Blind Intubation through the Laryngeal Mask Airway for Management of the Difficult Airway in Infants

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THE difficult airway in infants presents a unique challenge to anesthesiologists. Methods used in management of the difficult airway in adults do not always apply in infants. In addition, equipment such as the neonatal fiberoptic bronchoscope may not be readily available. The laryngeal mask airway (LMA) can provide an effective alternative to difficult airway management in infants when used either alone or as a guide for fiberoptic intubation.1,2 We describe successful blind endotracheal intubation using the LMA in two infants whose tracheas could not be intubated by direct laryngoscopy.

Case Reports

Case 1

A 9 month-old, 7 kg infant with Freeman Sheldon syndrome (pursed lips, microstomia, receding chin, limited mouth opening, and limited neck extension) presented for orthopedic surgery and right upper extremity contracture release under general anesthesia. Because of an association with malignant hyperthermia, a nontriggering anesthetic was chosen.3 Tracheal intubation was planned for several reasons, including the patient's position required for the surgery and the expectation of prolonged positive pressure ventilation.

The infant received 0.5 mg/kg oral midazolam 30 min before induction of anesthesia. Routine monitoring was established. Intravenous access was obtained, and 0.1 mg atropine was administered. Awake intubation was not attempted secondary to the patient's extreme anxiety and combative nature. Anesthesia was induced and maintained with propofol. The ability to ventilate was confirmed before administration of 0.1 mg/kg vecuronium.

On inspection of the glottic opening, a grade 4 laryngoscopic view was observed.4 Intubation using direct laryngoscopy proved unsuccessful despite four attempts with various blades and changes in position. Subsequently, a size-2 LMA was inserted easily into the oropharynx, and the lungs were ventilated. A size-4.0 endotracheal tube (ETT) was passed blindly through the LMA into the trachea. ETT placement was confirmed by auscultation and capnography. Surgery was completed uneventfully, and the trachea was extubated in the operating room.

Six months later, this patient presented for contracture release of the left upper extremity under general anesthesia. To avoid complications, intubation using the LMA as a conduit was planned and proceeded without difficulty as outlined above.

Case 2

A 6-month-old, 5 kg infant with obstructive hydrocephalus presented to the operating room for a repeat ventriculoperitoneal shunt. There were no problems with airway management during previous anesthetics performed shortly after birth and at 5 months of age. Physical examination of the infant revealed gross hydrocephalus.

Routine monitoring was established followed by 0.1 mg atropine and an uneventful induction with 25 mg thiopental. The ability to ventilate was confirmed, and 0.1 mg/kg vecuronium was administered. Five unsuccessful attempts were made to visualize the glottis with different blades and changes in position. A size-1 LMA was inserted easily into the oropharynx. A size-3.0 ETT was blindly passed through the LMA into the trachea on the first attempt. Surgery proceeded uneventfully, and the trachea was extubated on completion of the procedure.

Discussion

These two cases demonstrate the usefulness of the LMA as a guide for blind tracheal intubation in management of the difficult airway in infants. Although the current case reports do not allow us to quantify the success rate using this method in infants, it should be recognized that the LMA has been used in adults as a guide for blind tracheal intubation, and the success rate was reported as 90%.5

We are not recommending that this technique become the technique of choice for securing a difficult

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infant airway, but it does represent an alternative method in cases of anticipated as well as unexpected difficult tracheal intubation.

Should blind tracheal intubation through the LMA prove unsuccessful, the airway can be maintained with the LMA in place. If the airway requires further protection, the fiberoptic bronchoscope may be used to facilitate intubation using the LMA as a guide. 2,6-8

We describe two cases in which successful blind tracheal intubation was achieved using the LMA as a guide in infants with difficult airways. In the event that a difficult neonatal or pediatric airway is encountered, whether expectedly or unexpectedly, this simple technique may prove life-saving.

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References

Cardiogenic Shock after Electroconvulsive Therapy

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MODERATE cardiac changes due to myocardial stunning and acute neurogenic pulmonary edema after electroconvulsive therapy (ECT) have been reported. We report a case of neurogenic pulmonary edema and fulminant cardiogenic shock after ECT in a patient receiving concurrent β-adrenergic blockade.

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Case Report

A 41-yr-old woman was admitted for major depression, dissociative disorder, and self-mutilation. She had no prior history of cardiopulmonary disease, and her physical examination results were significant only for obesity (112 kg, 173 cm). Preoperative electrocardiogram and routine laboratory test results were normal. The patient’s medications included 80 mg paroxetine daily, 80 mg propranolol long-acting daily, 30 mg propranolol four times daily, and 100 mg naltrexone twice daily. After failure of intensive psychotherapy and antidepressant medications, ECT was instituted. Anesthesia was induced with 100 mg methohexital and 100 mg succinylcholine. Ventilation by mask, using an ambubag, was initiated easily, and Spo2 was 99%. Baseline blood pressure was 130/80 mmHg, and heart rate was 60 beats/min. Bifrontotemporal ECT was initiated (Thymatron DGX, Somatics, Lake Bluff, IL) with bidirectional brief pulse square wave at 35% energy. A generalized tonic/clonic seizure was induced, and blood pressure increased to 190/120 mmHg, with a heart rate of 100 beats/min and Spo2 of 99%, with easy manual ventilation. As the patient awakened and spontaneous respirations resumed, she became agitated and confused, and hemoglobin oxygen saturation (Spo2) began to decrease. Assisted ventilation with 100% O2 was continued, and the patient began to expectorate copious amounts of pink frothy...