



**RESEARCH ARTICLE**

**ANESTHETIC MANAGEMENT OF MYASTHENIA GRAVIS PATIENT UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY USING PROSEAL LARYNGEAL MASK AIRWAY**

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**ABSTRACT**

Myasthenia Gravis is an autoimmune disease characterized by weakness and fatiguability of skeletal muscles, with improvement following rest. It may be localized to specific muscle groups or it may be generalized. The incidence of myasthenia gravis is cited as 50 to 142 cases per 1 million and women in the age group of 20 - 30 yrs are most commonly affected. It is a chronic autoimmune disorder characterized by a decrease in acetylcholine receptors at the neuromuscular junction secondary to their destruction or inactivation by circulating antibodies. Patients are at an increased risk of pulmonary aspiration because of pharyngeal and laryngeal muscle weakness, and they may present with dysphagia, dysarthria and an overall difficulty of handling secretions. In this case report, we describe a patient with myasthenia gravis undergoing laparoscopic cholecystectomy using a proseal laryngeal mask airway without the use of muscle relaxant.

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**INTRODUCTION**

Myasthenia Gravis is an autoimmune disease characterized by weakness and fatiguability of skeletal muscles, with improvement following rest. It may be localized to specific muscle groups or it may be generalized. The incidence of myasthenia gravis is cited as 50 to 142 cases per 1 million and women in the age group of 20 - 30 yrs are most commonly affected. It is a chronic autoimmune disorder characterized by a decrease in acetylcholine receptors at the neuromuscular junction secondary to their destruction or inactivation by circulating antibodies. Patients are at an increased risk of pulmonary aspiration because of pharyngeal and laryngeal muscle weakness, and they may present with dysphagia, dysarthria and an overall difficulty of handling secretions. In this case report, we describe a patient with myasthenia gravis undergoing laparoscopic cholecystectomy using a proseal laryngeal mask airway without the use of muscle relaxant.

**Case summary**

A 58 year old woman, weighing 52 kgs, with an ASA physical status of III presented with multiple gall bladder stones and was posted for laparoscopic cholecystectomy. She had been diagnosed with Myasthenia Gravis 20 years back (Osserman stage IIA) and had undergone thymectomy 14 years ago

without any complications. Currently, patient was in remission period from an exacerbation one year back. At present, she had generalized muscle weakness and present treatment included oral pyridostigmine 60 mg, 5 times a day and tab azathioprine 50 mg BD. Pulmonary and cardiovascular evaluation was normal with a Mallampati score 3 and a thyromental distance greater than 6.5 cms. Laboratory tests were normal. PFTs including FVC were normal. On the morning of surgery, tab pyridostigmine 60 mg was continued as we had planned to avoid the use of neuromuscular blocking agents. Preoperatively, vitals were - BP - 136/93 mmHg, HR - 92/min, Oxygen Saturation - 98%. A 20G IV line was secured and patient was premedicated with Inj. Ranitidine 150mg, Inj. Metoclopramide 10mg iv, half an hour before being taken to the operating room. She was made to lie supine on the operating table and preoxygenated with 100% oxygen for 3 minutes. Induction was achieved with Inj. Fentanyl 100mcg, Inj. Propofol 2mg/kg, and Sevoflurane 4%. Proseal Laryngeal Mask Airway of size 4 was inserted smoothly without any trauma and secured in place. Position of PLMA was confirmed by fiberoptic view (grade 4). A 10G nasogastric tube was passed through the drainage tube of the PLMA and left in situ for deflation of the stomach. Pneumoperitoneum was created and intraabdominal pressure was kept 12 mmHg. EtCO<sub>2</sub> and capnography monitoring was done. Maintenance of anesthesia was done with sevoflurane, maintaining BIS between 40 - 60. Hemodynamic parameters remained within normal limits and surgery was completed uneventfully in 25 minutes. During emergence from anesthesia, PLMA was removed after ensuring

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that spontaneous ventilation was adequate. Patient was conscious, comfortable and shifted to post anesthesia care unit, where she was administered oxygen via face mask at 2L/min. Close postoperative monitoring was done and no complications occurred in the postoperative period.

## DISCUSSION

Myasthenia Gravis has historically been a challenging disease for the anesthetist to manage because of its involvement in the pulmonary, muscular and cardiovascular systems as well as with drug interactions. We decided to avoid the use of muscle relaxants altogether because of the higher sensitivity of these patients to non depolarising agents and resistance to depolarising agents. We used sevoflurane to facilitate PLMA insertion and at the same time providing relaxation for surgery. Inhalation agents allow neuromuscular transmission to recover with rapid elimination of these agents at the end of surgery. Della Rocca *et al* used propofol and sevoflurane in myasthenic patients without the use of any neuromuscular blocking agents with success and concluded that this method allows for early extubation with decreased requirement of postoperative mechanical ventilation. Kiran U *et al* found in a recent study that sevoflurane can be used as a sole anesthetic agent and provided adequate muscle relaxation. Maltby *et al* compared LMA-Proseal with endotracheal tube (ETT) with respect to pulmonary ventilation and gastric distension during laparoscopic cholecystectomy. They concluded that a correctly seated LMA-PS or ETT provided equally effective pulmonary ventilation without clinically significant gastric distension in all non-obese patients. In Myasthenic patients, PLMA has advantages over the endotracheal tube in that it causes lesser airway resistance and bronchospasm, and it does not require neuromuscular blocking agent drugs for its insertion. The cuff of PLMA extends over the posterior surface of the mask which

allows for better seal around the glottic opening. PLMA also permits peak airway pressures upto 30cm water without leak.

## Conclusion

In our case, use of PLMA in a myasthenic patient undergoing laparoscopic cholecystectomy, provided a safe technique and at the same time, avoiding the use of neuromuscular blocking agents ensured a rapid postoperative recovery.

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