

Comparison of Frequency of Postoperative Sore Throat, Cough and Hoarseness of Voice With and Without Betamethasone Gel Application on Endotracheal Tube

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ABSTRACT

Aim: To find out frequency of sore throat, cough and hoarseness of voice with and out Betamethasone gel application on endotracheal tube in patients undergoing elective surgery under G/A.

Methods: In this Prospective Randomized, single-blinded control trial 100 cases; 50 cases in betamethasone (0.05%) gel group and 50 cases in control group were used. Only (ASA) I and II patients, age 15-50 years, undergoing elective procedures requiring tracheal intubation of both genders were selected. Assessment for postoperative sore throat, cough and hoarseness at 6, 12 & 24 hours was carried out.

Result: The incidence of sore throat, cough and hoarseness of voice was significantly lower in betamethasone gel group than control group ($P < 0.05$).

Conclusion: The incidence of postoperative sore throat, cough and hoarseness of voice is significantly less in subjects who were intubated with betamethasone gel lubricated endotracheal tube as compared to that group who were intubated with endotracheal tube without any steroid based lubrication.

Keywords: Tracheal intubation, sore throat, cough, hoarseness of voice, betamethasone gel.

INTRODUCTION

Postoperative sore throat is a common and distressing complaint in patients receiving general anesthesia with endotracheal intubation¹. Factors contributing to the development of sore throat include trauma to pharyngolaryngeal mucosa from laryngoscopy, placement of a nasogastric tube, or oral suctioning, cuff design and pressure affecting tracheal mucosal capillary perfusion and contact of the tracheal tube with the vocal cords and posterior pharyngeal wall resulting in edema or mucosal lesions^{2,3}.

The use of endotracheal tubes with a low intracuff pressure, smaller-sized endotracheal tubes, topical lidocaine, steroid coated endotracheal tubes, intravenous steroids and inhalation of steroids are the common measures for the prevention of postoperative sore throat^{4,5}. Although local anaesthetic jelly along with its lubricating properties limits the potential damage to the tracheal mucosa by suppressing bucking on the tracheal tube, its role in prevention of postoperative sore throat is inconclusive as it does not possess any intrinsic anti-inflammatory action. As steroids are known for their anti-inflammatory action, Betamethasone gel applied to tracheal tube significantly reduces the incidence of postoperative sore throat, cough, and hoarseness of

voice. The reported incidence of postoperative sore throat, cough and hoarseness of voice is 100%, 28% and 50% in control group and with Betamethasone gel it is 40%, 6% and 4.1% respectively⁶. In this prospective, randomized and single blinded study, we compared the application of Betamethasone gel and nothing (control group) on tracheal tube in reducing the incidence of sore throat, hoarseness of voice and cough during first 24 hours postoperative period.

MATERIALS AND METHODS

After institutional Ethics Committee approval and written informed consent from all patients, 100 patients ASA I or II patients of either sex aging 18-60 years under going elective surgeries with endotracheal intubation were divided selected randomly in two groups through list of random numbers generated from Random Number Table. Patients having even minor throat symptoms preoperatively, oronasal surgeries, taking steroids, N/G tube insertion, anticipated difficult airway and more than one attempt at intubation were excluded. Study was conducted from September 2011-February 2012 in Jinnah Hospital, Lahore.

Study designed was prospective randomized, single-blinded controlled trial with non-probability purposive sampling. Sample size of 100 cases; 50 cases in each group was calculated with 80% power of test, 2% margin of error and taking expected percentage of cough (least among all) i.e., 6% in

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Betamethasone gel group and 28% in control group in patients underwent general anesthesia with endotracheal intubation.

At the time of induction of anesthesia, Betamethasone gel 0.05% was applied from the distal end of the PVC tube cuff to a distance of 15 cm from the tip using 2.5ml of Betamethasone gel, applied uniformly with sterile precautions to endotracheal tube in Group A and no lubrication in group B (control group). All patients were premedicated with midazolam 2.5mg i.v., 15 min before surgery. All intubations were done by a same expert anesthetist using ETT size (7.5 in male and 7.0 in female) and laryngoscope blade no.3 with adequate conditions for laryngoscopy. Immediately after intubation, the tracheal tube cuff was inflated with just enough room air to prevent an audible leak. Same anesthesia technique and analgesic drugs were used in all patients. Oral suctioning was done just before extubation only by metallic suction tip. The trachea was extubated after deflating the cuff when the patient fully awake. All patients received oxygen by a facemask. Assessment of patients for postoperative sore throat, cough and hoarseness at 6, 12,24 hours after surgery was carried out in recovery room and concerned surgical wards. Sore throat, cough and hoarseness of voice were assessed subjectively (grade 0=no, 1=mild, 2=moderate and 3=severe) while sore throat and hoarseness of voice assessed objectively as well. All this information was collected through a predesigned performa.

Data was analyzed by SPSS version 13.0. Mean and standard deviation was calculated for numerical variable like age weight and duration of surgery. Frequency table and percentages were generated for variable like gender, presence or absence of cough, hoarseness and sore throat. Chi Square test was applied for comparison of two proportions for cough, sore throat and hoarseness. P value <0.05 was considered as significant.

RESULTS

There was no difference of patient characteristics and duration of surgery between the two groups (Tab-1). No patients were excluded from analysis. The incidence of sore throat, cough, and hoarseness of voice (Figs 1, 2 and 3) was significantly lower in the Betamethasone as compared to control group at 6, 12 and 24 hours after surgery (P<0.05). None of patients in Betamethasone gel group while 24% patients in control group suffered from severe sore throat. None of the patients suffered from severe cough or hoarseness of voice.

Table-1: Patient characteristics. Mean ± SD

	Betametasone Gel group (n=50)	Control group (n=50)
Age (years)	35±11	32±12
Weight (kg)	60±7	57±6
Surgery duration (min)	90±36	80±30
Male/Female	27/23	24/26

Fig-1. Incidence of sore throat.

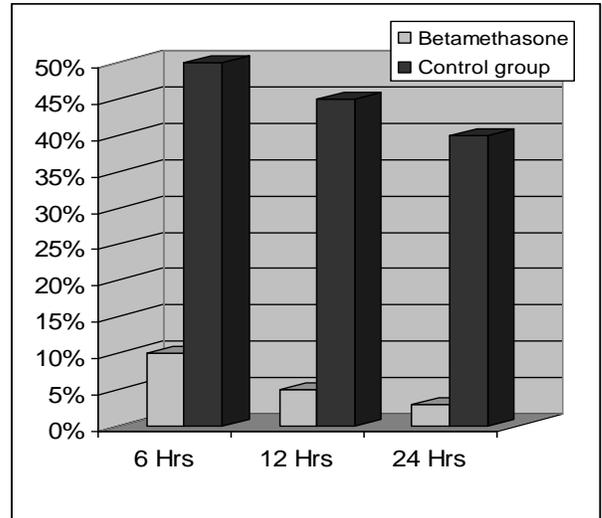


Fig. 2: Incidence of cough

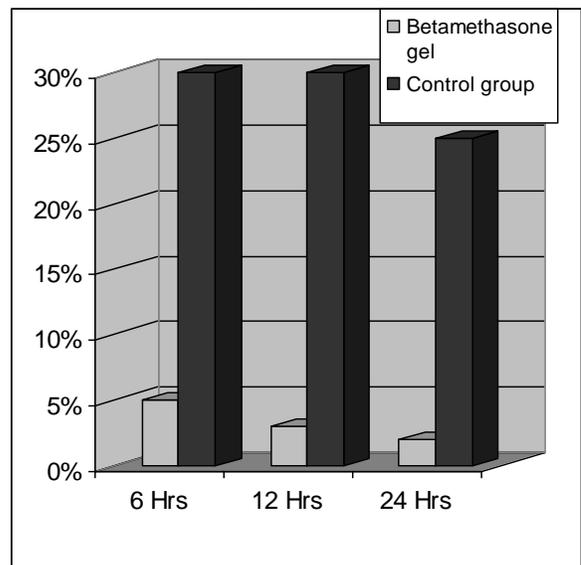
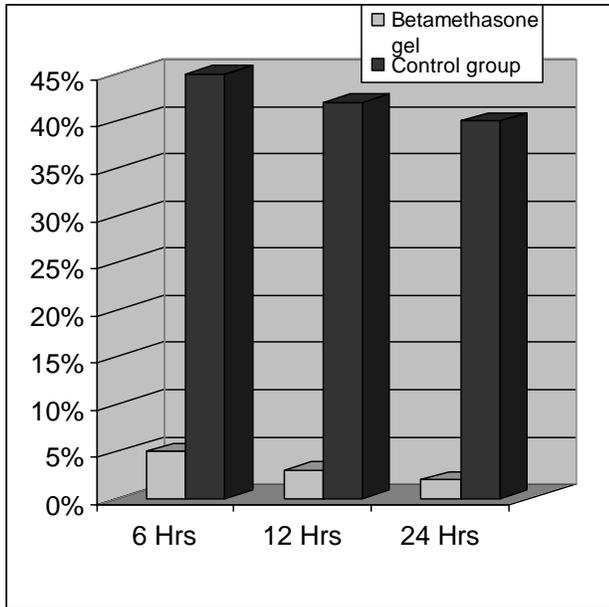


Fig-3. Incidence hoarseness of voice.



DISCUSSION

The incidence of sore throat, cough and hoarseness of voice in post-intubation period is influenced by many factors like the diameter of ETT, cuff pressure design, coughing on ETT and excessive pharyngeal suctioning, N/G tube insertion and laryngoscopy^{2,3}. Recognizing the potential role of inflammation in these postoperative airway sequelae, the use of inhaled and topical steroids was described^{3,4}. Therefore, topical administration of steroids can be beneficial in prevention and treatment of these complications⁶.

During the study, it was found that the incidence of postoperative sore throat, hoarseness of voice and cough was significantly less in patients who were intubated with Betamethasone gel lubricated endotracheal tube as compared to those who were intubated with endotracheal tube without any steroid based lubrication. But the incidence of severe sore throat was not observed in Betamethasone gel group while in control group this was significantly high. Amount of Betamethasone used in our study was equivalent to 5mg Prednisolone which is a safe dose.

We used wide spread of Betamethasone gel to cover the major points of contact with pharynx, larynx and trachea for the greater benefit compared with those achieved by Stride⁷ who applied topical hydrocortisone 1% from the distal tip of the endotracheal tube to 5cm above the cuff. Our results confirm the finding of the studies by Sumathi and colleagues, George Allen⁸ and Shaaban AR⁹ who applied wide spread Betamethasone gel like us. We did not use lidocaine gel like Sumathi and George Allen as there was no significant difference between

the lidocaine gel and the control group in their studies. Ayoub et al¹⁰ observed that 0.05% Betamethasone was effective in decreasing the frequency of sore throat and hoarseness but ineffective in reducing cough. In the current study, the frequency of cough and sore throat was lower than that reported by Ayoub et al. but the frequency of reduction of hoarseness of voice was less compared to his work. These differences can be due to application of Betamethasone gel 15 by Ayoub et al 15 cm from the cuffs of the tubes and did not mention of type of tube they used in their study.

Although flaring up of local subtle infection is a possibility with topical steroid application, there are no reports of adverse effects secondary to Betamethasone gel application over the tracheal tube. The drawbacks of our study are that although the extubation protocol was the same in all the groups, the correlation between coughing or bucking at the time of extubation and the incidence of post-extubation sore throat, cough or hoarseness could not be evaluated in this study.

CONCLUSION

The incidence of postoperative sore throat, hoarseness of voice and cough is significantly less in subjects who were intubated with betamethasone gel lubricated endotracheal tube as compared to that group who were intubated with endotracheal tube without any steroid based lubrication.

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