Section: Anaesthesia

Original Research Article

AWAKE BLIND NASAL INTUBATION- DOES IT STILL FIND A PLACE IN MODERN ERA

Khyati Jethva[1], Jigisha Badheka[2], Mayurika Patel[3], Shahin C.[4]

[1]*Assistant Professor, P.D.U. Medical College, Rajkot, Gujarat, India.*
[2]*Assosiate Professor, P.D.U. Medical College, Rajkot, Gujarat, India.*
[3]*2nd year Resident, P.D.U. Medical College, Rajkot, Gujarat, India.*
[4]*3rd year Resident, P.D.U. Medical College, Rajkot, Gujarat, India.*

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Corresponding Author:
Dr. Shahin C.,
3rd Year Resident, P.D.U. Medical College, Rajkot, Gujarat, India.
Email: shahinchembilaly@gmail.com

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ABSTRACT

Background: Airway management in patients with restricted mouth opening in emergency and elective surgeries becomes a major concern for anaesthesiologist. Although fiberoptic intubation is the generally accepted method for managing difficult airway, it may not be available in all the hospitals, requires patient cooperation and appropriate training. So awake blind nasal intubation can be useful in management of difficult airway. The aim of this study was to evaluate the usefulness of blind nasal awake intubation as an alternative technique when fiberoptic equipment is unavailable and insertion of ILMA not possible in patients of restricted mouth opening.

Materials and Methods: This prospective observational study was carried out in 150 adult patients of either sex aged between 30 and 65 years with restricted mouth opening posted for elective surgery. Awake blind nasal intubation was carried out in a conscious sedated patient with proper airway preparation. The monitoring of breath sound becomes the key for successful intubation. We carried out awake intubation with the help of cuff inflation technique (the cuff of ETT is inflated in the oropharynx to help guide the tip of the tube into the trachea) along with monitoring by capnography and breath sounds. We have recorded manipulation in position of head and neck, number of attempts, failure of intubation and complications.

Results: Out of 150 patients, 81(57.4%) patients were intubated in sniffing position, 32(22.6%) patients required increased neck flexion and 28(19.8%) required increased neck extension. 9 patients had failed intubation.47 patients(31.3%) were intubated in 1st attempt,43 patients (28.6%) were intubated in 2nd attempt and 51 patients (34 %) were intubated with 3 attempts.

Conclusion: Awake blind nasal intubation is an alternative technique when there is non- availability of fibre optic or ILMA in patients of restricted mouth opening.

Key words: Difficult airway, Restricted mouth opening, Blind nasal awake intubation.

INTRODUCTION

Laryngoscopy and Endotracheal intubation are very essential tools in the hands of anaesthesiologists in maintaining airway. Airway difficulties are a major concern for an anaesthesiologist. The presence of difficult airway poses one of the greatest challenges for the anaesthesiologist who should have several resources available in order to guarantee opened airway. All India Difficult Airway Association 2016 guidelines and ISA recommends the use of several devices such as laryngeal mask, supraglottic airway devices, retrograde intubation, lighted guide wire and fiberoptic endoscopy.[1]

Blind nasal intubation was introduced in 1928 by Stanley Rowbotham and popularized by both Stanley and Evan Magill.[2] Blind nasal intubation is an alternative technique to manage difficult airway and is also a life saving technique during emergency situation as it is less expensive, quicker and safer.

Awake blind nasal endotracheal intubation is a modification of Sir Evan Maggil's technique of blind nasal intubation. Whenever there is predicted difficult airway, awake intubation is recommended. Awake blind nasal intubation is probably the safest and easiest technique requiring combination with topical anaesthesia of nasal passages, superior laryngeal nerve and transtracheal blocks, decongestion of airway, sedation and patient cooperation. Various drugs used for sedation like midazolam, fentanyl,[3] Propofol,[4] dexmedetomidine etc. or combination of drugs by different studies. In our study we have used midazolam and dexmedetomidine as sedative agents.

The ideal blind nasotracheal intubation technique though still described waned in the popularity after the advent of the laryngoscope.[5,6]

Fiberoptic intubation is the gold standard method used for difficult airway.[7] But it is unavailable in every medical institution.In our institute we do not have the facility for fiberoptic bronchoscope. ILMA can also be useful in difficult airway situation but its use is limited in restricted mouth opening patients.

So, we have done this study of cases with restricted mouth opening in our hospital with the primary aim to see the usefulness as an alternative technique of intubation when fiberoptic equipment is unavailable and to study the required attempts and failure rate.

MATERIALS AND METHODS

This prospective observational study of 150 adult patients aged 30 to 65 years of either sex with restricted mouth opening posted for elective head and neck surgery was carried out. Informed written consent of the patients was taken prior to the procedure. All the patients were examined a day before surgery. Patients having inadequate mouth opening and short neck were included for the study. Those patients having history of bleeding diasthesis, acute epiglottitis, upper airway growth, large bilateral nasal polyps, patients with basal skull fractures, severe laryngeal trauma and patient refusal were excluded from the study. They were counselled with regards to sedation, local anaesthesia as well as the operative procedure.

In the pre anaesthetic room, baseline vital parameters were recorded using multipara monitor. An intravenous canula was inserted and i.v. fluid started.Nasal decongestion with 0.025-0.05% oxymetazoline drops, nebulization with 4% lignocaine to anaesthetize nasal passage, pharynx, larynx and trachebronchial tree as well as placement of pledgets soaked in 4% lignocaine was done. To anesthetize oropharynx, oral gargles with 10% lignocaine viscous and 4% lignocaine spray was used.

On arrival to the operation theatre, baseline vital parameters were recorded. Difficult airway cart was kept ready. All the patients were premedicated with injection glycopyrrolate 7-10 µg/kg, ondansetron 4mg, midazolam 20-40 µg/kg,fentanyl 1 µg/kggiven and dexmedetomidine 0.5mg/kg given intravenous slowly over 10 min till ramsay sedation score of 3 is achieved. To anaesthetise upper trachea, transtracheal injection was given with 2- 3ml 4% lignocaine via cricothyroid membrane with 22 G needle under aseptic precautions with aspiration of air.

The monitoring of breadth sounds becomes the key for successful intubation. We carried out awake intubation with the help of cuff inflation technique (the cuff of ETT is inflated in the oropharynx to help guide the tip of the tube into the trachea) along with monitoring by capnography and breath sounds.

After adequate airway block along with sedation, appropriately sized RAE tube impregnated with 2% Lignocaine jelly was introduced after keeping the patient in sniffing position with tube bevel facing nasal septum of the most patent nostril. The tube was passed gently through the nostril. Once the endotracheal tube has passed into the nasopharynx, the monitoring of breadth sounds and capnography was observed. At each inspiratory effort, the tube was then advanced while constantly monitoring breadth sounds along with capnography. While advancing the tube if it results in loss ofor reduction in breath sounds or disappearance of waveform on capnography, then the tube was withdrawn to the point at which the breath sounds are maximally heard. At this point, 10ml of air was introduced into the tube cuff (this directs the tube tip anteriorly away from the posterior pharyngeal wall) and the endotracheal tube was then advanced further 2cm without loss of breadth sounds. The cuff was then deflated and the tube advanced further into the trachea.[8] Confirmation of successful intubation was carried out by breadth sounds throughET tube, capnograph, absence of phonation, to and fro movements in the bag when connected to breathing system with APL valve open and Chest auscultation. The tube was secured by adhesive tape. If unsuccessful insertion in trachea, ET tube was again withdrawn 2cm till breath sound present. After that neck position is changed either flexion or extension and tube is advanced further as above till intubation was successful.

We have recorded manipulation in position of head and neck, number of attempts and failure of intubation. In patients with failed awake nasal intubation, airway was secured with trachestomy.

All the patients were maintained with oxygen, inhalational agent and non- depolarizing muscle relaxant. The intra-operative anaesthetic management was uneventful and all the patients were successfully extubated post-operatively.

Perioperative complications like nasopharyngeal haemorrhage, laryngeal trauma, retropharyngeal perforation and paranasal sinusitis were recorded.

Statistical Analysis: Continuous variables are presented as the mean ± SD and categorical

variables are presented as frequencies (percentage of patients).

RESULTS

In the present observational study, 150 cases were taken which met the inclusion criteria during elective head and neck surgeries at our institute.

The demographic profile of the patients with regards to age, weight, height, and male:female ratio is shown in table 1. Number of attempts for blind awake nasal intubation as shown in figure 1 suggests that 47 patients (31.33%) were intubated in 1st attempt,43 patients (28.66%) were intubated in 2nd attempt, 51patients (34%) were intubated with 3rd attempt. There were 9 cases (6%) of failed awake blind nasal intubation where tracheostomy was performed. Manipulation required in the position of head and neck for successful intubation as shown in figure 2 suggests that successful blind nasal awake intubation was done in sniffing position in 81(57.44%) patients, in increased flexion at neck in 32(22.69%) patients and in increased extension at neck in 28 (19.85%) patients.

Table 1: Demographic Variables

Demographic variables	Mean ±SD
Age (years)	46.2± 12.88
Weight (kg)	61.36±12.55
Height (cm)	166±9.04
Gender (M:F)	94:56

Table 2: Types of Surgery

Type of surgery	Number of patients
Mandible fracture	25
Wide local neck excision	40
Commando surgery	35
Sub mucous fibrosis for other surgery	50
Total	150

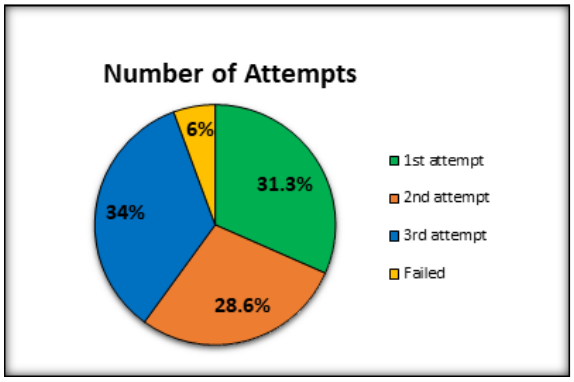

Figure 1: Number of Intubation Attempts

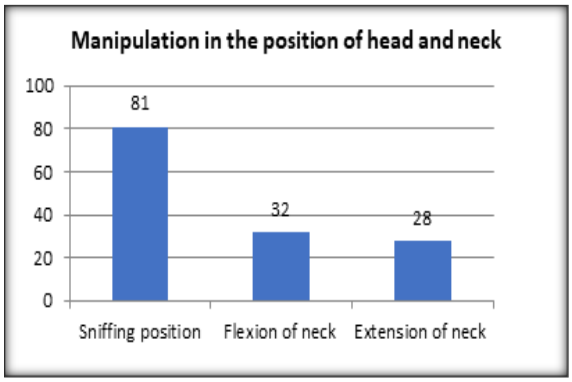

Figure 2: Manipulation in the position of head and neck

DISCUSSION

In practice of anaesthesia the most important principle is the safety and wellbeing of the patient. Airway management in patients with restricted mouth opening poses challenges to the anaesthesia provider. Difficult ET intubation technique includes use of blind nasotracheal and retrograde intubation, fiberoptic bronchoscope, intubating laryngeal mask airway (ILMA). Fiberoptic bronchoscope is the gold standard technique for difficult intubation. The intubating laryngeal mask airway (ILMA) as an alternative in the difficult airway algorithm was not feasible as all the patients in our study had restricted mouth opening.

Blind nasotracheal intubation is the technique whereby a tube is passed into the trachea through the nose without the use of a laryngoscope. The ability to intubate the trachea without the use of a laryngoscope is a valuable skill.[9] In the era of fiberoptic bronchoscopy and ILMA, we revisited the old technique of awake blind nasal intubation for cases of restricted mouth opening and nonavailability of fiberoptic bronchoscope.

Ezri et al and Kristensen et al did a survey of airway management practices amongst anaesthesiologists, they demonstrated that they preferred an awake fiberoptic intubation technique to secure the airway in patients with predicted difficult endotracheal intubation.[10]In these surveys the fiberoptic scope was available and easily accessible and the different cadres of anaesthesiologists had been trained on its use. They also demonstrated that senior anaesthesiologist faced with a ‘difficult intubation’ preffered to use the fiberoptic bronchoscope as it was available though they were comfortable at performing a blind naso-endotracheal intubation as well.[11]

Elstrate et al have done the study on comparison of tracheal tube cuff inflation and fiberoptic

bronchoscopy in nasotracheal intubation in patients with immobilized cervical spine and they found that there was no difference in the success rate of endotracheal intubation using both the techniques and were considered valuable in a difficult intubation scenario.[12]In our study we have used blind nasal intubation via tracheal cuff inflation.

Oesophageal intubation remains one of the most common mistake in the airway management. Though there are various methods of confirmation of successful tracheal intubation, no verification technique is entirely fullproof. In our study confirmation of successful intubation was carried out by Breadth sounds through ET tube, capnogram, absence of phonation, To and fro movements in the bag when connected to breathing system with APL valve open and Chest auscultation.

Magill et al found that with the patient's head held in a certain position, the inspiratory catheter and expiratory tube could be made to enter the trachea without the help of laryngoscope.[13] Magill advised the position adopted 'when sniffing the morning air', the head on a single pillow, with slight extension of the atlanto-occipital joint. If the tube does not enter the larynx, its direction may be adjusted by the rotation of the tube, rotation of the neck or digital movement of the larynx to meet the advancing tube.In our study successful blind nasal awake intubation was done in sniffing position in 81patients, increased flexion at neck was required in 32patients and 28 patients required increased extension at neck.

Awake blind nasal intubation requires sedation for patient comfort and cooperation. Various sedative and analgesic drugs like midazolam, fentanyl,[3]propofol,[4] dexmedetomidine, etc. or combination of drugs were used by different studies.Fentanyl and midazolam have short onset time and peak of action. Dexmedetomidine can be widely used as a sole pharmacological agent in awake blind nasal intubation as it provides sedation with minimal respiratory impairment. It provides better intubating condition as well stable hemodynamics with onset time 5 min and peak effect at 15 min. In our study we have used midazolam and dexmedetomidine as sedative agents.

Despite the presence of various techniques for endotracheal intubation, the blind awake nasotracheal intubation technique requires adequate proficiency and practice.

Our study results found that 47 patients (31.33%) were intubated in 1st attempt, 43 patients (28.66%) were intubated in 2nd attempt, 51patients (34%) were intubated with 3 attempts. Number of patients required two or more attempts were higher, this might be due to blind intubation technique requires experienced anaesthesiologist while this was performed by different trained anaesthesiologists in our study.

Failed intubation or in situations where a fiberoptic scope is not available for difficult endotracheal intubation, tracheostomy is usually performed.[14,15] Similarly in our study there were 9 (6%) cases of failed awake blind nasal intubation where tracheostomy was performed. In the management of the patients with restricted mouth opening, the blind nasotracheal intubation is a safe, reliable, and a cost-effective alternative technique that requires the presence of minimum equipment.

The limitation of our study is that different cadres of anaesthesiologists have performed this technique and not a single proficient anaesthesiologist have carried out the procedure in all the cases so we found multiple attempts of insertion due to lack of experience of awake blind nasal intubation technique.

CONCLUSION

Awake blind nasal intubation is a very useful alternative technique in patients with anticipated and unanticipated difficult airway and is the most important skill required to be taught during training of all the anaesthesiologist. Awake blind nasal intubation can be easily used when there is non-availability of fiberoptic equipment in patients of restricted mouth opening.

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