A CASE REPORT OF RETROPHARYNGEAL PASSAGE OF ENDOTRACHEAL TUBE WHILE ATTEMPTING BLIND NASAL INTUBATION- A RARE COMPLICATION
G. Harinath¹, G. Venkateshwarlu², M. Bhanu Lakshmi³, G. Ramesh⁴, A. Mrunalini⁵

HOW TO CITE THIS ARTICLE:

ABSTRACT: Nasal route of intubation is commonly used for surgical procedures involving Head and Neck, Patients with intra-oral pathology, structural abnormalities, trismus, cervical spine instability, cervical spine disease and OSA. The intubation may be aided by direct laryngoscopy, flexible fibreoptic laryngoscopy or by blind technique. The classical technique of blind nasal intubation requires a spontaneously breathing patient and uses breath sounds to guide placement. Most common complication associated with this technique is epistaxis. Other rare complications include - Inferior turbinate avulsion, middle turbinate/nasal polyp/tumour avulsion, Bacteraemia, Retropharyngeal mucosa dissection/laceration. Here we present to you a case of fracture mandible posted for ORIF for which blind nasal intubation was planned. While attempting the intubation the endotracheal tube coursed behind the retropharyngeal mucosa for a short distance before entering the trachea. Post-operatively the patient was put on Ryle’s tube feeding for 3 days followed by orals. The track healed spontaneously and the recovery was uneventful.

KEYWORDS: Nasal intubation, Blind nasal technique, Complications, Retropharyngeal mucosa dissection.

INTRODUCTION: Nasotracheal intubation was first described in 1902 by Kuhn. It is commonly used for surgeries involving the face and oral cavity which would hinder the surgeon’s access to the operative field.(1,2) Other indications include mandible fractures, restricted temporomandibular joint mobility and cervical spine injury. The blind nasal technique may be useful when direct laryngoscopy or fibreoptical intubation would be difficult. It is life saving and is worth learning.(3,4,5) The classical technique is performed in a spontaneously breathing patient and is guided by breath sounds. Prior to intubation the airway is anaesthetized to avoid discomfort to the patient. The patient is then placed in the classical intubating position. Tracheal tube selected should be one size smaller than the oral tube. Lubricate entire length of tube. The deflated tube is inserted in the nostril with the bevel facing laterally and then blindly advanced. In a spontaneously breathing patient breath sounds can be heard through the tube as the tip approaches the larynx. This technique ensures easier placement of tube and the tube is not occluded by biting. It can also be performed in limited cervical movement cases. Disadvantages include need to use a smaller size tube, increased resistance, abrasion or laceration of the nasal mucosa is common.(6) The nasal septum may be dislocated or perforated. Fragments of adenoid tissue, nasal polyps or turbinates may be dislodged (375, 561-566). Blood clots from epistaxis may enter the trachea and block a bronchus (336). There is also an increased incidence of bacteremia, sinusitis, and otitis (337-
CASE REPORT

343). Contraindications include coagulopathy, nasal polyps or foreign body, fracture at the base of skull, previous history of trans-spenoidal surgery. Submucosal or retropharyngeal dissection of the nasotracheal tube with potential for secondary subcutaneous emphysema and mediastinitis.

CASE REPORT: A 35 year old male patient was admitted in the department of plastic surgery following a road traffic accident and sustaining trauma to the lower jaw. Patient is not a known case of diabetes mellitus, hypertension, Koch’s, asthma, CAD or COPD. There is no history of bleeding diathesis and no history of jaundice or previous surgeries.

On examination patient belonged to ASA grade – I. Airway examination showed restricted mouth opening with MPG-3. Vitals – Pulse rate – 92/min, Blood pressure – 130/80mm Hg, H/L – NAD. Local examination – Frontal, both zygomatic and both maxillary bones normal. Tenderness and crepitus present at the angle of left mandible. Mouth opening is restricted.

Patient is posted for ORIF # Angle of mandible (left) and MMF under General anaesthesia. Anaesthetic plan – Patient counselling and AWAKE BLIND NASAL INTUBATION followed by general anaesthesia.

On the day of surgery patient vitals were stable. Patient pre-medicated with Inj. Glycopyrrolate 0.2mg/ IV, Inj.Ondansetron 4mg/IV, Inj.Midazolam 1mg/IV, Inj.Fentanyl 100mcg/IV. Patient prepared for awake blind nasal technique by giving 2% lignocaine viscous gargling + xylomatazoline drops in both the nares + Under aseptic conditions bilateral Superior laryngeal nerve block with 2% lignociane followed by transtracheal block with 4% lignocaine. Nasal intubation was attempted through right nare using 7.0mm ID portex OETT. Patient complained of pain as the tube passed the posterior nares with difficulty. As the tube was advanced it was guided by breath sounds. The ETT was palpated on right side of the midline and the breath sounds diminished. So, it was withdrawn little and reinserted. Again the tube was palpable on right side and couldn’t be directed into trachea inspite of manipulation. The ETT was completely withdrawn out of the nostril. A second attempt was made through the same nostril. Patient did complain of pain as the tube passed the posterior nares. As the tube entered the oropharynx, it was rotated anti-clockwise and with manipulation of larynx externally, the tube was advanced into the trachea. Tracheal placement was confirmed by connecting the Bain’s circuit to the tube and checking the reservoir bag movement with the patient’s respiratory efforts. Patient induced with Inj. Thiopentone 300mg, bilateral air entry checked and ETT fixed. He was paralysed with Inj. Vecuronium 6mg as loading dose and was started on N2O: O2 in the ratio of 4:4. Vitals were stable and the patient handed over to the surgeon. As they started packing the throat they informed that ETT was not seen in the the posterior pharynx. On examining, the tube was seen piercing the mucosa of retropharynx, ran a short course in the retropharyngeal wall, repierced the mucosa before entering the vocal cords. The entry and exit (fig.1) ports of tube are identified. ENT surgeon opinion taken on table. Surgery was continued as the patient maintained 100% saturation with stable vitals. Intra operative period was uneventful. Patient reversed with Inj. Neostigmine 2.5mg and Inj. Glycopyrrolate 0.4mg. Oral suction done cautiously and extubated. The ports were left untouched as there was no active bleeding. Post-operative vitals were stable. Minimal surgical emphysema noted in the neck region. Patient shifted to Respiratory Intensive Care Unit for further monitoring and advised to continue NPO, to watch for increase in
surgical emphysema, to start higher antibiotic and nebulisation with duolin and budecort 6th hrly for 48 hours apart from routine post-operative care.

Immediate Post-op – Minimal emphysema +. No fresh complaints.
- 1st post-op day – Emphysema resolved. Ryle’s tube inserted and RT feeds started.
- 2nd - 4th post-op day – uneventful.
- 5th post-op day – Oral feeds started. Uneventful.
- 6th post-op day – patient discharged from hospital and asked to review after 1 week.


**DISCUSSION:** It is important to understand the anatomy and physiology involved fully in order to appreciate the nature of the complications that can result from nasal intubation. Normally after entering the oropharynx the tube easily slides into the trachea without much manipulation. But when we encounter a difficulty in advancing the tube, the tip can go to one of the four sites mentioned by Elder. The four sites involved are oesophagus, pyriform sinus, vallecula and supraglottic. On entering the oesophagus, breath sounds become inaudible and can be corrected by extending the neck further followed by tube advance and release of the extension. As the tube enters the pyriform sinus, breath sounds become less audible and a palpable external bulge near the hyoid laterally as the tube leaves the midline. This placement can be rectified by withdrawing the tube and rotating it towards midline, followed by reinsertion. When the tube encounters resistance in further advancement, it probably is in vallecula or supraglottic space and this can be corrected by withdrawal of tube and neck flexion followed by reintroduction.

In our case, we probably entered the pyriform sinus when the tube was palpable externally in the first attempt. It was in the second attempt, that we pierced the retropharyngeal mucosa. In an attempt to pass the tube into the larynx after failed first attempt, the external manipulation of the larynx and pressure on the tube caused the tube to repierce the mucosa to enter oropharynx and finally the larynx.

On reviewing the literature, this complication of submucosal or retropharyngeal dissection of the nasotracheal tube was also reported by Daly(7) and Loers.(8) Posterior pharyngeal wall laceration has occurred as a result of anatomical abnormality(9) and may result in dissection of the retropharyngeal mucosa.(10) One series reported minor lacerations of the posterior pharyngeal wall in 2% of patients undergoing nasotracheal intubation.(11,12) There is an attendant risk of bleeding and later infection or abscess formation with such a complication. Subsequently, this complication has been described in several references. It occurs when the tube disrupts the mucous membrane and dissects into the underlying tissues. The secondary complications of submucosal dissection are mediastinitis as well as subcutaneous emphysema. Again, while this complication may be relatively rare, it should be kept in mind whenever resistance to passage of a nasotracheal tube is encountered. Resistance to the passage of the tube or absence of breath sounds should alert the practitioner to the likelihood that the end of the tube is abutting on the pharyngeal wall. If a pharyngeal wall laceration is identified, the use of a broadspectrum antibiotic has known to reduce the risk of infective complications.
CONCLUSION: Blind nasal intubation is an effective and safe technique though in the recent times it is not routinely used. The benefits of nasotracheal intubation to the head and neck surgery outweigh the potential disadvantages to the patient of using this route of tracheal intubation. Retropharyngeal dissection is a rare complication which can be managed by strict vigilance and using higher broad spectrum antibiotic to reduce post-operative morbidity.

REFERENCES:
**CASE REPORT**

**AUTHORS:**
1. G. Harinath
2. G. Venkateshwarlu
3. M. Bhanu Lakshmi
4. G. Ramesh
5. A. Mrunalini

**PARTICULARS OF CONTRIBUTORS:**
1. Associate Professor, Department of Anaesthesiology and Critical Care, Gandhi Medical College, Hyderabad, Telangana, India.
2. Professor, Department of Anaesthesiology and Critical Care, Gandhi Medical College, Hyderabad, Telangana, India.
3. Assistant Professor, Department of Anaesthesiology and Critical Care, Gandhi Medical College, Hyderabad, Telangana, India.
4. Assistant Professor, Department of Anaesthesiology and Critical Care, Gandhi Medical College, Hyderabad, Telangana, India.
5. Post Graduate, Department of Anaesthesiology and Critical Care, Gandhi Medical College, Hyderabad, Telangana, India.

**NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**
Dr. M. Bhanu Lakshmi,
Tulip 26, L&T Serene County,
Gachibowli-500032, Hyderabad.
E-mail: sunmoney17@rediffmail.com

Date of Submission: 01/06/2015.
Date of Peer Review: 02/06/2015.
Date of Acceptance: 05/06/2015.
Date of Publishing: 13/06/2015.