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TO STUDY THE INCIDENCE OF POST-OPERATIVE SORE THROAT IN PATIENTS PREMEDICATED WITH GLYCOPYROLATE FOR GENERAL ANAESTHESIA WITH ENDOTRACHEAL TUBE

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ABSTRACT **BACKGROUND:** A prospective observational study to study the incidence of post-operative sore throat (POST) in patients premedicated with Inj Glycopyrolate, undergoing elective surgeries under general anaesthesia(GA) with endotracheal tube(ETT).

METHODS: This was a prospective observational study done on 1000 patients to study the incidence of post-operative sore throat (POST) in patients premedicated with Inj Glycopyrolate, undergoing GA with ETT. The data was analysed using SPSS-10 for Windows statistical software. Fischer's Exact Test & Pearson's Chi Square test was the statistical test of significance.

RESULTS: The incidence of postoperative sore throat and hoarseness was not associated with Inj Glycopyrolate

CONCLUSION: Though the airway dryness that occurs after surgery is severe after pre-medication and reversal doses of Inj Glycopyrolate, and can increase the incidence of postoperative sore throat; our study shows that it is not significant.

KEYWORDS : Post-operative sore-throat, glycopyrolate, endotracheal-tubes, general anaesthesia

INTRODUCTION:

Postoperative sore throat is a common complication of anaesthesia. It can lead to dissatisfaction and discomfort after surgery and can delay a patient's return to normal routine activities. Many factors can contribute to postoperative sore throat and the incidence has been found to vary with the method of airway management[1]. The incidence is the highest after tracheal intubation and varies from 14.4% to 50%, while after laryngeal mask airway insertion the incidence has been found to vary from 5.8% to 34% and it is much less when a face mask is used for the maintenance of anaesthesia [1,2]. The wide variation in these figures is presumably due to different skills and techniques among anaesthetists and to differences between individual anaesthetists and patients in the definition of sore throat. The reporting of a sore throat is also affected by the method of interview, i.e., whether the questions regarding sore throat are asked directly or indirectly[3]. After indirect questioning of 129 patients, only two complained of sore throat, whereas after direct questioning of 113 patients, 28 complained of sore throat[4]. This difference may be due to the fact that patients concentrate on symptoms directly related to the operative site and do not immediately associate sore throat with anaesthesia and surgery.

This study was done to evaluate the incidence of post-operative sore throat (POST) in patients premedicated with Inj Glycopyrolate, undergoing GA with ETT, which has been indicated as an individual risk factor**.

MATERIALS AND METHODS:

Criteria for Selection of Subjects

1. Ages of 18 and 65, both sexes
2. Classified as ASA physical status I or II
3. Undergoing elective surgery lasting no longer than 180 minutes, and were not undergoing ear, nose, or throat surgery.

Criteria for Exclusion

1. Pre-existing sore throat
2. History of gastric reflux
3. Nasogastric tube
4. Recent anti-inflammatory medications
5. Oral or nasal pharyngeal airway
6. Position other than supine or lithotomy
7. Coughing or bucking on intubation
8. Coughing or bucking prior to extubation
9. Difficult or traumatic intubation
10. Re-intubation
11. Postoperative vomiting
12. Unable to communicate with the researcher
13. Undergoing emergency surgical procedure

Study Population: Randomly selected 1000 patients undergoing elective surgeries under general anesthesia with endotracheal tube.

METHODOLOGY

Patients' age, sex, weight, and ASA physical status will be recorded on a standardized information sheet (appendix II). The type and duration of surgery, operative airway management (ETT – PVC/FM) tracheal tube size, cuff pressure, patient position during surgery, drugs (muscle relaxants, Inj. Glycopyrolate) given, and duration of stay in the post-anaesthetic care unit were recorded.

An aqueous lubricant jelly will be applied to the tracheal tube. A standard method was used for placement of tracheal tubes. After ETT, patient's lungs will be mechanically ventilated. After intubation anaesthesia will be maintained with an inhalation agent in a mixture of oxygen and nitrous oxide. Airway devices was removed, after giving reversal, when patients were able to open their eyes to command.

The clinical management of the patients will be left to the discretion of the anaesthetist. Modified Aldrete Recovery Score will be used to decide when to discharge the patient. Patients will be interviewed at 0, 0.5, 1, 2 and 8 hours and the incidence of sore throat was noted by using standardized direct questions. Patients were asked directly whether they had a sore throat, and whether they had any hoarseness of voice.
A four-grade scale was used with a cold as a point of reference:
0= No sore throat
1= Mild sore throat (less than with a cold)
2= Moderate sore throat (as with a cold)
3= Severe (more severe than with a cold).

The degree of POST was evaluated several different times during the post-operative period.

Discomfort

To investigate if the emergence of airway symptoms uncomfortable for the patient, a four-grade scale was used:
0= No discomfort
1= Mild discomfort
2= Moderate discomfort
3= Severe discomfort

The degree of discomfort was evaluated several different times during the postoperative period.

Localization of POST

In order to determine where the sore throat was localized in the throat, a photograph was developed by the researcher (Figure 1). Initially, ten persons who had reported POST after anesthesia were contacted

irrespective of whether they had had an ETT or an LMA. They were asked to locate POST, and requested to describe the symptom by using an adjective that they found easy to understand. They described the location in the throat, that had been sore (the pharynx, and above or below the larynx). None of the ten persons described pain in the mouth, a category that included the lips and tongue, but we added this category. One patient had POST for 14 days, high up in her chest, after an intubation. The researcher interpreted this likely to be in the carina, and therefore a fifth category was added (high up in the chest). The photograph was then shown to ten new patients in the PACU, and they all confirmed that it was easy to under-stand and use (face and content validity)[5]. The color photograph was then laminated.

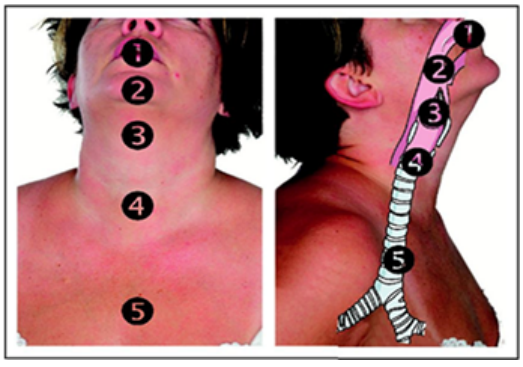


Figure 1 Photograph for localization of the sore throat-frontal and lateral views of a woman. 1. In the mouth. 2. In the pharynx. 3. Above the larynx. 4. Below the larynx. 5. High up in the chest

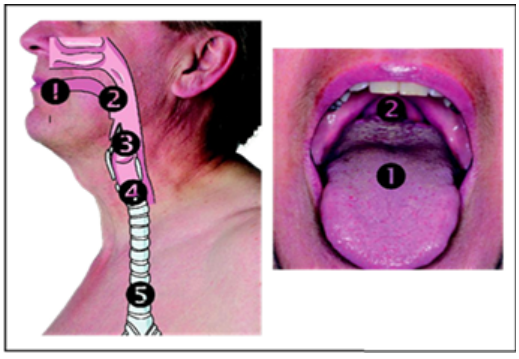


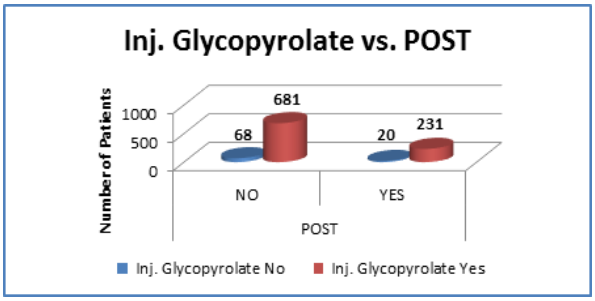
Figure 2 Photograph of localization of the sore throat- a lateral view of a man and in the mouth. 1. In the mouth. 2. In the pharynx. 3. Above the larynx. 4. Below the larynx. 5. High up in the chest

RESULTS:

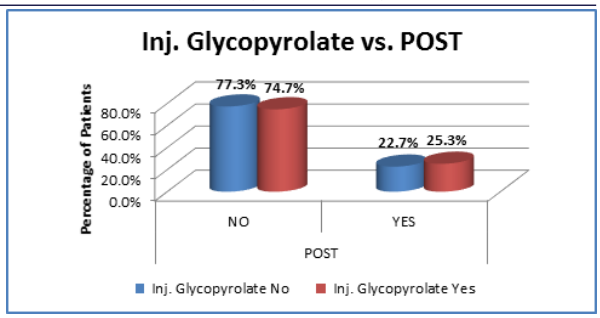
Our study revealed that the incidence of postoperative sore throat and hoarseness was not affected with the use of Inj. Glycopyrolate.

Results Table 1

	POST			Incidence		P-Value
Inj. Glycopyrolate	NO	YES	Total			
No	68	20	88	22.7%	Chi-Squared Test	0.591
Yes	681	231	912	25.3%	Fisher's Exact Test (Sig. (1-sided))	0.699
	749	251	1000	25.1%	Fisher's Exact Test (Sig. (2-sided))	0.347



Results Figure1



Results Figure 2

DISCUSSION:

The incidence of postoperative sore throat (POST) is as high as 100% in some studies, and is ranked as a patient's 8th most undesirable postoperative event[7]. The method of airway management has been shown to be the most significant predictor of POST, but the selection of an airway device is a multi-factorial decision based upon the patient and the procedure. Awareness of the variables associated with an increased incidence of POST can allow providers to minimize combinations of risk factors, reduce the incidence and severity of POST, and improve a patient's anaesthesia experience.

We compared the incidence of post-operative sore throat (POST) in patients premedicated with Inj Glycopyrolate, undergoing GA with ETT. The time of onset was noted and also the severity of POST.

To the best of our information only Joorgensen et al[13] have studied the location of POST as assed by the patient. One reason for not asking about the precise location of POST may be that it is difficult to explain correctly. Despite the complexity of pain localization, we did find that our patients seem to be able to localize pain in the throat. We found that more patients located the pain below the larynx after an ETT compared to an LMA, probably due to the design and shape of the cuff in the ETT. Pain above the larynx, was more common after an LMA than an ETT (52% vs. 37%), which is likely because the LMA cuff exerts pressure on the mucosa above the larynx. However, pain above the larynx after an ETT could also be caused by laryngoscopy.

Higgings et al reported a direct association between duration of surgery and sore throat[14]. In an other study by Sumathi, P. A., et al. they concluded that the incidence of developing POST was nearly 85% if the surgery time exceeded >240mins[15]. In our study patients showed an increasing trend with the increasing duration of surgery, with the incidence of POST 25.1% in cases that lasted more than 3.1hrs.

The drugs used for inducing and maintaining anesthesia and their propensity to cause POST were studied in great detail by many researchers. We in our study tried to find the association with commonly used muscle relaxants. Suxamethonium was not used in any patient who had been included in the study. From our study, we concluded that although 28.6% of the patients who had POST was intubated with Rocuronium, the correlation was not significant, with a p-value of 0.711. Use of suxamethonium for intubation was associated with POST in a significant proportions of patients as per earlier studies with an incidence as high as 62%. No other anesthetic drug was found to have an association with sore throat.

A comparison of prevalence of POST between elective and emergency cases was done in our study. Routinely emergency surgeries are excluded because of variability in the pre-operative period in almost all studies done so far. It was seen that the prevalence of POST was higher in elective cases than emergency cases with incidence of 26.2% and 17.7% respectively.

Higgins in his research documented that - Patients with ASA physical status III had a significantly smaller risk of developing sore throat compared with patients with ASA physical status I and II (OR 0.45)[14]. In our study we had excluded all ASA III patients. However on analysis of the incidence of POST in ASA I & II patients, no significant correlation could be found and p-values for the same were 0.076 and 0.086 respectively.

Edomwonyi, N. P., et al. found that in 36 (58%) out of the 62 patients that complained of sore throat, tracheal intubation was carried out by experienced and senior anaesthetists (consultants and senior

registrars[18]. Tracheal intubation of 26 (42%) of the patients who had sore throat was performed by junior anaesthetists. With regard to skills of the anaesthetist, there was no statistical significant difference (P = 0.6175, OR = 0.8040; 95% CI: 0.4194 – 1.541).

CONFLICTS OF INTEREST

All authors have none to declare.

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