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Original Research Article

Comparison of the efficacy of intravenous dexamethasone, betamethasone gel and lignocaine jelly in reducing postoperative sore throat among prone-positioned patients

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Abstract

Background and Objectives: Post-operative sore throat (POST), post extubation cough (PEC) and hoarseness of voice (HOV) are common post operative complications causing patient dissatisfaction and morbidity. The etiology of POST is multifactorial that includes patient positioning, as shifting from supine to prone cause displacement of the endotracheal tube (ETT). This study aimed to compare the efficacy to reduce POST, PEC and HOV between intravenous dexamethasone, betamethasone gel and lignocaine jelly among prone positioned patients.

Methodology: Ninety patients aged between 18-60 years, American society of anaesthesiologists (ASA) class I and II undergoing elective spine surgeries in prone position under general anaesthesia were randomly assigned into three groups of 30 each. ETT was lubricated with 0.05% betamethasone gel in Group-B, 2% lignocaine jelly in Group-L and intravenously 0.2mg/kg dexamethasone was given in Group-D. The occurrence of postoperative sore throat, post-extubation cough, and hoarseness of voice was evaluated at 1, 6, 12, and 24 hours after surgery.

Results: Among Group B, D and L the incidence of POST was 0%, 26.7% and 50% at 12 hours respectively and 0%, 20% and 60% at 24 hours respectively. Betamethasone had statistically significant lowest POST incidence (B vs D, p=0.01 at 12 hours; 0.03 at 24 hours; B vs L, p<0.001 at 12 and 24 hours). Among Group B, D and L the incidence of PEC was 16.7%, 50% and 63.3% at 6 hours respectively; 3.3%, 36.7% and 53.3% at 12 hours respectively and 3.3%, 26.7% and 40% at 24 hours respectively. There was statistically significant lowest PEC incidence with betamethasone (p<0.05). The HOV incidence at 24 hours was lower with betamethasone compared to lignocaine (p=0.002).

Conclusion: Betamethasone gel effectively reduces POST, PEC, and HOV in patients undergoing prone positioning during surgery when compared to intravenous dexamethasone and lignocaine jelly.

Keywords: Betamethasone; Lignocaine; Dexamethasone; Post operative sore throat; Post extubation cough; Hoarseness of voice.

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1. Introduction

Recent studies have reported post-operative sore throat (POST) incidences of up to 62% following general anaesthesia (GA) which makes it to be seriously considered as a problem to be resolved.[1] The reported incidence varies widely 0-22% in non-intubated patients and 6-100% in intubated patients. Although a minor complication, POST eventually leads to patient discomfort and morbidity. It can exaggerate post extubation cough (PEC) which is a reflex cough response due to airway irritation to clear it. Incidence of PEC is around 40-76%.[2] Hoarseness of voice (HOV), also known as dysphonia is an abnormal change in the voice due to various factors affecting the vocal cords and larynx. Post extubation HOV incidence is 4-42%.[3]

POST, PEC or HOV is more common when endotracheal tube (ETT) is used for airway control in comparison with laryngeal mask airway (LMA) or face mask. POST is attributed to the mucosal injury, local irritation, inflammation and edema associated with the

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airway instrumentation or due to the pressure exerted on tracheal mucosa due to cuff inflation.[4]

Numerous non-pharmacological and pharmacological measures have been used for attenuating POST with variable success. Non-pharmacological methods like smaller sized ETT thoroughly lubricated, careful airway handling and suctioning, intubation after complete relaxation, maintaining normal cuff pressures and careful, slow extubation can decrease POST.[4]

Pharmacological methods like use of corticosteroids acts by decreasing gene transcription or directly inhibiting various inflammation mediators. Dexamethasone sodium phosphate is a highly selective glucocorticoid which mediates its anti-inflammatory action when given intravenous (IV).[5,6] Betamethasone gel is a long acting water-soluble glucocorticoid. It acts as a lubricating agent with additional anti-inflammatory effects at the site of mucosal insult. It is often used topically for oral lesions.[7,8]

Lignocaine is an amide, sodium channel blocker, the most commonly used local anaesthetic drug. The local anaesthetic jelly's role in the prevention of POST is debatable as it does not possess extensive anti-inflammatory action like corticosteroids. Although lidocaine is used for airway anaesthesia, its use for postoperative airway symptoms has shown variable results.[9,10] The incidence of POST tends to be higher in patients positioned prone during surgery. This may be attributed to the use of wire-reinforced endotracheal tubes (ETTs) with larger outer diameters, the curvature of which is maintained by a rigid stylet during intubation. Additionally, changes in patient position during the perioperative period can affect ETT cuff pressures, potentially increasing the risk of ETT displacement and exacerbating airway inflammation.[11]

Limited studies have explored the impact of pharmacological methods on POST in prone-positioned surgeries, particularly regarding its effects on POST, hoarseness of voice (HOV), and postoperative cough (PEC). Therefore, this study aimed to compare the efficacy of betamethasone gel (0.05%), lignocaine jelly (0.2%), and intravenous (IV) dexamethasone (0.2 mg/kg) in reducing the incidence of POST, HOV, and PEC in patients undergoing elective spine surgeries under general anesthesia.

We hypothesized that betamethasone gel would be more effective than IV dexamethasone or lignocaine jelly in reducing postoperative airway symptoms following extubation. The primary objective of this study was to compare the efficacy of IV dexamethasone (0.2 mg/kg), betamethasone gel (0.05%), and lignocaine jelly (2%) in reducing the incidence of POST and PEC during the postoperative period at 1, 6, 12, and 24 hours. The secondary objective was to compare the incidence of HOV among the three groups at the same time intervals.

2. Material and Methods

This prospective, randomized, double-blinded, comparative study was conducted in 90 subjects after obtaining ethical committee clearance (IEC no - ECR/134/Inst/KA/2013/R-19) as well as informed consent from all patients.

Inclusion criteria for the study included patients of either sex, aged between 18 and 60 years, classified as American Society of Anaesthesiologists (ASA) grade I and II, and scheduled for elective spine surgery in the prone position under general anesthesia (GA). Additionally, patients had a Mallampati grade of 1 or 2. Exclusion criteria included anticipated difficult airway, patients requiring more than two attempts at intubation, patients with a nasogastric (NG) tube or throat packs, those with upper respiratory tract infections, and those receiving steroid therapy.

The study population was divided into three groups, each consisting of 30 subjects: Group D (dexamethasone), Group B (betamethasone), and Group L (lignocaine). On the day prior to surgery, each patient underwent a thorough pre-anesthetic evaluation and basic investigations. Patients were kept nil per oral (NPO) for solids for 6 hours before surgery. Upon arrival in the operating room, the patients were connected to multi-parameter monitors to record electrocardiogram, mean arterial pressure, and oxygen saturation. Baseline vital signs were recorded, and peripheral intravenous access was established, followed by the administration of crystalloids.

Patients were preoxygenated with 100% oxygen for 3 minutes and were premedicated with IV glycopyrrolate (0.01 mg/kg) and IV fentanyl (1.5 mcg/kg). General anesthesia was induced with IV propofol (2 mg/kg) and IV vecuronium bromide (0.1 mg/kg). After 3 minutes of bag and mask ventilation, an oral endotracheal tube (ETT) was inserted: size 8.5 mm for males and 7.5 mm for females. In Group D, patients received IV dexamethasone (0.2 mg/kg) before the induction of anesthesia. In Groups B and L, the ETT was lubricated with 2.5 ml of 0.05% betamethasone gel or 2.5 ml of 2% lignocaine jelly from the distal end of the cuff to a distance of 15 cm from the tip. The lubricant was measured using a syringe and applied under sterile conditions.

All patients were blinded to group allocation, and intubation was performed by a trained anesthesiology resident, also blinded to group allocation. The position of the ETT was confirmed using capnography, and the cuff was inflated with room air, secured, and connected to a closed circuit for ventilation. After intubation, the patients were turned from the supine to the prone position, and

mechanical ventilation was continued with the closed circuit. A horseshoe-shaped jelly pad was used to support the patient's head, and padding was applied to all pressure points. General anesthesia was maintained with a mixture of 60% nitrous oxide (N2O) and 40% oxygen, 0.2 to 1% isoflurane, and intermittent doses of IV vecuronium. At the end of surgery, patients were turned from the prone to the supine position, and 100% oxygen was administered.

After mild efforts to breathe, IV neostigmine (0.05 mg/kg) and IV glycopyrrolate (0.01 mg/kg) were administered, and the patients were extubated after cuff deflation and gentle oral suctioning. Following extubation, all patients were transferred to the Post Anesthesia Care Unit (PACU). The time of tracheal extubation was noted, and the patients were assessed for the incidence and severity of POST, hoarseness of voice (HOV), and postoperative cough (PEC) at 1, 6, 12, and 24 hours post-extubation using a standardized questionnaire. The data collector, a blinded anesthesiology resident, was unaware of group allocation. Double blinding was maintained throughout the study.

The incidence and severity of POST were graded as follows: grade 0 (no sore throat at any time since the operation), grade 1 (minimal sore throat only upon asking), grade 2 (moderate sore throat on the patient's own complaint), and grade 3 (severe sore throat causing obvious distress). PEC was graded similarly, with grade 0 (no cough), grade 1 (minimal cough or scratchy throat), grade 2 (moderate cough), and grade 3 (severe cough). The presence of HOV was also assessed at 1, 6, 12, and 24 hours post-extubation.

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 24. Continuous data, such as age, height, weight, BMI, and duration of surgery, were expressed as means and standard deviations and analysed using one-way ANOVA. Categorical data, such as gender, ASA status, Mallampati grade, intubation attempts, and the incidence and severity of POST, PEC, and HOV, were expressed as frequencies and percentages, and analyzed using the Chi-square test. A p-value of <0.05 was considered statistically significant.

The sample size was calculated using the following formula:

$$n= [(Z_{\alpha/2}+Z_{\beta})^2\times\sigma^2]/ \delta^2$$

Where $Z_{\alpha/2} = 1.96$ and $Z_{\beta} = 0.2$ (for 80% power). This yielded a required sample size of 27 subjects per group, which was rounded up to 30 subjects per group after accounting for a 10% attrition rate. The effect size (δ) was estimated based on a similar study by Tabari M et al.[12] This effect size was considered clinically significant and worth detecting, while not necessarily statistically significant. The standard deviation (σ) of the population under study was assumed to be 11.

3. Results

The study included a total of 90 patients, with 30 patients in each group: Group D (dexamethasone), Group B (betamethasone), and Group L (lignocaine). The demographic characteristics, ASA grade, and duration of surgery were similar across all three groups, ensuring comparability at baseline (**Table 1**).

There was no significant difference in the incidence of POST between the three groups at 1 and 6 hours postoperatively. However, at 12 and 24 hours postoperatively, the incidence of POST was significantly lower in Group B (betamethasone) compared to the other two groups (**Figure 1**). Additionally, Group D (dexamethasone) showed a significantly lower incidence of POST compared to Group L (lignocaine) at 24 hours postoperatively (**Figure 1**, **Table 2** and **Table 3**).

Regarding PEC, at 1 hour postoperatively, Group B had a significantly lower incidence compared to Group L. At 6, 12, and 24 hours postoperatively, PEC was significantly lower in Group B than in both Groups D and L. There was no significant difference in PEC incidence between Groups D and L across all postoperative intervals (**Figure 2**, **Table 4** and **Table 5**).

As for HOV, there was no significant difference in incidence between the three groups at 1, 6, and 12 hours postoperatively. However, at 24 hours postoperatively, Group B showed a significantly lower incidence of HOV compared to Group L (**Table 6**).

Table 1: Demographic characteristics and duration of surgery among the study groups

S. No	Parameters		Group-B (n=30)	Group-D (n=30)	Group-L (n=30)	p-value
	Age (mean ± *SD)		52.1 ±6.9	50.4± 7.0	52.0± 6.3	0.61
	Sex n (%)	Males	17 (56.7)	14 (46.7)	15 (50.0)	0.73
		Females	13 (43.3)	16 (53.3)	15 (50.0)	
	**BMI (mean ±SD)		22.8 ± 1.1	22.4 ± 1.8	22.5 ± 1.9	0.56
	#ASA grade n (%)	I	18 (60.0)	18 (60.0)	17 (56.7)	0.95
		II	12 (40.0)	12 (40.0)	13 (43.3)	
	Duration of surgery (mins) (mean ±SD)		65.8 ± 13.9	67.5 ± 15.4	67.1 ± 14.5	0.89

* SD- standard deviation; ** BMI- Body Mass Index; # ASA- American Society of Anaesthesiologist

Table 2: Comparison of post-operative sore throat (POST) at 1 hour and 6 hours among study groups

POST at 1 hour (n=30 each group)						
Grade	**Group-B n (%)**	**Group-D n (%)**	**Group-L n (%)**	**p- value**		
				B v/s D	D v/s L	L v/s B
Nil(0)	23 (76.7)	20 (66.7)	19 (63.3)	0.68	0.99	0.59
Mild(1)	5 (16.7)	6 (20.0)	7 (23.3)			
Moderate(2)	2 (6.7)	3 (10.0)	3 (10.0)			
Severe(3)	0 (0.0)	1 (3.3)	1 (3.3)			
POST incidence	7(23.4)	10(33.3)	11(36.7)			
POST at 6 hours						
Nil(0)	26 (86.7)	20 (66.7)	18 (60.0)	0.28	0.63	0.06
Mild(1)	3 (10.0)	6 (20.0)	9 (30.0)			
Moderate(2)	1 (3.3)	3 (10.0)	3 (10.0)			
Severe(3)	0 (0.0)	1 (3.3)	0 (0.0)			
POST incidence	4(13.3)	10(33.3)	12(40)			

Table 3: Comparison of post operative sore throat (POST) at 12 and 24 hours among groups

POST at 12 hours (n=30 each group)						
Grade	**Group-B n (%)**	**Group-D n (%)**	**Group-L n (%)**	**p- value**		
				B v/s D	D v/s L	L v/s B
Nil(0)	30 (100.0)	22 (73.3)	15 (50.0)	0.01	0.122	<0.001
Mild(1)	0 (0.0)	5 (16.7)	12 (40.0)			
Moderate(2)	0 (0.0)	3 (10.0)	3 (10.0)			
Severe(3)	0 (0.0)	0 (0.0)	0 (0.0)			
POST incidence	0	8 (26.7)	15 (50)			
POST at 24 hours						
Nil(0)	30 (100.0)	24 (80.0)	12 (40.0)	0.03	0.005	<0.001
Mild(1)	0 (0.0)	4 (13.3)	15 (50.0)			
Moderate(2)	0 (0.0)	2 (6.7)	3 (10.0)			
Severe(3)	0 (0)	0 (0)	0 (0)			
POST incidence	0	6(20)	18(60)			

Table 4: Comparison of post extubation cough (PEC) at 1 hour and 6 hours among groups

PEC at 1 hour (n=30 each group)						
Grade	**Group-B n (%)**	**Group-D n (%)**	**Group-L n (%)**	**p- value**		
				B v/s D	D v/s L	L v/s B
Nil(0)	24 (80.0)	18 (60.0)	11 (36.7)	0.16	0.17	0.005
Mild(1)	2 (6.7)	7 (23.3)	12 (40.0)			
Moderate(2)	3 (10.0)	5 (16.7)	5 (16.7)			
Severe(3)	1 (3.3)	0 (0.0)	2 (6.7)			
PEC incidence	6 (20)	12 (40)	19 (63.3)			
PEC at 6 hours						
Nil(0)	25 (83.3)	15 (50.0)	11 (36.7)	0.05	0.7	0.003
Mild(1)	3 (10.0)	8 (26.7)	11 (36.7)			
Moderate(2)	2 (6.7)	6 (20.0)	6 (20.0)			
Severe(3)	0 (0.0)	1 (3.3)	2 (6.7)			
PEC incidence	5 (16.7)	15 (50)	19 (63.3)			

Table 5: Comparison of post extubation cough (PEC) at 12 and 24 hours among groups

PEC at 12 hours (n=30 each group)						
Grade	**Group-B n (%)**	**Group-D n (%)**	**Group-L n (%)**	**p- value**		
				B v/s D	D v/s L	L v/s B
Nil(0)	29 (96.7)	19 (63.3)	14 (46.7)	0.005	0.32	<0.001
Mild(1)	1 (3.3)	9 (30.0)	10 (33.3)			
Moderate(2)	0 (0.0)	2 (6.7)	4 (13.3)			
Severe(3)	0 (0.0)	0 (0.0)	2 (6.7)			
PEC indidence	1 (3.3)	11 (36.7)	16 (53.3)			
PEC at 24 hours						
Nil(0)	29 (96.7)	22 (73.3)	18 (60.0)	0.03	0.28	0.007
Mild(1)	1 (3.3)	6 (20.0)	5 (16.7)			
Moderate(2)	0 (0.0)	2 (6.7)	5 (16.7)			
Severe(3)	0 (0.0)	0 (0.0)	2 (6.7)			
PEC incidence	1(3.3)	8(26.7)	12(40)			

Table 6: Comparison of hoarseness of voice (HOV) at different time intervals

HOV incidence at time interval	**Group-B n (%)**	**Group-D n (%)**	**Group-L n (%)**	**p- value**		
				B v/s D	D v/s L	L v/s B
1 hour	10 (23.3)	10 (33.3)	10 (33.3)	0.61	0.31	0.43
6 hours	4 (13.3)	5 (16.7)	8 (26.7)	0.67	0.67	0.57
12 hours	5 (16.7)	9 (30)	11 (36.7)	0.46	0.81	0.21
24 hours	1 (3.3)	5 (16.7)	12 (40)	0.19	0.13	0.002

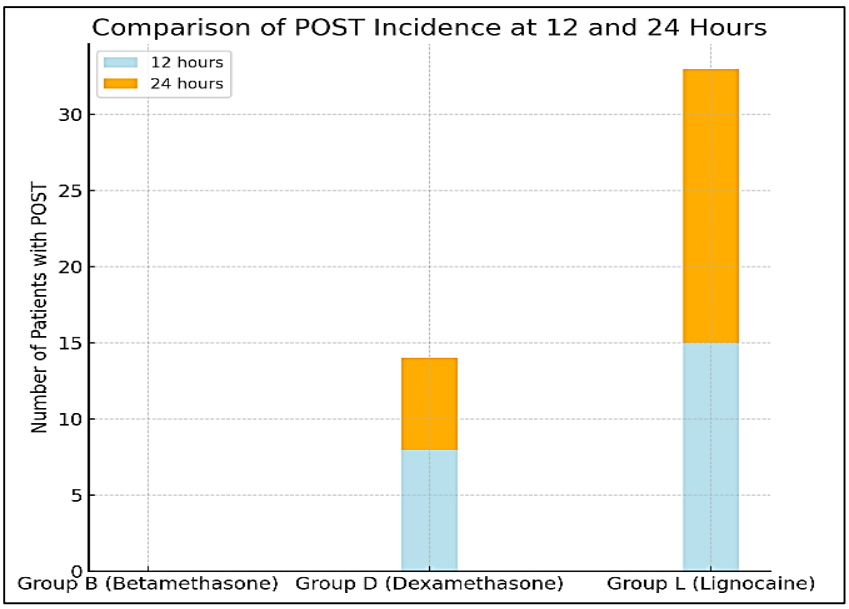

Figure 1: Comparison of POST and PEC incidence at different time periods

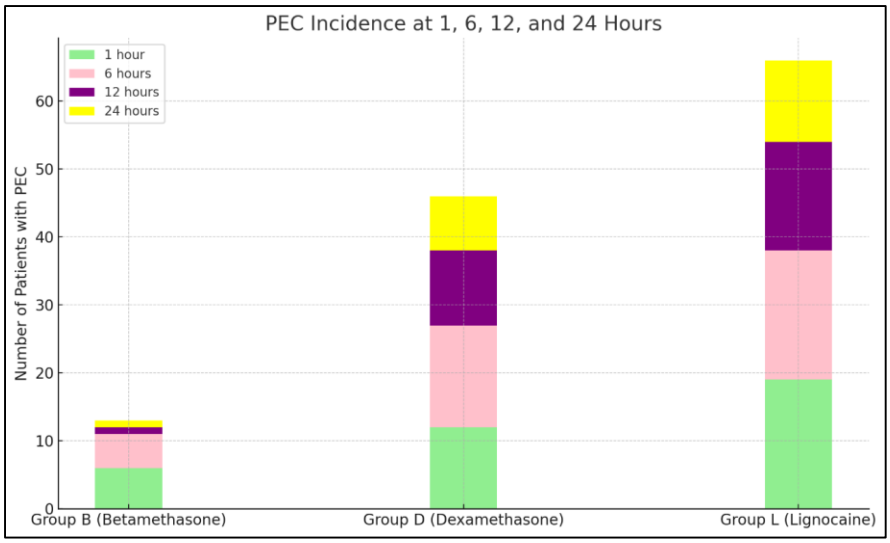

Figure 2: Comparison of PEC incidence at different time periods

4. Discussion

In this study, we aimed to compare the effectiveness of betamethasone gel, IV dexamethasone, and lignocaine jelly in reducing the incidence of POST, PEC, and HOV in patients undergoing elective spine surgeries in the prone position. The results revealed that betamethasone gel was significantly more effective than the other two treatments in reducing POST and PEC at 12 and 24 hours postoperatively. Additionally, IV dexamethasone was found to be more effective than lignocaine jelly in reducing POST at 24 hours, and betamethasone gel significantly reduced the incidence of HOV compared to lignocaine jelly at 24 hours.

These findings are consistent with previous research. Studies by Asif et al. and Ayoub et al. demonstrated that betamethasone gel, when applied to the external surface of the ETT, significantly reduced POST, PEC, and HOV at 24 hours compared to a control group.[13,14]

In other studies, comparing 0.05% betamethasone gel and 2% lignocaine jelly, betamethasone gel showed superior results in preventing POST and PEC at 6, 12, and 24 hours. Sumathi et al. reported statistically significant superiority of betamethasone gel in reducing POST and PEC at these time points compared to lignocaine jelly.[15] Parineeta et al. found a significantly lower incidence of POST at 24 hours with betamethasone gel ($p = 0.019$) compared to lignocaine jelly.[7] Guriqbal et al. and Upadhyay N et al. both observed a lower incidence of POST, PEC, and HOV with betamethasone gel compared to lignocaine jelly at various time points, including 8, 24, 1, 6, and 24 hours post-extubation.[8,16]

Kiran S et al. also found better results in controlling POST, PEC, and HOV with betamethasone gel compared to lignocaine jelly when used over a ProSeal LMA (PLMA). Their study reported no instances of POST in the betamethasone group throughout the postoperative observation period.[17]

The findings from previous studies consistently support the superiority of betamethasone gel over lignocaine jelly, which aligns with our results for POST and PEC at 12 and 24 hours, and HOV at 24 hours. These outcomes can be attributed to the prolonged anti-inflammatory action of betamethasone gel, a glucocorticoid. Kiran S et al. demonstrated the effectiveness of betamethasone gel in preventing POST even when used with the ProSeal LMA (PLMA), emphasizing its enhanced anti-inflammatory effects compared to lignocaine jelly, which was applied to the ETT.[17]

Additionally, studies have shown that IV dexamethasone, another glucocorticoid used in our study, also possesses strong anti-inflammatory properties. Smitha et al. and Thomas et al., in their comparison of IV dexamethasone (8 mg) to a control group, found that it significantly reduced both the incidence and severity of POST at 24 hours postoperatively.[6,18] Kuriyama A et al. conducted a meta-analysis of 15 randomized controlled trials, which included data from PubMed, EMBASE, and the Cochrane Central Register of Controlled Trials. Their pooled data, using a random-effects model and trial sequential analysis (TSA), indicated that IV dexamethasone was significantly more effective at reducing POST.[19]

Although there are few studies directly comparing IV dexamethasone to lignocaine jelly, several studies have compared IV dexamethasone with IV lidocaine for postoperative airway symptoms. In a study by Mohammed N et al., IV dexamethasone (8 mg) was found to be more effective than IV lidocaine (1.5 mg/kg) in reducing POST (41.6% vs. 58.4%; $p = 0.001$).[20] Similarly, Subedi et al. studied patients receiving IV dexamethasone, IV lidocaine,

a combination of both, and a placebo. Their analysis demonstrated that IV dexamethasone, whether administered alone or in combination with lidocaine, significantly reduced POST severity.[21]

In our study, the outcomes observed with betamethasone gel and IV dexamethasone align with previous research, which also highlighted the superiority of dexamethasone in reducing POST and HOV in prone-positioned patients. The studies by Shahnaz A et al. and Lee et al. demonstrated that IV dexamethasone resulted in significantly lower incidences of POST and HOV at 24 hours compared to control groups.[4,11]

This effectiveness of IV dexamethasone, as observed in several studies, can be attributed to its potent anti-inflammatory action, which is consistent with the findings in our study, where IV dexamethasone reduced POST at 24 hours, albeit less effectively than betamethasone gel but more effectively than lignocaine jelly.[18-21]

The superiority of betamethasone gel and IV dexamethasone over lignocaine jelly in our study can be explained by their anti-inflammatory properties. Corticosteroids like betamethasone and dexamethasone work by binding to receptors on various inflammatory cells (such as neutrophils, macrophages, lymphocytes, mast cells, and eosinophils) to suppress the transcription of inflammatory mediators. They directly inhibit pro-inflammatory cytokines and increase the production of lipocortin and annexin A1, proteins that decrease the synthesis of prostaglandins and leukotriene.[22]

These anti-inflammatory actions are crucial in preventing POST, which is caused by nociceptive pain due to inflammation following airway manipulation, such as laryngoscopy, intubation, or cuff inflation.[23,24]

Our findings of better control over airway symptoms with betamethasone gel and IV dexamethasone, even in prone-positioned patients with wire-reinforced ETTs, support the effectiveness of corticosteroids in managing these symptoms. The prone position inherently increases the likelihood of airway symptoms due to the pressure exerted by neck structures on the anterior larynx and trachea, influenced by gravity. Moreover, the head's lateral rotation in the prone position may twist the neck, enhancing the pressure effect of the ETT on the airway, resulting in increased inflammation. Thus, further studies are required to better understand the impact of corticosteroids on airway symptoms in prone-positioned surgeries. Lee J et al. observed a higher incidence of POST with lignocaine jelly compared to normal saline, although PEC and HOV incidence remained similar during the first 24 hours.[10] Similarly, Liao A et al. conducted a meta-analysis of 14 randomized controlled trials comparing the effectiveness of lidocaine lubricants with control, concluding that lignocaine was ineffective in preventing POST postoperatively.[25]

Consistent with these findings, our study showed that lignocaine was less effective than corticosteroids at 12 and 24 hours. This could be attributed to lignocaine's mechanism of action, which involves blocking sodium channels and transiently preventing cell depolarization. While lignocaine blocks sensory fibers responsible for reflex bucking and hemodynamic responses during intubation and extubation, its effect is more about preventing injury than promoting the healing of airway trauma. The higher incidence of POST with lignocaine jelly in our study might also be linked to the osmolarity of its jelly form, which could contribute to airway irritation.[7]

Contrary to the findings of Sumathi et al. and Upadhyay et al., who reported reduced POST at 1 and 6 hours with betamethasone gel compared to lignocaine jelly, our study did not find a significant difference between these two drugs up to 6 hours.[15,16] Maab H et al. suggested that lignocaine, with its mild and short-lasting anti-inflammatory properties, may reduce inflammatory mediators and cellular migration, but its effect is likely limited in duration.[26] The mild anti-inflammatory action of lignocaine might explain the lack of significant difference from betamethasone gel in the first 6 hours, but not over the prolonged period.

Our study also confirmed the superiority of betamethasone gel over IV dexamethasone, as seen in the studies by Tabari M et al. and Sazzadet M et al., where betamethasone gel was more effective in preventing POST at 24 hours.[12,27] Line with these findings, our study showed that betamethasone gel had a significantly lower POST incidence compared to IV dexamethasone at 24 hours ($p = 0.03$).[27] The superior outcome with betamethasone gel may be due to its widespread application on the ETT (up to 15 cm from the tip, covering even the cuff), which comes into direct contact with the posterior pharyngeal wall, vocal cords, and trachea, thus providing local lubricative and anti-inflammatory effects. Additionally, betamethasone is longer-acting than dexamethasone, which may contribute to its better outcomes.

This study had a few limitations. Variables like POST, PEC, and HOV are subjective and subject to inter-individual variations. While cuff pressure measurements were not included, inflation was done slowly with 10 ml of air. Other factors such as the positioning of the patient and the characteristics of the ETT also contribute to POST in the prone position. Moreover, the sample size in our study was relatively small, and larger studies with increased sample sizes are needed to further explore the effectiveness of these drugs in managing POST, PEC, and HOV in patients undergoing prone-positioned surgeries.

5. Conclusion

Prophylactic betamethasone gel lubrication on the ETT is more effective than lignocaine jelly and IV dexamethasone in controlling POST, PEC, and HOV for a longer duration, up to 24 hours postoperatively, in patients undergoing prone position surgery. Among IV dexamethasone and lignocaine jelly, IV dexamethasone was more effective in controlling POST at 24 hours. Further studies are needed to explore its effects in different types of surgeries under general anaesthesia.

6. Source of Funding

None.

7. Conflict of Interest

None.

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