VOLUME - 14, ISSUE - 06, JUNE - 2025 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper | Medical Science

COMPARISON OF OROPHARYNGEAL PACK SOAKED IN LIGNOCAINE WITH DEXAMETHHASONE AND MAGNESIUM SULPHATE IN POST OPERATIVE SORE THROAT IN PATIENTS UNDERGOING NASAL SURGERIES

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ABSTRACT

Background: Postoperative sore throat (POST), cough, and hoarseness are common complications following general anaesthesia with endotracheal intubation, particularly in nasal surgeries where pharyngeal packs are used. This study aimed to compare the efficacy of oropharyngeal packs soaked in Lignocaine with Dexamethasone versus Magnesium Sulphate in minimizing these symptoms. **Results** Baseline demographic and hemodynamic parameters were comparable between groups ($p > 0.05$). At 0 hours, significantly more patients in Group A (83.8%) reported no sore throat compared to Group B (12.1%) ($p < 0.05$). Although Group A showed better cough relief at early time points, the difference in cough and hoarseness scores across all time intervals remained statistically insignificant ($p > 0.05$). By 24 hours, both groups exhibited comparable outcomes for sore throat, cough, and hoarseness. **Conclusion:** Oropharyngeal packs soaked in Lignocaine with Dexamethasone provide superior immediate postoperative relief from sore throat and cough compared to Magnesium Sulphate. However, both agents are equally effective in minimizing symptoms at 24 hours post-extubation. Given its favorable early symptom control and safety profile, Lignocaine with Dexamethasone may be preferred for patients prone to airway irritation, while Magnesium Sulphate remains a safe and effective alternative.

KEYWORDS : Postoperative sore throat, Lignocaine, Dexamethasone, Magnesium Sulphate, oropharyngeal pack, nasal surgery, general anaesthesia, airway complications.

INTRODUCTION

Postoperative sore throat (POST) is a common complication after general anaesthesia with endotracheal intubation, affecting patient satisfaction and recovery [1-4]. POST incidence is high, reportedly up to 90% [5-10], with associated hoarseness in 4-43% of cases [11,12].

POST development is multifactorial, influenced by endotracheal tube characteristics, intubation duration, anaesthetic technique, and suction pressures [3]. Airway manipulation, especially in oral or nasal surgeries requiring pharyngeal packs, increases this risk. Symptoms like dysphagia, sore throat, and hoarseness can impact recovery, particularly within 48 hours postoperatively, with sore throat being most frequent [3, 5-10].

Pharyngeal packs, standard in oral and ENT surgeries to prevent aspiration and contamination, are essential for a clear surgical field but also increase POST incidence. Thus, strategies to minimize pack-related discomfort without compromising their function are crucial.

Local anaesthetics help prevent POST via mucosal analgesia. Studies have evaluated agents like topical lignocaine with dexamethasone (local anaesthetic and anti-inflammatory) [1] and magnesium sulphate (anti-inflammatory and membrane-stabilizing) [2] to reduce POST and related symptoms.

This study aims to compare the efficacy of oropharyngeal packs soaked in lignocaine with dexamethasone versus magnesium sulphate in reducing POST, hoarseness, and throat irritation after nasal surgeries. Identifying an optimal strategy is crucial for patient comfort, recovery, and satisfaction in these airway-involving procedures.

MATERIAL AND METHODS

After approval from the Institutional Ethical Committee, this analytical cross-sectional study was conducted in the Department of Anaesthesiology, Sri Aurobindo Medical College & PG Institute, Indore (M.P.), over a period of 18 months from June 2023 to November 2024. A total of 198 patients aged 20 to 50 years, belonging to ASA physical status I and II, and scheduled for elective nasal surgeries under general anaesthesia and satisfying the criteria of inclusion were enrolled. All the recruited patients were explained about the study and written consent was taken from every patient dually signed by him/her.

Inclusion Criteria

Patients aged 20 to 50 years, belonging to ASA physical status I and II, and scheduled for elective nasal surgeries under general anaesthesia were included in the study. Patients with no prior significant laryngotracheal disease were considered eligible.

Exclusion Criteria

Non-Consenting patients, Patients classified as ASA III or IV, known allergies to study medications, or those with active cardiovascular or central nervous system diseases.

Patients were randomized into two groups using the chit method:

- **Group A (Lignocaine + Dexamethasone Group):** Patients received an oropharyngeal pack soaked with 5 ml of 2% lignocaine mixed with 2 ml (8 mg) dexamethasone.
- **Group B (Magnesium Sulphate Group):** Patients received an oropharyngeal pack soaked with magnesium sulphate 20 mg/kg, diluted with normal saline to a total volume of 7 ml.

Randomization details were recorded on a pre-structured proforma.

Anaesthetic Technique

All patients were kept nil per oral for at least 8 hours before surgery and were administered 500 ml of Ringer lactate intravenously during the fasting period. Upon arrival in the operating room, standard monitoring was applied, including ECG, pulse oximetry, and non-invasive blood pressure.

Premedication included intravenous glycopyrrolate 0.2 mg, midazolam 1 mg, and fentanyl 2 μg/kg. Preoxygenation with 100% oxygen was followed by induction with intravenous propofol 2 mg/kg and muscle relaxation with atracurium 0.5 mg/kg. Following intubation with a cuffed endotracheal tube, the assigned oropharyngeal pack was inserted using Magill's forceps.

At the end of surgery, the oropharyngeal pack was removed under direct vision, and gentle suction was performed.

Outcome Assessment

Vital signs were recorded 5 minutes before extubation and at 5 and 15 minutes post-extubation. Patients were evaluated at 30 minutes, 2 hours, 12 hours, and 24 hours postoperatively for the presence of sore throat, hoarseness, and throat irritation.

An observer blinded to group allocation assessed postoperative sore throat using the Verbal Analogue Scale (VAS):

0 – No sore throat
1 – Mild sore throat
2 – Moderate sore throat
3 – Severe sore throat

Data were collected using a pre-designed, pre-structured proforma and entered into a master chart for analysis.

Statistical Analysis

The collected data were compiled in Microsoft Excel 2020 and statistically analyzed using SPSS 25.0 version software. Descriptive statistics were expressed as mean and standard deviation (SD) for continuous variables and as frequencies and percentages for categorical variables. Pie charts and bar diagrams were used for demographic and categorical data representation. The independent t-test or Mann–Whitney U test was applied for comparison between two groups. Repeated measures ANOVA or Friedman test was used for comparisons across multiple postoperative time points, with appropriate post hoc analysis. A p-value < 0.05 was considered statistically significant.

RESULTS

A total of 198 patients were enrolled in the study, equally randomized into two groups of 99 each. Group A received an oropharyngeal pack soaked in Lignocaine with Dexamethasone, while Group B received a pack soaked in Magnesium Sulphate. Baseline demographic characteristics were well matched between the groups, indicating effective randomization and group comparability.

Table 1: Demographic Characteristics (LD vs $MgSO_4$ Groups)

Parameter	Group A (Lignocaine + Dexamethasone)	Group B (Magnesium Sulphate)	p-value
Mean Age (years)	41.5 ± 12.7	41.8 ± 12.4	0.722 (NS)
Gender (M/F)	52 / 47	50 / 49	0.656 (NS)
ASA Grade I	74 (74.7%)	71 (71.7%)	0.602 (NS)
ASA Grade II	25 (25.3%)	28 (28.3%)	

For Hemodynamic Parameters, Systolic blood pressure (SBP), diastolic blood pressure (DBP), pulse rate (PR), and respiratory rate (RR) were stable and comparable between the groups before and after extubation. No significant hemodynamic variations were observed ($p > 0.05$), suggesting that both interventions were hemodynamically safe. [Table 2]

In the present study involving 198 patients, postoperative sore throat (POST) scores were assessed at 0, 4, 6, and 24 hours. At 0 hours post-extubation, significantly more patients in the Dexamethasone group (83.8%) had a POST score of 0 compared to the Magnesium Sulphate group (12.1%), with the difference being statistically significant ($p < 0.05$). At 4, 6, and 24 hours, although a higher percentage of patients continued to show a POST score of 0 in both groups, the differences were not statistically significant ($p > 0.05$). Overall, Dexamethasone demonstrated superior immediate postoperative sore throat relief, while both groups achieved comparable outcomes over time. [Table 3]

Table 2: Hemodynamic Parameters At Key Time Points

Time Point	SBP (mmHg)		DBP (mmHg)		PR (bpm)		RR (breaths/min)	
	Group A (LD)	Group B ($MgSO_4$)	Group A (LD)	Group B ($MgSO_4$)	Group A (LD)	Group B ($MgSO_4$)	Group A (LD)	Group B ($MgSO_4$)
Before Extubation	126.8 ±12.0	127.5 ± 11.6	86.1 ± 10.4	85.5 ± 9.9	91.6 ±11.7	92.2± 12.1	13.8 ± 2.3	13.9 ± 2.4
15 min After Extubation	108.5 ±13.2	110.0 ± 12.5	70.8 ± 8.6	72.3 ± 8.1	79.1 ± 9.5	80.2 ± 9.0	17.6 ± 2.3	17.5 ± 2.2

Table 3: POST Score Comparison (LD vs $MgSO_4$)

Time post-extubation	POST Score 0		POST Score 1		POST Score 2		p-value
	Group A (LD)	Group B ($MgSO_4$)	Group A (LD)	Group B ($MgSO_4$)	Group A (LD)	Group B ($MgSO_4$)	
0 hour	83 (83.8%)	12 (12.1%)	4 (4.0%)	97 (97.9%)	2 (2.0%)	0 (0%)	<0.05 (Significant)
4 hours	83 (83.8%)	14 (14.1%)	2 (2.0%)	85 (85.8%)	13 (13.1%)	1 (1.0%)	>0.05 (NS)
6 hours	85 (85.8%)	12 (12.1%)	2 (2.0%)	75 (75.8%)	20 (20.2%)	4 (4.0%)	>0.05 (NS)
24 hours	94 (94.9%)	3 (3.0%)	2 (2.0%)	88 (88.9%)	5 (5.0%)	6 (6.1%)	>0.05 (NS)

At 0 hours post-extubation, 77.8% of patients in the Dexamethasone group had a cough score of 0 compared to only 14.1% in the Magnesium Sulphate group, although the difference was not statistically significant ($p > 0.05$). At 4 hours, the cough-free rates improved to 81.8% in the Dexamethasone group and 76.8% in the Magnesium Sulphate group, with no significant difference. By 6 and 24 hours, the majority of patients in both groups maintained a cough score of 0, and the differences remained statistically insignificant. Thus, while the Dexamethasone group showed a higher percentage of patients with no cough at all time points, the differences between groups were not statistically significant [Table 4]

Table 4: Cough Score Comparison (LD vs $MgSO_4$)

Time Post-extubation	Cough Score 0		Cough Score 1		Cough Score 2		p-value
	Group A (LD)	Group B ($MgSO_4$)	Group A (LD)	Group B ($MgSO_4$)	Group A (LD)	Group B ($MgSO_4$)	
0 hour	77 (77.8%)	14 (14.1%)	8 (8.1%)	76 (76.8%)	12 (12.1%)	11 (11.1%)	>0.05 (NS)
4 hours	81 (81.8%)	16 (16.2%)	2 (2.0%)	76 (76.8%)	21 (21.2%)	2 (2.0%)	>0.05 (NS)

6 hours	95 (95.9%)	4 (4.0%)	0 (0%)	97 (97.9%)	2 (2.0%)	0 (0%)	>0.05 (NS)
24 hours	89 (89.9%)	8 (8.1%)	2 (2.0%)	86 (86.9%)	11 (11.1%)	2 (2.0%)	>0.05 (NS)

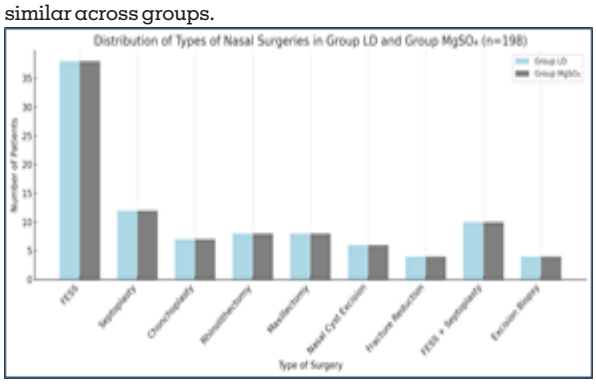
At 0 hours post-extubation, 87.8% of patients in the Dexamethasone group and 89.9% in the Magnesium Sulphate group had no hoarseness, with no statistically significant difference ($p > 0.05$). Similar trends were observed at 4, 6, and 24 hours, where the majority of patients in both groups remained hoarseness-free and differences were not significant. Overall, both Dexamethasone and Magnesium Sulphate groups were equally effective in minimizing postoperative hoarseness across all time points.

Table 5: Hoarseness Score Comparison (LD vs $MgSO_4$)

Time Post-extubation	Hoarseness Score		Hoarseness Score 1		Hoarseness Score 2		p-value
	Group A (LD)	Group B ($MgSO_4$)	Group A (LD)	Group B ($MgSO_4$)	Group A (LD)	Group B ($MgSO_4$)	
0 hour	87 (87.8%)	12 (12.1%)	0 (0%)	89 (89.9%)	10 (10.1%)	0 (0%)	>0.05 (NS)
4 hours	89 (89.9%)	8 (8.1%)	2 (2.0%)	97 (97.9%)	0 (0%)	2 (2.0%)	>0.05 (NS)
6 hours	93 (93.9%)	6 (6.1%)	0 (0%)	91 (91.9%)	8 (8.1%)	0 (0%)	>0.05 (NS)
24 hours	91 (91.9%)	8 (8.1%)	0 (0%)	97 (97.9%)	2 (2.0%)	0 (0%)	>0.05 (NS)

Surgical Procedures

The majority of patients underwent Functional Endoscopic Sinus Surgery (FESS) (38.5%), followed by septoplasty and combined procedures. The distribution of types of surgery was similar across groups.



Graph 1. Distribution Of Types Of Nasal Surgeries Among Both Study Groups

DISCUSSION

This study compared oropharyngeal packs soaked in Lignocaine with Dexamethasone (LD) versus Magnesium Sulphate ($MgSO_4$) for reducing postoperative sore throat (POST), cough, and hoarseness in 198 nasal surgery patients. The two groups (99 each) were demographically comparable (age, gender, ASA grade; $p > 0.05$ for all), validating randomization and minimizing confounders [Table 1].

Both interventions were hemodynamically safe, with stable and comparable parameters (systolic/diastolic blood pressure, pulse rate, respiratory rate; $p > 0.05$) before and after extubation [Table 2]. These findings align with previous research by Agrawal M et al. (2021) [1], Tabari et al. (2013) [13], Kunwar MS et al. (2023) [2], Mostafa H.R. et al. (2018) [14], and Gupta et al. [15], confirming the hemodynamic safety of both agents.

For POST [Table 3], the LD group demonstrated significantly superior immediate relief at 0 hours post-extubation (83.8% no sore throat vs. 12.1% in $MgSO_4$ group, $p < 0.05$), attributed to the synergistic local anesthetic and anti-inflammatory effects of LD. This immediate benefit concurs with Kunwar MS et al. [2]. However, by 4 to 24 hours, POST scores converged with no significant differences, indicating both regimens were effective over time, consistent with findings from Lee et al. [16] (dexamethasone) and Borazan et al. [17] (magnesium).

Regarding cough scores [Table 4], the LD group showed a numerical advantage at all time points (e.g., 77.8% cough-free vs. 14.1% at 0 hours). However, these differences were not statistically significant. This trend, without statistical significance, mirrors observations by Kunwar MS et al. [2] and Ashwini H et al. [18].

For hoarseness [Table 5], both Lignocaine with Dexamethasone and Magnesium Sulphate were equally effective, with no statistically significant differences between groups at any interval. This aligns with Sharma S et al. [19] and Kunwar MS et al. [2]. Dexamethasone's efficacy is likely via anti-inflammatory action, while magnesium sulphate may offer mucosal protection and anti-inflammatory effects.

The similar distribution of surgical procedures (mainly FESS) across groups [Graph 1] minimized procedural bias.

In summary, consistent with Kunwar MS et al. [2], Lignocaine with Dexamethasone provided superior immediate relief from POST and showed a favorable trend for cough. By 24 hours, Magnesium Sulphate achieved comparable outcomes for sore throat, cough, and hoarseness. Both interventions were hemodynamically stable, well-tolerated, and showed similar efficacy in minimizing hoarseness.

CONCLUSION

This study demonstrates that the use of oropharyngeal packs soaked in Lignocaine with Dexamethasone is significantly more effective than Magnesium Sulphate in providing immediate postoperative relief from sore throat and cough following nasal surgeries, particularly in the early hours after extubation. However, by 24 hours postoperatively, both groups achieved comparable outcomes in terms of sore throat, cough, and hoarseness, indicating that Magnesium Sulphate remains a viable alternative. Both interventions were hemodynamically stable and well-tolerated. Therefore, Lignocaine with Dexamethasone may be preferred for early postoperative comfort, especially in patients at higher risk for airway irritation, while Magnesium Sulphate can be considered an effective and safe alternative for broader clinical use.

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