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CASE REPORT AIRWAY MANAGEMENT

Challenges in positioning linear echoendoscopes via LMA®Gastro™ airway: A report of two cases

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ABSTRACT

Endotracheal intubation was perhaps the gretest invention in the field of anesthesia, as well as intensive care. It made the life of the clinicians much easier, but soon the associated drawbacks and complications made many to frown. The most compelling factor was the need of deep anesthesia and/or the need of muscle relaxants for successful insertion into the glottis. Laryngeal Mask Airway (LMA) revolutionized the science of airway management, as it could be used without relaxation and was less traumatic. Since the earliest versions, many new varients have been introduced. The LMA Gastro™ is one of these. The authors present two case report of use of this device for positioning linear echo endoscopes and the related challenges.

Keywords: Airway; Echo endoscopy; Endotracheal intubation, Laryngeal Mask Airway; LMA Gastro

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1. BACKGROUND

The LMA Gastro™ Airway by Teleflex Medical, Ireland, is a cuffed peri-laryngeal supra-glottic airway (SGA) with an endoscopic channel compatible with all standard endoscopes. We reported two cases of failed attempts to position a linear echoendoscope through the LMA®Gastro™ channel in patiens with difficult airways management during conversion to endotracheal intubation.

2. INTRODUCTION

The use of deep sedation or general anesthesia (GA) during minimally invasive upper gastrointestinal (GI) endoscopy has increased significantly due to the rising complexity and duration of such procedures.[1] Consequently, ensuring airway safety while maintaining unobstructed endoscopic access has become crucial. Risks associated with sedation during esophagogastroduodenoscopy (EGD) include the potential for deep sedation to progress to general anesthesia, especially with propofol administration,[2]

prone positioning during the procedure, and patient-related factors such as obesity.

The LMA Gastro™ Airway (Teleflex Medical, Ireland) is a cuffed peri-laryngeal supra-glottic airway (SGA) designed with an endoscopic channel compatible with standard endoscopes. It features separate channels for esophageal and pulmonary access, a built-in bite block, and an indicator for cuff pressure. Available in three sizes—#3 (30–50 kg), #4 (50–70 kg), and #5 (70–100 kg)—it has demonstrated promising results in previous studies. In a recent observational study,[3] Terblanche et al. reported a 99% success rate for airway insertion and a 93% first-attempt success rate for endoscopy among 292 low-risk patients.Here, we describe two cases of failed attempts to position a linear echoendoscope (Fujifilm EG-530UT2, tip diameter: 13.9 mm) through the LMA®Gastro™ channel.

3. CASE 1

The first patient was a 48-year-old female (weight: 67 kg, BMI: 23) with a reduced mouth opening (30 mm), thyromental distance of 4 cm, and Mallampati score of 2. The procedure was conducted with the LMA®Gastro™ Airway in a supine position. Adequate placement of the LMA was confirmed by evaluating parameters such as inspired and expired tidal volume difference, seal pressure, and a square-wave capnogram. General anesthesia was induced using fentanyl (100 µg), propofol (2.5 mg/kg), and sevoflurane (MAC 0.8%).

Despite ensuring optimal anesthesia depth, the expert endoscopist encountered significant resistance when attempting to insert the lubricated linear echoendoscope through the LMA®Gastro™ channel. Repeated attempts failed to position the endoscope in the esophagus. The procedure was converted to endotracheal intubation. A 7 mm endotracheal tube was placed using a stylet under direct laryngoscopy, with a Cormack-Lehane grade of 2E.

4. CASE 2

The second patient was a 65-year-old female (weight: 55 kg, BMI: 22.5) with a reduced mouth opening (<30 mm), a thyromental distance of 3.4 cm, and a Mallampati score of 3. Multiple failed attempts to position the echoendoscope through the LMA®Gastro™ channel, led to the decision to convert to endotracheal intubation. In this case, intubation was performed using a Glidescope videolaryngoscope due to a challenging airway (Cormack-Lehane grade 3E).

5. DISCUSSION

General anesthesia is the best choice for endoscopic procedures. Although the insertion of LMA®Gastro™ guarantees very high rate of successful placement for airways under general anesthesia, this study reports the inability to insert the endoscope Fujifilm EG-530UT2 Tip diameter, 13.9 mm via LMA®Gastro™ into esophagus. Different patients have varied anatomical structures, which can complicate the positioning of the endoscope. Factors such as obesity, sleep apnea, and previous surgeries can alter normal anatomy and make navigation difficult. We attribute the failed attempts to reduced hypopharyngeal space, likely associated with difficult airway management parameters, including a short thyromental distance and high-grade Cormack-Lehane scores during intubation.

Only a few studies have documented failed endoscopic device insertion using LMA Gastro™.[4] Other studies have identified challenges in introducing duodenoscopes into the esophagus, which may be linked to thick cricopharyngeus muscles or anterior cervical osteophytes, particularly in elderly patients.[5] In the single-center observational study of Schmutz and Coll.,[6] 27 patients were managed successfully using the LMA Gastro while in four of them placement or ventilation with LMA Gastro™ was not possible and conversion to an oral tracheal tube was required for four patients only, three of them with a history of major oral cancer and radiation therapy. We attribute the failed attempts to reduced hypopharyngeal space, likely associated with difficult airway management parameters, including reduced mouth opening and a short thyromental distance. In our cases, ventilation was perfectly perfomed in each of patiens. We converted in endotracheal intubation only for impossibility of positioning Echoendoscopic probe.

During endotracheal intubation, expert anesthesiologist reported high-grade Cormack-Lehane scores during intubations. To our knowledge, this study is the first to report a mismatch between anesthetist and endoscopist comfort levels. While patients were optimally ventilated using the LMA®Gastro™, endoscopists were unable to introduce the probe. Difficult airway management emerged during the conversion to endotracheal intubation.We hypothesize a correlation bwtween failed echoendoscopic probe positioning via LMA®Gastro™ and difficult aiways management during conversion in endotracheal intubation.

6. CONCLUSION

To our knowledge, this is one of the first reports documenting failed positioning of a linear echoendoscope through the LMA®Gastro™ channel. Our cases highlight the potential association between challenging airway management and unsuccessful endoscopic device placement through LMA. Further studies are needed to confirm this correlation and identify predictors for failed

endoscopic device insertion in patients with difficult airways.

7. Note

LMA®Gastro™ is a registered trademark of The Laryngeal Mask Company Ltd., an affiliate of Teleflex Incorporated.

8. Conflict of interest

All authors declare that there was no conflict of interest.

9. Consent for publication

Not applicable.

10. Authors' contribution

All authors took part in the lierature search, conduct of the cases and drafting the manuscript.

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