



Introduction

Chronic nasal airway obstruction due to adenoid hypertrophy is one of the most frequent chief complaints evaluated by the pediatric otolaryngologist. Caregivers often describe symptoms of chronic congestion, rhinorrhea, snoring, and mouth breathing. This constellation of symptoms has been shown impact quality of life, leading to behavioral changes, emotional distress, and limitations in activity². Current management of symptoms of chronic nasal obstruction includes allergy treatments, nasal steroid sprays, and surgery.

Intranasal steroid therapy has been established as a safe and effective treatment for management of these symptoms^{1,3,4}. In addition nasal steroids have been shown to reduce objective adenoid size³.

Adenoidectomy has been demonstrated to be an effective management strategy for chronic rhinosinusitis in children that fail medical management^{6,7}. However, the literature addressing adenoidectomy for management of chronic nasal obstruction is scant and inconclusive. Two studies on this topic were identified by a 2009 Cochrane review. Neither showed benefit of adenoidectomy in this population⁵.

In our practice, we have identified a number of patients that have failed nasal steroid therapy as a first line treatment that have subsequently undergone adenoidectomy.

The objective of this study is to identify the characteristics of children in which intranasal steroids fail to resolve symptoms of chronic nasal obstruction. In addition, we aim to evaluate the efficacy of adenoidectomy in this subset of patients.

Objectives

- 1) To identify characteristics of children that fail intranasal steroid therapy for treatment of chronic nasal obstruction
- 2) To evaluate the efficacy of adenoidectomy in this subset of patients

Methods and Materials

All records were reviewed of patients' ages 0-18 from 2011-2015 that underwent adenoidectomy for chronic nasal obstruction following treatment failure with intranasal steroids. Demographics, symptoms, treatment course, and operative data were collected. Adenoid size was graded by the senior authors based on volume filling the nasopharynx, endoscopically in clinic and/or by direct visualization in surgery.

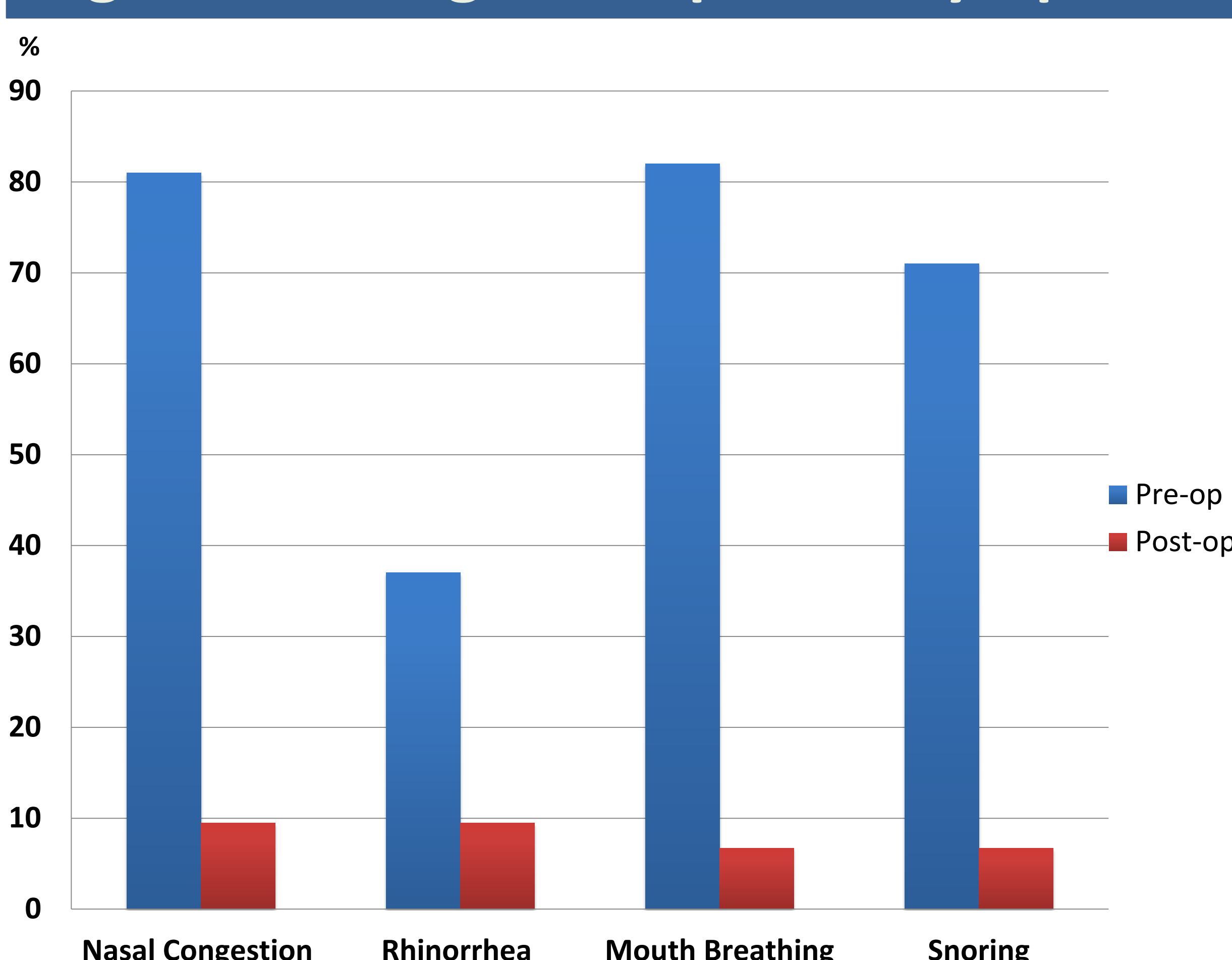
Results

Seventy-four cases were identified. Average age at time of presentation was 3.6 years. Duration of intranasal steroid therapy ranged from 30 days to greater than 2 years. 25.7% of patients had known asthma, 16.2% had documented environmental allergies, and 20.3% were being treated with systemic antihistamines. The most common pre-operative symptoms were mouth breathing (82.4%), nasal congestion (81.1%), snoring (71.6%), and rhinorrhea (37.8%). 33 (45%) of patients underwent preoperative nasal endoscopy. Average adenoid size was 78% preoperatively and 68% at the time of surgery. Symptoms improved or resolved in majority of patients postoperatively; persistent mouth breathing was noted in 6.67% of patients, nasal congestion in 9.46%, snoring in 6.67%, and rhinorrhea in 9.46%. 52 (70.2%) caregivers reported complete resolution of symptoms and an additional 21 (28%) reported improvement of symptoms. One caregiver reported no improvement in symptoms. Of the patients that were restarted on nasal steroids, 1 had diagnosed allergies and 3 had documented asthma.

Table 1: Patient Characteristics

n = 74	No. (%)
Average Age (years)	3.65
Male	51 (68.9)
Asthma	19 (25)
Documented Env. Allergies (per history or testing)	12 (16.2)
Allergy Testing	12 (16.2)
Positive Env. Allergy Testing	6 (8.11)
Systemic Antihistamines	15 (20.27)

Figure 1: Caregiver Reported Symptoms



Discussion

This study demonstrates adenoidectomy to be highly efficacious for the management of chronic nasal obstruction in patients that are refractory to nasal steroid therapy. This is contradictory to the two previous studies identified by a Cochrane review, which failed to demonstrate success of adenoidectomy for nasal obstruction. Whereas 98% of caregivers in our study reported symptomatic improvement and only 6 patients required continued nasal steroid therapy, previous literature cites success rates around 60%⁵.

Second, this study aimed to identify characteristics of patients that fail nasal steroid therapy. 16.2% of patients that failed nasal steroids had a history of environmental allergies. Worldwide, sensitization rates to one or more common allergens among school children are currently approaching 40%-50% and rates of allergic rhinitis are as high as 40%⁹. Interestingly, the number of patients with allergy that failed nasal steroid therapy was lower than expected. This could be due to selection bias in our study group, as patients with allergy may have responded appropriately to nasal steroid therapy. Furthermore, if patients with allergy fail intranasal steroid therapy, our data shows there is still a high likelihood of symptomatic improvement following adenoidectomy. Of the 6 patients that failed to respond to adenoidectomy, only 1 had known allergies.

In contrast to low rates of allergy, we found a high incidence of asthma among patients that failed nasal steroid therapy. National averages are around 12.5%, whereas 25% of our study group had documented asthma⁸. In the subgroup of patients that required resumption of intranasal steroids, 3 of 6 had a history of asthma. It is unclear why this subgroup had had rates of asthma. Further studies are needed to elucidate this relationship.

Conclusions

This study demonstrates a high incidence of asthma but a low incidence of allergy in children that fail intranasal steroid therapy in treatment of chronic nasal obstruction. In addition, our data show adenoidectomy is a highly effective intervention in this subset of patients.

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