CASE REPORT

Intubating laryngeal mask airway combined to fiberoptic intubation in subglottic stenosis

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SUMMARY

We reported a successful airway management in a patient with unknown tracheal stenosis admitted in the emergency room for benzodiazepine overdose. The use of intubating laryngeal mask airway in combination with fiberoptic intubation was easy and safe in this patient; procedures such as ventilatory control and patient oxygenation were continued during intubation attempts, lessening the likelihood of desaturation. This method allowed the diagnosis of tracheal stenosis and soft endotracheal intubation.

BACKGROUND

Airway management is a major responsibility for the anaesthesiologist, and the intensive care and the emergency physicians who are confronted irrespective of time. Difficulties with tracheal intubation may significantly contribute to the morbidity and mortality. Identifying situations and patients at frequent risk for airway management problems and the knowledge of different techniques of life-saving are keys to optimal care and were the focus of numerous publications.^{1 2} There are many devices which allow us to oxygenate and/or to intubate the patient. To date, there is no technique found to be effective in every case or that can solve all airway problems. Each airway device and technique has unique properties that may be advantageous in certain situations and disadvantageous in others. Recommendations and guidelines should be adopted and modified to the circumstances.²

We describe a successful tracheal approach of a patient in coma with unknown laryngeal stenosis admitted to the emergency room (Glasgow Coma Scale (GCS)<8) with hypoventilation.

CASE PRESENTATION

A 45-year-old woman was admitted to the emergency room for coma (GCS=6) and respiratory depression following self-poisoning by benzodiazepine overdose. The initial monitoring revealed a sinus cardiac rhythm of 48 bpm, oxygen saturation of 88% in room air and systolic/diastolic blood pressure of 82/44 mm Hg. Rapid oxygenation with a face mask was initiated and an early tracheal intubation was decided to protect the airway. At the same time, an intravenous line was inserted. Direct laryngoscopy was then performed, which revealed a grade I laryngeal view (Cormack and Lehane). A 7.5 mm internal diameter tracheal tube (TT) could not be advanced beyond the vocal cords because of resistance. Then, 75 mg of succinylcholine were administered to facilitate tracheal

intubation. Intubation was reattempted with no progression of 7.0, 6.5 and 6.0 mm internal diameter TT without forcing. Thereafter, an Eschmann TT introducer was used which failed to progress through the larynx. After each attempt of endotracheal intubation, the mask ventilation was easy without any decrease in oxygen saturation. Then we decided to put an intubating laryngeal mask airway (LMA-Fastrack) (The Laryngeal Mask Company Limited, San Diego, California, USA) to provide better oxygenation and ventilation for the patient. Uninterrupted oxygen delivery was achieved easily using the ventilator with the help of a right angled double swivel connector for endotracheal tube (Vygon, France). A 3 mm fiberoptic bronchoscope was then passed through the LMA-Fastrack and then passed into the trachea, where a subglottic stenosis was visible at 0.5 cm below the cricoid cartilage and estimated to be 6 mm. Then we decided to advance smoothly a 5.0-mm internal diameter TT over the fibrescope under direct vision of the trachea. The LMA-Fastrack was then removed from the oropharynx over the TT. The medical history included a craniotomy for clipping of ruptured intracranial aneurysm with subarachnoid haemorrhage requiring endotracheal intubation for 12 days in intensive care unit (ICU), by the age of 38 and she did not have any difficulty in breathing. She was admitted to the ICU for mechanical ventilation and treatment support. The cuff pressure was maintained around 20 cm H₂O using a manual manometer and controlled twice daily by the nurse. The patient was fully awake 40 h after ICU admission and regains a spontaneous breathing. As arterial blood gases were normal and the cuff leak test was positive, 100 mg of hydrocortisone was given and the extubation was achieved successfully.

DISCUSSION

Iatrogenic airway injury after endotracheal intubation continued to be a serious clinical problem. Endotracheal tube cuff caused pressure injury to the glottis, which could result in severe commissural scarring difficult to treat.³ Unsuspected laryngeal stenosis creating difficult intubating conditions in the emergency room were rare. It was reported that 75% of laryngeal stenoses occurred at the level of the vocal cords, and the remainder were in the subglottic or supraglottic location.³ Blind insertion of TT with a smaller diameter was usually the method of choice for airway management in these patients with a potential risk of causing trauma to the tracheal mucosa. This manoeuvre was

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dangerous because it could lead to bleeding or even perforation at the level of the stenosis.⁴ Supraglottic airway devices (LMA-Fastrack, etc) were used with success for the airway management of these patients during procedures involving spontaneous or controlled ventilation.^{5,6} Asai *et al*⁵ first published a case detailing the successful use of a classical LMA in a child with tracheal stenosis. Luk'ianov *et al*⁶ considered the use of LMA to solve the problem of unpredictable difficult intubation and provided reliable patency of the upper respiratory airways in a patient with latent subglottic stenosis.

Fibreoptic intubation techniques via a classic LMA were previously limited by either leaving the LMA in the oropharynx or advancing the TT into the trachea over an introducer without direct vision of the trachea.^{4,6} The new concept for fibreoptic intubation via a LMA allowed the removal of the LMA from the oropharynx and the advancement of the TT into the trachea over the fibrescope under direct vision of the trachea. This technique was easy and safe in patients who are expected to have difficult endotracheal intubation.^{7,8}

In this report, the intubation of the trachea could be performed under the direct vision of the bronchoscope via LMA-Fastrack and the tracheal stenosis could be diagnosed. The lumen of the LMA-Fastrack was wide enough to allow fibreoptic intubation without requiring its removal. Because the LMA-Fastrack could be used as an airway device in its own right, ventilatory control and patient oxygenation might be continuous during intubation attempts, lessening the likelihood of desaturation.⁹ The use of intubating LMA-Fastrack in combination with fibreoptic intubation was described in the literature.¹⁰

In conclusion, endotracheal intubation using fibreoptic bronchoscopy via LMA-Fastrack was easy and safe in patients with unexpected difficult intubation. This method allowed a diagnosis of laryngeal stenosis and could be considered as a complementary for these patients. In cases of difficult extubation, the same method can be used, then an endoscopic laryngeal examination can be performed through a laryngeal mask.

Competing interests None.

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Learning points

- Blind insertion of an endotracheal tube in patients with tracheal stenosis was usually associated with a potential risk of causing trauma to the tracheal mucosa.
- The endotracheal intubation using fibreoptic bronchoscopy via LMA-Fastrack was easy and safe in patients with unexpected difficult intubation.
- This method allowed a diagnosis of laryngeal stenosis.

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