

Airway Management in a Patient With Maxillofacial Trauma

Maksillofasial Travmalı Hastada Havayolu Yönetimi
Acil Tıp

Başvuru: 05.04.2018
Kabul: 29.04.2018
Yayın: 13.06.2018

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Özet

Havayolu yönetimi, barındırdığı önemli işlem basamakları ve olası tehlike belirtileri nedeniyle gerek hastane öncesi gerek hastane şartlarında morbiditesi ve mortalitesi yüksek seyreden bir konudur. Özellikle maksillofasial yaralanmalarda fraktürlere eşlik eden kanama, artmış sekresyon ve disloke dişler nedeniyle havayolu güvenliği daha büyük bir önem arz etmektedir. Bunun yanı sıra, ileri havayolu yönetimine başlanması için kriter olarak kullanılan bilinç durumu değerlendirmesinde Glasgow Koma Skoru (GKS)'nin kullanılması izole oküler travma vakalarında kullanışlı olmamaktadır. Sunacağımız vaka ile, çoklu maksillofasial fraktürlerine eşlik eden bilateral oküler yaralanması olan bir araç içi trafik kazası hastasının havayolu yönetiminde farklı yaklaşımlara ihtiyaç duyabileceği vurgulanmaktadır.

Anahtar kelimeler: *Havayolu, Maksillofasial, Entübasyon*

Abstract

Airway management contains important procedural steps and possible red flags. If management is unsuccessful, morbidity and mortality rates are high in prehospital or hospital settings. Especially, maxillofacial injuries can become more of an issue due to possible association with hemorrhage, increased secretions and dislodged teeth. Also trying to scale patient's brain functions with Glasgow Coma Scale (GCS) for advanced airway intervention, may not be useful due to ocular injuries. With this case report, We'd want to emphasise that different airway options might be needed as a different approach for motor vehicle accident with multiple maxillofacial fracture and bilateral ocular injury.

Keywords: *Airway, Maxillofacial, Entubation*

Introduction

Maxillofacial injuries and head traumas are common results of high-velocity traumas arising from road traffic accidents, sport injuries, falls and gunshot wounds. Lack of a seatbelt or an airbag increases the risk of facial and panfacial fractures¹. Airway management contains crucial steps and redflags. If airway management is unsuccessful it may lead to morbidity and mortality in prehospital or hospital settings. Securing the airway in patients with maxillofacial trauma is often extremely difficult because the trauma involves patients' airway and their breathing is compromised. High-velocity traumas to midface can produce fractures and dislocations that comprise nasopharynx and oropharynx. Facial fractures can be associated with hemorrhage, increased secretions, and dislodged teeth, which cause additional difficulties in maintaining a patent airway. Also trying to scale patient's brain functions with Glasgow Coma Scale (GCS) for traumatic brain injury (TBI) may not be optimal due to ocular injuries. Nevertheless, the most important issue with this patients is to acquire a secure airway.

Case Report

A twenty-three-year old male patient was brought to our emergency service by an ambulance. Trauma mechanism

reported by the paramedic team indicated that the patient was seated in the driver seat without his seatbelt on, and he had crushed his face to the steering wheel during the accident.

After the initial examination, it was noted that the patient's bilateral orbitas; maxillary, zygomatic and nasal bone structures were not observed. The patient was conscious, breathing spontaneously in tripod position and he had tachypnea. He had midfacial bleeding due to maxillofacial trauma. He was cooperated and oriented but vocal and ocular responses were suboptimal due to damages. Vital signs were: blood pressure 160/90 mmHg, heart rate 110, respiratory rate 22 and fingertip saturation 99%.(Figure1, figure 2, Figure 3)



Figure 1

Excessive bleeding from midfacial injuries might be challenging to maintain airway and control the hemorrhage.



Figure 2

Airway compromise should occur due to tongue falling back, hemorrhage to oropharyngeal region, foreign bodies and mid facial fractures themselves. In this case, it's hard to define proper tracheal structure to perform endotracheal intubation because of severe mid face fractures.



Figure 3

In most cases, bleeding can be are easily controlled. Rarely, Facial trauma arises from the maxillary artery, creating difficulty in hemorrhage control. In this case suction provided adequate hemorrhage control.

On his primary survey, his hemorrhage control was maintained with aspiration. Oxygen saturation was normal while sitting but he was not able to keep his airway open in supine position. After stabilization of the patient, urgent plastic surgery was planned. Because of his severe facial fractures, surgical airway (tracheostomy) placement was performed accompanied by a otolaryngologist. On his secondary survey, other system examinations were normal.

In his cranial computed tomography (CT) imaging there was neither damage in brain parenchyma; nor hemorrhage or hematoma on epidural, subdural or subarachnoid spaces. Lateral, superior, medial and inferior walls of bilateral orbitas and bilateral multiple zygomatic arch fractures were detected. Right bulbus oculi was not in its cavity, left bulbus oculi was displaced antero-superiorly. The relationship between the left temporomandibular joint was absent. After performing cranial imaging, the patient was referred to Plastic and Reconstructive Surgery for operation (figure 4).



Figure 4

Patients intra-operative aspect after completing surgery. Surgery was performed by Plastic and Reconstructive Surgery

Case Discussion

The most common cause of maxillofacial fractures is traffic accidents and young (26- 41 years of age) male patients are more prone to maxillofacial injury^{2,3}.

During the primary survey of facial trauma patients, airway should be aggressively protected from hemorrhage and mechanical obstruction. The major issue of multiple-trauma patients is often maintaining the airway properly. To do this, as we did for our patient, without significant associated injury, patients should be held in upright position of comfort, with suction in hand to better handle bleeding and secretions.

Significant hemorrhage with severe midfacial injury can obstruct the airway and make intubation attempts difficult. Life threatening hemorrhage can occur in up to 10% of patients with midface fractures⁴.

The best approach to difficult trauma airway involves planning ahead by having equipment ready for oral endotracheal intubation as well as keeping the neck prepared and cricothyrotomy kit ready. Also, like most of the cases, tracheostomy was the best option for this patient^{5,6}.

Hemorrhage control is another important key point of stabilization in primary survey. We used aspiration for this patient. Even if there are some reports describing the use of tranexamic acid for control of massive bleeding from facial injury in the emergency department⁷ there is no meta-analysis or definitive protocol for facial traumas.

Traumatic brain injury is commonly seen with high-energy traumatic maxillofacial injuries. Noncontrast head and face CT imaging modality is recommended for patients who have significant clinical findings for midface trauma, in order to exclude traumatic brain injury⁸.

Conclusion

Patients who require intubation should have at least one of the following five indications:

- inability to maintain airway patency,
- inability to protect the airway against aspiration,
- ventilatory compromise,
- failure to adequately oxygenate pulmonary capillary blood,
- anticipation of a deteriorating course that will eventually lead to the inability to maintain airway patency or protection.

Even though, this patient was conscious enough to maintain breathing, his severe maxillofacial trauma was compromising his airway. We conclude that, even patients with 15/15 GCS might need airway intervention.

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