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BEFORE YOU INJECT

Infrequently, some patient may experience lack of efficacy with a local anesthetic. In order to get the most out of our product, please consider the following factors that may result in a decreased anesthetic effect in a patient:

- **Anatomical variation**

- Bifid alveolar nerve and accessory innervations (such as mylohyoid nerve) may cause a failed inferior alveolar nerve block³
- The presence of retromolar foramen or accessory mental foramen may cause a failed mandibular block¹
- Contralateral innervation of the anterior teeth can lead to anesthetic failure in both the upper jaw and mandible¹

- **Local infection/inflammation**

- Low tissue pH, vasodilation and hyperalgesic nerves can reduce anesthetic effect²

- **Poor technique**

- Injections given too low, too high, too deep, too mesial, excessively superficial or intravascular injections¹
- Injections given too quickly^{1,2}

- **Not giving anesthetic enough time to achieve complete anesthesia**

- Wait at least 10-15 minutes¹

- **Patients with alcoholism**

- A combination of systemic acidosis and reduced circulatory resistance due to the vasodilative properties of alcohol can cause inadequate anesthesia^{7,9}

- **Hypersensitivity due to fear**

- Hormones associated with anxiety can prevent a local anesthetic from working as well in some people⁸
- Anxious patients are likely to have abnormal body PH which can affect the ability of the anesthetic radicals to penetrate the nerve cell⁹

- **Patients with Ehlers-Danlos syndrome**

- Rapid absorption of the anesthetic solution into the bloodstream due to the defective nature of the connective tissues in the surrounding blood vessels can cause inadequate anesthesia^{4, 8,9}



- **Patients with red hair**

- Due to mutation in the melanocortin-1 receptor gene, these patients have a lower response to anesthetics⁵

- **Older patients with increased bone density**

- Especially in mandibular teeth when using periapical infiltration techniques¹

- **Improper storage of anesthetic**

- Storage over 37°C will lead to anesthetic failure¹
 - Ideal storage is 25°C for Articaine products

Please keep in mind that the dosage amount or placement of injection may need to be adjusted for successful anesthesia

References:

- ¹ Oral Patol Oral Cir Buccal 2006; 11:E510-3
- ² British Dental Journal Volume 186, No. 1, Jaan. 9, 1999
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- ⁴ Acta Anaesthesiol Scand. 1990 Jul;34(5):358-61
- ⁵ Anesthesiology. 2004 August ; 101(2): 279–283
- ⁶ <http://www.anesthesia-analgesia.org/content/92/6/1601.full>
- ⁷ ANESTH ANALG 1983; 62:84-96
- ⁸ <http://www.dentalfearcentral.org/fears/not- numb/>
- ⁹ http://doctorspiller.com/Local_Anesthetics/local_anesthetics_5.htm