The Program for Comprehensive Management of Nasal and Sinus Disease
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History of the Program
The Department of Otolaryngology at the Mount Sinai Medical Center possesses a rich history in sinus surgery and rhinology. In the 1920s, Dr. Sidney Yankauer described the total sphenoethmoidectomy for the management of inflammatory sinusosal disease; a procedure which is still performed today in its original form. In the 1950s, Dr. Joseph Goldman began a landmark sinus surgery course that continued for decades incorporating the many technological advances that have evolved in the field of sinonasal surgery. Our department has utilized minimally invasive approaches, most notably the endoscopic technique, for the treatment of both inflammatory and neoplastic disorders of the nose and sinuses. These advances have led us to combine our expertise with the Multidisciplinary Head and Neck Surgery Center in the management of sinonasal tumors. We are one of the few medical centers that employ the full range of external and endoscopic procedures for the management of complex sinonasal disorders and tumors.

About The Mount Sinai Medical Center
The Medical Center is located on Manhattan’s Upper East Side and consists of the The Mount Sinai Hospital and Mount Sinai School of Medicine. The hospital was founded in 1852 and is one of the country’s oldest voluntary teaching hospitals. With the creation of the Medical School, in 1963, the Medical Center has been able to provide groundbreaking research that can be immediately translated into improving patient care for which the institution has become internationally renowned. We are equipped with the latest technological developments for the treatment of nasal and sinus disease.

About the Program
The Program for Comprehensive Management of Nasal and Sinus Disease at Mount Sinai has been at the forefront in the management of all disorders affecting the sinonasal area. Through its close relationship with the Department of Medicine’s Divisions of Allergy/Immunology, Pulmonary Medicine, and Oncology, our program provides the collective expertise of a multidisciplinary approach necessary to address
both inflammatory and neoplastic conditions of the nasal cavity and sinuses.

What conditions are treated in our program for Sinonasal Disorders?

- Acute and chronic sinusitis
- Allergic fungal sinusitis
- Invasive fungal sinusitis
- Autoimmune sinonasal disease
- Allergy and Immune disorders affecting the sinonasal cavity
- Inflammatory polyp disease
- Mucoceles of the sinuses
- Epistaxis
- Exophthalmos secondary to thyroid disease
- Orbital and optic nerve decompression
- Cerebrospinal fluid leaks and encephalocele treatment
- Benign and malignant tumors of the sinonasal complex
- Multidisciplinary management of sinonasal and skull base cancer
- Obstructive nasal disorders
- Nasal collapse
- Reconstruction of the external nose
- Combined cosmetic and functional disorders
- Microsurgical repair of surgical defects

Overview: What are the sinuses?
The sinuses are air filled cavities within the skull that connect to the nasal cavity. The true function of the sinuses is unknown. However, many believe they serve to increase the surface area of the sinonasal cavity; warming and humidifying inspired air; increase our immune defense; and lastly, a resonating chamber for voice. Anatomically, we have four paired sinuses: the frontal, ethmoid, maxillary, and sphenoid sinuses. A defined area known as the osteomeatal complex serves as the drainage point for the ethmoid, maxillary, and frontal sinuses. Surgically addressing obstruction in this area can alleviate refractory chronic sinusitis in select patients. Due to their location adjacent to the brain (skull base) and orbit, the sinonasal cavity has served as an avenue for minimally invasive approaches to treat tumors and brain fluid (cerebrospinal fluid) leaks.

Inflammatory Diseases of the Sinuses
Acute and chronic sinusitis are commonly treated in our program. Over 40 million patients suffer from chronic sinus conditions. The loss in quality of life secondary to chronic sinusitis rivals that of asthma and coronary artery disease. Sinusitis can occur in an acute form which lasts anywhere from a few days to four weeks or a chronic form lasting several weeks to months. Commonly, patients may develop sinusitis after a viral illness or from chronic sinonasal irritation from allergy or
environmental irritants (i.e. dust, molds, cigarette smoke). Our physicians specialize in formulating non-surgical treatment plans for the management of sinusitis. Patients who fail to respond to medical treatment or who suffer from recurrent sinus infections may require surgical intervention.

**Multidisciplinary Approach to Inflammatory Sinus Disease**

Understanding that inflammatory sinus disease requires the expertise of multiple disciplines is one of the unique features of our program. Adequate allergy management is imperative in successfully treating chronic sinus conditions. Patients can undergo evaluation by Mount Sinai allergists and immunologists the same day as their visit with our physicians, thus maximizing their diagnostic evaluation. Rarely, an underlying immune deficiency may be the cause of chronic sinus infections. Our immunologists specialize in recognizing these conditions in order to ensure that our patients receive the most effective treatment. Additionally, many patients with inflammatory polyp disease require concurrent management of their asthma with the help and expertise of physicians in our Pulmonary Division.

**Cerebrospinal Fluid Leaks (CSF) and Encephaloceles**

CSF leaks occur most commonly as a result of trauma, however, they can also occur spontaneously without preceding injury. Diagnostic advancements have demonstrated that many spontaneous leaks that were thought to be idiopathic are actually secondary to increased intracranial pressure. This is an important entity to appreciate and address since, if unnoticed, it may result in repair failure. These patients may also suffer from actual herniations of brain or encephaloceles in association with their CSF leaks. Imaging modalities such as high resolution CT scanning and MRI permit early detection of these entities and allow proper surgical planning. Our institution specializes in successfully addressing these conditions through endoscopic techniques. We are able to utilize local sinonasal tissue (i.e. nasal septum) to repair these defects and avoid donor site morbidity.

**Sinonasal and Skull Base Tumors**

The Department of Otolaryngology has been a pioneer in the management of both benign and malignant tumors involving the sinonasal cavity. With the combined expertise of the surgeons in the Department of Neurosurgery, we can address tumors involving the base of skull and pituitary gland.

Our institution has the leading experience in the management of inverted papilloma which is the most common tumor affecting the sinonasal cavity. These tumors have a high risk of recurrence and convert to squamous cell carcinoma in ten
percent of cases. Thus, complete resection is imperative and can be accomplished through either purely endoscopic or other minimally invasive approaches. Other benign tumors treated at our institution are sinonasal fibroseous tumors (osteoma, fibrous dysplasia, ossifying fibroma), juvenile angiofibromas, schwannomas, and pseudotumors. The service also provides expertise in the management of cysts and tumors of dental origin, complications of dental implants and sinus lift procedures, dental fistulas and osteonecrosis of the jaws.

Malignant tumors, such as squamous cell carcinoma, adenoid cystic carcinoma, esthesioneuroblastoma, and melanoma are treated in multidisciplinary fashion. All patients are presented at our weekly Head and Neck Cancer Tumor Board where treatment options, including both surgical and nonsurgical care, are discussed and a therapeutic plan is formulated based on the individual patient. Endoscopic and minimally invasive approaches are utilized in select cases. However, in the case of malignant lesions, the priority is complete resection to allow a patient the best chance at cure. With lesions of the skull base, a combined rhinological-neurosurgical team is employed. Similarly, with lesions involving the orbit, ophthalmologic and oculoplastic surgeons participate.

Endoscopic Sinus Surgery
In those cases where surgical intervention is required, our surgeons specialize in endoscopic techniques to minimize patient discomfort and ensure a quick recovery. Advancements in technology and sinus instrumentation have enabled us to manage surgical treatment of inflammatory sinus disease almost exclusively through endoscopic means. Our surgical team has expertise in treating those select cases requiring an open surgical approach. Surgical Navigation that allows intraoperative visualization of the sinuses is used as an adjunct in complex inflammatory cases especially those involving the frontal sinus. Essentially it serves as a GPS system for the sinuses in cases where normal anatomic landmarks have been altered or removed.

Endoscopic and Minimally Invasive Skull Base Surgery
Our surgeons are experts in the management of lesions involving the skull base (base of the brain). There are various conditions affecting this area. Cerebrospinal fluid leaks and encephaloceles are non-neoplastic conditions whose management has evolved with the advent of the endoscope. Through the utilization of intraoperative localization techniques, we are able to endoscopically treat patients with both normal and elevated intracranial pressure CSF leaks. In addition, encephaloceles of the ethmoid, sphenoid, and frontal sinus are treated with endoscopic techniques.
Our philosophy of a multidisciplinary approach has fostered strong relationships with our colleagues in neurosurgery and interventional radiology who are closely involved in many cases. Select neoplastic tumors of the skull base such as meningiomas and pituitary adenomas that are accessible through a trans-sinonasal approach are treated within our program as well. Resection of larger tumors is performed using the endoscope combined with minimally invasive approaches that avoid facial incisions and preserve cosmesis while at the same time insuring complete oncologic resections.

**Functional Nasal Disorders**

Nasal obstruction may be the result of inflammatory or anatomical factors, or a combination of both. Structural changes may involve the nasal cavity proper, or the external framework of the nose, producing internal or external nasal valve collapse. The latter may have a developmental or traumatic origin. Functional as well as cosmetic disorders can be treated simultaneously with endoscopic sinus surgery and incisionless rhinoplasty techniques, eliminating the need for multiple procedures and general anesthetics, reducing recovery time and absence from work or school, all on an outpatient basis.

**Research Interests**

The rhinology division’s research expertise is evidenced by its selection to be part of the National Aerospace Biomedical Research Consortium. Most recently, it has been designated a center for the treatment of nasal and pulmonary diseases for World Trade Center 9/11 workers. We are constantly evaluating outcomes with respect to the management of both inflammatory and neoplastic conditions. This analysis allows us to provide the highest quality of care, continue those practices that are effective, and improve the future care of our patients. The Department of Otolaryngology has performed both laboratory and clinical research studies.

Basic research has included creation of an experimental animal model for the production and study of sinusitis which is widely employed in sinus research laboratories. These studies also involved elucidating the gaseous physiology of the paranasal sinuses. Clinically, case series of unusual sinonasal tumors including olfactory neuroblastoma, melanoma, pseudotumor, neuroendocrine carcinoma, hemangiopericytoma and inverted papilloma have been reviewed and analyzed with regard to their natural history, optimum treatment and outcome.
SATISH GOVINDARAJ, MD

Dr. Govindaraj is Assistant Professor of Otolaryngology and Director of Endoscopic Skull Base Surgery at Mount Sinai. He received his medical degree from Northeastern Ohio Universities College of Medicine, completed his internship and residency at Mount Sinai Medical Center and a fellowship in endoscopic sinus and skull base surgery at the University of Pennsylvania under the direction of Drs. David W. Kennedy, James N. Palmer, and Alexander G. Chiu.

In addition to endoscopic sinus surgery, Dr. Govindaraj’s clinical interests include endoscopic skull base surgery, cerebrospinal fluid leaks (CSF), paranasal sinus and skull base tumors, balloon sinuplasty, and otolaryngic allergy. His current research is focused on the endoscopic management of frontal sinus tumors and CSF leaks and patient quality of life following minimally invasive skull base surgery.

Dr. Govindaraj has published articles for major U.S. journals in his specialty and is the author of several book chapters on sinus surgery and endoscopic CSF leak and encephalocele repair. He is a member and has presented at meetings of the American Academy of Otolaryngology-Head and Neck Surgery, the American Rhinologic Society, the American Academy of Otolaryngic Allergy, and the North American Skull Base Society.

WILLIAM LAWSON, MD, DDS

Dr. Lawson’s expertise as an Otolaryngologist and Maxillofacial surgeon has enhanced Mount Sinai’s reputation as a leader in these fields. As a clinician, Dr. Lawson’s focus on primary and revision rhinoplasty, facial plastic and reconstructive surgery, and sinonasal and anterior skull base tumors, ensures that Mount Sinai remains a world-renowned institution in the treatment of head and neck disorders.

Areas of original research include distribution of paraganglia migration of melanocytes, cell transformation in tissue culture and cartilage biomechanics in humans. His investigations in nasal gaseous physiology have resulted in The Mount Sinai Medical Center being chosen to participate in the National Space Biomedical Consortium. Comparative anatomical and paleoanthropological studies of the sinonasal complex in primates, mummies, fossil and modern humans in conjunction with the Department of Anatomy have resulted in his appointment as consultant in physical anthropology to the American Museum of Natural History.

Dr. Lawson is an elected fellow in ten highly respected professional societies including the American College of Surgeons. For over 20 years he was program chairman of internationally attended courses on Facial Plastic Surgery and Sinus Surgery given at Mount Sinai Medical School. He has authored 270 scientific publications including five books and monographs. These include classic papers on external approaches for the management of complex sinonasal disorders and tumors, as well as endoscopic removal. He has received numerous awards and honors including the Presidential Citation of the Trilogical Society, The Senior Academic Society in Otolaryngology and the Faculty Council Award for Academic Excellence at the Mount Sinai School of Medicine.

After earning a degree in dentistry at NYU College of Dentistry, Dr. Lawson came to Mount Sinai to pursue an internship in Oral Surgery. He later earned his MD at NYU College of Medicine and completed his Otolaryngology Residency training at Mount Sinai. For nearly three decades, he served as Chief of Otolaryngology at the Veterans Administration Medical Center. Currently, Dr. Lawson is Professor of Otolaryngology, Vice Chairman of the Department of Otolaryngology, and Director of the Facial Plastic Surgery Clinic and Co-Director of the Sinus Research Laboratory at Mount Sinai. He is the preceptor for a fellowship in facial plastic and reconstructive surgery. He is the Eugen Grabscheid MD Research Professor in Otolaryngology. Dr. Lawson also serves as consultant to the Bronx Veterans Hospital and City Hospital at Elmhurst.
To refer a patient or to make an appointment, please contact us at one of our locations or by calling the Physician Access Services

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For directions to our office locations visit our website at www.mountsinai.org.

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