

Airway management in a patient with Le Fort III Fracture

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ABSTRACT

Maxillofacial fractures present unique airway problem to the anesthesiologist. Patients with LeFort III fractures are at great risk of requiring emergent airway control due to midface instability and oropharyngeal airway obstruction. We present a case where difficult intubation was managed with close cooperation between the anesthesiologist and the surgeon.

Keywords: Difficult intubation, Le Fort III fracture, maxillofacial trauma

INTRODUCTION

Patients with Le Fort III fracture present a specific challenge to the anesthesiologist. The standard oral route for tracheal intubation may not be possible because of the limiting mouth opening in cases with postero-inferior displacement of the fractured maxilla and bilateral fracture of the anterior mandible.^[1] The nasal route may be used; however, this is contraindicated because of the deformity and fractures in the nasal bones.^[2] The solution in such complicated cases is to perform an elective short term tracheostomy or cricothyroidotomy to secure the airway before anesthesia and surgery.^[3]

We report a case of Le Fort III trauma in which the maxillary fracture was reduced manually to clear the airway and to perform the intubation with the fiberoptic bronchoscope.

CASE REPORT

A 27-year-old male was brought to the operating room with severe blunt injury isolated to the face. He was scheduled for open reduction and fixation of facial fractures under general anesthesia.

The patient was in the sitting position, head slightly bent down, conscious and oriented. He exhibited a dish-face deformity with periorbital edema, multiple lacerations and dropped upper jaw. He had profuse bleeding from the nose and the mouth [Figure 1]. Both nares were obstructed with no flow of air and the patient was breathing from his mouth with difficulty. When asked to lie down in the supine position, the patient started suffocating and desaturated. The airway assessment revealed the inability to open the mouth. Monitoring included electrocardiogram, pulse oximeter and non-invasive blood pressure. The laboratory investigations revealed a normal hemogram and coagulation profile.

Radiological 3 dimensional computed tomography scan examination revealed fractures of bilateral maxilla, mandibular symphysis, left infraorbital region and nose. The skull base and the cervical spine were intact [Figure 2].

Tracheostomy under local anesthesia was suggested prior to anesthesia and surgery to secure the airway

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because of the impossibility to perform the standard oral intubation and the contraindicated nasal intubation. The ear, nose, and throat surgeon refused to do the awake tracheostomy because of the unsuitable surgical position (sitting and head bent down). The discussion with the surgeon led to the following strategy: With the index behind the soft palate, the surgeon reduced manually the maxillary fracture by pulling the maxilla forward and upward resulting in clearing the airway and creating an inter-incisor space [Figure 3]. While the surgeon kept his finger in place, topical lidocaine 5% was sprayed into the mouth and the oropharynx. The fiber optic bronchoscope was advanced into the oropharynx through the vocal cords up to the carina. A 7, 5 endotracheal tube mounted on the bronchoscope was threaded into the larynx. Correct tube placement was confirmed clinically and by capnography. Then the patient lied down on the operating table and general anesthesia was induced. Tracheostomy was then performed to allow surgical access and repair of the maxillo-facial fractures. The surgery went uneventfully. The patient was awakened at the end of surgery with tracheostomy kept to ensure safe post-operative care.

DISCUSSION

In Lefort III fracture, several anatomical factors contribute to airway compromise. The airflow is mainly obstructed in the oropharynx because of the downward displacement of the fractured maxilla and the loss of support of the glossal and suprathyroid musculature by the symphyseal and bilateral body fractures of the mandible.^[4] This was the situation in our case as confirmed by the radiological exam. Also this explains the position the patient was taken to breathe: Sitting and head bent provides him the best position for air entry.

Different methods of intubation and surgical airway are described in the literature.^[5] No consensus exists to date as to the best way of controlling airway when orotracheal or nasotracheal intubations are contraindicated.^[5] Tracheostomy remains an excellent procedure for establishing a formal surgical airway. This procedure may involve a significant risk of iatrogenic complications such as tracheal stenosis, internal emphysema, damage to the laryngeal nerves and others.^[6] However in our case the inadequate surgical position for tracheostomy (sitting and head bent) doesn't offer the best conditions for this intervention, thus the possibility of complications could increase.

Cricothyroidotomy is an emergency act that is indicated in the situation of can't ventilate can't intubate.^[7] The cricothyroidotomy set was prepared in our case as a life-saving alternative. The management of the airway in our



Figure 1: Dish face deformity with dropped upper jaw (A)

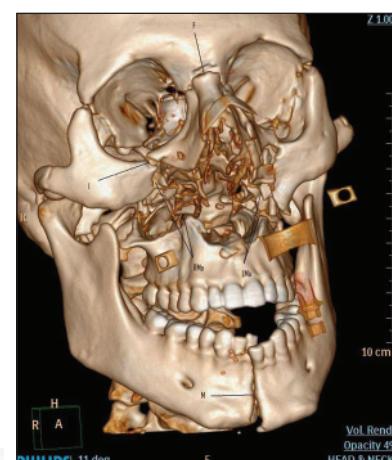


Figure 2: Computed tomography-scan 3 dimensional oblique view. F-Frontal fracture; I-Intra-orbital fracture; RMa-Right Maxillary fracture; LMa-Left Maxillary fracture; M-Mandibular fracture



Figure 3: Surgeon reducing the maxillary fracture pulling the maxilla forward with the index

report was based on the reduction of the maxillary by pulling the maxilla upward and forward with the index in the mouth behind and above the soft palate. This procedure cleared as possible the obstructed oropharynx

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and created significant interincisor space. Also it allowed a successful oral intubation with the aid of the fiber optic bronchoscope.

As a conclusion, awareness of the mechanism of airway obstruction in facial trauma is important to be able to initiate maneuvers that are helpful in securing and managing the airway in critical situations.

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