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Case Report

Gastro LMA: An Ideal Airway Device in High Risk Geriatric Patients Scheduled for Life Saving Gastroendoscopic Procedures

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Abstract

With the advancement of modern medical science the range of endoscopic procedures being carried out in gastro endoscopic (GE) suites have increased dramatically. These procedures are usually day care procedures, the endoscopistic prefer to perform the procedure in GE suite, in order to have early recovery and cost benefit. The use of supraglottic airway device usually reduces anaesthetic dose requirements and has shorter recovery time compared to tracheal intubation. With the introduction of Gastro LMAR in the armamentarium of anaesthesiologists, the so called above mentioned, high risk procedures have become easier to manage.

We would share our experience of a similar High risk geriatric case which was successfully conducted using Gastro LMA for airway control.

77 years old hypertensive female a known cardiac patient with history of Hypertrophic Obstructive Cardiomyopathy had undergone Percutaneous Transluminal Septal Myocardial Ablation (PTSMA) and then developed complete heart block and was on pacemaker since last 5 years. Patient also had cerebrovascular accident (CVA) of right parietal region 3 years back and was on dual antiplatelets. Such, high risk patient with multiple co morbidities had developed choledocholithiasis and was planned for ERCP.

After careful preanaesthetic checkup (PAC) patient was accepted in ASA 3 for Endoscopic Retrograde Cholangiography (ERCP) and was advised to be taken up for ERCP procedure after optimization of her physical condition and comorbidities. The case was conducted smoothly using gastro LMA for airway protection.

Keywords: *Gastroendoscopic Procedures; Gastro LMA; Endoscopic Retrograde Cholangiography (ERCP); Cardiovascular Disease; Pacemaker*

Abbreviations

LMA: Laryngeal Mask Airway; GE: Gastroendoscopic; PTSMA: Percutaneous Transluminal Septal Myocardial Ablation; CVA: Cerebrovascular Accident; CBD: Common Bile Duct; PPI: Permanent Pacemaker Implant; ERCP: Endoscopic Retrograde Cholangiography; PAC: Preanaesthetic Checkup; ASA: American Society of Anaesthesiologists Physical Status Classification

Introduction

With the advancement of modern medical science the range of endoscopic procedures being carried out in gastroendoscopic (GE) suites have increased dramatically. There is a huge number of severely ill or geriatric patients who cannot be given the benefit of these

interventions due to various risk factors such as the complexity, risk of aspiration and expected duration of the procedure [1]. The anaesthetic techniques for such procedures vary from moderate or deep sedation, with airway protection with an endotracheal tube or supraglottic airway device such as the LMA [2]. Since these procedures are usually day care procedures, the endoscopistic prefer to perform the procedure in GE suite, in order to have early recovery and cost benefit. The use of supra glottic airway device usually reduces anaesthetic dose requirements and has shorter recovery time compared to tracheal intubation. However with the introduction of Gastro LMA in the armamentarium of anaesthesiologists, the so called above mentioned, high risk procedures have become easier to manage.

In 2017, Dr. Marcus Skinner developed LMA Gastro, a novel modification of the LMA [3]. It is a second-generation silicone-based, cuffed LMA supraglottic airway device with separate channels for gastric and airway access. LMA Gastro is also equipped with a bite block and cuff pilot technology. It is available in three sizes (3, 4 and 5). It comes with an adjustable strap which helps to stabilize the device during endoscopic manipulation. Various studies have reported the efficacy and safety of the LMA Gastro for a variety of endoscopic procedures [3-6]. Enough literature is available to ascertain the advantages of this device over the traditionally used endotracheal tube.

Case Report

77 years old female, a known case of choledocholithiasis had undergone ERCP with CBD stenting 7 months back presented with history of pain abdomen right hypochondrium associated with nausea and vomiting. Patient had multiple co morbidities like Hypertension for past 15 yrs, Hypertrophied Obstructive Cardiomyopathy, underwent PTSMA 5 years back and presently on pacemaker. 3 years back she had right parietal region CVA. She recovered gradually with residual speech slurring. Presently patient is on Tab Amlodipine 5 mg, Tab Ecosprin 75 mg and Tab Atorvastatin 20 mg, all once daily. Patient was planned for ERCP.

On examination - Gen condition of patient was frail. New York Heart Association grade III. Airway was adequate with Mallampati scoring I. Central nervous system examination showed slurring of speech. Rest examination was unremarkable. Investigations like complete blood count, liver function test and renal function tests were within normal limits. Chest X Ray showed post PPI status. Cardiac evaluation revealed complete heart block with paced rhythm in electrocardiogram (ECG) and 2D Echo showed Left ventricular ejection Fraction -40%, LV dyssynchrony and LV apex was dilated and aneurismal. In view of the multiple co morbidities patient was accepted in ASA (American society of Anaesthesiologists Physical Status classification) 3 for ERCP under Total intravenous anaesthesia/General anaesthesia.

Anaesthesia management: Patient was visited day before surgery and the procedure was explained and high risk informed written consent taken.

On day of procedure, Pacemaker technician was called to reprogramme the pacemaker. Intravenous access was secured with an 18G iv cannula. Standard ASA monitors were attached. Anaesthesia was induced with Etomidate 10 mg, after premedication with Fentanyl 50 mcg. Gastro LMA was inserted and connected to Bain's circuit. Later patient was sedated with Dexmedetomidine infusion 0.5 mcg/kg/min. Patient was assisted during the period of apnea till return of spontaneous breathing. The Endoscope was introduced through the endoscope port and procedure was successfully completed. Intra op patient was hemodynamically stable without any episodes of hypoxia. Post procedure patient was stable and was discharged after 4 hours of observation.

Figure 1: *Patient position for ERCP with Gastro LMA in place.*

Figure 2: *Stable haemodynamics during the ERCP procedure.*

Discussion

Gastroenterology suite for advanced endoscopic procedures is one the commonest set up for non-operating room anaesthesia. The anaesthetic techniques for such procedures vary from moderate or deep sedation. The choice of the anaesthetic technique is based on multiple factors such as the complexity and expected length of the procedure, aspiration risk, etc [1]. Airway can be protected with an endotracheal tube or supraglottic airway device such as the LMA [2]. The use of supra glottic airway device usually reduces anaesthetic dose requirements and has shorter recovery time compared to tracheal intubation.

In 2017, Dr. Marcus Skinner developed LMA Gastro, a novel modification of the LMA [3]. It is a second-generation silicone-based, cuffed LMA supraglottic airway device with separate channels for gastric and airway access. The LMA Gastro is also equipped with a bite block and cuff pilot technology. It is available in three sizes (3, 4 and 5). It comes with an adjustable strap which helps to stabilize the device during endoscopic manipulation. However, it was not designed to be used as an intubating LMA. Various studies have reported the efficacy and safety of the LMA Gastro for a variety of endoscopic procedures [3-6]. In 2018, Terblanche., *et al*. published a prospective observational study involving 292 ASA class I and II patients with low pulmonary aspiration risk [3]. The overall LMA Gastro insertion success rate in their study was 99% and the first-attempt insertion success rate of 82%. Complex endoscopic procedures such as ERCP and percutaneous endoscopic gastrostomy have been successfully performed using LMA Gastro [4-6]. Tran., *et al*. in their retrospective analysis found to have a success rate of 93% for ERCP [6].

ERCP is most often performed in under deep sedation without airway protection in the prone position while patient breaths spontaneously. Prone position reduces the risk of aspiration. However, patients with ASA physical status III and above are at increased risk of cardio-respiratory adverse events [7,8] and therefore tracheal intubation during general anaesthesia is usually preferred.

Most StuIn 2020, Axel Schmutz., *et al*. in their observational study on successfully managed 27 out of 31 ASA > 3 patients with Gastro LMA [9]. Uysal., *et al*. compared the LMA Gastro Airway and Gastro-Laryngeal Tube in 100 patients undergoing ERCPs [10]. They observed

that first-attempt insertion rate was with the LMA Gastro (96%) was considerably higher than with the Gastro-Laryngeal Tube (72%). The oropharyngeal leak pressure was higher with the LMA Gastro. Sore throat incidence and severity was lower with LMA Gastro.

Conclusion

The LMA Gastro may be used as a primary airway device to allow safe and effective airway management, in a variety of endoscopic procedures, including ERCP. It has the advantage of offering airway protection while avoiding endotracheal intubation. It can be said with conviction that gastro LMA is an ideal airway device in high risk geriatric patients scheduled for life saving Gastroendoscopic procedures.

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Conflicts of Interest of Each Author/Contributor

There is no conflict of interest amongst any contributing authors.

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