Update on Local Anesthesia for the Dental Hygienist
Friday, November 1, 2013
Missouri Dental Hygienists’ Association Annual Session
Lake Ozarks, Missouri

Is it time for a refresher on the use of local anesthesia in your dental hygiene practice? This session will update participants on concepts that contribute to the success of local anesthesia and discuss some of the most current thinking regarding injection techniques, appropriate drug selection, equipment options, and future developments. By the end of the presentation, participants will be able to:

1. Identify anatomical landmarks for successful administration of maxillary and mandibular nerve block injections.
2. Comply with the most current recommendations for injection techniques to ensure patient safety.
3. Defend appropriate selection of specific local anesthetic agents.
4. Assess reasons for inadequate local anesthesia and consider modifications for improved success.
5. Discuss equipment options and alternative strategies for local anesthesia.
6. Describe current research and future developments in the use of local anesthesia.

Notes:

1. Consider anatomical landmarks for successful administration of maxillary and mandibular nerve block injections.
   • Maxillary: PSA; IO; ASA; MSA; NP; GP; AMSA
   • Discuss AMSA
   • Mandibular: Traditional IA/L; M/I; B; GG
   • Focus on advantages and techniques for GG

2. Identify the most current recommendations for injection techniques to ensure patient safety.
   • Aspiration in 2 planes now recommended by Malamed (2013)
   • Consider the safety margins with 25 gauge needles and high percentage of breakage reports associated with 30 gauge needles.
   • Discuss the bevel placement and Malamed’s position (2004 & 2013)
   • Maximum safe dosages and calculations
   • Clinician safety: recapping procedures and recapping devices.
     o ProTector Sheath [http://www.certol.com/LandingPages/ProTector.aspx](http://www.certol.com/LandingPages/ProTector.aspx)

3. Discuss recommendations for appropriate selection of specific local anesthetic agents.
   • Local anesthetic drug comparison: Lidocaine, Mepivacaine, Prilocaine, Articaine, and Bupivacaine
   • Indications and contraindications
   • Discuss that differences in duration related to vasoconstrictors and LA drugs
   • Discuss vasoconstrictor concentrations – especially 1:50,000 and 1:200,000
   • Discuss Infiltrations on mandible with articaine
4. Assess reasons for inadequate local anesthesia and make recommendations for improved success.
   - Vasocostructor; degree of protein binding; individual response to a drug; accuracy injection technique; type of injection
   - pKa and pH of drug choice
   - Consider pH of infected tissues and amount of drug available to block the nerve

5. Discuss alternative strategies and equipment options for local anesthesia

   Topical Anesthesia
   - Lidocaine 2.5% and Prilocaine2.5% (Oraqix) http://www.oraqix.com/Assembly.aspx
     - Series of videos – Assembly, Application, Patient Consult
   - Manufacturer’s maximum recommendation dose is 5 cartridges
   - Benzocaine 14%, Butamben 2%, Tetracaine 2% (Cetacaine) MRD 0.4mL
     - Each 200 mg dose contains 28mg benzocaine, 4mg butamben, and 4mg tetracaine
     - 400mg is approximately 0.4mL (MRD)
     - Manufacturer’s recommendation is 0.1mL per quad – 1 full syringe used for all 4 quads. How to Videos: http://www.cetacaine.com/dental/how-use

   Equipment
   - Clinician safety and recapping devices:
   - Petite syringes; thumb ring adjusters:
     - Septodont: http://www.septodontusa.com/products/aspirating-syringes
   - Computer-Controlled Local Anesthesia Delivery Devices (C-CLAD)
     - Compudent® http://www.milestonescientific.com/dental_compudent.html also has the SafetyWand Handpiece®; Single Tooth Anesthesia STA Unit; WandHandpiece®.
   - Reversing drug
     - Phentolamine mesylate (OraVerse) http://www.oraverse.com/

6. Research related to LA
   - Vibration to reduce pain sensations during injections
     - DentalVibe
     - Vibraject
   - Sonophoresis
   - LA and third molar development
   - Adverse drug reactions to local anesthetics
References:


Aggarwal V, Jain A, Kabi D. Anesthetic efficacy of supplemental buccal and lingual infiltrations of articaine and lidocaine after an inferior alveolar nerve block in patients with irreversible pulpitis. JOE 20095(7);925-929.


Logothetis D. Local Anesthesia for the Dental Hygienist, Elsevier Mosby, St. Louis, Missouri, 2012.


Wynn R. OraVerse™- A newly approved drug that speeds up return to normal after soft-tissue anesthesia. Lexi-Comp Dentistry Newsletter, November 2008.
