

# Postextraction Inferior Alveolar Nerve Injuries - Prevention and Treatment

## SUMMARY

Several sensory disturbances may occur to the inferior alveolar nerve postoperatively. They are usually associated with lower third molar surgery, and even then they are rare. The aim of this study was to evaluate and describe the radiological aspects of sensory disturbances after an attempted tooth extraction, and present their preoperative and postoperative treatment. The cases demonstrated are presented with symptoms of facial pain; radiological and clinical situation are given preoperatively and postoperatively. A small comparison is also made to a case without symptoms, although the inferior alveolar nerve was in close relation to the tooth, and to which a proper operative approach was taken.

**Keywords:** Inferior alveolar nerve, injury; Impacted lower third molars.

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## CASE REPORT (CR)

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## Introduction

There are several sensory disturbances that may occur to the inferior alveolar nerve during an extraction attempt. They most often occur when the tooth involved is an impacted lower third molar<sup>1-7</sup> and include complete anaesthesia, hypoesthesia, hyperaesthesia and the most common one, paresthesia.

Paresthesia is attributed to nerve injury being of either odontogenic or iatrogenic origin<sup>8,9</sup>. It is expressed as numbness, burning sensation and/or electric type stimuli. The cause of paresthesia is often odontogenic, though it can be of systemic origin, such as viral or bacterial infections, or local neoplasms. Of the mentioned causes, those of odontogenic origin are of special concern to general dentists, which can be an attempt to extract molars and, most often, wisdom teeth, cysts, odontomas and periapical inflammations<sup>8,9</sup>.

The **aim** of this paper is to present 4 patients who were referred to our clinic with symptoms of sensory disturbances of the trigeminal nerve.

## Report of 4 Cases

### Case 1

A 57-year-old patient was referred to our clinic with intense symptoms of pain and numbness at the area of

lower right second molar, though clinically no tooth was present. The panoramic radiograph, which patient had with him, showed a residual root (Fig. 1) indicated for extraction. The position of the root was confirmed with an intraoral radiograph. The residual root was removed. During the postoperative follow-up, 3 and 8 months after the initial surgery, the paresthesia was limited to the area of 41 and 42 at the time of the first follow-up, and ceased completely at the time of the second follow-up.

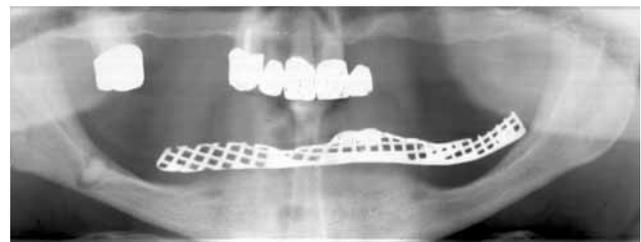


Figure 1: panoramic radiograph of the patient revealing the root remnant that caused the patient's paresthesia

### Case 2

A 52 years old patient was referred to our clinic after a long history of pain and misdiagnosed trigeminal neuralgia. According to the patient's history, he initially showed symptoms of pain about 2 years ago, when he visited a hospital with acute pain at the lower mandibular area that reflected to the ear and eye. Since then he had

visited numerous clinics from E.N.T. to Neurological and had been given medication (carbamazepine) for treatment of trigeminal neuralgia. The symptoms persisted, and about a year ago, he was referred to our clinic from a neurologist. After making an OPG (Fig. 2), we noticed a strongly inflamed wisdom tooth that was removed. The patient was re-examined 6 and 12 months after surgery and paresthesia he initially had was at the first follow-up restricted to the area between 31 and 34, and gone at the second follow-up.



Figure 2: Panoramic radiograph of the patient showing the impacted wisdom tooth with the inflammation of the surrounding tissues.

### Case 3

A 67-year-old patient was referred to our clinic after an unsuccessful attempt to remove the wisdom tooth. She came to us with the radiographs her dentist had taken before the attempt (Fig. 3). An intraoral and a panoramic radiograph were taken to gain a better understanding of the tooth's position (Fig. 4, a and b). After viewing the radiographs, we ordered a computerized tomography (CT) scan to know with absolute certainty the position of the inferior alveolar nerve (Fig. 5, a and b). In the CT scans we observed the close approximation of the tooth's residual roots to the inferior alveolar nerve. The correct localization of the inferior alveolar nerve was done, and a more careful approach to the extraction of the roots was taken. The lack of inflammation allowed us to conclude that the atypical paresthesia the patient had upon arrival, was of iatrogenic origin. When the patient came for a recall, 3 months after surgery, paresthesia was restricted in extent, but the symptoms of numbness and pain were more intense. A second recall, 6 months after surgery, was scheduled, when patient showed an improvement. The area of paresthesia was limited in extent, there was sensation at the lip and cheek area and only the anterior lower teeth area was still numb with very short paroxysmal pain involvement. Currently, 10 months after surgery, there are no symptoms of paresthesia.

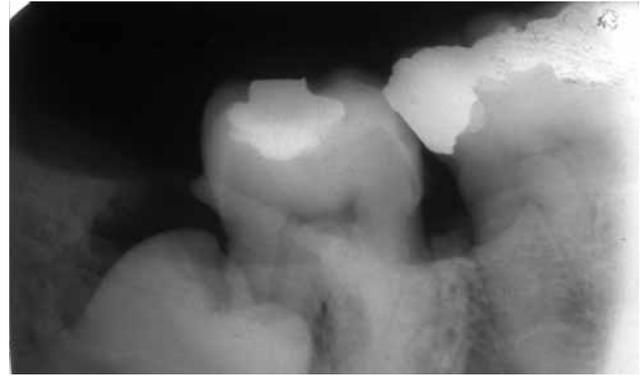


Figure 3: The intraoral radiograph prior to the extraction attempt that does not provide with the necessary information to avoid complications



Figure 4a: An intraoral radiograph of the same case as in figure 3 the way the patient presented to the clinic. We can clearly see the needed information to proceed to further surgery

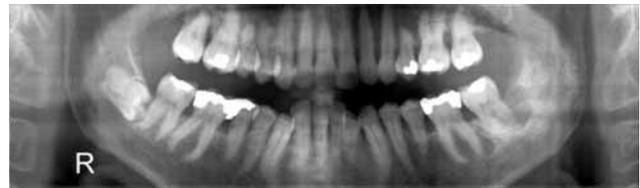


Figure 4b: Panoramic radiograph of the same case to give us all the information we need for the surgical removal of the root residues



Figure 5a: A C.T. section of the patient giving us the exact position of the inferior alveolar nerve in relation to the root residues

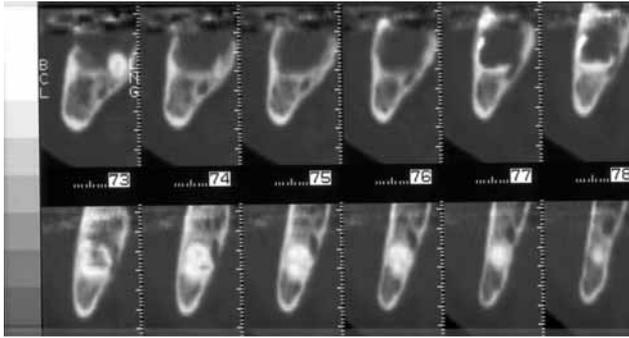


Figure 5b: Cross sections of the area of interest for locating the inferior alveolar nerve and obtaining all required information regarding the position of the root residues

#### Case 4

In this case, the patient arrived with no symptoms or clinical findings of paresthesia, after referral of an orthodontist for a wisdom tooth removal. The case is discussed in contrast to the previous cases to demonstrate the significance of proper preoperative control and the importance of proper surgical moves to avoid any complications. The orthopantomogram showed a close connection of the inferior alveolar nerve to the wisdom tooth's roots (Fig. 6). We ordered a CT scan prior to the surgery. At the CT we observed the exact position of the tooth and its roots, as well as the course of the nerve (Fig. 7, a and b). The surgery was scheduled and the tooth was extracted causing minimal damage to the surrounding tissues and, therefore, after the extraction, there was limited paresthesia that lasted only a couple of weeks.



Figure 6: Panoramic radiograph of the patient prior to removal of the impacted third molar demonstrating the close relation of the nerve to the tooth's roots.



Figure 7a: Cross section of the impacted third molar demonstrating the exact position of all anatomical structures



Figure 7b: Panoramic radiograph of the same tooth showing the close relation of the tooth's roots to the inferior alveolar nerve

## Discussion

Trigeminal paresthesia is not a commonly occurring sensory disorder. In many of the cases it is of odontogenic or iatrogenic origin. In cases of difficult tooth extraction, particularly of lower wisdom teeth, it is one of the most frequently occurring extraction complications. The most common cause of its appearance is the improper surgical procedure performed by the dentist, and underestimation of the difficulty of the operation.

When there is a need to extract a tooth that is in close approximation to the inferior alveolar nerve, one must always be aware of the tooth's position radiologically. Initially, an intraoral radiograph and a panoramic radiograph should be taken to provide information regarding the tooth's exact position. If a close proximity of the tooth's roots to the inferior alveolar nerve is observed, it should be decided whether additional radiographs, such as a CT scan, are needed to best assess the exact anatomical relationships between the tooth's roots and the inferior alveolar nerve. Patient must be informed of the possibility of a complication during surgery, and must be aware of the fact that there is no current treatment if paresthesia is the complication. He must also be informed that paresthesia is a temporary complication in most of the cases, but seldom it is a permanent one.

The possibility of this complication during an extraction cannot always be avoided. One should try to limit it, though, by taking every possible measure available prior to surgery. Reference of the patient to an oral surgeon should be made when the dentist is not certain of his limitations. The proper radiographic control and the correct clinical movements (e.g. avoiding lingual moves or instrument placement for lower wisdom teeth) during a tooth extraction, when the tooth is in approximation to the inferior alveolar nerve, should be considered in order to avoid complications, such as paresthesia of the nerve.

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