EDİTÖRE MEKTUP / LETTER TO EDITOR

Kocaeli Med J 2024;13(1):1-3, doi: 10.5505/ktd.2024.74152

Kanayan Maksillofasiyal Travma Hastasıyla Baskı Altında Olan Anestezistin Entübasyon Seçenekleri Sınırlı Olduğunda Sırada Ne Var?

What is Next For the Anesthetist Under Pressure with a Bleeding Maxillofacial Trauma Patient When the İntubating Options are Limited

Pramod Padmalayam

Hamad Tıp Şirketi, Anesteziyoloji Bölümü, , Doha, Qatar

ÖZ

Anahtar Kelimeler: hava yolu, maksillofasiyal travma, leforte kırığı, fiberoptik entübasyon

ABSTRACT

Keywords: airway, maxillofacial trauma, leforte fracture, fiberoptic intubation

Gönderim Tarihi: 11.06.2023 **Kabul Tarihi:** 24.04.2024

Correspondence: Uzm. Dr. Pramod Padmalayam, Hamad Tıp Şirketi, Doha, Qatar. **E-mail:** dr_pramod@outlook.com

Atıf/ Cite as: Padmalayam P. What is Next For the Anesthetist Under Pressure with a Bleeding Maxillofacial Trauma Patient When the İntubating Options are Limited. Kocaeli Med J 2024;13(1): 1-3, doi: 10.5505/ktd.2024.74152

To the Editor,

Airway management in a patient with maxillofacial trauma can be a nightmare even for an experienced anesthesiologist. Concomitant head and spine injury make the situation cumbersome. Maxillofacial fracture can be categorized into 3 groups depending on the bones involved; upper face fractures, middle face fractures and lower face fractures. Difficult mask ventilation, subcutaneous emphysema, difficulty in mouth opening and secretions blocking the airway- all these can affect the airway management. 10% of patients with midface fractures have life threatening hemorrhage. Epistaxis and facial swelling can make mask ventilation and visualization of the airway difficult during trial of intubation (1). We aim to highlight the importance of careful planning and preparation steps in the airway management of patients with maxillofacial trauma. A 19-year-old male patient weighing 63 kg presented with maxillofacial trauma; Lefort II fractures on the left side, Lefort I fractures on the right side, zygomaticomaxillary fracture, and sagittal palatal fracture with no difficulty in breathing (Figure 1,2). On suboptimal examination because of pain, it was found that modified Mallampati score was 4, limited mouth opening, pan face edema, and bleeding from right nostril. The patient had no other comorbidity or any other significant past medical or surgical. After explaining the anesthesia plan he signed the informed consent. Awake fiberoptic intubation was the first option. However, there was only one nostril available for fiberoptic vision and it was bleeding. Backup plans - Videolaryngoscopy assisted nasal fiberoptic intubation, awake video laryngoscopy guided submental intubation and oral intubation through supraglottic airway device were also discussed. On surgery day difficult airway management equipments were prepared and checked, ultrasound guided crycothyroid membrane marking was performed. Nebulisation with 4% lidocaine done in preop area. In the operation room monitoring included electrocardiography, noninvasive blood pressure, pulse oximetry, bispectral index and capnography. High flow nasal Oxygen started. Oxymetazoline decongestant applied in both nostrils. Intravenous Glycopyrrolate 0.2 mg, and ringer lactate infusion started. For sedation, remifentanil target-controlled infusion (TCI) 1ng/ml was started and titrated to keep patient comfortable. The oropharynx was anesthetized with a 10% lidocaine pump spray. The fiberoptic scope was loaded with a 6.5 mm tracheal tube and the patient was given semi-sitting position. One of the anesthesiologist stood on the head side of the patient and fiberoptic monitor kept on the left side of patient. Laryngeal and esophageal openings were visualized by videolaryngoscopy. Fiberscope advanced from right nostril to trachea however we lost sight due to bleeding. After optimal aspiration on the second attempt, the patient was intubated successfully and later 2 mg/kg propofol and rocuronium 0.6 mg/kg were administered. The breathing circuit was attached, and the tube placement was confirmed by bronchoscopy and capnography. Mechanical ventilation started with 1L/min of fresh gas flow with 50% oxygen in the air. Anesthesia was maintained by effect-site target controlled infusion(TCI) of propofol using the Marsh effect site model and remifentanil . Propofol and remifentanil were set at 3–4 mcg/mL and 4-5 ng/mL, respectively. Before extubation throat pack was removed and airway tract checked for possible blood with fiberoptic bronchoscopy. The intraoperative course was uneventful with no significant blood loss. Open reduction and internal fixation of left Zygomaticomaxillary Complex, Bilateral Lefort fractures repair, Left orbital floor exploration and close reduction of nasal bone fractures were performed by maxillofacial surgery team. The patient was reversed with Sugammadex 2mg/kg IV. The patient was discharged the next day.

The anesthetist is under pressure to secure the airway before imminent airway obstruction, poor visualization of the airway due to bleeding, edema and debris, distorted anatomy, and associated head and C-spine injury in patient with maxillofacial trauma. Associated injuries, altered sensorium, and loss of protective airway reflexes increase the risk of vomiting and aspiration during airway management (2). Soft tissue swelling and oedema tends to develop within 60-90 min following injury. Assessment and preparation of the maxillofacial trauma patient's airway is the key for successful intubation and anesthetic management. However sometimes it cannot be done properly due to limited time, pain, and bleeding. Most patients have less than two finger breadths of mouth opening and a Mallampati score of 3 or 4 points, that indicates a difficult airway. Obstruction is often dynamic, besides everything can be changed in minutes, therefore the patient should be reassessed periodically to rule out delayed airway compromise (3). Because of the anticipated difficult intubation in this trauma patient, we decided to perform awake fiberoptic intubation so that airway is protected before any relaxant is given. The main reasons for awake intubation are the unpredictability of mask ventilation, the potential complications, and the expected difficult intubation (4). Before fiberoptic intubation, we checked pharyngeal and laryngeal areas for possible distorted anatomy and cricothyroid membrane was marked with use of ultrasound, so that in case of failed fiberoptic intubation, we could proceed with cricothyroidotomy. However, we were able to perform awake fiberoptic intubation in the second attempt. "If this plan fails" we had arranged to proceed with awake video laryngoscopy then to extricate the tube through submental area. Another plan was to try fiberoptic intubation through a supraglottic airway device as well. As a last option, cricothyroidotomy or surgical tracheostomy was also considered. Postoperative period can also be difficult because of edema. Extubation should be deterred until normal anatomy is restored or at least until the edema subsides. Anesthetist should be prepared for the possibility of re-intubation or impossible intubation (5). Airway management of patients with maxillofacial trauma is challenging. Alternative steps should be planned before airway management is initiated. Combined awake techniques using videolaryngoscopes with fiberoptic scopes become successful when planned properly. Even for patient with bleeding upper airway, the operators can avail one of the following airway management strategies:

- Awake combined technique with nasal fiberoptic scope plus oral videolaryngoscopy
- Awake videolaryngoscopy plus bougie
- Awake intubation through supraglottic airway device
- Awake cricothyroidotomy under upper airway nerve block

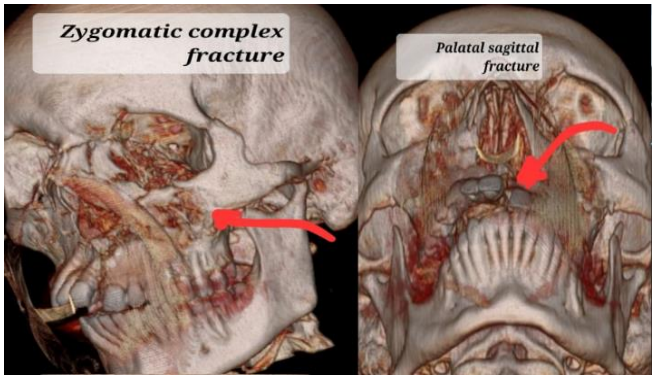

Figure 1. Three-dimensional CT scan illustrating complex zygomatic and palatal fractures

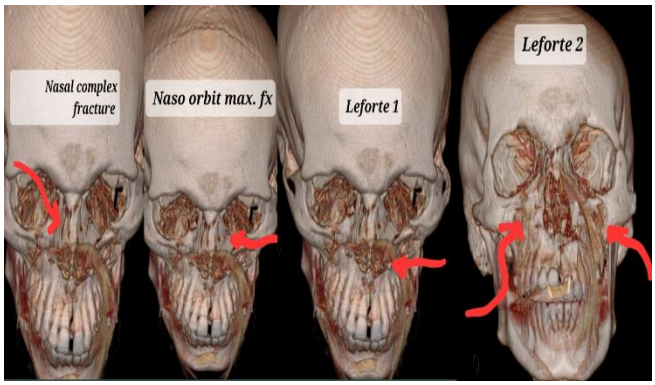

Figure 2. Three-dimensional CT scan illustrating naso-orbital complex fractures, Leforte 1 and 2.

REFERENCES:

1. Cai SS, Mossop C, Diaconu SC, Hersh DS, AlFadil S, Rasko YM, et al. The "Crumple Zone" hypothesis: Association of frontal sinus volume and cerebral injury after craniofacial trauma. J Craniomaxillofac Surg. 2017; 45(7): 1094-1098.

2. Baid H, Arora P, Arora RK, Chawang H, Pillai A. Difficult Mask Ventilation in Penetrating Facial Trauma Due to Animal Attack: A Unique Challenge in the Emergency Department. Cureus. 2022; 14(4): e23831.

3. Coppola S, Froio S, Merli G, Chiumello D. Maxillofacial trauma in the emergency department: pearls and pitfalls in airway management. Minerva Anestesiologica. 2015; 81(12): 1346-1358.

4. Dalar L, Saracoglu KT, Saracoglu A. Airway management in patients with tracheobronchial mass: challenges and solutions. Kocaeli Med J 2018; 7(1): 52-53.

5. Saracoglu KT, Yilmaz M, Yakin Duzyol I, Turan AZ, Okuyucu KA, Yurt E. Advanced techniques in extubation: Bailey maneuver, tube exchange catheter and staged extubation set. J Clin Anesth 2018; 48: 28-29.