

Demonstrating Clinical Innovation



Andrew Lane, M.D.

Sinus Surgery Technique Transfers to Skull-Base Surgery

Johns Hopkins Sinus Center surgeons have broad expertise in the medical and surgical management of paranasal sinus disease, using the most up-to-date, minimally invasive techniques. Thanks to mucosal-sparing instrumentation and high-resolution video technology, today's endoscopic sinus surgery offers many benefits to patients with chronic sinusitis. "We perform a targeted removal of bottlenecks that prevent normal sinus drainage," explains Andrew Lane, associate professor and director of the Rhinology and Sinus Surgery Center. "It's all done with small instruments passed through the nostrils, so there are no external scars or bruising."

For even the most complex sinusitis cases, a completely nasal endoscopic approach has been made possible by a high-tech mapping system that allows the surgeon to identify critical anatomic structures that have been distorted or obscured by severe disease or previous surgery. Called stereotac-

tic computer-assisted surgical navigation, the technology works much like a global-positioning system. With this tool, the surgeon can safely operate very near to the thin layer of bone separating the roof of the sinuses from the brain.

But Hopkins surgeons are using the surgical navigation system to do even more. “We now use it to perform endoscopic surgery for medical conditions other than sinusitis,” Lane says, “extending our transnasal approaches to the minimally invasive treatment of tumors of the nose, pituitary gland and eye, as well as to the repair of defects in the skull base through which brain fluid and tissue enter into the nose.”

Image-guided surgery brings together the skills of experienced surgeons with 2- and 3-dimensional images of the skull base obtained using CT or MRI scans. Graphic displays in the operating room link those images to the sterile instruments used by the surgeons so that the instrument tips in real space

also appear in the virtual space of the CT or MRI images. The virtual surgical field allows the surgeon to predict what lies ahead, to avoid damaging vital structures and to assure the complete removal of skull-base tumors.

With the advent of new technologies in imaging and operative and radiation management, the effective treatment of skull-base tumors requires close interdisciplinary communication.

“In this complex surgical area,” says Lane, “physicians in various specialties, such as diagnostics and surgery, must work together to plan and perform this intricate work.”