Acquired Nasopharyngeal Stenosis Following Adenotonsillectomy: A Difficult Airway

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Introduction
Nasopharyngeal stenosis is a very rare but significant complication of adenotonsillectomy. Our patient below presented in respiratory distress secondary to complete nasopharyngeal obstruction after adenotonsillectomy.

Airway Considerations
- Severe nasopharyngeal stenosis
  - Nasal intubation impossible prior to surgical reconstruction
- Oropharyngeal stenosis
  - Direct visualization of the vocal cords would be extremely difficult
  - Limited mouth opening due to extensive adhesions
  - Emergent intubation would be extremely difficult if tracheostomy was decannulated
    - Intubation would require a fiberoptic scope to be passed through the nare, through the softpalatal fistula, and forceful jaw distraction would be needed to visualize the epiglottis.

References

Past Medical History
- 22-month old Liberian female with sickle cell disease
- Presented from outside hospital in obvious respiratory distress
- Required emergent intubation and was a difficult airway
- CT scan showed distinct thickening and protrusion of the retropharyngeal soft tissue
- Rhinolaryngoscopy showed nasopharyngeal stenosis thought to be secondary to her previous adenotonsillectomy at 18 months of age

Surgical Course
- 2006: Tracheostomy
- May 2007: Pharyngoplasty for velopharyngeal stenosis
  - Stent placed in left nare
- December 2007: Re-stenosis of nasopharynx- no opening from nasal cavities to oropharynx
- February 2010: Pharyngoplasty with tissue rearrangement and inferiorly based pharyngeal flap reconstruction (surgically created cleft palate)
- October 2011: Recurrent oropharyngeal stenosis, marked adhesions extending from the area of the superior tonsillar pillars and base of the tongue to the lateral hypopharyngeal wall, very minimal oropharyngeal opening– 1cm opening into the midline of the soft palate opening into the nasopharynx
- August 2015: Nasopharyngeal stenosis, scarring of the mid-tongue to the soft palate limiting mobility, larynx could not be seen with direct laryngoscopy

Conclusions
Nasopharyngeal stenosis following adenotonsillectomy is caused by scar tissue formation that interrupts the normal communication between the naso- and oropharynx. These patients can present with a wide spectrum of symptoms from hyponasal speech to complete airway obstruction. The severity of these symptoms is usually related to the degree of nasopharyngeal stenosis. Fortunately, there is no optimal surgical technique for repair and these patients are at increased risk for recurrence, so prevention remains the best treatment.