University Hospitals

Neurological Institute

Maximizing the potential for facial and auditory nerve preservation.

Acoustic Neuroma Program

The Acoustic Neuroma Program—part of the Skull Base Surgery Program of the Brain Tumor Center at the University Hospitals Neurological Institute—has a multi-disciplinary medical team dedicated to the comprehensive management of acoustic neuromas, and other related tumors of the cerebellopontine angle.

An acoustic neuroma originates in the inner ear and causes pressure against the auditory and vestibular nerves. The result is often unilateral hearing loss, dizziness and tinnitus. As tumors enlarge, more serious complications associated with brainstem compression ensue.

The University Hospitals Neurological Institute's approach to acoustic neuroma

Under the direction of Warren R. Selman, MD, Director of the University Hospitals Neurological Institute, and Cliff A. Megerian, MD, Director of the Acoustic Neuroma Program, team members in the Acoustic Neuroma Program offer a collaborative, specialized approach to treatment tailored to the unique needs of each patient. Team members draw upon extensive clinical and research experience to devise the most appropriate therapies using the most advanced technologies available. The result: a more integrated and convenient experience for patients and referring physicians.

Referring to the Acoustic Neuroma Program
216-844-2724
www.UHhospitals.org/neuro

Our team includes specialists in:

- Audiology
- Diagnostic and interventional neuroradiology
- Head and neck surgery
- Neurodiagnostics and neurophysiology
- Neurosurgery
- Otology and neurotology
- Stereotactic radiosurgery (Gamma Knife and Cyberknife)

Diagnosis and testing

Care begins with a thorough evaluation including neurological testing, audiograms, and sophisticated imaging.

Advances in neurophysiology and neuroradiology have made it possible to identify small acoustic neuromas still confined to the internal auditory canal. Often time these tumors are detected after a hearing test for unilateral hearing loss raises concern for an acoustic neuroma or similar retrocochlear condition. Once this situation has been established with a review of the patient's audiogram, a MRI scan is ordered and is the most accurate test for determining the presence as well as size of the neuroma. The Acoustic

Neuroma Program utilizes the newest generation of MRI scanners and state-of-the-art audiological equipment with members of the Audiology Service.

A visit with the Acoustic Neuroma Team can establish the degree of hearing loss as it relates to the tumor, and can prognosticate future hearing trends.

Treatment planning

Options for treatment include observation, stereotactic radiosurgery, and microsurgical resection.

Observation

For patients with small acoustic tumors (<1.0 cm) it may be most appropriate to monitor the tumor's growth. Some older patients have tumors that grow more slowly, so watchful waiting with close surveillance may be the best option compared with the risks of any intervention.

Stereotactic radiosurgery

In patients who demonstrate a growing tumor but do not want to undergo surgical resection, the Acoustic Neuroma Program has successfully utilized stereotactic radiosurgery to prevent tumor growth. The Cyberknife and Gamma Knife can precisely deliver focused radiation in a single fraction to safely treat intracranial lesions. Their use avoids many of the risks of conventional surgery.

Microsurgical resection

Surgical resection is designed to remove the tumor completely and to preserve cranial nerve function. We use microsurgical techniques that offer the best chance for facial nerve and hearing preservation. As such, our neurotology and neurosurgery staff cooperate intraoperatively and postoperatively, utilizing sophisticated intraoperative neurophysiology techniques for facial and auditory nerve monitoring. This approach enables patients at the Neurological Institute to maximize the potential for facial and auditory nerve preservation and function.

Hearing rehabilitation

It is very common for patients with acoustic neuromas to present with or sustain unilateral hearing loss. University Hospitals offers a variety of hearing rehabilitation programs. Some patients may be candidates for an implantable cochlear stimulator (otherwise known as the Baha System) that can restore hearing for patients with single-sided deafness. Occasionally, cochlear implantation rehabilitation is appropriate for, and provided to, patients with bilateral deafness.

Support services for patients and families

In addition to our specialists' integrated expertise, patients and family members receive vital education and emotional support along the way. A nurse is dedicated to the team and helps coordinate care for any specific needs of the patient or the family.

An acoustic neuroma presents certain challenges to patients as well as their families. To help the whole family better understand and feel comfortable with the procedures involved, we provide extensive information about treatment options and invite questions at every stage of care. Our goal is to help patient and family to heal emotionally as well as medically.

Follow-up care and communication with the referring physician

The referring physician plays a key role in our program. We strive to maintain an active partnership with referring physicians during all stages of patient care. Perioperative management is carefully coordinated to ensure the continuity of care by referring physicians.

We provide timely communication with the referring physician after each patient visit. Our team is always available to help with any questions or concerns.

Research efforts at University Hospitals Neurological Institute

Great advances have been made to discover the etiology of acoustic neuromas. Clinical and basic science research efforts are underway to advance the understanding of the cause, prevention, detection and treatment of this disorder. Our staff members have published a variety of scientific articles regard-ing clinical aspects of acoustic neuromas and skull-base surgery. In addition, Dr. Megerian is co-editor of the upcoming book *Surgery of the Cerebellopontine Angle,* to be published in 2007.

The Center for Hearing Research in the Department of Otolaryngology has NIH grants of more than $3 million funding some of our current studies in hearing, hearing loss and cochlear implant technology. Dr. Megerian is principal investigator for a study of the molecular biology of deafness in the Meniere's model, and is co-investigator for research into microsensors for totally implantable cochlear implants. Results of these studies will have significant implications for acoustic neuroma patients who lose their hearing.

Acoustic Neuroma Program Directors

Cliff A. Megerian, MD
Director, Acoustic Neuroma Program
Medical Director, Cochlear Implant Program
Director of Otology and Neurotology
Professor, Otolaryngology – Head & Neck Surgery and Professor, Neurological Surgery
cliff.megerian@UHhospitals.org
216-844-5500

Warren R. Selman, MD
Director, University Hospitals Neurological Institute
The Harvey Huntington Brown, Jr. Professor and Chairman, Department of Neurosurgery
warren.selman@UHhospitals.org
216-844-5745