



BLIND NASOTRACHEAL INTUBATION IN A RARE CASE OF MANDIBULAR RETROGNATHIA : SAFE AND EFFECTIVE TECHNIQUE

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ABSTRACT

Proper airway maintenance is the pre-requisite for anesthesia. A difficult intubation should be anticipated in preanesthetic room itself by detailed history and examination. Various techniques of anaesthetic management for difficult intubation are available now days like video laryngoscopic intubation, blind nasal intubation, fiberoptic guided intubation and use of various intubating laryngeal mask airways.

Blind nasal intubation is an option whenever oral access is difficult or not possible. It does not require availability of a special device.

This is a case report of a 36 year old male with mandibular malunion leading to a rare condition of Mandibular Retrognathia who came for surgical correction under general anaesthesia.

Patient's mouth opening was one finger, Mallampati grade IV and anticipated as difficult airway.

KEYWORDS : Retrognathia, difficult intubation, Blind nasal intubation

INTRODUCTION –

Pre-requisite for proper conduction of general anesthesia require securing of airway (i.e. larynx & trachea) by placement of an endotracheal tube (or sometimes supraglottic device) to segregate it from gastrointestinal tract (i.e. pharynx, esophagus and stomach). This airway device also acts as a conduit to deliver fresh gases and remove expired gases from the patient.

At times placement of an airway device is difficult due to various anatomical and physiological factors, hence called "**Difficult Airway**". ASA defined a difficult airway as the "*Clinical situation in which a conventionally trained anesthesiologist experiences difficulty with facemask ventilation of the upper airway or difficulty with tracheal intubation or both*". Incidence of difficult laryngoscopy and difficult mask ventilation during surgery are estimated to be 4.4% and 2.5% respectively⁽¹⁾

A difficult airway can be anticipated by detailed history and examination. Any previous history of difficult intubation and a detailed analysis of the various physical, radiological and advanced tests should be applied to anticipate a case of difficult intubation in the pre-anaesthetic check-up.⁽²⁾ There are various methods to negotiate a difficult airway. One of the gold standard technique is *Fiber optic intubation*. But it is costly & sophisticated equipment requires proper maintenance and is not available freely. An alternative to fiber optic intubation is Blind nasal intubation.

Blind nasal intubation is an option whenever oral access is difficult or not possible in cases of restricted mouth opening or cervical immobility e.g. in cases of ankylosing spondylitis, rheumatoid arthritis, temporo-mandibular joint fixity, local infection. A case report is presented here where Blind nasal intubation was done in a case of post surgical mandibular retrognathia posted for surgical correction.

Retrognathia is a condition in which one of the upper or lower jaws is behind the other one. It is a type of mal-occlusion of teeth due to abnormal alignment of jaw. The causes can be genetic like Klippel-Feil syndrome, infective origin, accidental trauma or mal-union after surgery. Patients present with symptoms like difficulty in talking, eating, breathing obstructive sleep apnea or for cosmetic correction.⁽³⁾

CASE REPORT –

History –

A 36 year old male incurred mandibular fracture during a road traffic accident 6 months back and underwent surgical correction 5 months back. He had difficulty in talking and eating since then. He had reported to Department of Oral and Maxillofacial surgery for further treatment of mal-union and had been advised mandibular augmentation.



Fig. 1: Preoperative Profile view showing mandibular Retrognathia

Physical Examination

A) Facial anomaly –

1. Scar mark over mandibular region
2. Maxilla is more prominent than mandible

B) Temporo-mandibular joint assessment –

1. Sliding of mandible was inadequate
2. Mandible was retrognathic
3. Calder test- Lower incisors lie posterior to upper incisors

C) Atlanto-occipital joint assessment –

1. Normal angle of extension (Grade I) more than 65 degree
2. Normal angle of flexion at cervical joint more than 30 degree

D) Mandibular Space –

1. Thyromental distance 4cm

2. Hyomental distance < 3cm



Fig.2 Showing thyromental distance two finger

E) Oral cavity assessment -

1. Mouth opening was one finger
2. Multiple loose teeth present in socket
3. Mallampatti Class IV
4. Direct laryngoscopy (Intra-operative) –
 - a) Cormack & Lehane – Grade III
 - b) Modified Cook's - Grade IIIB

F) Upper lip bite test –

Class III (lower incisors cannot bite the upper)

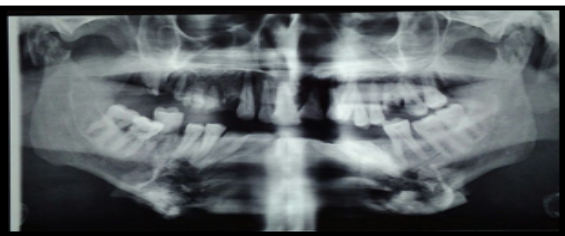


Fig 3. X-ray showing malunited mandible and multiple loose teeth in the socket

Anesthetic Management –

As fibre-optic bronchoscope was not available due to some unavoidable circumstances, awake blind nasal intubation was planned.

All the necessary preparation of difficult airway management was organized with necessary face masks, airways, endotracheal tubes, stylets, bougie, laryngoscope with all size Macintosh and Miller blades, surgical cricothyroidotomy set and tracheostomy set.

Procedure was explained to the patient in detail and written informed consent was obtained. Patient was nebulized with 10% Lignocaine to anesthetize the nasal pathway 30 minutes pre operatively. Patency of nostril checked and 2% Xylometazoline drops were instilled into both the nostril. .

Venous access with 18G cannula was secured and pre-medication done with IV Ondansetron 4mg, Ranitidine 50mg, Glycopyrrolate 0.2mg. No sedative drug was given to the patient.

Regional blockade of bilateral superior laryngeal nerve was performed using 2 ml of 2% Adrenalized lignocaine and trans-tracheal block was done with 2 ml of 2% lignocaine. Oropharynx was sprayed with 10% lignocaine spray.

Patient pre-oxygenated with 100% oxygen. 2% Propofol 50mg in sedative dose was given. A lubricated flexometallic endotracheal tube 7.0mm passed through the more patent right nostril. Gentle direct laryngoscopy was performed and only tip of uvula was visible. Failed initial attempt of endotracheal intubation was followed by a second successful attempt, hearing the breath sounds inside the proximal end of nasotracheal tube. Position of the tube was confirmed by chest auscultation and capnography.

Patient was then anaesthetized with IV Fentanyl 100mcg and IV Propofol 100mg. Muscle relaxant IV Vecuronium bromide bolus

4mg and infusion was started at 2mg/hour. Throat packing was done by surgeon after surgical opening of oral cavity. Maintenance of anesthesia was done with oxygen, nitrous oxide, muscle relaxant and isoflurane on controlled mode of ventilation using closed circuit. No intra-operative anesthetic or surgical complications.

At the end of the surgery residual neuromuscular block was reversed with neostigmine and glycopyrrolate. After adequate reversal, patient gained consciousness and spontaneous respiration was achieved. Awake extubation was done. Patient was shifted to ICU, propped up position given with oxygen at 4L/min.

Discussion –

Patients where tracheal intubation is either difficult or impossible, blind nasal intubation has been an accepted method for securing an airway in absence of Fiber optic bronchoscope. It is a very useful approach as the patient's consciousness and ventilation is maintained. It does not require availability of a special device (2). Also the preformed anatomical curve of the nasopharynx and oropharynx helps in correct placement of a nasotracheal tube.

Although blind nasal intubation has been shown to be an effective alternative for the management of difficult airways, there are inherent risk and complications associated with this. These should be kept in mind before planning awake nasal intubation. These are esophageal intubation, Subluxation of the cricoarytenoid cartilage, damage to the glottic opening (rare). In some instances, the epiglottis is pushed into the glottic opening. (4)

A study was conducted on blind intubation wherein during a period of 2 years, thirteen patients have been seen in whom direct laryngoscopy and intubation were impossible. In twelve of these patients, blind nasal intubation was performed successfully and tracheostomy was avoided. Thus indicating blind nasal intubation as a safe alternative. (5)

Study conducted by Daniel di Carli on blind nasotracheal intubation in awake patient posted for hemi-mandibulectomy concluded that it is up to the anesthesiologist to recognize the potential of difficult airways and timely think of various other approaches to guarantee the safety of patients in conditions of difficult intubation. Thus it is important to know how to use resources and alternatives that can overcome technical difficulties when handling the airways. (6) Fiberoptic bronchocopy is a better and advanced technique to handle awake or unconscious patients with potential difficult intubation. This is a more effective and less traumatic technique for tracheal intubation in patients who would otherwise undergo tracheostomy due to failure of conventional techniques. However, it demands the availability of a specific device and proper operator training. At times there can be a long waiting list for fibre-optic intubation in set-up with limited resources. Also a major drawback includes the additional expense of this procedure.

In conditions when oral access is difficult or impossible and fiberoptic bronchoscopy is not available, blind nasal intubation is an alternative technique. Thus blind nasal intubation when performed by a skilled anaesthesiologist is beneficial and life saving for the patients since prolonged attempts lead to hypoxemia and edema of the glottis due to repetitive trauma of intubation attempts.

CONCLUSION -

Blind nasal intubation is a helpful alternative in difficult airway management as it can be a lifesaving technique in emergency. Additionally, its simplicity makes it a less expensive option when advanced airway technology like fiberoptic bronchoscopy is unavailable.

REFERENCES –

1. Kheterpal S, Healy D, Aziz MF, Shanks AM, Freundlich RE, Linton F, et al. Incidence, predictors, and outcome of difficult mask ventilation combined with difficult laryngoscopy: a report from the multicenter perioperative outcomes group. *Anesthesiology* 2013; 119: 1360-9.
2. Rashid khan *Difficult Airway Management* 4th ed. 2016

3. Anaesthesia for Retrognathia correction in a case of Klippel Feil syndrome: Dr.Nandini Dave, Dr. Sharma R. K., Dr. Andrade N.: Indian J. Anaesth. 2006; 50 (2): 128 – 130.
4. Hagberg CA. Benumof and Hagberg's airway management. 3rd ed. Philadelphia, Elsevier Inc. 2013, pp 403-41
5. Blind intubation by P. Chandra Brit. J. Anaesth. (1966), 38, 207
6. Blind Nasotracheal Intubation in Awaken Patient Scheduled for Hemi-mandibulectomy. Case Report ; Daniel de Carli, TSA, Nivaldo Simões Correa, TSA, Tatiana Castelo Branco Vilar Silva, Eduardo Malta Maradei; Rev Bras Anestesiologia; 2008; 58: 1:55-62
7. Airway Assessment: Predictors of difficult airway; Dr. Sunanda Gupta, Dr. Rajesh Sharma KR Dr. Dimpel Jain: Indian J. Anaesthesiology 2005; 49 (4): 257-262.