Management of End-Stage Osteoradionecrosis with a Vascularized Bone Transfer

Daniel Alam, MD

Radiation-induced osteoradionecrosis (ORN) is often a devastating delayed complication of radiation therapy to the head and neck. ORN has been defined as exposed bone within a radiated field that has not healed with conservative therapy after a three-month period. With the recent increase in concurrent chemotherapy and radiation therapy protocols to treat head and neck cancer, this problem is becoming increasingly prevalent.

The most important risk factor for the development of ORN is radiation therapy, although the increased use of bisphosphonate drugs have also resulted in an increase in this condition. Patients with total doses in excess of 50 Gy are at significantly higher risk of development of ORN than those treated with lower dose profiles. The second most important factor is the local environment of the oral cavity. Poor oral hygiene, odontogenic infections, chronic inflammation, and local trauma (either iatrogenic or incidental) clearly also play a significant role in the progression and severity of ORN.

The management of ORN has rested primarily on efforts aimed at prevention and curtailing disease progression. The traditional dictum is that any marginal teeth in the field or radiation therapy should be removed prior to the onset of treatment. While this practice is uniformly advised, recent data suggest it may not be sufficient or effective in preventing late complications. Hyperbaric oxygen protocols have also been supported by small series as potentially beneficial in the prevention of ORN. Unfortunately, a recent larger clinical trial including a double-blinded placebo-controlled series found no clinical benefit of this type of treatment.

Because of this, the unfortunate reality is that despite appropriate management and diligent clinical care, many patients will progress to advanced disease with potentially serious complications. Pathologic fractures, orocutaneous fistulas, and recurrent soft tissue cellulitis with progressive scarring and necrosis are fairly common complications seen in late stage ORN. In essence, once an extensive segment of the mandible is necrotic and colonized with multi-microbial flora, there is no conservative approach to restore the viability of this bone.

The increasing number of patients seen in this terminal state of ORN has led to a difficult clinical problem with few good solutions. Surgical management has traditionally been avoided with the fear of worsening the problem due to the poor vascularity of the surrounding wound bed. Hypothetically, the ideal solution would be to reconstruct the jaw with healthy, well-vascularized bone from a non-irradiated source.

Key Point:

- We have started a protocol for the management of terminal stage jaw necrosis, which includes resection of the dead bone followed by immediate reconstruction.

This aggressive therapy has been used primarily for patients with terminal ORN and some form of associated complication, such as pathologic fractures, recurrent soft tissue cellulitis, trismus, etc.
FROM THE CHAIRMAN

Dear Colleagues:

It is with great pleasure that I welcome you to this edition of Otolaryngology Advances to update you on the innovative programs and recent advances of the Cleveland Clinic Head & Neck Institute. I joined the institute a little over half a year ago attracted by the opportunity to lead one of the finest teams of clinicians, educators and scientists. I have not been disappointed. If anything, I may have underestimated the remarkable quality and sophistication of our institute and the opportunities to impact the lives of patients, who often come to us feeling that they have exhausted all opportunities to resolve their problems. This newsletter serves to highlight only a few of our outstanding programs.

Cleveland Clinic has moved away from a predominantly departmental structure to institutes, in which independent departments who care for people with common disorders or in the same body area are integrated. The Head & Neck Institute combines otolaryngology, dentistry, speech-language pathology, audiology and oral surgery. We are now able to manage in a comprehensive fashion the overall needs of patients with head and neck diseases and disorders. This structure also facilitates a collaborative culture, well-rounded training programs and more comprehensive research.

Many of our programs are highlighted in this newsletter, representing a wide array of programs but only touching the surface of the unique care options available. With my interest in laryngology and professional voice, it has been a remarkable opportunity for me to join the voice team along with Drs. Hicks, Abelson and Milstein. We will soon have a unique, state-of-the-art voice center as we integrate multiple stroboscopes with high-speed video, high-definition cameras and a recording studio. The legacy of laryngology established by our two esteemed former chairmen, Drs. Harvey Tucker and Marshall Strome, continues.

As I end this introductory column, I would like to give you a taste of things to come. We are in the process of completely renovating the entire 7th floor of the Crile Building to accommodate the new and significantly expanded Head & Neck Institute. We have created a state-of-the-art conference center on the floor. We are implementing a global digital video, audio and still image capture and archiving system that will allow us to share images throughout all of our sites, our operating rooms and our conference center. In the near future, we will be able to provide remote, password-protected access for our referring physicians and for patients to access their relevant images.

We have recently recruited one of the most highly recognized and well-funded tinnitus researchers in the country, Dr. James Kaltenbach, who will integrate his activities with our highly recognized clinical tinnitus program to create one of the most comprehensive tinnitus programs in the world. The institute is doing well, our programs remain very strong and the future is bright for both the Head & Neck Institute and Cleveland Clinic.

Michael S. Benninger, MD
Chairman
Cleveland Clinic Head & Neck Institute
With this in mind, surgeons in the Section of Facial, Plastic and Reconstructive Surgery started a protocol for the management of terminal stage jaw necrosis, which includes resection of the dead bone followed by immediate reconstruction. The necrotic bone is removed until healthy bleeding bone is identified. Figure 1 shows a resected segment of mandible with a necrotic portion due to ORN. The remaining segment of the jaw is carefully mapped out and then reconstructed with a well-vascularized piece of the patient’s own fibula. The fibula is an excellent donor bone because it is strong enough to support the forces required for future dental implantation and fracture rates are very low. In this series, no patients had postoperative jaw fractures. The removal of the bone is associated with minimal morbidity because the majority of weight-bearing is done by the tibia, which is left unaffected. In the last five years more than 40 patients have undergone this procedure with excellent outcomes. All but two patients have had complete resolutions of their recurrent infections and have had complete healing of their jaw.

This aggressive therapy has been used primarily for patients with terminal ORN and some form of associated complication, such as pathologic fractures, recurrent soft tissue cellulitis, trismus, etc. The procedure involves a week-long hospitalization and recovery of up to a month for both the jaw as well as the donor leg. Therefore, these procedures are generally reserved for severe cases who have failed traditional therapy. Patients with early ORN should continue to be managed conservatively.

For references, please email the editor.

An Uncommon Perspective on Chronic Cough

Catherine Henry, MD, FACP

Chronic cough is a common problem which is frustrating for both patients and physicians. We offer a unique approach to the evaluation and management of patients with chronic cough.

Catherine Henry, MD, FACP, is a general internist who practices medical otolaryngology in the Head & Neck Institute, and has a special interest in chronic cough. Her background in internal medicine offers a broader perspective on cough than is available in most otolaryngology settings. She sees many patients with chronic cough and/or throat clearing. Causes of chronic cough are varied and include both ENT and non-ENT causes. While there are many disorders that can cause or contribute to chronic cough, the most common causes (in no particular order) are:

- Acid reflux disease (called laryngopharyngeal reflux when it affects the throat)
- Cough variant asthma
- Allergies and chronic sinusitis
- Postnasal drip
- Medications, most notably ACE inhibitors
- Sensory neuropathic cough and irritate larynx

When lung disorders causing chronic cough have been ruled out, a systematic approach to determine the cause (or causes) can be helpful, starting with a careful history, an ear, nose, and throat examination, and laryngoscopy. Depending on the specifics, CT scans of the sinuses, tests to evaluate for acid reflux, allergy evaluation, swallowing evaluations, and other diagnostic testing may be helpful. In the case of laryngopharyngeal reflux, a trial of medication and lifestyle changes to treat reflux can be a helpful diagnostic and therapeutic tool. Referral to a speech pathologist is often helpful, and Dr. Henry works closely with Claudio Milstein, PhD, in diagnosing and treating some of our chronic cough patients.

Sensory neuropathic cough is a relatively newly described disorder in which the nerves that sense the need to cough malfunction. While there are no tests which can specifically diagnose this disorder, there are features in the history which are typical. In patients that have symptoms consistent with this disorder and no other diagnosis to explain the cough, there are medications which can be helpful in controlling symptoms. These include amitriptyline, gabapentin, and other drugs commonly used to treat neuropathic pain.

Chronic cough is a challenging problem that affects many patients’ quality of life. Our approach offers answers and hope for many of these patients.
Several studies we have performed attest to the efficacy of the endoscopic approach. The initial study reported on 19 patients with sinonasal malignant neoplasms with a mean follow-up of 26.4 months. The overall survival and disease-free survival were 78.9% and 68.4% at 32 months, respectively. In a follow-up study, Batra et al. compared patients undergoing traditional craniofacial resection and minimally invasive endoscopic resection of anterior skull base neoplasms. The operative parameters and overall survival were comparable for the groups, with the endoscopic group having fewer complications.

The ability to resect skull base neoplasms strictly via the endoscopic approach has been a significant advance in management of these challenging patients. In the past, many of these patients required a craniotomy and the associated morbidity of brain retraction and loss of sense of smell. As experience has accumulated, some patients can be discharged in 48 to 72 hours without requiring a lumbar drain. Amber Luong, MD, recently has reviewed the 8-year experience with endoscopic resection of sinonasal and skull base neoplasms. The results with a much larger number of patients with longer follow-up appear to mirror the early series. Future research efforts must focus on multi-institutional studies that carefully scrutinize the results of endoscopic and open techniques to better help our patients.

For references, please email the editor.

Key Point:

- Resection of skull base neoplasms via the endoscopic approach is a significant advancement. Early studies show this approach results in fewer complications, better cosmesis and a faster recovery. Future efforts will focus on multi-institutional studies.
Figure 1: 76-year-old female presented with 4-month history of right nasal obstruction and epistaxis. Preoperative MRI demonstrates extensive right sinonasal undifferentiated carcinoma (SNUC) with extension to the skull base and right orbit. The patient underwent minimally invasive endoscopic resection of the neoplasm, followed by combined radiation and chemotherapy.

Figure 2: Postoperative MRI at 3 years demonstrates no evidence of recurrence. The patient is now 4 years free of disease.

Nasal and Sinus Disorders Clinical Research

The Cleveland Clinic Head & Neck Institute has been on the forefront of clinical research in the field of rhinology. We have published more than 50 peer-reviewed articles and book chapters in the field during the past 5 years.

We also were a designated participatory site for an FDA trial on medical management with nebulized tobramycin for refractory chronic rhinosinusitis after sinus surgery.

Clinical research trials currently under way include:

Arthrocare Corporation study titled “A prospective, randomized, controlled clinical study to validate a clinical and endoscopic assessment scoring system that evaluates longitudinal healing of the middle meatal mucosa following functional endoscopic sinus surgery.” Cleveland Clinic is a co-investigator for this study, which will assess paranasal sinus healing after sinus surgery, which still remains a significant challenge for our patients.

Recent grants include $13,200 from Xoran Technologies, Inc., to study intraoperative volume CT scanner for sinonasal and skull base procedures; and $4,500 from the American Academy of Otolaryngic Allergy to study nasal blood flow responses to inhalant allergens.
Botulinum Toxin Therapy New Option for Patients with Cricopharyngeus Muscle Spasm and Sialorrhea

Michael S. Benninger, MD

Because botulinum toxin type A (Botox®) has been proven effective for a variety of musculoskeletal disorders, Cleveland Clinic otolaryngologists are expanding its indications to help minimize some of the devastating complications of several rare diseases.

We are one of a few groups in the country using botulinum toxin to treat cricopharyngeus muscle spasm and sialorrhea. Typical indications for botulinum toxin in ENT are facial wrinkles and spasmodic dysphonia. Cleveland Clinic physicians also use the drug to treat major muscle group disorders, such as torticollis, postradiation muscular contraction disorders, such as jaw muscle trismus, other facial and neck dystonias and dysphagia.

Cricopharyngeus treatment

The cricopharyngeus is a sphincter muscle located at the top of the esophagus. Normally contracted, it relaxes when a person swallows. In a number of patients, however, the cricopharyngeus muscle does not relax during swallowing as it should. This population includes postlaryngectomy patients, postradiation therapy patients and patients with progressive neurologic disorders, such as amyotrophic lateral sclerosis (ALS). The disorder also can occur in patients without disease. Patients with cricopharyngeal spasm typically present with oropharyngeal dysphagia and, at times, aspiration.

Traditionally, Cleveland Clinic patients with cricopharyngeus muscle spasm were treated with dilation or myotomy. Although dilation is usually initially effective, over time the cricopharyngeus muscle begins to contract again, necessitating repetitive dilations, as well as multiple anesthesias.

Myotomy can be performed to permanently relax the cricopharyngeus muscle. In some patients, this open neck, nonreversible procedure is a viable option, but for others, it is not. For instance, when the cricopharyngeus muscle is not competent in patients with gastroesophageal reflux disease or in elderly patients who are prone to it, reflux could cause them to aspirate, potentially resulting in aspiration pneumonia. Therefore, cutting the muscle might result in worse problems in this population.

Beauty of botulinum therapy

Botulinum toxin therapy offers a simple, low-risk first step in the treatment of patients with cricopharyngeus muscle spasm. It is a 20-minute outpatient procedure with few complications that is performed in conjunction with electromyography. A 50-100 unit dose of toxin is injected into the cricopharyngeus muscle, which requires a knowledgeable and experienced physician.

Although the effects of botulinum toxin wear off in about 3-6 months, the injection can be repeated as needed. This characteristic of the treatment can be an advantage because if the patient begins to have reflux or other side effects, the effect of the toxin will resolve and the previously mentioned treatments can be instituted.

Treatment of sialorrhea

Most sialorrhea patients seen at the Head & Neck Institute are children with cerebral palsy or patients with progressive neurodegenerative diseases, such as ALS. Treatment options are limited for these patients. Medications to reduce saliva production have significant side effects. Surgically rerouting the salivary glands back further in the throat is a complex operation with an irregular success rate, and removing the salivary glands would be a significant operation for a patient with progressive neurologic disease.

Injecting botulinum toxin into the salivary glands is a 5-minute procedure with minimal discomfort or adverse effects for the patient.*

*Dr. Benninger had treated sialorrhea patients with botulinum toxin for a number of years during his tenure at Henry Ford Health System in Detroit. Although complete resolution was not achieved in all patients, all patients did notice improvement. The first Cleveland Clinic patients to be treated with the drug are now scheduled for injection.

Key Point:

- Botulinum toxin therapy is a low-risk and reversible initial treatment for cricopharyngeus muscle spasm and sialorrhea. It does require a knowledgeable and experienced physician.
By the end of the year, Cleveland Clinic will be one of the first medical centers in the world offering high-definition videostroboscopy for laryngeal assessment. The Head & Neck Institute already uses color high-speed videostroboscopy for both research and clinical use.

Videostroboscopy is a tool used to assess factors that may contribute to voice problems and to detect or differentiate lesions. It uses a strobe light to catch selective images of the vocal folds while they vibrate, which tricks the eye into seeing a slow-motion view of the vibration. It does not look at each individual waveform.

**Power of high-definition**

The difference between standard and high-definition (HD) videostroboscopy is akin to the difference between standard-definition and HD television. The greater resolution of the HD technology offers significantly improved clarity and better depth perception.

With HD videostroboscopy, every nuance of the mucous membrane structure can be seen, whereas in standard stroboscopy the image is less clear. HD video imaging can help determine whether a lesion on the vocal fold is a cyst, nodule or polyp, taking the guesswork out of treatment. It also can help identify important nuances such as small feeding blood vessels that may not be well seen in standard definition.

The technology's importance is further underscored when a physician is working endoscopically in the operating room with cases such as skull base tumor removal, and trying to differentiate between mucous membrane and the lining of the brain. For singers with voice problems, being able to visualize and then treat a small blemish on the vocal fold may mean the difference between their ability to reach high E or high C, and potentially between the Metropolitan and a local opera company.

We plan to extend the use of HD video imaging in both office-based laryngeal evaluations and surgical theaters. It will be used for ear, nasal sinus and skull base cases as well as for laryngeal surgery in the OR.

Additionally, image captures from all of our devices throughout the system (stroboscopies, video endoscopies, nasal endoscopies and surgical videos) will be put on a network so that they can be reviewed remotely, both from within the system and outside the system. During the next year or so, password-protected sites will be created for referring physicians, who will be able to view videos and images of their patients online. These capabilities will be unique to Cleveland Clinic. In the long term, we expect to offer international video consultative services for professional singers with voice problems.

**High-speed videostroboscopy**

The vocal folds vibrate from 70 to 1,300 times per second; the vocal folds of a person singing high C vibrate at 1,024 cycles per second. At even the lower rates of vibration, the eye cannot distinguish between individual images, making it impossible to see the true vibration of the vocal folds.

Color high-speed videostroboscopy can record all these vibrations, and then slow them down so that each individual waveform and vibration can be seen. This tool represents a dramatic leap from previous technology and is particularly useful for treating people with complex voice problems that are difficult to identify. Cleveland Clinic’s Head & Neck Institute is one of a few centers that offers color photography and that uses it for both research and clinical use.

**Key Points:**

- High-definition videostroboscopy provides significantly improved clarity for laryngeal assessment.
- The use of high-definition imaging will be expanded to include surgical assessment.
- Image captures will be put on a network so that they can be shared and reviewed remotely, both from within the system and outside the system.
- High-speed color videostroboscopy is particularly useful for treating people with complex voice problems that are difficult to identify by traditional methods. It is also a robust research tool.
Longitudinal Evaluation of the Baha® System for Patients with Single-Sided Deafness

Craig Newman, PhD, Sharon Sandridge, PhD, and Lisa Wodisz, AuD

Patients with single-sided deafness (SSD) are unable to take advantage of binaural hearing, resulting in: difficulty understanding speech in background noise and/or reverberant environments; reduced localization ability; poor speech understanding when the talker is on the deaf side; loss of binaural summation and integration; and abnormal spatial balance. These abnormal auditory perceptual problems result in communication breakdown and reduced psychosocial function in a variety of everyday listening environments.

Historically, contralateral routing of signal (CROS) hearing aids have been used to help patients overcome hearing problems associated with SSD. More recently, the Baha® System (Cochlear) has become an alternative treatment for individuals with SSD. In this application, the osseointegrated implant system, including an external sound processor, is placed on the deaf side. Direct bone conduction allows the signal from the sound processor to transfer from the deaf side to the opposite functioning cochlea. Numerous studies have demonstrated the benefit of Baha® fittings for patients with SSD; however, these investigations evaluated treatment outcome over relatively short intervals, ranging from 4 to 8 weeks.

We recently completed a study evaluating benefit from and satisfaction with the Baha® in patients with SSD over an 18-month period in 8 adult patients (4 males and 4 females). The etiology of the SSD for most of the patients (63%) was vestibular schwannoma surgery. The average duration between the acquired SSD and Baha® fitting was 10 years. A comprehensive battery of laboratory measures (Speech Perception in Noise-Revised [SPIN-R]; Hearing in Noise Test [HINT]; soundfield localization testing) and self-report (Abbreviated Profile of Hearing Aid Benefit [APHAB]; Hearing Handicap Inventory for Adults [HHIA]) were used to evaluate benefit. While the laboratory measures evaluate maximum potential of optimum performance in a controlled experimental environment, the self-report questionnaires are an indirect measure of listening performance in everyday communication situations. Satisfaction was documented using the Single-Sided Deafness Questionnaire (SSDQ) and a study completion feedback question (Taking everything into consideration, would you do it again? That is, would you still proceed with the Baha®?). Aided testing was conducted at 3, 6, 9, 12, and 18 months post-fitting.

Figure 1: Mean percent correct performance on the revised Speech Perception in Noise Test (SPIN-R) for the low-predictability (LP) and high-predictability (HP) sentences and total score for unaided and aided test intervals. The shaded areas represent the 95% confidence interval for the unaided condition.
As shown in Figure 1, SPIN-R testing (HP, high-predictability sentences; LP, low-predictability sentences; and total score) revealed a consistent aided advantage across time intervals demonstrated by performance exceeding the 95% confidence intervals for the mean unaided percent correct scores. Similar to previous research, no localization benefit was observed. The self-report measures yielded consistent improvement when assessing performance in everyday communication function as illustrated by the mean HHIA scores (Figure 2, values falling below the horizontal dashed line represent significant improvement in perceived activity limitation and participation restriction). The SSDQ indicated satisfaction in a variety of everyday listening situations across 18 months. These situations included listening: in quiet situations; in small groups; to music; to TV/radio; and to a talker at a dinner table when seated on the deaf side. At 18 months post-fitting, 7 of the 8 patients reported that they would be willing to have the Baha® surgery again.

The study demonstrates that Baha® benefit appears to be sustained over an 18-month time interval. The Baha® is especially beneficial for hearing in background noise when the competing signal is directed toward the unimpaired ear and the speech is presented toward the deaf ear (Baha®-aided side). This separation of sound sources (i.e., the head shadow listening situation) is often described by patients with SSD as their most difficult listening situation. Application of the Baha® also results in improved long-term communication abilities and perceived psychosocial function.

For references, please email the editor.

This article is written for educational purposes only and as a convenience. Cleveland Clinic has no financial interest in nor is it endorsing any product or device described in this article.
Paradoxical vocal fold motion (PVFM) is characterized by an involuntary approximation of the vocal folds, usually on inspiration, which causes an airway obstruction, leaving the patient with difficulty breathing. The resulting symptoms — stridor, cough, dizziness, chest tightness and other symptoms mimicking asthma and allergies — can result in an inaccurate diagnosis.

In addition, this sudden onset of severe shortness of breath is usually accompanied by anxiety, panic, and often, fear of death. A number of factors can trigger these episodes. The most common include strenuous physical activity, and exposure to chemicals, fumes, or irritants. Digestive disorders such as reflux are frequently associated with this condition.

Although the disorder is being recognized more frequently, PVFM diagnosis and treatment remains poorly understood and can result in years of frustration for the patient. At the Cleveland Clinic Head & Neck Institute, we specialize in diagnosis and treatment of PVFM.

We utilize various testing methods, including what is considered the gold standard for identifying and differentiating a diagnosis of PVFM — laryngoscopy during an acute attack. For this purpose, we use a variety of approaches to induce an acute, controlled episode in the office during the patient’s visit. This allows us to identify the underlying causes of PVFM, and to make an accurate differential diagnosis.

Successful treatment is better accomplished by a team of physicians and speech pathologists, as it necessitates both medical and behavioral intervention. Once the underlying cause is addressed, a behavioral three-step approach is implemented. With this combined treatment method we have reached a 90 to 95 percent success rate.

1. **Patient education.** It is important that patients understand the nature of the problem and its cause or trigger (e.g., exercise, extreme temperatures, airway irritants, emotional stressors) and that they are empowered with the knowledge that PVFM will not result in a fatal outcome.

2. **Biofeedback.** Patients are shown videos from their own laryngeal endoscopy so they can understand what is occurring, and learn to manipulate and control the movement of the vocal folds.

3. **Respiratory and laryngeal-control therapy.** Early recognition of symptoms allows for early implementation of treatment breathing and relaxation techniques. In one or two sessions, patients are taught how to control their larynx and respiratory muscles. These techniques provide patients with a sense of control that allows them to voluntarily interrupt symptomatic episodes, promoting normal laryngeal breathing.

Respiratory and laryngeal training is very effective in giving patients a sense of control over their symptoms, reducing the number and severity of their attacks.

PVFM remains a widely unrecognized and untreated disorder despite indications that awareness is steadily increasing. It is most common in young to middle-aged women, and they are frequently misdiagnosed and wrongly treated for asthma and anaphylaxis.

Inaccurate diagnosis can result in inappropriate hospitalization, high doses of corticosteroids, intubation, and tracheotomy. Suspicion should arise if patients continue to present with asthma symptoms despite conventional asthma treatments and with normal oximetry despite stridor. Physicians should be cautious in the use of oral steroids in the absence of an evaluation that excludes PVFM. Early recognition of the problem and an appropriate referral to a specialized center can significantly reduce healthcare costs, and can have a significant impact in patients’ quality of life.

**Key Point:**

- We specialize in the diagnosis and treatment of paradoxical vocal fold motion. Using a three-step approach of education, biofeedback, and respiratory and laryngeal-control therapy, we have had great success in helping patients overcome this still widely unrecognized disorder.
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New Staff

Samantha Anne, MD
Samantha Anne, MD, recently joined the staff of Cleveland Clinic's Head & Neck Institute. Dr. Anne specializes in pediatric otolaryngology.
Dr. Anne earned her medical degree at Wayne State University in Detroit. She underwent a head and neck surgery internship at State University of New York in Syracuse, and a head and neck surgery residency at University Hospitals of Cleveland, Case Western Reserve University. Dr. Anne completed a fellowship in pediatric otolaryngology at Children’s Hospital of Pittsburgh, University of Pittsburgh Medical Center.
Dr. Anne is seeing patients at our main campus and Hillcrest Hospital.

James Kaltenbach, PhD
James Kaltenbach, PhD, recently was appointed Director of the Otology Research Laboratories in the Lerner Research Institute with joint appointments in the Neurological Institute and the Head & Neck Institute. Dr. Kaltenbach is internationally known for his current research focusing on neural mechanisms and generator sites underlying tinnitus.
Dr. Kaltenbach earned his PhD in biology from the University of Pennsylvania. He completed a postdoctoral fellowship in auditory neurophysiology in the Department of Physiology from the University of Pennsylvania. Prior to his recent appointment at Cleveland Clinic, he served as a professor in the Department of Otolaryngology at the Wayne State University School of Medicine in Detroit.
Dr. Kaltenbach has received many grants, including funding from the National Institute on Deafness and other Communication Disorders (NIDCD), the American Tinnitus Association, and the Tinnitus Research Consortium. He has authored numerous papers and given presentations around the world related to tinnitus and hyperactivity in the dorsal cochlear nucleus. His research efforts will complement the nationally recognized clinical-oriented Tinnitus Management Clinic in the Head & Neck Institute.

Staff Awards
Craig Newman, PhD, was given the Accomplished Graduate Award from Bowling Green State University.
Sharon Sandridge, PhD, received the Outstanding Researcher Award from the Ohio Academy of Audiology.

Past Conferences

Cleveland Clinic Hosts 26th Meeting of the Politzer Society
Three hundred members of the Politzer Society, an international society for otologic surgery and science, came together for a highly successful 26th meeting Oct. 13-16, 2007, at the InterContinental Hotel and Bank of America Conference Center on Cleveland Clinic’s main campus. The international forum brought together experts in otology, neurotology, and related health professions to discuss new developments in otology, neurotology, skull base surgery, aural rehabilitation and science. The meeting earned $27,000 for the Politzer Society.
Gordon Hughes, MD, FACS, a former Cleveland Clinic otolaryngologist, served as the Chairman of the meeting. The convention featured five guests of honor, 14 guest speakers and panel moderators, 39 free paper podium presentations and a special poster review session. Among other presentations, former Cleveland Clinic Head & Neck Institute Chairman Marshall Strome, MD, presented guest of honor Timothy Heidler, the man who received the world’s only successful laryngeal transplant 10 years ago at Cleveland Clinic. Speech and language pathologist Douglas Hicks, PhD, presented serial videostroboscopy and voice recordings of the transplanted larynx. Politzer prizes for best clinical paper and best basic science papers were awarded.

Biennial Audiology Symposium Held in August
Cleveland Clinic’s 7th biennial Audiology Symposium was held August 1-2 on Cleveland Clinic’s main campus. The course, Innovations in Hearing: The Aging Patient, brought together clinicians and scientists to discuss issues related to auditory aging and the overall wellness of the older adult. Course co-directors were Craig Newman, PhD, and Sharon Sandridge, PhD.
Outcomes Data Available

The latest edition of outcomes data from the Cleveland Clinic Head & Neck Institute is available. Our outcomes booklet also offers summary reviews of medical and surgical trends and approaches. Charts, graphs and data illustrate the scope and volume of procedures performed in our department each year. To view outcomes booklets for the Head & Neck Institute, as well as many other Cleveland Clinic medical and surgical disciplines, visit clevelandclinic.org/quality.

The 2009 Vestibular Update will be held October 16 and 17

This CME-approved course will be directed by Judith White, MD, PhD, and feature guest faculty including Joel Goebel, MD, Belinda Sinks, AuD, Terry Fife, MD, physical therapists Kelly Beaudoin and Kathleen Coale, and Cleveland Clinic faculty.

The focus of the meeting will be advances in the diagnosis and treatment of vestibular and balance disorders, and vestibular rehabilitation including repositioning maneuvers for benign paroxysmal positional vertigo variants. Multidisciplinary contributions, practicum and vestibular lab tours will be of interest to otolaryngologists, neurologists, audiologists, physical therapists and other interested health professionals.

The Cleveland Clinic Center for Continuing Education is one of the nation’s largest academic accredited institutions and is proud to celebrate 75 years in continuing medical education.

Please visit clevelandclinicmeded.com for a listing of live meetings, web casts and enduring material.
U.S. News Ranks Cleveland Clinic One of America’s Top Hospitals

Head & Neck Institute Ranked One of the Top Programs in the Nation

Cleveland Clinic has been ranked among America’s top hospitals since U.S. News & World Report began its annual survey of “America’s Best Hospitals” in 1990. The 2008 survey recognized Cleveland Clinic as one of the nation’s best hospitals overall, ranking the hospital as No. 4 in the country. The magazine’s “America’s Best Hospitals” survey ranks our otolaryngology program among the top in the nation, and No. 1 in Ohio.

For more details, visit clevelandclinic.org.

Online Access to Your Patient’s Treatment Progress: DrConnect

DrConnect is a complimentary service for referring physicians that allows them to follow their patient's treatment progress while at Cleveland Clinic. By providing physicians with real-time information about their patient's treatment progress, DrConnect is propelling physicians into the future of healthcare, a world in which their patients' detailed medical information is always just a click away. Visit eclevelandclinic.org/drconnect.