A Novel Approach to Nasotracheal Intubation in Pediatric Patients with Prior Palate or Pharyngeal surgery.

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Palatoplasty and pharyngoplasty are common procedures in the pediatric population. Palatoplasty, with or without concomitant pharyngoplasty, is indicated for repair of cleft palate and pharyngoplasty alone is performed to correct velopharyngeal dysfunction. These repairs are necessary to provide for normal eating, breathing, and speech development. After these procedures are performed, the palate is often narrowed and more arched\(^1\). The nasopharyngeal outlets, or ports, are often more lateral and may be quite small, especially when a transverse flap pharyngoplasty is performed.

Occasionally, patients who have previously undergone palatoplasty or pharyngoplasty require nasotracheal intubation for subsequent surgeries. The changes in anatomy of the nasopharynx and oropharynx, increasing the difficulty and risks of nasotracheal intubation, have been previously described\(^1\). Presented is what we believe to be a novel approach to performing nasotracheal intubation in these patients, which can improve patient safety and the success of the procedure.

Case Report:

The patient is a 20-year-old female with severe midfacial hypoplasia, asthma and a history of a cleft palate repair as a child at a hospital outside of the United States. She presented for a la forte I osteotomy for correction of her midface hypoplasia. The patient was brought to the operating room. Monitors were applied and an inhalation induction was performed with 60% nitrous oxide and 8% sevoflurane. Once unconsciousness was established and adequate mask ventilation confirmed, a 20 gauge intravenous catheter was placed and secured. Fentanyl 1mcg/kg for analgesia and vecuronium 0.1 mg/kg was then administered for muscle relaxation. The nares were prepared with oxymetazoline drops and 2% lidocaine jelly. At this point, the oral surgeon placed his gloved finger into the oropharynx to manually assess the patency and size of the nasopharyngeal ports. A red rubber catheter was gently passed via the right nares, which was determined to have the larger outlet by the oral surgeon. The oral surgeon then felt for the tip of the catheter in the nasopharynx and gently guided the catheter out of the lateral port and into the oropharynx. With this completed, a well-lubricated (glycerine/hydrocortisone), preformed, nasal RAE endotracheal tube was passed using a Seldinger technique over the catheter, using gentle pressure and rotation, into the oropharynx and the catheter was removed. Direct laryngoscopy was performed using a Miller #2 blade, the vocal cords were visualized and the endotracheal tube was advanced with the assistance of McGill forceps. The trachea was intubated under direct visualization. Bilateral breath sounds were equal, end-tidal CO\(_2\) was confirmed and the tube was taped securely. The surgery was then performed without incident. The patient’s trachea was extubated in the recovery room after the completion of surgery when the patient was awake and able to follow commands. The postoperative course was uneventful and the patient was discharged home the following day.

Discussion:

After pharyngoplasty or palatoplasty, nasotracheal intubation for future procedures, such as orthognathic surgery or dental restorations/extractions, may be markedly more difficult. This is due to the changes in the anatomy of the naso- and oropharynx. After searching the literature, we were unable to find any articles describing a similar intraoperative technique for better managing the airways of these patients. The method we have described has improved the success rate and the safety of nasal intubation for these procedures in our facility.
Other authors have recommended preoperative nasal endoscopy and intraoperative fiberoptic intubation, but these adjuncts, while useful, have their limitations as well. First, it is difficult to assess the size of the nasopharyngeal ports using a fiberoptic scope. There may also be difficulty in passing the scope into the oropharynx even with direct visualization. Preoperative nasal endoscopy may help to identify a difficult airway, but would not necessarily make the intubation process faster, easier, or safer. It also requires additional time and resources, and in the younger patient, the added risk of another anesthetic for the endoscopy. Another method for airway management that has been recommended is division of the pharyngeal flap under orotracheal anesthesia before attempting nasal intubation. While this would result in successful nasotracheal intubation, it could result in longer anesthetic time and increased patient discomfort from the division and revision of the pharyngeal flap.

References:

