

# Cyanosis Of The Tongue: A Rare Complication Of LMA

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## Citation

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## Abstract

We present a case report of a patient who developed cyanosis of the tongue during anesthesia using the laryngeal mask airway. Cyanosis was thought to be due to compression and occlusion of both lingual vessels. Cyanosis resolved rapidly within one hour. The patient did not suffer paraesthesia or any permanent motor or sensory damage of the tongue. There are few case reports of complications associated with the use of laryngeal mask airways LMA's. These may directly relate to the use of the LMA or as a consequence of not using another technique such as an endotracheal tube. Most of the direct complications result from compression of surrounding structures. These include sore throat, laryngeal nerve palsy, lingual nerve palsy, alteration of taste/swallowing/ speech, rarely tongue cyanosis or tongue cyanosis with swelling. We are describing a case of tongue cyanosis after laryngeal mask airway insertion.

## CASE HISTORY

A 45 years old female of 60kg weight, ASA physical status 1 was scheduled for modified radical mastectomy. Her medical history was unremarkable. Physical examination revealed a Mallampati Grade 1 airway. Anesthesia was induced with morphine, propofol and vecuronium. A size 3 laryngeal mask airway was placed easily, with bilateral equal breath sounds. Placement was confirmed by the presence of carbon dioxide on a capnomac. The laryngeal mask airway cuff was inflated with 20 ml air. Anesthesia was maintained with isoflurane, nitrous oxide, oxygen and vecuronium. Surgery lasted for two and half hours. After surgery, muscle relaxation was reversed with neostigmine and atropine. The LMA cuff was deflated and the LMA removed. Tongue cyanosis was noted at the time of removal of the LMA. The patient was hemodynamically stable and maintained a saturation of 100%. She was fully awake and followed commands. She was kept under observation for 2 hours in the postoperative period. The tongue became pink within one hour after surgery. Arterial blood gas analysis was normal.

## DISCUSSION

Before discussing this case it is mandatory to know the anatomy of the blood supply of the tongue. The venous drainage of the tongue is via two main routes – dorsal lingual and deep lingual vein. The dorsal lingual vein drains the dorsum and lateral aspects of the tongue and joins the lingual vein along side the lingual artery and finally drains

into the internal jugular vein at or near the greater cornu of the hyoid bone. The deep lingual vein commences at the tip of the tongue passes along the ventral surface just beneath the mucosa. This then joins the sublingual vein and passes with the hypoglossal nerve between hypoglossus and mylohyoid muscles to drain into the internal jugular, facial, or lingual vein.

A case of tongue swelling and cyanosis associated with use of LMA was described in another case report in which they noted this problem towards the end of the surgical procedure<sup>1</sup>. The most likely cause in this case was direct venous compression. In another case, laryngeal nerve injury caused by LMA has been reported<sup>2</sup>. However, a literature review of complication following the use of LMA's found reports of damage not only to recurrent laryngeal nerve but also to other adjacent nerves namely the hypoglossal and lingual nerve<sup>3</sup>. These were neurapraxic injuries which eventually resolved. A case of unilateral vocal cord palsy requiring thyroplasty for voice restoration has been reported<sup>4</sup>. Very rarely neural problems following LMA use may cause alteration of taste, swallowing and speech. We believe that in our case the laryngeal mask airway was occluding the patients' lingual artery bilaterally. The cause of compression of the lingual artery may be due to malpositioning, size of LMA it self, or the cuff may also be a factor. Mask size cannot be a factor because we have chosen size 3 mask. Malpositioning can be ruled out as surgery lasted for two and half hour and there was no leak The patient was

hemodynamically stable and maintained saturation of 99-100 % throughout the operation. We believe that an increase in cuff pressure was the probable cause in our case, as we all know that LMA cuffs are highly permeable to nitrous oxide and cuff pressure increases during anaesthesia using nitrous oxide <sup>6</sup>. This mechanism may have contributed to the obstruction seen in this case.

To avoid the risk of an undetected increase in cuff pressure, a monitoring transducer has been recommended so that cuff can be deflated accordingly. Brain notes that the recommended initial inflation volume is actually the maximum volume and advises cuff inflation up to 60 mm of H<sub>2</sub>O with ongoing monitoring. If a significant leak occurs a larger LMA should be used <sup>7</sup>. Although tongue swelling as consequence of LMA use appears to be a rare occurrence, we would recommend periodic checking of the tongue, device position and correct selection of mask size.

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