



Research

Better Treatment for Chronic Sinusitis With Histopathologic Analysis

Rush University Medical Center's Rhinology section has been pioneering enhanced tissue profiling that opens options for patients experiencing chronic rhinosinusitis. During surgery, sinus tissues are removed and assessed using a structured histopathology report by Rush pathologists. The resulting analysis sheds light on an emerging classification system based on endotypes, which helps to explain the individualized mechanism of disease in patients suffering from chronic rhinosinusitis with and without nasal polyps. This classification helps sinus specialists plan more tailored treatments for these patients.

This type of tissue analysis was pioneered in Australia and was established at Rush approximately five years ago through initiatives of the Rhinology section in the department of the otolaryngology – head and neck surgery. Only a few centers across the world are pushing to implement and expand this program.

Histopathologic profiling removes the subjectivity of diagnosing a patient with sinus disease and creates a concrete profile to individualize treatment. In a 2019 publication, it was shown that structured histopathology profiling allowed for more objective endotyping and with this knowledge, doctors can recommend specific treatments and identify at risk patients. Director of otorhinolaryngology research and co-director of the Rush Sinus Program, Bobby A. Tajudeen, MD and Head of the Section of Rhinology, Sinus Surgery and Skull Base Surgery, has noted that Rush sees lower revision surgery rates compared to the community since the Rhinology section is better able to identify those patients who could be at risk for recurrence. ¹ Giving the patient more information helps them stick to longer term treatments, lessening the chances of revision surgery.

“Patients with sinus disease are often treated to a blanket standard. By better characterizing disease endotypes, we are more equipped to escalate therapy for at risk patients and reduce therapy for patients with less severe endotypes.” According to Dr. Tajudeen, understanding the drivers of inflammation is critical. Patients with robust eosinophilic inflammation demonstrate high disease severity with tissue remodeling and propensity for recurrence. These patients require more individualized comprehensive surgery, optimized topical therapy, adjunctive treatment, and close follow up.

It has been five years since the implementation of Rush's program and now every ENT patient who has a sinus surgery receives this profiling as routine. This initiative has resulted in numerous publications led by Dr. Tajudeen and, department chair of Otorhinolaryngology, Dr. Pete S. Batra. Currently, the department is looking to better understand the correlation between structured histopathology and inflammatory cytokine profile.

“Besides better personalized care and predicting treatments earlier on, and preventing recurrence, the biggest breakthrough that can come out of this is to find a way to predict these endotypes before needing surgery.” In the future, Tajudeen hopes to avoid the step of surgery altogether by introducing techniques to predict the profile and introduce treatment options prior to making surgery an option.

Cited Publications:

1. Tajudeen BA, Ganti A, Kuhar HN, Mahdavinia M, Heilingoetter A, Gattuso P, Ghai R, Batra PS. The presence of eosinophil aggregates correlates with increased postoperative prednisone requirement. *Laryngoscope*. 2019 Apr;129(4):794-799.