

CASE REPORT

Inferior Turbinectomy: An Unusual Presentation of Complication of Nasotracheal Intubation

Deepak Prasanna, Utpal Mazumdar, Sonia Bhat, Neeraj Nigam, Sandeep Jain

ABSTRACT

This article describes a case of accidental turbinectomy encountered at the time of tracheal intubation while inducing anesthesia at the time of an elective surgery. This is a rare complication in the field of anesthesia with very few reported cases till date. The article highlights the complications which were encountered due to the accidental turbinectomy and thereafter discusses the methods to prevent it.

Keywords: Inferior turbinectomy, Nasotracheal intubation, Obstruction, Anesthesia.

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INTRODUCTION

Maxillofacial surgical procedures often require nasotracheal intubation as an alternate method for achieving general anesthesia. The procedure of intubation involves achieving neuromuscular blockade followed by passing a nasotracheal tube into the trachea. Several complications during nasotracheal intubation like hemorrhage,¹ partial turbinectomy,²⁻⁴ total turbinectomy,⁵⁻⁶ obstruction with foreign body⁷ and retropharyngeal dissection⁸ have been reported in the past. Obstructions can lead to serious life-threatening complications. It is important that the diagnosis and corrective measures are prompt. This case report describes an uncommon potential complication of accidental turbinectomy during nasotracheal intubation which was diagnosed only following extubation.

CASE REPORT

A healthy 18-year-old male patient reported to department of oral and maxillofacial surgery with a draining intraoral sinus in the 1st right mandibular molar region. General physical examination showed the patient to be in good physical health. The extraoral examination revealed no abnormality. The intraoral examination revealed multiple carious teeth with a draining sinus intraorally, buccal to 1st right mandibular molar. Radiographic investigation with intraoral periapical radiograph (IOPA) and orthopantomograph (OPG) showed multiple carious teeth with periapical radiolucency indicating dental cyst in relation to mandibular

1st molar bilaterally. Enucleation of bilateral mandibular cysts under general anesthesia with nasotracheal intubation was planned.

Preanesthetic evaluations involved routine blood investigations which were found to be within normal limits. Physical examination did not reveal any gross abnormality in the upper airway and was classified according to ASA (American Society of Anesthesiologists) grade 1. Deviated nasal septum and hypertrophy of the turbinates were excluded.

On the day of surgery, patient was taken to the operating room and was placed supine on the operation table. He was sedated with IV propofol (2.5 mg/kg). Patient was given oxygen by face mask for 3 minutes and oxygen saturation was maintained at 100% for 3 minutes. Induction of anesthesia and neuromuscular blockade was achieved using fentanyl 1.5 µg/kg, atracurium 0.5 mg/kg and anesthesia maintained with 2% isoflurane. 2% xylocaine jelly was introduced using nozzle in the right nostril. A 7.0 Portex cuffed tracheal tube, lubricated with 2% xylocaine jelly was introduced into the right nostril with the bevel facing the turbinate, passing all along posteriorly into the hypopharynx. A slight resistance to the free movement of the tube into the nasal cavity was encountered. Brisk hemorrhage was encountered during this procedure which was subsequently controlled by external pressure on the nostril. Direct visualization using Mackintosh no. 4 blade revealed hemorrhage from the nasopharynx. To arrest hemorrhage, right nostril was packed with gelfoam with simultaneous suction of the hypopharynx with high volume evacuator. Visualizing the epiglottis was not difficult and it corresponded to Cormack Lehane grade 2. The tube was then inserted further without difficulty into the trachea, cuff inflated to 8 cc of air and secured. The anesthetist confirmed equal air entry bilaterally using a stethoscope, and capnography showed 100% oxygen saturation. However, half an hour intraoperatively a drop in the oxygen saturation to 90% was observed and the anesthetist decided to perform manual bag ventilation. He conveyed his dissatisfaction over manual bag ventilation. The anesthetist first doubted kinking of the tracheal tube and successful tube manipulation raised the oxygen saturation to 98%. The anesthetist still maintained his dissatisfaction on the ease of bag compression manually, while the monitor showed a satisfying oxygen saturation of 98%. Evaluation of the

nostril showed complete hemostasis and the surgery was completed with no further hemorrhage intraoperatively.

Patient was given reversal of neuromuscular blockade and extubated. The entire operating time was 1 hour from induction to extubation. Hemorrhage was again encountered during extubation; however, it was not significant and controlled with gelfoam pack. The cause for poor ventilation inspite of manual bag ventilation was understood only after extubation. Inspection of the tracheal tube revealed a totally avulsed inferior nasal turbinate, partially occluding the orifice and the Murphy's eye. This although not an entirely uncommon finding was unexpected as the preanesthetic evaluation had not indicated a deviated septum. The avulsed turbinate was firmly stuck in the orifice at the end of the tube and had to be removed using a forceps. The patient recovered from general anesthesia uneventfully. The patient was informed of the anesthetic complication the following day and was discharged after observing for 24 hours.

DISCUSSION

Nasotracheal intubation is one of the commonest methods used to secure airway in surgery of maxillofacial region as it gives good accessibility and visibility for oral surgical procedures. Several complications may be encountered while inducing anesthesia. Complications due to foreign objects mainly avulsed inferior turbinate,⁵ avulsed middle turbinate⁶ and have been reported in literature. Complications following obstruction of nasotracheal tube could range anywhere from minor bleeding, severe hemorrhage,¹ mediastinal emphysema⁷ to aspiration of the foreign object into the bronchii.⁸ Deviated nasal septum is the commonest intranasal abnormality causing one nostril to be larger than the other and is considered a risk factor for trauma during intubation. Deviation of the nasal septum due to the presence of angulated septum and bony spurs further increases the risk for trauma due to intubation pressure. Anesthetists usually, with experience develop the acumen to apply the accurate threshold pressure required to advance the tube into the trachea. However, if more than the threshold pressure is required for intubation, then the attempt to intubate through that nostril is aborted and the other nostril is used for intubation.⁹

This article reports of a total avulsion of inferior turbinate which occurred at the time of intubation but, it was discovered only after the surgery was completed and the patient was extubated. Apart from a minor bleeding which was arrested subsequently the anesthetist encountered no serious complication during the entire duration for which the patient was under anesthesia. Although difficulty in manual bag ventilation was encountered, satisfactory oxygen saturation did not command any action to be taken. The

difficulty in manual compression could be attributed to avulsed turbinate partially occluding the tracheal tube orifice and Murphy's eye. The firmly occluded avulsed turbinate could not get displaced into the main bronchial stem. The exact cause for the avulsion is not known but above threshold pressure application while introducing the nasotracheal tube is suspected (Fig. 1).

Such complications can be avoided by:⁹

1. Identification of correct nostril for intubation.
2. Excluding the presence of nasal spurs in the nostril selected for intubation.
3. Below threshold application of pressure at the time of intubation.
4. Lubrication of the nostril and tube prior to intubation.

A detailed preanesthetic evaluation inclusive of intranasal abnormality is paramount to prevention of such complications. Fiberoptic anterior rhinoscopy allows for initial assessment and selection of the appropriate nostril for intubation.

SUMMARY

Anesthetists develop the acumen for applying threshold pressure with experience. However, if one fails to intubate with threshold pressure, it is advisable to try intubation with the other nostril. Turbinate avulsion during nasotracheal intubation is an uncommon but preventable complication in elective cases. Provisional assessment using anterior rhinoscopy and use of fiberoptic intubation technique makes nasotracheal intubation more predictable. Nevertheless a potential threat in the emergency room and intensive care units still persists.

CONCLUSION

Complications during induction of nasotracheal intubation are not rare. However, they can be made completely obsolete



Fig. 1: Avulsed inferior turbinate occluding the nasotracheal tube and Murphy's eye

if one judiciously employs all the available preanesthetic evaluation methodologies. Today advancements in science have enabled us to have predictable and safe results.

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ABOUT THE AUTHORS

Deepak Prasanna

Reader, Department of Oral and Maxillofacial Surgery, Rishiraj College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, India

Utpal Mazumdar

Professor, Department of Oral and Maxillofacial Surgery, Rishiraj College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, India

Sonia Bhat

Reader, Department of Prosthodontics, Rishiraj College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, India

Neeraj Nigam

Senior Lecturer, Department of Conservative Dentistry, Rishiraj College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, India

Sandeep Jain

Senior Lecturer, Department of Oral Pathology, Rishiraj College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, India

CORRESPONDING AUTHOR

Deepak Prasanna, Reader, Department of Oral and Maxillofacial Surgery, No. 64, Exotica Villa, Suvidh Vihar Colony Airport Road, Bhopal-462036, Madhya Pradesh, India
e-mail: deepsmyle@yahoo.com