intubation or abandonment of the procedure. Limitations of this case series are the possibility of selection bias by the anesthesiologists in deciding whether to use the LMA CTrach™. The numbers of patients with each of the different causes of difficult airways are not large. Further study is needed to ascertain the difficult airway situations in which use of the LMA CTrach™ is most appropriate.

In summary, we found high success rates of ventilation, glottis visualization, and tracheal intubation with the LMA CTrach™ in patients with different types of difficult airways.

The authors thank their anesthesiology colleagues and anesthesia nurses at the National University Health System, Singapore, and the University of Washington Medical Center, Seattle, Washington, for their help with this work.

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CASE REPORTS

Severe Retropharyngeal Abscess after the Use of a Reinforced Laryngeal Mask with a Bosworth Introducer


WE report an unusual case of postoperative retropharyngeal abscess with major morbidity in a patient who had general anesthesia and whose airway was managed with a flexible laryngeal mask airway inserted with the aid of a Bosworth introducer.†

Case Report

A 57-yr-old man was scheduled to undergo phacoemulsification of a cataract. General anesthesia was scheduled because the patient declined regional anesthesia after subjective discomfort during previous peribulbar anesthesia for contralateral cataract phacoemulsification. He had type 2 diabetes mellitus, hypertension, and hypercholesterolemia. He was not compliant with his medication regimen, and consequently, his glycemic control was chronically poor, as evidenced by his most recent hemoglobin A1c measurement of 11.5%. He was moderately obese (body mass index 29 kg/m²) and had no history of gastroesophageal reflux. He had poor dentition (multiple missing teeth and caries), a Mallampati grade 2 airway, and good mouth opening. Standard monitoring, including electrocardiography, noninvasive blood pressure monitoring, capnography, end-tidal vapor analysis, and pulse oximetry, were used. His anesthetic care was provided by an anesthesiologist with 13 yr of experience. Anesthesia was induced with 2 mg midazolam, 100 µg fentanyl, and 140 mg propofol and maintained with sevoflurane in an oxygen-air mixture via spontaneous ventilation. A size 4 flexible reinforced laryngeal mask airway (FRLMA) lubricated with a water-based gel was inserted partially inflated with the aid of a Bosworth introducer.† The posterior aspect of the FRLMA and introducer were inserted along the hard palate. There was no documented difficulty with insertion of the laryngeal mask airway (LMA), and the introducer was removed with apparent ease. The cuff was inflated with 20 ml air, and the patient was allowed to breathe spontaneously. The operation lasted 30 min, and the LMA was removed awake with the cuff deflated, in postanesthesia care unit, with no evidence of blood on the LMA cuff. In postanesthesia care unit, the patient did

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report a sore throat, which was not investigated any further, and he was discharged home later that day with simple analgesics. The following day, he presented to his family doctor with throat pain, a sensation of a lump in his throat, fever, and a feeling of general unwellness with flu-like symptoms. The symptoms persisted despite administration of acetaminophen and diclofenac, and he was then referred to the emergency room 3 days after his initial surgery, reporting sore throat, fever, and difficulty swallowing. He was reviewed by the otolaryngologic resident, who performed flexible laryngoscopy and noted a posterior pharyngeal wall swelling with a purulent discharge. Lateral cervical plain film showed air tracking in the prevertebral area with marked swelling of the posterior pharyngeal wall. Computed tomography scan of his head and neck (fig. 1) showed air in the prevertebral area and a large defect in the posterior pharyngeal wall. Retropharyngeal abscess was diagnosed.

The patient was initially treated with intravenous antibiotics followed by surgical drainage 5 days after readmission. Operative findings included an extensive posterior pharyngeal wall deficit which contained necrotic tissue. This was debrided and irrigated. Despite multiple swabs, no pathogen was isolated. His postoperative course was complicated by a respiratory tract infection and poor glycemic control, which required insulin administration. Furthermore, because of the need for a protracted rest period of his laryngopharynx and the need for enteral nutrition, our patient had a percutaneous gastroenterostomy sited. After this, he had a 2-month inpatient stay but was eventually discharged home.

Discussion

To our knowledge, this is the first reported case of severe morbidity in the form of retropharyngeal abscess after FRLMA insertion. No pharyngeal injuries secondary to LMA use were reported in the closed claims database.\(^2\) Although there are many potential causes of this condition, we speculate that the most likely etiology is direct trauma of the posterior pharyngeal wall by either the introducer device or the FRLMA itself, compounded by poorly controlled diabetes, which predisposes to infection and impairs wound healing.

The FRLMA is widely used in anesthesia for ophthalmic surgery. It has overcome some of the design problems of the conventional LMA, namely tenting of the drapes and kinking of the lumen, but insertion of the device is difficult and has led to the development of introducer devices. The Bosworth introducer is an external introducer.\(^1\) It is a plastic, rigid device with a distal two-pronged fork that fits around the neck of the shaft of the FRLMA as it enters the mask (fig. 2). There is a concavity at the distal third of the shaft devised to mirror the curvature of the oropharynx. The shaft runs along the anterior aspect of the tube of the FRLMA, and the introducer is attached at the proximal end by way of a U-shaped flange. When positioned correctly, the flange detaches, and the introducer should be withdrawn carefully from the oral cavity.\(^1\) The Bosworth introducer has been in use since 1997, and to date no serious oropharyngeal trauma has been associated with its use. However, LMA cuff damage has been reported. The Bosworth introducer attempts to overcome difficulties that may be encountered in inserting and positioning the FRLMA, which may be difficult because of the elasticity of the shaft. The Bosworth “stiffens” the shaft, making placement easier. Alternative methods of FRLMA placement include the use of a stylette, which has the potential to cause upper airway or gastrointestinal tract trauma if the stylette protrudes. The FRLMA can also be inserted using gloved fingers into the oral cavity, which may increase the risk of transmission of infectious disease. Few data exist regarding the use of the Bosworth introducer for the FRLMA other than a small series of 150 ophthalmology patients in whom it was used without adverse events.

Minor morbidity has been commonly described after use of the LMA Classic\(^\text{TM}\) (Laryngeal Mask Company, San Diego, CA). Sore throat is described in approximately one third of patients in the postanesthesia care unit.\(^3\)
Further evidence of the frequency of mucosal injury is the presence of blood observed on the LMA Classic™, which has been described in 13–21% of cases, depending on whether the LMA is removed deflated or inflated. This does not seem to be of significant clinical consequence. Laryngopharyngeal mucosal injury may also result from prolonged use of the LMA Proseal™. Local complications after use of the LMA have been widely reported. Tissue trauma may result from either trauma during insertion of the LMA or prolonged direct pressure effects of the inflated cuff on the laryngopharyngeal tissues. Complications resulting from direct trauma include bleeding, uvular damage, and ulceration of the soft palate. Such complications can occur with apparent “easy insertion” of an LMA; however, they may be more likely if excessive force or repeated attempts at insertion are used. It has been suggested that the Bosworth introducer, although making the insertion of the FRLMA easier, sacrifices the tactile feedback during its insertion and hence increases the risk of laryngopharyngeal trauma. In light of this, the same author suggested that the use of a more pliable semirigid material would reduce this risk.

Although retropharyngeal abscess have been described to occur spontaneously in the general population, we believe that, because of the chronology of events, the absence of any declared previous symptoms, and the occurrence of throat pain in the recovery room, it is likely that this patient developed tissue injury during insertion of the FRLMA and that this patient’s poorly controlled diabetes subsequently contributed significantly to the development of this abscess. The incidence of surgical infection is increased in hyperglycemic diabetic patients in a number of different surgical populations. Diabetic patients are also more susceptible to deep neck infections than the nondiabetic population. Several aspects of immunity may deteriorate in short- or long-term hyperglycemia. Polymorphonuclear function is depressed particularly when acidosis is present. Furthermore, leukocyte adherence, chemotaxis, and phagocytosis may also be affected.

The LMA has proven itself to be a relatively safe instrument for use in airway management. However, this case demonstrates the potential for serious complications in a diabetic patient and highlights the need for careful consideration on a case-by-case basis with regard to the airway device used, with particular attention to its method of insertion.

References