

UT News

Office of Medical Information
The University of Texas Health Science Center at Dallas
5323 Harry Hines Boulevard Dallas, Texas 75235
214/688-3404

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CONTACT: Mike West
OFFICE: 214/688-3404
HOME: 214/321-0550

****Sinus endoscope simplifies diagnosis
and surgery for sinus sufferers

DALLAS -- When West German high technology meets low tech sinus disease, the payoff for the patient is better diagnosis and surgery.

Dr. Steven Schaefer, associate professor of otorhinolaryngology at The University of Texas Health Science Center at Dallas, recently introduced 80 Texas physicians to the paranasal sinus endoscope with a one and one-half day training class. The doctors learned the basic operations and advantages of the German-made instrument that permits a close-up, wide-angle view into paranasal sinuses (the four sinuses on each side of the nose).

"This instrument, coupled with CT scans, is very useful for diagnosis," explains Schaefer. "In addition to otolaryngologists, allergists and internists might use the sinus endoscope for diagnosis in their offices." Schaefer is one of relatively few physicians in the United States doing endoscopic sinus surgery. He's impressed with its many advantages: "Most significant is the ability to perform sinus surgery well, entirely through the nose with no external incisions. We can see the disease and tailor the operation to fit the patient. ... It gives us a lot of versatility."

Chronic sinusitis is a "mundane" disease affecting an estimated 5 percent of the population. In the serious form of the disease, infection develops within a paranasal sinus due to obstruction of the ostia (the "outflow") which drains the sinus. Symptoms include pain, tenderness over the sinuses and yellow-green drainage through the nose and the back of the throat.

"Around Dallas, hay fever is a real problem because it causes the mucous membranes to become swollen and obstructs the sinus drainage into the nose. The secretions become infected and may not respond to antibiotics," Schaefer explains.

In addition to allergies, chronic sinusitis can be caused by trauma, congenital malformations, or diseases which involve abnormal movement of secretions due to defects of the cilia in hair cells. Cystic fibrosis produces the latter abnormality, and children with this disease frequently have sinusitis.

If there is a limited focus of disease, the sinus endoscope's precision permits "fine-tuned" surgery. "You can use these instruments to remove just that focus. If the outflow of secretions is obstructed, you remove the obstructing mucous membrane, and you can leave the rest of the sinus alone," Schaefer says.

The instruments consist of rigid endoscopes -- long, narrow metal probes with tiny lenses and prisms along the length and an eyepiece for viewing. Accessories include a fiber optic cable to provide strong light and a suction irrigation device which cleanses and removes blood and secretions during surgery.

A TV camera can attach to the instrument, and various probes are designed for angled viewing. "You can see around corners, which you obviously cannot do with the eye," Schaefer says.

Schaefer believes the most important advantage of the sinus endoscope is the way it improves the way doctors "see" the sinus interior: "This tool is so good because of the visualization you achieve. Before, you had to make an incision large enough to see the sinus either by cutting into the upper lip and gum or into the exterior skin under the eye.

"The big advantage is that you get much less trauma to the patient and potentially more thorough surgery because of improved visualization. It also has changed the concept of surgery in some patients; it's possible to do more limited surgery."

(More)

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There are eight paranasal sinuses, four on each side of the face beside the nose and under the eyes: the frontal, sphenoid, ethmoid and maxillary. They all drain into the nose. The ethmoid sinus has a very tiny opening into the nose and is frequently the focus of infection.

"Sometimes a person has very limited sinus disease in, say, the ethmoid sinus next to the eye and brain," Schaefer explained. "The margin for error in sinus surgery is very small; it's hazardous -- the ethmoid sinus is only three inches long. Being able to see well is essential."

Once the viewing endoscope is in the bony sinus cavity, the physician uses bone-cutting forceps to cut away soft tissue and bone, opening up the sinuses to let them drain. All instruments are used through the nose.

Used with the CT scan, which pinpoints exactly the focus of infection, the sinus endoscope precisely limits the approach yet allows the physician to remove the disease thoroughly. There is less disruption of the patient's healthy tissue.

Schaefer cautions that it takes time and patience to learn to use the sinus endoscope well, and some physicians will not be comfortable with the technical nature of the instrument. "It takes a considerable amount of practice for the surgeon to become comfortable with these operations. They're going to see things differently than they've seen them before; they're going to see them better; but they're going to be operating in a small field -- it takes practice, practice, practice."

Around the turn of the century, endoscopes were invented by otolaryngologists and urologists to see within body cavities, according to Schaefer. The paranasal sinus equipment originated in Europe around 1978. The sinus endoscope has been used in the United States only two or three years.

Paranasal sinus endoscopes, with all the accessories needed for surgery, are expensive. But, for office diagnosis only, a physician can purchase the basic endoscope and fiber optic light for about \$3,000. A smaller set of instruments is available for use with children under 10 years old.

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NOTE: The University of Texas Health Science Center at Dallas comprises Southwestern Medical School, Southwestern Graduate School of Biomedical Sciences and the School of Allied Health Sciences.