

# Mutilating Facial Animal Bite: As an Airway Challenge

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## Abstract

Mutilating facial injuries and deaths because of animal bite is very common. Here we report a case of mentally retarded patient with difficult airway caused by mutilating animal bite on face. There was significant skin loss from just below eyes to upper neck, large amount of tissue and muscle loss from the cheek, nose and lips. The mandible was fractured and exposed. Upper incisors, lower incisors, canines and premolars of right side had been ripped off, that posed a problem in pre-oxygenation and mask ventilation. Patient was operated for twice as for two staged repair. Air-way was secured with fiber-optic intubation during surgery. Patient was managed successfully intra-operative and extubated smoothly after procedure.

**Keywords:** Difficult airway, Facial injuries, Fiber optic intubation

## INTRODUCTION

Difficult and compromised airway poses a significant challenge to the anesthesiologist. Mutilating injuries especially on the face is a common aspect; in pediatric age group it's more common than in adult age group.<sup>1</sup> Anatomical disruption is common in patients who are presenting with an injury to maxilla-facial region. Intubation is difficult and can cause injury to the air-way.<sup>1,2</sup> Role of fiber optic bronchoscopic guided intubation is already described in the literature.<sup>3</sup> In our case patient was mentally challenged and uncooperative with severe mutilating facial injury. In this kind of patients, i.e., mentally challenged and uncooperative, where intubation is difficult, definitely fiber optic bronchoscopic guided intubation is the only successful tool for an anesthetist.

## CASE REPORT

A 30-year-old female was presented to the emergency room with multiple facial injuries and hypovolemic shock. She was attacked by a street dog, and she could not protect herself due to her mental condition. She was resuscitated with four units of packed red blood cells. Her face was mutilated beyond recognition with significant skin loss

from just below eyes to the upper neck. Large amount of tissue and muscle loss from the cheek, nose and lips had occurred. The mandible was fractured and exposed. Right side upper and lower incisors, canines and premolar had been ripped off (Figure 1).

After initial stabilization and cleaning of the wound, the patient was put on anti-rabies protocol. She was planned for two stage procedure, after stabilizing the patient by Plastic Surgery Department, S.M.S Hospital Jaipur. In the first stage debridement and split skin grafting was planned and then in the next stage free flap cover, and reconstruction was planned under general anesthesia (Figure 2). After stabilization, she was taken for surgery, as she was uncooperative and agitated; besides this anatomical disruption of facial structures intubation was difficult. Routine intra-operative monitoring consisting of electrocardiography, non-invasive blood pressure and plethysmography was established. The patient was pre-medicated with 1 mg of midazolam, 0.2 mg of glycopyrolate. Pre-oxygenation could not be possible due to difficult mask ventilation. Anesthesia was induced by slow administration of intravenous ketamine. The aim was to sedate with preservation of respiratory drive till airway could be secured.

A 7.0 mm cuffed endotracheal tube was advanced over an intubating fiberoptic bronchoscope through the left nostril.



Figure 1: Pre-operative condition of patient



Figure 2: After 1<sup>st</sup> stage procedure (debridement and split skin graft)

Instillation of 10% lignocaine was used to suppress the gag reflex intraoperative 3 times. Visualization was very difficult because of anatomical disruption of the upper airway and local edema. However, once the oropharynx was negotiated successfully, the rest of intubation process was uneventful. The 90 min surgery was conducted by using halothane inhalational anesthesia at 0.6 minimal alveolar concentration and atracurium for neuromuscular blockade. Throughout the surgery, patient was hemodynamically stable. Surgery was completed successfully, and the patient extubated at the end of the procedure with uneventful recovery.

10 weeks later patient was taken for second stage surgery. In second stage free flap from para-scapular region was planned to cover and reconstruction of face (Figure 3). After split skin grafting in the first stage there was raw area remaining on the face, which was covered with gauge pieces and patient was pre-oxygenated with 100% oxygen. However, intermittent positive pressure ventilation could not be possible. After induction with intravenous ketamine, a 7.0 mm cuffed endotracheal tube was advanced over an intubating fiberoptic bronchoscope through the left nostril. After completion of surgery, patient was not extubated and shifted to Intensive Care Unit. Next day patient was extubated, and recovery was uneventful.

## DISCUSSION

Securing and maintaining a patent airway remains one of the fundamental responsibility of anesthesiologists. Patients who are presenting to emergency with mutilating animal bite on facio-maxillary region; disruption of oral anatomy beyond recognition is a usual phenomenon. Large amount of tissue and muscle loss from the cheek, nose and lips had already being occurred. Pre-oxygenation and mask ventilation are also difficult usually in those patients.



Figure 3: After 2<sup>nd</sup> stage procedure (free flap cover)

Caplan *et al.*<sup>1,2</sup> found that among main mechanism of injury resulting in  $\frac{3}{4}$ <sup>th</sup> of adverse respiratory events, the incidence of inadequate ventilation was as high as 38%. Benumof and Scheller estimated that up to 30% of deaths attributable to anesthesia caused by inability to successfully management of difficult airway. Difficult tracheal intubation is more frequent in patients who experienced difficult mask ventilation. Thus, clinician should be familiar with the corrective measures and management options when faced challenging in difficult or impossible mask ventilation.<sup>4</sup> When mask ventilation is impossible, the anesthesiologist may either proceed with tracheal intubation or use any alternative ventilatory device. Crosby *et al.*<sup>3</sup> considered an attempt at tracheal intubation prudent first intervention in case of impossible mask ventilation. Kheterpal *et al.*<sup>5</sup> reported successful tracheal intubation in 36 of 37 patients who had impossible mask ventilation and only one patient required cricothyrotomy. Based on these results, direct laryngoscopy and endotracheal intubation should be considered. Laryngeal mask airway (LMA) is considered by many to be first choice rescue ventilation device.<sup>6</sup>

In our case, LMA was not considered because of distorted oral anatomy and direct laryngoscopy could also not be possible as it might cause mucosal injury and bleeding due to friable and edematous tissue, rather it could be the

possibility of laryngospasm and hemodynamic alteration. The uncooperativeness of our patient due to her mental condition, fiber optic bronchoscope guided intubation in wakeful state was not possible. So under mild sedation, analgesia and local anesthesia successful fiberoptic bronchoscopic guided endotracheal intubation was done.

Here we conclude that in this kind of patients where LMA, direct laryngoscopy are not possible because of facial anatomy destruction; under mild sedation fiberoptic bronchoscopy guided intubation can be a gold standard procedure.

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