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Nasotracheal Intubation in Challenging Airway Cases with Portable Fibroscope

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Abstract

Background and Aim: The airway management in critically ill patients remains a difficult task associated with high morbidity and mortality rates. Present study was aimed at comparing the time taken for intubation in anticipated difficult airway with two different airway anaesthesia techniques and also haemodynamic parameters and patient comfort in both groups.

Material and Methods: All patients between 20 to 50 years of age of both Sex, ASA physical status I-II with anticipated difficult airway for elective surgery requiring awake fibrescope intubation under General Anaesthesia were studied.

Results: No statistically significant differences were found between the two groups regarding age, sex, weight, height, body mass index (BMI) and ASA class as well as the parameters of the airway assessment. **Conclusion:** Patient comfort and safety and results in minimal hemodynamic changes.

Keywords: Haemodynamic, Fibrescope, Anxiety, Blockade, Neural.

Introduction

Tracheal intubation is sometimes difficult and may end in many complications, the most serious being hypoxemic brain damage and death. Soft tissue damage is often caused by traumatic attempts at intubation. AFOI is the gold standard within the management of patients with an anticipated difficult airway. It is essential to sufficiently anesthetize the upper airway and suppress the gag, swallow, and cough reflexes before awake fiberoptic bronchoscope (FOB)-guided intubation and thus ensure patient comfort. This can be done in multiple ways, which can broadly be divided into two groups: (a) Topical administration of local anesthetic (LA) and (b) Blockade of neural supply to the oropharynx and larynx. Topical anesthesia of the airway can be done in the form of sprays, gargles, lozenges, nebulization, or impregnated swabs of local anesthetics, which causes less trauma to the oropharyngeal and laryngeal tissues as compared to nerve blocks.

Nasotracheal fiberoptic intubation is the best option where oral route is impossible. It has certain advantages such as the route to larynx is easier than mouth and also the patient is unable to bite the scope.[10] The nasal route provides an easier view of the laryngeal opening as a result of decreased interference from the tongue. In addition, the gag reflex is less pronounced with nasal intubation than with oral intubation.[11] Portable fiberscopes are new disposable flexible videoscope, which have several advantages compared with the reusable devices. Present study was aimed at comparing the time taken for intubation in anticipated difficult airway with two different airway anaesthesia techniques and also haemodynamic parameters and patient comfort in both groups.

Material and Methods

All patients between 20 to 50 years of age of both Sex, ASA physical status I-II with anticipated difficult airway for elective surgery requiring awake fibrescope intubation under General Anaesthesia were studied. It was a longitudinal observational study to determine the time taken to intubation using two different techniques of airway anaesthesia viz Nerve blocks vis-à-vis Spray-as-you-go technique. The procedure of fibrescope awake intubation was explained to the patients during their preanaesthetic visit. Uncooperative patients, those allergic to LA, asthmatics, epileptics and those with deranged coagulation, haemodynamic instability, bradyarrythmias or infection at the local site were excluded from the study. Patients were randomly allocated by computer generated random numbers into two groups of 50 each Group A (n=50) received Airway nerve blocks (bilateral superior laryngeal nerve block and transtracheal block) after nebulisation with 4% lignocaine and Group B (n = 50) received topical spray of local anesthetic on site via Ambuscope channel after nebulisation with 4% lignocaine.

Awake nasotracheal intubation carried out in both the groups while recording haemodynamic parameters. Patients assessed for comfort levels, recall, in the post operative period about the procedure. Patient age, weight, height and body mass index were recorded. In the operative room, Standard monitoring including ECG, Spo2 and NIBP were applied to all the patient and the vital parameters were recorded at baseline, and every 3 min thereafter. All patients were premedicated with Inj Ondansetron 4 mg IV, and Inj Glycopyrrolate 0.2 mg intravenously (IV) to reduce the secretions of airways and xylometazoline drops (3 drops in each nostril) 15 min before airway manipulation. Nasal mucosa anaesthetised with 4% lignocaine and both nostrils packed with pledgets of cotton soaked in phenylephrine (4% lignocaine and 1% phenylephrine at a ratio of 3:1). Inj Midazolam 0.02 - 0.03 mg/kg IVand Inj Fentanyl 1 ug/Kg given on table just prior to awake nasotracheal intubation. Supplemental oxygen was administered using nasal prongs.

A group received bilateral superior laryngeal nerve block and transtracheal block while the B group received 1 ml aliquots of 2% Lignocaine through the working channel of the flexible video scope. Vital parameters recorded at 1- and 3-mins post intubation and at 5 min intervals. With the patients in supine position, intubation was performed by an experienced Anaesthesiologist with minimum one year experience. The cord of the Scope was inserted through the nostril and advanced into the nasopharynx till the vocal cords were visualized. Then, a lubricated nasal tube, which had been mounted and fitted on the scope beforehand, was glided over the video scope and advanced through the vocal cords into the

trachea. After successful passage of the tube through the vocal cords into the trachea and after identification of the carina, the tube was positioned approximately 3 cm above the carina which corresponds to the mark of 26–28 cm at the nares, then the scope was withdrawn and the cuff of the tube was inflated and the tube was sealed with adhesive tape.

Correct placement of the tube was confirmed by the end-expiratory CO curve on capnography and by bilateral auscultation. Immediately 2 After securing the airway, General anesthesia administered using Propofol 2 mg/kg IV and Atracurium 0.6mg/kg IV and mechanical ventilation established. During the procedure, patients were awake. If it was necessary, facilitating techniques such as head flexion, and jaw thrust were utilized. In addition to the parameters of the airway assessment like mouth opening, Mallampati class, neck movement, and thyromental distance, the time from the start of insertion of the Scope in the nares till visualization of vocal cords (Tvc) and from this till successful endotracheal intubation and cuff inflation (Tti), then the total time of nasotracheal intubation which is the sum of the previous two times were recorded in seconds. The number of attempts, the need of facilitating maneuvers, the incidence of esophageal intubation or any complications and success rate were recorded. Intubation was considered failed if desaturation occurred before identification of the carina in spite of the precautions taken to provide oxygen.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2019) and then exported to data editor page of SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). Quantitative variables were described as means and standard deviations or median and interquartile range based on their distribution. Qualitative variables were presented as count and percentages. For all tests, confidence level and level of significance were set at 95% and 5% respectively.

Results

In our study overall patient comfort was better in Group A with fewer incidences of unpleasant recalls as compared with Group B. Group B had an increased number of coughing/gagging episodes as compared with Group A. Vocal cord visibility and ease of intubation were better in patients who received airway blocks and hence the amount of supplemental lignocaine used was less in this group. However, there was no statistically significant difference for quality of airway anaesthesia for intubation between groups. ($p \leq 0.05$) No difference for patient perception of discomfort during intubation.

Table 1: Demographic Profile of the studied groups

Variable	Group A (n= 50)	Group B (n =50)	P value
Age (yrs)	37.50 ± 12.47	34.22 ± 10.11	0.09
Gender (male/female)	37/13	35/15	0.32
Weight (kg)	62.68 ± 12.41	57.99 ± 10.35	0.06
Height (cm)	165.50 ± 4.23	166.05 ± 6.35	0.97
ASA(I/II)	34/16	24/26	0.48

Statistically significance at $p \leq 0.05$

Discussion

Awake fiberoptic bronchoscope (FOB) guided intubation is a safe approach to airway management in most cases of difficult airway, especially in patients with cervical spine injury. It is essential to sufficiently anesthetize the upper airway and suppress the gag, swallow and cough reflexes prior to awake FOB guided intubation and thus ensure patient comfort.[15] This can be achieved in multiple ways, which can broadly be divided into two groups: (a) Topical administration of local anesthetic (LA), or (b) blockade of neural supply to oropharynx and larynx.

In the present study the total time of nasotracheal intubation is more in A group as compared to a study. Our limitation was the small sample size and a study with larger sample size is required for validation of results.

Conclusion

A properly performed technique of awake fiberoptic intubation done under combined regional nerve blocks or Spray-As-You-Go airway topical anesthesia provides good intubating conditions, patient comfort and safety and results in minimal hemodynamic changes. Both techniques for airway anesthesia were found to be similarly safe and effective and offer alternatives when one of these two techniques is not feasible.

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