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## Parapharyngeal abscess following use of a laryngeal mask airway during open revision septorhinoplasty

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## ABSTRACT

**INTRODUCTION:** A laryngeal mask airway (LMA) is an established safe tool to support the airway during surgery under general anesthetic. It is commonly used both in North America and abroad. Complications with this device are rare.

**PRESENTATION OF CASE:** A 50-year old female developed a parapharyngeal neck abscess following an uneventful septorhinoplasty during use of an LMA Classic. The patient had symptoms of pain and difficulty swallowing. CT revealed extensive soft tissue edema and swelling in the right and posterior neck involving the right parapharyngeal space, right parotid space, minimal involvement of the right submandibular space, and extending across the retropharyngeal space. The abscess was incised and drained with an open approach, combined with laryngoscopy to evaluate the site of the infection at the right pyriform fossa. The patient fully recovered following discharge.

**DISCUSSION:** Despite the rare incidence of LMA injuries, early recognition of parapharyngeal neck abscesses can initiate early treatment and prevention of spread to retropharyngeal space where airway obstruction and emergent complications may occur.

**CONCLUSION:** Laryngeal mask airways have a high rate of success and low rate of complications. In this reported case, pressure necrosis from over-inflation of the LMA is thought to have perforated the right pyriform fossa. The perforation created a communication into the parapharyngeal space causing infection. We report this case to highlight the importance of identifying possible complications associated with a routine method of airway management during shared airway surgeries.

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## 1. Introduction

The laryngeal mask airway (LMA) provides a safe, effective, and reliable artificial airway for controlled and spontaneous ventilation. This occurs through the formation of a low-pressure seal around the glottis [1]. Literature supports the safety and effectiveness of LMA, reporting high success rates and a low incidence of complications or critical incidences [2]. A review of 11,910 patients by Verghese and Brimacombe (1996) demonstrates the safety effectiveness of laryngeal mask airway in patients, finding successful insertion in 99.81% of patients and critical incidents reported in 0.15% of patients [2]. Reported complications of the LMA include coughing, gagging, retching, glottis closure, laryngospasm, vom-

iting, arytenoid dislocation, vocal cord paralysis and sore throat [3,4].

Injuries caused by the LMA are rare. Both retro- and parapharyngeal abscesses following LMA have been reported in the literature in the past. A review by Harkani et al. documents five cases of retropharyngeal abscess resulting from pharyngeal trauma [5]. One case study by Casey et al. reports a severe retropharyngeal abscess following use of a reinforced laryngeal mask with a Bosworth introducer, believed to be caused by pharyngeal trauma during the procedure [6]. Another study by Lynn et al. reports retropharyngeal abscess following LMA insertion during a breast lump excision [7]. Retropharyngeal abscesses are of high morbidity and mortality due to risk of airway obstruction, aspiration pneumonia, mediastinitis, jugular venous thrombosis, necrotizing fasciitis, sepsis and erosion in the carotid artery [7], thus require immediate management through surgical drainage and antibiotics.

A review by Tennebaum's report 51 cases of retropharyngeal abscess [8]. Patients commonly present with sore throat, dysphagia, odynophagia or neck pain without airway obstructive symptoms. 37% of these cases report posterior pharyngeal swelling

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on examination. 41% of cases involve patients with recent history of preceding procedure or impacted foreign body, which may have led to a pharyngeal tear. Approximately 10% of these reported cases were preceded by blunt trauma that may have resulted in a retropharyngeal hematoma. Common organisms grown from these reported abscesses include group A  $\beta$ -hemolytic streptococcus (GAS), *Staphylococcus aureus*, *Haemophilus influenzae*, and anaerobic species such as bacteroides, peptostreptococcus and fusobacterium.

Although less commonly reported, the parapharyngeal space also provides an area for abscesses to form. If infection of this space is left untreated it may spread to retropharyngeal space and descend into the mediastinum [9]. A review by Sethi and Stanley found 9 patients with parapharyngeal abscess. All patients presented febrile and with swelling of the upper neck. Most commonly, mild soft tissue swelling of the prevertebral area was found in 7 of the 9 patients. All patients underwent neck examination, exploration, excision and drainage. Although this complication has been previously published, it has not been published in over 20 years.

Laryngeal mask airway injuries and parapharyngeal abscesses are rare. Here, we report a 50-year-old female who suffered a parapharyngeal neck abscess following an open revision septorhinoplasty with use of an LMA.

## 2. Case presentation

A 50-year-old female presented to our community hospital on May 10 with right neck pain and odynophagia following surgery on May 5. The patient had an uneventful, open revision septorhinoplasty, using a laryngeal mask airway for airway management. A number 4 LMA Classic™ laryngeal mask airway (LMA) was used and the procedure took approximately two hours to complete.

The insertion of the LMA was uneventful. It was done without laryngoscopy, being inserted successfully on the first attempt, by an experienced staff anesthetist, very comfortable in the use of LMA for airway management. There was no air leak during the case. In conversation the anesthetist recalled placing 20 mL of air in the cuff initially, but also noted that further air was added shortly afterwards by the operating room nurse. He was not certain how much was added, and did not measure the cuff pressure during the case.

The patient complained of pain with swallowing and right otalgia in PACU, which settled with IV morphine. She was discharged with Percocet for pain management to be used every 4–6 h as needed, with intolerance to Codeine.

The patient experienced difficulty swallowing since her surgery and had used oxycodone for pain management. She experienced little relief from the oxycodone, having difficulty eating any solid foods. The patient's primary complaint was of pain on the right neck, which also extends across to the left. There was no shortness of breath, no stridor, and no dysphonia.

Five days post-operatively, the patient presented to the ER, no longer able to manage her pain, before returning home and then coming back again several hours later for reassessment. The patient was given IV ceftriaxone and a computed tomography (CT) scan of the neck was done after a soft tissue X-ray showed a collection in the right neck. The CT scan revealed a collection in the right neck, lateral to the thyroid with air tracking up towards the pyriform sinus (Fig. 1). There was limited extension inferiorly, and did not extend into the mediastinum. There was extensive soft tissue edema and swelling in the right and posterior neck involving the right parapharyngeal space, right parotid space, minimal involvement of the right submandibular space, and extending across the retropharyngeal space. A loculated collection of fluid and air was present, measuring 2.0 cm  $\times$  1.9 cm, and extending 6.1 cm in length from C4 to T1 vertebral level (Fig. 2).



Fig. 1. An axial view CT scan with contrast at the level of the thyroid cartilage showing the injury into the right pyriform sinus.

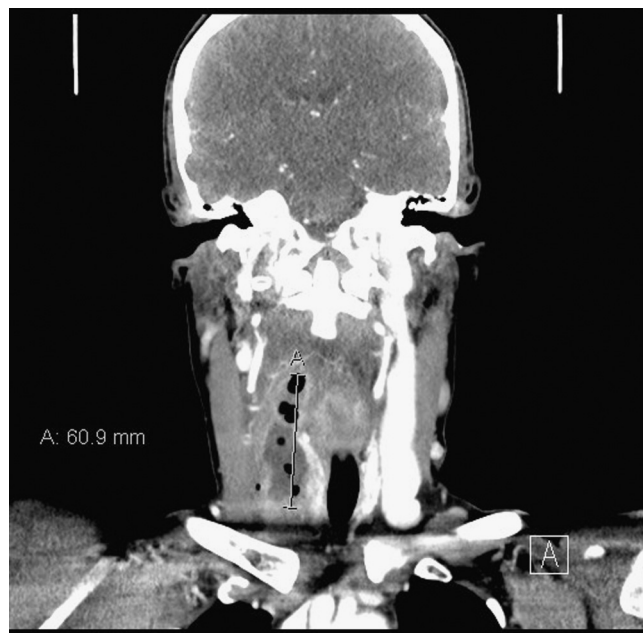


Fig. 2. A coronal view CT scan with contrast of the thyroid cartilage, at the level of the pyriform fossa as well, showing the extent of the neck abscess inferiorly.

On examination, the patient did not appear to be in distress, but initially presented very tachycardic with a heart rate of 130 BPM, febrile at 38.6 C. She had been fluid resuscitated and pain was managed intravenously. The patient had some tenderness over the right

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