The Upper Airway/Allergic Rhinitis

Adenoidectomy Outcomes in Pediatric Rhinosinusitis: A Meta-analysis

PURPOSE OF THE STUDY. The objective of this study was to evaluate the available medical literature for evidence that adenoidectomy is an effective procedure for treating children with medically refractory rhinosinusitis.

STUDY POPULATION. Articles were obtained by using database searches and manual searches. These articles studied children, ≤18 years of age, who underwent adenoidectomy alone for management of medically refractory rhinosinusitis. The mean of the mean age of patients for each included series was 5.8 years, with a range of means of 4.4 to 6.9 years.

METHODS. A meta-analysis was performed of the available literature on adenoidectomy as treatment for sinusitis in this population, using searches of Medline, Embase, and Cochrane databases as well as manual searches of reference lists. Studies were selected for meta-analysis by meeting the following criteria: (1) the study evaluated the efficacy of adenoidectomy as the only surgical intervention for sinusitis, (2) the study was published in the English language, and (3) the study had a sample size of ≥5. Statistical analysis was performed with random-effects modeling, with the outcome measure being caregiver report or perceived presence or absence of symptomatic improvement.

RESULTS. Of the 78 articles identified through the database search and several others through manual search of references published between 1952 and 2007, 9 met inclusion criteria and 8 were statistically analyzed. These included 5 cohort studies and 4 case series. There were no randomized, controlled trials. The mean sample size was 46 (range: 10–121). All studies reported an improvement in symptoms or outcomes in ≥50% of patients. The statistical model accounting for interstudy variance estimated that 69.3% (95% confidence interval: 56.8%–81.7%; P < .001) of patients experienced symptomatic improvement with adenoidectomy. When the 3 articles submitted by a single author were excluded, the improvement after adenoidectomy was >83%.

CONCLUSIONS. The authors concluded that, although the literature is sparse and of only moderate-to-good quality, there is substantial support for the efficacy of adenoidectomy for treatment of children with medically refractory sinus disease. In addition, they suggested that these results, combined with the simplicity of adenoidectomy, compared with other surgical procedures, support the use of adenoidectomy before other surgical procedures in this population.

REVIEWERS COMMENTS. Adenoidectomy has long been used as a treatment for sinusitis in children who do not respond to observation or medical therapy. This systematic literature review supports such use of adenoidectomy. Although a large majority of children experience improvement after adenoidectomy, it is clear that this procedure is not curative for many and may be ineffective for some. The need for prospective study of the various medical and surgical treatments for pediatric sinusitis remains, with uniform entry criteria, well-defined outcomes, and randomization between treatment modalities and appropriate controls.

URL: www.pediatrics.org/cgi/doi/10.1542/peds.2009-1870TT

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Effect of Adenoidectomy on Respiratory Function: A Randomised Prospective Study

PURPOSE OF THE STUDY. Previous studies reported that the risk of childhood asthma is increased more than threefold in children with recurrent otitis media who have undergone adenoidectomy. The purpose of this study was to provide information on young children who were monitored to 3 years, to assess the effect of adenoidectomy on lung function and the development of atopy.

STUDY POPULATION. Of the 217 children recruited, 166 children completed the follow-up trial. These children were 12 to 48 months of age, had recurrent or persistent otitis media treated with adenoidectomy and tympanostomy or tympanostomy alone, and were monitored to 3 years after random assignment.

METHODS. The study included young children with recurrent otitis media (≥3 episodes in 6 months or ≥5 episodes in 12 months). All children underwent tympanostomy tube placement and were randomly assigned to undergo adenoidectomy as well. At the end of the 3-year follow-up period, impulse oscillometry (as a measure of exercise-induced bronchoconstriction), exhaled nitric oxide measurement (as a measure of bronchial inflammation), and skin-prick testing (as a measure of atopy) were performed for these children.

RESULTS. There was no significant difference in baseline lung function, exercise-induced bronchoconstriction, exhaled nitric oxide concentration, or the development of positive skin-prick test results between children who underwent adenoidectomy and those who did not.
During the first, second, and third years of the follow-up period, no significant differences in the mean number of otitis media episodes were observed between the 2 groups.

CONCLUSIONS. Adenoidectomy does not increase the risk of childhood asthma or the development of allergy. Recurrent respiratory tract infections during early childhood seem to be connected to the risk of bronchial hyperreactivity. The authors also suggest that adenoidectomy is not warranted as first-line treatment for the prevention of otitis media in children <4 years of age, especially those who do not have adenoidal hyperplasia or chronic adenoid infection.

REVIEWER COMMENTS. Adenoidectomy is one of the most common surgical procedures performed for children. It is reassuring to know that it does not promote the development of asthma or atopy. However, for children who do not have adenoidal hyperplasia or chronic adenoid infection, adenoidectomy does not reduce the number of subsequent ear infections and may be unnecessary.

URL: www.pediatrics.org/cgi/doi/10.1542/peds.2009-1870UU

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Immunopathology of Chronic Rhinosinusitis in Young Children

PURPOSE OF THE STUDY. To use immunohistopathological methods to define further the lymphocytic inflammation in pediatric chronic rhinosinusitis (CRS).

STUDY POPULATION. Nineteen children (median age: 3.0 years) with CRS corroborated by axial computed tomo-graphic scans of the sinuses were included. Archival maxillary sinus mucosal tissue samples from 5 adults were used for comparison.

METHODS. Maxillary sinus biopsies were performed, and immunostaining was performed on tissue samples for the following: CD3, CD4, CD8, CD68, CD20, κ, λ, and CD56. Myeloperoxidase stain was used to identify neutrophils.

RESULTS. The epithelium contained significantly increased numbers of CD8+, myeloperoxidase-positive, and CD68+ cells in the pediatric CRS group, compared with the adult control subjects. There were trends toward higher numbers of CD3+ and CD4+ cells. There were insufficient epithelial tissue samples to perform staining for CD20, κ, λ, and CD56. Submucosa from pediatric CRS subjects contained significantly higher numbers of CD20+, κ+, λ+, myeloperoxidase-positive, and CD68+ cells, with a trend toward a higher number of CD4+ cells.

CONCLUSIONS. In contrast to adult subjects with CRS, for whom the inflammatory response is predominantly eosinophilic, the inflammatory response of pediatric subjects with CRS is characterized by a mixed lymphocyte population, macrophages, and neutrophils. These observations suggest 2 possibilities, that is, a different pathogenic mechanism in children with CRS or progression of the inflammatory response with protracted disease.

REVIEWER COMMENTS. This study provides basic insight into CRS in children. Additional studies need to be performed to determine whether the identified inflammatory response persists or progresses to the characteristic inflammatory response seen in adults.

URL: www.pediatrics.org/cgi/doi/10.1542/peds.2009-1870VV

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Effect of Adenoidectomy on Respiratory Function: A Randomised Prospective Study
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Pediatrics 2009;124;S134
DOI: 10.1542/peds.2009-1870UU

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*Pediatrics* 2009;124;S134
DOI: 10.1542/peds.2009-1870U

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