



Acute Oral Bleed Causing Airway Loss- A Rare Experience

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Abstract

Airway management in maxillofacial injuries presents with a unique set of problems. Patients with mandibular fractures taken for surgical intervention are considered to have difficult intubation because of the decreased mouth opening. However sudden and unexpected oral bleeding from the fracture site can change a difficult airway into a potentially disastrous one. We report the management of a patient who had sudden oral bleeding prior to securing the airway.

Keywords: Airway Complication; Airway Management; Fracture Mandible; Oral Bleed

Introduction

Mandibular fractures seem to be the most common of facial injuries, with mandible being the prominent and movable bone of the oro-facial region. Patients with mandibular fractures taken for surgical intervention are considered to have difficult intubation because of the decreased mouth opening. However, the most difficult and life-threatening complication is the sudden and unexpected oral bleeding from the fracture site which can change a difficult airway into a potentially disastrous one. Gruen., *et al.* studied 2,594 trauma mortality patients in order to identify patterns of errors contributing to inpatient deaths. They found that failure to intubate, secure or protect the airway was the most common factor relating to patient mortality [1].

A single universal technique of intubation may not work under all circumstances. Hence, timely decisive and skillful management of the airway often makes the difference between life and death or between ability and disability in such situations. We wish to report an incident when a patient had sudden oral bleeding prior to securing the airway along with the measures taken to maintain the airway and stop the bleed.

Case Report

A 19-year old male reported to our hospital following road traffic accident. He was diagnosed to have a fracture of the right parasymphysis and left angle of the mandible. Patient was medically fit with no other comorbidities or medical complications. Coagulation profile was within normal limits. On examination, there was a step deformity in the right parasymphysis and the left angle of the mandible was displaced medially and superiorly. The fracture line was passing through the left inferior alveolar canal and the right mental foramen. The patient had numbness of the left corner of lower lip which was documented by the attending oral and maxillofacial surgeon.

Routine laboratory investigations (including coagulation profile) done preoperatively were within the normal range. Computerized tomographic imaging of the maxillofacial region was done and the patient was posted for open reduction and internal fixation of the mandible. There was no active bleed from the oral cavity. Fracture of the left angle of mandible was unfavorable with a displaced bone fragment and complex laceration of the gingival tissue. The patient also had limited mouth opening.

Preanesthetic evaluation revealed an ASA-PS I patient with restricted mouth opening and modified Mallampati class III. Seventy two hours after the accident, the attending maxillofacial surgeon decided to schedule for elective open reduction and internal fixation of complex mandible fractures for the patient in order to stabilize his condition.

After an in-depth discussion with the anesthesiology team, it was decided that in view of the anticipated difficult airway, a fibreoptic-aided intubation would be the best management strategy. The plan for airway management was nasal fibreoptic intubation under sedation. The difficult airway cart was prepared along with the flexible fibreoptic bronchoscope. Pre-oxygenation was done for five minutes and then patient was sedated with incremental doses of intravenous propofol sedation (30+30+30 with a total of 90mg). Patient was sedated and was ventilated by oral mask, there was some resistance in ventilation, and an oropharyngeal airway was introduced. Sudden bleeding was observed through the nose and mouth. On removal of the face mask, the whole of the oral cavity was found to be completely filled up with blood and the blood was spilling out. The maxillofacial team with experienced nursing staff was activated. Technically we had two teams managing within few seconds; anesthesia team managing the airway and the maxillofacial team controlling the intraoral bleed. Attempts at direct oral laryngoscopy failed as the larynx could not be visualized due to the pooled blood. Attempt at intubation using the intubating LMA also failed. With the blood completely filling up the oral cavity, fibreoptic techniques were not considered. With the patient sedated and the mouth full of blood the risk of aspiration and its resulting complications became very high. The bleeding was predominantly from the left angle fracture of mandible. We could identify two sources of bleeding within mouth, first and major was arterial bleeding from the left inferior alveolar canal, brisk and fast filling and second was from right parasymphysis region.

All the events happened within a span of 5 to 6 minutes. The patient was then put in steep head-down, lateral position with continuous oral suctioning and supplemental high flow oxygen supply through a nasal cannula was provided by the anesthesia team. Aim of the anesthesia team was to keep airway patent and prevent any aspiration. Attempt was made to suck out the blood using a Yaunker suction cannula but the oral cavity kept filling up

immediately and completely with blood. On direct laryngoscopy the larynx could not be visualized due to the pooled blood. A single attempt at intubation using the intubating LMA also failed. With the blood completely filling up the oral cavity, FOB was not considered. No more Propofol was given, with continuous oral suctioning being done the patient was allowed to wake up and regain his airway reflexes. The patient was given Fentanyl 0.5 mcg/kg intravenously, along with a loading dose of Dexmedetomidine 0.5 mcg/kg over 10 min followed by an infusion of 0.5 mcg/kg/hr. which continued throughout the procedure. 3 ml of 2% Xylocaine with adrenaline was infiltrated locally.

As mentioned there were two major sources of bleeding, one at parasymphysis fracture region and second major bleed was from the left angle of mandible. To control the parasymphyseal bleed, an IMF screw was placed on the distal fragment of the parasymphysis, a stainless steel wire was made to pass through the IMF screw and passed around the lower incisor, and the wire was tightened getting two fractures closer, causing compression which caused bleeding to stop. The left angle bleeding was from left inferior alveolar artery, brisk and fast filling, the distal displaced fracture fragment was manually reduced, aligning the fracture together, holding it together and placing SURGICEL - an Absorbable Hemostat within and suturing of the lacerated gingival tissues. 2 ml of LA with adrenaline was infiltrated locally. Pressure packing and holding the fragments for minimum of 10 minutes. The bleeding was reduced and eventually stopped. The exact source was not identified nor was ligated. The estimated blood loss was 450 - 500 ml. The pack was left in place for 24 hours.

The surgery was deferred. The patient was kept in ICU for observation. Chest X-Ray was advised as there was increased chance for aspiration. On auscultation there was crepitation. Patient had developed cough. The chest x ray showed no immediate signs of aspiration. The chest radiograph was repeated after 48 hours. The patient was advised broad spectrum IV antibiotics along with chest physiotherapy, and nebulization.

Two days later, tracheostomy was done under local anesthesia, followed by ORIF of mandible was done. The tracheostomy was de-cannulated post-surgery. The Patient was discharged after five days.

Discussion

Krausz, *et al.* states, Trauma accounts for thousands of deaths, labeled as “neglected disease of modern society”. Maxillofacial injuries need special attention due to many reasons. These injuries are with or without head injury and cervical spine fractures or polytrauma [2].

The time lag between the injury and surgery is variable depending on primary care institutional protocols and may range from few hours to few days according to associated injury, facial edema and pre-operative optimization of general condition. Resolution of facial edema during this time allows for more accurate clinical evaluation of airway and ease of intubation. Capasi, *et al.* suggested that the delay in final reconstruction of facial fractures in critically ill patient has an acceptably low complications rate and may be advantageous in decreasing operative risk [3].

Approach to the maxillofacial trauma patient’s airway evaluation and preparation is the key to a successful anesthetic management [2]. The risk of airway-related complications during the peri-operative period was studied by Peterson, *et al.* they found that complications arose throughout the peri-operative period: 67% upon induction, 15% during surgery, 12% at extubation and 5% during recovery. As with every difficult airway situation, the equipment for difficult intubation should be prepared and ready to use. The approach should be chosen according to the patient’s injuries, airway status and the care provider’s experience with such equipment and procedures [4].

Maxillofacial surgeons prefer to have nasal intubation as it gives them freedom to operate and the accuracy of dental occlusion [5]. Flexible fiberoptic intubation under local anesthesia with sedation is the technique of choice for management of the anticipated difficult airway with restricted mouth opening and difficult mask ventilation in the patient undergoing an elective procedure [6]. In maxillofacial trauma patients, blood, vomitus and secretions in the patient’s airway preclude vision by fiber optic instruments. Furthermore, the patient’s cooperation is essential for such an approach [7].

Tracheostomy under local anesthesia had been considered gold standard of difficult airway management and for postopera-

tive period [8]. A pre-operative evaluation showing an interdental distance of less than 3 cm and a Mallampatti classification of more than II should be considered as predictors of difficult intubation. The above two criteria, which were also present in our patient. The ASA “Maxillary -Facial Trauma Algorithm” has advised, awake intubation in a co-operative patient while in non-cooperative patient, as in our case, it has advised a classical or modified rapid sequence intubation [8]. In the failure of the above techniques ASA “Difficult Airway Algorithm” has laid emphasis for alternative airway management such as LMA and intubating LMA. If everything fails, both have advised either a surgical airway or awakening the patient [6].

Our case is unique because the already difficult airway scenario was additionally complicated by the sudden and unexpected torrential oral hemorrhage. As advised by the ASA Difficult Airway Algorithm. Classical LMA’s carried the real risk of allowing blood aspiration and were thus not tried; intubating LMA was tried but failed.

This case report emphasizes the fact that a plan for securing airway is as important as the surgery itself. We feel that the best partner in a maxillofacial surgery is your anesthetist team. The team had taken all precautions like planning intubation with fibro optic. But the team had overlooked few things like administering high quantity IV sedations (propofol > 80 mg), which depressed all reflexes in awake intubation and upon that severe unexpected bleeding. Our anesthesia team managed the airway and also allowed space for OMFS team to stop the unexpected bleeding. As the fracture was old and benign, even the OMFS team were not expecting this complication. Surgical airway consent was not taken prior to surgery by us, it was decided cancel the surgery for present and wake the patient.

Conclusion

The above case report makes a clinician/surgeons aware of the fact that even old mandibular trauma has the ability to suddenly and unexpectedly bleed thus turning an already difficult airway situation into a potentially disastrous one. Planning for securing airway is as important as the surgery itself. The term Simple fracture is an illusion. Fractures of the facial region are very tricky to manage due to multiple reasons. Each fracture should be evaluated

on per case bases. Airway being the most important all the possible measures should be planned as we plan for surgery of fracture. While taking up such cases the patient should be counseled and consented for surgical airway in emergency. Surgeon has to recognize emergency situations and to manage it to avert any potentially disastrous state. Discussion with anesthesia team with regards to airway management such that both the teams can work symbiotically is the prime aim in these types of cases.

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Conflict of Interest

As far as authors are aware, there is no conflict of interest.

Bibliography

1. Gruen RL, Jurkovich GJ, McIntyre LK, Foy HM, Maier RV. Patterns of errors contributing to trauma mortality: Lessons learned from 2,594 deaths. *Ann Surg.* 2006;244(3):371-380.
2. Krausz AA, El-Naaj IA, Barak M. Maxillofacial trauma patient: coping with the difficult airway. *World J Emerg Surg.* 2009;4:21.
3. Casapi N, Zeltser R, Regev E, Shteyer A. Maxillofacial gunshot injuries in hostility activities in 2000-2003. *Refuat Hapeh Vehashinayim.* 2004;21(1):47-53.
4. Peterson GN, Domino KB, Caplan RA, Posner KL, Lee LA, Cheney FW. Management of the difficult airway: a closed claims analysis. *Anesthesiology.* 2005;103(1):33-39.
5. Lee SS, Huang SH, Wu SH, Sun IF, Chu KS, Lai et al. A review of intraoperative airway management for midface facial bone fracture patients. *Ann Plast Surg.* 2009;63(2):162-166.
6. American society of Anesthesiologists Task Force on Management of the Difficult Airway: Practice guidelines for management of the difficult airway: an updated report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. *Anesthesiology.* 2003;98(5):1269-1277.

7. Boylan JF, Kavanagh BP. Emergency airway management: competence versus expertise? *Anesthesiology.* 2008;109(6):945-947.
8. Wilson CW. Trauma Airway Management. *American Society of Anesthesiologist. Newsletter.* 2009;9(11).

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