# Lingual Nerve Injury: a complication associated with the classic laryngeal mask airway?

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**Citation**

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**Abstract**

Cranial nerve injuries are well-recognized complications of laryngoscopy and tracheal intubation and face mask ventilation. Recently, these have also been reported in association with extraglottic airway devices. Its diagnosis is clinical and it has a good prognosis, with resolution of the symptoms within a few weeks to months. The frequency of cranial nerve injuries can be reduced by avoiding insertion trauma, using appropriate sizes, minimizing cuff volume, and early identification and correction of malposition. We present a case of lingual nerve injury that was associated with use of the classic laryngeal mask airway during bilateral varicose vein stripping and perforator ligation under general, balanced anesthesia.

## INTRODUCTION

The laryngeal mask airway (LMA), created by Archie J. I Brain in 1980 is an alternative airway device used for anesthesia and airway support[1]. It consists of an inflatable silicone mask and rubber connecting tube. It is inserted blindly into the pharynx, forming a low-pressure seal around the laryngeal inlet and alowing gentle positive pressure ventilation. All parts are latex-free.

The laringeal mask was first introduced in the U.K. in 1988 and in the U.S. in 1992 as an alternative to the face mask. Since 1988, it is estimated that the laringeal mask has been used in over 100 million patients worldwide[3].

Although this technique has a lower rate of complications than the endotracheal tube, it is not devoid of morbidity, especially in cases of difficult airways. Sore throat is the most common complaint, with an incidence that varies from 10% to 40%[3]. However, neuropraxis of the hypoglossal, recurrent laryngeal, and lingual nerves have been reported.[4,5]

## CASE REPORT

A 55 year old female patient, weighing 75 Kg, 165 cm, ASA I, was admitted for an elective bilateral varicose vein stripping and perforator ligation under general, balanced anesthesia.

Monitoring consisted of electrocardioscope at the DII derivation, pulse oximetry, plestimograph, non-invasive blood pressure, capnograph, and capnometry.

The patient was premedicated with midazolam 2mg iv.

Anesthesia was induced with 170 mg of propofol; A classic LMA, size 4, lubricated with a water-based gel was easily inserted at the first attempt using the digital technique. The cuff was inflated with 20 ml of air and held to the face using adhesive tape, as recommended by the manufacturer. The head was placed on a head ring in the neutral position. The proper positioning of the device was confirmed by capnography.

Anesthesia was maintained with sevoflurane and oxygen under controlled mechanical ventilation, with a tidal volume of 8 – 10 ml/kg and peak inspiratory pressure of 16 - 20 cm H2O. Neuromuscular blockers were not given.

The surgery proceeded without problems. The LMA was removed with the cuff semi-inflated when the patient opened his mouth to verbal command. There was no visible blood on the surface of the cuff at removal. The LMA was in situ for a total of 2.5 h.

The patient was transferred to the recovery room without any complaints. After one hour, she developed decreased sensation and pain in the anterior two thirds of the tongue that evolved, in 30 hours, to partial loss of taste.

Regarding the patient's complaints, we placed a presumptive diagnosis of lingual nerve injury. After two weeks their symptoms disappeared spontaneously.

## DISCUSSION

Cranial nerve injuries are well-recognized complications of laryngoscopy, tracheal intubation[5,6] and face mask ventilation[7,8]. Recently, these have also been reported in association with extraglottic airway devices. Lingual[9-13], hypoglossal[14-15] and recurrent laryngeal[16-17] nerve injuries have been reported with the classic laryngeal mask airway, as well as lingual[18-19] and glossopharyngeal nerve injuries when using a cuffed oropharyngeal airway (COPA)[18]. However, most of these injuries were thought to be related to suboptimal use of the LMA.

The clinical presentation depends on which nerve was damage. Lingual nerve damage is associated with loss of taste and sensation in the anterior region of the tongue; lesion of the hypoglossal nerve leads to dysfagia; and the lesion of the recurrent laryngeal nerve to postoperative dysarthria, stridor, and aspiration.

The onset of symptoms ranged from immediately after anaesthesia to 48 h after surgery.

Potential predisposing factors included use of nitrous oxide, using an LMA that was too small, the lateral position, extreme head side rotation, anticoagulants rheumatoid arthritis, ankylosing spondylitis, calcinosis, Raynaud phenomenon, [o]esophageal dysmotility, sclerodactyly, and telangiectasia (CREST) syndrome, overinflation of the cuff, lidocaine lubricant, cervical epidural, inexperience, difficult insertion and alternative insertion techniques[20].

The most probable cause for cranial nerve injuries associated with LMA is a pressure neuropraxia from the tube (lingual) or cuff (hypoglossal and recurrent laryngeal). Neuropraxis of the lingual nerve can result from damage anywhere along the nerve, but it is more common between the lateral pterygoid muscle and the jaw[20].

This patient presented initially with decreased sensation and pain in the throat and anterior two thirds of the tongue evolving, over the next 30 hours, to partial loss of taste, which is compatible with lingual nerve damage.

In this case, a number 4 mask was used, which could explain the neuropraxis, since using a laryngeal mask smaller than recommended makes it more difficult to obtain the proper seal and, consequently, the need to inject a greater volume of air in the balloon, leading to excessive compression of adjacent structures.

In conclusion, the use of the laryngeal mask is associated with a very low incidence of complications, and neuropraxis of the lingual nerve is one of them. Its diagnosis is clinical and it has a good prognosis, with resolution of the symptoms within a few weeks to months. Although neuropraxis of the lingual nerve is a benign condition, it is important to notice that it can be avoided by using the laryngeal mask properly.

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