Background

- Respiratory events are the most significant complications during elective pediatric anesthesia
- eNO is a biomarker for Th-2 mediated airway inflammation and its levels can increase in the presence of upper respiratory tract infections or poorly controlled asthma
- This pilot study provided us data for 2 main questions: a) whether eNO is a feasible test in children in the preoperative phase and b) whether eNO is able to predict respiratory adverse events after adenotonsillectomy

Methods

- IRB approved, parental consent, prospective study
- Inclusion criteria: 4 to 12 years old, scheduled to undergo elective adenoidectomy and/or tonsillectomy
- Exclusion criteria: craniofacial syndromes, trisomy 21, hx of difficult airway, tracheostomy, chronic systemic use of corticosteroids
- eNO testing was performed immediately prior to adenotonsillectomy with an electro-chemical sensor that requires the subject’s cooperation (Niox Mino®, Aerocrine, Morrisville, NC)
- Using defined variables, complications were recorded by study personnel blinded to the eNO measurements and analyzed by Fischer’s exact test

Results

- 192 enrolled subjects, 103 children were able to provide an eNO sample. Most children required more than one attempt. The device allows multiple attempts until a successful sample is obtained (see table)
- Both respiratory and non-respiratory complications occurred at a higher rate in the high eNO group (>20ppb) but these differences did not reach statistical significance (see graph)
- 38% of African American children presented with elevated eNO compared to 17% of Caucasian children (p = 0.05)
- Causes for readmission were pain, stiff neck, dysphagia, dehydration and/or post-tonsillectomy bleeding

Discussion

- Complications after adenotonsillectomy are infrequent but they may incur significant morbidity and cost of care
- This pilot study was underpowered to detect relatively infrequent complications
- The results indicated a trend without significant associations between increased eNO and postoperative complications
- eNO testing is dependent on subject’s cooperation. According to ATS/ERS recommendations, a shorter exhalation time for eNO testing may be used and should be explored in future studies involving young children

Acknowledgement

Aerocrine USA, Inc. provided support for this study