Anterograde endotracheal intubation with a laryngeal mask airway and guidewire in an infant with micrognathia

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Tracheal intubation through a laryngeal mask airway is an alternative to secure the ventilation in patients with difficult airway. Different techniques have been described to intubate these patients. A case of micrognathia in remote location anesthesia is reported. Endotracheal intubation was unsuccessful with the conventional methods. A soft tip angiography guidewire was advanced through a laryngeal mask airway. The position of the catheter was confirmed by fluoroscopy. Laryngeal mask airway was removed after endotracheal tube was inserted over the guidewire. This technique is recommended as an alternative where fiberoptic bronchoscopy is unavailable and in emergency situations.

Key words: difficult intubation, laryngeal mask airway, infant.

Difficult tracheal intubation in children is an important issue in anesthesiology and intensive care medicine. Down syndrome, Klippel-Feil syndrome, Pierre Robin syndrome, Treacher Collins' syndrome, mucopolysaccharidoses and Goldenhar syndrome patients are more likely to experience difficult airway management. Different approaches to difficult intubation in children have been proposed, namely: fiberoptic bronchoscopy, laryngeal mask airway (LMA) and invasive procedures like retrograde intubation and tracheostomy[1-3].

The optimal choice for airway management depends on the availability of the equipment and the experience of the practitioner.

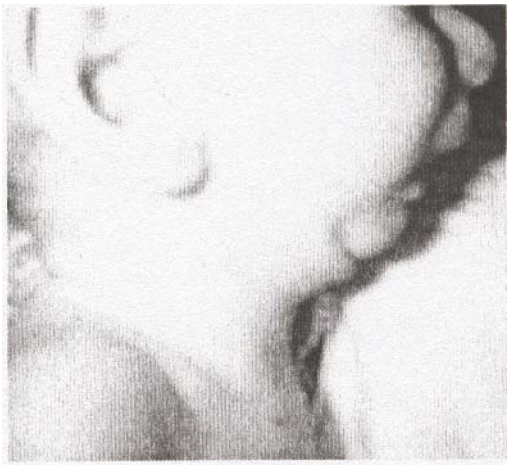

Fig. 1. Photograph of the case demonstrating micrognathia.

Case Report

A five-month-old, 5100 g boy was admitted to our hospital with difficulty in breathing. He was normal on physical examination. His plain chest X-ray revealed left mediastinal mass adjacent to the ascending aorta. He was scheduled to have a diagnostic angiography under general anesthesia. As he had micrognathia there was a possibility of difficult intubation (Fig. 1).

He was monitored with ECG, pulse oxymeter, and noninvasive blood pressure monitor in the radiology ward. Anesthesia was induced with propofol (12 mg) and isoflurane (1%). Two attempts at intubation were unsuccessful. In order to avoid traumatization, a laryngeal mask airway no. 1 was inserted to secure the airway throughout the procedure. An aortic aneurysm was diagnosed by the uneventful angiography. After the procedure the patient woke up and the LMA was removed. Oxygen saturation started to decrease and maintenance of the patient's ventilation was attempted via face mask. As this attempt was also unsuccessful,

the LMA was inserted again. As the previous attempts at intubation were unsuccessful, an anterograde intubation with an angiography guidewire was decided. An angiography guidewire (Terumo 0.035") was advanced through the LMA under fluoroscopy. After confirming the wire position (Fig. 2), a 3 mm ID endotracheal tube was inserted over the guidewire through the LMA. The LMA was removed after confirmation of the endotracheal tube in its proper position. The tube was fixed appropriately and the patient was transferred to the cardiovascular intensive care unit.

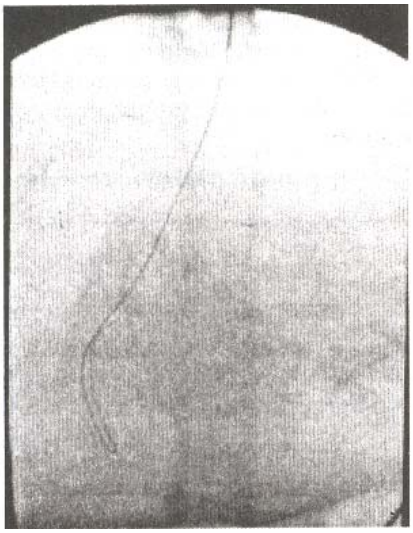

Fig. 2. Fluoroscopy demonstrating position of the guidewire.

He was operated the next day. His ductal aneurysm (as diagnosed during surgery) was successfully resected. He was discharged from the hospital on the 11th postoperative day without any complications.

Discussion

Endotracheal intubation in infants with micrognathia may sometimes be impossible to accomplish with conventional methods. To aid difficult tracheal intubation many different techniques have been described. The techniques that enable the use of LMA influence the use of a fiberoptic bronchoscope to visualize the larynx[2,4]. The availability of a bronchoscope is not always possible, especially in remote location anesthesia and in intensive care settings in emergency situations.

Walker et al.[4] described a technique using the LMA as a guide for the fiberoptic bronchoscope. After introducing a guidewire through the suction channel, they inserted an airway exchange catheter over the guidewire and consequently removed the LMA and advanced the endotracheal tube over the catheter[4].

Ultrathin fiberoptic bronchoscopes may also be used for endotracheal intubation of neonates and infants. Finer and Muzykas[5] described the use of this device in elective intubation of neonates for the management of respiratory distress.

In this case the situation was an emergency and fiberoptic bronchoscope was unavailable. As the procedure was performed in the radiology ward, fluoroscopy was available to check the guidewire position. A long angiography guidewire was easily advanced through the LMA. Trauma to the airway is less likely in this technique due to the soft tip of the catheter.

We conclude that a guidewire inserted through a LMA may be a successful alternative for the anesthesiologist dealing with difficult intubation of infants in remote location anesthesia.

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