

# Use of Preoperative Inhaled Budesonide to Reduce Postoperative Sorethroat Incidence after Endotracheal Intubation

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## ABSTRACT

**Introduction:** Post-operative sore throat (POST) and hoarseness of voice are common complaints from patients receiving tracheal intubation. Budesonide is used to reduce all these complications and metered dose delivery of drug is considered as simple and less time consuming with high patient acceptability. The present study was planned to assess the effect of use of preoperative inhaled budesonide to reduce postoperative sorethroat incidence after endotracheal intubation.

**Material and methods:** All the patients scheduled to undergo short elective laproscopic surgeries, lasting <2hrs under general anaesthesia with endotracheal intubation will be included in this study. The patients were selected randomly into two equal groups as follows: Group A- 20 patients received 200µg budesonide inhalation suspension, using a metered dose inhaler 10 min before intubation, which was repeated 6hrs after extubation. Group B- 20 patients with no such interventions was performed before intubation or after extubation. Post-operative sore throat was assessed at 2,6,12 and 24hrs. All the results were categorized and summarized.

**Results:** Incidence of POST was significantly higher among subjects of Group B in comparison to subjects of group A at different time intervals.

**Conclusion:** Administration of budesonide significantly reduced the incidence of postoperative cough hoarseness of voice and POST among subjects undergoing laparoscopic cholecystectomy.

**Keywords:** Budesonide, Hoarseness, Voice

tubes and laryngeal trauma during intubation is the common causes. Cause of prolonged hoarseness is usually by arytenoid cartilage dislocation. Budesonide is used to reduce all these complications and metered dose delivery of drug is considered as simple and less time consuming with high patient acceptability.<sup>7</sup>

Hence; the present study was planned to assess the effect of use of preoperative inhaled budesonide to reduce postoperative sorethroat incidence after endotracheal intubation.

## MATERIAL AND METHODS

The present study was carried out in the department of anaesthesia of medical institute and it included assessment of effect of inhaled budesonide suspension on the incidence and severity of Post-operative sore throat (POST), incidence of Post-operative Hoarseness of voice and incidence of Post-operative cough. Ethical approval was obtained from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. All the patients scheduled to undergo short elective laproscopic surgeries, lasting <2hrs under general anaesthesia with endotracheal intubation will be included in this study.

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## INTRODUCTION

The field of surgery and surgical techniques have been revolutionised by the introduction of laparoscopic procedure in the 1950s. This has happened due overall reduction in the medical costs and complications including reduced bleeding, less post-operative surgical and pulmonary problems, and early recovery.<sup>1,2</sup>

The spectrum of alterations occurring because of pneumoperitoneum, an essential component of laparoscopy, could lead to respiratory embarrassment and cardiovascular alterations best managed by the use of general anaesthesia (GA).<sup>3</sup> Post-operative sore throat (POST) and hoarseness of voice are common complaints from patients receiving tracheal intubation. Post-operative sore throat (POST) has the incidence of 21%-71.8%. Although they are not major complications and are usually self-limiting, but they affect the satisfaction of patients to a significant extent.<sup>4,6</sup> Hoarseness of voice and cough are symptoms very often associated with POST. Use of large sized endotracheal

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Parameter		Group A	Group B
Number of patients		20	20
Mean age (years)		45.5	42.3
Mean weight (Kg)		70.5	68.3
Gender	Males	8	7
	Females	12	13
ASA status	I	14	15
	II	6	5

Table-1: Demographic data

Time (hours)	Number of patients with POST among subjects of Group A	Number of patients with POST among subjects of Group B	p- value
2	3	17	0.00*
6	2	16	0.02*
12	1	16	0.02*
24	0	15	0.01*

\*: Significant

Table-2: Incidence of occurrence of POST among subjects of both the study groups

General anaesthesia was given to all patients as per a standardized protocol. Post-operatively, all patients were receiving i.v. paracetamol 1g 8 hourly and iv tramadol 100mg on demand. Total opioid consumptions (intra-operative and post-operative) were documented. Post-operative sore throat were assessed at 2,6,12 and 24 hours. All the results were categorized and summarized. Analysis of all the results was done by SPSS software. Assessment of level of significance was done using Chi-square test with P-value of less than 0.05 considered as significant.

## RESULTS

1 shows the demographic data of the patients of both the study groups. Mean age of the patients of group A and group B was 45.5 years and 42.3 years respectively. Mean weight of patients of group A and group B was 70.5 Kg and 68.3 Kg respectively. There were 8 male patients and 7 female patients in group A while there were 7 males and 13 females in group B. 14 patients of group A belonged to ASA grade I while the remaining 6 patients belonged to ASA grade II. 15 patients of group A belonged to ASA grade I while the remaining 5 patients belonged to ASA grade II. Significant values were obtained while comparing the incidence of occurrence of POST among subjects of group A and group B at 2 hours, 6 hours, 12 hours and 24 hours. Incidence of POST was significantly higher among subjects of Group B in comparison to subjects of group A at different time intervals (table-2).

## DISCUSSION

Prophylactic management of Post-Operative Sore Throat (POST) is recommended to improve the quality of post anaesthesia care. Various drugs like Ketamine, Lidocaine and Magnesium Sulphate administered either by nebulisation or gargling, which have some efficacy in

reducing the symptoms. But, use of ketamine has adverse effect on haemodynamic or on central nervous system. Intracuff Lidocaine diffuses out, while the chance of POST is reduced but hoarseness increases due to nerve paresis.<sup>10,11</sup> So, Corticosteroids were widely used to prevent and alleviate post-operative throat complications. Inhaled corticosteroids are preferred when compared to intravenous corticosteroids, because side effects such as fluid retention, delayed wound healing and glucose intolerance are concern with the use of intravenous corticosteroid.<sup>11</sup>

Budesonide is an anti-inflammatory corticosteroid with potent non-halogenated glucocorticoid and weak mineralocorticoid, it was the first and only inhaled corticosteroid that could be delivered by atomization inhalation. Budesonide has a stronger lipophilicity. When compared with other systemic corticosteroids and it can shorten the anesthesia recovery time and alleviates post operative anaesthesia related complications. Budesonide enhances the vascular tension of throat and also causes reduction of capillary permeability as well as can also cause inhibition of edema formation and inflammatory reactions of the local tissues.<sup>11,12</sup>

In the present study, mean age of the patients of group A and group B was 45.5 years and 42.3 years respectively. Mean weight of patients of group A and group B was 70.5 Kg and 68.3 Kg respectively. There were 8 male patients and 7 female patients in group A while there were 7 males and 13 females in group B. 14 patients of group A belonged to ASA grade I while the remaining 6 patients belonged to ASA grade II. 15 patients of group A belonged to ASA grade I while the remaining 5 patients belonged to ASA grade II. Incidence of POST, hoarseness of voice and postoperative cough was significantly higher among subjects of Group B in comparison to subjects of group A at different time intervals. Zhang W et al studied the prophylactic administration of corticosteroids for preventing postoperative complications related to Tracheal Intubation indicated that prophylactic administration of corticosteroids not only effective in reducing the incidence and severity of post-operative sore throat and hoarseness, but also the incidence of laryngeal edema and reintubation.<sup>8</sup> Kashefi P et al compared the efficacy of nebulized budesonide and intravenous dexamethasone administration before extubation in prevention of post extubation complications among patients admitted in intensive care unit. In this study 90 patients who had been admitted in ICU was selected and randomly assigned into two groups to undergo treatment with nebulized budesonide compared with IV dexamethasone since no significant difference was observed between the two but nebulized budesonide is recommended for prevention of post-extubation complications in ICU patients regarding lower systemic absorption of budesonide.<sup>10</sup>

In the present study, significant results were obtained while comparing the incidence of occurrence of POST among subjects of both groups at 2 hours, 6 hours, 12 hours and 24 hours. Rajan S et al carried a comparative study to assess the effect of inhaled budesonide suspension, administered as a 200 µg dose using a metered dose inhaler before induction of anaesthesia, and reported that it was effective in significantly

reducing the severity and incidence of POST, hoarseness of voice and cough seen in patients following endotracheal intubation.<sup>13</sup>

## CONCLUSION

Under the light of above obtained results, the authors conclude that administration of budesonide significantly reduced the incidence of postoperative cough hoarseness of voice and POST among subjects undergoing laparoscopic cholecystectomy. However; further studies are recommended.

## REFERENCES

1. Gerges FJ, Kanazi GE, Jabbour-Khoury SI. Anesthesia for laparoscopy: A review. *J Clin Anesth.* 2006;18:67–78.
2. Bajwa SJ, Kalra S. A deeper understanding of anesthesiology practice: The biopsychosocial perspective. *Saudi J Anaesth.* 2014;8:4–5.
3. Scude I, Phillip E. Postoperative Sore Throat: More answers than questions. *Anaesthesia and analgesia.* 2010; 111: 831-832.
4. Chen YQ, Wang JD, Xiao J et al. Prophylactic effectiveness of budesonide inhalation in reducing postoperative throat complaints. *J Anesth Clin Res* 3:225.
5. Huang C, Yang M, Jiang R et al. Effect of premedication with budesonide aerosol inhalation on the incidence of respiratory adverse events during anesthesia recovery period in pediatric patients. *Biomedical Research.* 2018;29:437-441.
6. Bajwa SJ, Takrouri MS. Innovations, improvisations, challenges and constraints: The untold story of anesthesia in developing nations. *Anesth Essays Res.* 2014;8:1–2.
7. Yamanaka H, Hayash Y, Watanabe Y et al. Prolonged hoarseness and arytenoid cartilage dislocation after tracheal intubation. *BJA.* 2009; 10: 452-455.
8. Zhang W, Zhao G, Li L, Zhao P et al. Prophylactic administration of corticosteroids for preventing postoperative complications related to tracheal intubation: a systemic review and meta-analysis of 18 randomized controlled trials. *Clin Drug Investig.* 2016;36:255-65.
9. Kashefi P, Abbasi A, Abbasi M, Davoodi L, Abbasi S et al. Comparison of the efficacy of nebulized budesonide and intravenous dexamethasone administration before extubation in prevention of post-extubation complications among patient admitted in intensive care unit. *Advanced Biomedical research* 2015;4:11.
10. Rauh R, Hemmerling TM, Rist M, Jacobi KE. Influence of pneumoperitoneum and patient positioning on respiratory system compliance. *J Clin Anesth.* 2001;13:361–5.
11. Hirvonen EA, Poikolainen EO, Pääkkönen ME, Nuutinen LS. The adverse hemodynamic effects of anesthesia, head-up tilt, and carbon dioxide pneumoperitoneum during laparoscopic cholecystectomy. *Surg Endosc.* 2000;14:272–7.
12. Salihoglu Z, Demiroglu S, Cakmakkaya S, Gorgun E, Kose Y. Influence of the patient positioning on respiratory mechanics during pneumoperitoneum.

*Middle East J Anaesthesiol.* 2002;16:521–8.

13. Rajan S, Tosh P, Paul J, Kumar L. Effect of inhaled budesonide suspension, administered using a metered dose inhaler, on post-operative sore throat, hoarseness of voice and cough. *Indian J Anaesth.* 2018;62:66-71.

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