

The Effect of Betamethasone Gel and Lidocaine Jelly Applied Over Tracheal Tube Cuff on Postoperative Sore Throat, Cough, and Hoarseness

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Purpose: *The purpose of the study was to investigate the effect of betamethasone gel and lidocaine jelly (over tracheal tube cuff) compared with distilled water on the postextubation syndrome incidence (sore throat, cough, and hoarseness).*

Design: *Double-blind randomized clinical trial study was used.*

Methods: *Ninety-nine patients of either sex undergoing elective surgery, under general anesthesia with endotracheal intubation, were recruited. Patients were randomized into three groups, betamethasone gel, lidocaine jelly, or distilled water applied on the external surface of the tracheal tube. Patients were assessed for postoperative sore throat, cough, and hoarseness at 1, 6, and 24 hours after surgery.*

Findings: *In the first hour after surgery, the patients who received lidocaine or betamethasone had a significantly greater incidence of sore throat than the patients who received distilled water (RR = 2.9). In the sixth hour after surgery, there was a better effect of distilled water on reducing the incidence of sore throat, but no significant differences between the three groups were seen 24 hours after surgery. The incidence of cough was significantly lower in the distilled water group ($P < .02$) except at the first and 24 hours postoperative when the incidence of cough was similar. The incidence of hoarseness was similar between the three groups at 1, 6, and 24 hours after surgery.*

Conclusion: *In this study, the use of lidocaine gel and betamethasone does not reduce the incidence of sore throat or cough after intubation as much as distilled water.*

Keywords: *betamethasone gel, lidocaine jelly, sore throat, intubation.*

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POSTEXTUBATION SYNDROME (the incidence of sore throat, cough, and hoarseness) due to endotracheal intubation is a common problem after general anesthesia that has been studied extensively during the last few decades. Various techniques are used to reduce the incidence of postextubation syndrome (between 14.4% and 50%).¹⁻⁸

The reason for the wide variation of the incidence is the use of different skills and techniques between anesthesia providers, how patients define the pain, use of smaller tracheal tube, and use of different drugs (dibucaine 1% is a local anesthetic),^{6,8,9} betamethasone gel,¹⁰ inhaled beclomethasone, use of lidocaine spray, aspirin, and ketamine or benzydamine hydrochloride (a non-steroidal anti-inflammatory drug local).¹⁰⁻¹² The syndrome causes problems like delayed feeding, delayed discharging of patient, and patient discomfort which is even more disturbing than the pain after surgery. Hung et al¹² have reported that benzydamine HCl spray on the tracheal tube cuff decreases the syndrome incidence after intubation more than the 4% lidocaine spray, lidocaine 10%, or control group.

Sumathi, et al.¹¹ reported that the application of betamethasone gel over the tracheal tube decreases the incidence of postoperative sore throat, cough, and hoarseness. Also, application of betamethasone gel over tracheal tubes relieves postoperative sore throat more than intravenous (IV) dexamethasone application.¹³ Furthermore, Ahmad et al¹⁴ added that betamethasone gel reduces the severity of postoperative cough and hoarseness more than ketamine. Airway inflammation plays an important role in creating the postoperative laryngopharyngeal sequelae in adult patients under general anesthesia.

In fact topical lidocaine jelly, in addition to its lubrication properties, limits damages to the mucus layer of the trachea by suppressing the straining of the endotracheal tube (bucking).^{1,15}

Steroids like betamethasone gel, due to its anti-inflammatory effect, reduce the incidence of sore throat, cough, and hoarseness after tracheal intubation,^{16,17} but there are contradictory results regarding lidocaine. The aim of this study was to investigate the effect of betamethasone gel and

lidocaine jelly (over tracheal tube cuff) compared with distilled water on the incidence of sore throat, cough, and hoarseness.

Materials and Methods

All the patients gave informed consent, and the study protocol was ethically approved by Islamic Azad University, Tehran Medical Branch. Ninety-nine patients of either gender undergoing elective surgery, under general anesthesia with endotracheal intubation, were recruited in a double-blind randomized clinical trial study. Clinical trial governance number for this study is NCT02114021.

The inclusion criteria were: (1) ages between 15 and 50 years, (2) no acute upper respiratory infections and no sore throat, (3) candidate for elective surgery unrelated to the throat, (4) the lack of airways difficulties, (5) candidate for general anesthesia with intubation, (6) no contraindications for receiving steroids, (7) surgery time < 240 minutes, (8) intubation not more than 2 times, (9) tracheal tube cuff pressure equal to 25 to 30 cm H₂O, (10) fasting for 6 to 8 hours before surgery, (11) American Society of Anesthesiology I and American Society of Anesthesiology II. Exclusion criteria were: (1) use of nasogastric tube or throat packs, (2) patients with upper respiratory tract infection, and (3) patients on steroid therapy.

Patients were randomized into the following three groups by a computer-generated random number table method: 1—control group: distilled water, 2—betamethasone group: betamethasone gel 0.05% applied (Betagel™; Micro Labs Limited, Bangalore, India), 3—lidocaine group: lidocaine 2% jelly applied (Xylocaine 2% jelly; Astra Zeneca Pharma India Limited, Bangalore, India).

All patients were premedicated with oral diazepam 10 mg and ranitidine 150 mg 2 hours before surgery. Betamethasone gel, lidocaine jelly, or distilled water was applied on the external surface of the tracheal tube. Single use PVC tracheal tubes (Portex Profile tracheal tube), having low-pressure-high-volume cuffs, of size 8.0- and 7.0-mm internal diameter were used for male and female patients, respectively. The polyvinyl chloride tracheal tube (Portex Profile tracheal tube; Smiths Medical, Dublin, OH) was lubricated from the

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