



OUR COVID-19 EFFORTS

Read about NYU Langone Health's response to the challenges of the COVID-19 pandemic.
See insert.



Otolaryngology— Head and Neck Surgery

2020 HIGHLIGHTS

Carefully Planned Endoscopic Approach Enables Minimally Invasive Orbital Tumor Resection

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for Patient with Neurofibromatosis Type 1

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System-Wide Emphasis on Quality Fuels
Necessary Innovation in Patient Care

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Cover image: Wireframe of the internal structure of the human ear. 3D. Front view. Vector illustration.
RENDERING: GETTY IMAGES

J. THOMAS ROLAND JR., MD
Mendik Foundation Professor
of Otolaryngology
Professor of Neurosurgery
Chair, Department of Otolaryngology—
Head and Neck Surgery

MESSAGE FROM THE CHAIR



When COVID-19 arrived in New York City in early 2020, we were challenged to pivot in patient care—adapting to the challenges of caring for patients with COVID-19 and evolving the management of our own patients. Throughout these dynamic weeks and months, our ongoing commitment to achieving excellence in clinical outcomes for our patients remained stronger than ever.

Our team’s agility enabled real-time innovation balancing critical care with long-term outcomes, such as early tracheostomy protocols in patients with COVID-19 that dramatically increased survival while reducing the risk of permanent throat and airway complications. When it became safe to see patients for routine care, we discovered new ways to maintain safety in procedures that inherently involve a high degree of aerosolization. Every step of the way, we continued to refine our surgical methods, aided by leading-edge technology, honing our expertise to improve outcomes.

Across research and clinical care, from diagnosis to treatment, we will continue to pursue and uncover new frontiers in otolaryngology—head and neck surgery, reimagining quality outcomes for the sake of our patients.



#31
IN U.S. NEWS &
WORLD REPORT

350+
COCHLEAR IMPLANTS
PERFORMED IN CHILDREN
UNDER AGE 1

90 Minutes
AVERAGE TIME FOR
SIMULTANEOUS PEDIATRIC
BILATERAL COCHLEAR
IMPLANT CASES

30+
ONGOING CLINICAL TRIALS
including the only FDA-approved
investigational exemption trial
with pediatric ABIs



▲
Michael J. Persky, MD

Advanced Surgical Approaches Evolve Standards of Care for Head and Neck Patients

With the goal of improving patient outcomes using less invasive, more efficacious approaches, a multidisciplinary team of physicians at NYU Langone Health’s Head and Neck Center continues to pioneer minimally invasive and robotic surgical techniques alongside advanced reconstruction methods. Combining focused expertise in the specialty with a dedicated unit equipped with advanced technologies, the team is pushing the boundaries of surgical treatment with greater precision and individualized options for patients with a range of head and neck conditions.

ENHANCING PATIENT SELECTION CRITERIA FOR ROBOTIC SURGERY

With optimal application, robotic approaches offer several advantages, including more precise surgical targeting and decreased morbidity. The team’s deep surgical expertise is critically important to match NYU Langone’s available technology—which includes the single-port robot, the most advanced robot available for head and neck surgery—with the patients who will accrue the greatest benefit.

“We maintain careful, patient-centric criteria to determine when the robot is indicated, rather than deferring to its use simply because it’s there,” notes Michael J. Persky, MD, assistant professor in the Department of Otolaryngology—Head and Neck Surgery and director of head and neck robotic surgery.

Patient evaluation involves a high degree of collaboration among a multidisciplinary team uniquely experienced in, and dedicated to, coordinated head and neck care. “It’s highly unusual for patients to consult with their surgeons, medical

oncologists, and radiation oncologists—all specialty trained in the head and neck—from a single point of care,” notes Mark S. Persky, MD, professor in the Department of Otolaryngology—Head and Neck Surgery. “The centralized expertise is critical to inform the most efficacious plan to treat each individual patient—including the decision whether to utilize a robot in surgery.”

Together, the team considers several variables when evaluating the surgical approach and potential robot application, including the stage of the head or neck tumor, the likelihood of achieving negative margins, and lymph node metastasis. For patients amenable to the robotic approach, positive outcomes include complete tumor resection with a less invasive surgery and a reduced need for adjuvant therapy without recurrent tumor. Often, chemotherapy can be bypassed completely. “These patients do much better in the long term, with speech and swallowing intact and without the compounding morbidity of high-dose radiation treatment,” Dr. Michael Persky adds. “But it can backfire if the robot is used without discretion on patients with adverse pathology, inadvertently leading to unnecessarily intensified treatment that could have been avoided.”

Physicians at the Head and Neck Center are also applying a robotic approach for patients with unknown primary tumors in the back of the throat, who previously required widespread radiation treatment of the potential primary sites. This enables targeted tissue removal in the suspected area with a high degree of accuracy. “We used to take biopsies hoping to determine the tumor site—but their elusive location often made that approach difficult,” notes Dr. Michael Persky. “Now we’re positively identifying the primary tumor site and achieving negative margins more often than not, enabling directed and site-specific radiation rather than radiating the entire oropharynx.”

COMPLEX MALFORMATIONS ADDRESSED WITH COLLABORATION AND EXPERIENCE

Careful, multidisciplinary surgical planning and expertise gained through surgical experience enable the head and neck team to treat conditions few physicians are willing or able to address. In collaboration with interventional radiologists, Dr. Mark Persky is developing a highly specialized multidisciplinary surgical group with expertise in treating patients with complex vascular malformations and vascular head and neck tumors.

Such high-flow malformations can be quite extensive and carry significant risk of life-threatening complications during treatment, such as bleeding and irreversible damage to involved organs, depending on their size and location. Dr. Mark Persky is among the few physicians who have vast experience and expertise in treating these malformations with a combination of surgery and embolization. With the growing vascular malformation group, he will build on a history of surgical innovation at the center, where the team has applied new techniques to safely deliver positive outcomes for patients. Additional advances in this field have also resulted in treating select patients with vascular malformations with sclerosing therapy or medical therapy.

Surgical success depends squarely on the shared experience and combined expertise of the surgeon and the interventional radiologist. Over time, that synthesis has helped the team to perform the procedures more quickly, with reductions in blood loss and other complications. Center specialists

use regular tumor board–style discussions to learn from each case and strengthen their multidisciplinary approach, and they routinely operate with younger faculty to help them further their own experience in these cases.

“These surgeries are incredibly complex, and no innovation can supersede the instincts that develop over time by performing them again and again,” says Dr. Mark Persky. “You need to be cognizant during surgery to understand and appreciate what is happening and, if necessary, modify the procedure to obtain the ideal result.”

REACHING GREATER NUANCE
IN RECONSTRUCTION

As primary surgeries become safer and more efficient, experts are working across disciplines to enhance reconstructive techniques, approaching highly complex cases with a combination of nuanced surgical practices and advanced medical modeling. Virtual surgical planning has become an important part of shaping both the extirpation and the reconstruction portions of these surgeries. The approach fosters more thoughtful and seamless planning between the extirpative and reconstructive teams, creating more sophisticated reconstructions that lead to better outcomes.

For patients with tumors of the mouth or jaw, advances in three-dimensional (3D) holographic technology support greater precision in preoperative planning, enabling both a mandibular replacement and functional dental restoration in the same surgery. In contrast, less nuanced surgical methods may limit cosmetic appearance and function if they do not mirror the jaw’s natural angles, and they often require multiple surgeries to complete the reconstruction and dental rehabilitation. Surgeons use medical models to plan the surgeries along with patient-specific 3D print hardware, allowing the exact placement of the rigid fixation hardware and the osseointegrated implants in one surgery.

“These are extremely sophisticated reconstructions in highly complex patients whom other centers may hesitate to operate on at all,” notes Adam S. Jacobson, MD, associate professor in the Department of Otolaryngology—Head and Neck Surgery and director of the Division of Head and Neck Surgery. “Our ability to mimic a patient’s natural anatomy makes every difference in their outcome, both cosmetically and functionally.”

The Head and Neck Center is also expanding free flap approaches from an array of donor sites to provide optimal tissue for each patient. With Jamie P. Levine, MD, associate professor in the Hansjörg Wyss Department of Plastic Surgery, Dr. Jacobson has pioneered the medial sural artery

12
ONGOING HEAD
AND NECK
CLINICAL TRIALS

30+
PUBLICATIONS
FROM HEAD AND NECK
CENTER PHYSICIANS
EACH YEAR



150+

FREE FLAPS
PERFORMED
ANNUALLY:

98%

SURVIVAL
RATE

LESS THAN

1%

FAILURE
RATE

LESS THAN

2%

POSTOPERATIVE
COMPLICATION RATE

LESS THAN

1%

MORTALITY RELATED
TO SURGERY

300+

THYROIDECTOMIES
PERFORMED
ANNUALLY:

OVER

80%

OF PATIENTS DISCHARGED
THE SAME DAY

LESS THAN

1%

OF PATIENTS EXPERIENCE
VOCAL CORD PARALYSIS
OR REQUIRE LONG-TERM
CALCIUM SUPPLEMENTATION

perforator flap—taken from the back of the calf and constituted of skin, soft tissue, and some underlying fascia—in head and neck reconstruction. “That particular flap was first described years ago for lower extremity reconstruction,” notes Dr. Jacobson. “The idea to use it in the head and neck came from our team’s ongoing push to think broadly about possibilities for better patient outcomes.”

Dr. Jacobson and his team perform more than 150 free flap approaches each year, utilizing 3D planning to carefully model each surgery for the best possible outcomes. When possible, they are also extending the techniques to correct earlier reconstructions in certain patients. “The goal is to restore patients to their pre-disease state,” he notes. “With technology advancing, we can perform more thoughtful reconstructions and more closely approach that state than ever before.”

A SHARED EMPHASIS
ON INNOVATION

These novel surgical methods, treatment approaches, and reconstruction techniques all demand a high degree of multidisciplinary collaboration among head and neck surgeons, radiologists, pathologists, basic science researchers, nurses, maxillofacial prosthodontists, and other specialists aligned to deliver forward-thinking care that evolves with new understanding. “I try to learn one thing from every case, especially the most complex cases,” notes Dr. Mark Persky. “Imagine how many lessons I’ve incorporated into future patient care over the thousands of cases I’ve treated.” ■



▲
Donato R. Pacione, MD (left), Seth M. Lieberman, MD (right)

Carefully Planned Endoscopic Approach Enables Minimally Invasive Orbital Tumor Resection

Medical and Cosmetic Outcomes Weighed
for Patient with Neurofibromatosis Type 1

A patient previously treated at NYU Langone for a left orbital tumor returned for treatment of a secondary tumor whose rapid growth—and associated eye proptosis—indicated a second resection. Balancing desired medical outcomes with the cosmetic concerns of a traditional invasive approach, a multidisciplinary team combined shared surgical expertise, planning a complex endoscopic approach to safely reach and fully resect the tumor.

PERSISTENT TUMOR DEMANDS INTERVENTION

The patient had initially presented two years prior for a consultation with Donato R. Pacione, MD, assistant professor in the Department of Neurosurgery, for progressive eye proptosis with associated pressure and pain. An MRI indicated the presence of two peripheral nerve sheath tumors of the left orbit (one

superior and one inferolateral), and mosaic neurofibromatosis type 1 (NF1) was suspected. At that time, Dr. Pacione recommended resecting the larger, superior tumor transorbitally, with a minimally invasive approach through the eyelid.

Because the secondary tumor was significantly smaller and asymptomatic, and removing it was considered overly aggressive in a single surgical setting, watchful waiting was recommended.

“That second tumor sat underneath the eye and at that time was not causing symptoms,” notes Dr. Pacione. “Resecting it along with the first tumor could have put undue pressure on the eye, but we knew it could eventually compromise vision and require removal.”

Eighteen months later, the patient returned with recurring eye proptosis, and new imaging confirmed progressive growth of the secondary tumor, which was now about 2 cm in diameter. Although surgical intervention was now a necessity in order to prevent further symptom development, the tumor’s location along the inferolateral orbit added another layer of complexity.

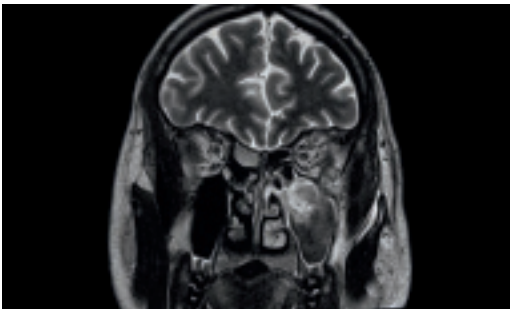
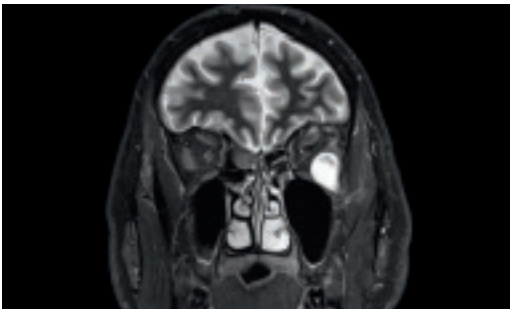
Such a challenging tumor location generally necessitates an open surgical approach with an osteotomy to gain access, with cosmetic implications that troubled the patient. The combination of complexities prompted a consultation with Seth M. Lieberman, MD, assistant professor in the Department of Otolaryngology—Head and Neck Surgery, whose endoscopic surgical expertise was critical to identifying the optimal approach.

COSMETIC CONCERNS INFORM ALTERNATIVE APPROACH

Typically, a tumor of this magnitude would necessitate a full orbitotomy—which involves removing the lateral wall of the orbit through the eyelid and cutting and removing the bone on either side of the orbit, which then requires reconstruction once the tumor is resected. For this patient, the cosmetic disfigurement that can result from such an approach was untenable.

However, this tumor’s location, between the inferior rectus and the lateral rectus, made it more amenable to an endoscopic-assisted approach. Dr. Lieberman and Dr. Pacione deliberated over the options and then together crafted a careful surgical plan relying on strategic endoscopic “ports” to safely reach the tumor.

“The location of this tumor, deep in the periorbital, made reaching it particularly challenging,” notes Dr. Lieberman. “You’re trying to get good visualization of and surgical access to the lesion using



Top: A preoperative MRI shows the 2-cm mass located along the inferolateral orbit, between the inferior rectus and the lateral rectus.

Bottom: A postoperative MRI indicates complete resection of the mass, achieved with a minimally invasive approach.

straight instruments in a small space, and it involves a high degree of difficulty that demands experience.”

Risks of such an approach include injury to the muscles and nerves within the orbit, as well as injury to the nasolacrimal duct. Additionally, the patient was advised that due to the tumor’s location adjacent to the infraorbital nerve, surgery would likely result in loss of facial sensation. However, in light of the tumor’s growth and the patient’s desire for both function preservation and a good cosmetic outcome, the decision was made to proceed endoscopically.

Dr. Lieberman used both a sublabial approach, by making an incision under the lip, and a transnasal prelacrima approach. “The tumor was way out toward the lateral part of the orbit, adding to the difficulty of reaching it, since most endoscopic approaches to the orbit are more medial,” notes Dr. Lieberman. “So this lateral access was important.”

Though the difficulty of resecting such a tumor is unknown until surgery begins, adds Dr. Lieberman, the approach itself often constitutes the most time-intensive portion of the surgery. Once this patient’s tumor was reached, it was observed to have excellent access and exposure with a clean plane and few adhesions, though it was intimately associated

with the infraorbital nerve. The tumor was safely resected in an en bloc fashion, and the tumor cavity was observed to be free of tumor bulk with clear visualization to the inferior rectus muscle as well as the lateral rectus muscle. Dr. Lieberman performed the closure, and the patient was sent to recovery.

SHARED OUTCOMES REACHED WITH MULTI-DISCIPLINARY PLANNING

With a complex, carefully planned, minimally invasive approach, Dr. Lieberman was able to resect the tumor while leaving the patient cosmetically intact without the need for orbital reconstruction. Although the patient did experience the expected facial sensation loss, he is doing well, and other early NF1-associated tumors appear stable.

“By considering the approach in a stepwise fashion with a multidisciplinary team, we were able to carefully consider the risks and benefits of each method and create positive medical and cosmetic outcomes for this patient,” adds Dr. Lieberman. ■

Expanded Cochlear Implant Applications Yield Cognitive Benefits for Older and Younger Patients

With continued focus on refining cochlear implantation to deliver the most impactful benefits for patients at both ends of the age spectrum, clinicians at NYU Langone’s Cochlear Implant Center are harnessing advanced research in concert with acute surgical expertise to pioneer their application. In doing so, they are enhancing outcomes and quality of life in populations that, without cochlear implants (CIs), are at greatest risk for cognitive deficits.

for CIs. Yet, a growing body of evidence shows that CIs can help prevent cognitive decline associated with age-related sensorineural hearing loss in patients for whom a hearing aid is not effective.

NYU Langone clinicians combined local anesthesia and conscious sedation (LA-CS) in cochlear implantation for the first time in 2006. The team has regularly performed the procedure ever since, establishing a mounting body of evidence of the approach’s efficacy and safety. NYU Langone is the only institution in the United States able to offer LA-CS to every patient over 65 years of age seeking CIs.

“Ninety-nine percent of patients over 65 years of age who consult with us for cochlear implants elect to receive local anesthesia and conscious sedation,” notes J. Thomas Roland Jr., MD, the Mendik Foundation Professor of Otolaryngology, chair of the Department of Otolaryngology—Head and Neck Surgery, and co-director of the Cochlear Implant Center. “Not only does it expand the availability of cochlear implants as a treatment option for more fragile patients, but it also reduces the risk of dementia for every older patient by addressing hearing loss without the use of general anesthesia.”

STUDY SUPPORTS LOCAL ANESTHESIA AS A SAFE ALTERNATIVE

In light of the increasing occurrence of bilateral, age-related sensorineural hearing loss in an aging population—currently impacting 17 to 43 percent of people 60 to 69 years of age—Dr. Roland and his research team conducted a retrospective chart review of 100 older patients who underwent cochlear implantation with LA-CS between 2013 and 2020. The patients were age matched with a control group of 50 patients who received

EXTENDING THE COGNITIVE BENEFITS OF COCHLEAR IMPLANTS IN OLDER PATIENTS

It is well established that older patients with hearing loss face a paradox when it comes to intervention: cochlear implantation, the treatment that would

improve their hearing while also lowering their risk for hearing loss-associated dementia, could also put them at risk for dementia associated with general anesthesia (GA). Since approximately 10 to 15 percent of older patients experience delirium following GA, which can progress toward dementia, only 5 percent of older patients with hearing loss previously met the criteria



▲
J. Thomas Roland Jr., MD

CIs under GA in order to compare time in the operating room, time in the post-anesthesia care unit, and the rate of adverse events.

The review, published in 2020 in *The Laryngoscope*, confirmed that cochlear implantation under LA-CS provides a safe, feasible, cost-effective alternative to surgery under GA when performed by experienced surgeons. The approach reduces surgery time by an average of 20 minutes and cuts operating room time by an average of 37 minutes—which could save more than \$1,300 per case. Adverse events were rare and relatively minor in nature, and patient satisfaction scores were notably higher in the LA-CS group than in the GA control group.

SKILL DRIVES SEDATION AS CARE STANDARD

Though the data collected by Dr. Roland’s team could support expanding the use of LA-CS in patients at other centers, he cautions that because the approach requires an accelerated timeline, 40 percent faster than a GA procedure, it demands a high degree of skill cultivated by experience.

“Success with local anesthesia and conscious sedation depends not only on the surgical skill required to perform the operation itself, but also on the surgeon’s ability to simultaneously recognize and address subtle nuances in patient behavior that could have an impact on the procedure,” explains Dr. Roland.

For example, up to 10 percent of patients experience nausea and vertigo when the semicircular canals are reached. Over time, Dr. Roland has refined his intraoperative management of these symptoms with quick interventions, such as warm irrigation and diazepam. “I keep one of my arms on the patient’s shoulder while I’m operating so I

can feel if they tense up due to a symptom they’re developing,” Dr. Roland says. “I need to keep the operation on pace, so I manage the symptoms as they arise, before they become a bigger problem by slowing or interrupting the procedure.”

HARNESSING THE BENEFITS OF COCHLEAR IMPLANTS AT AN EARLIER AGE

At the opposite end of the age spectrum, in March 2020 the U.S. Food and Drug Administration (FDA) lowered the age indication for a commonly used CI device from 12 months to 9 months, a decision supported by more than 10 years of NYU Langone research. Studies have demonstrated significant cognitive benefits associated with early cochlear implantation for children, helping to narrow the development gap between children born deaf and normal-hearing peers.

“Over a decade, we’ve developed a strong case, which led the FDA to take this meaningful step,” notes Dr. Roland. “The action was taken based on our convincing body of evidence demonstrating not only positive outcomes from the hearing improvements associated with cochlear implants, but also the proven cognitive benefits they convey to children when implantation is performed at an increasingly young age.” Such improvements include earlier speech production, which can help to prevent the irregularity known as “deaf speech” that arises from longer-term hearing impairment.

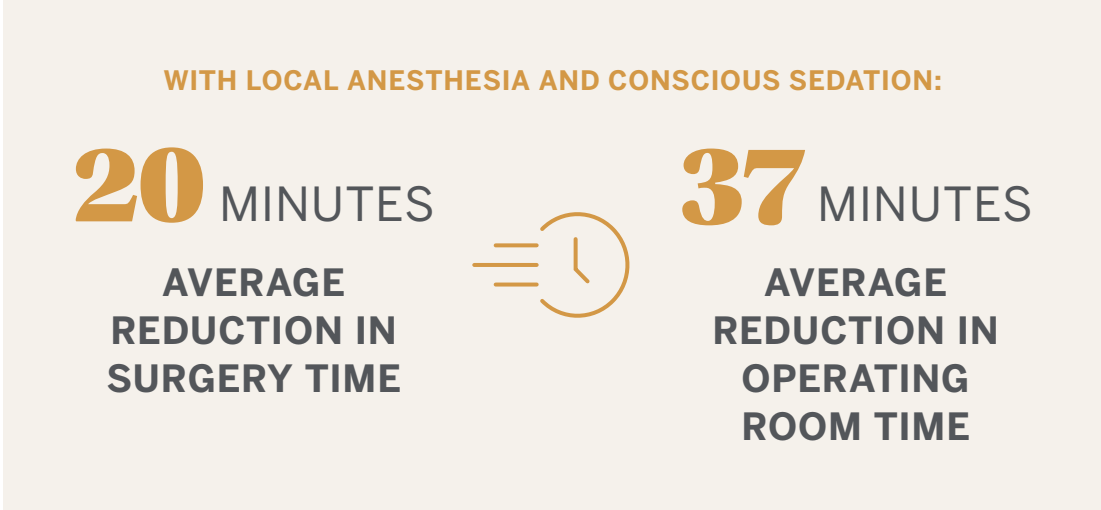
Studies have suggested that children who receive CIs are capable of the communication skills of their peers by the time they reach age 7. “However, we have data showing that our patients implanted under age 1 are then on par with typical-hearing kids in language development at 2 or 3 years of age, and this expedited timeline of achieving hearing improvement can help to foster other cognitive and developmental advantages,” explains Dr. Roland. “Those early data convinced us that implantation under age 1 was the right thing to do.”

SHARING SURGICAL INSIGHT TO EXPAND EARLY ADOPTION

Similar to cochlear implantation with LA-CS in older adults, implantation in children under 12 months requires a high degree of surgical skill garnered through neurotology training and extensive firsthand experience. “You’ve got to be quick, you need to know what you’re doing, and you must understand the unique aspects of anatomy and physiology of a baby compared to those of an adult,” notes Dr. Roland.

To date, the department has performed cochlear implantation on more than 350 children under 1 year of age, with an average simultaneous bilateral CI case time of 90 minutes. Based on this experience, Dr. Roland has developed a robust presentation that details the anatomical and physical issues involved, in order to enhance access to CIs for pediatric patients worldwide. “It’s important to share information on the surgical technique and outcomes of cochlear implants in infants because neuroscience research indicates that the sooner you give this young, plastic brain auditory information, the better these children will do—and every child whose condition would benefit should have this advantage,” adds Dr. Roland. ■

Disclosure: A portion of funding for the aforementioned research was provided by cochlear implant manufacturers.



Critical Changes in Patient Management Guide Routine and Acute ENT Care Through COVID-19

System-Wide Emphasis on Quality Fuels Necessary Innovation in Patient Care

As the COVID-19 pandemic took hold in New York City—demanding both a quick and a coordinated response—care teams across NYU Langone were redeployed throughout the system’s hospital network to support critical patient care.

Within the Department of Otolaryngology—Head and Neck Surgery, a significant number of physicians and nurses were rapidly assigned to COVID-19 intensive care units (ICUs) and converted medical floors, while other team members remained focused on safely providing emergent otolaryngology care and surgery.

As the dynamic situation evolved, each day shedding more light on the novel virus, the team continued to emphasize quality and multidisciplinary collaboration to support the health system in not only meeting the needs of critically ill patients, but also innovating to mitigate the pandemic’s most dangerous risks.

MAINTAINING QUALITY THROUGH CRISIS

As a massive influx of patients with COVID-19 began to inundate hospitals across New York City, an unprecedented challenge emerged: how to provide high-quality care while treating an idiosyncratic virus that posed more questions than medicine could immediately answer.

“Now we have so much guidance, based on patient data and emerging best practices, to help our physician colleagues worldwide respond to the virus and protect themselves,” notes J. Thomas Roland Jr., MD, the Mendik Foundation Professor of Otolaryngology, professor in the Department of Neurosurgery, and chair of the Department of Otolaryngology—Head and Neck Surgery. “But initially we knew very little about the disease, so it was like a live, real-time case example of leadership requiring coordination across administration, research, clinical care, and continued education of residents and fellows.”

The department’s emphasis was twofold: overcoming fear so doctors felt comfortable treating patients and creating an effective communication flow up and down the chain of command. New protocols, such as a daily newsletter tracking case data and best practices—including the proper ways to don and doff personal protective equipment (PPE)—became critical to the management of patients with COVID-19, which numbered 21,000 suspected infections, 6,000 admissions, and 1,200 ICU admissions from March 14 to June 2 at NYU Langone alone. From residents treating patients to department leaders managing response strategy, observations and innovations were shared rapidly and implemented system-wide, fueling NYU Langone’s strong COVID-19 survival data. Rapid-response communication techniques also served to protect COVID-19 caregivers, the vast majority of whom were spared exposure to the infection via patient care.

A strong communication chain, and the intelligent decision-making it supports, has enabled the multidisciplinary COVID-19 care teams to think about patient care beyond short-term survival. “We’ve approached these cases from a long-term vantage—not just treating the acute presentation of the disease, but thinking down the road about patients’ quality of life as they recover from both COVID-19 and the treatments we provide,” explains Dr. Roland. “And that means innovating as we go.”

RETHINKING TRACHEOSTOMY AS TREATMENT

One such innovation was a project initiating early tracheostomy in patients at day 5 of the disease’s course, as opposed to the 21-day mark suggested in established guidelines. The project was conceived by Luis F. Angel, MD, professor in the Departments of Medicine and Cardiothoracic Surgery, who had adopted percutaneous tracheostomy to facilitate faster recovery in patients with lung transplant. Faculty, residents, and fellows from otolaryngology—head and neck surgery, pulmonary medicine, and thoracic surgery collaborated to prevent the poor outcomes observed in intubated patients—who had death rates as high as 80 percent—by offering patients percutaneous or open tracheostomy at day 5. “This was a shift in conventional wisdom, which left tracheostomy as a last resort for dying patients requiring transport to hospice or chronic care facilities,” notes Dr. Roland.

The early intervention became an effective treatment approach enabling patients to mobilize,



Emphasizing collaboration and innovation, ENT specialists joined the multidisciplinary COVID-19 care teams comprising physicians and staff, including nurse clinicians like Michael Abejo, across NYU Langone who worked tirelessly to manage the influx of patients with COVID-19.

PHOTO: JONATHAN KOZOWYK

free of the sedation-induced paralysis associated with ventilation. A tracheostomy care team was formed to triage side effects of the procedure, and team members were often called in overnight to treat site bleeding or associated bleeding from the oral cavity or nose.

The benefits of the procedure quickly proved to far outweigh any risks; the movement and pulmonary toileting—methods to clear airways of mucus—facilitated by tracheostomy in more than 250 patients observed at NYU Langone resulted in a survival rate of 90 percent, far greater than the estimated rate of 20 to 50 percent in critically ill patients.

The approach also yields long-term benefits for these patients. “If a patient is intubated for three weeks, there’s a significant risk for laryngeal stenosis and scarring, vocal cord paralysis, and subglottic stenosis,” notes Dr. Roland. “With a tracheostomy, those risks are avoided, which means better long-term outcomes for our patients recovering from this disease.”

**SURGICAL INNOVATION
WORTH SUSTAINING**

Necessary COVID-19 innovation also emerged in the operating room, where surgeons continued to address cases meeting emergent criteria during the height of the pandemic, and subsequently when

elective surgeries commenced in May. PPE protocols were examined, particularly in the context of procedures that tend to cause aerosolized fluids to permeate the operating room. Research informed new protocols, including novel, three-dimensional-printed face shields developed by medical students. Special draping techniques covering most of the surgical site but allowing access, developed by department fellows, enabled the continued use of intraoperative microscopes without the release of aerosolized fluids.

Erich P. Voigt, MD, director of the Division of General Otolaryngology and Sleep Surgery, developed a patent-pending N95 mask that has a one-way valve for safe nasopharyngoscopy evaluations. The procedure is considered a potential superspreader event for its typical high release of fluids when a tube is introduced into a patient’s nasal cavity, making innovation necessary to enable its safe delivery as a standard of patient care, through and beyond the pandemic’s peak.

Similarly, as emergency otolaryngology patient care and surgery were sustained through the worst of the pandemic, safety demanded elevated sterilization and testing protocols, including on-the-spot PCR testing, appropriately pressurized rooms, and PPE. These and other patient management protocols have continued as the delivery of elective, non-emergent procedures was reinstated on the basis of priority categorization of different diagnoses.

“Though otolaryngology is not on the front lines of COVID-19 research like other specialties such as immunology, our specialty puts us at very high risk due to close contact around our patients’ faces,” notes Dr. Roland. “These lessons learned through the pandemic offer a road map for better, safer patient management moving forward, and many innovative technologies and procedures have evolved that will likely continue after the COVID-19 crisis abates.”

**COLLABORATION YIELDS
COLLECTIVE PROGRESS**

The health system’s capacity for continued quality improvement and multidisciplinary collaboration was tested and proved by the pandemic, as interdisciplinary teams worked together to stem the physical and emotional impacts of the novel virus.

“These months have underscored the vitality of our shared resources and workflows—that you can achieve better patient care, even through crisis, working together,” adds Dr. Roland. “As each day spurred new information based on collective discoveries, unnecessary fear and anxiety were mitigated with elevated precautions, frequent communication, and intelligent decision-making based on observation and analysis—fine-tuning our ability to innovate and expanding our collective emotional strength.” ■

**Necessary Shifts Lead
to Sustained Innovation
in Voice Care Throughout
COVID-19 Crisis**

As the first wave of COVID-19 unfolded, specialists at NYU Langone’s Voice Center responded to a rapidly evolving healthcare paradigm—shifting course in patient evaluations and treatments that routinely involve a high exposure risk through aerosolization.

With real-time innovation in patient management, redesigned guidelines, and an emphasis on maintaining standards of care throughout a dynamic situation, a multidisciplinary team collaborated to ensure care continuity while navigating pandemic-associated complexity.

**INNOVATING BEYOND
GUIDELINES YIELDS EARLY
TRACHEOSTOMY EVIDENCE**

Among care teams across NYU Langone collaborating to implement best practices for patients with COVID-19, concerns mounted regarding the complications associated with long-term ventilation. “The guidelines concerning delay of tracheostomies in these patients to the 21-day mark were built on fear of transmission rather than good evidence,” says Milan R. Amin, MD, professor in the Department of Otolaryngology—Head and Neck Surgery and director of the Voice Center. “The delay was recommended by researchers who hadn’t yet seen a wave of COVID-19, and we knew that we had to actively evolve previous understanding in the context of our highly complicated patients.”

While the theoretical risk of early tracheostomy at first prevented its use, the risks associated with an endotracheal tube in place for longer than 10 to 14 days—including tracheal stenosis and narrowing, mucosa injury, and larynx erosion—are well documented. Dr. Amin and colleagues have seen these impacts at the center at an increasing rate, with patients experiencing shortness of breath, diminished voices, and permanent scarring.

With those long-term consequences anticipated, a multidisciplinary team including otolaryngology, pulmonology, and thoracic specialists created a strategy to reduce the time to tracheostomy based on prognosis. For those patients with a good prognosis and most likely to recover, tracheostomy



▲
Milan R. Amin, MD

was provided at day 5; for those with a poorer prognosis, tracheostomy remained delayed.

A retrospective review led by Paul E. Kwak, MD, assistant professor in the Department of Otolaryngology—Head and Neck Surgery, published in August 2020 in *Otolaryngology—Head and Neck Surgery*, analyzed 148 adult patients infected with COVID-19. The review found safety equivalence between the two timelines, and early tracheostomy was associated with positive outcomes, including significantly shorter length of stay. A survival rate of 90 percent was observed in patients who received the earlier intervention, compared with the 20 to 50 percent estimated survival rate among critically ill patients.

“Our position as some of the first U.S. care teams treating COVID-19 patients focused us on the problem and how to help these patients in the most effective ways,” says Dr. Amin. “When you’re confronted with so many patients at once, there’s no time to try to glean protocols from prior studies that probably aren’t relevant anyway; you have to follow your instincts.”

DATA INFORM GUIDELINES TO KEEP PERFORMERS SINGING

While evolving protocols improved COVID-19 care, other measures centered on prevention. Aaron M. Johnson, PhD, a speech-language pathologist and associate professor in the Department of Otolaryngology—Head and Neck Surgery, and also a trained classical singer, turned his focus to elucidating how singing, an inherently aerosol-producing event, could contribute to the spread of COVID-19. “The performing arts community represents a significant part of the New York City economy and a significant subset of our own patient population,” he notes. “Since we ask performers to sing and project their voices during

treatment, it was important for us to determine how that could be done safely.”

Dr. Johnson and a consortium of co-investigators conducted a retrospective literature review to document how singing could be made safer in both treatment and performance capacities. Published in July 2020 in the *Journal of Voice*, this research defines the mechanism of singing as a superspreader event, stratifies risk based on environment and performance type, and outlines evidence-based guidelines to enhance singing safety. “We’ve had to reexamine all of the traditional ways we make music with others—really high-risk activities for disease transmission,” adds Dr. Johnson. “Other than staying home and not singing, we wanted to mitigate the risks of vocal training, voice therapy, and performing.”

A challenge associated with reliance on technology for singing is the latency of audio traveling across broadband signals—creating lags that interrupt fluidity of voices. One recommended approach to mitigate this effect is the adoption of low-latency audio systems within institutions. Other recommendations for reduced COVID-19 risk during in-person performances include relying on outdoor settings, rehearsing in shifts, and changing repertoires to accommodate singers in separate locations.

Additional research underway includes a survey of performers, in New York City and nationwide, to evaluate and quantify the economic and health impacts of COVID-19 that they have experienced.

AN EVOLUTION IN PATIENT MANAGEMENT

The sharp rise in COVID-19 cases also demanded shifts in patient management. Voice Center patients typically begin with an endoscopic laryngeal evaluation. This substantially exposes

providers to aerosolization but was found in previous research, co-authored by Dr. Amin, to be an important part of a comprehensive voice patient intake. “Listening to the voice remotely is just not as accurate,” notes Dr. Amin.

Dr. Amin and the Voice Center team took a deliberate approach to fine-tune safety protocols, focusing on both infrastructure and patient flow. The resulting changes included enhanced filtration, more robust cleaning protocols and personal protective equipment (PPE) requirements, and an overhaul of patient intake, moving aerosol-producing exams to a central location.

Although these measures enabled safer in-person initial evaluations, voice rehabilitation care continues to be provided through video visits. “We have found that if patients wear a headset, we can get good enough audio fidelity to provide the same quality care,” notes Dr. Johnson. He and his team are developing a patient questionnaire to evaluate the quality of telemedicine care, and have been invited by other centers to lend their expertise in reducing risk and enhancing patient care, in a worldwide effort to help improve overall COVID-19 outcomes.

“With collaboration, we were able to actively enhance quality care while managing highly complicated patients,” concludes Dr. Amin. “It was about balancing patient management and safety so we could deliver the kind of care we’d want for ourselves and our families.” ■

COVID-19–related Publications from the Department of Otolaryngology—Head and Neck Surgery

NYU Langone researchers have led many efforts to better understand the impact of COVID-19 across nearly every medical specialty, with 617 publications in 2020. The Department of Otolaryngology—Head and Neck Surgery contributed to this research with publications that included:

Givi B, Moore MG, Bewley AF, Coffey CS, Cohen MA, Hessel AC, Jalisi S, Kang S, Newman JG, Puscas L, Shindo M, Shuman A, Thakkar P, Weed DT, Chalian A. Advanced head and neck surgery training during the COVID-19 pandemic. *Head and Neck*. July 2020; 42(7): 1411–17.

Givi B, Schiff BA, Chinn SB, Clayburgh D, Iyer NG, Jalisi S, Moore MG, Nathan C-A, Orloff LA, O’Neill JP, Parker N, Zender C, Morris LGT, Davies L. Safety recommendations for evaluation and surgery of the head and neck during the COVID-19 pandemic. *JAMA Otolaryngology—Head and Neck Surgery*. June 1, 2020; 146(6): 579–84.

Gordon SA, Deep NL, Jethanamest D. Exoscope and personal protective equipment use for otologic surgery in the era of COVID-19. *Otolaryngology—Head and Neck Surgery*. July 1, 2020; 163(1): 179–81.

Kozin ED, Remenschneider AK, Blevins NH, Jan TA, Quesnel AM, Chari DA, Kesser BW, Weinstein JE, Ahsan SF, Telischi FF, Adunka OF, Weber P, Knoll RM, Coelho DH, Anne S, Franck KH, Marchioni D, Barker FG, Carter BS, Lustig LR, Bojrab DI, Bhansali SA, Westerberg BD, Lundy L, Jackler RK, Roland JT, Chandrasekhar SS, Antonelli PJ, Carey JP, Welling DB, Slaterry WH, Lee DJ. American Neurotology Society, American Otological Society, and American Academy of Otolaryngology–Head and Neck Foundation guide to enhance otologic and neurotologic care during the COVID-19 pandemic. *Otology & Neurotology*. October 2020; 41(9): 1163–74.

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Kwak PE, Persky MJ, Angel L, Rafeq S, Amin MR. Tracheostomy in COVID-19 patients: Why delay or avoid? [letter]. *Otolaryngology—Head and Neck Surgery*. August 18, 2020.

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Naunheim MR, Bock J, Doucette PA, Hoch M, Howell I, Johns MM, Johnson AM, Krishna P, Meyer D, Milstein CF, Nix J, Pitman MJ, Robinson-Martin T, Rubin AD, Sataloff RT, Sims HS, Titze IR, Carroll TL. Safer singing during the SARS-CoV-2 pandemic: What we know and what we don’t. *Journal of Voice*. July 2, 2020.

Piazza C, Filauro M, Dikkers FG, Nouraei SAR, Sandu K, Sittel C, Amin MR, Campos G, Eckel HE, Peretti G. Long-term intubation and high rate of tracheostomy in COVID-19 patients might determine an unprecedented increase of airway stenoses: A call to action from the European Laryngological Society. *European Archives of Oto-Rhino-Laryngology*. June 6, 2020.

Rameau A, Young V, Amin MR, Sulica L. Flexible laryngoscopy and COVID-19. *Otolaryngology—Head and Neck Surgery*. June 1, 2020; 162(6): 813–15.

Sobol SE, Preciado D, Rickert SM. Pediatric otolaryngology in the COVID-19 era. *Otolaryngologic Clinics of North America*. December 2020; 53(6): 1171–74.

Voigt, EP. Letter to the editor. *Annals of Otology, Rhinology & Laryngology*. July 2020; 129(7): 641–42.

Yakubov D, Ward M, Ward B, Raymond GF, Paskhover B. An increase in severe late-dental complications may result from reliance on home dental remedies during the COVID-19 pandemic [editorial]. *Journal of Oral and Maxillofacial Surgery*. August 1, 2020; 78(8): 1232–33.

ABOUT NYU LANGONE HEALTH

Leader in Quality

NYU Langone’s emphasis on continuous improvement inspires teams to continually raise the bar on quality and safety across our growing network in Manhattan, Brooklyn, Queens, Long Island, Staten Island, and Florida. NYU Langone’s Tisch Hospital, Kimmel Pavilion, NYU Langone Hospital—Brooklyn, and NYU Langone Hospital—Long Island were awarded an “A” as well as a Top Hospital award as part of the fall 2020 Leapfrog Hospital Safety Grades. NYU Langone Hospitals achieved Five Star ratings on CMS Hospital Compare effective October 2019 and is the only major academic medical center in the New York metropolitan region to attain a Five-Star Quality rating.



#9

in the Nation

Ranked ninth by *U.S. News & World Report* for Best Hospitals; and ranked fourth for Best Medical Schools (Research).



#4

in the Nation



Transforming Medical Education

As COVID-19 has added new urgency to nationwide physician shortages, debt burden, and lack of diversity, we remain committed to our accelerated pathways to the MD degree and full-tuition scholarships regardless of need or merit at the recently renamed NYU Grossman School of Medicine and the new primary-care focused NYU Long Island School of Medicine.

Otolaryngology— Head and Neck Surgery

2020 HIGHLIGHTS



Advanced Surgical
Approaches
Evolve Standards
of Care for Head
and Neck Patients
See page 1.



Expanded Cochlear
Implant Applications
Yield Cognitive
Benefits for Older
and Younger Patients
See page 4.



Necessary Shifts
Lead to Sustained
Innovation in Voice
Care Throughout
COVID-19 Crisis
See page 7.