

ARS NOSE NEWS JUNE 2017

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PRESIDENT'S REPORT

John DelGaudio, MD, FARS

Welcome to the Spring Edition of Nose News. It is an exciting time to be a part of the American Rhinologic Society. We have just concluded our first meeting of the year, the ARS at COSM in San Diego. The scientific program provided the latest in clinical rhinology and cutting edge research. In addition, the program featured a combined panel with the American Association of Facial Plastics and Reconstructive Surgery, continuing the ARS tradition of collaborating with sister societies to bring new ideas to our membership. I would like to thank Richard Orlandi, MD, the Program Chair and President Elect of the ARS, and the program committee for their hard work and dedication to making this meeting an unequivocal success.



Now we can look forward to our next installment of educational offerings of the ARS, the Summer Sinus Symposium. This year will be the 6th annual Summer Sinus Symposium, and for the first time it will be held at the Omni Shoreham Hotel in Washington DC, from July 14-16. The Summer Sinus Symposium provides great clinical content that is useful for all practitioners of Rhinology at every level. I would like to congratulate this year's course directors: Douglas Reh M.D., Mark Dubin M.D., and Greg Davis M.D. They have put together an excellent clinical and social program for this meeting. The Keynote Speaker will be Congressman Phillip Roe, MD who serves the First Congressional District of Tennessee. Dr. Roe earned his medical degree at the University of Tennessee in 1971 and practiced medicine for 31 years. He is the current co-chair of the House GOP Doctors Caucus and is a member of the Health Caucus. In this time of uncertainty in the healthcare environment, this is sure to be an interesting speech.

Please consider attending what we believe is the best sinus course in the world, and spend time getting to experience our nation's capital. Please visit <http://www.american-rhinologic.org/sss> for program and hotel information, and to register for the meeting.

It is my pleasure to serve as the president of the American Rhinologic Society this year. I must admit, as the time for my tenure as president was approaching, there was some anxiety. It seemed like it was going to be a daunting task to be the president of such a successful subspecialty organization. This was especially the case since my predecessors and those to follow me represent a Who's Who in Rhinology. How would I keep up this great tradition of excellence and not drop the ball?

It soon became apparent to me that serving as president of the American Rhinologic Society is not as daunting a task as I had anticipated. This is not to diminish the accomplishments of those that served before me. In fact, I am impressed by what they have accomplished in the short period of time in which they have served as president. And what is common to all of them is how they have utilized the full capacity of the ARS to obtain these impressive results. Specifically, they harnessed the energy of the membership, putting the right people in position to carry out the missions of the American Rhinologic Society. These efforts have positioned the ARS as the world leader in Rhinologic care, education, research, and advocacy.

The key to any successful society is an engaged membership. The leadership has consistently worked to make the American Rhinologic Society an inclusive organization. And in my experience, the membership of the ARS has evolved into the most engaged membership of all sub-specialty societies. Now, almost 30% of the membership serve on ARS committees. Over the past few years, to accommodate all interested members, many committees were expanded to create additional positions. We have also had to limit committee involvement to one position per person so that we could further maximize participation. This is a good problem to have. For those of you that are interested in serving, the online application module to fill vacant committee and committee chair positions opens each year. Please visit <http://www.american-rhinologic.org> and complete an application.

If you are not a member, please join the ARS now. The privileges of membership include:

- The right to vote on ARS issues
- Access to literature on the ARS website
 - educational materials
 - surgical video library
 - patient education materials
 - webcasts
- A subscription to the International Forum of Allergy and Rhinology, the journal of the American Rhinologic Society
 - Monthly "Scope it Out" podcast
 - New case of the month series
- Access to DocMatter, the new online forum for ARS members to communicate and share ideas
- Free registration to the Summer Sinus Symposium (see above for details of this year's meeting)

To all the residents and fellows, please remember that after graduation you no longer receive complimentary dues. You will need to become a regular member of the ARS. We encourage you to do so and not lose the privileges that come with membership. And don't be too complacent, because we will find you.

For those of you who are already members, consider upgrading your membership to become a Fellow of the American Rhinologic Society (FARS). This is the highest category of membership. As you look at the program at any of the ARS meeting you will notice the FARS designation behind many names. While it does not require having completed a rhinology fellowship, there are established criteria that each of these physicians has met to become a fellow of the

American Rhinologic Society:

- At least 3 years since completion of residency training
- Documentation of 50 rhinologic cases over a two-year period
- Evidence of service to the rhinology community (publications, teaching, etc)
- 2 letters of recommendation from current FARS members

So why should you become a fellow of the ARS? Well, the benefits of being a fellow include the same as those listed for members, in addition to:

- The privilege to chair ARS committees, hold office, represent the ARS, and even serve as president
- The recognition that you have achieved the highest level of membership in the subspecialty society for sinus, nasal, and skull-base surgery
 - Don't you want your sinus surgeon to have the highest membership designation from their society?

The changes that I have seen in the past 15 years since I became a member of the ARS are due to the dedication, commitment, and energy of the society membership. Under the direction of the committee chairs and society leadership, all of whom are Fellows of the ARS, there have been dramatic improvements in the quality and quantity of the scientific meetings, educational content and offerings, advocacy, and outreach.

And there is much more to come! I encourage all of you to become a part of this continued growth and excitement by becoming members and hopefully fellows of the American Rhinologic Society. Thank you for the privilege of serving as President of the ARS.

I hope to see you again in Washington, DC for the Summer Sinus Symposium.

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SUMMER SINUS SYMPOSIUM UPDATE

Greg Davis, MD, Marc Dubin, MD, Doug Reh, MD

Since its inception in 2011, the Summer Sinus Symposium has been directed by Rick Chandra, MD, James Palmer, MD, and Kevin Welch, MD. Held in Chicago in mid-July, the course established itself as the premier sinus course in the world. It's balanced offering of panel discussions led by domestic and international leaders in rhinology, cadaver prosections and interaction with industry partners led to unparalleled success.

As the new course directors, we have been tasked with expanding this highly successful program with the move of the 2017 course to Washington DC at the Omni Hotel (July 14-16). With that in mind, our goal is to maintain the successful course format that worked well in Chicago, yet offer unique opportunities to explore the new host city and allow for additional education experiences.

To accomplish these goals, we have made small adjustments to the program. The course will now begin on Friday with a full day of CME panels while on Saturday and Sunday morning there will be CME sessions concluding at lunch on both days. The Saturday afternoon block will allow participants to explore Washington DC with their family, lounge by the beautiful pool or participate in numerous scheduled corporate non-CME events. Family and individual tours of DC will be available through Context Travel. The course will conclude mid-day Sunday to allow everyone ample time to get home to start utilizing what they learned on Monday. We are also pleased to announce that Congressman Phillip Roe, MD will be the Keynote Speaker for the 2017 Summer Sinus Symposium. Dr. Roe serves the First Congressional District of Tennessee. He earned his medical degree at the University of Tennessee in 1971 and practiced medicine for 31 years. Currently he serves as co-chair of the House GOP Doctors Caucus and is a member

of the Health Caucus. Congressman Roe will be giving a timely and relevant lecture entitled “Health Care Reform in Congress: Where We’ve Been and Where We’re Going.”

As always, the CME panels are packed with rhinology thought leaders who will discuss all aspects of sinonasal patient management including office-based procedures. The first day will feature panels on primary sinus surgery (Brent Senior, MD moderating), frontal sinus surgery (Michael Sillers, MD moderating), revision sinus surgery (Peter Hwang, MD moderating), office procedures (John DelGaudio, MD moderating) and complication management (Tim Smith, MD moderating). A prosection performed by Jivianne Lee, MD will be moderated by Richard Orlandi, MD. Saturday morning will start with panels on medical management (Todd Kingdom, MD moderating), post-operative management (Sarah Wise, MD moderating), and novel technology (Winston Vaughn, MD moderating). The session will end with a prosection by Amber Luong, MD that will be moderated by Kevin Welch, MD. Sunday morning will feature breakout rooms with over a dozen panels to allow attendees flexibility to chose their own program.

Throughout the course, the exhibit hall, conveniently located right across the hall from the main ballroom, will showcase the newest technology available to treat your patients and allow you to meet with our corporate partners. Our corporate sponsors have also committed to showcasing their technologies via a variety of small sessions and cadaver labs.

The main goal of the Summer Sinus Symposium is to provide high yield, state of the art, educational opportunities for ALL providers of sinonasal patient care. Improving patient care, whether in the office, surgery center or the operating room, is our number one priority. From minimally invasive techniques under local anesthesia to revision polyposis cases we will review it all.

We thank the 120 faculty members who have committed their time and look forward to seeing everyone in Washington DC in July!

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MEMBERSHIP COMMITTEE REPORT

Stacey Tutt Gray, MD, FARS

We are happy to report that we continue to have a very strong and vibrant membership base. This past year we made several improvements in the process of membership renewal and dues payment and we hope that all members will take advantage of these new options. The on-line membership renewal process has been improved and can be accessed through the personalized log-on section of the ARS website. In addition, we have started to provide dues invoice statements at our Fall meeting, and members can now make dues payments on site. We also instituted a new option for paying for 3 years of dues at the same time for a discounted fee of \$900. Many members took advantage of this option this past year. We continue to have excellent benefits for our members including a complimentary subscription to the society’s peer reviewed journal, International Forum of Allergy and Rhinology, free registration for the Summer Sinus Symposium, discounted registration fees for annual meetings, and on-line services including access to the members-only section of the ARS website.



For this issue of Nose News, we would like to highlight all of the benefits of being an ARS

member as well as a special membership category, the Fellow of the American Rhinologic Society (FARS). Becoming a Fellow of the ARS is an excellent way to show your support and dedication to the field of Rhinology. It is also a way to signal your interest in becoming more involved in the society. All committee chairs and Board members have the FARS distinction. Please visit the website, <http://www.american-rhinologic.org/fars> to learn more about the application process and the necessary qualifications. We encourage every ARS member to investigate this option and apply if they are interested. Current ARS members seeking FARS designation can submit a letter of intent, an updated curriculum vitae, a rhinologic case log and sponsorship letters from two FARS members to membership@amrhso.org. Currently there are over 200 FARS members in our society, and we would like our entire membership to be aware of this special distinction. We will have more information about becoming a FARS member at the registration booth at the Fall meeting in 2017. We hope to see you there.

OLYMPUS

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THE ARS ANNUAL MEETING - CHICAGO, ILLINOIS

Richard R. Orlandi, MD, FARS
President Elect and Program Chair

The Annual Meeting of the American Rhinologic Society will be held September 8-9, 2017. Held on the Friday afternoon and Saturday preceding the AAO-HNS annual meeting, the sessions will take place in the Renaissance Chicago Downtown Hotel, just a few blocks from Navy Pier, Grant Park, and the Art Institute of Chicago.

Following on the heels of our successful COSM meeting in San Diego and the Summer Sinus Symposium in July, the ARS annual meeting will feature impressive scientific and clinical content. Numerous scientific papers touching all aspects of rhinology chosen from scores of submitted abstracts will be presented in both combined plenary and three breakout sessions. Over 70 podium presentations and over 100 posters will provide a rich educational experience and will undoubtedly lead to robust discussions and additional research questions. Please join me in thanking the program committee for their hard work in choosing among so many submitted abstracts and creating a high quality program.



One of the highlights for our Fall meeting is the annual Kennedy Lecture. Now in its 13th year, the Kennedy Lectureship has brought us the perspectives of many leaders in the field of rhinology. This year will be no different. Timothy L. Smith, MD, MPH is the Kennedy Lecturer for 2017 and will be addressing the issues of quality of life and impact of surgery, an area where he has led considerable multi-institutional research.

Panels are another important feature of our Fall meeting. Our recent COSM meeting panels provided provocative looks at a wide range of topics, including compelling recent research advances, lessons learned by leaders in our field, the microbiome in chronic rhinosinusitis, the

individual and societal impact of CRS, the management of cystic fibrosis patients, the nasal valve, and the current status of women in rhinology. Thanks go to our moderators and panelists for providing great content and compelling discussion on these topics.

The panels for our Fall meeting will be equally engaging. Our Friday afternoon session will feature two very interesting panels, one examining the clinical impact of endotypes in CRS and another exploring the appropriateness criteria for endoscopic sinus surgery. Additional panels on Saturday will advance our understanding of nasal polyps, office rhinology, postoperative care, the nose in obstructive sleep apnea, skull base surgery outcomes, and choosing the extent of frontal sinus surgery. The evolution of industry relationships, an international perspective on challenges in rhinology, and advocacy issues for our membership will round out the panels. Finally, the rhinologic Film FESStival, an ever-popular feature of the Fall meeting, will challenge us with new advances and techniques.

There's a large amount of material and definitely something for everyone in this year's Fall meeting. I look forward to seeing you in Chicago!

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CLINICAL PERSPECTIVES - SLIT VS SCIT: WHICH ONE SHOULD DO YOU RECOMMEND, DOC?

Mohamad Chaaban, MD, Julia Tripple, MD, Sarah Wise, MD

Introduction

The prevalence of allergic rhinitis (AR) in the U.S. is 30% based on self-reported symptoms and 15% based on physician diagnosis. [1,2] AR has been shown to substantially affect quality of life, work and school performance, sleep quality and engagement in outdoor activities. [2-3] Initial treatment of AR consists of avoidance and pharmacotherapy. According to the 2015 American Academy of Otolaryngology-Head and Neck Surgery (AAOHNS) clinical practice guidelines on AR [4], clinicians may offer allergen immunotherapy (AIT) for patients who have inadequate response to symptoms with pharmacologic therapy with or without environmental controls. Additionally, AIT should be considered in patients with adverse or intolerable side effects from pharmacologic therapy. The primary forms of AIT are via the subcutaneous (SCIT) or the sublingual routes (SLIT). Currently, the only FDA approved SLIT in the United States is in tablet form for grass pollens (Timothy grass or 5-grass), short ragweed pollen, and house dust mites. Some practitioners offer aqueous SLIT drops as an option as well, although this is not FDA approved in the U.S. and is considered off-label administration.

Prior to initiating AIT, the physician will need to make sure that there are no contraindications to therapy. In general, noncompliant patients or patients with co-morbidities (significant cardiovascular disease, uncontrolled asthma) that would reduce their likelihood of surviving a systemic reaction or treatment of a systemic reaction should not undergo AIT.[5] Additional considerations should be made for patients with diagnoses of cancer, severe psychological disorders, severe immunological diseases, and pregnancy.[6] Contraindications specific to SLIT include injury or surgical intervention in the oral cavity, acute gastroenteritis, eosinophilic esophagitis, history of severe systemic reaction to any form of immunotherapy, a severe local reaction to SLIT or history of hypersensitivity to any of the inactive ingredients of the preparation. [7] AIT is not generally offered to patients under the age of 5 although there are no absolute age limits for SCIT. The FDA approved SLIT tablets have more defined age indications. [5,7]

When choosing between the two routes of AIT, the physician needs to weigh the pros and cons of each route. SCIT and SLIT are both cost-effective compared to pharmacological treatment of AR [8]; however, direct cost comparisons are still lacking particularly in polysensitized patients. We will present the arguments for use of either route for patients with AR.

SCIT argument

Efficacy: Studies on the efficacy of immunotherapy have focused on the reduction of medication

and symptom scores in AR and asthma. Thus far, there are three Cochrane meta-analyses evaluating the efficacy of SCIT and SLIT in seasonal allergic rhinitis (SAR) and perennial allergic rhinitis (PAR). [9-11] Overall assessment and indirect comparisons suggest that SCIT is more effective than SLIT. For SAR, the effect size for SCIT for both symptom and medication score were about 2 times higher than that for SLIT with no overlap in the 95% confidence for symptoms and small overlap for medication use. [9,11] For PAR, no firm conclusion can be obtained given the considerable heterogeneity in the study designs and possible non allergic factors contributing to the perennial symptoms.

When examining further evidence derived from other systematic reviews and meta-analyses, a large meta-analysis concluded that SCIT was significantly more effective than SLIT in reducing rhinitis symptom and medication scores in adults and children with SAR[12] and another showed a trend favoring SCIT over SLIT. [13] In both of these meta-analyses SCIT and SLIT were found to be more effective than placebo. Similarly, other systematic reviews and meta-analyses found that SCIT and SLIT are effective in adults and children with SAR or PAR when compared with placebo. [14-17] The evidence for efficacy for both modalities is higher in SAR and adults.

There are only four double blind randomized controlled trials that directly compare SCIT to SLIT. Three of these studies were on SAR [18-20] and one on PAR. [21] Although several of the studies found no differences in rhinitis symptoms and medication scores between the two immunotherapy treatment routes, one study showed a larger treatment effect of SCIT over SLIT[18] in SAR. Due to the heterogeneity in the study designs and the small number of patients recruited, it is difficult to make broad conclusions from these head-to-head comparison studies.

It is important to note that many of these studies reference aqueous SLIT and that currently there are no FDA approved products available in the US for aqueous SLIT. The physician should recognize that unlike SCIT there is large variability in effective dose range for allergens used in aqueous SLIT and many allergens have not been formally evaluated in large studies for aqueous SLIT. In contrast, the three FDA approved SLIT tablets have been rigorously tested in US populations, have clearly defined dose ranges and schedules and have been shown to be effective in reducing symptoms and medication scores over placebo; however, as of yet, there is still insufficient data at this point to adequately compare efficacy of SCIT to SLIT tablets. [7]

SLIT argument

Safety: There have been no reported fatalities with SLIT and reports of anaphylaxis with this route have been sporadic and isolated. [22] On the other hand, although generally well tolerated, severe systemic reactions and fatalities with SCIT have been reported. The most recent Annual surveillance study from the American Academy of Allergy Asthma and Immunology (AAAAI) reported a total of 4 fatalities in the survey results for years 2008-2013. This represents a decrease from the 3.4 fatalities per year that were reported in earlier surveys. [5,23] Because there is no standard classification of SLIT related adverse events, comparing side effects and safety between SLIT and SCIT is difficult. Additionally, since SLIT is taken at home there is significant potential for inaccurate accounting of SLIT adverse events as this relies entirely on patient report of symptoms. Local reactions are common in both and have been reported to occur in up to 70% of patients with SLIT. [24] These include throat irritations, oral pruritus, oral cavity edema, oral paresthesia, stomatitis and pharyngeal edema. [25]

Convenience to patients: According to the most recent allergen immunotherapy practice parameter update by the Joint Task Force of AAAAI/ACAAI, SCIT should only be given in a physician's office. On the other hand, only the first dose of SLIT is to be given at the physician's office and the rest taken by the patient on a daily basis at home. [5] Reduction in travel to the physician's office, time off work or school, avoidance of copays and parking fees, and other convenience factors are not insignificant to patients.

Conflicting evidence

Adherence to therapy: Adherence to therapy depends on factors related to the efficacy of treatment, cost, adverse effects and convenience. The efficacy of AIT depends on consistent exposure to the allergen and long-term tolerance is only achieved after at least 3 years of

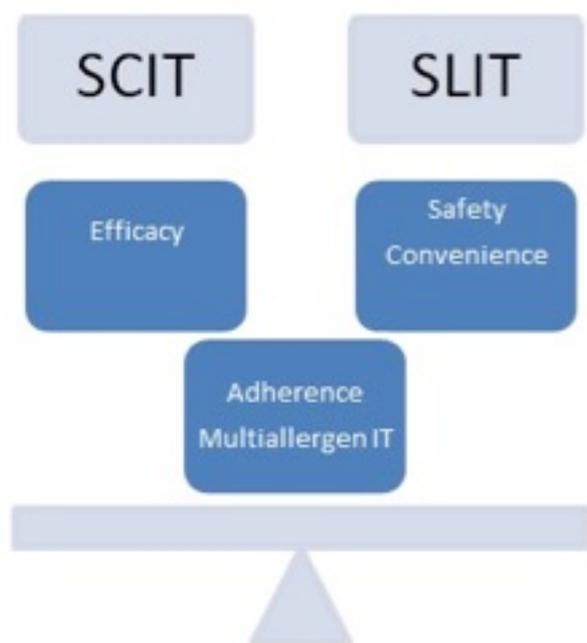
treatment. [26, 27] To the treating physician, adherence to therapy can be reliably monitored in patients receiving SCIT in the provider's office. SLIT is typically administered at home so close monitoring of adherence is less reliable. In some studies evaluating compliance to immunotherapy, SCIT has also been shown to have significantly higher compliance rates compared to SLIT [28,29]; however, there is some conflicting data regarding compliance as other studies have shown either higher compliance with SLIT [30] or no difference. [31] For SLIT, compliance can be improved in children with more frequent clinic visits. [32]

Polysensitized patient: Up to 80% of patients that are started on immunotherapy are polysensitized. [33,34] The approach in the U.S. to the management of polysensitized patients is to treat for all clinically relevant allergens in SCIT [22,34,35] and SCIT preparations contain an average of 8 allergens. [35] Despite the use of multi-allergen SCIT, a large review by Nelson [36] concluded that there is low evidence regarding the efficacy of multi-allergen therapy but more studies demonstrate efficacy in SCIT versus SLIT. For SLIT, several studies have demonstrated efficacy of monoallergen SLIT in polysensitized patients [35]. Evidence regarding efficacy of multi-allergen SLIT for polysensitized patients has been lacking. [37-39] The variability in the dosing regimens used in these studies and possibility of allergen dilution when mixing multiple allergens could explain the inconsistencies in the results.

Conclusion

The higher efficacy of SCIT is balanced by the safety profile of SLIT and patient convenience (Figure 1). Head-to-head double blind randomized controlled trials to address the controversies particularly regarding multi-allergen AIT are needed. When choosing between SCIT or SLIT, the treating physician needs to weigh the risks, benefits, cost and patient preference.

Figure 1



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RESIDENTS & FELLOWS COMMITTEE REPORT

Jamie Litvack, MD

Welcome to the ARS resident and fellows-in-training corner! The ARS has a lot of fantastic opportunities dedicated to residents and fellows-in-training. In fact, the incoming cohort of 2017-2018 rhinology fellows-in-training just got back from the annual “Incoming Fellows Advanced Rhinology and Skull Base Course,” May 4-6. Under the leadership of co-directors, Joe Han, Joey Raviv, and Seth Brown, incoming fellows learned new surgical techniques, practiced on their own cadavers and networked with future colleagues.



Want to learn more about clinical rhinology and plan for your future? Join us for the Summer Sinus Symposium in Washington DC from July 14-16. Don't miss the Women in Rhinology (WIR) guest speaker Kim Russo, CEO of George Washington University Hospital, who will be speaking about “Seven Strategies for Negotiating Your Future.”

Think you might be interested in Rhinology but not completely sure? Attend the Resident Rhinology Course before the ARS fall meeting on Sept 7-8 in Chicago. This two-day course under the direction of Zara Patel, MD, offers didactic sessions on rhinology topics, hands-on cadaver training, and an opportunity to meet and network with Rhinology faculty from around the country. Applications for positions will be sent out to Program Directors soon. Let them know you are interested and send in your application ASAP as spots fill up quickly.

Can't make the course but will be at the ARS meeting? Join us for the Annual Resident and Fellows-in-training Luncheon Panel with a catered lunch on Saturday, September 9.

On call for the fall meeting but don't want to miss out? Check out the ARS online educational content. There are “How I do it” surgical videos by Rhinology experts, a library of webinar lectures ranging from anatomy to epistaxis to CSF leaks, and educational handouts for you and your patients. You must be a member to get access to the best material. The good news is that joining is free for residents and fellows, can be done electronically, and takes less than 2 minutes. The application can be found under the membership tab at american-rhinologic.org. We look forward to seeing you at the next meeting!

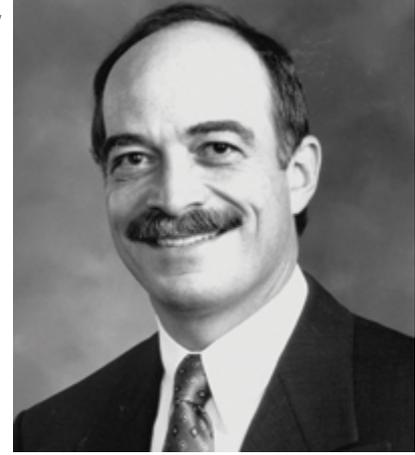
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CLINICAL PRACTICE GUIDELINE: IMPROVING NASAL FORM AND FUNCTION AFTER RHINOPLASTY-WHY?

Michael Setzen, MD, FARS

Those reading Nose News may ask, 'Why a Guideline on Rhinoplasty for the Rhinologist?'

This can simply be answered by listening to the podcast on this guideline put out by the American Academy of Otolaryngology - Head and Neck Surgery, in February 2017, and also by reading Otolaryngology-Head and Neck Surgery, February 2017 supplement and the Academy February 2017 Bulletin from which this was adapted.



The primary purpose of this guideline was to provide evidence-based recommendations for physicians who either perform or care for the rhinoplasty patient to improve patient care, promote effective diagnosis and therapy, and reduce harmful unnecessary variations in care. Despite the popularity of this procedure, there are currently no evidence-based, multidisciplinary, clinical practice guidelines to assist clinicians and patients in preoperative consultation, care, and enhancing clinical outcomes.

The Guideline has 10 Key Statements:

1. **Communicate expectations.** The clinician must elicit the motivations for surgery and expectations-why do you want a rhinoplasty and what do you expect from the surgery-you must manage expectations with respect to function and form. This will provide a more realistic goal of surgery. This discussion should be documented in the medical record.
2. **Co-morbid conditions.** The clinician should evaluate the rhinoplasty patient for any co-morbid conditions that may modify or contraindicate surgery; namely obstructive sleep apnea, body dysmorphic disorder, bleeding disorders, or the chronic use of topical vasoconstrictor intranasal drugs.
3. **Nasal airway obstruction.** This statement is of particular importance to the rhinologist because every rhinoplasty patient should be evaluated for nasal airway obstruction during the preoperative assessment. This can be carried out either with a nasal speculum or a nasal endoscope, and if the speculum does not elicit the cause of the obstruction, then nasal endoscopy must be carried out. One should evaluate the status of the septum, the inferior turbinates, the nasal valve, the osteomeatal complex, the presence of any nasal polyps and/or purulent discharge, and adenoidal hypertrophy. Rhinoplasty needs to address both function and form.
4. **Preoperative education.** The rhinoplasty patient should be informed of the inability to breathe through the nose in the first few days postop due to swelling, and any complications of surgery that could potentially occur. These patients need to understand that revision nasal surgery for function and/or form, may be necessary in some situations.
5. **Counseling for obstructive sleep apnea.** The physician should counsel the rhinoplasty patient with sleep apnea that this may indeed have an impact on the nasal airway and may affect the postoperative course. Postoperative use of a CPAP mask maybe contraindicated if lateral and or medial osteotomies are performed.
6. **Managing pain and discomfort.** The physician should educate the patient that there will be some discomfort following the surgery and pain management may be necessary.
7. **Outcome assessment.** An outcome assessment should be carried out at about 12 months after the operation. One should evaluate patient outcomes for both function and form.

The Guideline did recommend against two options:

8. **Postoperative antibiotics.** The guideline recommends that postoperative antibiotics should not be prescribed for more than 24 hours after surgery unless nasal packing and or nasal septal splints are used.
9. **Post Op nasal packing.** Surgeons should not routinely place packing in the nasal cavity of the rhinoplasty patient unless nasal packing is necessary to control bleeding.

The Guideline did recommend one option:

10. **Perioperative steroids.** This is an option that the surgeon may administer steroids at his or her discretion if necessary.

This guideline is important for the rhinologist because many rhinologists do perform rhinoplasty or work together in tandem with facial plastic surgeons where the rhinologist will take care of the functional component and the facial plastic surgeon the cosmetic component. It is hoped that this guideline will assist rhinologists in their management of the rhinoplasty patient.

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CASE OF THE QUARTER:

Samuel Helman, MD; Patrick Conley, MD

Case Description:

An otherwise healthy 54-year-old male with a long history of intermittent nasal obstruction along with facial pressure and pain was referred for evaluation. He was previously treated with antibiotics and nasal steroids with no improvement in his symptoms. In addition to his sinonasal complaints, the patient noted significant proptosis of his left eye that had taken place over the previous 6 months. He had no history of sinus surgeries and denied diplopia. Physical examination revealed that his left eye was displaced approximately 1.5 centimeters inferiorly compared to his right eye. Nasal endoscopy showed left sided mucosal edema and a polypoid mass in the middle meatus (Figure 1). A CT scan of the sinuses (Figure 2) showed opacification of the left frontal, ethmoid and maxillary sinuses. There was thinning and erosion of the left superior orbital wall with an intact orbital rim and posterior table of the frontal sinus. Given the size of the mucocele and resultant proptosis, the patient was sent for evaluation by an oculoplastic surgeon who noted 20/20 vision bilaterally with no peripheral field deficiencies.

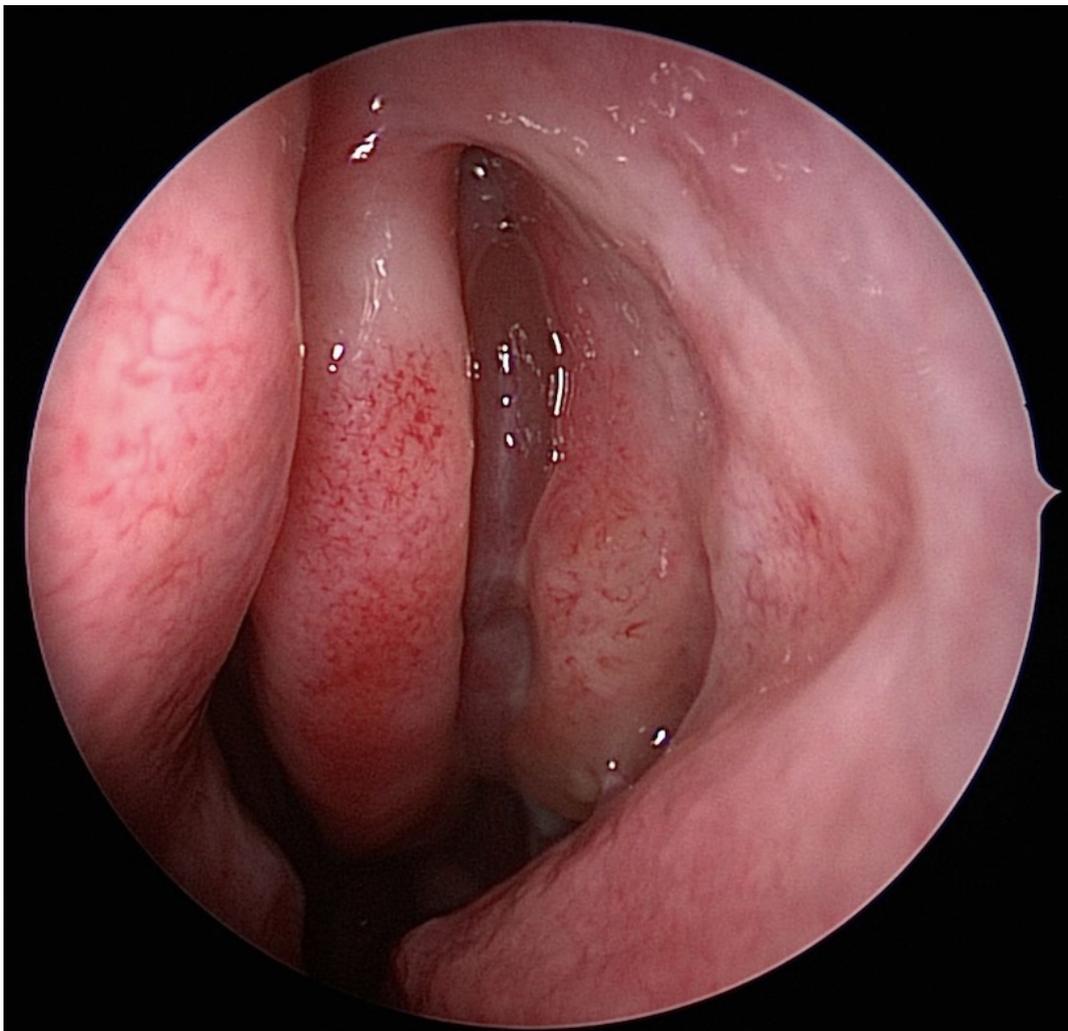


Figure 1 - An image of the pre-operative left nasal endoscopy findings showing mucosal edema and a polypoid soft tissue mass in the middle meatus.



Figure 2 - Coronal CT scan demonstrating opacification of the frontal, maxillary and ethmoid sinuses along with a frontal mucocele causing erosion of the superior orbital wall. This scan also demonstrates the inferior displacement of the orbit and proptosis.

After discussion with the oculoplastic surgeon, the decision was made to proceed to the operating room for left sided endoscopic sinus surgery. Drainage of the mucocele was accomplished via a frontal sinusotomy. A cell in the far lateral frontal sinus was also opened and drained endoscopically using curved instrumentation. Following drainage and irrigation of the frontal sinus mucoceles (Figures 3), a large dehiscence of the superior orbital wall was noted with intact periorbita (Figure 4). After consultation with the oculoplastic surgeon, the decision was made to end the surgery and plan for possible reconstructive orbit surgery as needed in the future. No posterior table defects were identified. The patient did well after the surgery. He reported no diplopia or other ocular complaints. Repeat measurement of his left eye three weeks after the surgery revealed that it was now displaced 9 millimeters inferiorly compared to the right. The frontal outflow tract remained widely patent.

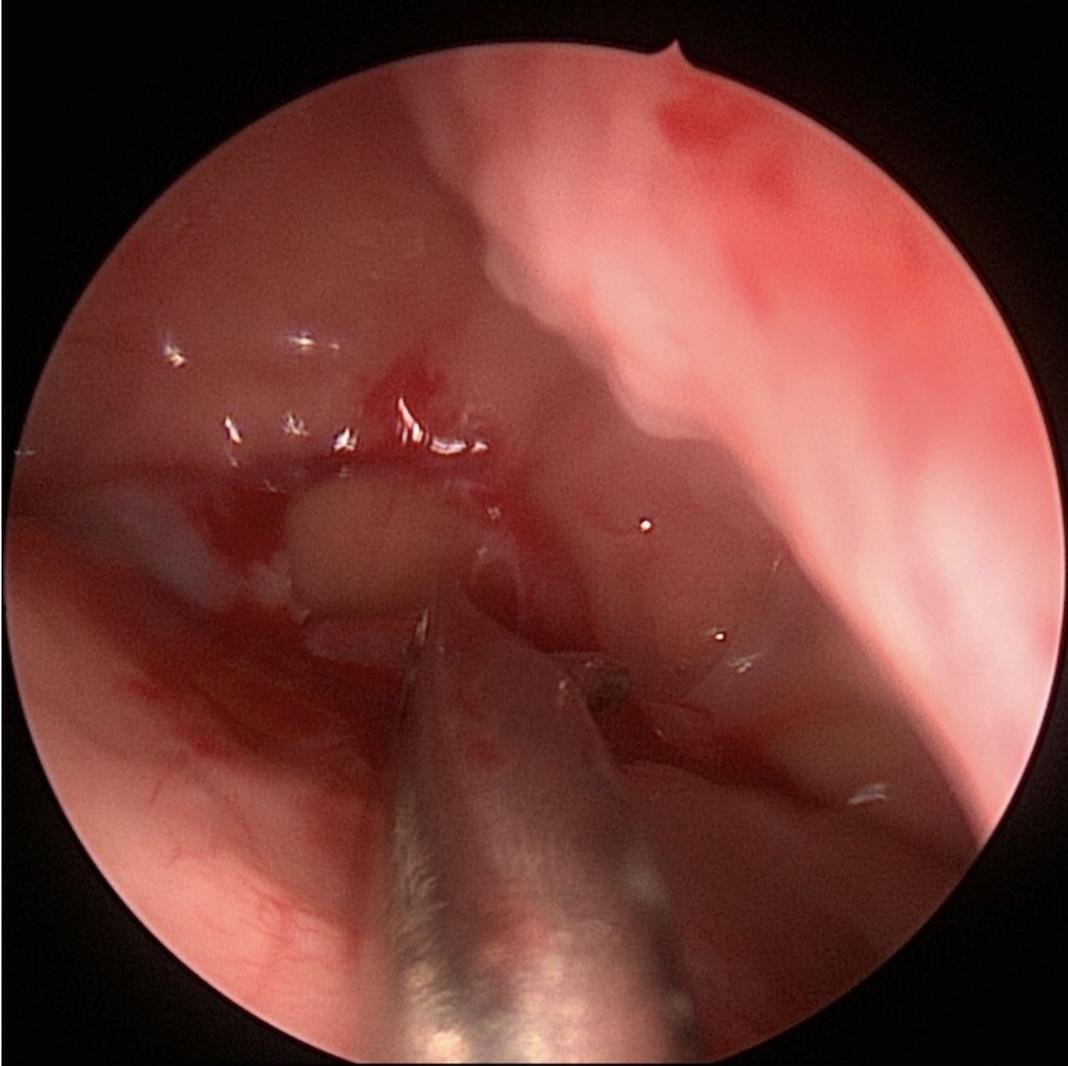


Figure 3 - After drainage of the mucocele, the frontal outflow tract was widely patent allowing for access to the far lateral frontal cells.

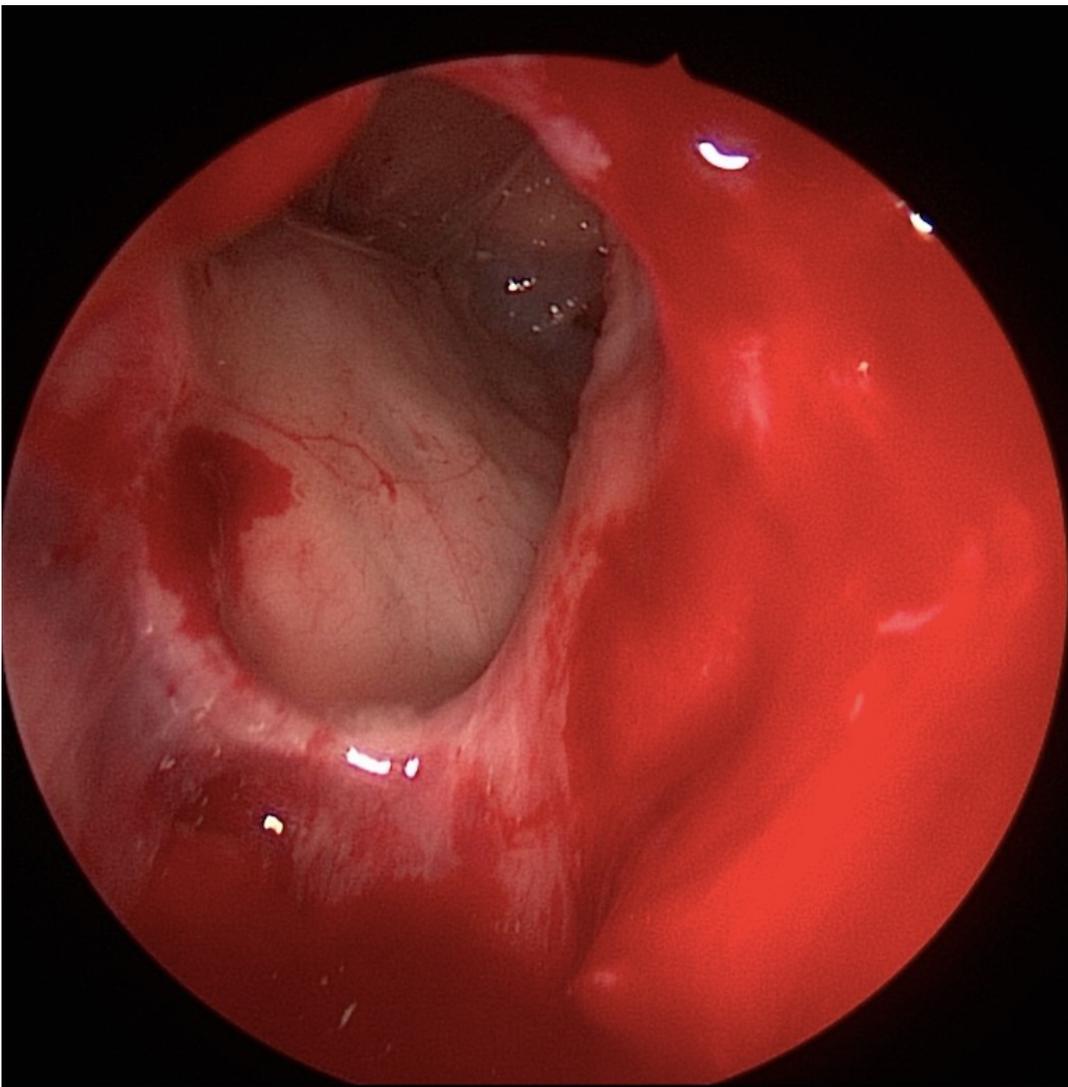


Figure 4 - Curved instrumentation including a cutting giraffe forceps were used to marsupialize the lateral frontal cell. The dehiscent superior orbital wall can also be seen in the lower portion of this image.

Mucocele management:

Frontal sinus mucoceles are mucus-filled cavities resulting from obstruction of the normal mucociliary drainage pathways. They have the histologic appearance of pseudostratified columnar epithelium with goblet cells, few ciliated cells, and a thickened submucosa. The mucocele cavity is filled with mucus and cholesterol crystals. The pathophysiology of the bony changes caused by mucoceles is multifaceted and is the product of increased local pressure from mass effect leading to bone devascularization and osteolysis. Release of inflammatory cytokines including IL1, IL6, TNF alpha and PGE2 results in bone resorption and remodeling as the mucocele expands and explains the locally-aggressive behavior of these masses.^{1, 6}

Ophthalmic complications of paranasal sinus mucoceles have been well described. In one retrospective study, 64% of patients with sinonasal mucoceles presented with periorbital swelling and 22% had diplopia. Only 6.7% of patients in that study did not have visual or orbital symptoms. Other studies have shown similar results with as many as 83% and 45% of patients with frontal mucoceles noted to have proptosis and diplopia, respectively. Based on this, involving ophthalmology and oculoplastics colleagues, if the orbit requires reconstruction, is a critical first step in the evaluation and treatment of frontoethmoidal mucoceles with involvement of the orbit.^{4, 7, 8} The same holds true when this pathology involves the skull base where care should be coordinated with a neurosurgical colleague.

Surgical treatment of mucoceles has changed as endoscopic sinus surgery has evolved. In addition to drainage of the mucocele, reconstruction of the bony defects caused by this pathology is an important pre-operative consideration. Reconstruction can be planned during the same surgery as the marsupialization or as needed after drainage. Each sinus wall carries its own risks when it is thinned or eroded by this process. Mucoceles that result in erosion of the anterior table of the frontal sinus can cause a sinocutaneous fistula or disfigurement after drainage. These patients may benefit from reconstructive cosmetic surgery. Mucoceles that cause thinning of the posterior table of the frontal sinus should be thoroughly evaluated prior to proceeding to the operating room for drainage. Posterior table erosion is a risk factor for intracranial infection, CSF leak post-operatively as well as pulsatile diplopia. An infected mucocele or a mucopyocele can portend serious orbital or neurologic infectious complications including meningitis, seizures, frontal lobe syndrome, sinocutaneous fistula, orbital cellulitis, osteomyelitis, and has been reported to cause oculomotor nerve palsy in rare cases.^{2, 3} The post-operative CSF leak is likely due to herniation of brain tissue through the defect in the skull base caused by the mucocele. When these defects in the skull base are combined with erosion of the superior orbital wall, pulsatile diplopia is also possible. In these instances, the dura is in direct contact with the periorbita and the pulsatile movement of the dura results in transfer of this pressure to the orbit leading to pulsatile diplopia. These types of cases require reconstruction of the orbital wall or posterior table to provide a barrier between the two tissues and prevent transmission of the intracranial pressure to the orbital contents.

Summary:

This case emphasizes the potential complications of sinonasal mucoceles and the pre-operative considerations the treating surgeon should address. Reconstructive surgery was not required in this case but should be considered whenever extensive bony erosion is identified. The type of reconstruction is unique to the sinus wall involved and coordination with the appropriate surgical colleague can aid in the optimal treatment of this condition.

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We want to express our sincere thanks for the generous donations to the 2017 ARS Friends in Research Campaign.

With your support, we can continue to fund the studies that provide clinical insights valuable to the care of our patients. In the past, these efforts have helped to establish the ARS and its members as the leaders in rhinologic research. This work not only advances the care of our patients through scientific innovation, but also generates important data establishing the efficacy and cost effectiveness of our care. In the current financial landscape, this is equally important to ensure that our patients have access to the treatment necessary to address their complaints. If you are interested in donating to the ARS, please visit <http://www.american-rhinologic.org/donate>.

We thank you again for your help in this worthy endeavor.

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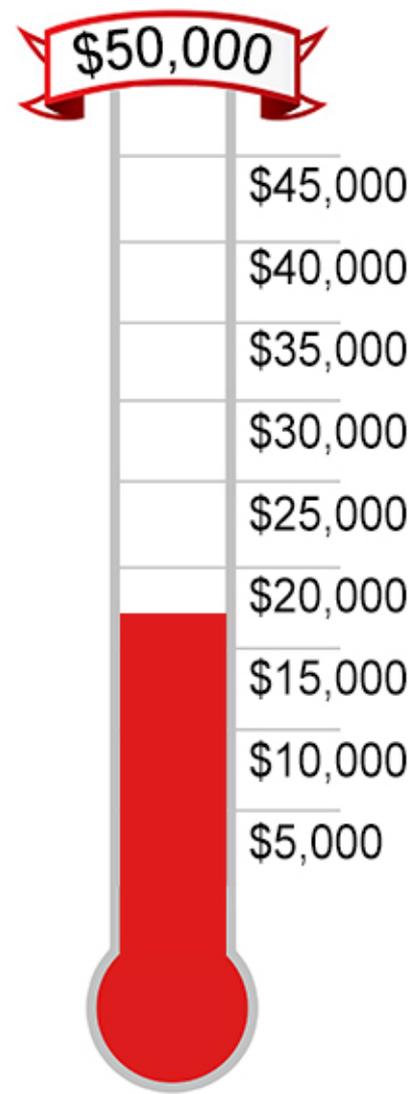
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