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To Study The Comparison Of LMA Proseal And Classic LMA In Patients Undergoing Minor Surgery

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Abstract

This study compares the clinical performance of the Laryngeal Mask Airway ProSeal (LMA ProSeal) and the Classic Laryngeal Mask Airway (Classic LMA) in patients undergoing minor surgical procedures. Both devices are widely used for airway management in anesthesia, but differences in design and function may influence patient safety, efficacy, and ease of use. The primary endpoints evaluated were ease of insertion, airway sealing pressure, and perioperative complications. The study's findings suggest that while both devices are effective, the LMA ProSeal offers superior airway sealing and reduced postoperative complications, particularly for procedures requiring higher airway pressures.

Method: This prospective study was conducted at North End Hospital, Tapper Pattan, Jammu and Kashmir, after ethical approval. A total of 100 patients, aged 18–60 years, weighing 30–60 kg, with ASA grades I–II and BMI < 35 kg/m², scheduled for minor surgeries, were included. Patients were randomly divided into two groups (n=50 each): Group A (LMA ProSeal) and Group B (Classic LMA). After obtaining written informed consent, standard anesthesia protocols were followed. LMA insertion was performed by an experienced anaesthetist, and data on insertion ease, time, Oropharyngeal seal pressure, and complications were recorded and analysed.

Result: The LMA ProSeal demonstrated higher first-attempt success rates (94% vs. 88%, p = 0.02), shorter mean insertion time (22 ± 4 seconds vs. 26 ± 6 seconds), and significantly better airway sealing pressures (28 ± 2 cmH_2O vs. 22 ± 3 cmH_2O, p < 0.001). Postoperative complications were lower with the ProSeal, including sore throat (6% vs. 14%, p = 0.04) and coughing during emergence (2% vs. 8%, p = 0.03). No gastric regurgitation was observed in either group.

Introduction

Airway management is a critical aspect of anesthetic practice, particularly during minor surgical procedures that require general anesthesia. Supraglottic airway devices (SGADs) have become an integral part of modern anesthetic practice due to their ease of use, safety, and effectiveness in managing the airway without the need for endotracheal intubation. Among the various SGADs available, the Classic Laryngeal Mask Airway (Classic LMA) and the Laryngeal Mask Airway ProSeal (LMA ProSeal) are two of the most commonly used devices. The Laryngeal Mask Airway (LMA) is a supraglottic airway device widely used in minor surgeries requiring general anesthesia. The Classic LMA, introduced in 1988, is a simple device designed for routine airway management. The LMA ProSeal, developed later, incorporates an additional cuff for improved airway sealing and a gastric access port to reduce the risk of aspiration. Among the SGADs, the Classic Laryngeal Mask Airway (Classic LMA) and the Laryngeal Mask Airway ProSeal (LMA ProSeal) are widely utilized due to their proven efficacy and safety profiles **Brain AIJ (2005)**.The Classic LMA, introduced by Dr. Archie Brain in 1988, was a revolutionary development in airway management. It features a single elliptical cuff designed to sit over the glottis, providing an effective seal for ventilation. Its simplicity, ease of insertion, and low complication rate has made it a preferred choice for elective surgeries, particularly those requiring spontaneous or light positive pressure ventilation **Brimacombe J, *et al*** (2000). However, the Classic LMA is not without limitations. Its relatively low airway sealing pressure makes it less suitable for procedures involving high ventilatory requirements. Furthermore, it lacks a mechanism to prevent gastric aspiration, posing a risk in patients with a full stomach or gastro esophageal reflux **Keller C, Brimacombe J (2002).**

Aim of the study

To Study the Comparison of LMA ProSeal and Classic LMA in Patients Undergoing Minor Surgery.

Objective of the Study

This study aims to compare the performance of the LMA ProSeal and Classic LMA in patients undergoing minor surgical procedures, focusing on their clinical efficacy and safety profiles.

Materials

The present study entitled “To Study the Comparison of LMA ProSeal and Classic LMA in Patients Undergoing Minor Surgery” was carried out, in North End Hospital, Tapper Pattan, Jammu and Kashmir, Bharat, after obtaining the approval from the hospital ethical committee. A total of 100 surgical patients of age 18-60 years, of weight 30-60 kgs, with ASA grade I and II, with BMI< 35kg/ m2 were scheduled for minor surgeries. Written informed consent was taken from all the patients. All the patients were randomly divided into 2 groups of 50 each.

Interventions

Patients were randomized into two groups:

1. **Group A**: LMA ProSeal (n = 50)
2. **Group B**: Classic LMA (n = 50)

Participants

Exclusion criteria:

- Patients with anticipated difficult airways, obesity (BMI >35), or increased risk of aspiration.
- Patients with ASA class III or IV.
- Patients with BMI> 30kg/ m2.
- Paediatric patients.
- Patients with age more than 50 years.

- Patients with weight more than 60 kgs.
- Patients unable to provide informed consent.
- Anticipated difficult airway.
- Patients with history of hyperactive airway disease.
- Patients with deranged serum creatinine level.
- Patients with deranged serum potassium level.

Parameters Evaluated

1. **Ease of insertion** (number of attempts, time taken for successful placement)
2. **Airway sealing pressure** (measured using a manometer)
3. **Hemodynamic stability** (heart rate, blood pressure changes)

Postoperative complications (sore throat, coughing, and gastric regurgitation

METHODS

Pre-Anesthesia Check-up

A comprehensive pre-anaesthesia check-up, encompassing patients detailed clinical history and clinical examination was done and routine investigations like Hb, blood sugar, renal function test, liver function test, coagulogram, ECG, X ray chest were ordered. All patients were kept nil per oral (NPO) for 8 hours prior to surgery. All patients were administered Tablet Alprazolam 0.25 mg given one day prior to the surgery (for anxiolysis) and Tablet Ranitidine 150 mg night before the surgery and two hours prior shift to operation theatre (OT).

On arrival into the operation theatre, an appropriate size peripheral venous canula was obtained and Ringer lactate infusion was started as IV fluid. All the routine monitors (ECG, Pulse Oximeter**,** and NIBP) were applied and the baseline vitals were recorded.

All the patients were pre-oxygenated with 100% oxygen for two to three minutes. Patients were then pre-medicated with inj. fentanyl 1-2 mcg/kg, inj. glycopyrrolate 0.2 mg iv and inj. ondansetron 0.1 mg/kg iv. Anesthesia was induced with inj. propofol 1-2mg/kg iv (in incremental doses). After the loss of verbal commands, the patients were subjected to bag-mask ventilation with 100% oxygen (O2) via Bain's circuit. After a positive bag-mask ventilation test, the process of induction was facilitated with airway management by giving group specific neuromuscular blocking agent. The endotracheal intubation was done with an appropriate size endotracheal tube by a trained anaesthesiologist. After confirming the correct placement of endotracheal tube by auscultation and capnograph the patient was put on controlled mechanical ventilation. The anesthesia was maintained with nitrous oxide, oxygen, (60% N20: 40%02), and sevoflurane (1%) along with controlled mechanical ventilation (CMV). Once the patient is recovered from the effect of depolarising neuromuscular blocking agents, muscle relaxation was maintained with inj., Atracurium 0.1mg/kg in incremental doses. Injection Paracetamol 15mg/kg was given for analgesia.

At the end of the surgery, after the return of spontaneous respiration, neuromuscular blockade was reversed with inj. neostigmine 0.05mg/kg and inj. glycopyrrolate 0.2mg iv. The endotracheal tube was removed once the patients had adequate spontaneous tidal volume, cough reflex, spontaneous eye opening and head lift.

The following parameters were recorded:

- Demographic variables (age, weight, gender, BMI, ASA grade)

- The conditions for intubation were accessed using the following criteria (Tom heier)

- The criteria for endotracheal intubation were recorded by a trained anaesthesiologist with more than 10 years of experience.

Statistical Analysis

Data were analysed using SPSS v25. Student's t-test and chi-square tests were applied, with a p-value <0.05 considered statistically significant.

Results

Patient Demographics

Both groups were comparable in terms of age, sex, BMI, and ASA grading ($p > 0.05$).

Table 1: The comparison of LMA ProSeal and LMA Classic in both the groups.

Ease of Insertion

- Successful placement on the first attempt was higher with the LMA ProSeal (94%) than with the Classic LMA (88%).
- Mean insertion time: 22 ± 4 seconds (LMA ProSeal) vs. 26 ± 6 seconds (Classic LMA), $p = 0.02$.

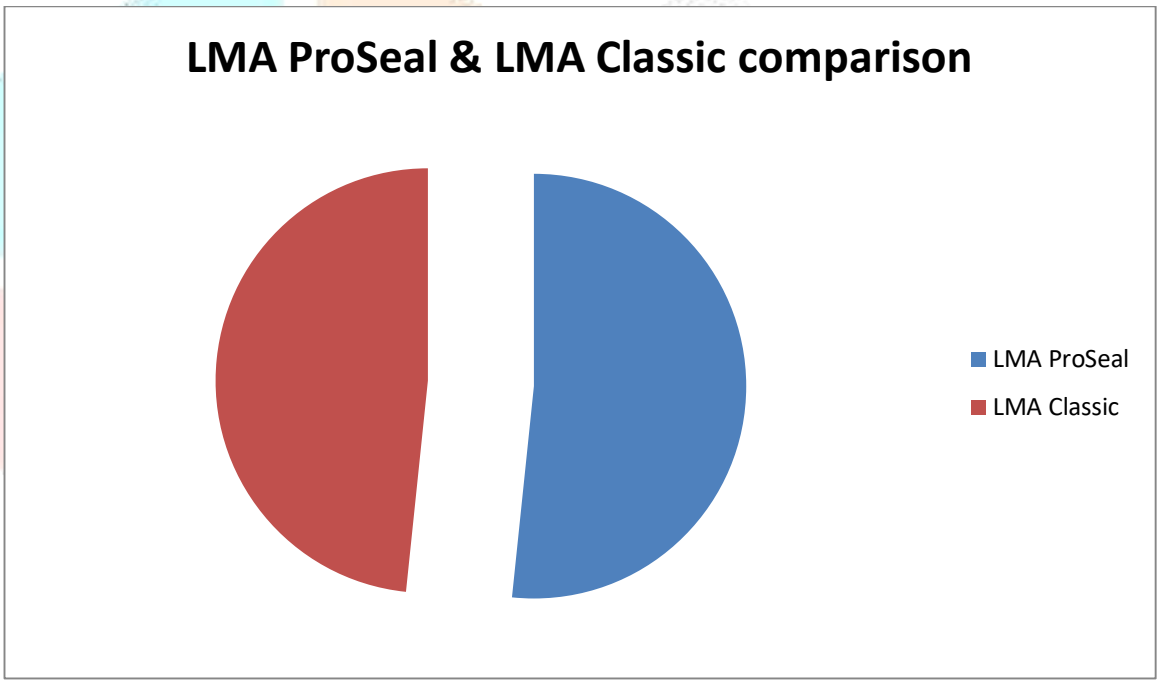


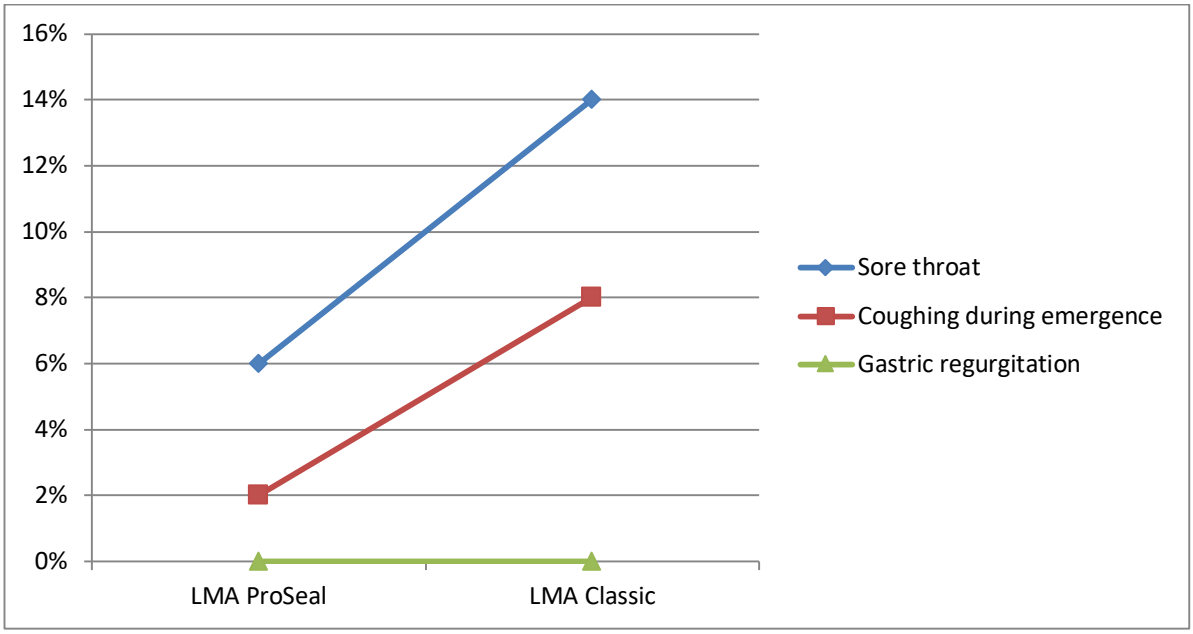
Table 2: The comparison of LMA ProSeal and LMA Classic in both the groups.

Airway Sealing Pressure

- The LMA ProSeal demonstrated significantly higher sealing pressures (28 ± 2 cmH_2O) compared to the Classic LMA (22 ± 3 cmH_2O), $p < 0.001$.

Complications

- Sore throat: 6% (LMA ProSeal) vs. 14% (Classic LMA), $p = 0.04$.
- Coughing during emergence: 2% (LMA ProSeal) vs. 8% (Classic LMA), $p = 0.03$.
- No cases of gastric regurgitation were observed in either group.



Discussion

The findings indicate that the LMA ProSeal provides better airway sealing pressure and fewer postoperative complications than the Classic LMA. The improved design of the LMA ProSeal, including its dual cuff and gastric access port, likely contributes to its superior performance. However, the Classic LMA remains a reliable and cost-effective option for minor surgeries with lower airway pressure requirements.

Conclusion

Both the LMA ProSeal and Classic LMA are effective for airway management in minor surgical procedures. However, the LMA ProSeal offers distinct advantages, including better sealing pressure and reduced complications. Its use is particularly recommended for cases requiring higher airway pressures or those with an elevated risk of aspiration. Further studies with larger sample sizes are needed to validate these findings.

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Ethical Considerations:

Informed consent was obtained from all participants before they were enrolled in the study. **Conflict of Interest**: None

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References

1. Brain AIJ. The laryngeal mask—a new concept in airway management. *Br J Anaesth*. 1988;60(3):325–329.
2. Brimacombe J, et al. LMA ProSeal vs. Classic LMA in anaesthetized patients. *Anaesthesia*. 2000;55(5):419–423.
3. Keller C, Brimacombe J. Airway sealing pressure of ProSeal vs. Classic LMA. *Anesthesiology*. 2002;96(3):603–607.
4. Cook TM. Supraglottic airway devices: challenges and advances. *Anaesthesia*. 2006;61(9):899–905.

5. Verghese C, Brimacombe J. Survey of laryngeal mask airway usage in 11,910 patients. *Anaesthesia*. 1996;51(8):815–818.
6. Brimacombe J. ProSeal LMA improves seal pressure in patients. *Anesth Analg*. 2001;93(4):1234–1240.
7. Goldmann K, Roewer N. Role of the ProSeal LMA in positive pressure ventilation. *Curr Opin Anaesthesiol*. 2003;16(5):503–507.
8. Lopez AM, Valero R. Safety and efficacy of supraglottic airway devices. *Rev Esp Anestesiol Reanim*. 2013;60(6):323–331.
9. Luba K, Cutter TW. Critical appraisal of laryngeal masks. *Annals of Anesthesia*. 2018;12(3):140–147.
10. Sharma B, Sahai C. Comparison of ProSeal and Classic LMA: A meta-analysis. *Indian J Anaesth*. 2010;54(3):134–140.