INNOVATIONS

in Otolaryngology – Head and Neck Surgery

Head & Neck Cancer Center Makes Strides

pg 4

UH Ear, Nose & Throat Institute research continues in U.S and Africa

Director’s leadership results in expansion and better care

Collaborative approach leads to novel skull base procedure

Pierre Lavertu, MD

University Hospitals Case Medical Center and Case Western Reserve University School of Medicine are consistently recognized as two of the premier institutions in the nation, according to U.S. News & World Report's annual rankings.
From the Director

Moving in the Right Direction

We enter 2014 looking back at some of the great achievements that defined this past year and feeling optimistic about the future of the Department of Otolaryngology and the University Hospitals Ear, Nose & Throat Institute.

We are pleased to welcome new team members who have contributed to making 2013 a success.

Todd Otteson, MD, Division Chief, Pediatric Otolaryngology, University Hospitals Rainbow Babies & Children’s Hospital; and Associate Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine; and Jay R. Shah, MD, MD, Assistant Professor, Otolaryngology, Case Western Reserve University School of Medicine, joined the Pediatric Otolaryngology team in 2013. In addition, Kenneth Rodriguez, MD, Assistant Professor, Otolaryngology, Case Western Reserve University School of Medicine, has been recruited to become the Chief of Rhinology, Sinus and Anterior Skull Base Surgery.

We will hire two additional physicians in 2014, as detailed in our cover story (page 4).

In regard to our research group, we are pleased that Ruben Stepanyan, PhD, has joined the team following completion of a fellowship at the University of Kentucky (UK). Dr. Stepanyan and colleagues at UK recently published preclinical research showing that the proteins protocadherin-15 and cadherin-23 are involved in the regeneration of tip links (tiny protein chains that connect stereocilia and open ion channels). These are important findings toward the development of strategies to restore normal hearing.

We are also pleased to have had more than 400 applications for the four otolaryngology residency positions with UH Case Medical Center and Case Western Reserve University School of Medicine.

This issue focuses on the Head & Neck Cancer Center, which is one of eight Centers of Excellence that compose the UH Ear, Nose & Throat Institute. The growth of the center, both in terms of our ability to treat patients and the quality of patient care we provide, is just one example of our remarkable achievements.
Research, Outreach and Education

The UH Ear, Nose & Throat Institute continues its research and educational efforts

The UH Ear, Nose & Throat Institute prides itself on providing excellent training and educational opportunities. The nation’s most well-known ear and skull-based surgeon, Derald E. Brackmann, MD, from the House Ear Clinic in Los Angeles, taught a two-day temporal bone course in October 2013, along with his former fellow and current course director Maroun Semaan, MD, Co-Director, UH Ear, Nose & Throat Institute; Ear, Hearing & Balance Center and Audio & Cochlear Implant Center; and Assistant Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine.

UH Ear, Nose & Throat Institute physicians also continue to expand their research and development accomplishments. Cliff Megerian, MD, FACS, Director, UH Ear, nose and throat institute; Chairman, Department of Otolaryngology, UH Case Medical Center; Richard W. and Patricia R. Pogue Chair in Auditory Surgery and Hearing Sciences; and Professor of Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine, along with otolaryngology colleague Dr. Semaan, and Wen H. Ko, PhD, Professor Emeritus, Electrical Engineering and Applied Physics, Case School of Engineering, Case Western Reserve University, recently secured a provisional patent for a cochlear implant microphone. The microphone was developed in conjunction with Darrin J. Young, PhD. Director, Wireless Microsystem Laboratory, The University of Utah.

The department may be extending its research efforts into Africa as well. Under the guidance of Chad Zender, MD, FACS, Otolaryngology, UH Case Medical Center; and Assistant Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine, colleagues from University Hospitals, in conjunction with faculty from Harvard University, are working to create a head and neck surgical mission program in Kampala, Uganda.

Dr. Zender has extensive experience participating in head and neck surgical missions, including multiple trips to the Dominican Republic and separate trips to Kenya and Nigeria under the guidance of his mentor, James Netterville, MD, Professor, Department of Otolaryngology, Vanderbilt Bill Wilkerson Center. Despite very limited hospital resources, the team treated 60 to 80 patients during each of their two-week mission trips to Africa. Surgeons were able to perform complex procedures including thyroidectomies, jaw and face reconstructions, and cleft lip and palate repairs. The surgeons also provided training to local doctors so that they could provide postsurgical care as well as treat new patients after the U.S.-based team left.

Dr. Zender and UH colleagues will go to Uganda this January to develop a head and neck program built upon existing Case Western Reserve University resources in Kampala. The new head and neck program will treat patients with unmet medical needs and will also include research development in the region.

Current research efforts focus on how the strains of human papillomavirus (HPV) that cause cervical cancer in the U.S. differ from the strains that cause cervical cancer in Africa and may be more emergent in an HIV-positive population, such as that seen in Uganda. Dr. Zender and colleagues want to determine whether the HPV strains that cause head and neck cancers in Africa differ from those that cause similar cancers in the United States.

Aaron Weinberg, DMD, PhD, Associate Dean for Research, Professor and Chair, Department of Biological Sciences, School of Dental Medicine, Case Western Reserve University, who is collaborating with Dr. Zender and colleagues on head and neck cancer research (see page 4), will accompany Dr. Zender on his planned trip to Uganda in January. They will join Robert Salata, MD, Division Chief, Infectious Disease and HIV Medicine, UH Case Medical Center; Program Director, Infectious Disease, UH Case Medical Center; and Professor of Medicine, Case Western Reserve University School of Medicine, who has extensive experience with the Kampala-based HIV program.

Dr. Chad Zender and colleagues in Africa.
Teamwork and patient-focused care yield comprehensive treatment plans

Under the leadership of Pierre Lavertu, MD, Director, Head and Neck Surgery and Oncology, University Hospitals Case Medical Center; and Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine (see Physician Focus on page 6), UH Case Medical Center has increased the number of patients seen, improved patient care and initiated collaborative research efforts.

Team-Based Approach
Dr. Lavertu attributes the success of the UH Ear, Nose & Throat Institute’s Head & Neck Cancer Center to the team-based approach, where all aspects of patient care are considered when developing a treatment plan for patients. The Head & Neck Cancer Care Team holds weekly tumor board meetings, where specific patient cases are discussed. The tumor board includes all oncologists, surgeons and radiologists as well as nonphysician team members such as nurses, speech pathologists, nutritionists/dietitians, pain management specialists, palliative care representatives and mental health specialists.

"The tumor boards are collaborative with a focus on building a unified treatment plan for each patient," says Michael Gibson, MD, PhD, Medical Director, Head & Neck Cancer Care Team, University Hospitals Seidman Cancer Center; and Associate Professor, Medicine, Case Western Reserve University School of Medicine.

The team approach has been enhanced since the head and neck team also sees patients at the nationally renowned UH Seidman Cancer Center. "We are closer to our colleagues geographically, as opposed to working in satellite offices," says Dr. Lavertu. "Our proximity to one another makes us unique," agrees Dr. Gibson. "Sometimes two specialists can see patients together on short notice, which enhances patient care."

The surgical team has also worked with the nursing and anesthesia staffs to develop a new care path that allows postsurgical free-flap patients to bypass the ICU and go directly to the dedicated head and neck cancer floor, freeing up beds in the ICU. "We’ve been doing this for more than a year, with excellent results," says Chad Zender, MD, FACS, Otolaryngology, UH Case Medical Center; and Assistant Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine. "The length of the hospital stay for free-flap patients has stayed the same. Our patients are doing really well with postsurgical treatment on the dedicated floor."

Another benefit of the team-based approach is a focus on survivorship care, which supports patients over the long term as they recover from the side effects of surgery and/or therapy. For head and neck patients, this often means follow-up care in the areas of speech and swallowing. "The goal is not just to cure the patient but also treat and manage any acute or ongoing side effects," explains Dr. Gibson.

Research Efforts
The head and neck team is involved in a variety of clinical trials. Currently, the team is investigating strategies to decrease morbidity and side effects from cancer treatment in human papillomavirus (HPV)-positive head and neck cancer patients. "Outcomes are 25 percent better at five years if a patient is HPV-positive," says Dr. Lavertu. The HPV population tends to be younger with less history of tobacco and alcohol use compared to the HPV-negative tumor patients, who tend to be older smokers and/or drinkers. Strategies for decreasing morbidity include reducing the intensity of treatment by using laser or robotic surgical procedures and minimizing postoperative chemotherapy and radiation. The team is also looking into whether initial use of chemotherapy and radiation is necessary for some HPV-positive tumors.

Part of improving the patient experience involves state-of-the-art treatment. In about two years, the Head & Neck Cancer Center will offer the first proton radiation treatments...
available in Ohio. Unlike traditional radiotherapy, proton therapy energy can be distributed more directly and deposited in specific tissues in volumes designated by physicians. The 3-D patterns of the beams allow for greater precision, thereby minimizing damage to surrounding tissue. “Proton therapy is a good option in head and neck cancer treatment in selected patients because it can help spare critical structures, such as the brain and spinal cord, from excess radiation,” says Min Yao, MD, PhD, Associate Professor, Radiation Oncology, Case Western Reserve University School of Medicine, who specializes in radiation oncology.

A targeted radiation therapy technique currently available is CyberKnife®, which uses high-dose radiation to treat the patient with a short course of radiotherapy. Rod Rezaee, MD, FACS, Director, Microvascular Head and Neck Reconstructive Surgery, UH Seidman Cancer Center; and Assistant Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine, and Dr. Yao have been working together using this technology. “CyberKnife is a unique treatment our team can offer a patient with previously treated cancer that cannot be offered elsewhere,” says Dr. Rezaee.

“We typically use the CyberKnife as a second course of radiation for patients who had previous radiation or for patients whose tumors are near a critical area, such as the skull base or near the optic nerve or spine,” explains Dr. Yao. The team is also examining the role of CyberKnife in situations where patients have exhausted all other treatment options.

Research efforts also have a collaborative focus. Drs. Rezaee, Lavertu and Zender continue to work with Aaron Weinberg, DMD, PhD, Associate Dean for Research, Professor and Chair, Department of Biological Sciences, School of Dental Medicine, Case Western Reserve University, to identify biological markers in the mouth and upper aerodigestive tract that are prognosticators of potential cancer. Dr. Weinberg’s research is based on the hypothesis that precancerous lesions in the oral cavity overexpress the protein human beta defensin-3 (hBD3), which may affect the recruitment of cells that allow for increased tumor growth.

Drs. Zender and Weinberg are also collaborating on research for a potential project in Uganda (see the news section, page 3). hBD3 may play a role in suppressing head and neck cancer cell migration. The doctors want to examine whether the peptide behaves differently in an HIV-positive population. This will help predict whether treatments used in a nonimmune-compromised population will be effective in an immune-compromised population.

New Physicians
The free-flap program has seen tremendous growth. Prior to Dr. Rezaee’s arrival in September 2006, the institute had performed fewer than 15 free-flap procedures annually. In 2013, the team surpassed its 500th procedure and performs between 150 and 175 flaps of all types per year. “This reflects the trust of the regional physicians who refer their patients to our team and the collective positive experience the patients and their families have had at the UH Ear, Nose & Throat Institute and dedicated floor at UH Seidman Cancer Center,” says Dr. Rezaee.

Two new physicians will join the head and neck team in 2014. Nicole Fowler, MD, will join the team in August and will be responsible for building a head and neck tumor database and tissue bank for the eventual development of a tumor registry. Dr. Fowler is completing a fellowship in head and neck microvascular reconstructive surgery at the University of Washington.

Evan Greenbaum, MD, will join the team in July. He will be the first Head and Neck Microvascular Surgery Fellow.
Leadership through Collaboration for a Patient-Centered Focus

The Head & Neck Cancer Center has grown in terms of the number of patients treated and in its research capabilities under the direction of Pierre Lavertu, MD, FRCS (C), FACS, Director, Head and Neck Surgery and Oncology, University Hospitals Case Medical Center; and Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine. “Under Pierre’s leadership, we have seen the Head & Neck Cancer Center within the UH Ear, Nose & Throat Institute grow from two providers to five providers, including Nicole Fowler, MD, who will be joining the team in 2014,” says Cliff Megerian, MD, FACS, Director, UH Ear, Nose & Throat Institute; Chairman, Department of Otolaryngology, UH Case Medical Center; Richard W. and Patricia R. Pogue Chair in Auditory Surgery and Hearing Sciences; and Professor of Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine. “His leadership has been extraordinary,” says Dr. Megerian. The center now performs more than 160 free-flap procedures every year.

“I've always been a proponent of the team approach,” says Dr. Lavertu. “As a surgeon, the tendency is to think surgically first. Using a team approach, including tumor boards, forces us to look at all options and form a treatment plan that is in the patient’s best interests.”

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For details on the team-based approach, see the cover story on pages 4 – 5.

Dr. Lavertu is a renowned head and neck surgeon and a Fellow of the American College of Surgeons and Canada’s Royal College of Physicians and Surgeons. A graduate of the University of Montreal Medical School where he also completed his residency, he completed two additional years of training in head and neck surgery and oncology, one at the University of Montreal and one at The Cleveland Clinic Foundation. Among Dr. Lavertu's clinical interests are surgery of the base of the skull, head and neck surgical oncology, thyroid and parathyroid surgery. He is recognized as an expert for his skill in the evaluation and treatment of tumors of the head and neck, anterior and mid-base of the skull, and thyroid gland. He is also recognized for his support of organ preservation strategies in the management of head and neck cancer.

Dr. Lavertu is widely published in the area of surgical oncology. He served as an editor and author for Netter's Surgical Anatomy and Approaches, published by Elsevier Saunders in August 2013 (pictured above). Dr. Lavertu edited the section titled “The Neck.” He also co-authored two chapters: the first on selective neck dissection with Chad Zender, MD, FACS, Otolaryngology, University Hospitals Case Medical Center; and Assistant Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine; and the second on tracheotomy and cricothyrotomy with Rod Rezaee, MD, FACS, Director, Microvascular Head and Neck Reconstructive Surgery, University Hospitals Seidman Cancer Center; and Assistant Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine. Fifth-year residents at School of Medicine/ENT at Case Western Reserve University, Evan McBeath, MD, and Yi-Chun Carol Liu, MD, were also co-authors on the first and second chapters, respectively.
“Cavernous malformations of the brain stem are rare lesions,” says Nicholas Bambakidis, MD, Director, Cerebrovascular & Skull Base Surgery, University Hospitals Neurological Institute; and Associate Professor, Neurological Surgery, Case Western Reserve University School of Medicine. “They often begin developing in young adulthood and many continue to grow. There are no known triggers, and they are not thought to be congenital. What we do know is that surgical resection is the only proven treatment option. If untreated, patients have a slow progression of symptoms that usually begins with weakness on the left side, developing over the years to paralysis, leaving the patient wheelchair bound or worse. Hemorrhagic events are common.”

The rarity of this condition allows UH physicians to treat fewer than a dozen patients per year, who usually present with a new worsening of symptoms that improve with surgery. One recent example was a 40-year-old woman referred to UH by a community neurosurgeon. The patient had a long-standing history of this malformation and was experiencing balance problems when she walked. During the previous 10 years, she had suffered multiple strokes, and her outlook was grave. The lesion was deemed “inoperable” with conventional techniques by the referring physician.

This unique case was reviewed by Dr. Bambakidis, who consulted with Cliff Megerian, MD, Richard W. and Patricia R. Pogue Chair in Auditory Surgery and Hearing Sciences; Chairman, UH Otolaryngology – Head and Neck Surgery; Director, Otology and Neurotology, UH Case Medical Center; and Chair and Professor, Otolaryngology – Head and Neck Surgery and Neurological Surgery, Case Western Reserve University School of Medicine. Collaboratively, these two surgeons thoroughly reviewed the progression of symptoms and worked up a surgical approach using preoperative imaging and mapping before getting team approval.

“Because the path to the brain stem in this patient was convoluted, the common surgical access routes were not an option,” says Dr. Megerian. If used in this surgery, those routes would likely have led to deafness. With a goal of preserving the patient’s hearing and balance, he proposed a unique option – using a subtemporal transpetrosal labyrinth-sparing approach. Since the surgery was to be performed in a highly vascular area of the brain, the risks included stroke or permanent neurological injury. The two surgeons repeatedly re-evaluated these risks as they honed their approach before starting the procedure.

Surgery was performed using technology-aided neuronavigation. Employing a team approach, Dr. Megerian helped gain access to the skull base while Dr. Bambakidis and team completely removed the lesion. The patient came through the surgery with both her hearing and balance intact and without any new neurological symptoms.

In this modern era of health care, advances are often attributed to improvements in technology. Indeed, this surgery could not have been performed without the latest imaging and surgical devices; however, the key to this patient’s successful outcome was good, old-fashioned teamwork. These two physicians perform surgery together almost weekly: Dr. Bambakidis has expertise in the brain while Dr. Megerian is an expert on the skull. “This successful procedure was possible only because we had accumulated years of experience working together in surgery,” says Dr. Megerian.

Cultivating Relationships

The patient in this case was referred to UH by a neurosurgeon practicing at a Cleveland-area community hospital. “This physician’s collaboration with peers inside the UH network was just as vital to the patient’s outcome as the surgery itself,” says Dr. Nicholas Bambakidis. “However, the referral came as a final option for this patient. Another critical kind of teamwork is expanding our relationships with outside providers to help us identify patients earlier and reduce suffering.”

To view a video of this procedure, please visit www.UHhospitals.org/SkullBaseVideo.

To refer a patient or consult with a physician, call 216-844-1111 or 800-421-9199.
When to Refer for Sinus Issues

Common nasal or sinus symptoms can be caused by a range of underlying problems, often making exact diagnosis challenging. A thoughtful, stepwise approach is needed to deal with these complex problems. Chronic sinus disease, allergic rhinitis, anatomical problems (deviated nasal septum) or, less commonly, tumors can be the underlying cause – but these conditions can also overlap, leading to worsening symptoms. “The most common referrals are for problems breathing through the nose, facial pain and pressure or headaches, postnasal drainage, smell and taste disorders, and nasal bleeding,” says Kenneth Rodriguez, MD, Chief, Rhinology, Allergy, and Anterior Skull Base Surgery, University Hospitals Case Medical Center; and Assistant Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine.

Primary care providers and pediatricians should consider referring patients for sinus issues that are refractory to common therapies such as topical steroids or antibiotics. “Failure of appropriate initial therapy could represent a resistant organism or an anatomical problem that is preventing symptom resolution,” explains Dr. Rodriguez. “A diagnosis can often be found with nasal endoscopy, saving the patient the need for the radiation of a CT scan.”

During the first visit, patients are questioned in detail about their nasal and sinus symptoms and history, including past treatments. Next they undergo a comprehensive examination, including nasal endoscopy which allows both nasal passages to be evaluated. Based on those findings, a plan is formulated most often with medical therapy as first line. Patients typically return for a follow-up visit within two to three months to allow new medications to have maximum benefit.

Surgical Referrals
In addition to Dr. Rodriguez, other otolaryngologists in the UH Ear, Nose & Throat Institute also perform sinus surgery, including Diana Ponsky, MD, Assistant Professor, Otolaryngology, and Clinical Senior Instructor, Plastic Surgery, Case Western Reserve University School of Medicine; A. Tony Reisman, MD, Division Chief, Otolaryngology, University Hospitals Ahuja Medical Center; and Assistant Professor, Otolaryngology, Case Western Reserve University School of Medicine; Rod Rezaee, MD, FACS, Director, Microvascular Head and Neck Reconstructive Surgery, University Hospitals Seidman Cancer Center; and Assistant Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine; and Chad Zender, MD, FACS, Otolaryngology, UH Case Medical Center; and Assistant Professor, Otolaryngology – Head and Neck Surgery, Case Western Reserve University School of Medicine.

In cases where surgery of the anterior cranial base is required to remove a tumor, the otolaryngology team works in conjunction with neurosurgery to create a corridor through the nose to reach these tumors. “Going through the nose prevents the need to open the skull from above and mobilize the brain to get to the tumor,” says Dr. Rodriguez.

A sinus center is currently under development at University Hospitals Chagrin Highlands Health Center near UH Ahuja Medical Center. The center will feature state-of-the-art facilities that offer a range of services focused on caring for sinus and nasal patients. Patients can currently be seen at many locations within the hospital system.

For more information or to refer a patient, please call 216-844-6000.

UH Transfer Referral Center
University Hospitals Transfer Referral Center provides immediate and comprehensive round-the-clock services for adult and pediatric patients and serves as a central point of entry for transfers into University Hospitals Case Medical Center and other system hospitals.

With just one phone call, our team of transfer liaisons will expedite the process and give you immediate access to our critical care transport teams, board-certified specialists and five Beacon Award-winning intensive care units. We streamline the transfer process and handle all the details so that you have more time to focus on patient care.

Please call 216-844-1111 or 800-421-9199 to speak with a transfer referral liaison.