



**LARYNGEAL MASK LUBRICATION AND PHARYNGEAL MORBIDITIES
COMPARISON OF TOPICAL APPLICATION OF SALINE, LIGNOCAINE,
BETAMETHASONE GEL**

Dr. Neethu Rebecca Isaac

Consultant Anaesthetist, Mar Baseliouse Medical Mission, Kothamangalam, Kerala

Dr. Bindu George*

Professor. Department of Anaesthesia, St John’s National Academy of Health Sciences, Bangalore *Corresponding Author

Dr. Manjula Devi

Associate Professor. Department of Anaesthesia, St John’s National Academy of Health Sciences, Bangalore

ABSTRACT

Sore throat, cough and hoarseness of voice are common in the post operative period following classic LMA insertion . This prospective randomized study is aimed at evaluating the efficacy of lubricating agents like 0.9% saline, 2% lignocaine and 0.05% betamethasone gel in reducing post operative pharyngeal morbidities.

METHODS ASA I-II patients undergoing short procedures under general anaesthesia with LMA were randomly divided into 3 equal groups ;saline, lignocaine and betamethasone gel groups. The patients will be assessed for post operative pharyngeal morbidities at 1 and 24 hours.

RESULTS The incidence of postoperative pharyngeal morbidities was 13.33%, among which sore throat was higher (10%). Among the three groups, saline showed higher incidence for postoperative sore throat (20%) . No single lubricant was associated with statistically significant lower incidence of complaints. Comparing the ease of insertion of LMA, more than 2 attempt was more with saline(30%)

CONCLUSION No single lubricant was associated with statistically significant lower incidence of post operative complaints.

KEYWORDS : Laryngeal mask, lignocaine gel ,betamethasone gel

INTRODUCTION

LMAs are widely used in day care surgeries as it is less invasive. LMA insertion can lead to post operative sore throat (POST), cough and hoarseness in the post-operative period. This causes significant patient discomfort and dissatisfaction. Incidence of sore throat following LMA insertion varies from 5.8% to 34%. The wide variation is due to the differences in skills and techniques among individual anesthetists¹. Many of the previous studies have compared the efficacy of lubricating agents in reducing the post-operative sore throat and hoarseness following endotracheal intubation. This prospective, randomized comparative study was aimed at evaluating the efficacy of lubricating agents like 0.9% saline, 2% lignocaine and 0.05% betamethasone gel in reducing post-operative sore throat, cough and hoarseness of voice following LMA insertion in day care surgeries. Secondary objective is to compare the ease of insertion following lubrication with these agents.

MATERIALS AND METHODS

After obtaining Institutional Ethical Committee approval, written, informed consent from 90 patients of either sex, aged between 18 and 60 years, belonging to ASA physical status class I or II ,subjects were divided randomly in to three groups using computer generated random tables. Patients in group1(n=30) had 2.5 ml of saline applied on the cuff as a thin film,group2(n=30) had 2.5 ml of 2% lignocaine jelly and group 3 had 0.05% of Beta methasone gel as a thin film on posterior surface of mask under sterile precautions. Patients posted for minor surgical procedures (likely to last within an hour) under general anaesthesia with laryngeal mask airway were included. Patients undergoing surgeries of the oral cavity and pharynx, with anticipated difficult airway, needed nasogastric tube , throat packs, at risk of aspiration,ASA 3&4 and on steroid therapy were excluded from the study.

After connecting to standard monitors, adequate intravenous access, and preoxygenation, patients were induced with fentanyl 1–2 mcg/kg followed by propofol 2–3mg/kg given over 30 seconds. LMA was lubricated either with saline, or 2% lignocaine gel or 0.05% betamethasone gel as a thin film under aseptic precautions, prior to insertion.

The LMA was inserted with the cuff deflated and the rim facing posteriorly following loss of eyelash reflex and jaw relaxation. An

adequate size classic LMA was inserted by an anaesthetist who has was performed more than 100 LMA insertions. The cuff was inflated with air to prevent a cuff leak and to maintain cuff pressure within 60mm Hg. The number of attempts required for the placement of LMA was noted. Three attempts were allowed to place the LMA successfully before insertion was considered a failure. An insertion attempt is defined as placement of the LMA in the mouth and withdrawal of the device from the mouth. LMA position confirmed by chest wall movement and capnography. Anaesthesia was maintained with O2, N2O (66%) and 1-1.5% Isoflurane. LMA was removed when the patient was able to obey commands. Problems occurring during placement, maintenance and emergence were documented. All patients were given Tab.Paracetamol 1 g and Tab. Tramadol 50mg SOS as post-operative analgesics.

PATIENT ASSESSMENT: Patients were interviewed 1 and 24 hours after the surgery by a second anaesthetist blinded to the type of lubricant used. The patients were assessed for post-operative pharyngeal morbidities using a structured scoring system (Table 1).⁴ Telephonic enquiry were done to check the above mentioned complications after 24 hrs.

TABLE 1⁴

	SORE THROAT
0	No sore throat (at any time since the operation (until now))
1	Minimal sore throat (less severe than with a cold, occurring at any time since the operation)
2	Moderate sore throat (similar to that noted with a cold, occurring at any time since the operation)
3	Severe sore throat (more severe than noted with a cold, occurring at any time since your operation)
	COUGH
0	No cough
1	Mild (less than what is seen in common cold)
2	Moderate (like what is seen in common cold)
3	Severe (more than what is seen in common cold)
	HOARSENESS
0	No hoarseness

1	Mild (no hoarseness in the time of interview but had it previously)
2	Moderate (only is felt by the patient)
3	Severe (recognizable in the time of interview)

STATISTICAL ANALYSIS : Results were analyzed using percentages, proportions and chi-square test. Descriptive statistics reported using number and percentages for categorical variables; mean and standard deviation for continuous variables. The proportion of patients with postoperative morbidity were reported for each group. This proportion was compared using Chi-square test at 1 hr and 24 hrs post operatively. Probability less than 5% was considered as statistically significant. Analysis was carried out using SPSS software.

RESULTS

The association of sore throat, cough and hoarseness in three groups when classic LMA was lubricated with Saline, Lignocaine and Betamethasone gel were studied. . Number of attempts for proper positioning of LMA also compared between the groups. The demographic characteristics like gender, BMI, ASA, were comparable for all the three groups Duration of surgery was 30-45 minutes which was comparable between three groups.

Association of sore throat at 1 hour, 24 hours with the groups

Incidence of sore throat at 1 hour, 24 hours were studied within the three groups. Also, the association of sore throat (sum of sore throat at 1 hour with sore throat at 24 hours) with the groups were tested.

The frequency distribution of sore throat at 1 hour, at 24 hours and total number of patients with sore throat in each of the study groups are given below.

TABLE 1: Frequency distribution of sore throat

		Group			Total
		Saline	Lignocaine	Betamethasone	
Sore Throat @ 1 hr	Yes	6	3	2	11
	No	24	27	28	79
Total		30	30	30	90
Sore Throat @ 24 hr	Yes	4	3	1	8
	No	26	27	29	82
Total		30	30	30	90

The number of patients with sore throat at 24 hours was lesser than the number of patients with sore throat at 1 hour.

TABLE 2

	Pearson Chi-Square Value	df	Asymp. Sig. (2-sided)
Sore Throat @ 1 hr	2.693	2	0.260
Sore Throat @ 24 hr	1.921	2	0.383
Sore Throat	2.443	2	0.295

Chi-square test was used to test the null hypothesis that there was no statistically significant association of sore throat at 1 hour, at 24 hours and total sore throat with the groups

Association of cough at 1 hour, 24 hours

Association of cough at 1 hour, 24 hours with the study groups is studied.

The frequency distribution of cough at 1 hour, at 24 hours and total cough in each of the study groups is given below.

TABLE 3 Frequency distribution of Cough

		Group			Total
		Saline	Lignocaine	Betamethasone	
Cough @ 1 hr	Yes	1	0	1	2
	No	29	30	29	88

Total		30	30	30	90
Cough @ 24 hr	Yes	0	0	0	0
	No	30	30	30	90
Total		30	30	30	90
Cough	Yes	1	0	1	2
	No	29	30	29	88
Total		30	30	30	90

The number of patients with cough at 24 hours was lesser than the number of patients with cough at 1 hour. Also it can be observed that none of the patients had cough at 24 hours.

The frequency distribution of hoarseness at 1 hour, at 24 hours and total hoarseness in each of the study groups is given below.

TABLE 4: Frequency distribution of hoarseness

		Group			Total
		Saline	Lignocaine	Betamethasone	
Hoarseness @ 1 hr	Yes	3	0	0	3
	No	27	30	30	87
Total		30	30	30	90
Hoarseness @ 24 hr	Yes	1	1	0	2
	No	29	29	30	88
Total		30	30	30	90
Hoarseness	Yes	4	1	0	5
	No	26	29	30	85
Total		30	30	30	90

Hoarseness at 1 hour and 24 hours and total hoarseness with the groups.

TABLE 5: Chi-square test

	Pearson Chi-Square Value	df	Asymp. Sig. (2-sided)
Hoarseness @ 1 hr	6.207	2	0.045
Hoarseness @ 24 hr	1.023	2	0.600
Hoarseness	5.506	2	0.064

From the above table it can be concluded that there is statistically significant association hoarseness at 1 hour (p-value = .045) with the group. But there is no statistically significant association of hoarseness at 24 hour and within the groups.

Association of number of attempts among the groups

Here it is tested if there is any statistically significant association among the number of attempts 1, 2 and > 2 among the study groups. Chi-square test for association is used to test this hypothesis. The frequency distribution of number of attempts is given below.

TABLE 6: Frequency distribution of number of attempts

Number of attempts	Group			Total
	Saline	Lignocaine	Betamethasone	
1	15	27	24	66
2	13	3	6	22
> 2	2	0	0	2
Total	30	30	30	90

TABLE 7: Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.727	4	0.005

From the above table it can be concluded that there is statistically significant association of the number of attempts - 1, 2 and > 2 among the study group, with saline group having significantly more number of attempts

DISCUSSION

Incidence of sore throat following LMA insertion varies between 5 and 34%¹. However sore throat following LMA insertion is less severe

compared to endotracheal intubation¹ Causes of sore throat depends on the number of attempts, pressure applied during insertion, the lubricating gel used to ease the insertion and cuff pressure.² In the present study patients were divided in to three groups based on the lubricating gels that were used before inserting LMA, including 0.9% saline, 2% lignocaine and 0.05% Bmethasone gel. Incidence of sore throat was assessed in the immediate postop and 24 hours after the surgery. There were no significant differences between three groups with regards to demographic details. In our study number of patients with sore throat was more in the first hour compared to 24 hours after the procedure. It was more in saline group (20%) compared to lignocaine (10%) and Betamethasone group (6%). However incidence of sore throat was not statistically significant among three groups at 1 hour ($p=0.260$) and at 24 hours ($p=0.383$). Keller et al did a study compared Saline and Lignocaine gel for occurrence of POST while using classic LMA. The incidence of sore throat was found to be similar in both groups. These results were in agreement with our study. But Keller et al concluded that there is no role for lignocaine in controlling post operative sore throat¹. However Tanaka et al in a systematic review concluded that topical and systemic lignocaine is useful for preventing POST.³

One of the reasons for POST is inflammation of the oropharynx. As steroids are effective anti inflammatory agents, topical steroids can be considered for POST. Thapal et al compared Betamethasone and Lignocaine gel for lubrication of ET tube and found Betamethasone to be effective in reducing POST.⁵ In our study though the occurrence of POST was not statistically significant in three groups the incidence was significantly less in B methasone group.

In our study there were no significant difference in the occurrence of cough among three groups. But there was a statistically significant association of hoarseness among three groups at 1st hour which disappeared at 24 hours. Saline group had significant hoarseness in the first hour. In contrast to our study Keller et al found that lignocaine gel has no advantages over saline may lead to increase in post operative complications other than sore throat.¹ LMA was inserted in the first attempt in sixty six patients (73%) 22 patients required a second attempt (24%) and 2 patients required more than 2 attempts. The 2 patients that needed more than 2 were from saline group. There were no failed placements after 3 attempts in all three groups. Nott et al conducted a study in which they found POST more frequently happened in patients who needed multiple attempts to insert LMA. This is because of direct trauma caused to the oropharyngeal structures.⁷

CONCLUSION

Lubricating the classic LMA with saline, lignocaine, Betamethasone gel did not show any statistically significant difference in the incidence of sore throat, cough and hoarseness in the post operative period for elective day stay surgeries. But the incidence was less when Beta methasone was applied as lubricant. Further studies involving a larger number of patients are required to prove that Betamethasone gel is effective in preventing post operative sore throat following classic LMA insertion.

REFERENCES

1. Keller C, Sparr HJ, Brimacombe JR. Laryngeal mask lubrication. A comparative study of saline versus 2% lignocaine gel with cuff pressure Control. *Anaesthesia*. 1997; Jun;52(6):592-7.
2. McHardy FE, Chung F. Postoperative sore throat; cause, prevention and treatment. *Anaesthesia* 1999;54:444-53
3. Tanaka Y, Nakayama T, Nishimori M Lidocaine for preventing post operative sore throat, *Cochrane Database System Rev* 2009 July 8;(3):CD004081
4. P. A. Sumathi*, T. Shenoy, M. Ambareesha and H. M. Krishna. Controlled comparison between betamethasone gel and lidocaine jelly applied over tracheal tube to reduce postoperative sore throat, cough, and hoarseness of voice. *British Journal of Anaesthesia* 2008;100(2):215-18
5. Vanipuram Raghava Chari, Arnab Paul; Comparative study to analyse the incidence of sore throat, cough and hoarseness of voice after general anaesthesia with the use of topical benzydamine and 2% lignocaine gel with placebo, *Medical Journal Of Patil University* Jan, 2016, vol 9, issue 1
6. Parineeta Thapa, Ravi Ram, Gautam Ratna; Betamethasone gel compared with lidocaine jelly to reduce tracheal tube related post operative airway symptoms; a randomised controlled trial; *BMC Res Notes*. 2017;10;361, PMID:28764777
7. M R Nott, P D Noble, Mittal Parmar: Laryngeal incidence of sore throat with the