

How do we treat chronic rhinosinusitis in asthmatic patients? : Medical vs. surgical

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Chronic rhinosinusitis (CRS), nasal polyposis (NP) and bronchial asthma are common diseases of the respiratory tract. These are seemingly distinct diseases but instead viewed as similar common airway diseases under the consideration of a united airway concept.¹ Strong association among CRS, NP and bronchial asthma is well known on a worldwide scale.² There have been several studies reporting that coexisting CRS aggravates asthma.³ However, this mechanism is still unclear and more research is needed to prove the causes of CRS that aggravate bronchial asthma. The most common hypotheses are the sinonasal bronchial reflex and dripping of nasal secretion to the lung.⁴ It has been reported that 7% to 15% of patients with asthma were found to have NP and 26% of patients with NP were diagnosed with asthma.⁵

Many studies reported the effectiveness of endoscopic sinus surgery (ESS) in asthmatic patients with CRS and NP. There are few well-conducted trials on the effects of surgical treatment for CRS and NP on asthma so far. Thus, the effect of ESS in asthmatic patients is still controversial. In a retrospective study with 50 patients who had failed medical treatment for more than 3 months, the results were not different between subgroups, CRS with and without NP.⁶ Postoperatively all symptoms, especially hyposmia and nasal obstruction in CRS and postnasal discharge and headache in NP, were improved significantly. The overall asthma control was easier and the number for patients who required hospitalization and oral steroid therapy for asthma exacerbations was reduced after ESS. Another group also showed the efficacy of ESS in 14 asthmatic children with CRS with or without NP. The enrolled patients were hard to control CRS even with 4 to 8 weeks medical treatment.⁷ Symptoms of CRS and asthma were improved and requirement of oral steroid therapy for asthma, hospitalization and the number of school days missed was reduced. However, there was no significant change in the pulmonary function tests. In one study including 13 patients with NP and asthma, they reported that FESS did not improve the asthmatic state in patients with massive NP.⁸ However, there was a significant decrease in the usage of oral corticosteroid and bronchodilator. Another

study showed significant improvement in the lung function tests including FEV1 and reduction of systemic steroid usage after ESS in 17 CRS patients with NP and oral corticosteroid dependent asthma.⁹

The results of most studies to determine effects of ESS for CRS and NP on asthma were towards a beneficial effect of surgery on different pre- and postoperative parameters of asthma including frequency, duration and visual analog scores of CRS and asthma symptoms, quality-of-life, nasal endoscopic scores, variables to test pulmonary improvement and requirements to control asthma exacerbation such as hospitalization, oral steroid therapy and bronchodilator. More recently, long-term surgical outcome and the surgical extent of ESS has been discussed in patients with CRS and NP on asthma. In one study, they showed long-term efficacy of ESS till 3 years in 25 CRS patients with asthma.¹⁰ Their asthma control levels were significantly improved but not their pulmonary function. After 2 years, same group reported comparison data between functional endoscopic sinus surgery (FESS) and extensive endoscopic sinus surgery (EESS).¹¹ They suggested that EESS significantly alleviated the olfactory reduction and/or loss in CRS patients with NP and asthma compared to FESS.

In summary, most studies agreed that postoperative symptoms were improved and the need for hospitalization and requirement of oral steroid was reduced. Although the specific results of several studies are not consistent, ESS seems to have a positive effects on asthmatic patients with CRS and/or NP.

References

1. Marney SR, Jr. Pathophysiology of reactive airway disease and sinusitis. *Ann Otol Rhinol Laryngol* 1996; 105:98-100.
2. Lee TJ, Fu CH, Wang CH, Huang CC, Huang CC, Chang PH, et al. Impact of chronic rhinosinusitis on severe asthma patients. *PLoS One* 2017; 12:e0171047.
3. Adinoff AD, Cummings NP. Sinusitis and its relationship to asthma. *Pediatr Ann* 1989; 18:785-790.
4. Senior BA, Kennedy DW. Management of sinusitis in the asthmatic patient. *Ann Allergy Asthma Immunol* 1996; 77:6-15; quiz 15-19.
5. Klossek JM, Neukirch F, Pribil C, Jankowski R, Serrano E, Chanal I, et al. Prevalence of nasal polyposis in France: a cross-sectional, case-control study. *Allergy* 2005; 60:233-237.
6. Dunlop G, Scadding GK, Lund VJ. The effect of endoscopic sinus surgery on asthma: management of patients with chronic rhinosinusitis, nasal polyposis, and asthma. *Am J Rhinol* 1999; 13:261-265.
7. Manning SC, Wasserman RL, Silver R, Phillips DL. Results of Endoscopic Sinus Surgery in Pediatric-Patients with Chronic Sinusitis and Asthma. *Archives of Otolaryngology-Head & Neck Surgery* 1994; 120:1142-1145.
8. Uri N, Cohen-Kerem R, Barzilai G, Greenberg E, Doweck I, Weiler-Ravell D. Functional endoscopic sinus surgery in the treatment of massive polyposis in asthmatic patients. *J Laryngol Otol* 2002; 116:185-189.
9. Batra PS, Kern RC, Tripathi A, Conley DB, Ditto AM, Haines GK 3rd, et al. Outcome analysis of endoscopic sinus surgery in patients with nasal polyps and asthma. *Laryngoscope* 2003; 113:1703-1706.
10. Chen FH, Zuo KJ, Guo YB, Li ZP, Xu G, Xu R, et al. Long-term results of endoscopic sinus surgery-oriented treatment for chronic rhinosinusitis with asthma. *Laryngoscope* 2014; 124:24-28.
11. Chen FH, Deng J, Hong HY, Xu R, Guo JB, Hou WJ, et al. Extensive versus functional endoscopic sinus surgery for chronic rhinosinusitis with nasal polyps and asthma: A 1-year study. *Am J Rhinol Allergy* 2016; 30:143-148.