CASE REPORT

Tracheal Tube Blockage by Fractured Middle Turbinate During Nasal Intubation: A Rare Airway Complication

Praveen Satish Kumar¹ · Francis Akkara¹ · Vikas Dhupar¹

Received: 2 February 2017 / Accepted: 30 September 2017 / Published online: 9 October 2017
© The Association of Oral and Maxillofacial Surgeons of India 2017

Introduction

Nasotracheal intubation is the preferred method of securing airway in patients undergoing maxillofacial and oral surgical procedures [1]. Nasotracheal intubation can potentially cause nasal damage, sinusitis [2] and local abscesses. Some of the contraindications to nasotracheal intubation include suspected epiglottitis, midface instability, suspected basilar skull fractures, large nasal polyps and coagulopathy. We report a case in which fracture of the middle turbinate caused inadvertent blockage of tracheal tube lumen during intubation in a maxillofacial patient causing airway emergency.

Case Report

A 26-year-old male patient was to undergo open reduction and internal fixation of left zygomatico maxillary complex fracture under general anesthesia via nasotracheal intubation. The pre-anesthetic evaluation performed by the anesthesiologist did not reveal any abnormalities which could contraindicate the nasal intubation. So general anesthesia was induced, and after adequate pre-oxygenation, an attempt to pass no. 7 tracheal tube through the right nostril failed due to increased resistance. Another attempt was made through the left nostril, the trachea was successfully intubated with a 7.0-mm-internal-diameter tracheal tube (Portex, Smiths Medical, Hythe, UK) with moderate nasal bleed.

With cricoid pressure maintained, there was unusual resistance to bag ventilation associated with high peak airway pressures of 45–50 cmH₂O. Breath sounds and capnographic trace were absent. A check of the breathing circuit revealed no malfunction. Attempts to pass a soft suction catheter through the lumen of the tube failed due to resistance. The oxygen saturation did not fall during this time as the patient was adequately pre-oxygenated. The anesthesiologist made a quick decision to remove the tube with cricoid pressure maintained. Without further delay, an oral intubation was performed with a fresh no. 7 endotracheal tube and the airway secured without any drop in oxygen saturation.

When the tube was examined, the lumen was occluded till above the Murphy eye by what seemed to be a mucosal plug (Fig. 1). The obstructing tissue was removed using a hemostat which turned out to be bone with nasal mucous around it. Nasal endoscopy was then performed to evaluate and achieve hemostasis. Endoscopy revealed that the lower third of the middle turbinate was missing with mucosal ragged margins which were the source of bleeding. Nasal packing was done to achieve hemostasis, and the operative procedure for ZMC fracture was performed as planned prior. A postoperative coronal computed tomographic scan was ordered to evaluate the extent of damage to middle turbinate bone (Fig. 2). Detailed report from the radiologist of the coronal CT scan revealed significant hypertrophy of the inferior turbinate bilaterally which had contributed to the failed attempt initially.

Discussion

We postulate that during the second attempt, there was excessive manipulation, thus forcing the tube to take an unusual path through the middle meatus leading to fracture

✉ Praveen Satish Kumar
praveenmaxfac@icloud.com

¹ Department of OMFS, GDCH, Bambolim, Goa, India

Fig. 1 Showing the middle turbinate bone firmly lodged within the tracheal tube

Fig. 2 Coronal CT scan image showing missing lower third of the middle turbinate (red arrow)

dislodgement of the middle turbinate. A detailed literature search revealed only three previous reports implicated to oral medications causing tracheal tube obstruction [3–5] and one case report on blood clot obstructing the lumen in a pediatric patient. We feel this case report to be first of its kind and hence worthy of creating awareness. We would like to emphasize the importance of meticulous examination of the airway along with CT scan of the nasal cavity if available by both the surgeon and the anesthesiologist to prevent such incidents. If a “can’t intubate, can’t ventilate”

situation occurs while securing airway, then there is an immediate need to pursue surgical airway management by performing cricothyroidotomy. Although approximately 1% of emergency airway management requires a surgical airway, if performed incorrectly or in an untimely manner, death is almost certainly imminent.

Compliance with Ethical Standards

Conflict of interest None

References

1. Kwak HJ, Lee SY, Lee SY, Cho SH, Kim HS, Kim JY (2015) McGrath video laryngoscopy facilitates routine nasotracheal intubation in patients undergoing oral and maxillofacial surgery: a comparison with Macintosh laryngoscopy. *J Oral Maxillofac Surg* 74(2):256–261
2. O’Reilly MJ, Reddick EJ, Black W et al (1984) Sepsis from sinusitis in nasotracheally intubated patients. A diagnostic dilemma. *Am J Surg* 147(5):601–604
3. McDonnell NJ, Paech MJ, Clavisi OM, Scott KL (2008) Difficult and failed intubation in obstetric anaesthesia: an observational study of airway management and complications associated with general anaesthesia for caesarean section. *Int J Obstet Anesth* 17:292–297
4. Rodriguez PMA, Conde SMP, Lopez RJM, Hernandez F, Casado PJ, Muriel-Villoria C (2008) Endotracheal tube obstruction secondary to oral medication. *Eur J Anaesthesiol* 25:598–599
5. Haldar R, Samantha S, Bhagat H (2013) Unexpected tracheal tube blockage from a semi-dissolved misoprostol tablet. *Int J Obstet Anesth* 22(3):267–268