Should we have a Score to Predict Difficult Laryngeal Masks Placement? Two Case Reports

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Abstract

Laryngeal masks (LMA) are supraglottic airway devices used in the operating room. Although placement success is generally high, no study demonstrates 100% effectiveness. The "RODS" mnemonic (Restriction, Obstruction/Obesity, Disrupted/Distorted anatomy, Short thyromental distance) can be used to predict difficulty in placing LMA. We present two case reports of difficult LMA placing.

Case 1: 58-year-old female scheduled for phaco-vitrectomy. No stigma of difficult airway. No "RODS" characteristics found. Attempts were made to place a size 3 and 4 i-Gel LMAs but ventilation was not effective. Then, we tried to place the size 4 i-Gel LMA using laryngoscopy, this time successfully.

Case 2: 80-year-old female scheduled for vitrectomy, without difficult airway or "RODS" predictors. An attempt was made to place a size 4 wired laryngeal mask, but it did not fit well. Then we tried a size 5 reinforced laryngeal mask but, similarly, it did not seal adequately. Afterwards, we decided to try size 4 i-Gel LMA, without success. Finally, we decided to intubate with a size 7 endotracheal tube (ETT) with direct laryngoscopy.

Although the best way to protect the airway is ETT, in the ambulatory setting there are many advantages of the LMAs over ETT. The correct placement of an LMA is not always easy. In these two cases we found that RODS was not predictive of the difficulties we experienced, so we suggest that a specific scoring system (not exclusively based on RODS) should be studied and validated for patients in whom LMA placement could be suspected difficult.

Keywords: Laryngeal mask, Ambulatory surgery, Difficult laryngeal mask placement.

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Introduction

Laryngeal mask airways (LMA) are single-use or reusable supraglottic airway devices introduced into clinical practice in the 1980s by Dr. Archie Brain (1). Since its introduction, several modifications, additions, and variations have been developed, and are currently in use. Initially they were used predominantly in the operating room but have become widely used in the intensive care unit, emergency department and field settings. Although placement success is generally high, no study demonstrates 100% effectiveness and alternate airway management maneuvers may be necessary (1). The mnemonic RODS can be used to predict difficulty in either placing an extraglottic device or in providing adequate gas exchange through one. RODS stands for Restriction, Obstruction/Obesity, Disrupted or Distorted anatomy, and Short thyromental distance (2). The approach to difficult LMA placement varies between anesthetists. Here we present two cases with two different anesthetists and their approach to difficult LMA placing.

Case 1

A 58-year-old, 60kg female patient was scheduled for phaco-vitrectomy in ambulatory setting. Pre-anesthetic evaluation revealed depression; without other pathologies or previous surgeries. Evaluation of airway revealed Mallampati 2, with normal cervical mobility and without difficult airway stigmas. Induction of anesthesia was made with propofol and fentanyl. The patient was easily ventilated with face mask. An attempt was made to place a size 4 i-Gel; but as the mask, which was pushed forward, came back, it was thought that the mask was large for the patient and the attempt was repeated using a size 3 i-Gel. However, as size 3 i-Gel LMA was pushed forward and ventilation was initiated, a significant air leakage occurred, and considering that size 3 was small, we again tried using size 4. This time, we performed maneuvers to improve the placement of the laryngeal mask, namely laryngoscopy. This way, we were able to "fit" the laryngeal mask in the right place. Laryngoscopy revealed Cormack-Lehane score of 1. During intraoperative period, there was no need to readjust the LMA. The surgery lasted for 80 minutes. Meanwhile, consent of the patient was obtained for presenting her case as a case report.

Case 2

An 80-year-old, 64kg female patient was scheduled for vitrectomy in ambulatory setting. Pre-anesthetic evaluation revealed hypertension, hyperlipidemia and deaf-muteness; without previous surgeries. Evaluation of airway revealed Mallampati 1, with normal cervical mobility and without difficult airway stigmas. Induction of anesthesia was made with propofol and fentanyl. The patient was easily ventilated with face mask. An attempt was made to place a size 4 wired laryngeal mask but it didn't adapt well. Then we tried a size 5 wired laryngeal mask but it didn't adapt as well. Insertion of the laryngeal masks revealed very loose tissues. Then, we decided to try i-Gel LMA, without success. Finally, we decided to intubate with a 7 endotracheal tube with direct laryngoscopy. Laryngoscopy revealed Cormack-Lehane score of 1. Surgery went uneventful and lasted for 60 minutes. Meanwhile, consent of the patient was obtained for presenting her case as a case report.

Discussion

In ophthalmology, as well as in other specialties in which the surgeon approaches the head and/or it is difficult for us to handle the airway during surgery, it requires that we ensure an airway in which we reduce the need to replace/readjust it. The best way to ensure a protected airway is, of course, endotracheal intubation. But, in the ambulatory setting, there are many advantages of the LMAs over endotracheal tubes (ETTs). They are tolerated under lighter anesthesia and are less stimulating to the sympathetic nervous system, resulting in decreased risk of cardiovascular events. Furthermore, LMA have a lower incidence of sore throat post-operatively and allow spontaneous ventilation during the procedure. The data comparing

ETTs and SADs showed that there is a significantly shorter time to home-readiness when LMAs are used. In addition, success rates of "intubation" with LMAs have been shown to be over 90% (1).

Although the learning curve is fast and the success rate is high, the placement of an LMA is not always linear. The most common causes of poor LMA placement are inadequate anesthesia/relaxation (pharyngeal muscle and/or laryngeal spasm), failure to negotiate the 90 degrees turn from the posterior pharynx to the hypopharynx, and choice of wrong LMA size. In 2–33% of LMA placements, more than one attempt is required, whether by residents or experienced practitioners, adult or pediatric patients (3).

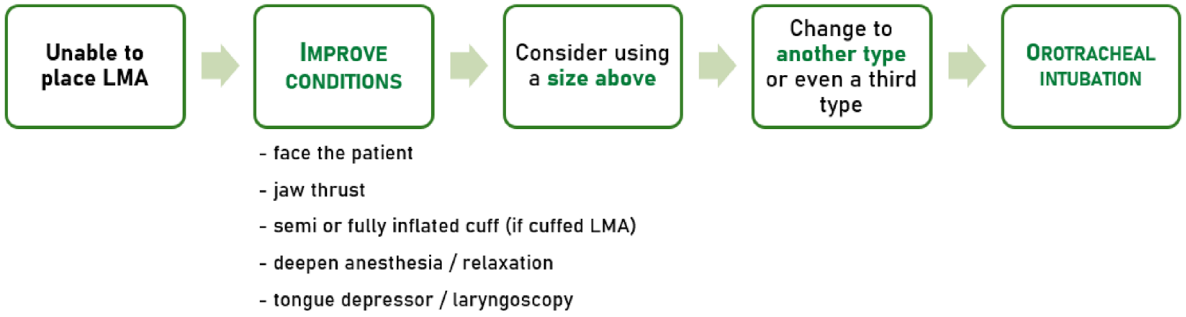
Therefore, we must keep in mind the RODS mnemonics that allows us to identify, a priori, a difficult LMA placement. RODS stands for Restriction (increased airway resistance as well as restricted mouth opening), Obstruction (tumor or foreign body)/Obesity (redundant tissue and increased ventilatory pressures), Disrupted or Distorted anatomy (airway deviated from the midline makes the device less likely to seat properly), and Short thyromental distance (due to the position of the tongue) (2). When we identify a patient in which, a priori, it will be difficult to place the LMA, we can be forewarned with other sizes of the same type of LMA, other types of LMA and the intubation material prepared to be used.

In the two cases presented here, none of them had, a priori, obvious signs of difficult placement. There are probably other variables that may predispose to laryngeal mask displacement, namely the laxity of tissues as verified in case 2, which does not provide sufficient anatomical support for the correct positioning of the LMA.

Figure 1 shows the proposed approach to difficult placement. When we are unable to adapt the laryngeal mask, we must first consider using a size above. Even with the same type of LMA, there are ways to improve the conditions for placing the LMA: facing the patient, jaw thrust, semi or fully inflated cuff (if cuffed LMA), tongue depressor and laryngoscopy. If repeated attempts with one type of LMA are unsuccessful, changing to another type or even a third type, may work. Ultimately, orotracheal intubation will be the final option (1).

Further studies are required to assess the need for a preoperative score that can predict difficulty in inserting a laryngeal mask. In addition, we question the need for a protocol to approach a difficult placement of laryngeal mask.

Figure 1 Proposed approach to difficult laryngeal mask placement.



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