



## Original Research Article

## To compare the efficacy of application of bethamethasone gel with KY jelly for prophylaxis of post operative sore throat

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## ABSTRACT

**Background:** Post operative sore throat (POST), cough and hoarseness of voice though minor sequelae after tracheal extubation can be distressing to the patients, and is not an uncommon complaint, it adversely affects the patient satisfaction and activities after discharge.

**Materials and Methods:** A comparative study was conducted to see the incidence of post operative sore throat after tracheal extubation after applying betamethasone gel (Group 1) and KY jelly (Group 2) on the cuff of the tracheal tube in patients undergoing elective surgery under general anaesthesia. POST was assessed at rest and with efforts like swallowing and talking at 1, 3, 6, 12, 24 hrs post operatively.

**Results:** The incidence of POST was significantly lower in the betamethasone group when compared to KY jelly group.

**Conclusion:** From our study we can conclude that application of betamethasone gel on the cuff of ETT decreases the incidence of POST after tracheal extubation. Severity of sore throat is assessed using VAS score and found that POST was severe in KY jelly group when compared with betamethasone group.

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### 1. Introduction

POST is one of the most common, uncomfortable, distressing sequelae after tracheal extubation.<sup>1-4</sup> These effects are because of irritation and inflammation of the tracheal mucosa.<sup>3</sup> The incidence of POST depends on factors such as history of smoking, lung disease, size of ETT, cuff pressure, placement of NG tube.<sup>5</sup> As steroids are known for their anti-inflammatory action betamethasone gel application on cuff of ETT might reduce the incidence of POST.<sup>6</sup> KY Jelly is a water based lubricant which is biologically inert and contains no colour or perfume have also been shown to reduce the incidence of POST.<sup>7</sup>

### 2. Materials and Methods

After obtained institutional ethical committee approval and written informed consent from all the patients 60 patients of either sex aged between 18-60yrs belonging to ASA

physical status class 1 and 2 undergoing elective surgery under general anaesthesia with tracheal intubation were included. Patients with ASA physical status class 3 and 4, patients with recent history of respiratory tract infection, pregnant patients, Patients with cardiac, hepatic and renal disease, patients with NG tube or throat pack inserted, patients requiring rapid sequence intubation, operating in prone or lithotomy positions, head and neck surgeries, presence of blood in oropharyngeal suction or endotracheal tube after extubation, patients with history of smoking, duration of surgery lasting for more than 2 hours and patients who refused to give consent were excluded from the study. POST was assessed at 1, 3, 6, 12, 24 hrs post operatively using VAS score at rest and with efforts.

Score 0- No sore throat

Score 1-3- Mild sore throat

Score 4-6- Moderate sore throat

Score 7-10- Severe sore throat

Pre – anaesthetic evaluation was done in all the patients. patients were randomised using chit methods of similar

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size and shape. Patients were asked to pick the chit and the chit was handed over to the nursing assistant who was not blinded to the study and who helped in applying the betamethasone gel or KY jelly over the cuff of the ETT and the tube was handed over to the investigator who is blinded to the study.

The patients were allocated into two groups of 30 each

Group 1- Betamethasone group

Group 2- KY jelly group

On the day before surgery patients were premedicated with alprazolam 0.5mg and pantoprazol 40mg per oral preoperatively. After arrival in the operation room an IV line is secured with 18G cannula and monitors were applied ECG, NIBP, pulse oximeter. Patients premedicated with glycopyrolate 0.01mg/kg, and fentanyl 2mcg/kg after preoxygenation for 3 mins with 100% oxygen, anaesthesia will be induced with propofol 2mg/kg IV, orotracheal intubation facilitated by vecuronium 0.1mg/kg ETT with low pressure high volume cuff(portex) was used Laryngoscopy was performed by experienced anaesthesiologist in both groups using standard 3 and 4 macintosh metal blades. Male patients received either an 8 or 8.5mm ID ETT and female patients received either 7 or 7.5mm ID ETT. The tracheal tube cuff was inflated to 25cm of H<sub>2</sub>O. Intracuff pressure was adjusted every 30mins to 25cm of H<sub>2</sub>O by using a cuff manometer.

Anaesthesia was maintained with 0.5-2% isoflurane with 33% oxygen in nitrous oxide. Intra operatively the following parameters were monitored MAP, SPO<sub>2</sub>, EtCO<sub>2</sub>. at the end of surgery residual neuromuscular block was reversed with neostigmin 0.05mg/kg and glycopyrrolate 0.01mg/kg. POST was assessed at 1,3,6,12,24hrs post operatively at rest and with efforts.

### 3. Results

No patients were excluded from the study. Patients characteristics like age, sex, ASA PS grade and duration of surgery were comparable between both the groups there was no statistical significance found. The incidence of POST at rest and with efforts like swallowing and talking were significantly lower in the betamethasone group when compared to KY jelly group which showed statistical significance ( $p < 0.05$ ).

### 4. Discussion

We found that the incidence of POST was significantly less when betamethasone gel was applied over the cuff of the endotracheal tube when compared to KY jelly application on the cuff of endo tracheal tube. But KY jelly application also reduces the incidence of POST independently as shown by statistical significance as it is a water soluble lubricant jelly.

**Table 1:**

Age (in years)	Group		Total
	Group A	Group B	
≤20	4 13.3%	2 6.7%	6 10.0%
21-30	10 33.3%	8 26.7%	18 30.0%
31-40	7 23.3%	7 23.3%	14 23.3%
41-50	7 23.3%	7 23.3%	14 23.3%
51-60	2 6.7%	6 20.0%	8 13.3%
Total	30 100.0%	30 100.0%	60 100.0%

The results did not show any statistical significance in age group of the patients.

**Table 2:**

ASA Grade	Group		Total
	Group A	Group B	
1	18 60.0%	14 46.7%	32 53.3%
2	12 40.0%	16 53.3%	28 46.7%
Total	30 100.0%	30 100.0%	60 100.0%

There was no statistical significance in ASA-PS grading of the patients

**Table 3:**

Sex	Group		Total
	Group A	Group B	
Male	15 50.0%	13 43.3%	28 46.7%
Female	15 50.0%	17 56.7%	32 53.3%
Total	30 100.0%	30 100.0%	60 100.0%

There was no statistical significance in the sex of the patients.

The incidence of post operative sore throat, cough, and hoarseness of voice is distressingly high in patients who have received general anaesthesia with endotracheal intubation. Many factors including the diameter of the tube, intubation procedure, bucking/coughing on the tube during emergence and excessive pharyngeal suctioning during extubation have been described to influence the incidence of POST.<sup>4-7</sup>

We compared betamethasone gel with KY jelly, KY jelly is a lubricant jelly which is also known to reduce the incidence of POST.

The limitation of our study was we included Only ASA-PS class 1 and 2 only and the duration of surgery was short. The correlation with bucking and coughing during extubation was not evaluated in this study. And we could

**Table 4:**

	Group A		Group B		t value	p value
	Mean	SD	Mean	SD		
Age (in years)	33.73	10.979	37.93	11.304	-1.460	0.150
Duration of Surgery (in Mins)	78.00	25.175	88.50	28.772	-1.504	0.138

**Table 5:**

Post Operative Sore throat At rest	Group A		Group B		t value	p value
	Mean	SD	Mean	SD		
1st hr	2.07	0.25	2.67	0.48	-6.058	0.000
3rd hr	1.03	0.18	1.57	0.50	-5.449	0.000
6th hr	0.00	0.00	0.30	0.47	-3.525	0.001
12th hr	0.00	0.00	0.00	0.00	-	-
24th hr	0.00	0.00	0.00	0.00	-	-

Our results showed statistical significance in post operative sore throat at 1<sup>st</sup>, 3<sup>rd</sup>, 6<sup>th</sup>, 12<sup>th</sup>, 24<sup>th</sup> hr post operatively

**Table 6:**

Post Operative Sore throat with efforts	Group A		Group B		t value	p value
	Mean	SD	Mean	SD		
1st hr	3.13	0.35	3.40	0.50	-2.408	0.019
3rd hr	2.07	0.25	2.23	0.43	-1.828	0.073
6th hr	0.90	0.31	1.07	0.52	-1.512	0.136
12th hr	0.00	0.00	0.00	0.00	-	-
24th hr	0.00	0.00	0.00	0.00	-	-

Statistical significance was observed in post operative sore throat even at rest in both the groups

**Table 7:**

	Post Operative Sore throat				t value	p value
	At Rest		With Efforts			
	Mean	SD	Mean	SD		
1st hr	2.07	0.25	3.13	0.35	-13.624	0.000
3rd hr	1.03	0.18	2.07	0.25	-18.107	0.000
6th hr	0.00	0.00	0.90	0.31	-16.155	0.000
12th hr	0.00	0.00	0.00	0.00	-	-
24th hr	0.00	0.00	0.00	0.00	-	-

Application of betamethasone gel on the cuff of the ETT was effective in prevention of post operative sore throat which showed statistical significance.

**Table 8:**

	Post Operative Sore throat				t value	p value
	At Rest		With Efforts			
	Mean	SD	Mean	SD		
1st hr	2.67	0.48	3.40	0.50	-5.809	0.000
3rd hr	1.57	0.50	2.23	0.43	-5.511	0.000
6th hr	0.30	0.47	1.07	0.52	-6.008	0.000
12th hr	0.00	0.00	0.00	0.00	-	-
24th hr	0.00	0.00	0.00	0.00	-	-

Application of KY jelly on the cuff of the ETT was also effective in reducing the incidence of post operative sore throat which showed statistical significance.

not measure the amount of the jelly put on the cuff of the ETT.

## 5. Conclusion

We conclude that application of betamethasone gel on the cuff of endotracheal tube reduces the incidence of POST compared with KY jelly application.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.

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