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Respiratory Support via Laryngeal Mask Airway in a Case with Treacher Collins Syndrome

Treacher Collins Sendromlu Hastada Laringeal Maske Havayolu ile Ventilasyon

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Dear Editor,

According to the American Society of Anesthesiologists' guidelines, a difficult airway refers to a clinical situation in which a trained physician experiences anticipated or unanticipated difficulty or failure.[1] Anatomical and physiological differences in the pediatric airway can complicate emergency airway management. Since life-threatening emergencies in children are often due to respiratory pathologies, alternative airway practices are crucial. Midline deformities such as cleft palate and macroglossia can hinder visualization of the vocal cords and, consequently, intubation. A laryngeal mask airway (LMA) should be employed swiftly for a child with failed intubation if no upper airway obstruction or distorted airway anomaly is present. In emergency situations, ventilation can be accomplished with positive pressure via LMA until an intubation tube or tracheostomy is conducted.

A 5-month-old girl with Treacher Collins syndrome was brought to the pediatric emergency service due to irritability, vomiting, and tachypnea. She has a cleft palate and severe gastroesophageal reflux; therefore, she has been fed via a nasogastric tube. Her symptoms included tachypnea, subcostal and suprasternal retractions, cyanosis in room air, and lethargy. Her blood gas analysis indicated metabolic acidosis and the physical findings were consistent with shock. A chest X-ray revealed new bilateral infiltrates. Due to aspiration pneumonia and acute respiratory failure, the pediatrician and anesthetist attempted multiple intubations but were unsuccessful; an LMA was subsequently inserted. The patient was transferred to our pediatric intensive care unit by ground ambulance from a city 5 hours away, using the LMA with self-inflating bag ventilation. Upon admission, her vital signs were recorded as follows: 37 °C fever, 129 beats per minute heart rate, 101/71 mmHg blood pressure, 30 breaths per minute respiratory rate, and 80% oxygen saturation due to inadequate ventilation, despite positive pressure ventilation with the LMA. We attempted to intubate the patient using a video laryngoscope, but visualization of the vocal cords was not possible. Therefore, we reinserted the LMA and initiated invasive mechanical ventilation through the LMA using pressure-controlled synchronized intermittent mandatory ventilation with a peak inspiratory pressure of 30 cm H_2O and a positive end-expiratory pressure of 10 cm H_2O. Oxygen saturation began to increase, and a tidal volume of 8 mL/kg was achieved. Blood gas parameters returned to normal. Otorhinolaryngologists evaluated the patient and decided to perform a tracheostomy. After 8 hours of ventilation with the LMA, the tracheostomy was completed. We anticipated a reduction in the need for high-pressure support; however, even after tracheostomy, we were unable to decrease the pressure support (Figure 1). Upon finishing the patient's acute respiratory distress syndrome (ARDS) treatment, she was transferred to the service following tracheostomy training

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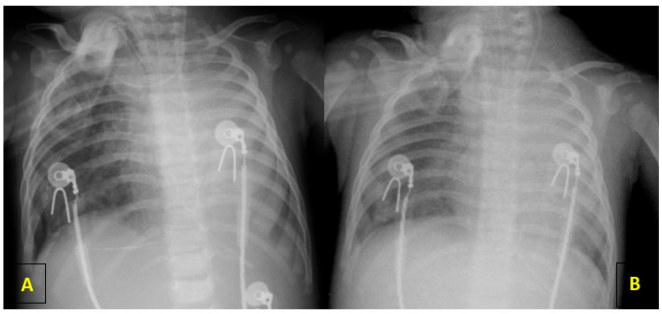

Figure 1. Chest X-ray when the patient with LMA (A) and after tracheostomy performed (B)
LMA: Laryngeal mask airway

for her family. Having completed the family training and with no further need for mechanical ventilation, the patient was discharged to go for outpatient clinic check-ups.

The incidence of difficult airways in healthy children is very low. Valois-Gómez et al.[2] reported an incidence of 7%. Difficult airway management guidelines recommend using an LMA for ventilation in these patients.[1,3] The pediatric difficult intubation registry identifies Treacher Collins as one of the syndromes associated with a difficult airway.[3] Our patient has a cleft palate, micrognathia with retrognathia, limited mouth opening, and a disproportionately large tongue. Repeated attempts at intubation have been unsuccessful; therefore, we used an LMA for ventilation despite her ARDS and the need for high-pressure support.

Aspiration during LMA ventilation is a big concern for managing these patients. Risk factors for aspiration include insufficient anesthesia depth, upper gastrointestinal conditions, a full stomach, repeated attempts, and cuff deflation.[4,5] To mitigate these risks, nasogastric decompression, suitable sedation and analgesia, and proper cuff inflation techniques were implemented during transport and in the intensive care unit. While there is ongoing debate about the use of high airway pressures during ventilation with a LMA, research indicates that it can be utilized safely under such conditions.[6] Considering the patient's existing lung condition, we provided appropriate ventilation using high airway pressures. Throughout this process, the patient was continuously monitored for any potential complications. The requirement for the same airway pressures for ventilation after performing a tracheostomy indicated that we were able to ventilate as if a tracheal route had been established using the LMA.

Ventilation with an LMA is a fundamental life-saving tool during cardiopulmonary resuscitation or elective surgeries. In this case, we observed that LMA can be safely utilized even in children with acute respiratory distress syndrome.

Keywords: Laryngeal mask airway, difficult airway, acute respiratory distress syndrome

Anahtar Kelimeler: Laringeal maske havayolu, zor hava yolu, akut solunum yetmezliği

Footnotes

Authorship Contributions

Surgical and Medical Practises: E.T., F.E., A.D.A., Concept: E.E., M.H., T.K., Design: M.H., T.K., Literature Search: E.E., E.T., F.E., A.D.A., M.H., T.K., Writing: E.E., T.K.

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