



Dexamethasone treatment for bilateral lingual nerve injury following orotracheal intubation

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Lingual nerve injury is a rare complication of general anesthesia. The causes of lingual nerve injury following general anesthesia are multifactorial; possible mechanisms may include difficult laryngoscopy, prolonged anterior mandibular displacement, improper placement of the oropharyngeal airway, macroglossia and tongue compression. In this report, we have described a case of bilateral lingual nerve injury that was associated with orotracheal intubation for open reduction and internal fixation of the left distal radius fracture in a 61-year-old woman. In this case, early treatment with dexamethasone effectively aided the recovery of the injured lingual nerve.

Keywords: Dexamethasone; General anesthesia; Lingual nerve injuries; Orotracheal intubation; Steroid.



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Nerve damages associated with the use of airway manipulation devices, such as cuffed oropharyngeal airways, laryngeal mask, or difficult laryngoscopes, are a rare surgical complication but do occur [1-3]. We present here, a case of lingual nerve injury after orotracheal intubation in a 61-year-old woman who underwent open reduction and internal fixation of the left distal radius fracture.

CASE REPORT

A 61-year-old woman was referred to a pain clinic with severe tongue paresthesia after general anesthesia. Following surgery, the patient complained of paresthesia and loss of taste in the anterior two thirds of the tongue (Fig. 1). The anesthesia record showed that she underwent general anesthesia for open reduction and internal fixation

of the left distal radius fracture. She had no remarkable past medical history. Pre-operative laboratory tests and chest radiography were normal, and pre-operative physical examination determined her degree of airway difficulty to be Mallampati Class I. Anesthesia was induced with an intravenous injection of propofol (120 mg) and rocuronium (50 mg). A size 7.0 mm inner diameter endotracheal tube was easily and atraumatically inserted on first attempt, under direct visualization, using a No. 3 Macintosh blade laryngoscope. The endotracheal tube cuff was inflated to a cuff pressure of less than 25 cmH₂O and a 90 mm Guedel oral airway was inserted on the left side of the endotracheal tube. The endotracheal tube was secured by tape at the right mouth angle. The patient was positioned supine with her head rotated 30 degrees to the right. The endotracheal tube remained in situ for 170 minutes. Anesthesia was maintained with 2-3% sevoflurane in 50% nitrous oxide and 50% oxygen. There

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were no adverse events during anesthesia maintenance. At the end of the surgery, tracheal extubation was performed when the patient opened their eyes and responded to verbal commands. One hour after the surgery, the patient reported tongue paresthesia and loss of taste in the anterior two thirds of the tongue (Fig 1). She had no difficulty in moving her tongue. No other complications, such as dysphasia, dysphonia, or sore throat, were observed. In addition, there were no abnormal findings, such as hematoma or swelling of the oral cavity. After consultation with an otorhinolaryngology surgeon, bilateral lingual nerve injury was diagnosed, based on the clinical presentation of the patient. The degree of paresthesia was determined as 5 on the visual analogue system (VAS), which ranges from 0 (no paresthesia) to 10 (worst detectable paresthesia). Therefore, dexamethasone (10 mg) was administered daily intravenously for 3 days. Approximately 12 hours after dexamethasone administration the severity of paresthesia was reduced to 1 on the VAS scale. In addition, 3 days after dexa-



Fig. 1. The patient complained of paresthesia and loss of taste in the anterior two thirds of the tongue. But she had no difficulty in moving her tongue.

methasone treatment, recovery of paresthesia and loss of taste were observed. The patient remained symptom-free at a 3-month follow-up. Patient's consent was obtained for the publication of this case report.

DISCUSSION

The lingual nerve provides sensory innervation to the sublingual region, such as the floor of the mouth, as well as the gums and anterior two thirds of the tongue. It arises from the posterior trunk of the mandibular nerve in the pterygomandibular fossa and initially courses between the tensor veli palatini and the lateral pterygoid muscles, where it receives the chorda tympani branch of the facial nerve. It then passes between the lateral and medial pterygoid muscles, proceeding anteriorly and inferiorly on the surface of the medial pterygoid muscle to lie medial to the body of the mandible, opposite the third molar. Here, at its most superficial point, the lingual nerve lies just beneath the gingival mucosa on the medial surface of the mandible. The lingual nerve then passes anteriorly and medially, across the styloglossus muscle and lateral to the hyoglossus and genioglossus muscles, before coursing upward to divide into terminal branches that supply sensory innervation to the lingual mucosa [4].

The association of lingual nerve injury with orotracheal intubation is rare. The etiology of lingual nerve injury following general anesthesia might be multifactorial. Forceful or difficult laryngoscopy, prolonged anterior mandibular displacement, macroglossia, and tongue compression could result in lingual nerve injury [5-7]. Recently, it was reported that the use of laryngeal mask airway increased the incidence of lingual nerve injury [8].

In the present case, tracheal intubation was easily performed. Therefore, it is hypothesized that Guedel oral airways and endotracheal tubes could compress the lingual nerve during general anesthesia.

Supportive psychotherapy with steroids, antidepressants, and anticonvulsants may be used to treat lingual nerve injury. Most cases of lingual injuries recover within

3 months without special treatment, but some patients have reported permanent lingual nerve injury [9]. In this case, the patient presented with level 5 paresthesia on the VAS. Therefore, dexamethasone 10 mg was administered, leading to reduction of paresthesia in the tongue. Dexamethasone has an anti-inflammatory action, which is effective against neuroinflammation and reduction of post-operative pain [10,11]. Moreover, in a pre-clinical study, dexamethasone was shown to effectively aid functional recovery after nerve injury [12]. In another clinical study, steroid administration effectively reduced nerve injury-associated neuroinflammation, leading to an accelerated nerve recovery. It has also been reported that early steroid treatment successfully decreases neuroinflammation [13].

In conclusion, lingual nerve injury following orotracheal intubation is rare but can cause irritation to patients [14,15]. In the case presented here, early treatment with dexamethasone effectively aided the recovery of the injured lingual nerve.

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