

Lingual Nerve Injury Following Laryngoscopy

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Lingual nerve injury is a recognized but rare complication of laryngoscopy and endotracheal intubation. It may occur as an isolated injury or in combination with injury to the hypoglossal nerve.¹⁻⁵ The etiology appears to be related to forceful laryngoscopy with tongue compression. Cricoid pressure, anterior displacement of the mandible, or mandibular retraction may be contributory factors.¹⁻⁶ The lingual nerve is vulnerable to injury as it passes between the medial and lateral pterygoid muscles and between the medial pterygoid and the mandible and as it crosses the hyoglossus muscle.

In the eight cases previously reported, the possible site of injury was considered on the basis of the neurologic course and anatomic considerations.¹⁻⁶ However, in no instance was inspection of the oropharynx described following the procedure. We present a case of lingual nerve damage following laryngoscopy in which pharyngoscopy revealed swelling of the left side of the base of the tongue.

CASE REPORT

A 57-yr-old, 100-kg woman with a history of hypertension presented for elective repair of an incisional hernia. She had undergone resection of a colon carcinoma 18 months previously, at which time oral intubation was performed without difficulty. She had gained 40 kg during the past year. Her mouth opening was 3.5 cm, and the soft palate and uvula were visualized. The thyromental distance was four finger breadths, and extension at the atlantooccipital joint appeared normal. The remainder of the examination was unremarkable. There were no symptoms of temporomandibular joint disease. Diazepam 7.5 mg was administered orally 1 h preoperatively. Anesthesia was induced with sodium thiamylal. Manual ventilation of the lungs was easily accomplished. Succinylcholine was administered to facilitate intubation. On laryngoscopy the tip of the epiglottis was visualized; despite multiple forceful attempts and laryngeal displacement, the glottis could not be visualized. Attempts at passing a flexible stylet beneath the epiglottis were unsuccessful. The patient was then awakened and taken to the

recovery room. Hydrocortisone 200 mg was administered intravenously. The immediate postoperative period was uneventful.

Approximately 24 h later, the patient complained of complete "numbness" of the tongue. On examination, the tongue was without motor deficit. There was a loss of two-point discrimination, pin prick, and light touch of the left hemitongue from the base to the tip and bilateral loss of taste. Pharyngoscopy revealed a mild swelling at the left base of the tongue. The patient was reassured that she could expect a gradual but complete recovery and was discharged home after a herniorrhaphy was performed under regional anesthesia. At 6-week follow-up, complete recovery had occurred.

DISCUSSION

In this case trauma to the tongue, with subsequent swelling, following forceful prolonged laryngoscopy resulted in bilateral lingual nerve injury. In six previous reports,¹⁻⁶ the site of postlaryngoscopy lingual nerve damage was uncertain. Three occurrences of combined lingual and hypoglossal nerve injury were attributed to pressure by the laryngoscope blade and the endotracheal tube on the lateral retrolingual region.¹ Laryngoscopy and cricoid pressure were followed by right anterolateral hypesthesia of the tongue in one case² and by left hypesthesia of the tongue in another.³ The latter report attributed the hypesthesia to the application of cricoid pressure and subsequent stretching of the lingual nerve as it crosses the hyoglossus muscle.³ The development of right-sided lingual numbness occurred in one patient after two atraumatic attempts at laryngoscopy; cricoid pressure was not used.⁵ In an obese patient two unsuccessful attempts to visualize the larynx led to a difficult inhalation anesthetic using an oral airway and continuous bilateral anterior pressure at the mandibular angles. This patient subsequently complained of numbness of the tongue and loss of taste sensation.⁴ In one case lower jaw retraction was implicated in the development of lingual and buccal nerve neuropathy.⁶

Examination of the pharynx, specifically the posterior aspect of the tongue, was not described in these reports. In our patient, although the laryngoscope blade was placed on the right side of the tongue, a swelling developed on the left posterior aspect of the tongue. The greatest sensory deficit was also on the left hemitongue.

The paucity of information in the literature concerning this complication is surprising, considering that the overall incidence of difficult tracheal intubation is in the range of 1-3%.⁷ An assumption that lingual neuropathy is rare

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suggests that other anatomic or technical factors, independent of or in addition to tongue compression, are necessary for its occurrence.

The lingual nerve arises from the mandibular nerve in the pterygomandibular space; it receives the chorda tympani nerve and descends between the medial and lateral pterygoid muscles to lie between the medial pterygoid muscle and the mandible. On leaving the pterygomandibular space it runs superficially on the periosteum of the mandible close to the gingival margin. The nerve then crosses the hyoglossus muscle superficially to divide into terminal branches just deep to the mucosa of the tongue. However, variations in the path of the lingual nerve are common.⁸

The lingual and chorda tympani nerves may be compressed between the pterygoid muscles by anterior displacement of the mandible.⁴ Winter and Munro suggest that lower jaw retraction may place both pterygoid muscles in sufficient tension to produce lingual nerve compression.⁶ The lingual nerve may pass through the inferior belly of the lateral pterygoid muscle rather than between the pterygoid muscles; it is of interest that 3% of patients with temporomandibular joint disc displacement demonstrate lingual nerve dysfunction attributable to arthrokinetic myospasm of the lateral pterygoid muscle.⁹

Cricoid pressure prevents the hyoid bone from moving forward with the tongue during laryngoscopy. This maneuver may cause stretching of the lingual nerve as it crosses the hyoglossus.³ In our case cricoid pressure was not used, but pressure was applied to the larynx in an attempt to accomplish posterior displacement. Laryngeal displacement and cricoid pressure may have similar effects. The hypoglossal nerve runs closely parallel to the lingual nerve on the superficial aspect of the hyoglossus muscle and may also be damaged. Classically viewed as a purely motor nerve, some investigators believe that the hypoglossal nerve has an afferent component that supplies the tongue.¹⁰

The lingual nerve may in some cases be very superficial along its submucosal course from the medial mandible to the posterior segment of the tongue and therefore more susceptible to damage from a laryngoscope blade.⁸

In this case, as in those previously reported, lingual nerve dysfunction was temporary and recovery complete, suggesting a neuropraxic injury due to compression or stretch.

Lingual nerve injury following laryngoscopy appears to be a rare event; its etiology may be multifactorial. We suggest that pharyngoscopy be performed to determine the presence or absence of gross pathology in the oropharynx. A prospective study of lingual nerve dysfunction following difficult laryngoscopy is worthy of consideration.

REFERENCES

1. Agnoli A, Strauss P: Isolierte Hypoglossus- und kombinierte Hypoglossus-Lingualis-Paresen nach Intubation und direkter Laryngoskopie. *HNO* 18:237-239, 1970
2. Teichner RL: Lingual nerve injury: A complication of orotracheal intubation. *Br J Anaesth* 43:413-414, 1971
3. Jones BC: Lingual nerve injury: A complication of intubation. *Br J Anaesth* 43:730, 1971
4. James FM: Hypesthesia of the tongue. *ANESTHESIOLOGY* 42:359, 1975
5. Loughman E: Lingual nerve injury following tracheal intubation. *Anaesth Intensive Care* 11:171, 1983
6. Winter R, Munro M: Lingual and buccal nerve neuropathy in a patient in the prone position: A case report. *ANESTHESIOLOGY* 71:452-454, 1989
7. Latto IP: Management of difficult intubation, Difficulties in Tracheal Intubation. Edited by Latto IP, Rosen M. London, Bailliere Tindal, 1987, pp 44-141
8. Mozsary PG, Middleton RA: Microsurgical reconstruction of the lingual nerve. *J Oral Maxillofac Surg* 42:415-420, 1984
9. Isberg AM, Isacson G, Williams WN, Loughner BA: Lingual numbness and speech articulation deviation associated with temporomandibular joint disk displacement. *Oral Surg Oral Med Oral Pathol* 64:9-14, 1987
10. Tier GA, Rees RT, Rood JP: The sensory nerve supply to the tongue: A clinical reappraisal. *Br Dent J* 157:354-357, 1984