

Lightwand: a useful aid in faciomaxillary trauma

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Received: 14 September 2010 / Accepted: 21 December 2010 / Published online: 20 January 2011
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Abstract Airway management in patients of faciomaxillary injury is of great concern to the anesthesiologist. Bag and mask ventilation and orotracheal intubation may be difficult with these patients. Recently, a middle aged, obese female presented in the emergency department after sustaining a blast injury, with laceration of the upper chest and left submandibular region. Laceration of the submandibular region was communicating with the intraoral space and the airway was filled with blood. The airway was secured with nasotracheal intubation aided by a lightwand, after failure with the Macintosh laryngoscope. This case report highlights the importance of the lightwand in intubating a patient with a bleeding airway and when the bright light glow of the lightwand gives sufficient direction toward the glottis for successful tracheal intubation.

Keywords Difficult airway · Lightwand · Facio-maxillary trauma

Introduction

Airway management in patients who have sustained faciomaxillary trauma is often difficult and is a challenge to the attending anesthesiologist. There may be problems of bag and mask ventilation and orotracheal intubation in such patients. Recently we encountered a patient with blast

injury to the face with mandibular fracture and deep facial laceration. Nasotracheal intubation guided by the Macintosh laryngoscope was ruled out by initial examination under halothane. Fortunately, lightwand-aided tracheal intubation was successful and tracheostomy could be avoided, as highlighted by this case report.

Case report

A 50 year old, ASA II obese female, presented in the emergency department with blast injury owing to bursting of a cooking gas cylinder. There was deep laceration of the upper chest and the left submandibular region. The laceration in the submandibular region was communicating with the intra oral space (Fig. 1). The patient's upper airway was filled with blood and she was swallowing that blood. Although breathing was spontaneous, air was noted to be gurgling out through this opening. X-ray of the face showed fracture at the ramus of the mandible on the left side (Fig. 2). The patient was conscious, yet very anxious and uncooperative. Fortunately, she had minimal difficulty in breathing. There was no history of medical or surgical illness in the past and relevant investigations were essentially normal.

At the time the patient was brought to the operating theater, she was maintaining oxygen saturation of 99%. The patient's heart rate and blood pressure were 86/min and 142/86 mmHg, respectively. On gentle assisted bag mask ventilation there was significant leakage from the communicating wound in the submandibular region. There was constant intraoral bleeding from the wound. In addition, intraoral mucosal lacerations were also noted. Because of these findings, the patient was considered difficult for face mask ventilation and orotracheal

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Fig. 1 Laceration of the upper chest and submandibular area



Fig. 2 X-ray showing fracture at the left ramus of the mandible

or nasotracheal intubation. Nature of surgery necessitated nasotracheal intubation. The importance of awake tracheal intubation was explained to her, yet the patient refused awake airway management. Therefore the patient was taken for endotracheal intubation under spontaneous respiration. Arrangements for emergency tracheostomy were made, in case this failed.

The patient was premedicated with inj. midazolam 1.5 mg (in increments of 0.5 mg boluses); inj. glycopyrrolate 0.2 mg, and inj. tramadol 100 mg. Preoxygenation was conducted for 5 min. Anesthesia was induced with halothane 4% in oxygen in incremental doses. The patient maintained spontaneous respiration. After attaining sufficient depth of anesthesia, the airway was cleared by suction. Approximately 10–12 ml blood was removed by suction. Gentle laryngoscopy was conducted by an experienced

anesthesiologist to ascertain ease of laryngoscopy and tracheal intubation. Unfortunately, no portion of the glottis or epiglottis could be seen because the traumatized mandible and excessive bleeding hampered vision. It was therefore decided to attempt lightwand-aided tracheal intubation before considering tracheostomy. An adult lightwand (Trachlight™), premounted with 7 mm ID endotracheal tube (ETT), was bent into a gentle C shape. The well lubricated lightwand-ETT (LETT) assembly was now introduced through the left nostril. With gentle maneuvering of the LETT assembly, a circumscribed glow, albeit of slightly reduced intensity because of blood on the bulb of the wand, appeared above the laryngeal area. It was gradually made to enter the glottis and trachea. The lightwand was now withdrawn. Correct endotracheal intubation was confirmed. The procedure took less than 30 s. During this period, vital signs remained stable and oxygen saturation did not fall below 98%. Duration of surgery was 1 h, after which awake tracheal extubation was done.

Discussion

This case report highlights the dilemma one faces during airway management in patients with faciomaxillary trauma. In cases of predicted difficult bag mask ventilation and orotracheal intubation, awake tracheal intubation should be attempted [1]. However, this may not be always feasible as the patient may be uncooperative, similar to our patient. In addition, some trauma patients cannot be prepared for awake intubation because local anesthetic preparation is time-consuming, may increase the risk of aspiration, and constant bleeding in the airway is likely to dilute the effectiveness of local anesthetics. The next option is intubation in a spontaneously breathing patient [2]. Anesthesia was induced by halothane because of our extensive experience with it during difficult airway management. Furthermore, unlike sevoflurane, gradual change in depth of anesthesia by halothane gives a relatively longer time for airway instrumentation in an otherwise trying situation [3]. Routine laryngoscopy and intubation were attempted first. The Macintosh laryngoscope revealed grade IV Cormack and Lehane's view of the glottis. Fiberoptic tracheal intubation was out of question in the presence of blood hampering airway visibility. So we used a lightwand and were successful. Laryngeal mask airway (LMA) was kept ready but was not placed for risk of aspiration and also because nasal intubation was preferred in this case of oral surgery. Also, LMA would act as a bolus in the pharynx and relax the lower esophageal sphincter and increase the chances of reflux [4].

At our institution we routinely perform lightwand-assisted tracheal intubation. During lightwand-aided intubation, direct

viewing of the glottis is not required. Essentially, we rely on the presence of circumscribed glow in the neck which may be visualized even in the presence of blood in the oral cavity. This glow gives sufficient direction to the operator as the LETT assembly approaches the glottis for successful tracheal intubation.

The lightwand is an easy to use, easy to maintain, highly economical device and more effective than fiberoptic tracheal intubation in such cases.

In conclusion, this case report highlights the usefulness of the lightwand in patients with faciomaxillary trauma with blood in the airway.

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