

Paresthesias in Dentistry

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KEYWORDS

• Paresthesia • Articaine • Prilocaine • Lidocaine

Alterations to normal oral sensory function can occur after restorative and surgical dental procedures. These sensory abnormalities, generally described as paresthesias, can range from slight to complete loss of sensation and can be devastating for the patient. This article reviews the extent of this oral complication as it relates to dental and surgical procedures, with specific emphasis on paresthesias associated with local anesthesia administration. This review establishes a working definition for paresthesia as it relates to surgical trauma and local anesthesia administration, describes the potential causes for paresthesia in dentistry, assesses the incidence of paresthesias associated with surgery and local anesthesia administration, addresses the strengths and weaknesses in research findings, and presents recommendations for the use of local anesthetics in clinical practice.

DEFINITION OF PARESTHESIA

What is meant by paresthesia? Stedman's Medical Dictionary¹ defines a paresthesia as an abnormal sensation, such as of burning, pricking, tickling, or tingling. Paresthesias are one of the more general groupings of nerve disorders known as neuropathies. Paresthesias may manifest as total loss of sensation (ie, anesthesia), burning or tingling feelings (ie, dysesthesia), pain in response to a normally nonnoxious stimulus (ie, allodynia), or increased pain in response to all stimuli (ie, hyperesthesia).²

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In reviewing the dental anesthesiology literature regarding paresthesias, some confusion exists when describing this as an adverse reaction after the administration of local anesthesia. Depression of nerve function and associated anesthesia are the clinical functions of the local anesthetic agents, and altered sensations, such as dysesthesias, are an expected component of the recovery process following local anesthesia. It is now commonplace to include an element of duration to the definition to permit expected pharmacologic alterations in sensory nerve function to be differentiated from abnormal and potentially permanent adverse reactions. In describing paresthesia as a complication of local anesthesia, the anesthesia or altered sensation is required to “persist beyond the expected duration of action of a local anesthetic injection.”³

Most cases of paresthesia that are reported after dental treatment are transient and resolve within days, weeks, or months.^{4–9} The best data regarding rate of recovery are provided in the article by Queral-Godoy and colleagues,⁸ in which survival curves are presented for recovery from surgical paresthesias. These data suggest that complete recovery at 8 weeks had occurred in only 25% to 30% of the patients. When reevaluated at 9 months, complete recovery had occurred in 90% of the patients. The time when a paresthesia should be considered permanent is not absolute and is often not known with certainty. Paresthesias that last beyond 6 to 9 months can be described as persistent and are unlikely to recover fully, although some still can. Reports of recovery of sensory function beyond a year are extremely rare.^{5,10}

These persistent neuropathies are the authors' primary concern. Few treatments are available that effectively improve symptoms or completely correct persistent paresthesias after dental procedures.¹¹ Microsurgical repairs of traumatic nerve damage after oral surgical procedures have reported some success in obtaining useful sensory recovery or complete recovery of nerve function.¹² Scientific analyses that establish risk factors for the development of paresthesias must continue to be performed, and treatment options that may prevent this potentially serious complication should be disseminated to those practicing the profession.

REPORTS OF PARESTHESIA AFTER DENTAL TREATMENT

Persistent paresthesias are most commonly reported after oral surgical procedures in dentistry. Needle trauma, use of local anesthetic solutions, and oral pathologies have been less frequently documented.

Third Molars

It has been estimated that 5 to 10 million impacted third molars are removed every year in the United States.^{13,14} Peripheral nerve injuries associated with this common oral surgical procedure may be caused by stretching of the nerve during soft tissue retraction, nerve injury caused by compression, as well as partial and complete resection.⁴ During removal of third molars, the inferior alveolar nerve (IAN) and the lingual nerve are most likely injured.^{12,15} Bataineh,¹⁵ in reviewing more than 30 reports of nerve impairment immediately after third molar extraction, found that the incidence of lingual nerve paresthesia was 0% to 23% and that of IAN paresthesia was 0.4% to 8.4%. Risk factors for these surgical paresthesias include procedures involving lingual flaps and osteotomies, operator experience, tooth angulations, and vertical tooth sectioning.^{16,17} IAN and lingual nerve sensory impairments are transient and usually recover fully. Recovery has been reported to occur more rapidly during the first months.⁸ As indicated in **Table 1**, estimates for the prevalence of persistent paresthesias (lasting at least 6–9 months) after third molar extraction range from 0.0% to 0.4%.

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