Oral to Nasal Endotracheal Tube Exchange in a 4-week-old with Pierre Robin Sequence

Bridget L. Muldowney, MD 1  Charles D. Nargozian MD 2  Elizabeth Eastburn DO 2

1 University of Wisconsin Department of Anesthesiology-Madison, Wisconsin
2 Boston Children’s Hospital Department of Anesthesiology

Introduction: Pierre Robin Sequence (PRS) is characterized by cleft palate, micrognathia, and glossoptosis. Neonates with PRS often present with upper airway obstruction requiring treatment with oral or nasopharyngeal airway placement, prone positioning, or surgical intervention. Surgical procedures include tongue lip adhesion, mandibular distraction, or ultimately tracheostomy.

Case: A 4-week-old male born at 35 weeks with multiple congenital anomalies including PRS presented for percutaneous gastrostomy tube placement and tongue lip adhesion. Genetic workup revealed no unifying diagnosis. He had respiratory obstruction at birth requiring nasal CPAP but had weaned to nasal cannula oxygen. He underwent diagnostic laryngoscopy and bronchoscopy at 2 weeks of age in the OR that revealed normal airway anatomy. Airway management was described as difficult using a two-hand mask technique with an oral airway. The ORL team reported a Grade 2 view of the larynx with a Parsons laryngoscope.

The patient was scheduled for a PEG insertion followed by tongue lip adhesion. Inhalational anesthesia was induced after placement of a LMA awake. Fiberoptic intubation through the LMA failed and the trachea was orally intubated with direct laryngoscopy using a retromolar approach. After successful placement of the PEG, the oral endotracheal tube needed to be changed to a nasotracheal tube. The suction catheter was advanced through the right nare and retrieved from the oropharynx. After the patient was placed on 100% oxygen, the non-stitched end of the exchange catheter was tied together. The suction catheter was then withdrawn pulling the tied end of the exchange catheter out the nose. After the stitch was quickly cut, a McGill forceps was used to remove the stitch. The trachea was placed under direct vision an unacceptable option. We therefore chose to exchange the oral endotracheal tube to a nasotracheal tube over an airway exchange catheter that was guided from an oral to nasal location by a soft suction catheter. In many instances nasal intubation may be preferred over oral intubation, and we report successful exchange of an oral to nasal endotracheal tube in a newborn with PRS and a difficult airway.

Discussion: Airway Management in patients with PRS, as well as other disorders that include mandibular hypoplasia, can be challenging due to airway obstruction and difficult intubation. Retromolar approach to direct laryngoscopy has been reported successful when conventional DL has failed.1 The introduction of the LMA has revolutionized airway management as both a first line technique and rescue management tool. Insertion of the LMA in awake newborns has also been described for the induction of anesthesia in newborns with PRS.2

Our patient had anesthesia successfully induced after placement of a LMA awake. Fiberoptic intubation through the LMA, although previously described, was difficult in our patient.3 The trachea was eventually intubated orally using the retromolar approach during direct laryngoscopy. Converting the oral endotracheal tube to a nasal endotracheal tube presented a challenge. The limited view and lack of space for a McGill forceps made a switch under direct vision an unacceptable option. We therefore chose to exchange the oral endotracheal tube to a nasotracheal tube over an airway exchange catheter that was guided from an oral to nasal location by a soft suction catheter. In many instances nasal intubation may be preferred over oral intubation, and we report successful exchange of an oral to nasal endotracheal tube in a newborn with PRS and a difficult airway.

References: