

EAR, NOSE AND THROAT ASSOCIATES OF CHESTER COUNTY

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SINUSITIS AND ADVANCES IN SINUS SURGERY

Sinusitis usually results as a complication of either an upper respiratory tract infection or an allergic inflammatory condition of the nasal chambers. It is an inflammation of the lining of one or more of the 4 paired sets of air-filled paranasal sinuses in our skull. These structures are found around the orbit. Their function involves resonating our voices, lightening our skulls, aiding in olfaction or smell, and acting as a shock absorber for untoward impacts.

Sinusitis affects approximately 35 million Americans and is responsible for nearly 22 million doctor office visits annually. It is responsible for many missed workdays and costs our society billions of dollars. The incidence of sinusitis has increased 18% over the past 10 years, ranking 3rd in the diagnosis used for antibiotic prescriptions.

Sinusitis develops when the tiny openings to the sinuses (called ostia) are blocked and the bacteria trapped within the sinuses multiply and infiltrate the mucous lining of the sinuses. This lining then becomes swollen, and the body's defense mechanism directs white blood cells to the area and starts the inflammatory cascade. This results in congestion, sinus pain, pressure, the production of discolored nasal secretions, and fever.

Usually acute sinusitis responds quite well the antibiotic therapy especially when used in combination with expectorants and decongestants. If the infection persists in spite of aggressive medical therapy over a period of 12 weeks or more, the patient then has a chronic sinus condition. Chronic infections may be treated with nasal steroid sprays, oral steroids, antibiotics, as well as expectorant and decongestant combinations. These chronic sinusitis patients may be candidates for endoscopic sinus surgery if medical management fails.

Recent trends in endoscopic sinus surgery have taken advantage of surgical technology. Specifically computer assisted navigational systems allow the surgical technique to be more complete in eradicating sinus disease while offering greater safety and a more beneficial outcome. Their use is especially helpful in revision sinus surgery in which the surgical landmarks have been distorted or removed.

These navigational systems utilize a three-dimensional reconstruction of the patient's sinus cavities to assist the surgeon during the operation. As the sinuses are close to important structures such as the eyes and brain, the tear ducts and important blood vessels, the navigational system offers the surgeon improved intraoperative appreciation of spatial relationships. Prior to the use of these systems, endoscopic sinus surgery was often less complete in eradication of sinus disease.

Patients wear a specially designed “helmet” or “mask” during the procedure that correlates the specific coordinates of the patient’s anatomy to their CT scan that is projected on a monitor during the operative procedure. The computerized navigational system allows the display of the location of surgical probes during the operation so the surgeon can visualize the anatomic surgical relationships to the CT scan projections. This feedback allows the surgeon to safely assess the progress and completeness of the surgical procedure.

This computer assisted, image guided surgical technique has opened the door to many more unusual types of sinus surgery that involve tumors of the skull base and sinus malignancies. Now the potential exists to resect these tumors with less invasive, more accurate, and less disfiguring approaches.

Another recently developed treatment is Balloon Sinuplasty. This treatment uses balloons to dilate or expand the ostia of the sinuses in a less invasive manner to re-establish appropriate sinus drainage. This technique may be used separately or in combination with more traditional endoscopic sinus surgery.

As the interface of medicine and technology grows with new techniques and approaches to patient betterment, there is also ongoing bench research related to sinusitis and its treatment. Recently consideration of the importance and influence of fungus and biofilms in the development of chronic sinusitis is demanding further study in the pathogenesis and treatment options for patients. The use of aerosolized medications to assist in the treatment of chronic sinusitis has come into sharper focus.

Clearly the future of this important clinical entity that affects nearly 35 million Americans is ripe with innovation and optimism. ENTACC health care providers offer our patients the various medical and surgical options described above for the treatment of acute and chronic sinus disease.