



Understanding the mechanisms of improved asthma control following sinus surgery

Sachin Ananth

To cite this article: Sachin Ananth (2020): Understanding the mechanisms of improved asthma control following sinus surgery, Journal of Asthma, DOI: [10.1080/02770903.2020.1780254](https://doi.org/10.1080/02770903.2020.1780254)

To link to this article: <https://doi.org/10.1080/02770903.2020.1780254>



Accepted author version posted online: 08 Jun 2020.
Published online: 19 Jun 2020.



Submit your article to this journal [↗](#)



Article views: 47



View related articles [↗](#)



View Crossmark data [↗](#)

LETTER TO THE EDITOR



Understanding the mechanisms of improved asthma control following sinus surgery

Sachin Ananth, MD, BSc (Hons) 

Department of Respiratory Medicine, West Hertfordshire Hospital NHS Trust, Watford, United Kingdom

Dear Editor,

I read with great interest the article by Hamada et al. on the impact of sinus surgery on type 2 inflammation in asthma (1). In this prospective observational study, patients with asthma and chronic rhinosinusitis with nasal polyps (CRSwNP) underwent endoscopic sinus surgery. At the 52-week follow-up, 40% of patients were classified as responders (defined as improvement in Asthma Control Questionnaire of >0.5). Responders demonstrated sustained decreases in blood eosinophils and FeNO at 52-weeks, while non-responders did not. Furthermore, improvements in asthma control correlated with decreases in blood eosinophils and FeNO at 52-weeks. The authors concluded that surgical treatment of eosinophilic CRSwNP improves asthma control through suppression of type 2 inflammation.

This study raises some interesting questions. At baseline, the only difference between the responders and non-responders was increased total IgE in the responders. This implies that non-responders had non-allergic eosinophilic inflammation, which is driven by the action of epithelial-derived cytokines on type 2 innate lymphoid cells (ILC2s), rather than Th2 cells (2). Therefore, one can speculate that removal of nasal polyps did not reduce the activity of ILC2s in the lower airways, and so ILC2 activity in the upper and lower airways is not as extrinsically linked as Th2 activity in these areas (3). Alternatively, sinus surgery may not reduce the secretion of epithelial-derived cytokines (IL-25, IL-33, and TSLP), which are more prominent in non-allergic eosinophilic inflammation. To test this hypothesis, future studies should measure the levels of these cytokines following sinus surgery. If these studies are negative, antibodies targeting the epithelium-derived cytokines may be an alternative to sinus surgery in non-allergic CRSwNP patients, since

anti-TSLP reduces exacerbations in non-allergic asthma (4).

A caveat to the study by Hamada et al. was the exclusion of patients with poor adherence to inhaled corticosteroids. This may reduce the external validity of the results, as adherence to inhaled corticosteroids in clinical practice can be as low as 22% (5). Moreover, previous work of the authors has shown that nasal corticosteroids improve FeNO and ACQ in patients with asthma and allergic rhinitis (6). Therefore, it is unclear whether type 2 inflammation would have been suppressed in non-adherent patients following sinus surgery. Nevertheless, this study raises the interesting potential of sinus surgery to improve asthma control in allergic CRSwNP.

Declaration of interest

The author reports no conflicts of interest. The author alone is responsible for the content and writing of the paper.

ORCID

Sachin Ananth  <http://orcid.org/0000-0002-6204-993X>

References

1. Hamada K, Oishi K, Chikumoto A, Murakawa K, Ohteru Y, Matsuda K, Sho U, Suetake R, Ohata S, Murata Y, et al. Impact of sinus surgery on type 2 airway and systemic inflammation in asthma. *J Asthma*. 2020;1–9. doi:[10.1080/02770903.2020.1729380](https://doi.org/10.1080/02770903.2020.1729380).
2. Brusselle GG, Maes T, Bracke KR. Eosinophils in the spotlight: eosinophilic airway inflammation in nonallergic asthma. *Nat Med*. 2013;19(8):977–979. doi:[10.1038/nm.3300](https://doi.org/10.1038/nm.3300).
3. Yip ACA, Tay T, Choo XN, Koh MSY, Tee AKH, Wang D. Precision medicine in united airways

- disease: a “treatable traits” approach. *Allergy*. 2018; 73(10):1964–1978. doi:[10.1111/all.13496](https://doi.org/10.1111/all.13496).
4. Corren J, Parnes JR, Wang L, Mo M, Roseti SL, Griffiths JM, van der Merwe R. Tezepelumab in adults with uncontrolled asthma. *N Engl J Med*. 2017; 377(10):936–946. doi:[10.1056/NEJMoa1704064](https://doi.org/10.1056/NEJMoa1704064).
 5. Bårnes CB, Ulrik CS. Asthma and adherence to inhaled corticosteroids: current status and future perspectives. *Respir Care*. 2015;60(3):455–468. doi:[10.4187/respcare.03200](https://doi.org/10.4187/respcare.03200).
 6. Oka A, Matsunaga K, Kamei T, Sakamoto Y, Hirano T, Hayata A, Akamatsu K, Kikuchi T, Hiramatsu M, Ichikawa T, et al. Ongoing allergic rhinitis impairs asthma control by enhancing the lower airway inflammation. *J Allergy Clin Immunol Pract*. 2014;2(2): 172–178. doi:[10.1016/j.jaip.2013.09.018](https://doi.org/10.1016/j.jaip.2013.09.018).