

# Unilateral Tongue Swelling From Use Of The Laryngeal Mask Airway With The Guedel Airway As A Bite Guard

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## Abstract

Unilateral tongue swelling is a rare occurrence and that due to the use of the laryngeal mask airway with the Guedel airway as a bite guard has never been previously reported. This complication is reported here following a prolonged period of anaesthesia and upper limb surgery. Recommendations are made as to the appropriate use of bite guards.

## CASE REPORT

A 22 year-old Chinese male was assaulted following a drinking session and sustained injuries to his left hand. Microsurgical repair of the ulnar digital nerve and artery of his left middle finger with digital artery island flap and repair of tendons was carried out under general anaesthesia.

He was induced with intravenous fentanyl and propofol. After the insertion of a size 4 laryngeal mask airway (LMA), a size 2 Guedel airway was placed in the oral cavity to the right of the LMA to serve as a bite guard. The LMA was secured using adhesive tape. Anaesthesia was maintained with the patient spontaneously breathing a mixture of oxygen, nitrous oxide and isoflurane. Morphine was used for analgesia.

Following an uneventful 5-hour surgery, anaesthetic agents were discontinued and the patient was transferred to the post-anaesthesia care unit (PACU). Both the LMA and the Guedel airway were removed with the patient awake. After about an hour in the PACU, he was discharged to the ward without any untoward effects being noted.

The following day, the patient complained of a unilateral tongue swelling on the right side which he claimed to have been present immediately following anaesthesia and surgery but which was not present before. The swelling had decreased in size since and was not causing any airway obstruction (figure 1).

## Figure 1

Figure 1: Open mouth view of the unilateral tongue swelling on day 2



Clinically, the raised and indurated lesion was pink, measured 3 by 2 cm with well-demarcated borders and was not associated with any sensory changes or abnormalities in taste. There was no evidence of any mucosal tear or flap. Tongue movements were normal. There was no lymphadenopathy and he was not pyrexial. A surgical consult was made and the impression was that of trauma from use of the Guedel airway.

The swelling gradually decreased over the next few days and was just palpable upon discharge home. A follow-up phone call revealed that the swelling was still present after 1 week although not interfering with speech or food intake. When he was reviewed at the outpatient clinic 2 weeks after his surgery, the unilateral tongue swelling had disappeared.

## DISCUSSION

Since the introduction of the LMA in 1983, its use as an airway device has been increasing in popularity. A well-recognised complication from its use is that due to biting of the LMA by the patient during emergence and removal of the LMA <sup>1</sup>.

The Guedel airway is commonly used as a bite guard as it is convenient and readily available. Its relatively harder material and reinforced stem make for a good bite guard.

However, the Guedel airway is primarily an oral airway, designed to sit in the midline and ensure airway patency. Use of the airway in conjunction with the LMA as a bite guard results in a few potential problems. Malpositioning of the LMA due to the flange of the Guedel airway is one. Impingement of the distal end of the Guedel airway on the cuff of the LMA is another. Even when used alone as an airway devices originally designed, the distal end of the Guedel airway may trap a 'shelf' of the tongue in 40% of cases as shown in a study by Marsh et al <sup>2</sup>.

In this case report, we postulate that the Guedel airway has caught a 'shelf' of the tongue when it was inserted to the right of the LMA in the already limited space of the oral cavity. This likely caused trauma and ischemia to the tongue. Aggravating the situation was the prolonged surgery duration of 5 hours. Following removal of the Guedel airway and LMA after surgery, the unilateral nature of the swelling though causing discomfort did not lead to airway compromise. The swelling likely further increased in size initially from improved perfusion before subsiding subsequently, accounting for the delay in symptom reporting by the patient.

Other differential causes of tongue swelling include allergies or angioedema <sup>3</sup>, venous congestion from tongue compression <sup>4</sup>, haematoma, local reaction to chemicals used in the sterilisation of airway instruments <sup>5</sup>, glossal abscess <sup>6</sup> and apparent tongue swelling due in actual fact to swelling of the salivary gland <sup>7</sup>. These usually present with

generalised tongue swelling and closer examination would often reveal the true aetiology.

This unilateral swelling of the tongue following the use of the LMA and the Guedel airway as a bite guard has not been reported previously. It demonstrates the need to exercise care in the choice, and insertion of something as seemingly innocuous as a bite guard. While Brain recommends the use of rolled gauze <sup>8</sup>, Brimacombe prefers the use of translucent surgical vinyl tubing <sup>9</sup> to the Guedel airway as bite guards. Various other devices have been advocated including commercially available bite guards.

Whatever material or equipment used, thought must be given to the reason for its use. The period when a bite guard is needed is towards the end of surgery when anaesthetic agents are gradually tailed off and at emergence. As such, bite guards only need to be inserted before anaesthetic depth is decreased at the end of surgery or before transfer to the PACU. In so doing, any potential trauma or ischemia to tissues through the use of the Guedel airway or any other equipment as a bite guard can be minimised as the duration of possible compromised perfusion is decreased.

## References

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