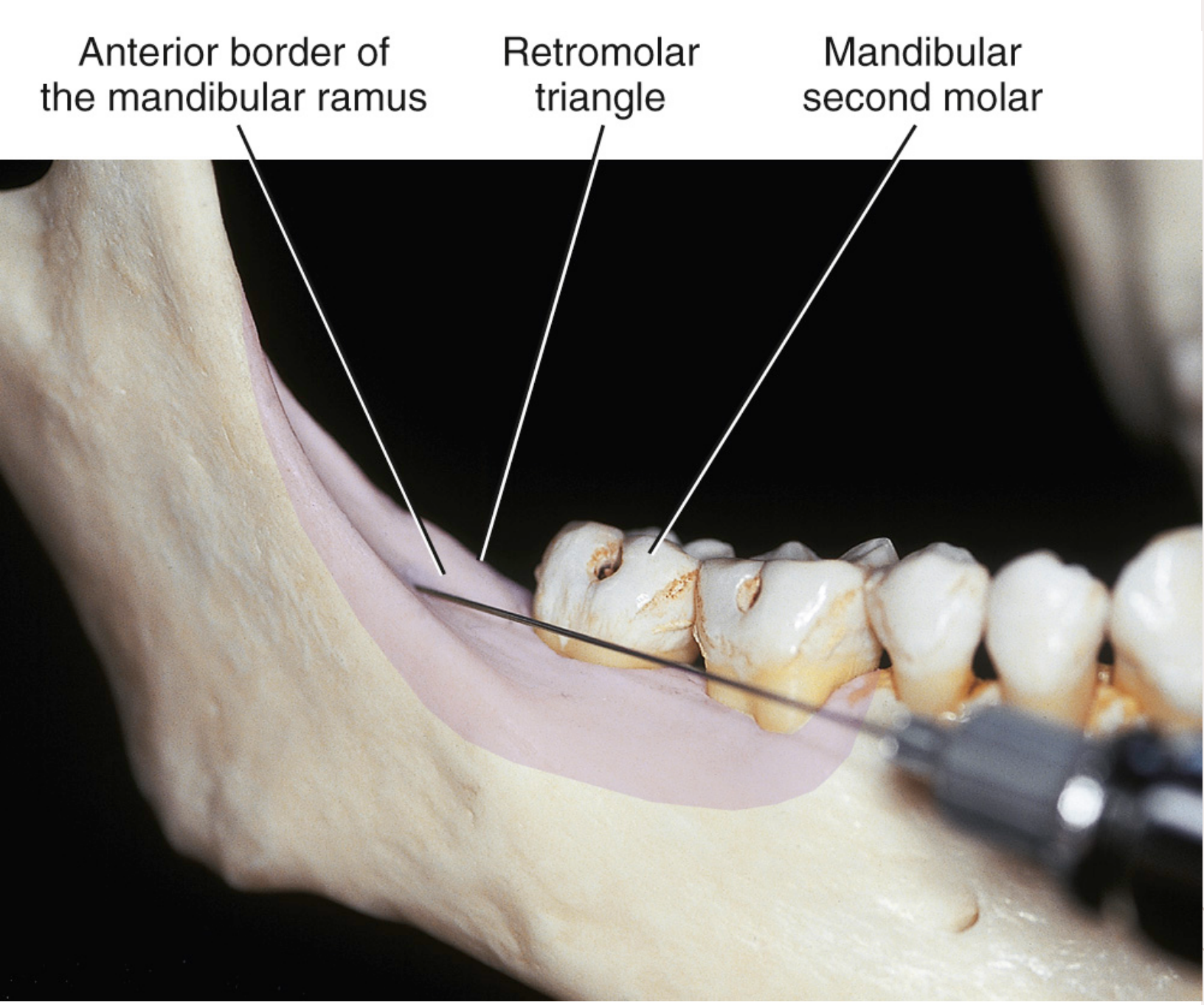
Penetration Site: Buccal fold just distal and buccal to the most posterior molar for which soft tissue anesthesia is required.

Deposition Site: At the buccal aspect of the ramus lateral to the external oblique ridge.

Procedure: Angle of insertion is parallel to the occlusal plane, Insertion depth is 3-4mm. Deposit remaining stopper-ful of solution.

Common Causes of Injection Failure: Rare, occur due to operator error namely due to lack of anesthesia budgeting. If a penetration is initiated in an area too close to the alveolar bone, boney resistance may be met thus not permitting adequate diffusion of solution. A lateral penetration site should be selected.

Buccal Block



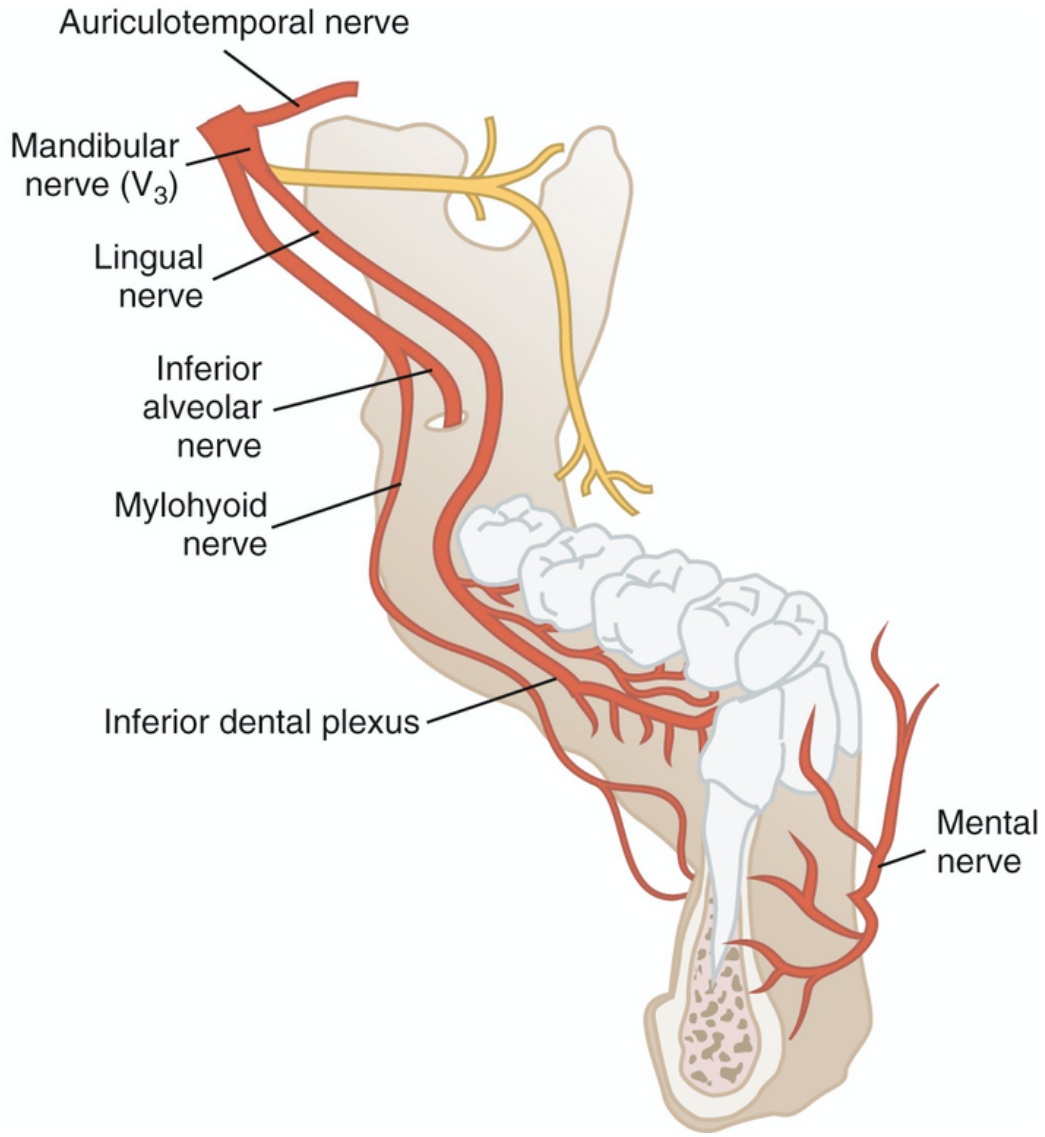
Mylohyoid

Penetration Site: The lingual mucosa below the apex of the tooth immediately posterior to the tooth requiring supplemental anesthesia

Deposition Site: At the mesiolingual apex of the tooth just posterior to the one requiring supplemental anesthesia.

Procedure: Retract the tongue, Penetrate until boney contact is met. Insertion depth: 3-5mm. Deposit 1/3 cartridge of solution.

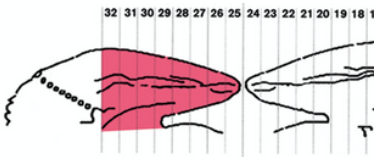
Common Causes of Injection Failure: Rare, occur primarily due


Auriculotemporal nerve
Mandibular nerve (V_3)
Lingual nerve
Inferior alveolar nerve
Mylohyoid nerve
Inferior dental plexus
Mental nerve

B

NOTES:

Incisive



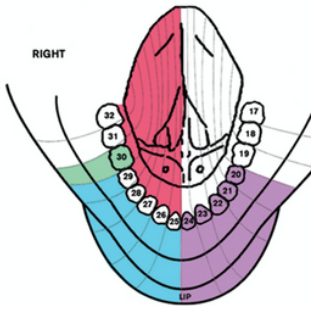
Incisive

Teeth anesthetized:

premolars to midline

Periodontium/Soft tissues:

premolars to midline



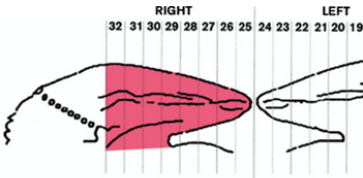
Penetration Site: Varies based on the location of the mental foramen located via palpation and radiographs.

Deposition Site: Slightly superior to the mental foramen.

Procedure: Depth is typically 4-6mm, bone should not be contacted. Deposit 1/3 of a cartridge. Apply postoperative pressure for 1-2 minutes.

Common Causes of Injection Failure: Rare. Typically due to failure to correctly identify location of the foramen or inadequate volumes of solution deposited.

Mental



Mental

Teeth anesthetized:

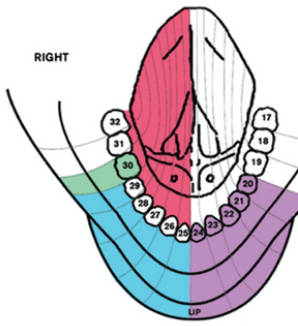
pulpal limited to tooth

at site of infiltration

Periodontium/Soft tissues:

premolars to midline

(A)



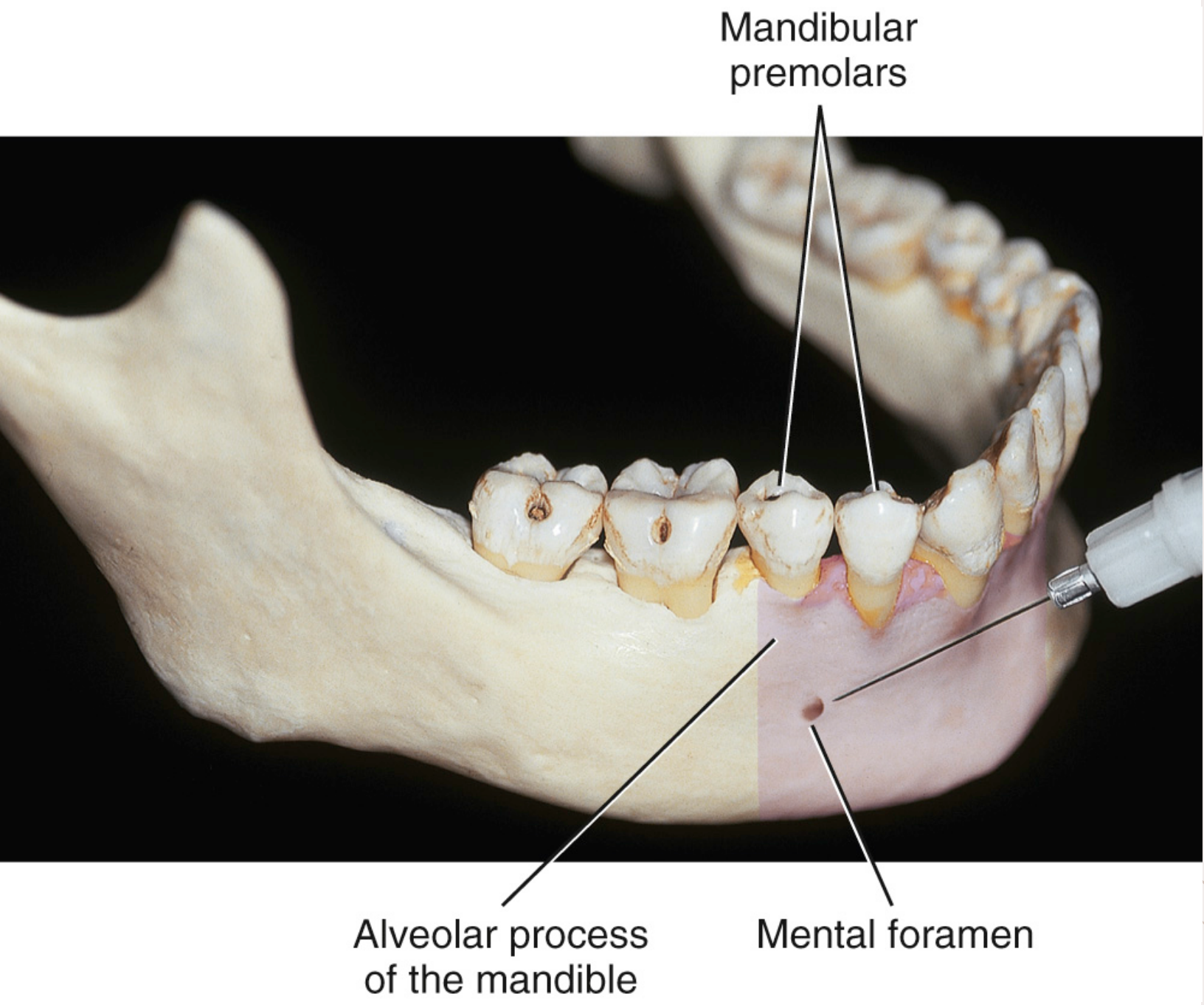
Penetration Site: Varies based on the location of the mental foramen located via palpation and radiographs.

Deposition Site: Slightly superior to the mental foramen.

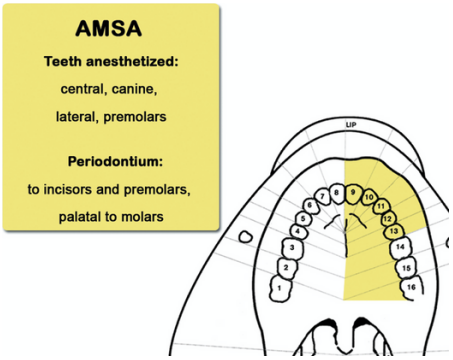
Procedure: Depth is typically 4-6mm, bone should not be contacted. Deposit 1/3 of a cartridge.

Common Causes of Injection Failure: Rare. Typically due to failure to correctly identify location of the foramen or inadequate volumes of solution deposited.

Incisive & Mental Block



Anterior Middle Superior Alveolar



Penetration Site: Between the premolars approximately halfway from the median palatine raphe to the gingival margin on the side to be anesthetized. Described as the junction of the vertical and horizontal aspects of the palate.

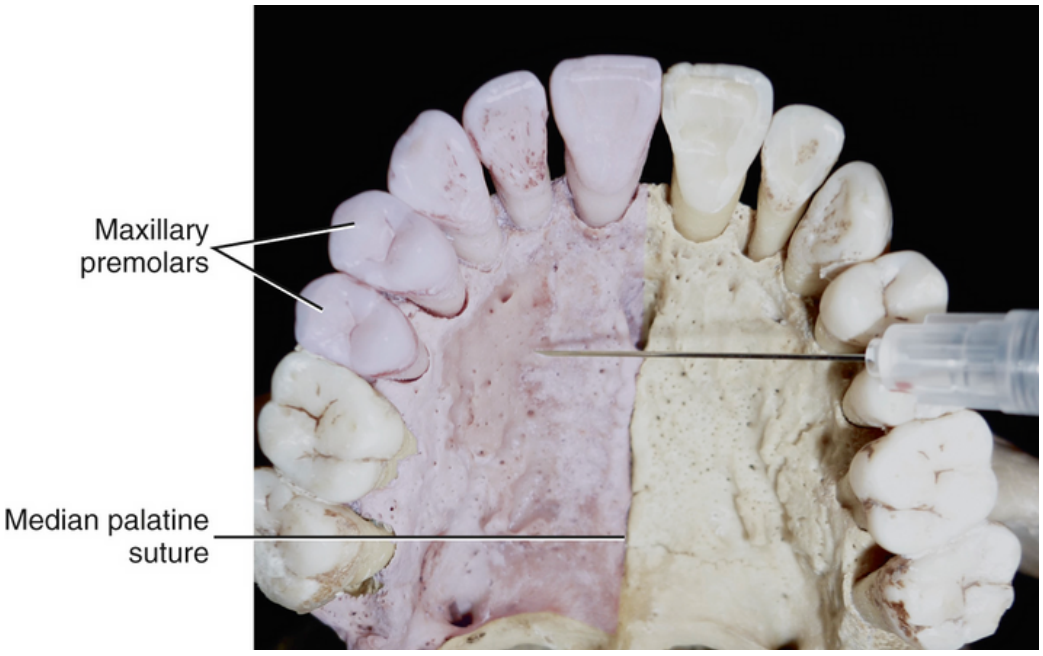
Deposition Site: Near the junction of the alveolar process and palatal process ensuring adequate tissue thickness for accommodation of solution.

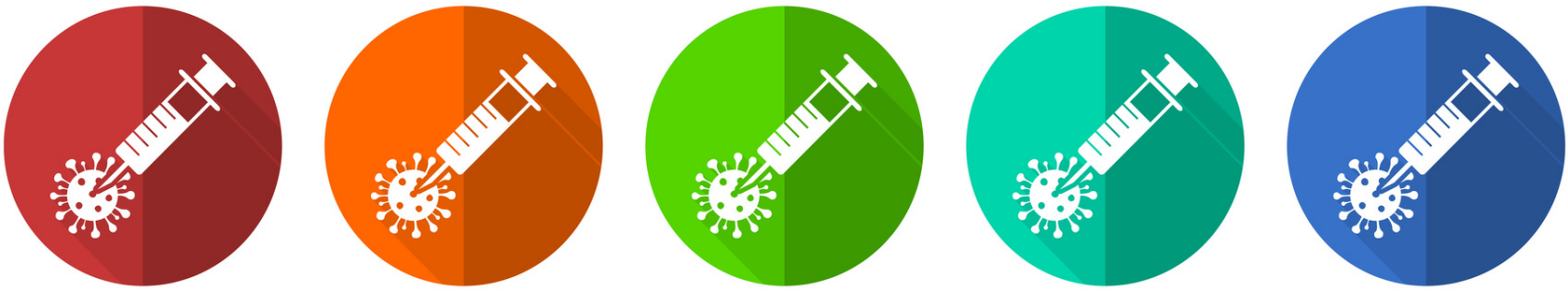
Gentle hydraulic pressure develops with insertion of solution thus diffusing easily to the dental plexus of the ASA and MSA nerves through porous palatal bone and nutrient canals.

Procedure: Insertion at a 45 degree angle until contact with bone. Deposit ½ to 2/3 of a cartridge. Observe for blanching.

Common Causes of Injection Failure: Blanching may demonstrate inaccurate penetration sites. Inexperience with injection, overlapping innervatio

Anterior Middle Superior Alveolar Block





NOTES:

Palatal Approach: Anterior Superior Alveolar

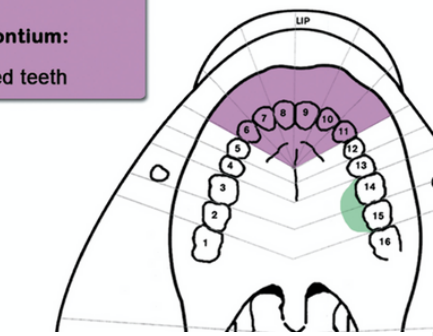
PASA

Teeth anesthetized:

central, lateral, canine

Periodontium:

to affected teeth



Penetration Site: Palatal mucosa at the widest anteroposterior dimension of the incisive papilla

Deposition Site: through the incisive papilla to contact the opposite wall of the incisive canal. From this point, needle advances superiorly into the canal until penetrated depth within the incisive canal.

Procedure: Depth of 6-10mm. Deposit 2/3 of a cartridge. Rate of deposition modification: .5mL over 60 seconds.

Common Causes of Injection Failure: Low published success rates; between 22-58% depending on choice of anesthetic. Lack of familiarity.

Maxillary V2 - Palatal Approach

Hemimaxillary Pain Management

Penetration Site: Site of the greater palatine foramen

Deposition Site: the trunk of the maxillary nerve as it remains within the pterygopalatine fossa prior to the nerve entrance into the cranium by the foramen rotundum.

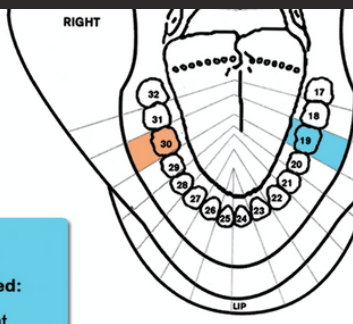
Procedure: Preanesthesia is recommended. Locate anterior depression of the greater palatine foramen, use a long needle, advance through the slope of the greater palatine canal to optimal depth of 30mm. Deposit 1.8mL of solution.

Complications: Issues occur when the greater palatine foramen is relatively straight and unobstructed.

*Penetration of the orbit is possible in overpentration resulting in ocular complications.

*Needle may penetrate the medial wall of the nasal cavity

Periodontal Ligament Intraligamentary



PDL

Teeth anesthetized:
individual tooth at site of injection

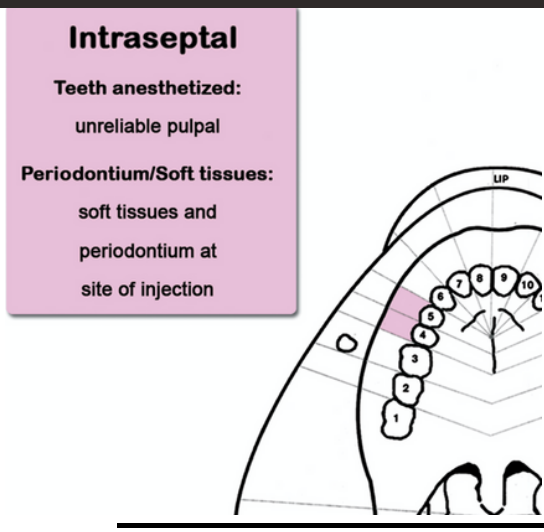
Periodontium/Soft tissues:
associated periodontium

Penetration Site: Within the sulcus that surrounds a tooth. Multiple sites should be selected to ensure adequate delivery of anesthesia.

Procedure: Insert between the roots of a tooth or to the base of the periodontal attachment; until resistance is met. Deposit solution. No aspiration required. Deposit 1 stopper-ful.

Additional Notes: Considered an intraosseous technique due to diffusion of solution through bone in order to achieve anesthesia to the apex of injected teeth.

Intraseptal



Penetration Site: At the center of the papilla adjacent to the tooth to be treated and below the height of the interdental papilla but within the attached gingiva.

Deposition Site: Just inside the cortical plate of bone, no perforation is made in the bone before needle insertion.

Procedure: Advance until boney resistance is met, deposit within the septum 1-2 stopper-fuls of solution.

Common Causes of Injection Failure: Not effective in mandibular molar regions where cortical bone is thicker and more dense.

Mandibular Infiltration with Articaine

Demonstrate superior efficacy for molar anesthesia (87-88%). This injection is particularly effective over the IA block when a molar is symptomatic or presents with irreversible pulpitis. Articaines' increased pka improves tissue diffusion rates.

Procedure: Deliver in the mucobuccal fold over the apex of each root. Most effective delivery occurs when both buccal and lingual approaches are used. Gain access to the site of penetration, penetrate into the mucobuccal fold between 3-6mm, deposit 1/3-1/2 a cartridge

Common Causes of Injection Failure: none

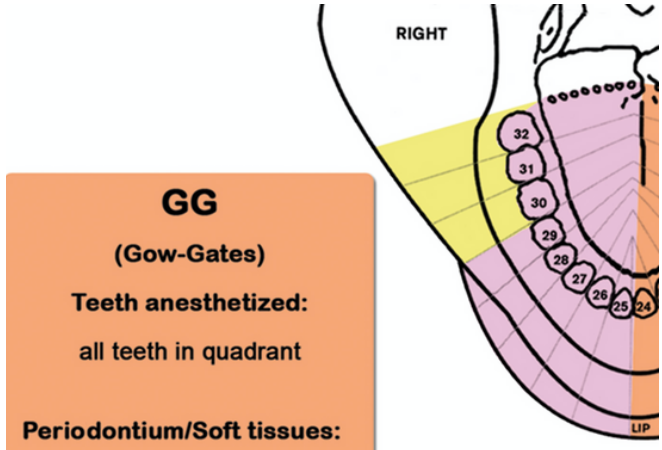
Gow Gates

Penetration Site: Buccal mucous membrane directly posterior to the maxillary second molar at the level of the mesiolingual cusp. Location varies based on use of landmarks.
Extraoral: Line visualized from the intertragic notch to the labial commisure.

Deposition Site: Anterolateral surface of the neck of the condyle at the insertion of the lateral pterygoid muscle.

Procedure: Advance to a depth of 25mm in an up and back movement until boney resistance is met. Deposit one full cartridge of solution. Pt must remain open postoperatively for 2-5 minutes.

Common Causes of Injection Failure: Closure during or immediately after injection: displacement of the pterygomandibular space. Operator error. Insufficient solutions.



GG

(Gow-Gates)

Teeth anesthetized:

all teeth in quadrant

Periodontium/Soft tissues:

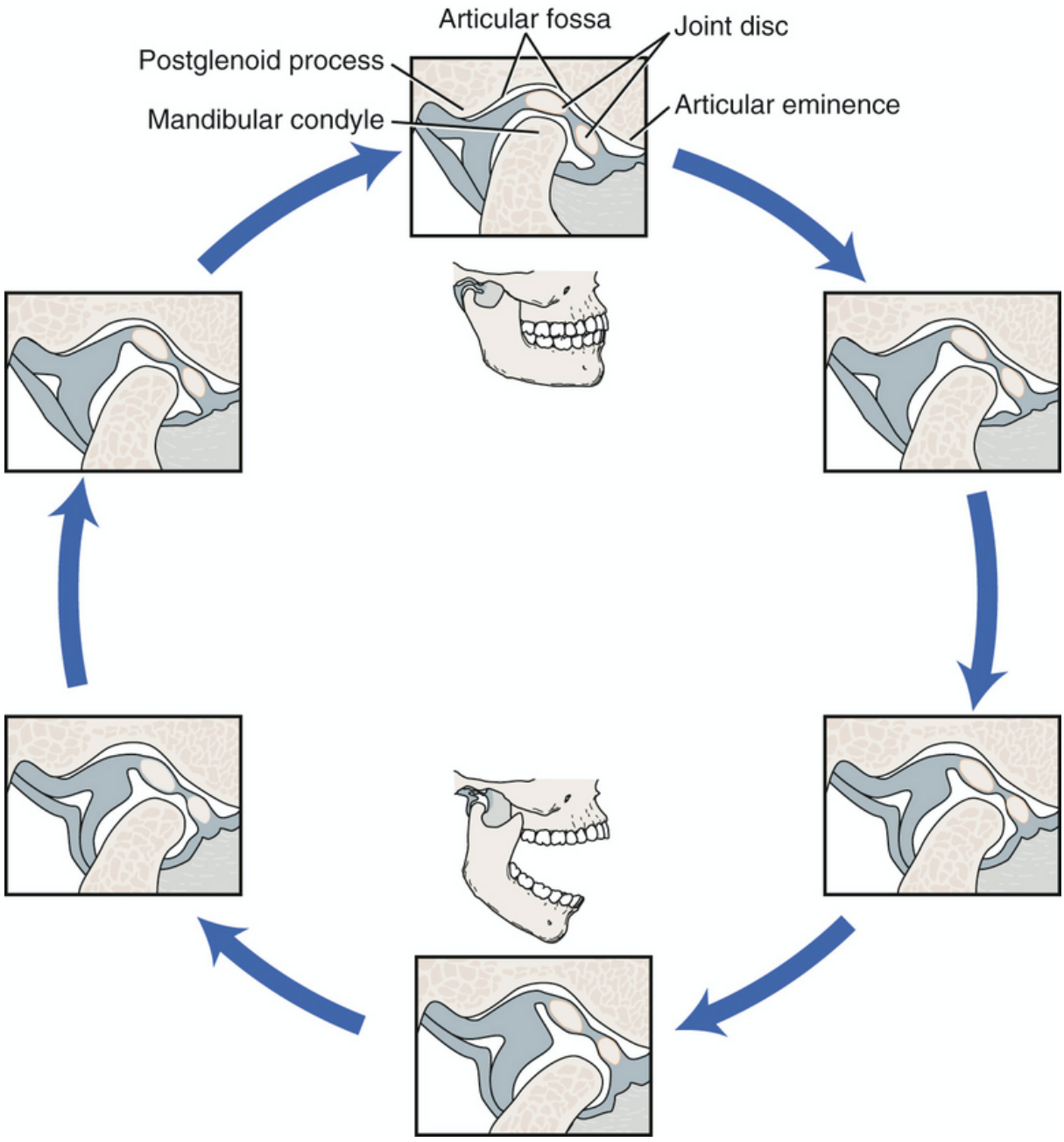
all periodontium, buccal mucosa

premolars to midline,

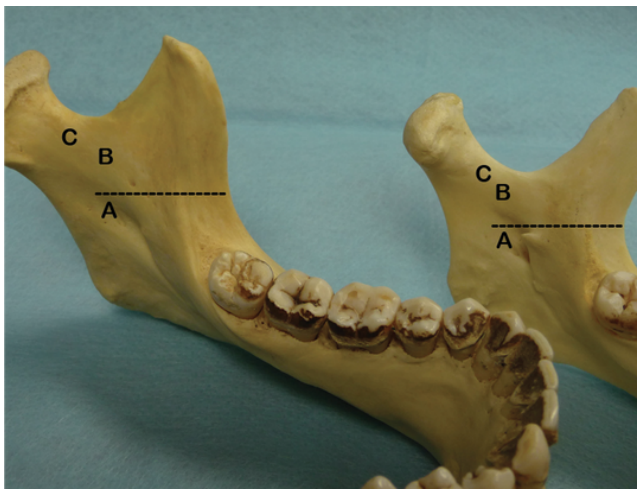
floor of mouth and

½ tongue in quadrant

TMJ Articulation



Vazirani-Akinosi Closed Mouth

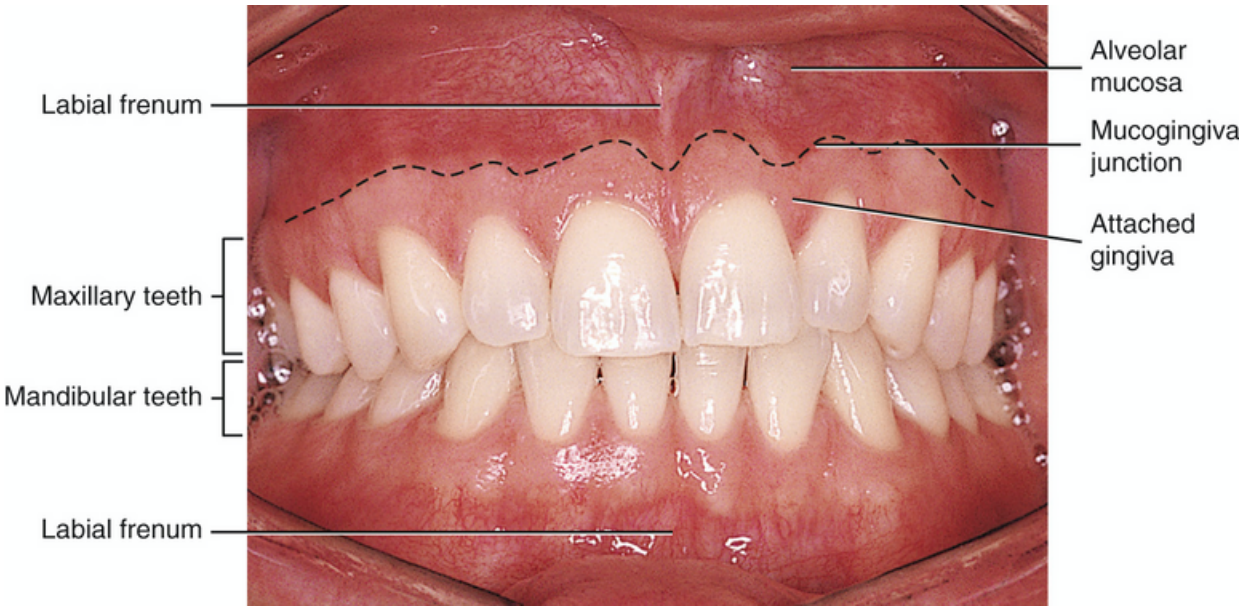


Penetration Site: In the soft tissue medial to the ramus, directly adjacent to the maxillary tuberosity at the height of the mucogingival junction of the maxillary molars.

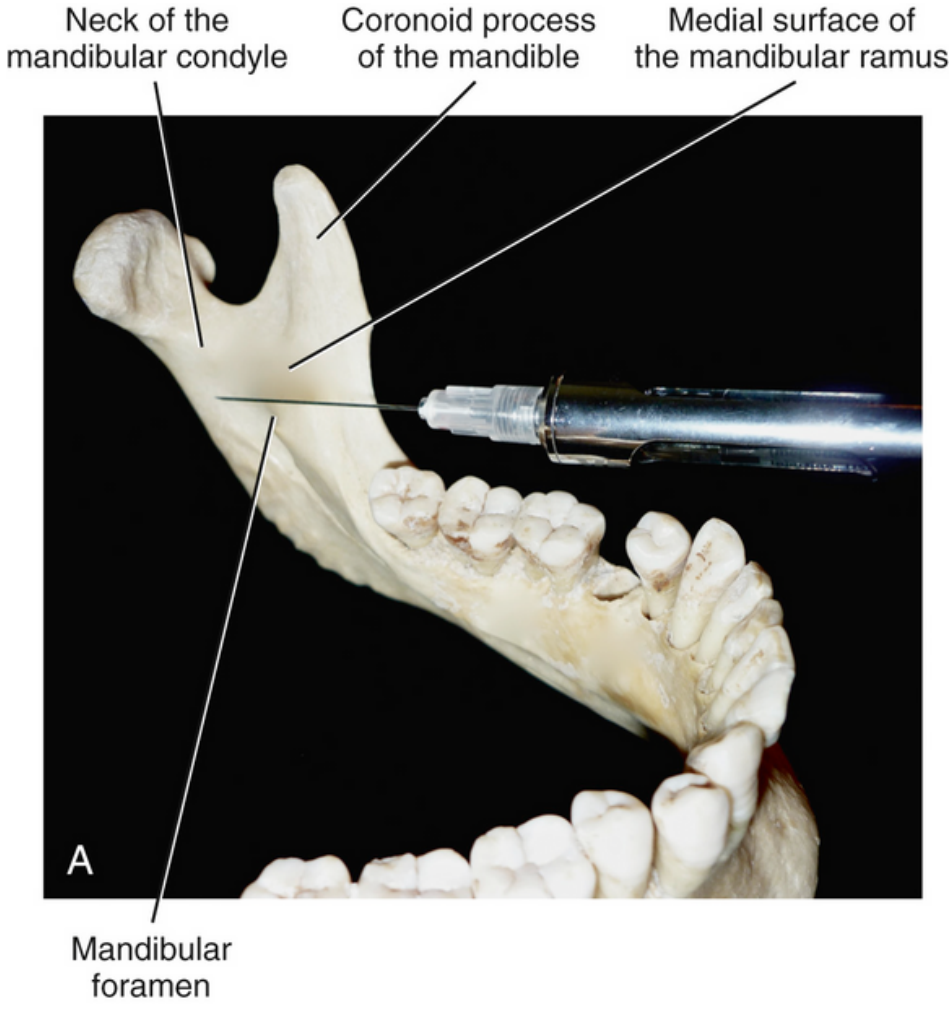
Deposition Site: Above the mandibular foramen on the medial surface of the ramus in the pterygomandibular space.

Procedure: Retract to reveal the penetration site and have patient close. Angulation is parallel to mandibular molars. Advance 25mm and deposit one full cartridge.

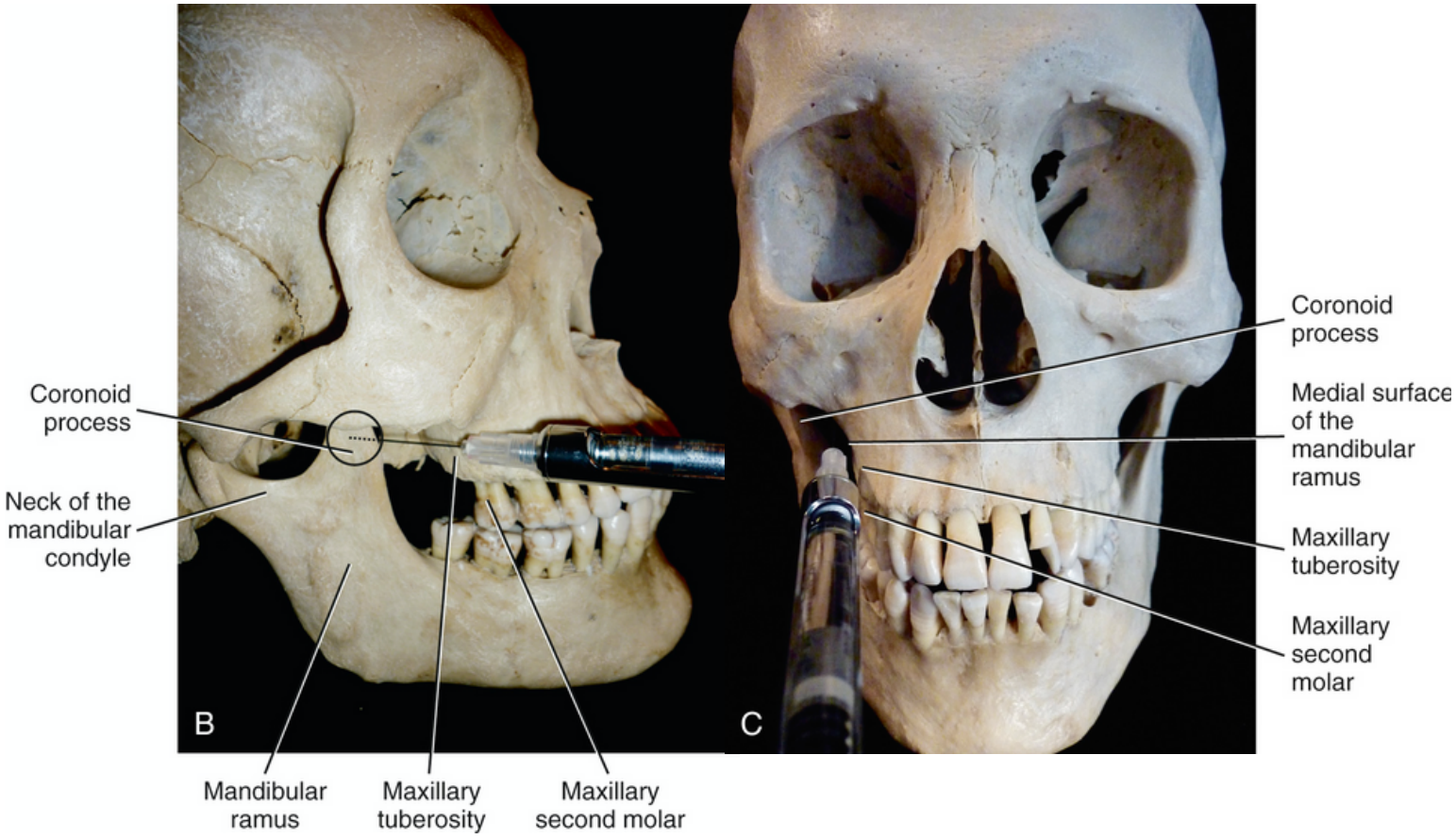
Common Causes of Injection Failure: Lack of experience. 93% success rate. Concerns with medial deflection of the bevel.



Vazirani-Akinosi Mandibular Block

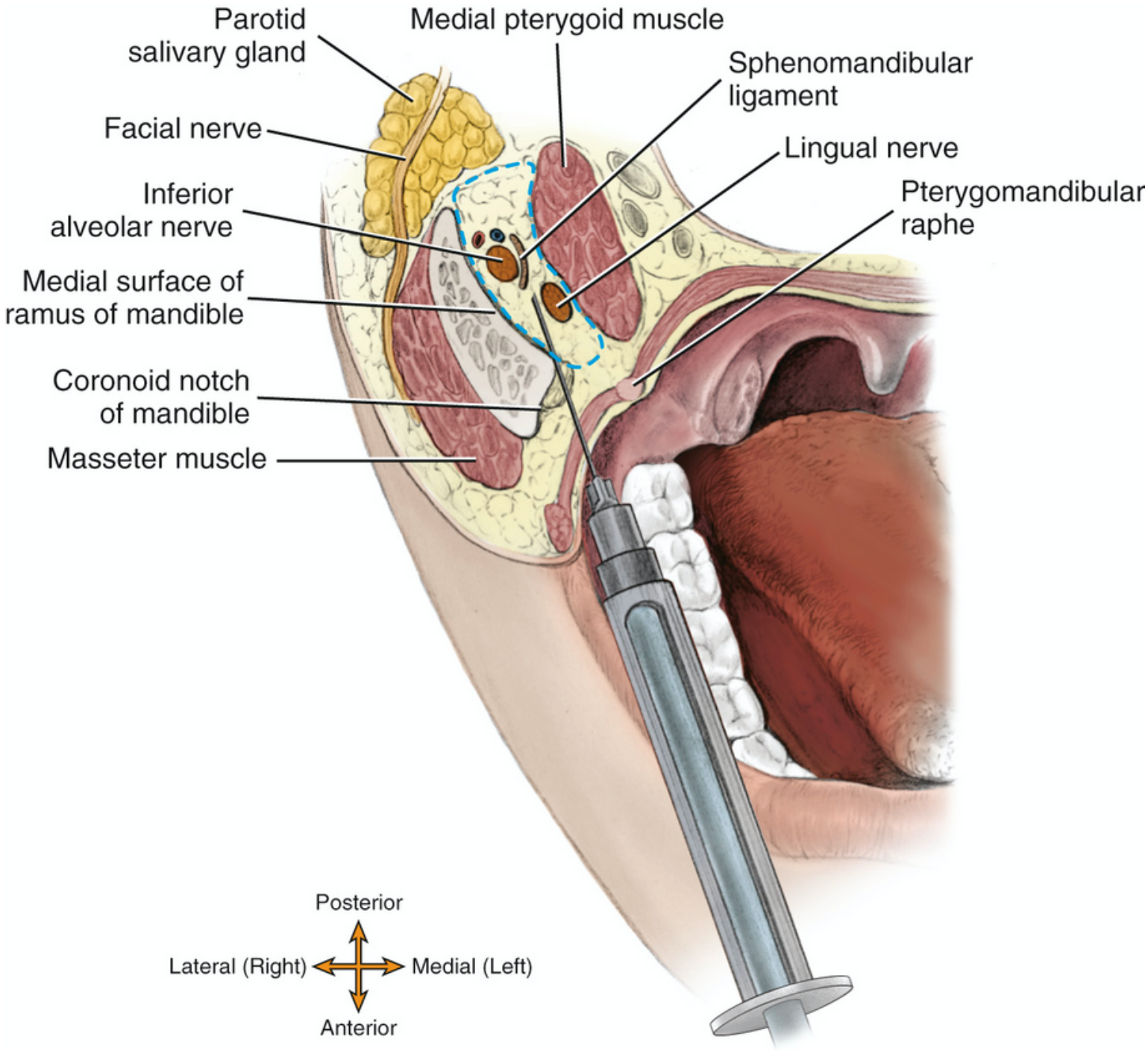


Vazirani-Akinosi Mandibular Block



NOTES

Vazirani-Akinosi Mandibular Block



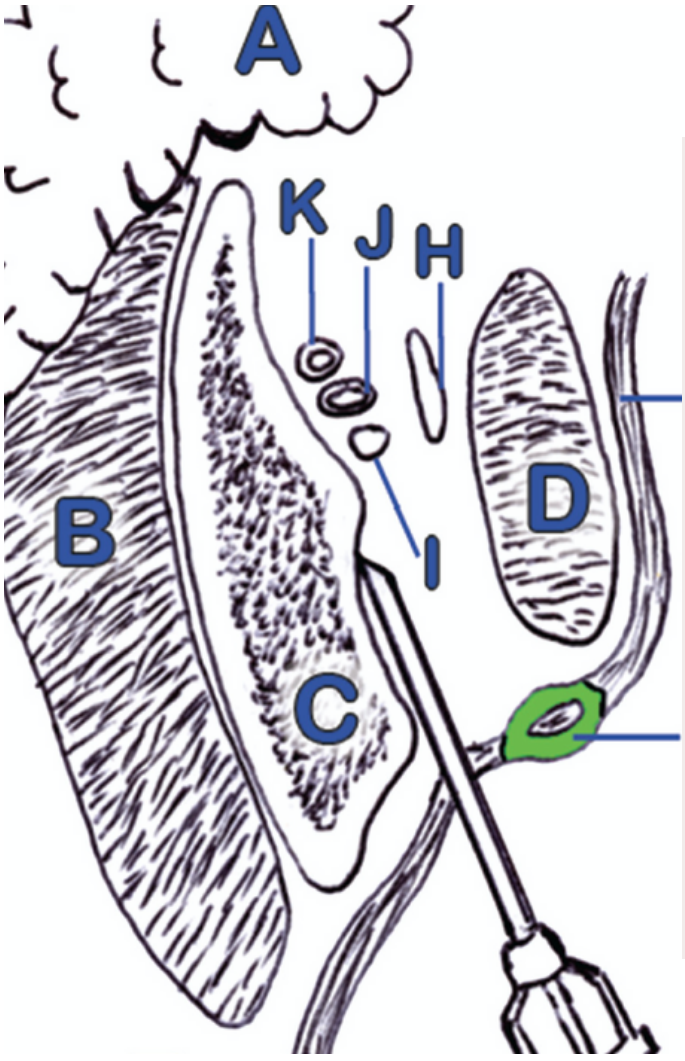
Loma Linda Inferior Alveolar

Penetration Site: Lateral and posterior to the pterygomandibular raphe at the height of the coronoid notch.

Deposition Site: The mandibular sulcus, needle slides past the lingual notch.

Procedure: Initial contact with bone on the internal oblique line occurs, repositioning of the barrel to parallel to the mandibular teeth advances needle past the internal oblique and into the mandibular sulcus. No contact with bone is needed. At approx 25 mm, 1 cartridge is deposited.

Common Causes of Injection Failure: Lack of experience.



Troubleshooting

Critical Thinking

Ideal Injection Components

- Technically simple
- Comfortable for patients
- Can provide hemostasis when needed
- Obviate the presence of collateral innervation
- Avoid the risk of potential damage to nerve trunks
- Lesser risk of intravascular injection
- Safer in patients with clotting disorders
- Reduce risk of needle-stick injury
- Preinjection application of topical anesthetic masks needle penetration discomfort.

General Considerations

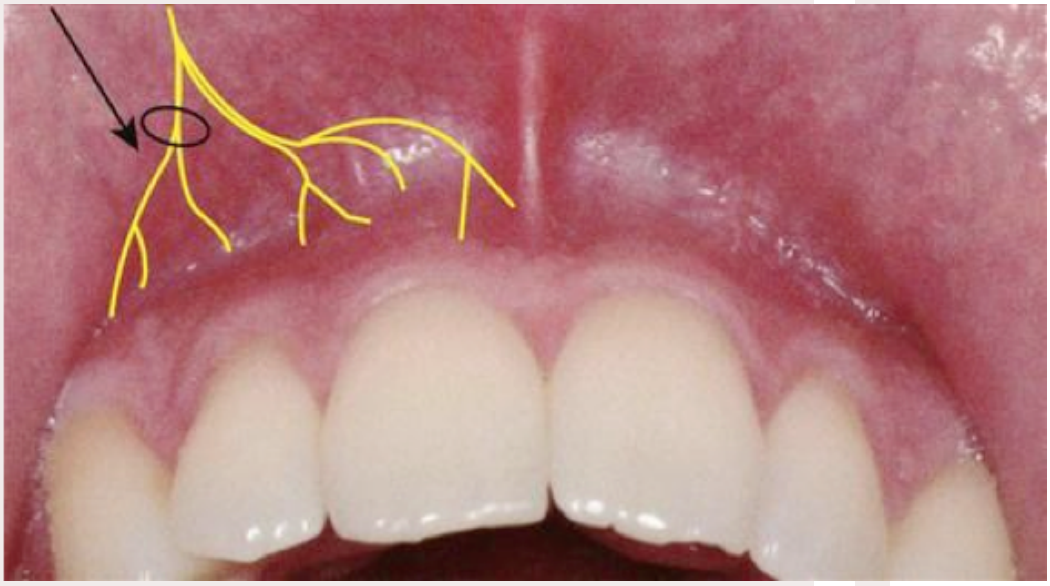
- Anatomic variations
- Thickness of the mandibular cortical plate
- Aberrant/accessory innervations
- Adequate volume of solution
- Presence of infection/inflammation
- Quality of cartridge contents
- Tachyphylaxis
- Vitamin C
- Circadian Body Rhythms

Troubleshooting

Critical Thinking

Anatomical Considerations

- Consider a field block or a nerve block in lieu of an infiltration of the site.
- Particularly, aiming higher on the nerve branch or ganglion will permit improved anesthetic outcomes



NOTES:

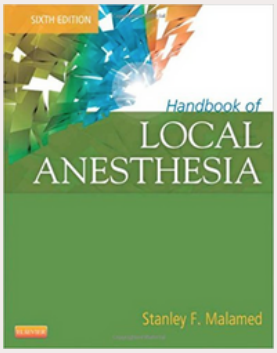
Local Anesthesia in Pediatrics

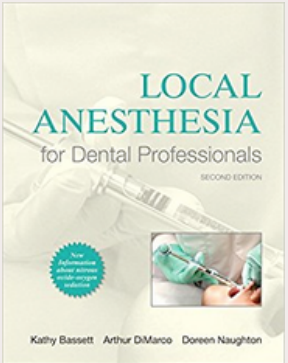
Ideal Injection Components

- Consider the drug of choice
  - Paxton & Thome (2010) implied a distinct advantage to the use of articaine as it relates to pediatric care over 2% lidocaine 1:100k epi
    - May decrease the likelihood of needing additional injections
    - Package inserts indicate to not utilize on patients under the age of 4 (Septodont, 2010)
- Bilateral Mandibular Blocks
- Mandibular infiltrations
- Special considerations in childhood obesity

Publications

- Malamed, S. F. (2013) Handbook of Local Anesthesia 6th ed. Elsevier, Evolve. St. Louis, Missouri. ISBN: 978-0-323-07413-1
- Bassett, K., DiMarco, A. Naughton, D. (2015). Local Anesthesia for Dental Professionals 2nd ed. Pearson. Lakewood, Washington. ISBN: 978-0-13-307771-1





www.katrinasanders.com

Twitter:
@MsSandersRDH

Facebook:
@TheDentalWINEgenist

Instagram:
@TheDentalWINEgenist

LinkedIN:
Katrina M Sanders
RDH, BSDH, M.Ed, RF

katrina@katrinasanders.com

Katrina Sanders