

Incidence of Lingual Nerve Paresthesia Following Third Molar Extraction

Sharanya.H, Dr.M.Sivakumar,

Department of Oral and Maxillofacial Surgery, Saveetha Dental College .

Abstract:

Aim : To do a review on lingual nerve paresthesia following mandibular third molar extraction

Background:

The incidence of lingual nerve paresthesia was more observed with lingually inclined tooth than buccal inclination. It is more prone on surgical removal of unerupted mandibular third molar. Commonly paresthesia is mostly prone with distoangular and horizontal-impacted third molar. Association of depth of impaction with lingual nerve paresthesia can be observed and found that third molar present below the cemento-enamel junction of second molar is more significant for paraesthesia. If there is any fracture of the cortex due to excessive pressure while elevating the tooth then also lingual nerve paresthesia or dysesthesia is observed.

Reason: Lingual nerve paresthesia is a common concern for any oral and maxillofacial surgeon and a continuous discomfort for the patient after surgical removal of mandibular third molar. Although this is a rare complication, measures have to be taken to prevent this symptom. This review is to comprise all the possible reasons for lingual nerve paresthesia and to put forward some tips to avoid this complication.

Key Words: Lingual nerve, paresthesia, mandibular third molar, lingual flap.

INTRODUCTION:

Complications like pain, swelling, bruising and trismus is caused during surgical removal of mandibular third molar. Nerve damage (inferior alveolar and lingual nerve) is also a possible complication during this procedure. The lingual nerve is a branch of the mandibular division of the trigeminal nerve (CN V3), which supplies sensory innervation to the tongue(1). It also carries fibers from the facial nerve, which return taste information from the anterior two thirds of the tongue, via the chorda tympani. The risk associated with wisdom tooth surgery is commonly accepted to be 2% temporary and 0.2% permanent. It has been reported that if the teeth are partially erupted, the risk of lingual nerve paresthesia is increased(2). Impacted mandibular third molar teeth are in close proximity to the lingual, inferior alveolar, mylohyoid, and buccal nerves (3). During surgical removal, each of these nerves is at risk of damage, but the most troublesome complications result from inferior alveolar or lingual nerve injuries. The majority of injuries result in transient sensory disturbance but, in some cases, permanent paraesthesia (abnormal sensation). These sensory disturbances can be troublesome, causing problems with speech and mastication and may adversely affect the patient's quality of life. They also constitute as one of the most frequent causes of complaints (4).

ANATOMICAL VARIATIONS OF LINGUAL NERVE :

Anatomical variations might be responsible for unexpected and unexplained symptoms after a surgical procedure. Sensory disturbance of the lingual gingiva and mucosa can be caused on floor of the mouth and tongue surgeries. Severance of the lingual nerve will include a variable loss of taste because of the involvement of the chorda tympani nerve, which runs within the lingual nerve sheath. It may also result in permanent numbness, loss of taste and dysesthesia of the anterior two-thirds of the tongue on the side of the mandibular third molar extraction, causing a lifetime of distress. Enormous variation in the pathway of the lingual nerve, especially in the third molar area, oral surgeons developed techniques for 3rd molar extractions which limited extractions to a buccal approach, thereby giving a wide surgical berth to most variations of the lingual nerve(6). These variations are listed as running from the crest of the lingual bone to below the floor of the mouth. Sometimes one of the variations is the lingual nerve traversing the retromolar pad. Staying away from the lingual bone during extractions, and the retromolar pad for incisions will keep the surgeon away from the multiple pathways the lingual nerve might take.

CAUSES OF LINGUAL NERVE DAMAGE :

Dental paresthesia is one possible postoperative complication associated with wisdom tooth removal, or in some cases receiving a dental injection. It involves a situation where tissues or structures in or around the mouth (lip, tongue, facial skin, mouth lining, etc...) experience prolonged or possibly permanent altered sensation due to nerve trauma that's been created(5). This damage might be the result of bruising, stretching, crushing or even severing the nerve. Beyond surgical procedures, some cases of paresthesia are caused by routine dental injections. The wisdom teeth extraction may cause lingual nerve damage that leads to numbness of the ipsilateral anterior two-thirds of the tongue and taste disturbance (6). Sometimes the elevation of lingual flaps and the experience of the operator are significant factors contributing to lingual nerve paraesthesia.(7)

Paraesthesia is a sensory-only phenomenon and not accompanied by muscle paralysis.(8) In most cases, the nerve damage is not identified during the dental procedure but instead as a postoperative complication. The patient will notice altered, diminished, or even total loss of sensation in the affected area. One or more senses may be involved (taste, touch, pain, proprioception or temperature perception). In the case of the mandibular or lingual nerves, that means some aspect of the person's lip, chin, mouth lining or tongue. (9) Sometimes tooth itself as it's forced against the nerve. Improper instrumentation during the procedure is the most common cause of lingual nerve paresthesia.(10)

ASSESSMENT OF INJURY:

1. Subjectively by asking the patient if the tip of the tongue or the lateral border of the tongue is numb or not.
2. Objectively by instrumentation, using the periosteal elevator and applying pressure on the lingual gingiva and also lateral border of tongue.

REVIEW OF LITERATURE:

Steven et al in 2003 did a study in 25 patients with impacted mandibular third molars and subjected them for surgical removal. They found 6.5% incidence of lingual nerve paresthesia. They concluded that the lingual nerve paresthesia depends on the surgeon's experience, procedure methodology, and certain patient-specific factors during the procedure.[10]

Jeevan lata et al did a study in 15 patient with impacted mandibular third molars and subjected them for surgical removal. They found 4.6% incidence of lingual nerve

paresthesia. They concluded that the lingual nerve paresthesia can occur with or without reflection of lingual flap in spite of all the measures taken to protect it.[1]

Vikas Sukhadeo Meshram et al in 2013 did a prospective study in 147 patient with impacted mandibular third molars and subjected them for surgical removal. They found, 62 (42.1%) patients had mesioangular type of impaction, 37 (25.1%) were horizontal, 36 (24.4%) were vertical, 10 (6.8%) patients had distoangular impaction, and 1 (0.68%) patient each of linguoversion and inverted type of impaction. They had found lingual nerve paresthesia in 1 patient which had a linguoversion. [3]

Kenji Nakamori et al in 2014 did a study on "Clinical significance of computed tomography assessment for third molar surgery". This study reveal low incidence of complications during third molar surgery. To resolve these issues, multi-institutional studies and development of a uniform protocol are needed[11]

Marcelo Breno Meneses Mendes et al in 2013 did a study on "Anatomical Relationship of Lingual Nerve to the Region of Mandibular Third Molar". This study says about the unless adequate protection of the lingual nerve is acquired by following an adequate surgical technique, the lingual nerve will always be vulnerable to damage during surgical intervention or manipulation in this region.(12)

H. S. Charan Babu et al in 2013 did a Prospective Clinical Study on "Factors Influencing Lingual Nerve Paraesthesia Following Third Molar Surgery". This study says that The age of the patient, depth of impaction, lingual flap retraction and longer duration of surgery are significant risk factors for LNI during mandibular third molar surgery. Greater care should be taken to avoid the morbidity and patients should be informed well ahead about the probable complications.(13)

POSSIBLE MEASURES TO AVOID LINGUAL NERVE DAMAGE:

- 1) Adequate surgical training .
- 2) Proper radio graphic evaluation on level of impaction and difficulty score.
- 3) Proper surgical technique with proper instrumentation.

CONCLUSION :

With evidence found various reviews from literature and also the authors experience ,lingual nerve paresthesia is an un avoidable rare complication following surgical removal of mandibular third molars. This solely depends on the level of impaction surgeons experience and proper surgical technique with necessary instrumentation.

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