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THE JELLY EFFECT- IMPACT OF 2% LIGNOCAINE JELLY APPLICATION ON THE INCIDENCE OF POST-INTUBATION SORE THROAT: A PROSPECTIVE COMPARISON

DR SHANTHI S[1], DR SANJANA[2], DR KISHANTH[3], DR.MARIA PRISCILLA[4]

[1](POST GRADUATE),
[2](ASSISTANT PROFESSOR), DEPARTMENT OF ANESTHESIOLOGY, SAVEETHA MEDICAL COLLEGE AND HOSPITALS,SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES, SAVEETHA UNIVERSITY, CHENNAI - 602105, TAMIL NADU, INDIA
[3](SENIOR RESIDENT), THE DEPARTMENT OF ANESTHESIOLOGY AT SREE BALAJI MEDICAL COLLEGE & HOSPITAL IS LOCATED AT NO. 7, WORKS ROAD, CHROMEPET, CHENNAI - 600 044, TAMIL NADU, INDIA
[4]SENIOR LECTURER,DEPARTMENT OF ORAL MEDICINE & RADIOLOGY, SREE BALAJI DENTAL COLLEGE & HOSPITAL, CHENNAI, INDIA

Abstract

Background: Postoperative sore throat (POST) is a common side effect after general anesthesia with endotracheal intubation, with incidence rates reported between 7% and 90%. Topical lignocaine has been explored as a preventative measure to reduce POST.

Objective: To evaluate whether applying 2% lignocaine jelly to the endotracheal tube lowers the incidence of sore throat in patients undergoing elective surgery under general anesthesia.

Methods: In this prospective observational study, 60 patients aged 18–65 years, ASA I or II, scheduled for elective surgery were randomly assigned to two groups. Group A had their endotracheal tubes lubricated with 2% lignocaine jelly; Group B did not receive lignocaine. POST was assessed at 1, 6, 12, and 24 hours post-extubation.

Results: Group A experienced significantly fewer cases of moderate to severe sore throat at all time points ($p < 0.05$). No significant differences were found in the rates of hoarseness or cough between groups.

Conclusion: Applying 2% lignocaine jelly to the endotracheal tube effectively reduces the incidence and severity of postoperative sore throat.

INTRODUCTION

Postoperative sore throat (POST) is a common complication after general anesthesia involving endotracheal intubation, with incidence reported between 7% and 90% depending on factors like tube size, cuff pressure, and intubation technique [1,6,12]. Although often considered minor, POST can cause significant discomfort and affect patient satisfaction [2].

The primary cause of POST is trauma and irritation to the airway mucosa during intubation and mechanical ventilation. This includes mechanical injury from the tube, pressure from the cuff leading to mucosal ischemia, and irritation from suctioning [1,11,12]. Several methods, including pharmacological interventions such as topical lignocaine, have been investigated to reduce POST.

Lignocaine jelly applied topically to the ETT cuff is thought to reduce mucosal irritation by providing localized anesthesia. While some studies have reported benefits of lignocaine in preventing POST [4,5,7],

others have shown inconclusive results [10]. This study aims to evaluate the effectiveness of 2% lignocaine jelly in reducing the incidence and severity of POST in elective surgeries

The aim of this study is to evaluate the effectiveness of 2% lignocaine jelly in reducing the incidence and severity of postoperative sore throat (POST) following endotracheal intubation in patients undergoing elective surgery under general anesthesia. The primary objective is to compare the incidence of POST at 1, 6, 12, and 24 hours post-extubation between patients intubated with and without 2% lignocaine jelly applied to the endotracheal tube. The secondary objectives include assessing the severity of POST at various postoperative intervals in both groups, evaluating the incidence of other airway-related symptoms such as hoarseness and cough, and determining whether the application of lignocaine jelly leads to any adverse effects or complications.

MATERIALS AND METHODS

Study Design

This was a prospective, comparative, observational study conducted at saveetha medical college and hospital. The study aimed to assess the incidence and severity of postoperative sore throat (POST) in patients undergoing elective surgery under general anesthesia, with or without the application of 2% lignocaine jelly on the endotracheal tube (ETT).

Patient Selection

Inclusion Criteria

- Patients aged between 18 and 65 years
- American Society of Anesthesiologists (ASA) physical status I or II
- Undergoing elective surgical procedures requiring general anesthesia with oral endotracheal intubation
- Willingness to participate and provide written informed consent

Exclusion Criteria

- Patients with known upper airway pathology (e.g., infections, tumors, trauma)
- ASA grade III or higher
- Emergency or prolonged surgeries (>4 hours)
- Requirement of nasal intubation or difficult airway
- History of recent sore throat, upper respiratory tract infection, or allergy to lignocaine

Group Allocation

Sixty eligible patients were randomly allocated into two equal groups (n = 30 each) using a computer-generated randomization sequence:

- Group A (Lignocaine Group): Patients were intubated using an endotracheal tube (ETT) lubricated with 2% lignocaine jelly applied along the external surface of the distal 10–12 cm, including the cuff.
  Group B (Control Group): Patients were intubated using a plain, unlubricated ETT with no lignocaine applied.

Monitoring and Anesthesia Protocol

All patients were monitored intraoperatively using standard ASA monitoring, including electrocardiography (ECG), non-invasive blood pressure (NIBP), pulse oximetry, and capnography. Pre-medication consisted of intravenous midazolam and glycopyrrolate. Anesthesia induction was carried out using fentanyl, propofol, and atracurium. Endotracheal intubation was performed by experienced anesthesiologists utilizing a standard Macintosh laryngoscope. Appropriately sized, high-volume, low-pressure polyvinyl chloride (PVC) endotracheal tubes were used, and cuff pressure was consistently maintained at 20 cm H_2O with the help of a cuff manometer.

Intraoperative ventilation was provided through a standard anesthesia workstation, with maintenance of anesthesia achieved using isoflurane in a mixture of oxygen and air. Upon completion of surgery, patients were administered neostigmine and glycopyrrolate for neuromuscular reversal and were extubated once they regained full consciousness.

Post-extubation sore throat and related symptoms were assessed using a standardized 4-point scale (0 = none, 1 = mild on asking, 2 = moderate spontaneous complaint, 3 = severe with hoarseness or voice changes) at 1, 6, 12, and 24 hours after extubation.Additional symptoms such as cough and hoarseness were also documented.

Statistical Analysis

Data were compiled and analyzed using SPSS software (version XX) (or any preferred statistical software). Continuous variables (e.g., age, duration of surgery) were expressed as mean ± standard deviation and compared using the Student's t-test. Categorical variables (e.g., incidence of POST, severity scores) were compared using the Chi-square test or Fisher's exact test, as appropriate.

A p-value of <0.05 was considered statistically significant.

RESULTS

1. Demographic and Baseline Characteristics

There were no statistically significant differences between the two groups regarding age, sex distribution, ASA grade, or duration of surgery.

Table 1: Baseline Characteristics

Parameter	Group A (n=30)	Group B (n=30)	p-value
Age (years, Mean ± SD)	39.5 ± 12.4	41.2 ± 11.8	0.52
Gender (M/F)	18/12	17/13	0.79
ASA Grade (I/II)	20/10	19/11	0.79
Duration of surgery (min, Mean ± SD)	92.3 ± 26.1	89.7 ± 24.5	0.63

2. Incidence of Postoperative Sore Throat (POST)

Group A had significantly lower incidence of POST at all time intervals post-extubation.

Table 2: Incidence of POST at Different Time Intervals

Severity	Group A (n=30)	Group B (n=30)	p-value
None	18 (60%)	4 (13.3%)	<0.001*
Mild	9 (30%)	8 (26.7%)	0.78
Moderate	3 (10%)	10 (33.3%)	0.032*
Severe	0 (0%)	8 (26.7%)	0.005*

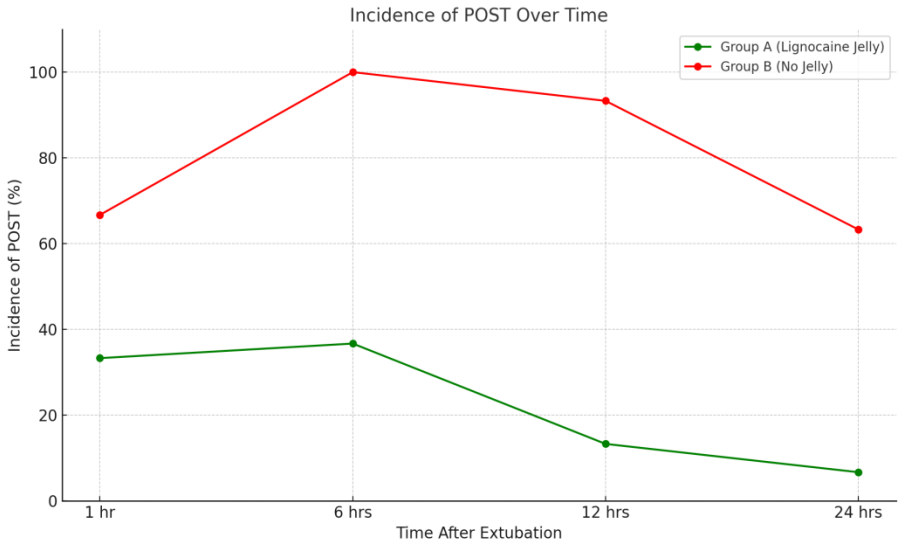

Figure 1- Here's the graph displaying the incidence of postoperative sore throat (POST) over time for both groups. Let me know if you'd like additional visualizations (e.g., for severity or secondary outcomes) or if you need this graph exported for a presentation or manuscript.

3. Severity of POST

Severity was graded as mild, moderate, or severe. Group A had a significantly lower incidence of moderate and severe sore throat compared to Group B.

Table 3: Severity of POST

Severity	**Group A (n=30)**	**Group B (n=30)**	**p-value**
None	18 (60%)	4 (13.3%)	<0.001*
Mild	9 (30%)	8 (26.7%)	0.78
Moderate	3 (10%)	10 (33.3%)	0.032*
Severe	0 (0%)	8 (26.7%)	0.005*

4. Incidence of Other Airway Symptoms (Cough and Hoarseness)

No significant difference was observed between groups in terms of cough or hoarseness.

Table 4: Incidence of Cough and Hoarseness

Symptom	**Group A (n=30)**	**Group B (n=30)**	**p-value**
Cough	4 (13.3%)	6 (20%)	0.48
Hoarseness	3 (10%)	5 (16.7%)	0.44

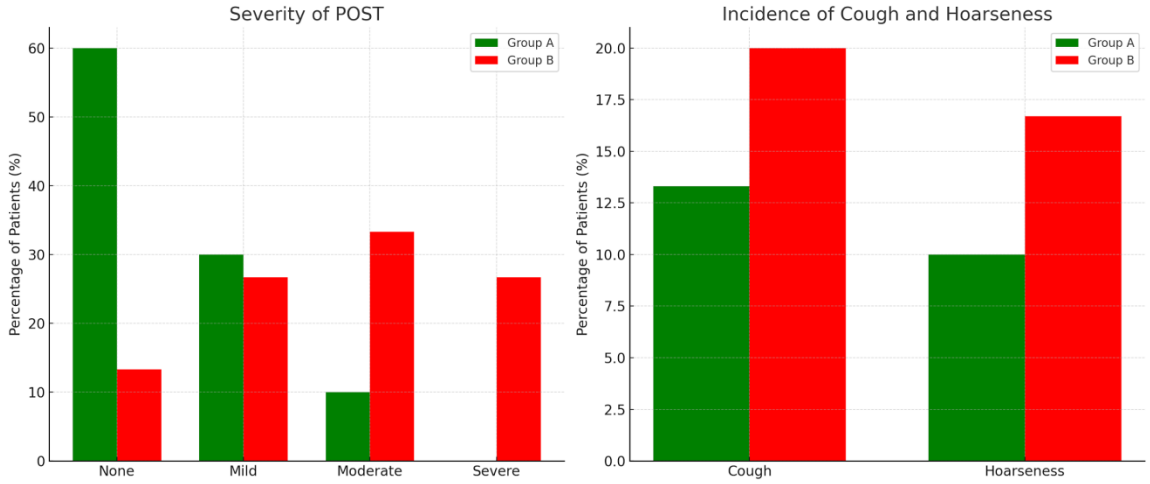

Figure 2 – Two additional graphs are presented:

1. *Severity of POST: A bar chart illustrating the distribution of sore throat severity—categorized as none, mild, moderate, and severe—across both groups.*
2. *Incidence of Cough and Hoarseness: A comparison of the percentage of patients reporting cough and hoarseness symptoms between the two groups.*

5. Adverse Effects

No adverse effects related to the use of lignocaine jelly (e.g., allergic reactions, delayed recovery, or airway complications) were observed in any patient.

DISCUSSION

Postoperative sore throat (POST) remains a frequently encountered complication after general anesthesia involving endotracheal intubation, with reported incidences varying between 7% and 90% depending on patient-related and procedural factors [1,6,12]. Mechanical trauma to the airway mucosa, mucosal ischemia from cuff pressure, and irritation from suctioning contribute to the development of POST [11,12]. In our study, we observed a significantly lower incidence and severity of POST in patients whose endotracheal tubes were lubricated with 2% lignocaine jelly, compared to those without any lubrication.

Our findings are consistent with previous studies that have demonstrated the benefit of topical anesthetics in reducing airway irritation. Navarro and Baughman reported a significant decrease in POST with the use of lignocaine in the endotracheal tube cuff [7]. Similarly, Sumathi et al. found that both betamethasone gel and lignocaine jelly were effective in reducing POST, although betamethasone showed superior efficacy [4]. In our study, the incidence of POST at 6 and 12 hours post-extubation dropped dramatically in the lignocaine group, indicating a prolonged protective effect of the jelly formulation.

Contrary to our results, some studies have shown inconclusive or minimal benefits from lignocaine use. Soltani and Aghadavoudi reported no significant difference in POST incidence with different methods of lignocaine application [10]. Hara et al. also found that lignocaine spray offered no significant advantage over placebo in reducing throat discomfort [8]. These differences could be attributed to variations in study design, patient populations, intubation techniques, or types and concentrations of lignocaine used. Importantly, our study specifically targeted the application of lignocaine jelly to the distal portion and cuff of the ETT, which may have provided more effective and sustained mucosal anesthesia.

No adverse effects or complications were observed in patients receiving lignocaine jelly in our study, aligning with previous reports that support the safety of topical lignocaine in airway management [9]. Additionally, the use of lignocaine did not significantly affect the incidence of cough or hoarseness, suggesting its primary benefit lies in reducing mucosal irritation responsible for sore throat rather than deeper laryngeal inflammation. Overall, our findings strongly support the routine use of 2% lignocaine jelly for ETT lubrication to minimize patient discomfort in the postoperative period.

CONCLUSION

The application of 2% lignocaine jelly to the endotracheal tube significantly decreases both the incidence and severity of postoperative sore throat, without impacting the occurrence of cough or hoarseness. As a simple and cost-effective intervention, it offers a practical means to improve postoperative patient comfort and warrants consideration as a routine component of anesthetic practice.

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