

# AMERICAN RHINOLOGIC SOCIETY

## 48th Annual Spring Scientific Meeting May 10-11, 2002 Boca Raton, Florida

**Objectives:** This program has been assembled to fulfill the educational needs of the membership of the American Rhinologic Society based partly on feedback from last year's meeting, as well as on conversations among the various members of the Board of Directors and Counselors.

From a large number of submitted abstracts the very best were blindly selected for presentation with a goal, however, to fulfill the perceived educational needs of the membership.

In addition, special panels were put together to augment the proper papers with the same goal in mind.

**Commercial Support:** This scientific program has been partially supported by unrestricted educational grants from Aventis Pharmaceuticals, Glaxo, Wellcome, Schering Pharmaceuticals, Bayer Pharmaceuticals, Bristol-Myers Squibb Co., Karl Storz Endoscopy-America, Inc., Medtronic Xomed, Ortho-McNeil, Smith & Nephew-ENT, Surgical Laser Technologies, Visualization Technology, Inc., Linvatec, Richard Wolf Medical Instruments Corporation.

As an accredited sponsor of CME activities, the American Rhinologic Society has adopted the standards of the ACCME and formulated a policy with regard to commercial support of educational activities. This educational program has been prepared in accordance with these standards and policies.

**DISCLOSURE STATEMENT:** In accordance with the policies on disclosure of the Accreditation Council for Continuing Medical Education and the Program/Education Advisory Committee of the American Rhinologic Society, presenters for this program have identified no personal relationships which, in the context of their topics could be perceived as a real or apparent conflict of interest. Those presenters who have identified any relationships with a commercial concern will announce the nature of that relationship at the meeting prior to their presentation.

# AMERICAN RHINOLOGIC SOCIETY

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## **Conference Schedule**

**May 9, 2002**

**American Rhinologic Society**

**1:00-2:30      Group Committee Meetings**

**1:00-2:30      Executive Committee Meeting**

**2:30-6:00      Board of Directors Meeting**

*(Rooms to be Announced)*

**1:00 pm**

**ARS Spring Scientific Session**

**Royal Palm Ballroom VI-X**

**Opening Remarks**

*Paul Toffel, MD*

*President*

*Glendale, CA*

*Donald C. Lanza, MD*

*President Elect*

*Cleveland, OH*

1:05 pm

**Current Management of Epistaxis: Isn't  
There a Better Way?**

**Moderator**

*Elie Rebeiz, MD*

**ER Management: How I Do It?**

*Steven Marks, MD*

**Evaluation of New Strategies for Epistaxis**

*Kelvin Lee, MD*

**Embolization, Ligation or Endoscopic  
Sphenopalatine Clip?**

*Eugenia M. Vining, MD*

**Hemorrhagic Hereditary Telangiectasia : Best  
Evaluation and Treatment !**

*Elie Rebeiz, MD*

## Structure & Function

### Moderators:

*Joseph Jacobs, MD*  
New York, NY

*Paul Toffel, MD*  
Glendale, CA

1:40 pm

### Arterial Ligation for Pediatric Epistaxis: Developmental Anatomy

*Glenn Isaacson, MD*  
Philadelphia, PA

**Objectives:** Anatomic studies of adult skulls and radiographs have aided in the design of operations for the surgical ligation of nasal feeding vessels. Lack of appropriate specimens has prevented similar studies for improved management of pediatric epistaxis. We performed an anthropometric study of archeological specimens to learn the effects of growth on key anatomic relationships.

**Study design:** Observation anatomic study

**Methods:** We studied the skulls of children who died between 200 and 8000 years ago, recovered from archeological digs around the world. Measurements of the distances from the posterior lacrimal crest to the foramina of anterior and posterior ethmoidal arteries and optic canal, and the pyriform aperture to the foramen of the sphenopalatine artery were made and compared to postnatal age, estimated from facial growth and dental eruption patterns.

**Results:** There is rapid growth in the orbit and midface during the first six years of life and gradual growth between seven years and adulthood. The length of the medial wall of the orbit doubles during development with disproportionate enlargement of its anterior half.

**Conclusions:** Arterial ligation is sometimes required for intractable pediatric epistaxis, especially after trauma. The changing relationships of critical structures in the orbit must be understood to allow safe ethmoidal artery ligation. The transantral approach to the maxillary artery is greatly limited by lack of midfacial development and maxillary pneumatization. We describe the necessary parameters for endoscopic, transnasal sphenopalatine artery ligation in growing children.

1:47 pm

**Rhinoplasty from the Goldman/Cottle  
Schools to the Present:  
A Survey of 7,447 Personal Cases**

*Fred J. Stucker, MD  
Shreveport, LA*

Nasal surgery techniques in the 50's evolved and were taught in courses by strong willed pioneers like Goldman and Cottle. Residencies during this period rarely prepared their trainees to undertake nasal reconstructive surgery. As a consequence, courses were the mainstay of educating the practicing Otolaryngologist in nasal surgery for the next 20 years. As a result, men such as Cottle and Goldman delivered to our specialty ranks a steady stream of dedicated disciples. Because of their strong personalities and emersion teaching techniques, the attendees espoused the dictates of their mentors. This often resulted in a lifetime of rigid adherence to the precepts and techniques of the different schools. It is interesting that many attendees would take these courses several times. In the 1960's and 1970's, there emerged a number of more inclusive leaders such as Anderson, Wright and Tresley. Most of these individuals attended courses by Cottle and Goldman. These men were less dogmatic and rigid and more receptive to and assimilated alternative views and the American Academy of Facial Plastic and Reconstructive Surgery emerged. In the ensuing 25 years, many contributors used the open forums of the AAFPRS to build upon the tenets of the early pioneers. Today residencies are the mainstay of training and subscribe to refinements and contributions from hundreds. However, in spite of the high level and consistency of our training programs we must realize the foundation of the modern rhinoplasty rests solidly on the shoulders of the early pioneers.

The successes obtained in rhinoplasty surgery today have reached a profound level of exactness and sophistication. The open exchange of ideas along with the high level of our residencies and fellowships, which have evolved over the past 35 years, increases the chances for a predictable outcome. In spite of a paucity of any new ideas reported in the literature, improvements are readily apparent. These better results appear to be the consequences of surgical refinement and precision of previously described techniques. A broad foundation of techniques utilized by any single surgeon also contributes to the higher standard now achieved.

The senior author has critically reviewed his personal cases over the past 35 years. The various techniques he has employed in 7,447 rhinoplasties are documented on an annual basis and reviewed against a background of influential surgeons and events that have influenced him. National trends are noted and discussed as rhinoplastic techniques have progressed from tissue



excision to its preservation and replacement. Common techniques are discussed as seen through the eyes of a single surgeon and how his and others experiences have modified acceptance and/or rejection of various surgical maneuvers. It is amusing that some of the unique and original contemporary concepts are lifted unaltered from the writings of the Cottle and Goldman.

**1:54 pm**

**Discussion & Questions**

*Marvin Fried, MD*

*Bronx, NY*

*Paul Toffel, MD*

*Glendale, CA*

1:59 pm

## Age-Related Olfactory Dysfunction – Cellular and Molecular Characterization

*David B. Conley, MD*  
*Alan M. Robinson, PhD*  
*Michael J. Shinnars, MD*  
*Robert C. Kern, MD*  
*Chicago, IL*

Clinical studies indicate an age-related decline in olfactory sensation associated with a decrease in the size of the peripheral olfactory epithelium. Olfactory receptor neurons (ORNs), present within this epithelium, are directly exposed to the external environment rendering them susceptible to injury and programmed cell death (apoptosis). Adult mammals, however, have the ability to replace ORNs throughout life. This homeostatic mechanism fails with age resulting in a decrease in the population of ORNs. The question remains whether this age-related failure of olfactory sensation is a result of a decrease in neural regeneration or an increase in cell death.

Three groups of animals were studied: young (12 weeks), old (24 months), and young bulbectomized rats. Bulbectomy is a standard model for ORN injury and is known to induce apoptosis. The ribonuclease protection assay (RPA) was first utilized in these three groups to assess the expression of pro and anti-apoptotic genes. Secondly, the TUNEL assay was utilized to assess the number of cells undergoing apoptosis (apoptotic index or AI). RPA data demonstrate an increase in bax, bcl-xl, and caspase3 in both bulbectomized and aged rats compared to younger counterparts. The molecular data was then correlated with AI for the three groups.

These findings demonstrate an increase in pro-apoptotic related gene expression in aging similar to that seen following injury. These data support the hypothesis that the decline in clinical olfactory sensation with age may be at least in part associated with an increase in neuronal fragility.

{Supported by a grant from the American Rhinologic Society}

2:06 pm

**Efficacy of Endoscopic Sinus Surgery Simulator (ES3) in Teaching Paranasal Sinus Anatomy and Basic Surgical Skills to Medical Students**

*Michelle S. Marrinan, MD*

*Zan Mra, MD*

*Todd R. Olson, Ph.D.*

*Marvin P. Fried, MD*

*Bronx, NY*

**Introduction:** Endoscopic sinus surgery involves a significant learning curve. Virtual reality applications may aid in this training. The Endoscopic Sinus Surgery Simulator (ES3) has shown promising results in improving resident skills in sinus surgery. The current study looks at the ES3 as a teaching tool for medical students.

**Methods:** Medical students were randomly assigned to either the simulator group or control group. Both groups underwent a simulated sinus surgery session on a cadaver. The simulator group underwent two training sessions on the ES3. Both groups then repeated the cadaver session. Cadaver sessions were videotaped and assessed by two attending surgeons with an inter-rater reliability of 0.8. Assessments included identification of landmarks and errors in technique.

**Results:** Of 26 students enrolled, 18 completed the study. The average number of positive identifications was 7.5 for the first session improving to 8.0 in the second. The number of errors declined from 10.4 to 14.1. The length of time to completion increased from 288 to 453 seconds. There was no appreciable improvement in the simulator group over the control group.

**Conclusions:** This preliminary study failed to show efficacy of the ES3 in teaching sinus anatomy and surgical skills to medical students. Issues included high drop out rates, cadaver variability, structure of training sessions and outcome measurements. Assessing surgical skills in a standardized manner is a difficult, labor intensive process with multiple variables. Our study demonstrates the pitfalls associated with this type of assessment despite a promising educational tool and offers insight into future investigations.

2:13 pm

**Discussion & Questions**

*Karen Fong, MD*

*Portland, OR*

2:18 pm

**Three Dimensional Computed  
Tomographic Analysis of Frontal Recess  
Anatomy in Cases of Frontal Sinusitis**

*James N. Palmer, MD*

*Frederick A. Kuhn, MD*

*Ron E. Swain MD*

*Philadelphia, PA*

The frontal recess is often considered the key anatomic region in frontal sinus disease, as disease in the frontal recess may prevent drainage of the frontal sinus proper. Because endoscopic frontal recess dissection is considered the first line of treatment for surgical frontal sinus/recess disease, precise anatomic knowledge of this region is paramount. To further our understanding of frontal recess anatomy and its relationship to frontal sinusitis, we reviewed the CT scans of 50 consecutive cases of frontal sinusitis, many which had undergone previous operation (100 anatomic sides). The CT scans were performed as axial plane 1mm cuts, and the data were fed onto a workstation that allowed reconstruction in coronal and sagittal planes, as well as the ability to scroll through serial images. Each case of frontal sinusitis was reviewed, and all anatomic cells and structures identified on the three planes of analysis were recorded. The population was 28 women, 22 men, with an average age of 46. Eleven different anatomic cells and or structures of the frontal recess were recorded, with the prevalence as follows: Agger nasi cell (72%), Supraorbital ethmoid cell (40%), Frontal sinus cells of Type I (22%), Type II (3%), Type III (4%), and Type IV (4%), Intrafrontal sinus septal cell (30%), Recessus terminalis (18%), Frontal bullar cell (16%), Suprabullar cell (9%), and frontal recess osteoma (1%). Twelve patients had symmetric findings, and the most common grouping of anatomic findings were: Agger nasi cell only (5%), Agger nasi cell and supraorbital ethmoid cell (9%), and the triad of agger nasi, supraorbital ethmoid, and intrafrontal sinus septal cell (12%). The frontal recess comprises a very highly varied anatomic complex of cells. Knowledge of the precise anatomic detail is important prior to any endoscopic surgical intervention in this region.

2:25 pm

## Frontal Cells: A Critical Variant of the Frontal Recess

*Tanya K. Meyer, MD*

*Mehmet Kocak, MD*

*Michelle M. Smith, MD*

*Timothy L. Smith, MD, MPH*

*Milwaukee, WI*

**Introduction:** Described by Schaefer in 1916, frontal cells have been implicated as a potential cause of frontal recess obstruction. Little is known of frontal cells as they are the subject of few studies. The object of this study was to determine the prevalence of frontal cells and other anatomic variants of the frontal recess and examine their interrelationships.

**Methods:** Coronal sinus computed tomography (CT) scans performed from January 2000 to May 2001 were evaluated for presence of frontal cells, other anatomic variants, and sinus disease. Three millimeter contiguous coronal scans were formed and filmed with standard bone algorithm. Frontal cells were classified according to the system proposed by Bent and Kuhn (1994).

**Results:** 458 CT scans were accepted for data collection. In this population, 16.8% of individuals had frontal cells. By category, 13.1% had type I, 3.3% type II, 0.7% type III, and 1.3% type IV frontal cells. Individuals with frontal cells had an increased rate of concha bullosa as compared to individuals without frontal cells (40.3% v. 26.2%,  $p=0.02$ ). The rate of pneumatized crista galli (6.3%), intersinus cell (12.7%), or frontal sinusitis (26.2%) was not statistically different among patients with frontal cells (all types) as compared to patients without frontal cells.

**Conclusions:** The prevalence of frontal cells among a population presenting with sinonasal complaints is 16.8%. Frontal cells are associated with concha bullosa, and should be searched for when this variant is noted on pre-operative CT scans.

**2:32 pm**

**Atrophic Rhinitis:  
A New Treatment Technique**

*Michael Friedman, MD*

*Hani Ibrahim, MD*

*Chicago, IL*

**Introduction:** Our objective is to describe a new technique for treatment of atrophic rhinitis.

**Methods:** This is a prospective pilot study designed to treat a small group of patients with severe atrophic rhinitis. Six patients with severe symptoms of atrophic rhinitis were included in the study. All patients had extensive and prolonged attempts at classical palliative treatment without benefit. Three patients had atrophic rhinitis of unknown origin and three patients had iatrogenic atrophic rhinitis secondary to inferior turbinate resection. All patients were treated by turbinate or lateral nasal wall augmentation with homograft skin commercially available (AlloDerm«). The skin was implanted into a submucosal pocket. Subsequent injection of micronized skin (Cymetra«) was used to augment the grafts.

**Results:** In patients with some residual turbinate, the augmentation graft resulted in dramatic improvement. In patients with no residual turbinate, creation of a turbinate-like structure on the lateral nasal wall was of no value.

**Conclusions:** Turbinate augmentation with homograft skin may be a valuable procedure in some patients with atrophic rhinitis.

**2:39 pm**

**Discussion & Questions**

*Joseph Jacobs, MD*

*New York, NY*

*Stilianos Kountakis, MD*

*Charlottesville, VA*

**2:45 pm**

**Break with Exhibitors**

## Procedure Advances

### Moderators:

*Marvin Fried, MD*  
*Bronx, NY*

*Stilianos Kountakis, MD*  
*Charlottesville, VA*

**3:15 pm**

### **Endoscopic Maxillary Sinus Rehabilitation and Drainage of Mucocoeles after Failed Caldwell-Luc Procedures**

*James N. Palmer MD*  
*Frederick A. Kuhn MD*  
*Ron E. Swain MD*  
*Philadelphia PA*

Prior to the endoscopic era, the Caldwell-Luc operation was the primary surgical procedure to treat chronic maxillary sinusitis. Some patients experience long term failure from Caldwell-Luc, expressed as pressure, pain, and recurrent infection. In many of these patients, failure is due to a mucocoele in the lateral most portion of the maxillary sinus that does not communicate with the nasal cavity itself. Previously, surgical treatment included a revision Caldwell-Luc operation, with the attendant pain, scarring, and risk of damage to the infraorbital nerve. We have developed an endoscopic procedure that will rehabilitate the maxillary sinus and allow drainage into the nasal cavity. The procedure is performed with computer-assisted surgical navigation, and includes endoscopic uncinectomy, wide maxillary antrostomy through the natural maxillary ostium, and then use of frontal sinus curettes and punches to open the lateral cavity and drain it into the larger maxillary sinus. The newly created pathway is held open by placement of a soft stent for two weeks. Endoscopic maxillary sinus rehabilitation has been performed 6 times for the indication of chronic maxillary pain and pressure after long-term (4-22 years) failure post Caldwell-Luc operation. 2 patients had infection in the lateral cavity, and 4 had mucocoeles. Patency and resolution of the pain was achieved in 100% of cases, with follow up ranging from 9 months to 4 years. Endoscopic rehabilitation of the maxillary sinus with a soft stent after failed Caldwell-Luc is a useful and safe treatment option to revision Caldwell-Luc procedure.

3:22 pm

**Discussion & Questions**

*Stilianos Kountakis, MD*  
*Charlottesville, VA*



3:25 pm

## **A Stepwise Surgical Correction of the Crooked Nose**

*Fred J. Stucker, MD*  
*Shreveport, LA*

The surgical correction of the crooked nose is often a frustrating undertaking because of its frequent failure. The recurrence of the preoperative abnormality is directly related to failure to recognize the etiology which compromises the subsequent corrections. The surgical technique is doomed if understanding the pathology is faulty.

It is the author's contention that the skeletal underpinnings must be appreciated and measured surgical maneuvers undertaken if there is to be any hope of a successful outcome. A deliberate methodic analysis of the basic anatomy of the crooked nose precedes our stepwise procedure for its correction. The fundamental contributions of the septum, bony dorsum, and cartilage dorsum of the crooked nose are offered. The surgical corrections of these areas are presented in a stepwise fashion. The presentation is a compilation of the findings in the author's surgical correction of 200 consecutive crooked noses.

**3:32 pm**

**The Use of Cranial Bone Grafts for  
Endoscopic Repair of Skull Base Defects**

*William E Bolger, M.D., F.A.C.S.*

*Kevin McLaughlin, M.D.*

*Philadelphia, PA*

With the introduction and subsequent widespread acceptance of endoscopic surgery, otolaryngologists are increasingly being called upon to care for patients with cerebrospinal fluid rhinorrhea and meningoencephaloceles. Patients with large encephaloceles and skull base defects present a special challenge. Graft material selection for reconstruction is especially important in large defects. We present our experience with cranial bone grafts in treating this important entity. The bone graft is part of a multilayered closure and is placed in the epidural space to reconstruct the bony skull base while temporalis fascia covers the defect within the sinus cavity. The bone graft serves to prevent future encephalocele formation while the fascia prevents cerebrospinal fluid leak and ascending meningitis.

Our clinical experience was reviewed from 1998-2001. Study parameters included defect size, cranial bone graft harvest site and size, and graft appearance on post operative follow up. Study results revealed that 20 patients underwent defect repair with cranial bone graft. The average defect was approximately 1.0cm x 0.4 cm, 10 defects were located in the ethmoid roof, 7 in the sphenoid, and 3 in the posterior table of the frontal sinus. Donor sites included 4 parietal and 16 mastoid cortex. Grafts healed well and all defects remained closed on endoscopic and computerized tomographic follow up. All donor sites healed well. Our experience indicates that cranial bone graft is an excellent material for endoscopic reconstruction of skull base defects. It confers special advantages in large defects, in defects with complex three dimensional characteristics and in patients with high volume CSF leaks.

**3:39 pm**

**Discussion & Questions**

*Marvin Fried, MD*

*Bronx, NY*

*Paul Toffel, MD*

*Glendale, CA*

## Neoplasia and Their Management

### Moderators:

*William E. Bolger, MD*  
*Philadelphia, PA*

*Carol Bradford, MD*  
*Ann Arbor, MI*

**3:44 pm**

### Diagnosis and Pathology of Unilateral Maxillary Sinus Opacification

*Brian A. Kaplan, MD*  
*Stilianos E. Kountakis, MD, PhD*  
*Charlottesville, VA*

**Introduction:** Determine the frequency, diagnostic criteria, and etiology of unilateral maxillary sinus opacification.

**Methods:** A prospective analysis was performed of patients presenting to a tertiary care rhinology practice with complaints of chronic sinusitis and or acute exacerbation. Fifty consecutive patients were identified with unilateral maxillary sinus opacification on CT scan after at least a 3-week maximum medical therapy for sinusitis. The study population comprised thirty men and twenty women with a mean age of 46.7 years. All patients completed a symptom score questionnaire, received nasal endoscopy, and CT imaging. Patient symptoms, endoscopic and radiographic findings were analyzed to determine patterns related to final diagnosis.

**Results:** All fifty patients underwent functional endoscopic sinus surgery. Each surgical specimen was sent for pathologic confirmation of the diagnosis. Thirteen mucocoeles, thirteen cases of nasal polyposis, seventeen cases of acute or chronic sinusitis, and seven cases of inverting papilloma were identified. Endoscopic and radiographic appearances were correlated with each disease process.

**Conclusion:** Unilateral maxillary sinus opacification is a relatively common finding. Early identification of inverting papillomas and mucocoeles may avoid delay in surgical intervention, while acute sinusitis and nasal polyposis can initially be managed medically. Careful history, endoscopic examination, and radiographic studies can often determine the responsible disease process.

**3:51 pm**

## **Endoscopic Resection of Inverted Papilloma**

*Roy R. Casiano, MD  
Sarita Kasa, MD  
Robson Capasso, MD  
Miami, FL*

**Objective:** To evaluate the efficacy and safety of endoscopically resecting paranasal sinus

inverted papillomas at a tertiary medical center.

**Methods:** Over a 9 year period thirty-eight patients with a diagnosis of inverted papilloma underwent endoscopic resection at the University of Miami/Jackson Memorial Medical Center. The study group consists of 9 females and 29 males with a mean age of 60.5 years (range of 40 to 88 years) enrolled in a clinical database. All of the patients were followed endoscopically at regular intervals on an outpatient basis.

**Results:** Over 50% of the patients had extensive disease by computer tomography/MRI and clinical examination. All but 2 had unilateral disease. An association with chronic inflammatory polyps (clinically and pathologically) was observed in 14 out of 38 patients (37%). Follow-up ranged from 18 to 99 months (mean of 36 months). There have been 7 recurrences (18%). Five of these have been managed in the office under topical anesthesia. Two recurrences were managed surgically in the operating room. All of the patients been free of disease. Complications included an intraoperative CSF leak (2), temporary infraorbital hypesthesia (3), and periorbital echymosis (2). Carcinoma was found in four patients (11%), who received radiotherapy and remain free of disease.

**Conclusion:** Endoscopic resection of inverted papilloma is safe and effective. The final cavity should allow for adequate postoperative surveillance and potential resection of recurrences in the office setting, without the need for a return to the operating room in most patients. The association of inverted papilloma with chronic inflammatory polyps warrants further study.

**Conflict details:**

Gyrus – Consultant

Xomed – Consultant

Bayer – Consultant

**3:58 pm**

## **Discussion & Questions**

*Carol Bradford, MD  
Ann Arbor, MI*

**4:10 pm**

## **Endoscopic Treatment of Fibrous Dysplasia – The Role of Image-Guidance**

*Mark Samaha, MD*

*Ralph Metson, MD*

*Boston, MA*

**Introduction:** Although endoscopic techniques have greatly enhanced the ability to treat sinonasal fibrous dysplasia through an intranasal approach, the difficulty in monitoring depth of bone removal along the skull base remains a technical challenge. The purpose of this study was to evaluate the utility of image-guidance systems for the endoscopic resection of fibrous dysplasia.

**Methods:** Eight endoscopic resections of sinonasal fibrous dysplasia were performed in 6 patients utilizing a microdebrider or drill in conjunction with an image-guidance system. The mean age was 44.2 years (range 34 to 63 years). Indications for surgical intervention were chronic sinusitis (4 patients), sphenoid mucocele (1), and compressive optic neuropathy (1). Average follow-up was 29.7 months (range 7 to 61 months).

**Results:** The use of an image-guidance system allowed the surgeon to monitor the depth of bone removal to less than 2 millimeter accuracy relative to the intracranial cavity and orbit. No external or intraoral incisions were required, and there were no intraoperative complications. Surgery achieved resolution of symptoms in all patients with chronic sinusitis and mucocele. The patient with optic neuropathy regained visual acuity, but required additional surgery because of continued dysplastic bone growth.

**Conclusion:** Image-guidance systems are ideally suited for the endoscopic treatment of patients with fibrous dysplasia involving the skull base. Because of the loss of surgical landmarks in these patients, image-guidance systems are invaluable for precise monitoring of the depth of bone removal along the skull base and may therefore enhance the safety and efficacy of such surgery.

**4:17 pm**

## **Discussion & Questions**

*William E. Bolger, MD*

*Philadelphia, PA*

## Pathophysiology of Sinonasal Disease

### Moderators:

*B.J. Ferguson, MD*  
*Pittsburgh, PA*

*Bradley Marple, MD*  
*Dallas, TX*

4:22

### Is Empiric Therapy Sufficient for Acute Infections in Chronic Sinusitis Patients?

*Christopher Church, MD*  
*Winston Vaughan, MD*  
*Susan M. Poutanen, MD, MPH*  
*Ellen Jo Baron, PhD*  
*Palo Alto, CA*

**Introduction:** Culture-directed antimicrobial therapy for patients with acute infections in chronic sinusitis is often recommended. The microorganisms identified in cultures of purulent sinus secretions from such patients were reviewed to determine if empiric antimicrobial therapy might have been a sufficient treatment approach.

**Methods:** A retrospective review of sinus cultures obtained by one rhinologist in a tertiary-care practice over a 25-month period was conducted. Specimens for aerobic bacterial, fungal and mycobacterial cultures were obtained using an endoscopic aspiration technique. One university clinical laboratory processed all specimens.

**Results:** A total of 1033 specimens from 467 patients were processed. Of these, 1030 were set up for aerobic bacterial culture, 1027 for fungal culture and 2 for mycobacterial culture. Final culture and susceptibility results were provided by the laboratory 3-5 days after submission. 84% of all specimens showed growth. 2095 organisms were isolated: 73% aerobic bacteria and 27% fungi. 33% of the bacterial isolates were gram-negative species. The most commonly isolated organisms included coagulase-negative staphylococci (19%), *Staphylococcus aureus* (12%), *Aspergillus fumigatus* (8%), *Pseudomonas aeruginosa* (6%), and alpha-hemolytic streptococci (6%).

**Conclusions:** The high proportion of fungal and gram-negative organisms seen in this cohort suggests that empiric antimicrobial therapy may be less effective than culture-directed therapy. Outcomes studies, including cost-benefit analyses, are needed to verify the differences between empiric and culture-directed therapies.

4:29 pm

## Chronic Sinonasal Disease in Patients with Inflammatory Bowel Disease

*David T. Book, MD*  
*Timothy L. Smith, MD, MPH*  
*Justin P. McNamar, BS*  
*Robert J. Toohill, MD*  
*Milwaukee, WI*

**Objective:** To explore the possible relationship between inflammatory bowel disease (IBD) and chronic sinonasal disease.

**Study Design:** Cross-sectional study

**Methods:** Patients with inflammatory bowel disease at a tertiary medical center IBD clinic were eligible for evaluation. Patient demographic data and information regarding IBD diagnosis and management, sinonasal disease diagnosis and management, and complications related to these diagnoses was gathered by retrospective chart review and standardized survey. The chi square test was used for statistical analysis.

**Results:** The records of 247 eligible IBD patients were reviewed and surveys sent to all. One hundred sixty six (67%) surveys were returned and analyzed. IBD patients had Crohn's Disease (CD) (72%) or ulcerative colitis (UC) (28%). Overall, 47% of IBD patients reported chronic sinonasal disease symptoms. Patients with CD had a higher prevalence of sinonasal disease than those with UC (53% v. 32%,  $p < 0.02$ ). The sub-group of CD patients with obstructive bowel complications had the highest prevalence of sinonasal disease (68% v. 27%;  $p < 0.001$ ), with 23% reporting chronic sinusitis, 14% reporting chronic rhinitis, and an additional 31% reporting chronic nasal or sinus symptoms.

**Conclusions:** The prevalence of chronic sinonasal disease is elevated in patients with IBD, occurring in approximately half of patients seen at a tertiary IBD center. Crohn's disease patients experiencing obstructive complications had significantly increased rates of sinonasal disease. The relationship of chronic sinonasal disease and CD is not understood, but may be related to partial obstruction of the lower bowel or a systemic inflammatory process.

4:36 pm

## Discussion & Questions

*Bradley Marple, MD*  
*Dallas, TX*

4:41 pm

## Spontaneous Nasal Meningoencephaloceles and Empty Sella Syndrome: A Common Pathophysiology?

*Rodney J. Schlosser, MD*

*William E. Bolger, MD*

*Philadelphia, PA*

**Introduction:** Spontaneous, nasal meningoencephaloceles and empty sella syndrome represent similar conditions: herniation of arachnoid/dura and cerebrospinal fluid (CSF) through anatomically fragile sites within the skull base and sellar diaphragm, respectively. This population presents with extensive pneumatization of the paranasal sinuses and broad attenuation of the skull base. When combined with pulsatile intracranial pressure, development of meningoencephaloceles and herniation of intracranial contents into the sella occurs. The objective of this study was to examine the association between spontaneous encephaloceles/CSF leaks and empty sella syndrome due to their potential common pathophysiology.

**Methods:** Retrospective.

**Results:** Fourteen patients were treated for spontaneous, non-traumatic encephaloceles between 1996 and 2001. All 14 patients had associated CSF leaks, five patients had multiple simultaneous encephaloceles. Eleven of fourteen were obese females (mean body mass index 33.3 kg/m<sup>2</sup>). Ten of ten had empty or partially empty sella on radiographic imaging available for review. Only one defect was actually located in the sella turcica. Others were in lateral sphenoid recess (8), ethmoid roof (3), cribriform (2), supraorbital ethmoid/posterior frontal recess (2), central sphenoid anterior to optic chiasm (2), and frontal sinus (2) for 20 total defects. Mean follow-up was 7 months with 100% success in closure of the defects.

**Conclusions:** Spontaneous cranionasal fistulae resulting in meningoencephaloceles and CSF leaks are strongly associated with empty sella syndrome. The underlying pathophysiology probably represents a mild form of intracranial hypertension with a predisposition for anatomically weakened sites within the skull base. Modern otolaryngologists should be familiar with this disease entity and its treatment.

**Conflict details:**

Gyrus – Consultant



4:48 pm

## Analysis of Blood Leukotriene Levels in Aspirin Sensitive Patients

*James M. Chow, M.D.*

*Maywood, IL*

**Introduction:** Roughly 500,000 patients have Samter's triad (aspirin sensitivity, nasal polyps and asthma). This association may be possibly secondary to release of inflammatory mediators such as leukotrienes. This study was undertaken to evaluate changes in blood leukotriene levels in aspirin sensitive patients (ASP) after exposure to increasing concentrations of aspirin.

**Methods:** Ten patients known to have Samter's triad were studied. All Samter's triad patients had nasal polyps and suffered from a severe asthmatic attack after aspirin ingestion. Ten healthy patients without nasal polyps, bronchial asthma and aspirin sensitivity served as a control group. Six mls of blood were collected from each patient and incubated with aspirin concentrations of 0 mg/ml, 1 mg/ml, 5 mg/ml, and 10 mg/ml. These samples were analyzed using a Peptido-leukotriene enzyme immunoassay kit in order to measure serum leukotrienes C4 and D4 levels.

**Results:** Leukotriene levels (mg/ml) in ASP were 991.2 +/-28.3, 1965.3 +/- 24.7, 1810.7 +/-18.7, 1401.9 +/-25.5 after exposure to aspirin concentrations of 0 mg/ml, 1 mg/ml, 5 mg/ml, and 10 mg/ml, respectively. Leukotriene levels (mg/ml) in controls were 108.5 +/- 3.9 (P=0.01), 951.5 +/- 12.7 (P=0.03) 1298.2 +/- 8.9 (P=0.08) and 1095.0 +/- 15.0 (P=.4) after exposure to the same concentrations of aspirin as above.

**Conclusions:** These results indicate that patients with Samter's triad have markedly elevated levels of serum leukotriene levels compared to controls even without aspirin exposure. Additionally, aspirin exposure causes a greater increase in serum leukotriene levels in patients known to have Samter's triad compared to controls.

4:55 pm

## Discussion & Questions

*B.J. Ferguson, MD*

*Pittsburgh, PA*

5:00 pm

**Socioeconomic Issues Confronting  
Practicing Rhinologist &  
Business Meeting of ARS**

**Moderators:**

*Paul Toffel, MD  
Glendale, CA*

*Donald C. Lanza, MD  
Cleveland, OH*

Notes: \_\_\_\_\_  
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**8:00 am**

**Combined AAOA &  
ARS Scientific Session**

**Opening Remarks**

*Richard Mabry, MD*  
*Dallas, TX*

*Paul Toffel, MD*  
*Glendale, CA*

**8:10 am**

**Allergic/ Non-Allergic Inflammation  
and Rhinosinusitis**

**Moderator:**

*Bruce Gordon, MD  
Hyannis, MA*

**Best Allergy Avoidance Measures:  
Do They Work?**

*Bruce Gordon, MD  
Hyannis, MA*

**Food Allergy And Upper Airway  
Inflammation: Myth or Science?**

*James Hadley, MD  
Rochester, NY*

**Aspirin Sensitivity, Leukotriene Blockers,  
& Rhinosinusitis**

*B.J. Ferguson, MD  
Pittsburgh, PA*

**Anti-Ige or Anti-Interlukin Therapy:  
Which and When?**

*John Krause, MD  
Port Orange, FL*

## Outcomes in Chronic Rhinosinusitis

### Moderators:

*Andrew Goldberg, MD*  
*San Francisco, CA*

*Thomas Tami, MD*  
*Cincinnati, OH*

**8:45 am**

### A New Staging System Based on Chronic Sinusitis Symptoms

*Peter J. Catalano, MD*  
*Eric Roffman BA*  
*Burlington, MA*

Previous studies have shown little correlation between patient symptoms and the radiologic extent of disease in chronic sinusitis. Furthermore, subjective outcome following surgical treatment for chronic sinusitis is completely independent of the preoperative radiologic extent of disease. Yet, all current staging systems for chronic sinusitis remain radiologically based. In this study, a new staging system is proposed for chronic sinusitis based on patient symptoms. Ninety-two patients with chronic sinusitis were staged preoperatively according to 4 well known radiologically-based staging systems. The patients were also staged according to a new system, which is based on the preoperative Chronic Sinusitis Survey total score (CSSt) - lower scores correspond to severe symptoms and higher stages of disease. All 92 patients underwent endoscopic sinus surgery. The 5 staging systems were compared and assessed by their respective ability to predict subjective outcome and magnitude of improvement 24 months post-surgery. Results showed that the higher the preoperative CSSt score stage, the lower the postoperative CSSt score outcome ( $F=3.19$ ,  $P=0.007$ ), and the greater the magnitude of improvement achieved by the patient ( $F=12.19$ ,  $P<0.005$ ). The 4 radiologically based staging systems showed NO relationship between preoperative stage and postoperative CSSt score outcome. Hence, we conclude that the new staging system better serves the purpose of a staging system for chronic sinusitis. It can be used to assess subjective extent of disease, follow symptom control through treatment, and help predict patient outcome for those requiring surgical management.

8:52 am

## Effect of Asthma on Sinus Computed Tomography Grade and Symptom Scores in Patients Undergoing Revision FESS

*Dewayne T. Bradley, MD*  
*Stilianos E. Kountakis MD, PhD*  
*Charlottesville, VA*

**Objectives:** To determine the influence of asthma on sinus computed tomography (CT) grade and symptom scores in patients undergoing revision functional endoscopic sinus surgery (FESS).

**Methods:** We prospectively collected data on patients undergoing revision FESS at a tertiary care medical center over a 2 year period. CT scans were graded as per the Lund and Mackay system. Patients rated their sinusitis symptoms, as defined by the Rhinosinusitis Task Force, on a scale from 0-10.

**Results:** Seventy nine patients underwent revision FESS and 17 of those patients had asthma. The mean CT grade in asthmatic patients was 18.2 compared to 12.8 in non-asthmatics ( $p=0.00008$ ). The mean symptom score in patients with asthma was 84.8 compared to 70.8 in non-asthmatics ( $p=0.029$ ).

**Conclusion:** Patients with asthma undergoing revision FESS had higher sinus CT grades and symptom scores compared to patients without asthma.

9:04 am

## Nasal Osteocartilaginous Necrosis in Cocaine Abusers: Experience on 25 Patients

*Matteo Trimarchi MD*

*Piero Nicolai MD*

*Davide Lombardi MD*

*Ulrich Specks MD*

*Brescia, Italy*

**Introduction:** Cocaine-induced lesions may cause extensive destruction of the osteocartilaginous structures of the nose, sinuses and palate that mimics the clinical picture of other diseases associated with necrotizing midfacial lesions.

**Methods:** From January 1991 to September 2001, 25 patients with cocaine-induced midline destructive lesions, 15 males and 10 females (age range, 22-66 yr), were observed at the Department of Otorhinolaryngology of the University of Brescia. The diagnosis was based on physical and endoscopic evaluation, routine blood and urine analysis, the urine cocaine metabolites test, radiologic (CT and/or MR) findings, and repeated biopsies of the nasal mucosa. Patients' sera were submitted to the ANCA test by indirect immunofluorescence and by ELISA for antibodies to proteinase 3 and myeloperoxidase.

**Results:** Septal perforation was present in all patients. Sixteen of them (64%) had partial destruction of the inferior turbinate. Hard palate reabsorption was observed in only 6 patients (24%); in 3 of them the lesion also extended to the soft palate. Fourteen patients (56%) were positive at the immunofluorescence test (9 with a P-ANCA and 5 with a C-ANCA pattern); four patients (16%) with the P-ANCA pattern and all the patients with the C-ANCA pattern had a positive test for anti-proteinase 3 antibodies.

**Conclusions:** Any sinonasal inflammatory process that persists or remains refractory to treatment may be the first manifestation of a potentially lethal drug addiction. Cocaine abuse should be considered in differential diagnosis of destructive lesions of the nasal cavity even in the presence of a positive ANCA test.

9:11 am

**An Association Between  
Acquired Epiphora and the Signs and  
Symptoms of Chronic Rhinosinusitis:  
A Prospective Case-Control Study**

*Haytham Kubba  
Sivakumar Annamalai  
N Ajith Kumar  
M B Madkour  
Glasgow, United Kingdom*

**Objective:** It has been suggested that chronic rhinosinusitis may lead to epiphora because of inflammatory oedema at the nasal end of the nasolacrimal duct, and that treatment of the underlying nasal disease may obviate the need for dacryocystorhinostomy. The aim of this study was to establish whether or not there is an association between the signs and symptoms of chronic rhinosinusitis and a complaint of epiphora.

**Setting:** Otolaryngology and ophthalmology clinics in a UK district hospital

**Design:** Blinded, prospective case-control study.

**Participants:** A consecutive series of 15 adult patients presenting to the ophthalmology department with acquired epiphora were compared with 29 patients presenting with chronic open-angle glaucoma over the same study period.

**Interventions:** Nasal symptoms and the findings on nasal endoscopy were recorded by a single otolaryngologist blinded to the diagnosis and using a standardised staging system.

**Results:** The age and sex distributions of the two groups were similar. Scores for headache and altered smell were significantly higher in the epiphora cases than in controls ( $p=0.05$  and  $0.03$  respectively). Trends for higher scores for congestion and discharge were not statistically significant ( $p=0.06$  and  $0.07$  respectively). Mucosal oedema and discharge were significantly more common on endoscopy in the epiphora cases than controls ( $p<0.02$ ).

**Conclusions:** We have shown an association between rhinosinusitis and acquired epiphora, and this would be consistent with chronic rhinosinusitis being the cause of the epiphora in some cases.



**9:18 am**

**Discussion & Questions**

*Richard R. Orlandi, MD*  
*Salt Lake City, UT*

9:23 am

## **Cost Analysis in the Diagnosis of Chronic Rhinosinusitis**

*James A. Stankiewicz, M.D.*

*James M. Chow, M.D.*

*Maywood, IL*

One hundred (100) patients who met the diagnostic criteria for chronic rhinosinusitis were evaluated. Patients who satisfied the definition of chronic rhinosinusitis were evaluated by CT scanning for diagnostic accuracy. Fifty-two (52) per cent had normal CT scans and would have unnecessarily undergone prolonged antibiotic treatment. A cost analysis was performed comparing a pre-treatment CT scan to an endoscopic examination and medical therapy. The overall cost of a pre-treatment CT scan or endoscopy was balanced by the cost saving of unnecessary medical therapy. A pre-treatment screening CT scan or endoscopy for chronic rhinosinusitis is cost efficient and helps to provide not only a more accurate diagnosis but also a better selection of treatment candidates.

9:30 am

## Symptomatic and Endoscopic Outcomes of Culture-Directed Therapy in Chronic Sinusitis

*Winston Vaughan, MD  
Christopher Church, MD  
Susan Poutanen, MD, MPH  
Ellen Jo Baron, PhD  
Stanford, CA*

**Introduction:** Published outcome data regarding the management of acute infections in chronic sinusitis patients is limited. A review of outcomes associated with endoscopic culture-directed therapy for such patients was performed.

**Methods:** Seventy-five patients were randomly selected from patients seen in a tertiary-care practice who had positive endoscopic sinus cultures between July 1998 and July 2000. All were treated with culture-directed therapy and were evaluated before and after therapy with endoscopy and the Rhinosinusitis Outcome Measure<sup>®</sup>31 (RSOM-31).

**Results:** Frequently isolated organisms included *Staphylococcus aureus* (9%), *Pseudomonas aeruginosa* (9%), *Aspergillus fumigatus* (7%), *Streptococcus pneumoniae* (5%), and *Moraxella catarrhalis* (3%). 76% of patients were treated with culture-directed antimicrobials for an average of 3 weeks. Of these, 18% were also treated with topical or oral steroids, and 3% also underwent sinus surgery.

Follow-up was completed an average of 40 days after initiation of therapy. For patients with follow-up endoscopy (n=66), 64% had normal endoscopic findings. For patients with complete RSOM-31 records (n=42), there were significant improvements in overall symptom-impact scores (p=0.005) and for nasal (p=0.0005), general (p=0.04), practical (p=0.04), and emotional (p=0.05) subscales.

Of those with normal initial follow-up endoscopic findings, 40% had a repeat acute infection, on average 3 months after culture-directed therapy.

**Conclusions:** Endoscopic culture-directed therapy was associated with normal follow-up endoscopic examinations in nearly two-thirds of patients. Follow-up overall RSOM-31 symptom-impact scores, as well as those for nasal, general, practical, and emotional subscales were also significantly improved. Prospective outcomes studies directly comparing culture-directed therapy with empiric therapy are needed.

**9:37 am**

**Discussion & Questions**

*Thomas Tami, MD  
Cincinnati, OH*

**9:45 am**

**Break with Exhibitors**

10:15 am

**The Effect of FloSeal on Mucosal Healing  
After ESS: A Comparison to  
Thrombin-Soaked Gelatin Foam**

*Rakesh K. Chandra, MD*

*David B. Conley, MD*

*Robert C. Kern, MD*

*Chicago, IL*

**Background:** The optimal form of nasal packing following ESS has yet to be established. Although wide variations exist among sinus surgeons, the goals are adequate hemostasis, rapid healing and patient comfort. Preliminary studies indicated that FloSeal, a new absorbable hemostatic gel used as a nasal pack, was associated with minimal post-operative discomfort and effective hemostasis. The current study is designed to evaluate the effects of this agent on mucosal healing in ESS.

**Patients:** Twenty (20) consecutive patients undergoing bilateral ESS.

**Methods:** For each patient, one ethmoid cavity was randomized to receive FloSeal (FS) and the other received thrombin-soaked gelatin foam (TSGF). The extent of granulation tissue and the presence of adhesions were evaluated at 3-4 weeks and at 6-8 weeks following surgery.

**Results:** No significant differences were observed between the FS and the TSGF groups with respect to pre-operative Lund-Mackay score, extent of surgery or need for additional nasal packing. The FS group, however, demonstrated a clear trend toward increased granulation tissue and slower mucosal healing. A higher proportion of FS patients required office lysis of adhesions between the middle turbinate and the lateral nasal wall.

**Conclusions:** Absorbable hemostatic agents are associated with a high degree of patient comfort and provide hemostasis comparable to traditional techniques. Different materials may induce differential patterns of mucosal healing, potentially affecting the ultimate result of ESS.

**10:22 am**

## **Surgical Management of Contact Point Headaches**

*Fereidoon Behin  
Babak Behin  
Danniel Behin  
Soly Baredes  
Jersey City, NJ*

Contact headache syndrome has been described as referred pain, caused by contact between the lateral nasal wall and the nasal septum. Although contact between the middle turbinate and the septum has been studied, the effects of contact between the medial wall of the ethmoid sinuses or the superior turbinate and the septum has not received much attention.

A retrospective chart review was done on patients diagnosed with contact headaches with the aid of a CT scan. They underwent endoscopic sinus surgery and septoplasty in order to relieve contact points. Only 12 of these patients met the inclusion criteria which included Pre and postoperative questionnaires, 2 month follow up, contact between the medial wall of the ethmoid or superior turbinate and septum, no evidence of sinusitis and no contact anywhere else along the nasal septum except for the superior part of the middle turbinate being pushed medially by the ethmoid sinuses.

Postoperatively, 9 of the 12 patients were free of symptoms and 2 had significant relief (at least 50%). 1 patient did not benefit significantly from the surgery. The average pain scale of 8.33 (1-10) preoperatively was decreased to 1.33 postoperatively. Of the 5 patients previously diagnosed with migraines, three were completely cured, 1 had significant relief and 1 did not benefit significantly.

Contact between the nasal septum and ethmoid sinuses or superior turbinate can cause significant headaches, be diagnosed by CT scan and corrected by surgery.

**10:29 am**

## **Discussion & Questions**

*Howard Levine, MD  
Cleveland, OH*

## **Fungus & Rhinosinusitis**

### **Moderators:**

*Peter H. Hwang, MD*  
*Portland, OR*

*David Sherris, MD*  
*Rochester, MN*

**10:34 am**

### **Clinical and Histopathologic Differentiation Between Allergic Fungal Sinusitis and Sinus Fungus Ball**

*M. Tarek Orfaly, MD*  
*Brad Marple, MD*  
*Dallas, TX*

**Purpose:** To delineate the clinical and histopathologic differences between two conditions: allergic fungal sinusitis (AFS) and sinus fungus ball (SFB). **Methods:** Subjects were selected at random by a search of the Pathology department database for patients with pathology specimens that had been assigned either of these two diagnoses. A total of 10 AFS patients and 9 SFB patients were identified. Data analysis includes a review of the history and physical exam findings on initial presentation, results of RAST testing for molds, culture results, and comparison of histopathologic findings on permanent section. **Results:** The AFS patients were more likely to present with symptoms of allergic rhinitis as well as having more positive RAST testing for molds. Culture results were variable. Histopathologic examination showed more eosinophilic infiltration and evidence of a local inflammatory response in the AFS group. **Conclusion:** These two conditions should be regarded as separate disease entities with different modes of presentation, pathophysiology, and treatment options.

**10:41 am**

**Safety of Long-term Dosing with  
Itraconazole (Sporanox) in Patients with  
Chronic Refractory Sinusitis (CRS)**

*Peter J. Catalano, MD  
Eric Roffman BA  
Reuben C. Setliff III, MD  
Sharuki Jalisi, MD  
Burlington, MA*

Treatment of patients with CRS presents an extreme challenge to the otolaryngologist due to the recurrent nature and uncertain etiology of the disease. Patients tend to be temporarily responsive to surgical management and typically require frequent short-term dosing of steroids and/or antibiotics to control symptoms. The authors believe long-term maintenance with itraconazole to be effective and safe in managing CRS, and herein report long-term itraconazole tolerance in a series of 90 patients. In this retrospective study, 90 patients clinically diagnosed with CRS were treated with oral itraconazole for a mean duration of 13.3 +/- 10 months, with a range of 6 to 48 months. Mean patient age was 51.0 +/- 9.8 years. Sporanox dosing began at 300mg daily, tapering to 100 mg daily depending upon patient tolerance and clinical response. Patients were maintained for a minimum of 6 months at the lowest effective dose. Liver function tests were monitored every 6-8 weeks, and follow-up exams were performed every 4-6 weeks. Six patients (6.6%) developed adverse reactions to the drug, primarily skin rashes and gastrointestinal complaints. One patient developed congestive heart failure 1 month after starting the drug, which resolved once it was discontinued. Liver enzymes temporarily elevated in only 1 patient while on 200mg daily, but returned to normal after tapering the dose to 100mg. We conclude that while long-term dosing with itraconazole requires constant monitoring, it is a safe method of treatment for patients with CRS.

**Conflict details:**

Reuben C. Setliff III, MD: Stryker-Leibinger – Consultant

**10:48 am**

**Discussion & Questions**

*Peter H. Hwang, MD  
Portland, OR*



10:53 am

## Topical Antifungal Therapy for Allergic Fungal Rhinosinusitis: A Retrospective Case Series

*Frank G. Ondrey, MD, PhD*

*Michele B. St. Martin, MD*

*Minneapolis, MN*

**Introduction:** Management of allergic fungal rhinosinusitis (AFRS) remains a challenge. Current therapy includes surgical management followed by a combination of oral steroids, antifungals, and/or immunotherapy. However, recurrence rates remain high postoperatively.

Little information exists regarding topical antifungal therapy for AFRS. Kuhn et al have investigated the use of several topical antifungal agents in vitro, reporting that ketoconazole and amphotericin B were most effective. We describe a series of four AFRS patients in whom topical antifungal therapy was used postoperatively to control recurrence of symptoms.

**Methods:** This retrospective case series consists of four consecutive patients diagnosed with AFRS-like illness from 1999 until present. Diagnoses were based on symptoms of chronic rhinosinusitis with rubbery mucus, eosinophilic mucin, and/or positive fungal cultures. Chart review was used to investigate symptoms, symptom duration, associated conditions, CT findings, surgical pathology, and response to topical antifungal treatment.

**Results:** All patients experienced pre- and postoperative symptoms and findings consistent with AFRS or AFRS-like illness as described by Ponikau, Sherris, et al, in 1999. Symptoms were unresponsive to nasal steroids, multiple antibiotics, and oral antifungal therapy. All experienced recurrence after FESS and were treated with topical antifungal therapy using tolnaftate powdering of the sinuses in clinic and/or ketoconazole nasal irrigations bid. Duration of treatment ranged from three to nineteen months. All patients experienced significant improvement in symptoms following this treatment.

**Conclusion:** Topical antifungal therapy with tolnaftate and ketoconazole may be beneficial in postoperative management of AFRS.

11:00 am

**Role of Fluconazole Nasal Spray in the  
Treatment of Allergic Fungal Sinusitis –  
A Pilot Study**

*Vijay Anand  
Albert Jen  
Ashutosh Kacker  
Clark Huang  
New York, NY*

**Background:** Allergic fungal sinusitis (AFS) is a form of chronic sinusitis characterized by nasal obstruction, sinus pain, rhinorrhea and frequent orbital symptoms. Patients usually have unilateral involvement on CT scan with areas of hyperdensity in the affected sinuses. Bony erosion is a common finding however, the fungus is non-invasive as fungal hyphae are not found within tissue. Conventional treatment consists of sinus surgery with extirpation of the allergic mucus followed by postoperative systemic steroids and frequent saline nasal irrigation. Despite all interventions, there is a high incidence of recurrence in AFS.

**Study Design/ Material and Methods:** This is a prospective pilot study to investigate the use of topical nasal antifungal spray in addition to systemic steroids and itraconazole in the treatment of allergic fungal sinusitis based at a tertiary teaching hospital. Sixteen patients with a history of AFS were given fluconazole nasal spray and followed over a course of three months. The patients were selected as they were worsening on itraconazole and systemic steroids or could not tolerate treatment. The patients were followed monthly with fiberoptic examination of the nasal vault. Response to treatment was assessed through the serial examinations comparing presence of polyps and mucosal edema. The patient's symptoms and own perception of response to treatment was recorded.

**Results:** There was stabilization or improvement of disease in 12 of 16 patients without significant side effects, who were treated with this protocol.

**Conclusion:** Topical fluconazole application may help treating patients with Allergic Fungal Sinusitis. Further multi-center study with longer follow-up is required.

11:07 am

**Discussion & Questions**

*David Sherris, MD  
Rochester, MN*

**11:12 am**

**Controversies in Pediatric Rhinosinusitis**

**Moderator:**

*Rodney P. Lusk, MD*  
*St. Louis, MO*

**GERD & Rhinosinusitis**

*William F. McGuirt, Jr., MD*  
*Winston-Salem, NC*

**Medical Management & Antibiotics**

*Scott C. Manning, MD*  
*Seattle, WA*

**Surgical Outcomes & Effects on Facial  
Growth**

*Rodney P. Lusk, MD*  
*Saint Louis, MO*

**11:55 am**

**Closing Remarks**

*Donald C. Lanza, MD*  
*Cleveland, OH*

*Bruce Gordon, MD*  
*Hyannis, MA*

**Poster sessions: Poster 52**

**Moderator:**

*Saurabah Shah, MD  
Salt Lake City, UT*

**Solitary Fibrous Tumor of Ethmoid Sinus**

*Rajendra Bhayani  
Aron Freidman  
Yusuf Krespi  
New York, NY*

**Introduction:** Solitary fibrous tumors (SFT's) are neoplasms that usually arise from the pleura but have been reported in other serosal tissues as well. They are rare in the head and neck region, with only 11 cases involving the paranasal sinuses, nasal cavity, or nasopharynx documented in the literature. We report 12 th case in the nasal area which involved left ethmoid sinus.

**Methods:** A 56 year old woman presented complaining of persistent epistaxis and chronic sinus infections. Physical examination showed purulent nasal discharge on the left, a mass emanating from the left middle meatus. CT confirmed a 3 x 1.7 x 2.5 cm anterior ethmoidal mass. A diagnosis of solitary fibrous tumor of the ethmoid sinus was made.

**Results:** Resection of the tumor was performed using lateral rhinotomy incision. The tumor was immunohistochemically negative for neurofilament, S-100 protein, and high molecular weight cytokeratin. Electron microscopy showed fibroblasts, small vessels, and adipose tissue with no identifiable neural elements.

**Conclusion:** The solitary fibrous tumor of paranasal sinus is a rare benign tumor which has excellent prognosis after total excision.

**Poster sessions: Poster 53**

**Moderator:**

*Saurabah Shah, MD*  
*Salt Lake City, UT*

**Nodular Fasciitis of the Nasal Cavity**

*Fred W. Lindsay, DO*  
*Michael A. Keefe, MD*  
*San Diego, CA*

**Introduction:** Nodular fasciitis is an uncommon, benign tumor of fibrohistiocytic proliferation most commonly found in the extremities. It is estimated that only 10% of these lesions occur in the head and neck. Trauma to an anatomic area with strong fascial connections is a proposed etiologic inciting event. The malignant counterpart to these lesions are soft tissue sarcomas.

**Methods:** A comprehensive literature search (Ovid, Medline) for the presentation, diagnostic evaluation, and outcomes of patients with nodular fasciitis was performed.

**Results:** A 43 year-old female presented with a several year history of nasal congestion, allergic rhinitis, sinus headaches, and intermittent sinusitis. Physical exam was consistent with mucosalized mass of the midline and right nasal cavity. There was no surgical or traumatic history. CT and MRI demonstrated no intracranial involvement. The patient underwent ESS with directed biopsies and resection. The diagnosis of nodular fasciitis was made. One year post-operatively the patient's symptoms were significantly reduced and there was no evidence of recurrent disease. This is the first adult case of nasal cavity nodular fasciitis reported in the literature.

**Conclusions:** Nodular fasciitis is an uncommon head and neck tumor. Management is conservative resection and observation. This is the second report of a nasal cavity lesion, and the first in an adult. It is important to differentiate this lesion from malignant soft tissue lesions.

**Poster sessions: Poster 54**

**Moderator:**

*Saurabah Shah, MD  
Salt Lake City, UT*

**A Preliminary Report on the Use of  
the Laryngeal Mask Airway in  
Endoscopic Sinus Surgery**

*Barak J. Greenfield, MD  
Joseph B. Jacobs, MD  
New York, NY*

Airway maintenance and protection during general anesthesia and recovery are significant issues for intranasal surgery. In addition to the obvious requirements of safe general anesthesia, upper airway bleeding both during the procedure and associated with extubation can create potential hazards including increasing cough, laryngospasm and aspiration. The laryngeal mask airway (LMA) has been utilized safely for approximately 10 years and has gained acceptance to provide general anesthesia for a number of otolaryngologic procedures including, more recently, upper airway surgery. We are reporting on a series of 100 endoscopic procedures that were selected for laryngeal mask general anesthesia. The LMA does not require the use of muscle relaxants or deep anesthesia to aid insertion. It can be left in situ to maintain the airway until the return of upper airway reflexes with little risk of coughing or airway obstruction while the patient is extubated fully awake. Our preliminary results reveal that the reinforced LMA may be utilized in place of endotracheal intubation for intranasal surgery.

**Poster sessions: Poster 55**

**Moderator:**

*Saurabah Shah, MD  
Salt Lake City, UT*

**Management of the Orbital Floor  
in Silent Sinus Syndrome**

*Robert D. Thomas  
Scott M. Graham  
Keith D. Carter  
Jeffrey A. Nerad  
Iowa City, IA*

**Introduction:** Enophthalmos in a patient with an opacified hypoplastic maxillary sinus without sinus symptomatology describes the silent sinus syndrome. A current trend is to perform endoscopic maxillary antrostomy and orbital floor reconstruction as a single-staged operation. A 2-staged approach is performed at our institution to avoid placement of an orbital floor implant in the midst of potential infection and to allow the possibility that enophthalmos and globe ptosis may resolve with endoscopic antrostomy alone, obviating the need for orbital floor reconstruction.

**Methods:** A retrospective review identified six patients with silent sinus syndrome evaluated between June 1999 and August 2001. Patients presented to our ophthalmology department with ocular asymmetry and CT scanning confirmed the diagnosis in each case.

**Results:** There were 4 males and 2 females. The mean age was 35.7 years. 4 patients underwent endoscopic maxillary antrostomy. One patient refused surgery and the other patient is currently recovering from facial cellulitis emanating from a tooth abscess. The mean pre-operative enophthalmos determined by Hertel's measurements was 3.3 mm (range 3-4 mm). Following endoscopic maxillary antrostomy the mean reduction in enophthalmos was 1.5 mm (range 1-2 mm). Orbital floor augmentation was avoided in two patients after satisfactory improvement in enophthalmos. In the other two patients orbital reconstruction was performed as a second-stage procedure. There were no complications.

**Conclusions:** Orbital floor augmentation should be offered as a second-stage procedure for patients with silent sinus syndrome because some patient's enophthalmos may improve with endoscopic antrostomy alone.

## NOTES



## NOTES

## MEMBER LIST

Walter J. Agesenz, MD, San Jose, CA  
Robert F. Aarstad, MD, Shreveport, LA  
Awny A. Abdou, MD, Johnson City, NY  
Tom Abelson, MD, Solon, OH  
David A. Abraham, MD, Garden City, NY  
Manoj T. Abraham, MD, New York, NY  
Mark J. Abrams, MD, Rock Hill, NC  
Ravi Agarwal, MD, Glendale, AZ  
Robert A Akins, MD, Sioux Falls, SD  
Mouwafak Muflih Al-Rawi, MD, Philadelphia, PA  
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Ernest A. Weymuller, Jr., MD, Seattle, WA  
Mark Whitaker, MD, Danville, PA  
Ira White, DO, Bloomington, IN  
James White, MD, Dubuque, IA  
Bryan Wilcox, MD, Syracuse, NY  
Andrea Williams, MD, Buffalo, NY  
Jack Williams, MD, Sugar Land, TX  
Robert Williams, MD, East Aurora, NY  
Lorraine Williams-Smith, MD, Los Angeles, CA  
Hobson L. Wilson, MD, Rockledge, FL  
Keith Wilson, MD, Cincinnati, OH  
Mark Wilson, MD, Madison Heights, MI  
Charles Wine, MD, Oklahoma City, OK  
Catherine Winslow, MD, Denver, CO  
Welby Winstead, MD, Louisville, KY  
Birgit Winther, MD, Charlottesville, VA  
Daniel Wohl, MD, Richmond, VA  
Gregory Wolf, MD, Ann Arbor, MI  
Arthur Wood, MD, Youngstown, OH  
B Tucker Woodson, MD, Menomonee Falls, WI  
Erin Daniel Wright, MD, Canada  
J Robert Wyatt, MD, Mesquite, TX  
John Wyllie, MD, Saudi Arabia 31952  
Michelle Yagoda, MD, New York, NY  
Eiji Yanagisawa, MD, New Haven, CT  
Ken Yanagisawa, MD, New Haven, CT  
Kathleen Yaremchuk, MD, Dearborn, MI  
James Yee, MD, Folsom, CA  
James Yeh, MD, Rockville, MD  
David Yen, MD, Philadelphia, PA  
Matthew Yetter, MD, Colorado Springs, CO  
Anthony Yonkers, MD, Omaha, NE  
Dayton L. Young, MD, Omaha, NE  
M. Young, PhD, Hines, IL  
Kathy Yu, MD, Chapel Hill, NC  
Taskin Yucel, MD, Turkey  
Richard Yules, MD, Boca Raton, FL  
Bilal Zaatari, MD, Lebanon

Warren Zager, MD, Philadelphia, PA  
Gerald Zahtz, MD, Jamaica, NY  
Lloyd Zbar, MD, Glen Ridge, NJ  
Jill F. Zeitlin, MD, Pleasantville, NY  
Warren Zelman, MD, Garden City, NY  
Shane Zim, MD, Los Angeles, CA  
Jeffrey M Zimmerman, MD, Philadelphia, PA

## **Dr. Maurice H. Cottle Honor Award**

*For Outstanding Clinical and Laboratory  
Investigation in Rhinology  
First Place Gold Medal Winners*

**1978**

***The Nasal Cycle in the Laboratory Animal***

Winston M. Campbell, MD, Mayo Clinic, Rochester, MN

Eugene B. Kern, MD, Mayo Clinic, Rochester, MN

**1979**

***The Physiologic Regulation of Nasal Airway Resistance  
During Hypoxia and Hypercapnia***

T.V. McCaffrey, MD, Mayo Clinic, Rochester, MN

Eugene B. Kern, MD, Mayo Clinic, Rochester, MN

**1980 Two Awards Given**

***Growth Pattern of the Rabbit Nasal Bone Region  
A Combined Serial Gross Radiographic Study  
with Metallic Implants***

Bernard G. Sarnat, MD, Los Angeles, CA

Abbee Selman, DDS, Los Angeles, CA

***Sleep Disturbances Secondary to Nasal Obstruction***

Kerry D. Olsen, MD, Mayo Clinic, Rochester, MN

Eugene B. Kern, MD, Mayo Clinic, Rochester, MN

Phillip R. Westbrook, MD, Mayo Clinic, Rochester, MN

**1984**

***Nasal Problems in Wood Furniture Workers –  
A Study of Symptoms and Physiological Variables***

Borje Drettner, MD, Sweden

Bo Wilhelmsson, MD, Sweden

**1987**

***Eustachian Tube and Nasal Function During Pregnancy  
A Prospective Study***

Craig S. Derkay, MD, Pittsburgh, PA

**1988**

***The Effect of Klebsiella Ozenae on Ciliary Activity  
in Vitro: Implications for Atrophic Rhinitis***

Jonathan Ferguson, MD, Mayo Clinic, Rochester, MN

**1990**

***The in Vivo and in Vitro Effect in Phenylephrine  
(Neo Synephrine) on Nasal Ciliary Beat Frequency  
and Mucoilliary Transport***

P. Perry Phillips, MD, Mayo Clinic, Rochester, MN



**1991**

***Ultrastructural Changes in the Olfactory Epithelium  
in Alzheimer's Disease***

Bruce Jafek, MD, University of Colorado, Denver, CO

**1992**

***A Scanning Electron Microscopic Study of Smoking and  
Age Related Changes in Human Nasal Epithelium***

Steven Kushnick, MD, New York, NY

**1993**

***Mucociliary Function in Endothelins 1, 2 & 3***

Finn Ambie, MD, Mayo Clinic, Rochester, MN

**1996**

***Capsaicin's Effect on Rat Nasal Mucosa  
Substance P Release***

Frederick A. Kuhn, MD, Savannah, GA

**1999**

***Subacute Effects of Ozone-Exposure on  
Cultivated Human Respiratory Mucosa***

Joseph Gosepath, D. Schaefer, C. Broomer, L. Klimek, R. G.  
Amedee, W. J. Mann, Mainz, Germany

**2000**

***Capsaicin's Effect on Trigeminal Nucleus  
Substance P Release***

Frederick A. Kuhn, M.D.  
Savannah, Georgia

**Golden Head Mirror Honor Award  
For Meritorious Sharing  
in the Service of Rhinology**

*The Golden Head Mirror Honor Award was first given by Dr. Cottle to colleagues who were chosen because of "Meritorious Sharing in the Service of Rhinology." The first pair of Golden Head Mirror cuff links were given by Dr. Cottle to Dr. George Fisher in 1948.*

A

Vijay Anand, US  
Pierre Arbour, US  
Harold Arlen, US  
Walter J. Agesen, US  
Tomas L. Aguara, Mexico

B

Pat A. Barelli, US  
Fred W. Beck, US\*  
Carlos G. Benavidee, US  
Bernard Blomfield, US\*  
Max Bornstein, US\*

C

Jamie Carillo, Mexico\*  
James Chesson, US\*  
Maurice H. Cottle, US\*

D

Efrain Davalos, Mexico  
H.A.E. van Dishoeck, The Netherlands\*  
George H. Drumheller, US\*  
Glen W. Drumheller, US  
Larry E. Duberstein, US

F

George W. Facer, US  
Anthony Faills, US\*  
George G. Fishcer, US\*  
Douglas W. Frericha, US  
Amos D. Friend, US\*

G

Irwin E. Ganor, US  
Norman E. Ginsberg, US\*  
Vernon D. Gray, US\*  
Harvey C. Gunderson, US

H

Richard B. Hadley, US\*  
Robert M. Hansen, US\*  
Edward W. Harris, US\*

Raymond L. Hilsinger, US\*  
Kenneth H. Hinderer, US\*  
Leland R. House, US  
Sandy Hoffman, US  
Egbert Huizing, The Netherlands

J  
Gerald F. Joseph, US

K  
Alvin Katz, US  
David Kennedy, US  
Eugene Kern, US  
John A. Kirchner, US  
Daniel D. Klaff, US\*  
Zvonimir Krajina, Croatia

L  
Clifford F. Lake, US\*  
Donald Lanza, US  
Don Leopold, US  
Walter E. E. Loch, US\*  
W. Kaye Locklin, US  
Fausto Lopez-Infante, Mexico  
Roland M. Loring, US\*  
Frank Lucente, US

M  
Henry Merriman, US\*  
Lewis E. Morrison, US

N  
William J. Neidlinger, US\*  
Roberto Neveus-Pinto, Brazil  
Leon Neiman, US

O  
Joseph H. Ogura, US\*  
Harold Owens, US

P  
Charles J. Patrillo, US\*  
Ivan W. Philpott, US\*  
Loring W. Pratt, US

R  
Federico Reyes, Mexico  
Ralph H. Riggs, US  
Zvi Henry Rosen, Israel

S  
Pieter H. Schmidt, The Netherlands  
Thomas C. Smersh, US  
Maynard P. Smith, US  
Pinckney W. Snelling, US\*  
Carl B. Spath, US  
Heinz Stammberger, Austria  
Albert Steiner, US\*

Sydney L. Stevens, US\*  
Fred Stucke, US  
Giorgio Sulsenti, Italy  
Edward A. Swartz, US

T

William H. Tenny, US  
H. Ashton Thomas, US\*  
Richard Trevino, US  
Charles A. Tucker, US

W

Richard C. Webster, US\*  
Alvin P. Wenger, US  
Joseph W. West, US\*  
Manuel R. WexterUS\*  
Henry L. Williams, US\*  
Russell I. Williams, US

\* Deceased

## American Rhinologic Society Honorary Members

John J. Ballenger, MD  
Chicago, IL

John E. Bordley, MD  
Baltimore, MD

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Mexico, DF, Mexico

Bernard Butterworth, PhD  
Kansas City, MS

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Ponte Verde Beach, FL

J. Dankmeijer, MD\*  
Leiden, Holland

H.A.E. van Dishoeck\*  
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Valentine H. Fuchs, MD\*  
New Orleans, LA

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Zagreb, Yugoslavia

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Beijing, China

French K. Hansel, MD\*  
St. Louis, MS

James Herbertson, MS, DDS\*  
Kansas City, MS

John A. Kirchner, MD  
New Haven, CT

Francis L. Lederer, MD\*  
Chicago, IL

Thomas J. McDonald, MD  
Rochester, MN

Joseph H. Ogura, MD\*  
St. Louis, MS

Morey L. Parkes, MD  
Los Angeles, CA

Anthony A. Rieder, MD  
Milwaukee, WI

Ryo Tschiasny, MD\*  
Cincinnati, OH

Richard C. Webster, MD\*  
Brookline, MA

Jim Zinreich, MD  
Baltimore, MD

\* Deceased