



A difficult airway, a 10 hour facial reconstruction, and you just sawed through my awake fiberoptically placed nasal tube?



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Introduction

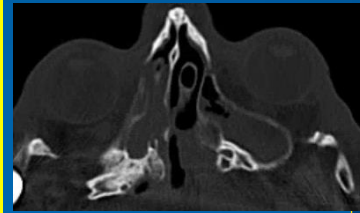
Treacher Collins Syndrome (TCS) is inherited in an autosomal dominant fashion with variable penetrance. There is abnormal development of the first and second branchial arches, leading to features such as facial bone hypoplasia, maxillary hypoplasia, choanal shortening, micrognathia, and other craniofacial defects. These patients are generally anticipated difficult airways, requiring adequate preoperative preparation.² We present the case of a TCS patient who required a nasal endotracheal tube (ETT) exchange several hours into the start of a complex craniofacial reconstruction.

Case

A 17 year old male with TCS and a history of prior awake fiber optic intubations due to difficult airway and difficult mask ventilation was scheduled for a 10 hour complex surgical reconstruction with plastic surgery and oromaxillary facial surgery.

An awake nasal FOB was performed uneventfully prior to induction, and the case progressed smoothly until hour 6 when a significant air leak was noticed during the LeFort I osteotomy. We were able to ventilate the patient with extremely high flows (15 L) but the leak necessitated an intraoperative tube exchange. The surgeons were told to prep for a possible emergency tracheostomy.

In order to exchange the ETT, a Williams airway was inserted into the mouth. A fiberoptic scope was loaded with a 6.0mm ETT (as an emergency backup) and introduced through the airway. The scope was advanced into the glottis past the in situ nasal tube then advanced into the trachea and the carina visualized. A Cook airway exchange catheter was introduced through the nasal tube and intentionally mainstemmed into the right bronchus. The patient was hand-ventilated to confirm adequate tidal volumes could be delivered through the exchanger before the nasal RAE tube was removed.

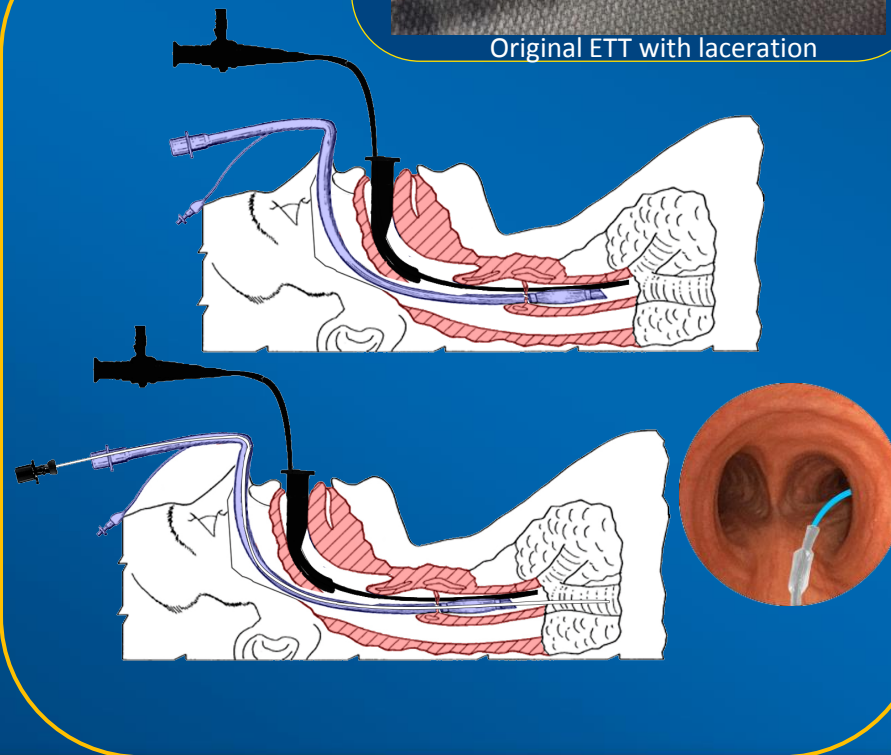


Atretic R choana



Original ETT with laceration

ETT exchange



Case cont.

Under direct visualization via the fiberoptic scope we were able to confirm that the exchanger was still in the trachea and had not been dislodged. A new 6.5 mm nasal RAE tube was then put over the airway exchanger and into the trachea under direct visualization. Its final position was confirmed via the scope, and end tidal CO2 and tidal volumes were confirmed before removing the scope. Examination of the original tube revealed a laceration where the surgical saw had sliced through, just above the pilot cuff tubing. The patient's vital signs remained stable throughout, and at no point did we have any oxygen desaturations. Because the ETT cuff was still inflated, the trachea remained free of the blood and debris from the oropharynx. The surgery was completed without issue and the patient was extubated uneventfully on POD 2.

Discussion

The airway exchange was conducted in the above manner due to the following issues:

- 1) A side by side nasal tube exchange was not possible because the patient's unoccupied nare/choana was atretic.
- 2) The airway was significantly bloody as the case had been ongoing.
- 3) We were unable to visualize the glottic opening with video laryngoscopy and therefore could not visualize the tube exchange in that manner
- 4) Blind nasal tube exchange with an airway exchange catheter is risky and prone to complications, especially displacement of the exchange catheter upon removal of the ETT, which in this particular case would have been disastrous.¹

Had the surgeons sawed through the nasal tube entirely, the situation would have been much more dire, and it is likely an emergency tracheostomy would have had to be performed. As it stood, we were able to rapidly troubleshoot various options and create a plan that was safe and controlled.

References

1. McLean, Sheron MD; Lanam, Carolyn R. BS; Benedict, Wendy BS; Kirkpatrick, Nathan BS; Kheterpal, Sachin MD, MB; Ramachandran, Satya Krishna MD, FRCA. Airway Exchange Failure and Complications with the use of the Cook Airway Exchange Catheter: A Single Center Cohort Study of 1177 Patients. *Anesthesia & Analgesia*. 2013;117:1325-1327.
2. Johnson JM, Moonis G, Green GE, Carmody R, Burbank HN. Syndromes of the First and Second Branchial Arches, Part 2: Syndromes. *American Journal of Neuroradiology*. 32:230-37.
3. Intubation images are alterations of Christopher Kent's patent on the endotracheal tube. Kent, C. (2000). *Endotracheal tube having a beveled tip and orientation indicator*. 6,378,523.

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