

Double Blind Comparison between Betamethasone Gel and Lidocaine Jelly Applied Over Tracheal Tube to Reduce Postoperative Sorethroat, Cough and Hoarseness of Voice

Dr. Akhil Kumar Gupta

Sr. Resident GMC Jammu, India

Abstract: Tracheal intubation is the foremost cause of trauma to the airway mucosa, resulting in postoperative sore throat, cough and hoarseness of voice which are its common, uncomfortable, distressing sequelae. These effects are because of irritation and inflammation of the airway. It affects patient satisfaction and can affect the patients' activities after leaving the hospital. This prospective, randomized, double blind study will compare the role of extensive application of betamethasone gel and lidocaine jelly on the tracheal tube and cuff in reducing the incidence of sore throat, cough and hoarseness of voice during the first 24 hr postoperative period. One hundred patients of either sex belonging to ASA Grade I or II and aged between 18/60 years scheduled for emergency or elective surgeries will be included in the study. They will be randomly divided into two study groups. The variables will be measured as per the protocol. Data will be collected and statistically analysed using ANOVA.

Keywords: Intubation, sore throat, cough, hoarseness, betamethasone, lidocaine

1. Introduction

General anesthesia is the induction of a balanced state of unconsciousness, accompanied by the absence of pain sensation and the paralysis of skeletal muscle over the entire body. It is induced through the administration of anesthetic drugs and is used during major surgery and other invasive surgical procedure.

Tracheal intubation is the foremost cause of trauma to the airway mucosa, resulting in postoperative sore throat, cough and hoarseness of voice which are its common uncomfortable, distressing sequelae. These effects are because of irritation and inflammation of the airway. Rapidly acting receptors which are found superficially throughout the tracheal mucosa are thought to be irritant receptors involved in the cough reflex. Many factors including the diameter of the tracheal tube, cuff design and pressure, intubation procedure, movement of the tracheal tube during surgery, bucking/coughing on the tube, and excessive pharyngeal suctioning during extubation have been described to influence the incidence of cough. It has been demonstrated that use of a smaller tracheal tube reduces the incidence of sore throat, presumably because of decreased pressure at the tube mucosal interface. It affects the patient satisfaction and can affect the patients' activities after leaving the hospital. Although local anaesthetic jelly along with its lubricating properties limits the potential damage to 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 might reduce the incidence of postoperative sore throat, cough and hoarseness of voice.

2. Aims and Objectives

This prospective, randomized, double blind study is being carried out to compare the role of extensive application of betamethasone gel or lidocaine jelly on the tube and cuff in reducing the incidence of sore throat, cough and hoarseness of voice during the first 24 hr postoperative period.

3. Materials & Methods

After approval from the Hospital Ethics and Research Committee of Govt Medical College and Hospital, Jammu this prospective double blind study will be conducted on 100 patients of either sex, belonging to American Society of Anaesthesiologists (ASA) physical status I or II. The patients will be aged between 18-60yrs and admitted in Govt Medical College and Hospital, Jammu for elective or emergency surgical procedures under general anaesthesia.

4. Results

Distribution of subjects according to incidence of Hoarseness Group B and L

Period	Group-B		Group-L		p-value
	No.	%age	No.	%age	
1 hr	5	10.00	18	36.00	0.00835
6hrs	0	0.00	3	6.00	0.09382
12hrs	0	0.00	0	0.00	NA
24hrs	0	0.00	0	0.00	NA

This table compares the incidence of hoarseness at the end of 1, 6, 12 and 24 hrs between both the groups. 5 patients had hoarseness at the end of 1 hr in betamethasone group whereas none had at the end of 6, 12 and 24hrs. In the lignocaine group 18 patients had hoarseness at the end of 1 hr, 3 at the end of 6 hrs and none at the end of 12 and 24 hrs. The incidence of hoarseness was highly significant at the

end of 1 hr after surgery (p value= 0.00835) but there was no statistically significant difference at the end of 6, 12 and 24hrs after surgery. Our study shows, application of Betamethasone prior to intubation has less incidence of sore throat, in comparison to Lidocaine jelly applied over tracheal tube to reduce postoperative sore throat. The statistical test used was 'Z' test.

5. Discussion

Tracheal intubation is the standard method for maintain a patent airway during anaesthesia. However introduction of the tracheal tube usually requires direct laryngoscopy. The insertion of tracheal tube can damage the upper respiratory tract resulting in haematoma, laceration or granuloma of the mucosa or arytenoids cartilage damage.

Tracheal extubation at the end of general anaesthesia is often associated with varying degrees of problems. Problems during extubation can vary from mild cough to severe hemodynamic changes which can be catastrophic.

Asai et al in 1998 suggested a greater incidence of respiratory complications associated with endotracheal extubation than with endotracheal intubation.

Coughing is a well recognized phenomenon associated with extubation in almost every patient undergoing general anaesthesia. Smooth emergence from general anaesthesia with minimal coughing is often considered a hallmark of an experienced anaesthesiologist, and clinicians generally attempt to prevent patients from coughing at the end of a procedure.

Postoperative sore throat, cough and hoarseness of voice is common, uncomfortable sequelae after tracheal intubation. Although typically not incapacitating these effects can be very comfortable especially to patients returning home after ambulatory procedures. It was postulated that these effects are because of irritation and inflammation of the airway.

Tracheal intubation is associated with a great incidence of sore throat than laryngeal mask airway or facemask.

Almost all patients who were intubated for long term and short term operations, had some degrees of airway injury. Larynx is one of the most common sites of injury. Usually manifested as local irritation, inflammation, and even necrosis. Although most of the injuries to the trachea are minor and reversible, however, they may become severe. Due to edema and granuloma formation, injury to the trachea after extubation may manifest as acute or chronic obstruction of the airway that may be severe enough to necessitate surgical intervention.

Sore throat, cough and hoarseness though minor, are fairly common problems after general anaesthesia with endotracheal intubation. Sore throat and hoarseness in the first 24 hours after the procedure were among the most common complications of endotracheal intubation, occurring in 5.7 to 90 percent of cases. Incidence of some degree of pharyngotracheal complications (sore throat, hoarseness and

cough) is high, and one patient develop two or all the three complications.

A number of techniques have been used to diminish cough during emergence. Administration of intravenous (iv) opioids or intravenous lignocaine before emergence is useful due to the antitussive properties of these drugs, but leads to delayed emergence and can be unpredictable. Deep extubation can be done but the incidence of other respiratory complications such as airway obstruction, laryngospasm and aspiration after tracheal extubation is greater when the trachea is extubated while the patient is still deeply anaesthetized.

Sorethroat is also a common postoperative complaint. Stout and Bishop in 1987 conducted a study which concludes that after tracheal intubation, the incidence of sorethroat varies from 14.4% to 50% and after laryngeal mask insertion from 5.8% to 34%. The highest incidence of sorethroat and other airway related symptoms tend to occur in patients who have undergone tracheal intubation.

Various pharmacological and non-pharmacological trials have been used with variable success. Among the non pharmacological methods- smaller size endotracheal tubes, lubricating the endotracheal tube with water soluble jelly, careful airway instrumentation, intubation after full relaxation, gentle oropharyngeal suctioning, minimizing intracuff pressure and extubation when the tracheal tube cuff is fully deflated have been reported to decrease the incidence of post operative sorethroat. Among the pharmacological methods were use of local anaesthetic agents such as lidocaine jelly or spray, topical steroids, iv xylocard, beclomethasone inhalation, gargling with azulene sulphate, or ketamine gargles.

Hoarseness is also a common complication occurring after tracheal intubation and may be very limiting for a patient after anaesthesia.

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