VOICE AND SWALLOWING TEAM IS A REGIONAL LEADER

THE CENTER FOR VOICE AND SWALLOWING DISORDERS at Wake Forest Baptist is the state's most comprehensive for state-of-the-art diagnosis and treatment of dysphonia, dysphagia and upper respiratory problems of all origins and causes. S. Carter Wright, M.D., Catherine J. Rees, M.D., and Susan G. Butler, Ph.D., with the support of a team of specialized nurses and speech language pathologists, employ the latest diagnostic tools, including stroboscopic voice evaluations, laryngeal electromyography, acoustical voice analyses, transnasal esophagoscopy (TNE) and bronchoscopy, high-resolution esophageal, pharyngeal and upper esophageal sphincter manometry, dual-probe pH and impedance testing, flexible endoscopic evaluation of swallowing and videofluoroscopy.

Spasmodic dysphonia is a particular focus of Wright's. "This is a condition where the musculature of the larynx receives a miscommunication from the brain and either tenses or relaxes inappropriately, while the patient is trying to speak," he explained. Working in concert with a neurologist, Wright said, the center provides Botox® injection treatment to selectively weaken the muscles that are malfunctioning in the larynx.

Rees said the Center uses TNE and other tools to diagnose swallowing disorders. "We deal with the oral phase, the oropharyngeal phase and the esophageal phase of swallowing," she said. "The goal is to provide a comprehensive assessment of swallowing from the lips to the stomach, by one closely integrated team of clinicians."

Office-based therapies at the Center include vocal fold augmentation, laryngeal and esophageal biopsy, pulse-dye laser treatments to the larynx and trachea, CO2 laser treatments via flexible fiber to the larynx and trachea, tracheobronchoscopy, esophageal and tracheal balloon dilation, cricopharyngeal and esophageal botulinum toxin injections, tracheoesophageal puncture, endoscopic swallowing biofeedback, surface electromyography swallowing biofeedback, electrical stimulation, and lingual manometry biofeedback.

EXCELLENT OUTCOMES WITH PALATE RECONSTRUCTION SURGERY

ROUTINE PALATAL RECONSTRUCTION with the temporalis muscle flap at the time of surgical removal of cancer is a unique offering in the Department of Otolaryngology. J. Dale Browne, M.D., has helped refine the use of the temporalis muscle of minor salivary cancers to include a skull base dissection. This allows for a more complete oncologic resection, as well as provides a secure technique for the rebuilding of the palate after tumor removal. Browne has performed about 80 of these palate reconstructions over the past decade, and is one of the few surgeons in the country doing it routinely. Palate function has been near normal in almost 90 percent of cases, and patients were able to enjoy an oral diet without the need for a prosthetic device.

Browne, Christopher A. Sullivan, M.D., and Joshua D. Waltonen, M.D., represent the surgical arm of the multidisciplinary Head and Neck Cancer team. They are the point-of-entry consultants at Wake Forest Baptist for head and neck cancer evaluation and management and are the most active head and neck cancer surgical team in the region.

Having done more than 700 major head and neck reconstruction procedures over the past decade, Browne, professor and chair of Otolaryngology, is one of the nation's most active surgeons in both the microvascular free flap replacement of resected bone and soft tissue and the temporalis myofascial flap for palate replacement. Together with Browne, Sullivan and Waltonen provide surgical management of all aspects of head and neck oncology involving diseases of the upper aerodigestive tract, paranasal sinuses, and skull base, as well as salivary and endocrine glands of head and neck.

To watch a webcast of the temporalis myofascial flap procedure, go to **wfubmc.edu/webcasts**.

TO WATCH A WEBCAST OF THE TEMPORALIS MYOFASCIAL FLAP PROCEDURE, GO TO WFUBMC.EDU/WEBCASTS.

WAKE FOREST BAPTIST SURGEON AMONG THE NATION'S BEST IN BAHA® SYSTEM PROCEDURES

THE BONE-ANCHORED HEARING AID, OR BAHA – which operates on the principle that vibrations conducted through the skull can reach the cochlea as clearly as vibrations in the air – is an excellent alternative to conventional hearing aids for patients with single-sided deafness (SSD), chronic ear infection, or congenital conductive hearing loss.

The Baha's sound processor snaps onto a titanium post that is surgically anchored in the skull behind the ear. The processor converts the sound it receives through its microphone into vibrations that are transmitted through the bone to the cochlea in the patient's good ear. SSD patients get crystal clear sound in their good ear plus some sound directionality from the vibrotactile sensation on their deaf side.

At Wake Forest Baptist, they also get some of the best hearing service in the nation. John S. May, M.D., associate professor of surgical sciences-otolaryngology, sees patients from North Carolina and the three surrounding states and has done more Baha implants than anyone else in the state.

But unlike many centers who keep Baha patients overnight, May plans most Baha cases to be done safely and efficiently on an outpatient basis. The surgery takes about one hour and is done under local anesthetic in most cases. The patient is usually healed and ready to wear the processor within 90 days.

May summarized his approach:
"WE TRY TO MAKE IT AS CONVENIENT AS POSSIBLE FOR THE PATIENT."

WAKE FOREST UNIVERSITY BAPTIST MEDICAL CENTER

WAKE FOREST UNIVERSITY BAPTIST MEDICAL CENTER, one of the nation's preeminent academic medical centers, is an integrated health care system that operates 1,056 acute care, rehabilitation, long-term, and psychiatric care beds, outpatient services, and community health and information centers.

Wake Forest Baptist has been ranked as one of "America's Best Hospitals" by *U.S. News & World Report* since 1993, and in five categories in 2009. The Medical Center also holds the Gold Seal of Approval™ from The Joint Commission, the nation's esteemed standards-setting and accrediting body for health care quality. Best Doctors lists 170 Wake Forest physicians, "America's Best Graduate Schools" lists Wake Forest in three categories, and National Research Corporation has named Wake Forest Baptist the most preferred hospital in the region every year since 1999. The prestigious distinction of Magnet® nursing status was for the third time awarded to Wake Forest Baptist this year by the American Nurses Credentialing Center.

The Medical Center currently has about 350 active human subject research protocols plus several hundred animal and basic science studies related to human conditions. Wake Forest Baptist is in the top third of NIH funding; total direct extramural funding for 2007-08 was about $200 million. Major research areas include aging, alcohol, drug abuse, biomolecular imaging, brain tumors, cancer, diabetes, genomics, heart disease and prevention, hypertension, minority health disparities, regenerative medicine, ultrasound, women's health and worker's health.

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NEWS UPDATE: OTOLARYNGOLOGY

SWALLOWING STUDIES RAISE QUESTIONS ABOUT TREATMENT STANDARDS

WHEN AN ELDERLY PERSON ASPIRATES liquid during a swallowing exam with no cough reflex, is that a serious risk factor for pneumonia, as the current treatment standards dictate? Or is it perfectly normal and no cause for alarm?

If the latter is true, "we have been overmanaging patients with dysphagia for years," said Susan G. Butler, Ph.D., an associate professor of otolaryngology and swallowing researcher at Wake Forest Baptist. Under current guidelines, patients who aspirate are often placed on a diet of thickened liquids. "This is a huge quality of life issue, because patients don't like them, they don't drink very much and they get dehydrated. And in the elderly, dehydration means they're more likely to get urinary tract infections, confusion, and other cognitive changes."

Butler had never questioned the treatment protocol until she was conducting an American Speech-Language-Hearing Association-funded swallowing study last year and was surprised to observe that 30 percent of subjects over age 65 aspirated a small amount of thin liquid – either water or milk – with no apparent health effects.

continued on page 2

No aspiration

Aspirating liquid

TISSUE ENGINEERING DISCOVERY COULD HELP RESTORE SALIVARY FUNCTION IN HEAD AND NECK CANCER PATIENTS

LOSS OF SALIVARY GLAND FUNCTION is one of the most debilitating effects of radiation therapy for head, neck and thyroid cancer patients. "Their quality of life suffers terribly," explains Christopher A. Sullivan, M.D., assistant professor of Otolaryngology at Wake Forest Baptist. "It is a truly terrible problem with no cure and marginally effective medications to treat it."

Replacement of damaged salivary gland tissue with a patient's own salivary cells would provide a physiologic solution to salivary gland hypofunction. Perhaps the best long-term hope for these patients lies with a breakthrough discovery in salivary tissue regeneration that Sullivan and colleagues made this past year.

Sullivan's discovery involves injecting a cocktail of human salivary cells into the blood stream where they have oxygen immediately available and undergo little hypoxic shock. In a rodent model, "all the component cells, including tissue stem cells, were able to find their way to the site of salivary gland damage and were distributed widely throughout the gland,"

continued on page 2

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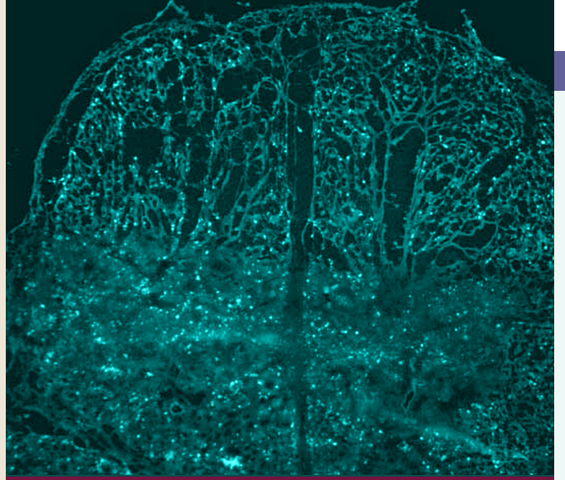
Swallowing Studies *(continued from page 1)*

She is now conducting an NIH-funded study to replicate the previous findings and to see if these silent aspirators have had a history of pneumonia, and she will follow another group for five years to see if they develop pneumonia or other health effects. She will also be using CT scans to look for changes in the lungs. "It seems likely that if you've got milk sitting in the bottom of your lungs, you're not going to oxygenate as well, you're going to be short of breath, and probably fatigue quicker."

Concurrently, she is using a Claude D. Pepper Older Americans Independence Center grant to see if there is a correlation between aspiration and poor hand-grip strength and slower walking speed, both known predictors of mortality. "We're trying to phenotype these people who are aspirating versus non-aspirators. Our hypothesis is that the aspirators have poorer hand-grip strength, they're slower walkers, and probably have worse cognitive and memory functioning than non-aspirators.

"If there is a correlation, the next question is, did the person's general frailty cause the aspiration – or the other way around? If the aspiration is the culprit, we may be able to rehabilitate them and significantly improve their overall health status."



Sullivan's new technique evenly distributed salivary cells throughout the gland, highlighted with a fluorescent tag.

Tissue Engineering Studies *(continued from page 1)*

Sullivan said. All injected cells demonstrated functional activity when tested using special antibody stains. "In a larger study, we hope to restore salivary function in a rat disease model."

Sullivan and colleagues have also developed successful harvesting and storage methods specifically for human salivary cells. "We used three different types of salivary gland component cells. When we characterized the injected cells to see which ones survived injection, everything made it, including the cells that we and other researchers believe to be salivary tissue progenitor (stem) cells ."

The clinical application of this technology for patients would be to take a salivary gland biopsy prior to radiation therapy, and store salivary cells for intravascular delivery after radiation therapy has been completed. "For existing patients who have already lost their salivary cells due to radiation, we believe this cell delivery method could be used to replace lost salivary cells with embryonic or amniotic stem cells," Sullivan said.

Sullivan believes that this technologic breakthrough will overcome the massive cell loss associated with current cell implantation methods and will leverage the regenerative power of relatively small numbers of tissue or other stem cells to repair damaged salivary glands.

MEET OUR FACULTY

J. DALE BROWNE, M.D., F.A.C.S.
James A. Harrill Professor and Chairman

Clinical Interests: Head and neck surgical oncology, thyroid carcinoma, skull base surgery

Board Certification: American Board of Otolaryngology

Recent News: Listed for several years in "Best Doctors," Dr. Browne has an active clinical practice in cancer, reconstruction, and skull base disease. He recently completed and published an extensive review of arteriovenous dural fistulas involving the skull base treated at Wake Forest Baptist. His international collaboration on the transotic approach to the cerebellopontine angle with technique developer Professor Ugo Fisch of Zurich, Switzerland, was recently republished as a classic in acoustic tumor surgery. Active in national education, he was editor-in-chief of the popular Patient of the Month Program for seven years and is currently chairman of the Laryngology and Bronchoesophagology Committee of the Academy of Otolaryngology-Head and Neck Surgery.

BRIAN L. MATTHEWS, M.D., F.A.C.S.
Associate Professor

Clinical Interests: Rhinology and allergies

Board Certification: American Board of Otolaryngology

Recent News: A leader in the field of nasal and sinus disorders, Dr. Matthews has been performing endoscopic sinus surgery since its infancy in the United States. He has authored multiple articles and lectures frequently on the treatment of chronic sinusitis. Dr. Matthews, who is listed in "Best Doctors," offers a full range of services for sinus and nasal disorders, including reconstructive nasal surgery and treatment of nasal tumors. He has a major interest and wealth of experience in endoscopic skull base surgery with extensive experience in repair of traumatic and developmental causes of cerebrospinal fluid leaks.

JOHN S. MAY, M.D., F.A.C.S.
Associate Professor

Clinical Interests: Neurotology, otologic and skull base surgery, chronic ear disease, disorders of hearing and balance, management of cerebrospinal fluid leakage of the temporal bone and skull base

Board Certification: American Board of Otolaryngology

Recent News: Listed in "Best Doctors," Dr. May is the author of several otolaryngology textbook chapters and co-authored two editions of a textbook on Tympanoplasty, Mastoidectomy and Stapes Surgery with Professor Ugo Fisch in Zurich Switzerland. He is the United States representative of the Fisch International Microsurgery Foundation, an organization is dedicated to the training of surgeons around the world in techniques of microsurgery of the ear and skull base. He has been an active instructor in the skull base and the advanced otologic surgery courses in Zurich for 17 years. He is the clinical director of the Adult Cochlear Implant program at Wake Forest Baptist.

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SUSAN G. BUTLER, PH.D., M.S.
Associate Professor
Director of Research

Clinical Interests: Swallowing and swallowing disorders

Board Certification: Board-recognized specialist in swallowing and swallowing disorders. Certificate of Clinical Competence, American Speech, Language, and Hearing Association. State Licensure for Speech and Language Pathology

Recent News: This past year, Dr. Butler was elected to the board of directors for the Dysphagia Research Society and also now serves on the Society's Research Committee. In the last year, Dr. Butler received two NIH grants on "Endoscopic Evaluation of Swallowing Across the Lifespan," an NIH Pepper Pilot and an NIH Pepper Scholar Grant on "CT Imaging of Lingual Muscle/Fat Composition in Community-Dwelling Older Adult Aspirators and Non-Aspirators." Dr. Butler has held over 50 seminars nationwide, training individuals in flexible endoscopic evaluation of swallowing, and has provided hundreds of presentations on advanced dysphagia evaluation and management.

NEAL D. GOLDMAN, M.D.
Assistant Professor

Clinical Interests: Otolaryngology, plastic and reconstructive surgery

Board Certification: American Board of Otolaryngology, American Board of Facial Plastic and Reconstructive Surgery.

Recent News: Dr. Goldman, who is listed in "Best Doctors," has an active practice in facial plastic surgery and is integrally involved in education of resident physicians in North Carolina programs. He serves on the faculty of AO, an international interdisciplinary teaching organization, as a reviewer for the American Journal of Otolaryngology, as lead chair of the home study course "Plastics and Reconstructive Surgery" of the American Board of Otolaryngology, as an active member of the American Academy of Facial Plastic And Reconstructive Surgery Education Committee, and as an oral board question writer for American Board of Facial Plastic and Reconstructive Surgery.

DANIEL J. KIRSE, M.D.
Associate Professor and Vice-Chairman
Medical Director of Pediatric Otolaryngology
Residency Program Director

Clinical and Research Interests: Clinical practice limited to the care of children with diseases of the head and neck, special emphasis on surgery for chronic diseases of the middle ear and mastoid, cochlear implantation, endoscopic and reconstructive airway surgery, and cysts and tumors of the head and neck

Board Certification: American Board of Otolaryngology

Recent News: Listed for several years in "Best Doctors," Dr. Kirse is a published expert in the use of the microdebrider in pediatric endoscopic airway surgery. He has recently been invited to write a review on the topic to be published in Current Opinion in Otolaryngology-Head and Neck Surgery. Dr. Kirse is currently the editor of the Patient of the Month Program, a continuing education series sponsored by the American Academy of Otolaryngology-Head and Neck Surgery.

J. WHIT MIMS, M.D., F.A.C.S.
Assistant Professor

Clinical and Research Interests: General adult and pediatric otolaryngology, rhinology, allergy

Board Certification: American Board of Otolaryngology

Recent News: Dr. Mims is the 2009 course co-director for Basic Courses of the American Academy of Otolaryngic Allergy (AAOA). He also serves as director of the ImmunoCap Specific IgE Wake Forest Allergy Laboratory. In 2008 he received the AAOA Young Leadership Award. In 2009 he was appointed to the Committee on Allergy and Immunology of the American Academy of Otolaryngology-Head and Neck Surgery, and was nominated to be the 2009 AAOA Patient and Professional Relations chairman.

CATHERINE J. REES, M.D.
Assistant Professor
Center for Voice and Swallowing Disorders

Clinical and Research Interests: Swallowing problems, voice disorders, reflux disease, chronic cough

Board Certification: American Board of Otolaryngology

Recent News: Dr. Rees is an international educator on laryngopharyngeal reflux and throat disorders. She has recently published the first series of in-office balloon dilations of the esophagus without the need for sedation. She was elected in 2009 to the American Bronchoesophagological Association, and was selected as a Clinical Scholar of the American Academy of Otolaryngology. She is an active participant on several national committees in her field and is the president-elect of the North Carolina Society of Otolaryngology Head and Neck Surgery.

CHRISTOPHER A. SULLIVAN, M.D.
Assistant Professor

Clinical and Research Interests: Head and neck surgical oncology, reconstruction and rehabilitation, surgery of thyroid and parathyroid glands, salivary gland tumors

Board Certification: American Board of Otolaryngology

Recent News: Dr. Sullivan, listed in "Best Doctors," is a pioneer in the endoscopic management of hypopharyngeal stenosis after organ-sparing hemoradiation therapy for head and neck cancer. In a published series, transgastric retrograde esophagoscopy with anterograde dilatation (TREAD) was used to restore swallowing function in nearly 90% of gastric feeding tube dependent patients with hypopharyngeal and esophageal luminal stricture. In the laboratory, Dr. Sullivan is the lead investigator and inventor of novel bioabsorbable, drug-eluting luminal stent technology and wound closure devices that inhibit collagen deposition and reduce stricture and skin scarring in animal models. Earlier this year Dr. Sullivan presented his findings at the American Bronchoesophageal Association and the Plastic Surgery Research Council Annual Meeting. The results of his wound closure device experiments were published in *Plastic and Reconstructive Surgery*.

S. CARTER WRIGHT JR., M.D.
Assistant Professor
Center for Voice and Swallowing Disorders

Clinical Interests: Dysphonia resulting from benign lesions, early carcinoma, and neurological disorders. Comprehensive treatment for spasmodic dysphonia, tracheal stenosis, and Zenker's diverticula.

Board Certification: American Board of Otolaryngology

Recent News: Dr. Wright's recent research has addressed endoscopic management of Zenker's diverticula, the association between viral illness and sensorimotor derangement in the larynx, and the use of the pulsed-dye laser to treat vocal fold pathology in the office setting. The Center for Voice and Swallowing Disorders offers state-of-the-art medical, surgical, and behavioral treatment for all conditions affecting the larynx, trachea, and esophagus.

ADELE K. EVANS, M.D.
Assistant Professor

Clinical Interests: Pediatric otolaryngology

Board Certification: American Board of Otolaryngology

Recent News: Dr. Evans has been working this year very closely with the N.C. Department of Health and Human Services to get Medicaid coverage expanded to support the use of Baha® osteointegrated hearing devices for appropriate candidates with hearing loss under the age of 21. She has also completed the first year of pilot programs in Medical-Legal Liability Education for medical students and house officers, with very positive evaluations. Working together, Drs. Evans and Kirse have formalized the Brenner Children's Hospital — Wake Forest University School of Medicine Pediatric Cochlear Implant Team, which will hold a symposium for early intervention educators this November.

JOSHUA D. WALTONEN, M.D.
Assistant Professor

Clinical and Research Interests: Head and neck surgical oncology and reconstruction, microvascular reconstruction, thyroid and parathyroid surgery, skull base surgery.

Board Certification: American Board of Otolaryngology

Recent News: Dr. Waltonen joined the Wake Forest Baptist faculty in 2008 after completing a Head and Neck Oncology/Microvascular Reconstruction fellowship at Ohio State University. Among other ongoing clinical research projects, he is beginning a study on the efficacy of transoral robotic surgery for pharyngeal and laryngeal tumors. Research published earlier this year compared the yield of detecting occult tumors by performing tonsillectomy and deep tonsil biopsies in patients with metastatic carcinoma to the neck in whom a primary tumor was not evident, concluding that tonsillectomy offers a significantly higher likelihood of finding occult tonsillar tumors than deep tonsil biopsy.

XIN FENG, M.D., PH.D.
Research Assistant Professor

Research Interests: Hypophonia in Parkinson's Disease, neuropathological bases of spasmodic dysphonia

Recent News: Dr. Feng, who recently joined the Department of Otolaryngology, has discovered important dopamine receptors in the larynx with implications for treatment of Parkinson's patients. She comes to Wake Forest Baptist from the Laryngeal and Speech Section at NIH. Dr. Feng is a basic and translational science researcher who will be collaborating on research protocols with other faculty in the Center for Voice and Swallowing Disorders and also will be providing basic science research opportunities for Otolaryngology residents.