

Management Strategies for Recurrent Acute Rhinosinusitis

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Background: Management of patients with recurrent acute rhinosinusitis (RARS) is often challenging, and robust data in the literature is scant. The aim of this study is to better characterize the current treatment strategies for RARS used by otolaryngologists.

Methods: An online survey sent to all members of the American Rhinologic Society in a 1 month period evaluated demographics, practice characteristics, and management strategies for patients with RARS, subdivided into those with (RARSwD) and without (RARSsD) septal deviation. Eighty-eight practicing members responded, of whom 41% were fellowship-trained rhinologists.

Results: For most cases of RARSsD, 61% of otolaryngologists would primarily use medical management. Most would wait until patients had experienced 4–5 episodes to perform balloon sinuplasty (80%) or formal sinus surgery (79%). The sinus surgery procedure of choice was limited sinus surgery (62%). For RARSwD, 52% primarily chose medical management. Most would wait until patients had experienced 4–5 episodes to perform balloon sinuplasty (80%) or formal sinus surgery (78%). Nearly all fellowship-trained rhinologists (97%) would perform limited sinus surgery with septoplasty for RARSwD, compared to only 70% of other otolaryngologists who would do so and 24% who would perform complete sinus surgery with septoplasty. While 89% of practitioners in private practice would wait to perform balloon sinuplasty until patients had experienced 4–5 episodes, only 68% of those in academia would wait this long and 23% would do so after only 1–3 episodes.

Conclusions: Treatment of patients with RARS is complex, and the differences in strategies employed between groups of otolaryngologists may reflect their training backgrounds and different patient populations.

Key Words: Rhinosinusitis, chronic rhinosinusitis, sinus surgery, balloon dilation, endoscopic sinus surgery, medical therapy of chronic rhinosinusitis.

Level of Evidence: V

INTRODUCTION

Rhinosinusitis is very common, affecting 12% of adults in the United States per year.¹ Despite the frequency with which sinusitis is diagnosed, its treatment strategies range significantly even among otolaryngologists. Medical management of rhinosinusitis includes oral and nasal antibiotics, oral and nasal steroids, oral and nasal antihistamines, as well as nasal saline sprays and irrigation. Balloon sinuplasty and functional endoscopic sinus surgery are also used to treat rhinosinusitis. Recurrent acute rhinosinusitis (RARS) is defined as four or more episodes of rhinosinusitis annually without any symptoms in between episodes, and the combinations of medical and surgical management of this condition vary even more widely than for acute or chronic rhinosinusitis alone.²

Management of RARS in particular is quite challenging, and symptom burden is very high. Studies have not shown chronic antibiotic therapy and nasal steroids to have significant benefit in treating RARS.^{3,4} Sinus surgery is often considered for these patients, but even the most recent guidelines for treating rhinosinusitis does not offer guidance for surgical management of RARS as there is not enough evidence in the literature.^{5,6}

In light of the wide range of treatment options and lack of definitive data in the literature, this study aims to characterize the management strategies of RARS currently employed by practicing otolaryngologists.

MATERIALS AND METHODS

We conducted an online survey to evaluate current practice strategies in the treatment of RARS. This survey was distributed to all members of the American Rhinologic Society in a 1 month time period. Requested data included demographics, practice characteristics, and management strategies for patients with RARS, subdivided into those with (RARSwD) and without (RARSsD) septal deviation. Specific patient characteristics were not detailed in this survey, as this study sought to describe general management strategies for the typical RARS patient. Furthermore, computed tomography (CT) findings were also not described, as CT often will not show abnormal findings, due to the nature of the disease. Management choices included medical management, balloon sinuplasty, and sinus surgery (Table I). Balloon sinuplasty was evaluated as a separate management strategy from formal endoscopic sinus surgery. Sinus surgery was further delineated as limited and complete sinus surgery. Limited sinus surgery was defined as removal of nasal polyps and opening of the maxillary and/or anterior ethmoid sinuses. Complete

Supplemental Figure 1 Recurrent Acute Rhinosinusitis Survey

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TABLE I.
Survey Questions.

Respondents were asked the following questions regarding their primary management strategy for patients with and without nasal septal deviation.
In the MAJORITY (>50%) of cases, how would you manage these patients?
Medical management ONLY
Balloon sinuplasty
Surgery
Other
What is the average number of episodes per year that a patient will experience before you offer BALLOON SINUPLASTY?
1–3
4–6
6 or more
NA or I do not use balloon sinuplasty
What is the average number of episodes per year that a patient will experience before you offer SURGICAL management?
1–3
4–6
6 or more
NA or I do not use surgical management
Which of the following SURGICAL procedure(s) would you do in the majority of these cases?
<i>*Limited/conservative sinus surgery: removal of nasal polyposis and opening of the maxillary +/- anterior ethmoidal sinuses; Complete/radical sinus surgery: removal of nasal polyposis and opening of all the paranasal sinuses</i>
Septoplasty ONLY
Limited/conservative sinus surgery ONLY
Limited/conservative sinus surgery with septoplasty
Complete/radical sinus surgery ONLY
Complete/radical sinus surgery with septoplasty
NA or I do not use surgical management
Other

sinus surgery, on the other hand, was defined as removal of nasal polyposis in addition to opening of all the paranasal sinuses. A copy of the full survey questions is presented in Supporting Information Fig. 1. All responses were entered into a secure database, and descriptive statistical analyses were performed using IBM SPSS 20.

RESULTS

A total of 88 practicing members responded (response rate: 6.8%), 41% of whom were fellowship-trained rhinologists. The majority of the remaining responders were general otolaryngologists (50%), with a few responses from facial plastic surgeons, head and neck surgeons, and otologists (Table II). The respondents represented a wide range of practice sizes, from solo practice to those with 150 practitioners.

In a typical patient with RARSsD, 61% of otolaryngologists would primarily utilize medical management (Table III). Most would wait until patients had experienced 4–5 episodes to perform balloon sinuplasty (80%) or endoscopic sinus surgery (79%) (Fig. 1). In the latter category, the majority of practitioners preferred limited sinus surgery (62%) (Fig. 2).

For RARSwD, 52% primarily chose medical management (Table III). The majority of responders would wait

TABLE II.
Demographics of Responders.

Number of Responders	88
Subspecialties	
General	50%
Rhinology	41%
Otology/neurotology	2%
Head and neck	1%
Facial plastics	6%
Average number of otolaryngologists per practice	50
Range	1–150

until patients had experienced 4–5 episodes to perform balloon sinuplasty (80%) or sinus surgery (78%) (Fig. 3). The sinus surgery procedure of choice was limited sinus surgery with septoplasty (79%) (Fig. 4). Nearly all fellowship-trained rhinologists (97%) would perform limited sinus surgery with septoplasty for RARSwD, while 24% of other otolaryngologists would perform complete sinus surgery with septoplasty ($P = .05$) (Fig. 5). Interestingly, while the majority of practitioners in private practice (89%) would wait to perform balloon sinuplasty until patients had experienced 4–5 episodes, nearly a quarter of those in academia (23%) would do so after only 1–3 episodes ($P = .05$) (Fig. 6).

DISCUSSION

Most otolaryngologists begin treatment of RARS with medical therapy. In line with a recent best practice guideline, most otolaryngologists will consider balloon sinuplasty or endoscopic sinus surgery when patients have had at least 4–6 episodes of RARS.⁷ However, because of the intermittent nature of this disease, it is difficult to study, with little in the literature to definitively recommend when to proceed with surgical intervention. As Figures 1 and 3 show, a small percentage of responders intervened even when patients had not met the criteria for RARS, which may reflect the intermittent nature of this disease and difficulty in capturing all episodes.

Surgical intervention has been shown in previous studies to provide significant improvement in quality of life in patients with RARS as it does in patients with

TABLE III.
Initial Management of RARS.

	RARSsD (%)	RARSwD (%)
Medical only	61	52
Balloon sinuplasty only	11	3
Surgery only	12	37
Medical and balloon	4	2
Medical and surgery	6	3
Balloon and surgery	3	2
All of the above	2	1

RARS = recurrent acute rhinosinusitis.

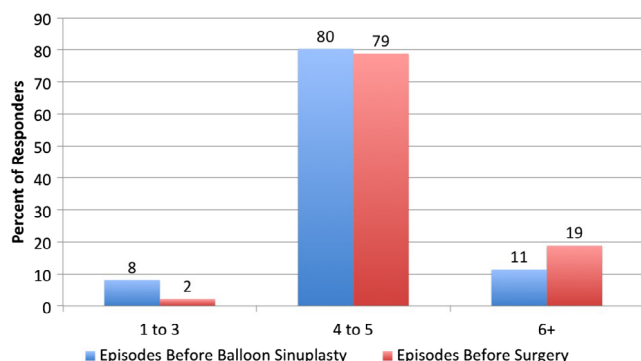


Fig. 1. Episodes of RARSsD prior to balloon sinuplasty or sinus surgery.

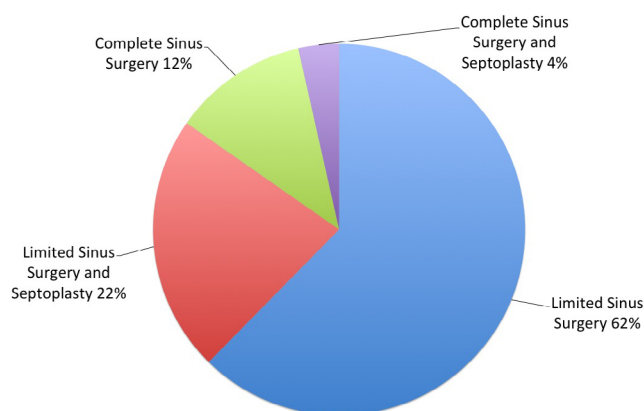


Fig. 2. Sinus surgery management preferences for RARSsD.

chronic rhinosinusitis.^{8,9} A study of 220 patients with RARS showed a statistically significant reduction in SNOT-22 scores in patients undergoing surgery compared to medications alone at 3, 6, and 12 months of follow-up.¹⁰ However, this study did not delineate the number of episodes patients experienced prior to intervention beyond the fact that all patients enrolled had experienced at least four episodes. Furthermore, analyses have shown that at five or more episodes within 12 months, patients would benefit from an economic perspective if they undergo surgical intervention.⁵ A study using the Medical Outcomes Study Short Form-6D to measure health utility also found significant improvement

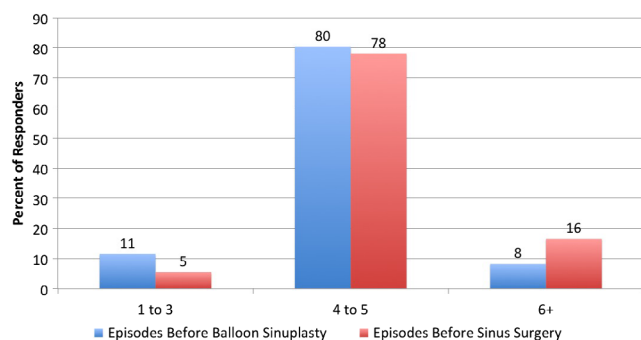


Fig. 3. Episodes of RARSsD prior to balloon sinuplasty or sinus surgery.

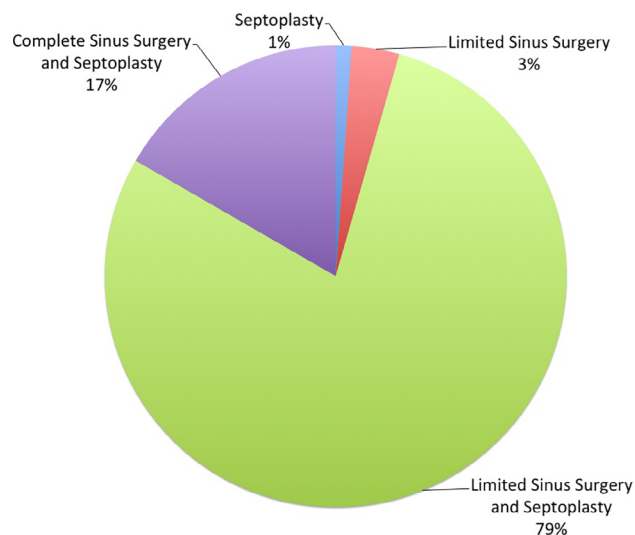


Fig. 4. Sinus surgery management preferences for RARSsD.

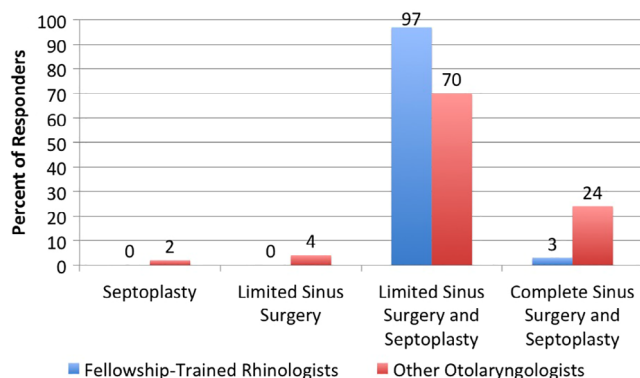


Fig. 5. Sinus surgery management preferences for RARSsD by fellowship training.

after surgery for patients with RARS on a similar scale as those with chronic rhinosinusitis.¹¹

Balloon sinuplasty has also been shown to provide improvement in RARS, although there are even fewer studies than for sinus surgery. One study showed improvements in SNOT-20 and rhinosinusitis symptom

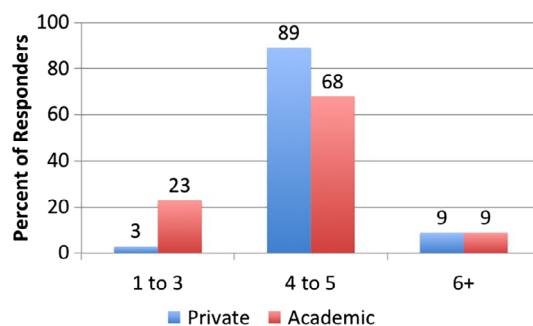


Fig. 6. Episodes of RARSsD prior to balloon sinuplasty or sinus surgery by practice type.

inventory (RSI) scores in 17 patients with RARS undergoing balloon dilation, which were comparable to improvements in patients with chronic rhinosinusitis (CRS).¹² Interestingly, in our study, responding practitioners in academia appeared to be willing to try balloon dilation after fewer episodes compared to those in private practice (Fig. 6). Although no other studies have examined differences in academic compared to private practice management strategies in RARS, perhaps those in academia see a skew in the severity of their patient base that leads them to be willing to try balloon dilation sooner than their counterparts in private practice.

Due to the intermittent nature of RARS, CT scans can often show no evidence of sinus disease. In our survey, the majority of practitioners chose limited sinus surgery as their procedure of choice, including septoplasty in cases of RARSwD. While nearly all fellowship-trained rhinologists in our survey preferred limited sinus surgery with septoplasty in cases of RARSwD, nearly one-quarter of non-fellowship-trained otolaryngologists chose complete sinus surgery with septoplasty. Although more surgery is indicated if the CT scan shows more extensive disease, patients with RARS may have minimal or no disease on their scans, particularly if they obtain the scan during a symptom-free period. For this reason, most practitioners typically address these patients with limited sinus surgery.^{9,10} Perhaps fellowship-trained rhinologists see more extensive disease in their CRS patients, and therefore more frequently offer more limited sinus surgery to their RARS patients in comparison.

Limitations of this study include the low response rate, which raises the possibility of sampling bias. However, we did have an approximately equal number of general and fellowship-trained otolaryngologists from a wide range of practice types who contributed their management strategies. In addition, this study was a survey, and we relied upon the reports of individual practitioners, which we were not able to verify by other means. Specifically, the survey was not validated, and our findings were interpreted with this in mind. Furthermore, given the nature of a survey study, recall bias could also have influenced our results. Despite these limitations, our study provides a description of the

general management strategies of otolaryngologists for this challenging disease. Future directions include management considerations of specific patient factors, such as immune status and exam findings.

CONCLUSION

Most practitioners begin treatment of RARS with medical therapy, and will wait until patients have had 4–6 episodes prior to offering balloon sinuplasty or sinus surgery. When planning for sinus surgery, the procedure of choice appears to be limited sinus surgery, including septoplasty in cases of RARSwD. With the wide variation in treatment strategies between otolaryngologists, further research is needed to provide more evidence-based guidelines for the management of RARS.

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