

# The occurrence of paraesthesia of the maxillary division of the trigeminal nerve after dental local anaesthetic use: a case report

## Abstract

Paraesthesia can be a complication of surgical intervention. Its occurrence after dental local anaesthetic use is a rare event in general dental practice. Reported cases have mainly described its presentation for the mandibular division of the trigeminal nerve with very few reports for the maxillary division of this nerve. This report describes a case of paraesthesia in the maxillary region following local anaesthetic use prior to removal of an upper molar tooth.

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## Introduction

Local anaesthetics are usually safe, effective and indispensable drugs used routinely in dentistry. Local anaesthetics allow dentistry to be practised in a pain-free environment. However, their use may involve complications. Paraesthesia can be defined as persistent anaesthesia (anaesthesia well beyond the expected duration) or as an altered sensation (tingling or itching).<sup>1-3</sup> It is the result of damage to a nerve and the occurrence of paraesthesia following the use of local anaesthesia in dentistry represents a rare but important side effect, which is often under-reported<sup>4-8</sup> and is important in medico-legal practice. To date, there have been very few recorded incidences or published cases of maxillary nerve paraesthesia following the use of dental local anaesthetic for a routine extraction.

## Case report

The patient, a 38-year-old Caucasian female, was referred for a maxillofacial opinion regarding persistent numbness present in her upper left lip from the midline to the commissure, together with numbness of the

gingiva in the upper left anterior region of the maxilla. The numbness had developed following removal of an upper left first molar tooth. The tooth was removed due to localised periapical infection and, according to the patient, was a straightforward extraction and did not require surgical intervention. The patient recalls having local anaesthetic administered on the buccal and palatal aspects of the tooth involved. She reported that shortly after having the procedure completed she developed itchiness on her left nostril and that the effects of the local anaesthesia in the region of her upper left lip and buccal, palatal gingiva of the associated tooth never wore off. She reported the absence of any associated pain, or relieving or aggravating factors, and complained of occasional drooling from her mouth. Her symptoms were static throughout. Unfortunately, information regarding the type of local anaesthetic used was initially unavailable but was confirmed later as 2% lidocaine with 1:80,000 epinephrine.

Medically, the patient was fit and healthy but was quite distressed by the longstanding paraesthesia. She smoked 15 cigarettes daily and consumed alcohol socially.



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Clinical examination identified decreased sensation to light, sharp touch, two-point discrimination and temperature in the cutaneous areas of the upper left lip, when compared to the right side. This reduced sensation was also evident in the gingiva in the buccal aspect of the left anterior maxilla from the central incisor to the second premolar tooth. The wound site of the extracted upper left first molar tooth had healed completely. All cranial nerves were intact. Plain radiographs were non-contributory. Routine blood tests were normal. Axial computerised tomography (CT) imaging of the brain, cranial base and maxillae was assessed to rule out any organic cause for the described reduction in sensation. The CT scan was normal.

The patient attended for review. The reduced sensation had been present for a total of seven months. At this stage it was decided to undertake a magnetic resonance imaging (MRI) scan to rule out any demyelinating disease or any other cranial nerve pathology. The MRI scan was normal. A course of pregabalin, 100mg three times daily, was prescribed as an attempt to help the patient cope with her symptoms but was unsuccessful.

In view of the absence of any organic cause clinically, the negative results of all scans performed, the relatively straightforward nature of the dental procedure, and the long-standing nature of the patient's symptoms, a diagnosis of paraesthesia after dental local anaesthetic use was reached. No active treatment was undertaken. The patient has been discharged but advised to contact the maxillofacial clinic if there are any changes in her symptoms and to inform the hospital if the nerve sensation returns to normal.

### Discussion

The spectrum of altered sensations considered as paraesthesia includes perceived numbness, swelling, tingling, itching, oral dysfunction and, occasionally, pain.<sup>4-7</sup> The pathogenesis underlying non-surgical paraesthesia is unknown. Pogrel *et al.* in 2000 conducted a study where patients with paraesthesia secondary to local anaesthetic use underwent surgical exploration of their affected sites. All cases showed that there was no evidence of damage to the affected nerve caused by the anaesthetic needle shank.<sup>6</sup> Mechanical trauma alone appears to be an unlikely cause and nerve damage itself has been hypothesised to be caused by neurotoxicity of the local anaesthetic in combination with a minor trauma created by the needle.<sup>4,8</sup>

Paraesthesia associated with local anaesthetic used as part of routine dental treatment is an infrequent event. Many dentists and patients are not aware of this potential problem. Its occurrence can be quite alarming and to date has mainly been described for the mandibular division of the trigeminal nerve,<sup>7-9</sup> with very few reports for the maxillary division of this nerve.<sup>9</sup> If paraesthesia occurs after tooth extraction in general dental practice and the sensibility disorder persists unaltered for an extended length of time (>3 weeks), referral to an oral and maxillofacial surgeon to evaluate the situation and discuss possible management is advisable.

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