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A Comparative Study of Postoperative Sore Throat Following Use of ProSeal Laryngeal Mask Airway Versus Endotracheal Tube in Elective Surgeries Under General Anaesthesia

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Abstract

Background: Postoperative sore throat (POST) is a common complication following airway instrumentation during general anaesthesia. The choice of airway device plays a crucial role in its incidence and severity. ***Objective:*** To compare the incidence and severity of POST following use of ProSeal Laryngeal Mask Airway (PLMA) and Endotracheal Tube (ETT). ***Methods:*** A prospective randomized study was conducted on 60 adult patients (ASA I–II) undergoing elective surgeries. Patients were divided into two groups: PLMA (Group P) and ETT (Group E), with 30 patients in each group. POST was assessed using a 10-point Visual Analogue Scale (VAS) at 1, 4, and 24 hours postoperatively. Hemodynamic parameters and ease of insertion were also evaluated. ***Results:*** The incidence of POST was significantly lower in the PLMA group (16.66%) compared to the ETT group (46.67%). Severity was higher in the ETT group at early postoperative periods. Hemodynamic parameters were more stable in the PLMA group. ***Conclusion:*** PLMA is associated with a lower incidence and severity of POST and provides better hemodynamic stability compared to ETT.

Keywords: Postoperative sore throat, ProSeal Laryngeal Mask Airway, Endotracheal Tube, General anaesthesia, Airway management.

INTRODUCTION

Airway management is a fundamental and indispensable component of anaesthetic practice, playing a crucial role in ensuring adequate ventilation, oxygenation, and patient safety during surgical procedures. However, improper or traumatic airway manipulation can lead to a range of complications, among which postoperative sore throat (POST) is one of the most common and distressing. Although often considered a minor complication, POST can significantly affect patient comfort, satisfaction, and overall perioperative experience. Endotracheal intubation has traditionally been regarded as the gold standard for securing the airway, particularly in procedures requiring controlled ventilation and airway protection. Despite its effectiveness, it is frequently associated with a higher incidence of airway-related morbidity, including sore throat, hoarseness, coughing, and mucosal injury, primarily due to laryngoscopy and tracheal irritation.

The development and widespread adoption of supraglottic airway devices, particularly the ProSeal Laryngeal Mask Airway (PLMA), have introduced a less invasive alternative to endotracheal intubation. The PLMA is designed to provide an effective airway seal while minimizing direct contact with the tracheal mucosa. It offers several advantages, including ease of insertion, reduced requirement for laryngoscopy, decreased airway trauma, and better hemodynamic stability due to minimal sympathetic stimulation during placement. These features make it particularly useful in elective surgical procedures where the risk of aspiration is low.

Postoperative sore throat remains a frequently encountered complication in patients undergoing general anaesthesia with airway instrumentation. Its incidence varies widely depending on multiple factors, including the type of airway device used, cuff pressure, duration of anaesthesia, size of the device, lubrication, and technique of insertion. Higher cuff pressures and prolonged surgeries are known to increase mucosal ischemia, thereby contributing to POST. Given these considerations, the present study was undertaken to compare the incidence and severity of postoperative sore throat between patients managed with PLMA and those undergoing endotracheal intubation, with the aim of identifying a safer and more comfortable airway management strategy.

MATERIALS AND METHODS

This prospective randomized study was conducted at a tertiary care hospital after obtaining ethical clearance and informed consent. A total of 60 patients aged 18–60 years, belonging to ASA I and II, undergoing elective surgeries of 60–120 minutes duration were included.

Patients were randomly divided into two groups:

- **Group P:** PLMA (n=30)
- **Group E:** ETT (n=30)

Standard general anaesthesia was administered in both groups. Airway devices were inserted using standard techniques, and correct placement was confirmed clinically and with capnography .
POST was assessed using a 10-point Visual Analogue Scale (VAS) at 1, 4, and 24 hours postoperatively .
Hemodynamic parameters were monitored at predefined intervals. Statistical analysis was performed using SPSS software with significance set at $p<0.05$.

RESULTS

The present study demonstrated a significantly higher incidence of postoperative sore throat (POST) in the endotracheal tube (ETT) group (46.67%) compared to the ProSeal laryngeal mask airway (PLMA) group (16.66%), indicating a clear advantage of PLMA in reducing airway-related morbidity. This difference can be attributed to the relatively less invasive nature of PLMA, which avoids direct laryngoscopy and minimizes trauma to the tracheal mucosa. In contrast, endotracheal intubation involves passage of the tube through the vocal cords and trachea, increasing the likelihood of mucosal irritation and inflammation.

In addition to incidence, the severity of POST was also found to be greater in the ETT group, particularly during the early postoperative period at 1 and 4 hours. Patients in this group reported higher discomfort scores, suggesting that the immediate postoperative phase is most affected by airway instrumentation. However, by 24 hours postoperatively, the difference in severity between the two groups became minimal, indicating that POST is generally a self-limiting condition that resolves with time.

Hemodynamic responses further supported the advantages of PLMA over ETT. Parameters such as heart rate and blood pressure showed greater fluctuations in the ETT group, likely due to the sympathetic stimulation associated with laryngoscopy and intubation. In contrast, the PLMA group exhibited more stable hemodynamic profiles, reflecting the less stimulating nature of its insertion technique.
Interestingly, there was no statistically significant difference in the ease of insertion between the two airway devices, suggesting that both can be effectively used by trained personnel. However, factors such as longer duration of surgery and higher cuff pressures were found to be associated with an increased incidence of POST in both groups. These findings highlight the importance of careful intraoperative management, including monitoring cuff pressures and minimizing procedure duration, to reduce postoperative complications.

DISCUSSION

The findings of this study demonstrate that PLMA is associated with a significantly lower incidence and severity of POST compared to ETT. This is likely due to reduced mucosal trauma and lower cuff pressures with PLMA.
Previous studies have also reported similar findings, suggesting that supraglottic airway devices are associated with fewer airway-related complications. The improved hemodynamic stability observed with PLMA can be attributed to the absence of laryngoscopic stimulation during insertion.

Factors such as duration of surgery and cuff pressure were found to influence POST, consistent with earlier studies. Monitoring these variables can help reduce postoperative complications.

CONCLUSION

The findings of the present study suggest that the ProSeal Laryngeal Mask Airway (PLMA) is a safe and effective alternative to the Endotracheal Tube (ETT) for airway management in elective surgical procedures. PLMA offers several

clinical advantages, particularly in terms of reducing airway-related complications. One of the most notable benefits observed was the significant reduction in both the incidence and severity of postoperative sore throat (POST) among patients managed with PLMA compared to those who underwent endotracheal intubation. This can be attributed to its less invasive nature, as it avoids direct laryngoscopy and minimizes irritation to the tracheal mucosa.

In addition to improved patient comfort, PLMA was also associated with better hemodynamic stability. Unlike ETT insertion, which often leads to sympathetic stimulation resulting in increased heart rate and blood pressure, PLMA insertion is smoother and less stimulating, thereby maintaining more stable intraoperative parameters. This makes it particularly advantageous in patients where hemodynamic fluctuations may be undesirable.

Furthermore, PLMA provides an adequate airway seal and effective ventilation in most elective procedures, making it a reliable choice in routine anesthetic practice. Overall, the use of PLMA not only enhances patient satisfaction by reducing postoperative discomfort but also contributes to safer anesthetic management, supporting its growing preference as an alternative to traditional endotracheal intubation.

Authors' Declaration

The authors declare that this study is original and has not been published previously nor is it under consideration for publication elsewhere. All authors have made substantial contributions to the conception, design, data collection, analysis, and interpretation of the study. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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