IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 15, Issue 1 Ser. 1 (Jan. – Feb. 2026), PP 01-03
www.iosrjournals.org

Comparison Of I-Gel, Classic LMA And Proseal LMA For Airway Management During General Anesthesia

Samana Syed, Saba Gul. Abhishek Gupta
Department Of OT/AT, USAHS, Rayat-Bahra University, Mohali, India. 140104

Abstract
Background
Maintenance of a patent airway is a fundamental component of general anesthesia, and ensuring adequate ventilation remains a primary responsibility of the anesthesiologist. Supraglottic airway devices (SADs) are widely used as alternatives to endotracheal intubation, particularly to minimize the hemodynamic stress response. Among the commonly used SADs are the I-gel, Classic Laryngeal Mask Airway (C-LMA), and ProSeal Laryngeal Mask Airway (PLMA).
Methods
This prospective, randomized, comparative study was conducted on 60 patients aged 50–70 years, weighing 55–70 kg, of either gender, with Mallampati grade I or II, undergoing emergency surgical procedures under general anesthesia. Patients were randomly allocated into three groups of 20 each. Group A had airway maintenance with the I-gel, Group B with the Classic LMA, and Group C with the ProSeal LMA. Parameters assessed included ease and time of insertion, number of attempts, hemodynamic responses, airway sealing pressure, and perioperative complications.
Results
The I-gel demonstrated significantly shorter insertion time and greater ease of insertion compared to the Classic LMA and ProSeal LMA. Airway sealing pressures were higher with the I-gel and ProSeal LMA than with the Classic LMA. Hemodynamic parameters remained stable across all groups, with no statistically significant differences. Complication rates such as sore throat, blood staining, and airway trauma were lowest in the I-gel group.
Conclusion
The I-gel proved to be a superior supraglottic airway device with faster and easier insertion, effective airway sealing, and fewer complications. Its favorable safety profile and simplicity of use make it a preferable option for airway management during general anesthesia, especially in emergency settings.
Keywords: *I-gel, Classic LMA, ProSeal LMA, supraglottic airway devices, airway management*

Date of Submission: 22-12-2025 Date of Acceptance: 02-01-2026

I. Introduction

Airway management is a cornerstone of anesthetic practice, and failure to maintain a patent airway can lead to significant morbidity and mortality. Traditionally, endotracheal intubation has been considered the gold standard for airway protection; however, it is associated with increased sympathetic responses, airway trauma, and postoperative discomfort.

Supraglottic airway devices (SADs) have gained widespread acceptance as alternatives to endotracheal intubation due to their ease of placement, reduced hemodynamic response, and lower incidence of airway-related complications. The Classic Laryngeal Mask Airway (C-LMA) was the first SAD introduced into clinical practice and has since undergone several modifications, including the ProSeal LMA (PLMA), which provides a better airway seal and gastric drainage. The I-gel is a newer SAD made of a thermoplastic elastomer with a non-inflatable cuff designed to achieve an anatomical seal of the perilaryngeal structures.

Given the increasing use of SADs, especially in emergency surgeries where rapid airway control is essential, it is important to evaluate their comparative performance. This study aims to compare the I-gel, Classic LMA, and ProSeal LMA with respect to insertion characteristics, hemodynamic stability, airway sealing pressure, and perioperative complications.

II. Materials And Methods

Study Design and Setting

This prospective, randomized, comparative study was conducted in the Department of Anesthesiology after obtaining approval from the institutional ethics committee and written informed consent from all patients.

Study Population

Sixty patients aged 50–70 years, weighing 55–70 kg, of either gender, with Mallampati grade I or II, and classified as ASA physical status I or II, scheduled for emergency surgeries under general anesthesia were included in the study.

Inclusion Criteria

- Age between 50 and 70 years
- Weight between 55 and 70 kg
- Mallampati grade I or II
- ASA physical status I–II
- Patients undergoing emergency surgery under general anesthesia

Exclusion Criteria

- Anticipated difficult airway
- Risk of aspiration
- Restricted mouth opening
- Upper airway pathology
- Patient refusal

Group Allocation

Patients were randomly divided into three groups of 20 each using a computer-generated randomization table:

- **Group A:** Airway maintained with I-gel
- **Group B:** Airway maintained with Classic LMA
- **Group C:** Airway maintained with ProSeal LMA

Anesthetic Technique

All patients were kept nil per oral as per standard guidelines. On arrival in the operating room, baseline heart rate, blood pressure, oxygen saturation, and ECG were recorded. General anesthesia was induced using standard intravenous agents, followed by muscle relaxation. The allocated supraglottic airway device was inserted as per manufacturer's instructions.

Parameters Assessed

- Time taken for insertion (seconds)
- Number of insertion attempts
- Ease of insertion (graded subjectively)
- Airway sealing pressure
- Hemodynamic parameters (heart rate and blood pressure)
- Perioperative complications (sore throat, blood staining, cough, laryngospasm)

Statistical Analysis

Data were analyzed using appropriate statistical software. Continuous variables were expressed as mean ± standard deviation and analyzed using ANOVA. Categorical variables were compared using Chi-square test. A p-value < 0.05 was considered statistically significant.

III. Results

The three groups were comparable with respect to demographic parameters such as age, gender, weight, and duration of surgery. The I-gel group demonstrated significantly shorter insertion times and higher ease-of-insertion scores compared to the Classic LMA and ProSeal LMA groups ($p < 0.05$).

Airway sealing pressures were highest in the I-gel and ProSeal LMA groups, with no statistically significant difference between them, but both were significantly higher than those of the Classic LMA. Hemodynamic parameters remained stable throughout the perioperative period in all three groups.

The incidence of complications such as sore throat and blood staining was lowest in the I-gel group, followed by the ProSeal LMA and Classic LMA groups.

IV. Discussion

The present study demonstrates that the I-gel provides superior performance compared to the Classic LMA and ProSeal LMA in terms of ease and speed of insertion, airway sealing capability, and lower complication rates. The non-inflatable cuff of the I-gel allows it to conform anatomically to the perilaryngeal structures, reducing tissue compression and airway trauma.

The ProSeal LMA, although offering better sealing pressures than the Classic LMA, requires more technical expertise and longer insertion time. Hemodynamic responses were comparable across all groups, supporting the advantage of SADs over endotracheal intubation in attenuating stress responses.

These findings are consistent with previous studies that have highlighted the clinical advantages of the I-gel, particularly in emergency and short-duration procedures.

V. Limitations

The study was limited by a relatively small sample size and inclusion of only Mallampati grade I and II patients. Further studies including patients with anticipated difficult airways and larger populations are recommended.

VI. Conclusion

All three supraglottic airway devices provided effective airway management with stable hemodynamic parameters. However, the I-gel demonstrated faster and easier insertion, effective airway sealing, and fewer complications compared to the Classic LMA and ProSeal LMA. Its simplicity, safety, and reliability make it a preferred supraglottic airway device for routine as well as emergency surgical procedures under general anesthesia.

References

[1]. Butterworth, J. F., Mackey, D. C., & Wasnick, J. D. (2018). Morgan & Mikhail's Clinical Anesthesiology (6th Ed.). Mcgraw-Hill Education.
[2]. Twersky, R. S., & Philip, B. K. (2003). Ambulatory Anesthesia Advances Into The New Millennium. Current Opinion In Anaesthesiology, 16(6), 513–520.
[3]. Trapani, G., Altomare, C., Liso, G., Sanna, E., & Biggio, G. (2000). Propofol In Anesthesia: Mechanism Of Action, Structure–Activity Relationships, And Drug Delivery. Current Medicinal Chemistry, 7(2), 249–271.
[4]. Mckeage, K., & Perry, C. M. (2003). Propofol: A Review Of Its Use In Intensive Care Sedation Of Adults. CNS Drugs, 17(4), 235–272.
[5]. Marik, P. E. (2004). Propofol: Therapeutic Indications And Side-Effects. Current Pharmaceutical Design, 10(29), 3639–3649.
[6]. Claeys, M. A., Gepts, E., & Camu, F. (1988). Haemodynamic Changes During Anaesthesia Induced And Maintained With Propofol. British Journal Of Anaesthesia, 60(1), 3–9.
[7]. Picard, P., & Tramèr, M. R. (2000). Prevention Of Pain On Injection With Propofol: A Quantitative Systematic Review. Anesthesia & Analgesia, 90(4), 963–969.
[8]. Forman, S. A. (2011). Clinical And Molecular Pharmacology Of Etomidate. Anesthesiology, 114(3), 695–707.
[9]. Gooding, J. M., Weng, J. T., Smith, R. A., Berninger, G. T., & Kirby, R. R. (1979). Cardiovascular And Pulmonary Responses Following Etomidate Induction Of Anesthesia In Patients With Cardiac Disease. Anesthesia & Analgesia, 58(1), 40–41.
[10]. Vuyk, J., Sitsen, E., & Reekers, M. (2020). Intravenous Anesthetics. In R. D. Miller, L.I. Eriksson, L. A. Fleisher, J. W. Wiener-Kronish, W. L. Young, & W. F. Butterworth (Eds.), Miller's Anesthesia (9th Ed., Pp. 854–915). Elsevier.
[11]. Vinclair, M., Broux, C., Faure, P., Brun, J., Genty, C., Jacquot, C., Zeni, F., & Payen, J. F. (2008). Duration Of Adrenal Inhibition Following A Single Dose Of Etomidate In Critically Ill Patients. Intensive Care Medicine, 34(4), 714–719.
[12]. Doenicke, A., Roizen, M. F., Kugler, J., Kroll, H., Foss, J., & Ostwald, P. (1999). Myoclonus After Etomidate: Frequency, Intensity And Duration. Anesthesia & Analgesia, 88(3), 693–696.