

Case Report

Airtraq® laryngoscope-assisted fiberoptic bronchoscope intubation in a child with Pierre-Robin sequence: a case report

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Abstract: We present a new strategy method of combining use of Airtraq® and fiberoptic bronchoscope (FOB) for tracheal intubation in 3-year-old child with Pierre-Robin sequence.

Keywords: Airtraq® laryngoscope, fiberoptic intubation, Pierre Robin sequence

Introduction

Pierre-Robin sequence (PRS), a congenital malformation, which is characterized by micrognathia, cleft palate, glossoptosis and a wide range of other anomalies. Patients with this syndrome can create a challenge for the anesthesiologist during the induction of anesthesia and when managing the airway. Therefore, various techniques such as fiberoptic bronchoscopy [1], laryngeal mask airway-guided fiberoptic intubation [2], and intubation with a lighted stylet [3] have been reported as successful intubations in these cases. We here report a new strategy of combining use of Airtraq® and fiberoptic bronchoscope (FOB) for tracheal intubation in a 3-year-old child with Pierre-Robin sequence.

Case report

A 3-year-old boy with Pierre-Robin sequence was referred to our hospital for tongue lip adhesion surgery. Preoperative laboratory assessments were unremarkable. In light of the potential for encountering difficulty with tracheal intubation, we decided to pursue a sedated intubation technique that preserved spontaneous respiration. The patient did not receive pre-anesthetic medication. Standard monitoring, including electrocardiogram, noninvasive blood pressure, pulse oximetry, and rectal temperature, was applied to the patients. An intrave-

nous access was obtained, and atropine 0.15 mg was administered intravenously (IV). Sedation was achieved with IV dexmedetomidine 1 µg/kg and ketamine 1 mg/kg. The upper airway mucosa was then topical anesthesia with 2% lidocaine. Airtraq® laryngoscope was first attempted, which could barely provide one-fifth of the epiglottis. Though shaped as a hook by the internal stylet, the tracheal intubation was failed, for the anterior extremity of the tracheal catheter was either blocked by the epiglottis or fallen into the esophagus. Then, as shown in **Figure 1**, with Airtraq® held in an optimal position, fiberoptic bronchoscope was advanced through the guiding channel of the blade and adjusted to reach the tracheal. Under the visualization of the vocal cords by the FOB, the endotracheal tube passed over the bronchoscope into the glottis and the endotracheal tube was then connected to the breathing circuit.

Discussion

Airway management is a major concern in surgical patients with Pierre-Robin sequence. Difficulties may be encountered when tried to maintain stable oxygen saturation in prone position as the malformation frequently led to the obstruction of the airway. We opted to use dexmedetomidine and ketamine in this child because they provide sedation and analgesia



Figure 1. Airtraq® laryngoscope-assisted fiberoptic bronchoscope intubation.

without compromising respiratory drive. A recent study conducted on manikin suggested that the combined use of Airtraq® and a FOB facilitates smooth and rapid intubation in simulated difficult airway scenarios [4], indicating this technique can be established as an alternative approach to difficult airway.

Airtraq® was designed to provide visualization of the glottis and the surrounding structures. Successful intubation using the Airtraq® requires optimal positioning of the glottis in the middle of the viewfinder. If the glottis view cannot be optimized, some glottis manipulation is essential for the Airtraq®-assisted successful intubation. However, limited by its ergonomic shape, those with anatomical variations were less likely to benefit from it.

Though considered the gold standard for securing the difficult airway, fiberoptic bronchoscope was restricted by several conditions in clinical practice. It should be performed by well-trained physician with experienced, and requires certain spaces for flexing the tip by manual control. Since neither Airtraq® nor the bronchoscope can fulfill all these requirements, we attempt to utilize their advantages in combine. By lifting the tongue and jaw, enlarging the lumen of the pharynx, providing better view to identify the anatomical landmarks, guiding the progression of the bronchoscope, Airtraq® contributes in averting lengthy detours to peripheral structures, while the bronchoscope helps to reach the glottis. The combination of these two devices facilitates tracheal intubation in patients with airway difficulty.

Conclusion

A combination of Airtraq® laryngoscope and a fiberoptic bronchoscope can be a novel alternative for tracheal intubation in patient with difficult airway.

Disclosure of conflict of interest

None.

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