Abstract
Introduction: Sleep disordered breathing and obstructive sleep apnea are commonly encountered in the pediatric population. In many cases it is secondary to adenotonsillar hypertrophy. The differential diagnosis is long, and as clinicians we have to determine who needs to undergo fiberoptic laryngoscopy in the clinic setting and other extensive testing. The differential diagnosis of a supraglottic mass in sleep disordered breathing needs to be considered in patients who fail conservative treatment- even a diagnosis as rare as neurofibroma.

Materials and Methods: A case report. A 16-year-old female presented with snoring, obstructive sleep apnea (OSA), and “asthma” secondary to a neurofibroma of the aryepiglottic fold without associated NF-1.

Conclusions: This is the first case of an adolescent aged patient of African descent diagnosed with a solitary laryngeal neurofibroma. Her prolonged treatment with asthma medications and attempt to treat her sleep apnea with CPAP emphasize the importance of considering obstructive lesions in these situations.

Case Presentation
A 16 year-old African-American girl presented to her primary care physician with the complaints of dyspnea on exertion and worsening snoring, especially while laying on her right side. She was diagnosed with asthma and placed on Symbicort which did not provide any relief. Her mother also witnessed apneic events and she underwent a formal polysomnography, which demonstrated moderate sleep apnea. She tried a trial of CPAP, but was unable to tolerate it and referred to an outside otolaryngologist for tonsillectomy. The patient was referred to the senior author after she was found to have a supraglottic mass. Upon presentation she noted recent voice changes and dysphagia.

She was an otherwise healthy, non-smoker with no history of surgery. Family history was non-contributory. Her head and neck examination was significant for mildly enlarged tonsils, a click associated with swallow, and slow laryngeal elevation on swallow. Flexible laryngoscopy demonstrated a large, pedunculated, submucosal lesion arising from the left aryepiglottic fold. The vocal folds were mobile bilaterally.

Computed tomography with contrast showed a 4.2 x 1.9 x 2.2 cm well-circumscribed hypodense, nonenhancing, cystic-appearing lesion arising from the posterior aspect of the left supraglottis (Fig 1).

The patient underwent microlaryngoscopy, which demonstrated a pedunculated, submucosal lesion with its base at the left aryepiglottic fold (Fig 2). After successful intubation, the lesion was removed with a combination of cold steel and CO2 laser (Fig 3).

Conclusions
To the best of our knowledge, this is the first case of an adolescent patient of African descent diagnosed with a solitary laryngeal neurofibroma. Her prolonged treatment with asthma medications and attempt to treat her sleep apnea with CPAP emphasize the importance of thinking of obstructive lesions in these situations.

Discussion
• Supraglottic neurofibromas are in the head and neck, but supraglottic involvement is a very rare entity [5].
• These tumors can be confused with schwannomas, which are more commonly found in the larynx. They are derived from Schwann cells, perineural cells, and fibroblasts [6].
• Many patients suffer from NF-1.
• Plexiform subtype is mostly seen in the setting of NF-1 and is more invasive with higher risk for malignant transformation.
• Can develop at any age.
• MRI scan is the imaging modality of choice, but CT plays a significant role [5].
• Surgery is the mainstay of treatment.
• Resection can be challenging and can range from resection with microlaryngeal surgery with CO2 laser to laryngectomy.
• Recurrence is a concern.
• While obstructive sleep apnea is common in the pediatric population, it is rarely the result of occult laryngeal lesions. Our patient was newly diagnosed with obstructive sleep apnea and did not have a previous history of this condition or chronic tonsil problems, and at her age it is unlikely that she would have new onset sleep apnea from enlarged tonsils. A supraglottic mass with decreased muscle tone may cause periodic obstruction of the upper airway during sleep and lead to OSA.

Conclusions
To the best of our knowledge, this is the first case of an adolescent patient of African descent diagnosed with a solitary laryngeal neurofibroma. Her prolonged treatment with asthma medications and attempt to treat her sleep apnea with CPAP emphasize the importance of considering obstructive lesions in these situations.

Acknowledgements
We would like to thank E. Brodling, MD in the Department of Pathology and the Department of Radiology for their collaboration in diagnosing this patient.

References
[2] They can present sporadically or in the setting of neurofibromatosis type 1 (NF-1, von-Roelinghausen’s disease).
[4] Laryngeal involvement has presented in infancy in the setting of NF-1.
[5] Clinicians need to determine when fiberoptic laryngoscopy should be performed in the clinic setting.
[6] We describe a 16 year-old female presenting with snoring and obstructive sleep apnea secondary to a neurofibroma of the aryepiglottic fold without associated NF-1.

Figure 1: CT with contrast demonstrated a well-circumscribed hypodense, non-enhancing, cystic-appearing lesion arising from the posterior aspect of the left supraglottis.

Figure 2: Intraoperative view of the submucosal mass arising from the left supraglottis. The vocal cords are not involved.

Figure 3: Gross specimen of the lesion. Frozen section suggested neural origin. Note the extensive submucosal growth.