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Case report

A case report of successful awake fiberoptic intubation in a child with severe airway burn

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Abstract The role of awake fiberoptic bronchoscopy in non burn population is well established, however, in burn patients; more evaluation is needed. Here's a case of successful management of difficult airway with fiberoptic bronchoscopy in a child with a severe degree of post-burn contractures.

1. Introduction

In chronic burn patients; multiple deformities can be encountered; the most dangerous are those affecting the airway [1–3]. The underlying dense fibrous hypertrophic sheets of scar may displace the epiglottis and vocal cords anteriorly and pulled towards the scar, circumoral and mentosternal contractures may limit the mouth opening and cervical range of motion, the nasal orifices may be closed with inability to advance nasal airways, also, the limited mouth opening may prevent introducing airways, laryngoscope blades or laryngeal mask airways. Facial burns during early childhood can cause underdevelopment of the jaw (micrognathia) [4].

Many airway equipments and techniques have been tried successfully for intubating burn patients: spontaneous ventilation under general anesthesia without muscle relaxation while doing surgical release of circumoral and mentosternal contractures followed by direct laryngoscopy or the use of intubating laryngeal mask airway, blind nasal intubation, lightwand, retrograde wire technique [5] or others.

But with repeated attempts; bleeding and secretions in the oropharynx will harm the airway and will make fiberoptic intubation impossible as a second plan. So, fiberoptic intubation from the start is the most efficient and the least traumatic.

As induction of general anesthesia is dangerous because both intubation and mask ventilation may be impossible, the awake state is the safest option [6].

2. Case presentation

A male patient 11 years old, weighing 30 kg. He had severe flame burn since he was 5 years old. He was presented to the surgery unit for release of the neck and graft application (see Fig. 1).

History was taken confirming absence of any medical illness, no history of epistaxis or nasal problems, no infectious diseases, no allergy to lidocaine or phenylephrine, no current medications (see Figs. 2–6).

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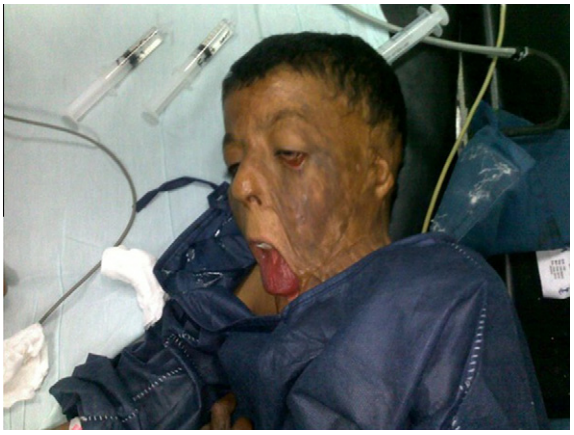

Figure 1 Chronic burn patient with multiple deformities.

Figure 4 Successful nasal intubation.

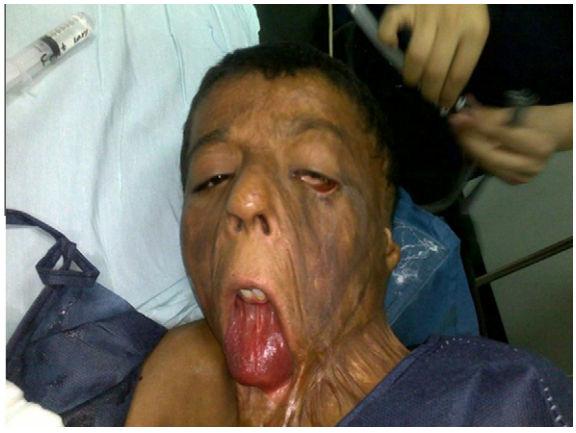

Figure 2 Circumoral and mentosternal contractures with limited mouth opening.

Figure 5 Release of the neck with graft application.

Figure 3 Severe scarring to the face and neck.

Physical examination: Severe flame burn with severe scarring to the face including the lower eyelids, neck, palms, hands. Thumb dislocation. Left eye ectropion (viable 6/6 eyes). HR: 100/min, BP: 110/70, Temp: 36.5, RR: 13/min.

Airway assessment: Severe neck flexion due to anterior neck contracture. Mouth opening was restricted with interincisor gap of 1 cm. Both nares were patent.

Awake nasal fiberoptic intubation was planned. The procedure and the need for it was explained to the patient. A written informed consent was taken pre-operatively.

The patient fasted 6 h before endoscopy. Monitoring includes ECG, pulse oximetry, capnography and arterial blood pressure. Intravenous access was obtained and infusion of normal saline started.

2.1. Preparation

IV atropine 0.01 mg/kg was given to reduce secretions, IV midazolam 0.03 mg/kg to alleviate anxiety, IV fentanyl 0.5 μg/kg was given. All resuscitation equipments were ready for use.

Both nasal passages were inspected by superficial nasal endoscopy and the right one was chosen because of its larger