

Case report

Use of Airtraq as a rescue device in intensive care unit

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Abstract

Inability to secure an airway in a hypoxic patient is a nightmare for every anaesthesiologist. The challenge doubles when such situations occur outside the operating room. Many new airway devices have been designed to overcome this difficulty. Airtraq is a videolaryngoscope which has been successfully used in the operating room as a rescue device during difficult laryngoscopy. We describe two such scenarios where Airtraq was used successfully to secure the airway in patients with poor or no glottic view on direct laryngoscopy.

Keywords: Airtraq, difficult intubation, airway management in ICU.

Introduction

Endotracheal intubation performed in the intensive care unit (ICU) is more challenging and is associated with life-threatening complications which include difficulty in ventilation and oxygenation due to difficult airway.¹ Common causes for difficult airway in the ICU set up are trauma, burns, and head and neck malignancy. These cases are more effectively managed in the comforts of the operating room (OR) rather than in ICU where there may be lack of availability of difficult airway equipment, emergency conditions, poorly adjustable ICU beds and lack of trained assistants. Many of the devices for the management of difficult airway are very expensive, cumbersome or require special training for use.

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The Airtraq® (Prodol Ltd., Vizcaya, Spain) is a video laryngoscope which facilitates tracheal intubation in patients with normal and difficult airways. The Airtraq blade consists of two adjacent channels, one of which acts as a conduit for passage of a tracheal tube. The other channel contains a series of lenses, prisms and mirrors which transfer the image from the illuminated tip to a proximal view finder. Glottic view is provided without the alignment of the oral, pharyngeal and laryngeal axes.^{2,3} We hereby describe the use of Airtraq in two difficult airway scenarios in ICU.

Case 1

A 36 year old man was admitted in burns ICU with 55% burns over the lower part of the face, neck and upper part of the chest. On the 4th day, the anaesthesiologist in charge of the multidisciplinary ICU was requested to evaluate the need to secure the airway. A decision to intubate the patient's trachea was taken in view of impending respiratory arrest and hypoxaemia. His neck and chest were bandaged and a difficult airway was anticipated. Since difficult airway equipment was not available in the burns ICU, a gum elastic bougie and an Airtraq were requested from the operation theatre for rescue.

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After preoxygenation, sedation was achieved with midazolam 2 mg and fentanyl 50 µg given intravenously. Ventilation using bag-valve-mask was possible. Direct laryngoscopy using a Macintosh laryngoscope size 4 blade showed a Cormack Lehane grade III view which did not improve with external laryngeal manoeuvre. Airtraq was used subsequently and showed a grade I view. The patient was successfully intubated with Airtraq and put on a ventilator for further management.

Case 2

A 54 year old man with oral malignancy post-radiotherapy and surgery (pectoralis major myocutaneous flap) was shifted to the ICU on post-operative day 6 in view of oxygen desaturation and altered sensorium. On examination, the patient had shallow inadequate breaths. Pulse oximetry reading (SpO₂) was 60% on 60% O₂ delivered by a Venturi mask. The patient needed endotracheal intubation and ventilation. He had been intubated in the operating room previously using a fiberoptic bronchoscope for flap reconstruction surgery. In the ICU, direct laryngoscopy with size 4 Macintosh blade revealed a Cormack Lehane grade IV which did not further improve with external laryngeal manoeuvre. The patient was ventilated with a bag-valve-mask (Ambu) and the SpO₂ improved to 95%. The patient's respiration was assisted with bag mask ventilation until the arrival of the Airtraq requested from the operation theatre. A grade II view was obtained with the Airtraq and the patient's trachea was successfully intubated.

Discussion

Airway management in the ICU is a challenge and of paramount importance. Intubation is often difficult as the patient may be awake, haemodynamically unstable, or because of suboptimal positioning of bed and patient.¹ In addition, if the patient has difficult airway features, the challenge of securing the airway is compounded.

Direct laryngoscopy followed by orotracheal intubation is the most common approach and most intensivists are familiar with this technique. Difficult

airway equipment such as fiberoptic bronchoscope, intubating laryngeal mask airway, or any other videolaryngoscope is rarely available in ICU. Most ICUs possess laryngeal mask airway and bougie to assist intubation. A fiberoptic bronchoscope is considered the gold standard for use in difficult airway but it requires time for preparation of the airway, expertise and assistance.

In both the cases described above, a fiberoptic bronchoscope may have been the ideal choice, but it is often not available in the ICU. The expertise to use it may also be limited. The airway needs to be secured urgently in most of these cases. Airtraq was easy to transport from the OR as it is not bulky and the operator was familiar with its use. The literature describes the use of Airtraq both for normal and difficult airways.^{2,3} There have been case reports which showed a good laryngeal view with Airtraq in patients who had been intubated with a fiberoptic scope in view of difficult airway with a Cormack Lehane grade of IV.⁴

Dere *et al* reported the use of Airtraq in a burns patient in the OR where direct laryngoscopy showed grade IV Cormack Lehane view after induction. Introduction of Airtraq revealed a good view of the glottis and the patient was nasotracheally intubated using Airtraq laryngoscope.⁵

Airtraq has certain limitations in patients with difficult airway, mainly the requirement of an adequate mouth opening. Introduction of a regular size 3 Airtraq laryngoscope requires mouth opening of at least 18 mm.⁶ Since these two patients had adequate mouth opening, insertion of Airtraq was not a problem.

Being a single use airway device, it reduces the transmission of prions.² Low cost and the easy transportability of the device permit its use in different peripheral locations in the hospital.

Conclusion

Airtraq is a good alternate device to use in patients where direct laryngoscopy fails especially in

peripheral locations such as the emergency room and intensive care unit. It can be included in the difficult airway cart along with laryngeal mask airway and gum elastic bougie in these peripheral locations.

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