

Nasal bleed aspirated postextubation. A scary experience

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ABSTRACT

Introduction: Pulmonary aspiration of gastric content is a risk associated with administration of anesthesia, which is common during induction of anesthesia in patients with a full stomach. Maxillofacial injuries lead to bleeding, which is often swallowed by the patient and therefore they cannot be considered nil orally. Proper precaution during induction and extubation has to be maintained to prevent aspiration. **Case Report:** A 28 year old male 80 kg with Body Mass Index (BMI) 35 had a road traffic accident and sustained nasal bone fracture and was planned for an emergent exploration and repair by the ENT surgeons. Induction of anesthesia was done uneventfully after rapid sequence induction; airway secured, but after extubation patient aspirated the nasal bleed regurgitated from the stomach. The patient was reintubated and managed in the intensive care unit and discharged subsequently with no sequel. **Conclusion:** Oro-Gastric Tube (OGT) insertion is key in managing patients with airway bleeds and apart from conventional techniques other methods can be used to insert OGT and extubation should always be considered equally risky for aspiration of gastric content as at the time of intubation. However, with all the measures taken there is still the risk associated which demands a skilled anesthesia provider for managing the pulmonary aspiration acutely which can reduce the morbidity and mortality in these scenarios.

Key words: Extubation, nasal bleeds, nasogastric tube, pulmonary aspiration

INTRODUCTION

Pulmonary aspiration of gastric content is a risk associated with administration of anesthesia which is common during induction of anesthesia in patients with full stomach^[1]. We encountered a case with nasal bone fracture with one day history of injury. Oro-Gastric Tube (OGT) insertion was not possible with conventional techniques and was intubated uneventfully by using rapid sequence induction with cricoid pressure but at the time of extubation patient aspirated the swallowed blood in the stomach. However, with immediate diagnosis and acute management, patient recovered after the scary event, but compelled to draw the attention towards the risk of aspiration even at the time of extubation of the trachea. Proper measures and requirement of other specialized techniques for insertion of OGT in maxillofacial trauma is needed in managing cases and delivering quality anesthesia services^[2,3].

CASE REPORT

A 28 year old male 80 kg with BMI 35 had a road traffic accident and sustained nasal bone fracture and lacerated wounds in the scalp and face involving the left eyelid. The patient had received a primary treatment elsewhere and referred to our hospital. The patient was planned for an emergent exploration and repair by the ENT surgeons.

The patient did not have any associated co-morbidities. He was very apprehensive, nasal bandages were applied over his face. He had a history of snoring, mouth opening was adequate

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with Mallampati Grading (MPG) 2, short neck and obese. Laboratory investigations were normal. His last oral intake was a juice taken 6 hrs prior to the surgery. Nasal bandages were a clear indication of difficult mask ventilation for which necessary measures were taken like different sizes of face masks, oral airways of different sizes, gauzes which may be used with face masks to prevent air leaks. We planned for gastric aspiration with OGT, for which patient didn't co-operate. After aspirating a small amount of blood, the patient started to gag and removed OGT. He was planned for general anesthesia with rapid sequence induction. Pre-operatively the patient received Injection Pantaprazole 40mg IV, injection Metoclopramide 10mg 30 minutes prior to the procedure. Vitals were stable. Preoxygenation with 100% oxygen for 5 minutes done (extra minutes of Preoxygenation done to ensure complete denitrogenation as it was an anticipated difficult airway situation). Injection Glycopyrrolate 0.2mg IV, Injection Midazolam 1 mg iv, Injection Nalbuphine 8mg IV (0.1mg/kg), Injection Propofol 160mg (2mg/kg) IV and Injection Succinylcholine 160mg (2mg/kg) IV given. Cricoid pressure applied and intubation done with cuffed Endotracheal Tube (ETT) size 8 after rapid sequence induction. Tube position was confirmed by auscultation and capnography. A throat pack was inserted after laryngoscopy. Injection Vecuronium 8mg (0.1 mg/kg) IV, Injection Hydrocortisone 100mg IV, Injection Dexamethasone 4mg IV, Injection Tranexamic acid 1gm IV, administered. Anesthesia was maintained with Isoflurane, nitrous oxide and 40% oxygen. Patient was attached to mechanical ventilator. Peak airway pressures varied from 15-17 cm H₂O. Attempts were made to insert OGT but failed even after laryngoscopic guidance and repeated coiling of OGT was observed. 30 minutes later Injection Paracetamol 1gm IV infusion started. Injection ondansetron 8mg IV (1 mg/kg) administered after 1 hour. Surgery went uneventfully for next 2 hrs (figure 1, 2). At the end of surgery during dressing, patient started spontaneous ventilation for which injection Propofol 20mg IV given. To prevent cough reflex^[4], injection xylocaine 2% preservative free (1.5 mg/kg) was also administered. Suddenly saturation started to fall and reached 90%. The air entry was checked and found to be decreased bilaterally, endotracheal tube biting by the patient was noticed and the patient got awake. Deepening the plane of anesthesia would have made extubation difficult and we already had planned to extubate him awake, so we proceeded with extubation. Oral cavity suctioning was done, throat pack removed, followed by removal of the endotracheal tube after reversal with Injection Neostigmine 4 mg (0.05 mg/kg) and Injection Glycopyrrolate 0.8 mg (0.01 mg/kg) IV.

Patient was awake and started coughing. The oral cavity was filled with bloody secretion. Trendelenberg position done. Once again saturation started to fall. On auscultation of the chest,

crepitations were present all over the chest area. Aspiration was suspected. Immediately suction attempted for which patient didn't cooperate and saturation reached to 50%. The patient re-intubated with cuffed ETT size 8 without prior ventilation by Injection Propofol 100mg IV and injection Succinylcholine 50mg IV. Proper positioning was checked with capnography but saturation improved marginally to 60%. ETT showed bloody secretions.

Line of management of pulmonary aspiration started by Endotracheal suctioning with proper asepsis and patient attached to ventilator with PEEP10 cm H₂O, FiO₂ 100%. Injection Vecuronium 8mg IV administered. Saturation started to improve gradually & crepitations decreased. The patient was given injection



Figure 1. Clinical picture showing explored nasal cavity.

Furosemide 20mg IV (to decrease pulmonary edema resulting from change in capillary permeability owing to aspiration of gastric content), Injection Morphine 8mg IV, Injection Etofylline 2ml IV. Within the next half an hour saturation returned to 90%.

He was transferred to ICU for continuous ventilatory support. Bedside chest x ray showed slight heterogeneous opacity in both the lung fields, (Figure 3). Arterial Blood Gas (ABG) analysis showed slight respiratory acidosis which were corrected. The patient was sedated with Injection Morphine around 8mg /HR,



Figure 2. Clinical picture post repair.

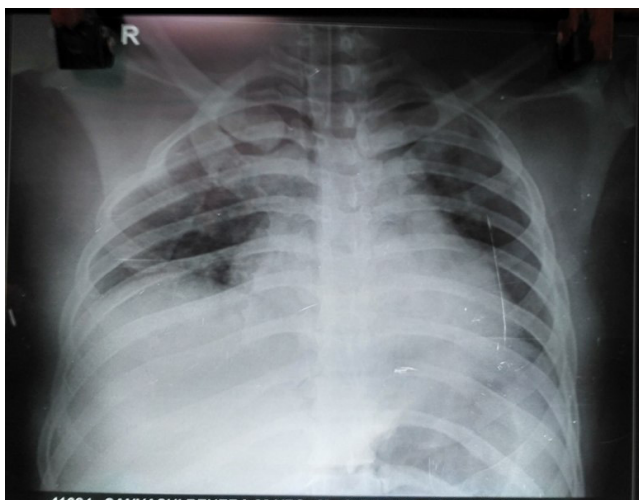


Figure 3. Chest x ray PA view in ICU showing mild heterogeneous opacities bilaterally.

which was tapered to 3 mg/HR in 6 hrs and then stopped to plan for weaning. Hourly secretions were suctioned orally. Oro-gastric tube was inserted and suction done and the patient were weaned of ventilator and extubated. Repeat ABG was normal in all parameters and patient shifted to ward. Nebulisation with bronchodilator and steroids advised for the next 1 day.

DISCUSSION

Injuries of the external nose and nasal bone fractures are the most frequent lesions of the midface^[5,6]. Nasal septum hematomas may result in severe complication and hence considered as surgical emergency^[7].

Hemorrhage effects in several ways (a) blood in the oral cavity excludes mask ventilation, (b) it may preclude good view of airway anatomy, thus making intubation very difficult, (c) full stomach due to swallowed blood increases the risk of aspiration, (d) suboptimal surgical field due to bleeding and (e) circulatory compromise.

Mask ventilation is problematic in nasal bone fractures as the nasal dressings over the fractured nasal bone preclude an effective seal for proper ventilation. When attempts at intubation or ventilation have failed, cricothyroidotomy is considered the procedure of choice^[8,9].

Oropharynx's anatomy also get altered by the trauma and/or blocked by bleeding. The choice of sedative/hypnotic agents and muscle relaxants in hemodynamic instability needs special mention.

The maxillofacial trauma patients must be assumed to have a "full stomach" as digestion stops when the trauma occurs^[10]. Often these patients bleed from the upper airway, and blood is swallowed and gets accumulated in the stomach. Hence the risk of regurgitation and aspiration is high. In order to diminish such risks, evacuating the contents of the stomach through the naso/oro-gastric tube before proceeding with airway management is recommended. Although Sellick's maneuver and RSI are widely used, the maneuver may significantly hamper endotracheal intubation because the laryngeal view is worsened^[11].

For Naso-Gastric Tube (NGT) insertion, the most commonly used methods are blind nasal insertion with external laryngeal manipulation and laryngoscope-guided insertion with Magill forceps. Ozer and Benumoff found the pyriform sinuses and arytenoid cartilages were the most common sites of impaction during NGT insertion^[12], whereas other investigators suggested that failures may be caused by the endotracheal tube itself, the base of the patient's tongue, or the cuff of the endotracheal tube bulging back onto the esophagus^[13]. The average failure rate is 50% for blind insertion of an NGT on the first attempt with patient's head in the neutral

position^[14]; this is because the NGT is soft and made of flexible materials. Repeated attempts can make the NGT softer because of the patient's body heat, and, hence, make insertion more difficult and increase the risk of coiling, kinking, or knotting. Which was in our case it was not possible to insert the OGT after intubation from conventional techniques.

The patient with a difficult airway is also at high risk for postoperative complications. Following surgery, the mucous membranes are edematous, the soft tissues are swollen, and the airway may be compressed. The risk of airway-related complications during the perioperative period was studied by Peterson et al.,^[15]. They found that 12% of complications arose at extubation and 5% during recovery.

In intubated patients with maxillofacial trauma, extubation should be deferred until the edema subsides, as in our patient there is a solitary trauma of nasal bone fracture and eyelid injury and no associated oral or laryngeal injury extubation was planned and done. During extubation the patient should be monitored closely and the care providers should be prepared for the possibility of re-intubation. It is important to prevent nausea and vomiting because of the risk of gastric content aspiration^[16].

Many techniques for facilitating NGT tube insertion are described in the literature which includes the use of a slit endotracheal tube, forward displacement of the larynx, the use of various forceps, the use of a ureteral guide wire as a stylet, head flexion, lateral neck pressure, and the use of a gloved finger to steer the NGT after impaction, insertion through airway exchanger^[2,3].

CONCLUSION

To conclude, NGT/OGT insertion is key in managing patients with airway bleeds and apart from conventional techniques other methods should be considered to insert it. Extubation should always be considered equally risky for aspiration of gastric content as at the time of intubation.

OGT can be inserted in an intubated patient with different maneuvers. Gastric aspiration with OGT before extubation plays an important role to prevent pulmonary aspiration of gastric content. Trendelenberg position before reversal of muscle relaxation is the key to ENT procedures especially maxillofacial trauma.

However, with all the measures taken there is still risk associated, which demands a skilled anesthesia provider for managing the pulmonary aspiration acutely which can reduce the morbidity and mortality in these scenarios.

REFERENCES

1. Asai T. Editorial II: Who is at increased risk of pulmonary aspiration? *Br J Anaesth.* 2004; 93(4):497–500. <https://doi.org/10.1093/bja/ae234> PMID:15361474.
2. Kim H-J, Lee HJ, Cho H-J, Kim H-K, Cho A-R, Oh N. Nasogastric tube insertion using airway tube exchanger in anesthetized and intubated patients. *Korean J Anesthesiol.* 2016; 69(6):568. <https://doi.org/10.4097/kjae.2016.69.6.568> PMID:27924196 PMCid:PMC5133227
3. Mahajan R, Gupta R. Another method to assist nasogastric tube insertion. *Can J Anesth.* 2005; 52(6):652. <https://doi.org/10.1007/BF03015781> PMID:15983156
4. Shabnum T, et al. Effects of lignocaine administered intravenously or intratracheally on airway and hemodynamic responses during emergence and extubation in patients undergoing elective craniotomies in supine position. *Anesth Essays Res.* 2017; 11(1):216. <https://doi.org/10.4103/0259-1162.200239> PMID:28298788 PMCid:PMC5341675
5. Atighechi S, Karimi G. Serial nasal bone reduction: A new approach to the management of nasal bone fracture. *J Craniofac Surg.* 2009; 20(1):49–52. <https://doi.org/10.1097/SCS.0b013e318190def5> PMID:19164988
6. Han DSY, Han YS, Park JH. A New Approach to the Treatment of Nasal Bone Fracture: Radiologic Classification of Nasal Bone Fractures and its clinical application. *J oral Maxillofac Surg.* 2011; 69(11):2841–2847. <https://doi.org/10.1016/j.joms.2011.01.013> PMID:21474225
7. Wright RJ, Murakami CS, Ambro BT. Pediatric nasal injuries and management. *Facial Plast Surg.* 2011; 27(5):483–490. <https://doi.org/10.1055/s-0031-1288931> PMID:22028012
8. Christine E, Whitten M. A flood of blood in the airway. *Airw jedi*; 2017. p. 9–12.
9. ISAACS JJ, Pederson A. Emergency cricothyroidotomy. *Am Surg.* 1997; 63(4):346–9. PMID:9124756
10. Barak M, Bahouth H, Leiser Y, Abu El-Naaj I. Airway management of the patient with Maxillofacial Trauma: Review of the Literature and Suggested Clinical Approach. *Biomed Res Int.* 2015; 2015.
11. Haslam N, Parker L, Duggan JE. Effect of cricoid pressure on the view at laryngoscopy. *Anaesthesia.* 2005; 60(1):41–47. <https://doi.org/10.1111/j.1365-2044.2004.04010.x> PMID:15601271
12. Ozer S, Benumof JL. Oro- and nasogastric tube passage in intubated patients: fiberoptic description of where they go at the laryngeal level and how to make them enter the esophagus. *Anesthesiology.* 1999; 91(1):137–43. <https://doi.org/10.1097/0000542-199907000-00022> PMID:10422939
13. Tucker A, Lewis J. Procedures in practice. Pasing a nasogastric tube. *Br Med J.* 1980; 281(6248):1128–9. <https://doi.org/10.1136/bmj.281.6248.1128> PMID:6775756 PMCid:PMC1714574
14. Choon LB, Joselo DM, Hwang NC. Insertion of the nasogastric tube made easy. *Anesthesiology.* 2004; 101(1):266. <https://doi.org/10.1097/0000542-200407000-00058>
15. Gene N, Peterson M, Domino KB, Angelo RD, Caplan M. Management of the Difficult Airway. *Anesthesiology.* 2005; 103(1):33–9. <https://doi.org/10.1097/0000542-200507000-00009>
16. Jahromi HE, Gholami M, Rezaei F. A randomized double-blinded placebo controlled study of four interventions for the prevention of postoperative nausea and vomiting in maxillofacial trauma surgery. *J Craniofac Surg.* 2013; 24(6):e623–e627. <https://doi.org/10.1097/SCS.0b013e3182a2d896> PMID:24220487