Evaluation of Role of Stylet Use during Intubation on Airway Maintenance and Post Intubation Complications

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ABSTRACT

OBJECTIVE: To evaluate the role of placing stylet during tracheal intubation on the post-operative complications in anesthetized patients.

STUDY DESIGN: A Randomized control trial.

PLACE AND DURATION: Department of Anesthesia and ICU, Nishtar Hospital Multan. From 10 January 2017 to 17 June 2017

METHODOLOGY: All these patients were divided into two groups, Group S (stylet group) and Group C (control group). Total 386 patients were enrolled through non probability sampling and divided into two equal groups by lottery method. Predesigned Performa was used to collect data regarding demographic variables like age and gender, and outcome variables like airway maintenance, pharyngeal pain and sore throat.

RESULTS: A total number of 386 patients were included in this study, both genders. It was noted that group (S) showed easy airway maintenance in 95.9% patients. In group (S), 63.2% patients complained sore throat and 67.4% complained about pharyngeal pain. In group (C), only 8.3% patients complained about sore throat and 11.4% complained about pharyngeal pain.

CONCLUSION: Use of stylet during endotracheal intubation make the airway maintenance easy for the anesthetist but on the other side it has complications like sore throat and post intubation pharyngeal pain more than those patients in which stylet was not used.

KEYWORDS: Pharyngeal pain, Tracheal Intubation, Stylet, Post-operative, Anaesthesia, Endotracheal Tube.

HOW TO CITE THIS:

INTRODUCTION

Tracheal intubation is very well known and useful procedure in the general anesthesia. It is usually simply referred as to place the flexible plastic tube into the trachea (windpipe) to maintain the open air passage. In 1979 Ketz and Berci used a term optical stylet for a straight and rigid device which is helpful in Endotracheal intubation. This is very helpful in early airway maintenance. Size of stylet always constant and it should be less than the size of endotracheal tube. In difficult airways it is very helpful to reduce number of attempts for intubation and easy airway management. Anesthetist satisfaction on stylet and efficacy of styles has been reported in many studies. Patients should be asked for coughing and huffing properly in preintubation time to avoid hurdles due to secretions. Pharyngeal pain and sore throat are very common and usual complaints of post-intubation. One of the major contributing factors is the tracheal intubation that could cause the pathological changes, trauma and nerve damage of trachea and air passage as well. Stylet has following important uses: it guides the tracheal tube directly to the larynx, allows the tracheal tube to pass easily, can be stiffened to help tracheal tube to pass through trachea. Shape of stylet can be modified to facilitate the tracheal intubation. In a study Komasawa N suggested that the stylet use in the tracheal intubation is very contributing in the post-operative pharyngeal pain. According to this, there was significantly. Raised post-operative pharyngeal pain in the stylet group (10/20 patients) than in the control group (2/20 patients) (P = 0.013). Most of the previous studies are not in favor of stylet use during endotracheal intubation but few studies suggested the use of stylet. Few studies have been conducted on this topic before and almost all were on a small sample size. Another gap in previous studies is that they were conducted on single aspect of device benefits or complication. But in our study we evaluate both aspects and our study was on a large sample size. The Objective of our study was to evaluate the role of placing stylet during tracheal intubation on the post-operative complications in anesthetized patients.

METHODOLOGY

This randomized control (RCT) was conducted in the Department of Anesthesia and of Nishtar Hospital, Multan.
from 10 January 2017 to 17 June 2017. After taking the ethical approval from the Institutional Ethical Committee of hospital study was started. Informed consent from the particular subjects was also taken. After this we enrolled total number of 386 patients. All the patients required stylet to be used for endotracheal intubation, from age group 15-45 years of both genders and ASA I and ASA II were included in the study. Patients with congenital abnormalities, ENT, oral surgery, facial injury, and above, and those in which endotracheal not placed for general anesthesia were excluded from study. Patients meeting the inclusion criteria were intubated with endotracheal tube of standard size calculated 7 ID for females and 7.5 ID for males by anesthesiologist having an experience of at least 5 years. After placement of endotracheal tube to the patient, cuff was inflated with air by auscultating trachea with minimal audible air leak. Standard conducts of anesthesia with monitoring as suggested were observed. After extubation patients were interviewed about their pharyngeal pain and sore throat after gaining orientation and consciousness. Pharyngeal pain was graded as Grade 0 – No pain, Grade 1 – Mild Pain, Grade 2 – Moderate pain, Grade 3 – severe pain as described by the patients.

Data Analysis: All variables like, Age, Gender, BMI, easiness in airway maintenance, Pharyngeal pain and sore throat were noted in the Pre- designed Performa and analyzed by using SPSS 23.2 V. Mean + SD calculated for quantitative variables like age, and frequency and percentages for qualitative variables like gender, easiness in airway maintenance, pharyngeal pain and sore throat. T test was used to check significant difference between both groups. P value 0.05 was considered as significant.

RESULTS

A total number of 386 patients were included in this study, both genders. Gender distribution showed that there were more males than females i.e. 56.2% (n=217) and 43.8% (n=169) respectively. The mean age and BMI of the patients was 35.03±9.82 years and 28.45±4.60 BMI respectively. The distribution of Mallampati grades (1-4) showed that 33.4% (n=129) patients had grade 1, 17.1% (n=66) had grade 2, 38.1% (n=147) had grade 3 and only 11.4% (n=44) patients had grade 4 (Fig. - 1). When patients were categorized into different age and BMI categories, it was noted that majority of patients i.e. 52.3% (n=202) were aged from 15 to 35 years and 47.7% (n=184) were aged from 36 to 63 years. 56% (n=216) patients were BMI from 22 to 28 and 44% (n=170) patients were BMI from 29 to 36 respectively. These 100% (n=386) patients were divided into 2 groups, 193 in each, i.e. control (C) and stylet (S). The mean age and BMI of the patients of control group was 35.16±9.98 and 32.46±2.76 respectively, while the mean age and BMI of the patients of stylet group was 34.91±9.69 and 24.44±1.58 respectively. The main outcome variables of this study were pharyngeal pain, airway maintenance and sore throat. It was observed that, in group (S), 63.2% (n=122) patients suffered from sore throat and 67.4% (n=130) suffered from pharyngeal pain. It was also noted that group (S) showed easy airway maintenance in 95.9% (n=185) patients and difficult airway maintenance in 4.1% (n=8). While on the other hand, in group (C), only 8.3% (n=16) patients suffered from sore throat and 11.4% (n=22) suffered from pharyngeal pain. It was also observed that group (C) showed easy airway maintenance in 78.2% (n=151) patients and difficult airway maintenance in 21.8% (n=42) patients (Table - I).

Figure - 1: Frequency of Mallum Patti grades among patients   N= 386
DISCUSSION

From last few years many side effects of stylet use were noted on the air passage and tracheal passage but tracheal intubation procedure is still performed with help of stylet, because anesthesiologists feel comfortable during intubation with the use of stylet. In our study it was noted that group (S) showed easy airway maintenance in 95.9% patients and difficult airway maintenance in 4.1% In two previous studies 35 patients were intubated, out of these 11 patients were with difficult airway due to anatomical curvature and lot of secretions but they were all intubated successfully, success rate was 100%.

Komasawa N suggested that sore throat in 50% patients and the hoarseness in 55% patients were observed immediately after the surgery. Both the sore throat and the hoarseness were found even after the use of lidocaine spray. In another study Salvalaggio et al conducted a study and reported that intubation with the use of stylet have more complication like sore throat and hoarseness f voice. In another study Kitamura T et al reported incidence of sore throat in 28% of patient with the use of stylet minor hoarseness in 25% patients. In some studies conducted by Biro, Ahmed, and Subrahmanyam post intubation sore throat reported from 14.4 to 50% and after insertion of laryngeal mask airway it was 5.8 to 24%. Some previous studies shows the results of application of lubricant on the endotracheal tube in (20/60) patients, the sore throat and pharyngeal pain were both significantly higher; but in our study we didn’t use lubrication for endotracheal tube.

CONCLUSION

Use of stylet during endotracheal intubation make the airway maintenance easy for the anesthetist but on the other side it has complications like sore throat and post intubation pharyngeal pain more than those patients in which stylet was not used.

RECOMMENDATIONS

In the spectrum of our clinical trial we are going to suggest using the stylet during every endotracheal intubation procedure for every difficult airway. But it enhances the incidence of the sore throat and pharyngeal pain in post-operative anesthetized patients, so it should be use in limited cases.

CONTRIBUTION OF AUTHORS

Mohsin MU: Conceived Idea, Designed Study
Ahmad MS: Manuscript Writing, Data Analysis
Israr H: Data Collection, Manuscript Writing
Furqan A: Proof reading, Statistical Analysis

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