

Management Of A Difficult Airway By Retrograde Nasal Intubation: A Case Report

M Jain, M Garg, A Gupta, N Dev, A Rana

Citation

M Jain, M Garg, A Gupta, N Dev, A Rana. *Management Of A Difficult Airway By Retrograde Nasal Intubation: A Case Report*. The Internet Journal of Anesthesiology. 2006 Volume 13 Number 1.

Abstract

Tracheal intubation by direct laryngoscopy remains the technique of choice to achieve to control of airway. However, alternative techniques are required when airway control can not be established by convention methods, because of anatomical or technical reasons. Retrograde passage of catheter into the pharynx to aid tracheal intubation is an established technique.

We report successful management of airway by retrograde nasal intubation in a patient posted for distraction osteogenesis and advancement of mandible for retrognathia.

INTRODUCTION

Tracheal intubation by direct laryngoscopy remains the technique of choice to achieve to control of airway. However alternative techniques are required when airway control can not be established by convention methods, because of anatomical or technical reasons. Retrograde passage of catheter into the pharynx to aid tracheal intubation is an established technique.

We report successful management of airway by retrograde nasal intubation in a patient posted for distraction osteogenesis and advancement of mandible for retrognathia.

CASE HISTORY

A seventeen year old female patient (42kg, 142 cm, ASA-1) having severe retrognathia (fig.1 and fig.2) was admitted in department oral and maxillofacial surgery for distraction osteogenesis and advancement of mandible.

Figure 1

Figure 1: frontal view showing severe retrognathia protruding upper incisor, and reduced mento hyoid and mento thyroid distances.



Figure 2

Figure 2: lateral view showing severe retrognathia and reduced mento hyoid and mento thyroid distances.



The patient gave a positive history of snoring during sleep. She gave no history of hoarseness of voice, swallowing difficulty or breathlessness. Examination of airway revealed severe retrognathia, protruding upper incisors, mentohyoid and mentothyroid distances of 2.4 and 3.0 cms respectively. Both nares were patent and neck mobility was normal. Radiograph of lateral neck showed severe retrognathia, submandibular tongue, epiglottic shadow and long air shadow of extended oropharynx in direct alignment with esophagus (fig.3).

Figure 3

Figure 3: lateral neck radiograph showing: A. severe retrognathia; B. long air shadow of extended oropharynx in direct alignment with esophagus; C. submandibular tongue



Severe retrognathia along with decreased mentothyroid and mentohyoid distances presented a difficult situation for securing airway. As the patient had good mouth opening, we planned to give a try for routine nasal intubation after giving general anaesthesia. All equipments essential for difficult airway management like Laryngeal Mask Airway, Combitube, and Jet Ventilation were kept ready with a facility for emergency tracheostomy.

Preoperatively an informed consent was obtained for surgery and anesthesia as well as patient and her relatives were explained that a tracheostomy might be necessary. On the night before and on the morning of surgery the patient was administered 10mg of metoclopramide and 150mg of ranitidine orally for prophylaxis against acid aspiration. Tab. diazepam 5mg was given at 6am in morning of surgery. The patient was administered xylometazoline 2% intranasally (nasal decongestant) and inj. Glycopyrrolate 0.2mg I/M one hour before surgery. An 18G intravenous cannula was placed in left arm. After preoxygenating the patient for 5

min, intravenous sedation was given with inj. midazolam 0.03mg/kg and inj.fentanyl 2 microgram/kg. The patient was monitored with ECG (lead II), pulse oximetry, noninvasive blood pressure monitor, and end tidal carbon dioxide (capnograph).Patient was induced with inj.propofol 2.5 mg/kg and inj. succinylcholine 2.0mg/kg .Before giving succinylcholine it was confirmed that patient can be ventilated with mask. After giving succinylcholine an attempt for nasal intubation with help of direct laryngoscope (Macintosh) was made. However no glottic structures could be visualized (Cormack Lehane classification grade –IV). Three intubation attempts were made but patient could not be intubated nasally. Then we change the plan and choose retrograde intubation technique for securing airway.

The patient was ventilated manually till the effect of succinylcholine weaned off and spontaneous breathing resumed. Bilateral superior laryngeal nerve block was given with 1.5 ml of 2% lignocaine and 1.5 ml of 2.0 % lignocaine was given transtracheally. Anaesthesia of nares, nasopharynx was achieved with 10 % lignocaine spray. The cricothyroid membrane was punctured with 18 gauze Tuhouy's needle and tracheal lumen was confirmed by air aspiration. A radio opaque ureteric guide wire was passed through epidural needle and was retrieved from oral cavity with the help of Magill's forceps. A suction catheter of 16 G was passed through right nostril and lower end was retrieved from oral cavity with the help of Magill's forceps. Then ureteric guide wire was passed through lumen of suction catheter and was brought out from right nostril and suction catheter was removed. PVC preformed nasal endotracheal tube (ETT) no.7.0 was lubricated with jelly and ureteric guide wire was passed into the lumen of ETT via Murphy's eye. After that ETT was threaded over the tautly held ureteric guide wire into the trachea. Guide wire was pulled back into the proximal end of the tube, Bain's circuit was connected to ETT and position was confirmed by bilateral auscultation of breath sounds and capnograph. After confirmation, guide wire was pulled out from tracheal or lower end. ETT was advanced further and then cuff was inflated. Then general anaesthesia with control ventilation was administered & case was conducted in a routine manner. The remaining intraoperative and postoperative periods were uneventful.

DISCUSSION

Endotracheal intubation in patients with altered airway anatomy always remains a challenge for anesthesiologist. In developing countries patients often present late for

treatment. Due to late presentation in patients having retrognathia, airway anatomy become so much altered that it becomes quite difficult or sometimes impossible to intubate with conventional methods.

The fiberoptic laryngoscope is a reliable method of aiding intubation in these patients. However in developing countries flexible fiberoptic laryngoscope is not available freely even when present it is not working properly because of its high maintenance cost. Bleeding in airway can make intubation by fiberoptic laryngoscope is difficult even for experienced anesthesiologist.

With out flexible laryngoscope retrograde intubation method is an accepted option for management of difficult airway ^{1, 2}. Since its description ³, the retrograde technique of securing the airway has been based on the one described originally by WATER'S ⁴. For nasotracheal intubation the catheter is first retrieved from mouth with magill's forceps and later pull through nose ⁵. Unfortunately some mouth opening is essential for all these maneuvers. If mouth opening is limited, pharyngeal loop can allow successful retrograde intubation ⁶. A number of technical and procedural problems may arise using this method. These may include catheter selection⁵ site of puncture ⁷, route of advancement of ETT over catheter ^{8, 9} and attendant complication^{6, 10}. Many refinements have been proposed for this method⁵ with a common goal of achieving an uneventful passage of tracheal tube over retrograde catheter.

Our patient had presented for correction of severe degree of retrognathia. This retrognathia had resulted in submandibular tongue leading to extended oropharynx and a relatively anterior larynx misaligned with oral and nasopharyngeal airway axis. As our patient had adequate mouth opening we first tried for nasal intubation with laryngoscope but were not able to do so.

As tracheotomy has its own disadvantages (hemorrhage, infection, stenosis, scar, etc.), so we opted retrograde intubation technique for securing airway. We were able to secure the airway by this technique in a single attempt with out any complication.

So we suggest that if fibre-optic laryngoscope and expertise for its use are not available, retrograde intubation can be accepted as a suitable alternative for securing airway in patients with altered airway anatomy.

References

1. Barriot P, Riou B. Retrograde technique for tracheal intubation in trauma patients. *Crit Care Med.* 1988; 16: 712-3.
2. Borland LM, Swan DM, Leff S. Difficult pediatric endotracheal intubation; a new approach to the retrograde technique. *Anesthesiology* 1981;55:577-8.
3. Butler FS, Cirillo AA. Retrograde tracheal intubation. *Anaesth. Analg* 1960; 39 :333-8.
4. Waters DJ. Guided blind endotracheal intubation: for patients with deformities of the upper airway. *Anaesthesia* 1963;18:158-62.
5. Latta IP, Rosen M, eds. Difficulties in tracheal intubation. London: Bailliere Tindall, 1985.
6. Beebe DS, Tran P, Belani KG, Adams GL. Pretracheal abscess following retrograde tracheal intubation. *Anaesthesia* 1995;50:740.
7. Shanther TR. Retrograde intubation using the subcricoid region. *Br J Anaesth* 1992;68:109-12.
8. Dhara SS. Guided blind endotracheal intubation. *Anaesthesia* 1980;35:81.
9. Harmer M, Vaughan RS. Guided blind oral intubation. *Anaesthesia* 1980;35:921.
10. Copley M, Vaughan RS. Recognition and management of difficult airway. *Br J Anaesth* 1992;68:90-7.

Author Information

Manish Jain, M.D.

Assistant Professor, Department of Anaesthesiology & Critical Care, Subharati Medical College

Munish Garg, M.D.

Assistant Professor, Department of Anaesthesiology & Critical Care, Subharati Medical College

Amit Gupta, DNB

Assistant Professor, Department of Anaesthesiology & Critical Care, Subharati Medical College

N. Dev, M.D.

Professor and Head, Department of Anaesthesiology & Critical Care, Subharati Medical College

A. S. Rana, M.D.S.

Professor (Oro-Maxillofacial Surgery), Subharati Dental College