Robot-assisted surgery has become a popular alternative to many open traditional surgical procedures. While modern robotic surgical techniques have been described since the late 1980s, telesurgery (i.e. surgery done at a distance from the patient) was first successfully performed in 2001, when physicians situated in New York removed the gallbladder of a 62 year-old patient in Strasbourg, France. Since then, technology has improved and remote robotic surgery has become quite prevalent and sophisticated. Used primarily in urology and gynecology at its inception, transoral robotic surgery (TORS) was developed for use in head and neck procedures. The da Vinci System® (Intuitive Surgical Inc., Sunnyvale, CA) is one such advanced robot, studied extensively at the University of Pennsylvania for its application in TORS in order to perfect and standardize its use.

Bert O’Malley wrote an article entitled Transoral Robotic Surgery (TORS): Clinical Update 2009. Drs. Weinstein and O’Malley and the team at Penn are undeniably trailblazers in the field of TORS. The Penn group has been instrumental in developing, researching, disseminating and educating head and neck surgeons in TORS. Until recently, the da Vinci robot was the only platform for transoral robotic surgery. The newest iteration of robot-surgical equipment is the Flex® Robotic System (Medrobotics, Raynham, MA), which improves upon many of the shortcomings of the da Vinci platform.

The Flex® Robotic System gives head and neck surgeons the ability to access anatomical locations that were previously difficult or impossible to reach minimally invasively. Surgeons can steer the flexible robotic arm and camera around anatomical structures with magnified HD for views that may not be possible with other minimally invasive approaches.

The Flex® Robotic System can navigate a nearly 180 degree path to reach challenging surgical targets. Surgeons can then deploy 3mm articulating instruments from a stable surgical platform that extends their reach to perform procedures. The Flex robotic system was FDA approved for head and neck surgery in October of 2015. In November 2015, PAO member Dr. Umamaheswar Duvvuri at UPMC was the first American surgeon to utilize the Flex Robotic System since it received FDA approval. In December 2015, Dr. Goldenberg was the second American surgeon to operate with the Flex System at Penn State University. Both UPMC and Penn State surgeons now have dedicated Flex Systems which have been used to date for radical tonsillectomies, pharyngectomies, tongue base resection, supraglottic laryngectomy, and benign lingual tonsillectomies.

It seems that PAO surgeons continue to lead the national and international charge in the field of Transoral robotic surgery.
The Pennsylvania Academy of Otolaryngology-Head and Neck Surgery has continued to strive to support all otolaryngologists in the state by addressing educational, legislative, advocacy, and practice management issues. We have had a very productive year as an organization.

One of my goals as President of the PAO-HNS has been to work closely with the Pennsylvania Medical Society (PAMED) to address practice management and political issues of interest to otolaryngologists in the state. Participating in PAMED’s Specialty Leadership Cabinet (SLC) has helped us to improve our communication with other state specialty societies and PAMED in general (see brief article in this issue of Soundings about the SLC). I have also met with Michael Fraser, PhD, the Executive Vice President of PAMED, and we are actively working together on ways in which the PAO-HNS and PAMED can collaborate to benefit members of both societies. For example, many of the current state legislative priorities for the PAO-HNS would also be pertinent to other physicians in the state. These issues include preventing taxes on medical procedures, truth in advertising for doctors, tobacco and E-cigarette use, smoking cessation, and medical liability reform. Our own lobbying firm, Milliron and Goodman, LLC, will help us address these issues in the Pennsylvania legislature, but it would be very beneficial to have the support of PAMED, with its much greater resources.

The PAO-HNS has continued to work with the AAO-HNS on legislative and healthy policy issues. We are also thinking about other ways that the two societies can work together to support Pennsylvania otolaryngologists and our patients. Dr. Karen A. Rizzo, our Governor representing the PAO-HNS to the AAO-HNS Board of Governors (BOG), recently traveled to Washington, DC to give a presentation about the success of our state society and to participate in a round table discussion on the importance of state otolaryngology societies at the AAO-HNS Annual Leadership Forum and BOG Spring Meeting. The PAO-HNS continues to be a “model” state society which many others are trying to emulate.

We have also been continuing to update and expand the PAO-HNS website, which was redesigned last year. As chair of the Website Committee, Michael Ondik, MD, has helped us to find ways to make our website more user friendly for our members and our patients. We are preparing to launch a new “Find an Otolaryngologist” function for patients. We are also working to enhance the patient information section of the website.

Our next Annual Scientific Meeting will be held at the Omni Bedford Springs Resort in Bedford, PA on June 17–18, 2016 (see update in this issue of Soundings about the Annual Scientific Meeting). Our program coordinator, Amanda Hu, MD, and the planning committee have created an outstanding program that includes topics that will be of interest to all practicing otolaryngologists as well as to residents, fellows, medical students, and advanced practice professionals. The meeting will be a great opportunity to learn, network, and socialize in a beautiful setting. I look forward to seeing you all in Bedford this June.

Finally, I feel it is important to thank our staff for all they do and recognize their hard work. I am grateful to Jennifer Keeler, our Executive Director, Kelley Richwine, Assistant Executive Director, Jessica Winger, Meeting Manager and Melanie Dupont, Member Service Specialist. I am honored to serve as your President. I encourage you to contact me with any questions or issues that arise.

Respectfully,
Jeffrey P. Simons, MD, FACS, FAAP
Unilateral Vocal Fold Paralysis in Children

Karen B. Zur, MD

Vocal fold paralysis (or impairment) is the second most common laryngeal abnormality in children and typically presents within the first 24 months of life.1-2 The etiology of vocal fold immobility can be categorized as iatrogenic, neurologic or idiopathic. The iatrogenic causes are most common. Cardiac surgery in children poses a risk to the recurrent laryngeal nerve due to the course of this very small nerve in the neck and chest. The ligation of a patent ductus arteriosus (PDA) is the most common surgical procedure associated with a unilateral vocal fold paralysis. The rates reported in the literature are variable and range from 1 to 25%.1,3 The recurrent laryngeal nerve is also at risk of injury following thyroidectomy, trachea-esophageal fistula (TEF) repair and excision of lesions that may lie along the course of the nerve in the trachea-esophageal groove in the neck.

Neurological causes of unilateral vocal fold immobility have been described. These include peripheral nerve disease, agenesis of the corpus callosum, intracranial bleed.14

Idiopathic vocal cord paralysis is a diagnosis of exclusion when no other cause can be found. In the Daya review, which spanned a 10-year period at a tertiary referral Children’s Hospital in London, 10 of 56 patients had an idiopathic vocal fold paralysis.

Unilateral cases of vocal fold paralysis are often accompanied by a weak cry and feeding difficulties. In many cases, the aspiration either resolves or improves with dietary modifications, and the issue in older kids post injury to the recurrent laryngeal nerve is more typically that of dysphonia. Some patients can manage the breathiness of a mild dysphonia with voice therapy, and many children with unilateral vocal fold immobility compensate over time, and the normal vocal fold can overcome the midline to achieve full glottic closure and hence, improved vocalization (and swallowing).

Since the time to recovery from paralysis can be highly variable, a method to determine the likelihood of recovery in children is desirable. The laryngeal electromyography (L-EMG) has been established as a useful technique for determining the extent of injury, prognosis for recovery, and may help guide treatment. It is not a well-studied modality in children and has multiple challenges, most importantly due to the need to perform this procedure under anesthesia. The risk of placing a young child under anesthesia for a diagnostic procedure, and the loss of information obtained from the EMG due to the anesthesia, render this test in children not as effective as in the adult population.

Prognosis for recovery depends on the cause of the paralysis with variability among series. Neurologic causes have the best prognosis for recovery. Iatrogenic paralysis is least likely to resolve, while idiopathic palsies generally resolve but the time to recovery can be from months to over 10 years. This variability impacts the decisions for treatment. Procedures that will permanently alter the structure or function of the larynx should be used with caution if there is any chance of recovery. Even with a favorable prognosis for recovery, patients with aspiration, respiratory distress, failure to thrive, or significant dysphonia may require treatment.

Traditional surgical options can be divided into injection laryngoplasty, laryngeal...
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framework surgery, and reinnervation procedures. The goals of surgery are to provide a midline surface upon which the contralateral vocal fold can appose. Injection laryngoplasty provides an attractive option for children given the temporary nature and low morbidity of the procedure. Many injectable materials are designed to resorb over 2 to 12 months and can act as a bridge while awaiting return of function. A test injection using a temporary injectable material is useful to provide the parents with a sense of how beneficial this intervention is for the child.

The results with injection laryngoplasty in children are not as consistent as in adults, and more research is needed with respect to the types of injectable materials and their efficacy. In my practice, I currently use the Prolaryn Gel for the temporary injection material, and Cymetra or autologous fat as options for the more long-term injectates. Medialization thyroplasty refers to the placement of an implant through the laryngeal framework to push the affected vocal fold toward the midline. Medialization thyroplasty is difficult in children given the smaller size of the larynx and the inability to perform awake, sedated procedures to assess the quality of the voice intraoperatively (which is how the adult thyroplasty procedures are typically done). There is theoretical concern of disrupting growth centers in the larynx with any surgical intervention, however this has not been found in animal models. The other potential complication of an implant thyroplasty is medial extrusion of the graft, potentially adversely affecting the airway. There is limited data on these procedures in children. I tend to avoid this surgical option in young children.

The Recurrent Laryngeal nerve reinnervation with the Ansa Cervicalis as a donor source has several advantages over the alternatives. This procedure does not require an awake child to attain excellent results; it avoids implantation of a foreign body; and is unlikely to affect development of the larynx during puberty as the architecture of the larynx is preserved. The goal of the reinnervation is to provide tonic stimulation to the vocal fold and to the interarytenoid muscle, aiding in medialization of the affected vocal fold and closure of the posterior glottis. A recently published analysis of a comparison between children who underwent an injection laryngoplasty and a reinnervation showed that in

A variation of World Voice Day events are hosted each year on April 16th: Free head and neck cancer screenings, lectures on vocal health and hygiene, concerts, fundraisers, etc. Here in Philadelphia, the Voice Foundation held a concert and happy hour with the Academy of Vocal Arts, a premier finishing school for opera singers. A collection of World Voice Day events can be found at (http://worldvoice-day.org/).

Don’t worry if you missed World Voice Day this year. Mark your calendars for April 16th, 2017 and join voice professionals next year for this international celebration!
12 children who underwent an ansa cervicalis-to-recurrent laryngeal nerve (ANSA-RLN) reinnervation, voicing started to improve within 3-6 months and there is a gradual improvement over time, up to 20 months post reinnervation. There was an improvement in volume of vocalization, less raspy vocal quality and there was an objectively improved parental perception and acoustic perception of the voice handicap as evidenced by universally improved standardized parental surveys and expert interpretation of the acoustics. In contrast to some past concerns, there does not seem to be a correlation between the post-injury time to reinnervation and voicing results, making this an excellent option for children with dysphonia due to RLN injury. Furthermore, the ANSA-RLN procedure seems to benefit those patients who were diagnosed with aspiration as well as dysphonia as demonstrated by more recent cases that I had taken care of.

In summary, the goals of managing children with unilateral vocal fold immobility are to provide them with a serviceable voice, ensure a safe swallow, and minimize the risk of airway compromise following intervention. The recurrent laryngeal nerve reinnervation is an excellent option for long-term management of children with symptoms of paralysis that have not resolved over a period of observation. It is a safe, relatively quick ambulatory surgical procedure that has given children and their families a second chance.

REFERENCES