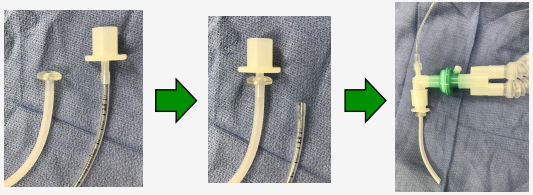
The Case of the Interfering Nasopharyngeal Airway

Maricarmen Roche-Rodriguez MD, John Fiadjoe MD, Brian Struyk MD, Grace Hsu MD
The Children's Hospital of Philadelphia, Perelman School of Medicine at the University of Pennsylvania
Department of Anesthesiology and Critical Care Medicine

Background

- Tracheal intubation using fiberoptic bronchoscopy (FOB) guidance remains the gold standard in pediatric difficult airway management.
- Passive oxygenation techniques during fiberoptic intubation (FOI) include the use of high flow nasal cannula, modified oral RAEs, supraglottic airways, or modified nasopharyngeal airways (NPA)

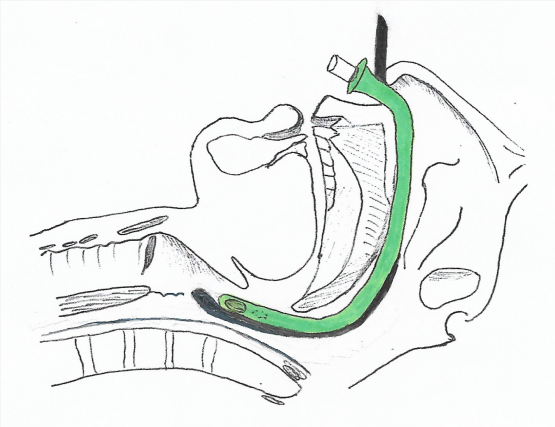


Case 1

- 17 year-old female
- PMH: right hemifacial microsomia, ankylosis of bilateral temporomandibular joints
- Scheduled for closed release of ankylosis
- Developed upper airway obstruction during inhaled induction. Could not place oropharyngeal airway due to limited mouth opening
- Modified NPA placed in right nare and connected to anesthesia circuit. FOB in left nare with full view of glottis
- Initial difficultly in maneuvering FOB to glottis. Ability to guide scope improved with retraction of NPA.

Case 2

- 4 year-old male
- PMH: Hurler syndrome, tracheomalacia, C1-C2 spinal stenosis
- Scheduled for bilateral inguinal hernia repair
- Modified NPA placed in right nare after inhaled induction
- Attempted nasal FOI via left nare with inadequate view of glottis and difficulty maneuvering FOB anteriorly into glottis
- Three attempts at advancing FOB unsuccessful
- Fourth attempt successful with slight retraction of NPA, allowing for improved scope manipulation



Discussion

- NPAs are used during induction of anesthesia to prevent airway obstruction, and when modified, also provide a conduit for oxygenation, and allow for monitoring of end-tidal carbon dioxide.[1]
- The optimal depth of NPAs in infants has been previously described as determined by listening for when there is maximal air entry into the trachea or when the tip of the NPA is in close relation to the epiglottis.[2]
  - Optimal depth: 8.0 cm (7-8.5cm) from the nostril in the first year of life and 8.5 cm (8-10cm) from the nostril in the second year of life
- **NPAs in a contralateral nare and in close proximity to the epiglottis may lead to difficulty maneuvering a FOB during nasal FOI. Close proximity to the NPA may make it difficult for the FOB to curve acutely into the glottis by restricting deflection of the scope proximally. This is solved by slight NPA retraction.**

References

1. Metz, S. Perioperative use of the modified nasal trumpet in 346 patients. Br J Anaesth 2004; 92: 694-96

2. Holm-Knudsen R, Eriksen K, Rasmussen LS. Using a nasopharyngeal airway during fiberoptic intubation in small children with a difficult airway. Pediatr Anesth 2005; 15: 839–845