

CASE REPORT

Neuropraxia following Nonsurgical Removal of Impacted Third Molar

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ABSTRACT

Extraction of mandibular third molar teeth are frequently associated with complications. The nature of the complication depends on the age of patient, extent of surgery, expertise of the surgeon and the anatomy of the neurovascular bundle surrounding the tooth. Paresthesia is an one such unpleasant complication which is not only related to functional sensory loss in the region innervated by the nerve but also having a psychosocial impact on the patient. This case report tends to highlight a neuropraxic injury following nonsurgical extraction of a mandibular third molar and return of sensory response following neuropraxic injury.

Keywords: Injuries, Nerve, Neuropraxia, Paresthesia.

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INTRODUCTION

The third molar extraction is quite commonly carried out surgical procedure in the oral cavity.¹ As with any surgical procedure, third molar extraction is associated with its own complications. One of the most feared complications is paresthesia of lip as it is associated with psychosocial impact apart from the sensory loss. Postoperative neurosensory deficit may affect either the inferior alveolar nerve or more commonly, the lingual branch of the mandibular division of the trigeminal nerve that leads to numbness of the ipsilateral anterior two-thirds of the tongue and taste disturbance.¹

Injury to the peripheral trigeminal nerve results in degeneration, the degree of which depends in part

upon the magnitude of the injury, the age of the patient and the location of the injury.² The reported incidence of paresthesia after extraction of third molars varies between 0.4 and 7% for the lower alveolar nerve.³ Trauma to a peripheral nerve may result in a deficiency ranging from total loss of sensation (anesthesia) to a mild decrease in feeling (mild hypoesthesia).³ The sensory disturbances can be troublesome, causing problems with speech and mastication and may adversely affect the patients quality of life.⁴

There are various diagnostic tests that can be of aid in predicting as well as determining the degree of nerve injury.¹ Response to pinprick, direction and two-point discrimination, taste evaluation and diagnostic nerve blocks are few of the tests which can guide to the extent of injury to the sensory nerves. Orthopantomographs (OPG), computed tomography (CT) scans, magnetic resonance imaging (MRI), magnetic resonance neuroradiography (MRN) and ultrasonography (USG) are of relevance in diagnosis of nerve injuries. Principles of management of nerve injuries are based on extent of the injury and the time frame of recovery. Nonsurgical (medical) and surgical mode of treatment have been extensively reviewed in the literature.

CASE REPORT

A 25-year-old male patient was referred to Department of Oral and Maxillofacial Surgery, College of Dentistry, King Khalid University, Abha, Kingdom of Saudi Arabia for management of pain in the lower right back region. History, clinical examination and revealed pericoronitis with tooth #48. Orthopantomogram was suggestive of erupted tooth #48 with slight distal bone coverage (Fig. 1). The tooth could not be classified as distoangular as the amount of inter-radicular bone between #46 and #47 was almost equal to that between #47 and #48 (Fig. 1).

Treatment included nonsurgical extraction of tooth #48 under inferior alveolar nerve block, lingual nerve block and long buccal nerve block. The extraction was uneventful without any significant bleeding or fracture of the root. The patient was given routine post-extraction instructions along with antibiotics and analgesics. On the second postoperative day, the patient complained of paresthesia over the mental region. Both intraoral and

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extraoral examination revealed normal healing tendency without any signs of infection. The intraoral flap was healthy without any dehiscence. Mapping of the mental region was performed through pin-prick method and two-point discrimination (Fig. 2). As shown in Figure 2, the patient had paresthesia over the mental region.

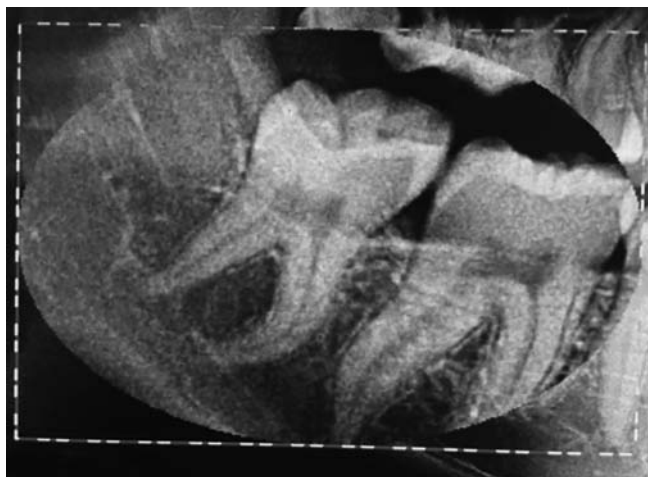


Fig. 1: Preoperative orthopantomogram



Fig. 2: Mapping of mental region



Fig. 3: Improved sensation: 2 weeks postoperative

The patient was reassured that over a period of time, regular follow-up will be done and that the sensation would return in due course of time. The patient was regularly followed every third day and a second sensory testing was performed at the end of 2 weeks. As shown in Figure 3, the sensation over more than two-thirds of the mental region returned back to normal. By the end of 4 weeks, the patient had no complain of sensory loss with almost 100% return of sensation.

DISCUSSION

Inferior alveolar nerve is at risk with surgical removal of impacted third molar due to its proximity and the surgical technique of cutting the bone with bur. Paresthesia can be defined as an altered sensation of numbness, burning, or prickling that may reflect an alteration in the sensation of pain in the distribution of a specific sensory nerve.⁵ The majority of nerve injuries following third molar removal are transient and the recovery is almost always complete. Temporary block of nerve conduction may be accompanied by some thinning of the axons and segmental demyelination.⁶ Patients who are ultimately left with a minor degree of hypoesthesia or mild paresthesia cope well with the sensory deficit and are probably best left untreated.⁷

Various studies have been performed to assess the extent and type of nerve injury following extraction of third molar. Leung YY et al, conducted a study involving 42 subjects to investigate the effect of persistent neurosensory disturbance of the lingual or inferior alveolar nerve on general health and oral health-related quality of life.⁸ They concluded that patients with neurosensory deficits had poorer mental- health component and general health. Cheung LK et al, conducted a prospective clinical study involving 4,338 cases to assess the incidence of neurosensory deficits and recovery after third molar surgery. They concluded that depth of impaction was related to the risk of inferior alveolar nerve (IAN) deficit and also stated that sex, age, raising of lingual flap, tooth elevation were not significantly related to IAN or lingual nerve (LN) injury.⁹ Bataineh AB in his prospective study involving 741 patients to assess the sensory nerve impairment following mandibular third molar surgery stated that the IAN paresthesia was highest in the under 20-year-old age group. He also stated that there was a significant relationship to the experience of the operator.¹⁰ Kim et al, in their case controlled study involving 12,842 patients stated that older age, deeper impaction, deflection of the roots, narrowing of the roots, dark and bifid apices of the roots and narrowing of the canal were significant risk factors for IAN injury.¹¹

Management of nerve injuries involves a broad perspective. Both nonsurgical and surgical modalities of treatment have been extensively discussed in the literature. Leung YY et al, conducted a systematic review to discuss the treatment modalities of neurosensory deficit after lower third molar surgery.¹² They stated that six treatment modalities of LN or IAN deficit after third molar surgery were identified. External neurolysis, direct suturing, autogenous vein graft, and a Gore-Tex tube as a conduit were the four surgical treatments. Acupuncture and low-level laser therapy were the two available nonsurgical treatment modalities.

Following nonsurgical removal of third molar, the risk of IAN injury is remote. As mentioned in this present case report, when the IAN is in close proximity to the root, the risk of IAN injury does exist. This type of neuropraxic nerve injury can be managed by regular follow-ups, psychological counseling of the patient. In our experience, the return of sensation is almost always complete within 1 month following IAN injury due to nonsurgical removal of simple impacted third molars whose roots are in close proximity to the IAN.

CONCLUSION

- A thorough preradiographic evaluation of neurovascular bundle is imperative while performing third molar extractions
- Sectioning the tooth may be attempted to minimize the sensory loss following third molar extractions
- Mild neuropraxic injuries are almost always reversible. Sequential follow-up in such patients plays an important role.

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