INNOVATIONS in surgery

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Our Unique Capabilities

This issue of Innovations in Surgery highlights some of the unique services provided by surgeons at University Hospitals Case Medical Center and University Hospitals Rainbow Babies & Children’s Hospital. In the cover story, you will read about our surgeons’ experience with the innovative per-oral endoscopic myotomy (POEM) technique to treat patients with achalasia. We are one of five institutions in the United States with the training and experience to provide this scarless surgical option to restore the ability to swallow in people severely affected by this rare disease.

The research connection story looks at some of the other leading-edge diagnostic and therapeutic services that we provide for patients with dysphagia through the Swallowing Center at the UH Digestive Health Institute. In addition to providing the most advanced surgical and endoscopic techniques, we are engaged in unique research using esophageal function testing that combines manometry with multichannel intraluminal impedance.

In the feature story, you will learn about a recently hired surgical oncologist who is working with surgeons at UH Case Medical Center to bring new intraoperative and regional therapies for the treatment of patients with gastrointestinal malignancies. These collaborations are building a program to use heated intraperitoneal chemotherapy to treat patients with cancers that spread to the peritoneal surface.

Also, this issue features a case study to illustrate the capabilities of the Pediatric Trauma Center at UH Rainbow Babies & Children’s Hospital. This facility is the only Level I Pediatric Trauma Center in northeastern Ohio. Here, highly trained and caring professionals provide lifesaving services to help young patients and their families recover from the physical and psychological effects caused by severe injuries.

As always, we are dedicated to helping you and your patients by providing excellent personalized care and pursuing research to refine and improve therapeutic options.

Sincerely,

Jeffrey L. Ponsky, MD, FACS
Surgeon-in-Chief
University Hospitals Case Medical Center

Oliver H. Payne
Chairman and Professor
Department of Surgery
Case Western Reserve University School of Medicine
Analyzing the Esophagus
State-of-the-art diagnostic capabilities coupled with surgical and endoscopic expertise help patients with dysphagia

The Swallowing Center at University Hospitals Digestive Health Institute offers patients with dysphagia a combination of extensive surgical experience and technical capabilities found nowhere else in Northeast Ohio.

“At our Swallowing Center, we have expertise in esophageal disorders and swallowing disorders, including not only diagnostic but also therapeutic capabilities,” says Leena Khaitan, MD, MPH, FACS, Director, Center for Esophageal Diseases and Swallowing Disorders, University Hospitals Case Medical Center; and Associate Professor, Surgery, Case Western Reserve University School of Medicine. “We have techniques that allow us to analyze the esophagus and its physiology in a much more detailed fashion than we could have before.”

Clinical Services
In addition to impedance manometry and high-resolution manometry, the Swallowing Center has other diagnostic capabilities such as wireless pH testing and combined multichannel intraluminal impedance and pH, which allows detection of acid and non-acid reflux.

Patients referred to the Swallowing Center include those with diagnoses of reflux disease, achalasia and general difficulty with swallowing.

“Many people come in with complaints such as chest pain, heartburn, difficulty swallowing and painful swallowing,” says Dr. Khaitan. “Some patients have functional problems with the esophagus, such as with achalasia, and others have mechanical problems, such as a narrowing of the esophagus due to chronic reflux disease or cancer.” Cancer is a separate issue that needs to be ruled out in the diagnosis of swallowing problems.

Surgical and endoscopic expertise encompass the most advanced technologies, including the Stretta and EsophyX minimally invasive endoscopic approaches to reflux disease, Bârrx for Barrett’s esophagus, per-oral endoscopic myotomy (POEM) for achalasia, and transoral gastroplasty (TOGA) for weight loss, notes Dr. Khaitan.

Unique Research
“The esophageal impedance studies that we do are unique,” Dr. Khaitan explains. “With impedance we can assess not only pressures in the esophagus but also volume transit.”

When Dr. Khaitan began conducting esophageal impedance research about 10 years ago, one of the first things she recognized was that patients could exhibit normal manometry with abnormal impedance. This was a very unique finding because no one had previously recognized the potential for a disconnect between how well the esophagus squeezes and its ability to move a bolus to the stomach.

“We had always assumed that if the esophagus squeezes right, your esophagus is working normally, but that’s not the case,” says Dr. Khaitan.

At the Swallowing Center, Dr. Khaitan is conducting clinical research using esophageal function testing (see sidebar) to better understand biological and physiological causes of dysphagia.

“Another aspect of our research is to see what happens to people’s swallowing before and after anti-reflux disease surgery,” says Dr. Khaitan. “We are especially interested in patients who have normal manometry but abnormal impedance, because they have the most trouble after surgery.”

Other important questions that Dr. Khaitan and her associates are investigating include: Where in the esophagus are patients most likely to have abnormal bolus transit? Are there predictive factors for dysphagia? How does weight-loss surgery affect impedance?

Getting More Accurate
Esophageal function testing combines manometry with multichannel intraluminal impedance. In preparation for the test, a thin, high-resolution, 32-channel catheter, equipped with pressure and impedance sensors, is inserted through the patient’s nostril and positioned in the esophagus. Pressure and impedance are measured while the patient takes 10 swallows of a saline bolus and 10 swallows of a gelatin substance with a standard ionic content. The study takes approximately 15 minutes, significantly shorter than the 25 to 30 minutes required for standard manometry.

Call Our Experts
To learn more about the diagnostic and therapeutic options available at the UH Swallowing Center, contact Leena Khaitan, MD, MPH, FACS, at 216-844-4918, option #2, or to refer a patient call 1-866-UH4-CARE (1-866-844-2273).
For individuals who have achalasia, a simple everyday act becomes an impossibly difficult task. “These patients have lost communication between the upper and lower esophagus that allows the muscle to relax and let food go through,” says Jeffrey L. Ponsky, MD, FACS, Surgeon-in-Chief, University Hospitals Case Medical Center; and Oliver H. Payne Chairman and Professor, Department of Surgery, Case Western Reserve University School of Medicine. “So they can’t swallow.”

Dr. Ponsky – together with Jeffrey Marks, MD, Director, Surgical Endoscopy, UH Case Medical Center; and Associate Professor, Case Western Reserve University School of Medicine – now offers the state-of-the-art per-oral endoscopic myotomy (POEM) technique for patients with dysphagia due to achalasia.

“This procedure is directed at providing a more minimally invasive approach to achalasia,” explains Dr. Ponsky.

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Traditional Methods

“Historically, treatments for achalasia include pharmacologic therapy, surgical therapy and endoscopy therapy [see sidebar],” says Dr. Marks. “Medicines have had minimal short-term effects in treating this disease.”

Surgical cure initially had been done by accessing the esophagus via a thoracotomy or a laparotomy and performing an esophageal myotomy (also called Heller myotomy), cutting the muscles on the esophagus and then across the esophageal sphincter area and onto the stomach to allow food to go through.

“In recent years, we have been doing a laparoscopic minimally invasive operation through the abdomen, with about five small incisions,” says Dr. Ponsky. “The muscles are cut selectively, and the patients are able to swallow and go home in a couple of days.”

Although this laparoscopic Heller myotomy is an improvement from open surgery, it still carries some risks such as persistent dysphagia due to incomplete myotomy and reflux disease due to excessive cutting of the esophageal muscles.

A New Minimally Invasive Option

About two years ago, Dr. Haruhiro Inoue and colleagues in Japan developed the POEM procedure using refined technologies and approaches learned from natural orifice transluminal endoscopic surgery (NOTES).

“With the POEM, we go through the mouth and make a small incision in the inner lining of the esophagus, create a tunnel and cut the muscle endoscopically,” explains Dr. Ponsky. “We clip the little opening closed, and the patient has no outside scars at all.”

Dr. Marks estimates that about 200 POEM procedures have been done worldwide. At UH Case Medical Center, Drs. Ponsky and Marks have successfully performed four POEM surgeries. All these patients had severe difficulties swallowing, and all are happy with the results, notes Dr. Ponsky. They had no complications and were eating normally within a week of the procedure.

“We are one of five institutions in the country that are actively performing this procedure,” says Dr. Marks.
“It’s still under investigation, and we are following these patients very closely.” The UH surgeons and their colleagues at these other institutions are collaborating in the planning of a prospective clinical trial of POEM to start in 2012.

Unsettled Issues
According to Dr. Marks, benefits of POEM include: (1) avoiding abdominal surgery; (2) cutting only through the innermost layer of muscles in the esophagus, leaving the outer layer intact – this might reduce the risk of reflux problems (in contrast, surgical myotomy requires cutting through all the layers); and (3) lowering the chance of disrupting other tissues because POEM is being performed inside the lining of the esophagus.

Dr. Marks cautions, however, that it is still too early to tell whether the POEM technique is going to have the same benefits and longevity as laparoscopic Heller myotomy. Also, although early results suggest that undergoing a POEM procedure will not complicate additional surgeries for achalasia, this issue still needs to be further investigated.

Currently, the POEM approach takes a little longer than laparoscopic Heller myotomy. “We are being very careful,” observes Dr. Ponsky. “It’s probably harder on the surgeon because it requires a lot of intense maneuvering as each muscle fiber is identified and cut under direct vision. It’s a very meticulous procedure.”

Applications for the Future
Patients who might benefit from the POEM approach include those who would be more of a challenge to treat surgically because of prior esophageal or stomach surgery or those who are morbidly obese. Other patients might prefer the POEM procedure because they do not want to have abdominal surgery.

“We have a frank discussion with patients to let them know that this is a new procedure that seems to have produced some early benefits but with yet-to-be-determined long-term benefits,” says Dr. Marks.

“This is a leading-edge new endoscopic surgery which is the way of the future,” Dr. Ponsky notes. “In the future, we will probably apply these methods and these techniques to other areas of the intestinal tract for other purposes.” One potential application of the POEM technique would be to remove small benign tumors of the esophagus without opening the chest.

Short-Term Treatments for Achalasia
Endoscopic procedures for achalasia include pneumatic dilation, which entails the use of a strong balloon to rip muscle fibers, leading to dilation of the lower esophageal sphincter. “While it has a reasonable short-term effect, the long-term effect is not as good as surgery,” explains Jeffrey Marks, MD. “It carries the risk of rupturing the esophagus, which occurs in 2 to 5 percent of cases and might require surgical repair.”

In another endoscopic procedure used to treat achalasia, the paralyzing agent Botox is injected into the esophagus to allow relaxation of the muscles involved in swallowing. This procedure provides three to six months of relief of dysphagia symptoms.

“One limitation of these options is that achalasia is a permanent disease, and you are providing a very temporary solution,” notes Dr. Marks. Another issue is that the residual scarring caused by some of these endoscopic therapies, such as the Botox therapy, makes performing other surgeries more complicated.

Call Our Experts
To consult with Jeffrey Marks, MD, or Jeffrey L. Ponsky, MD, FACS, at UH Case Medical Center, call 216-844-3209, option #2, 216-983-4930, option #2, or, or e-mail us at UHSurgery@UHhospitals.org. To refer a patient, call 1-866-UH4-CARE (1-866-844-2273).
A New Face in Surgical Oncology

A recently hired surgical oncologist brings more options for the treatment of gastrointestinal malignancies

University Hospitals Case Medical Center welcomes to the gastrointestinal cancer care team surgeon

John Ammori, MD, who also is Assistant Professor, Department of Surgery, Division of General and Oncologic Surgery, Case Western Reserve University School of Medicine. After medical school and a general surgery residency at the University of Michigan, Dr. Ammori completed a two-year surgical oncology fellowship at Memorial Sloan-Kettering Cancer Center, where he gained a wealth of experience in intraoperative and regional therapies.

“Clinically, my focus is on the surgical treatment of patients with malignancies of the stomach, pancreas, liver, bile ducts, retroperitoneum and peritoneal surface,” says Dr. Ammori. “My research interests are predominantly clinical and translational. As we phase in new treatments, we will do clinical studies to assess how patients do compared with those treated with more standard therapies, as well as collect tissues in order to study molecular correlates of disease prognosis and response.”

Heated Intraperitoneal Chemotherapy

Dr. Ammori is working with Robert DeBernardo Jr., MD, Gynecologic Oncologist, UH MacDonald Women’s Hospital; and Assistant Professor, Case Western Reserve University School of Medicine, to spearhead a program to use heated intraperitoneal chemotherapy (HIPEC) for the treatment of patients with certain advanced gastrointestinal and gynecologic malignancies.

“Ovarian cancers, appendiceal cancers and more rarely some colorectal cancers have a propensity to spread to the peritoneal surface,” Dr. Ammori explains. “Patients undergo cytoreductive surgery to remove the bulk of tumor from the primary organ and from the peritoneal surface.” This surgery removes all gross disease but might leave behind microscopic tumor cells. The experience at various institutions suggests that the addition of HIPEC to this surgical approach will remove the residual malignant cells, reducing the incidence of recurrence.

Translational Research

Working with Julian Kim, MD, Chief Medical Officer, UH Seidman Cancer Center; and Charles A. Hubay Chair in Surgery and Professor, Surgery, Case Western Reserve University School of Medicine, and Jeffrey Hardacre, MD, Section Head, Pancreatic Surgery, UH Seidman Cancer Center; and Assistant Professor, Surgery, Case Western Reserve University School of Medicine, Dr. Ammori is also engaged in a translational research program to develop immunotherapeutics for pancreatic cancer.

“We are planning to start with preclinical studies in Case Western Reserve University School of Medicine Laboratory to see if it is possible to grow T cell clones from the lymph nodes of pancreatic cancer patients and use these to develop individualized immunotherapies that would ultimately be reinjected in patients,” Dr. Ammori explains. “This is similar to the personalized immunotherapy approach used by Dr. Kim and others in melanoma.”

Another aspect of the research will be to molecularly characterize pancreatic cancer and pancreatic cyst specimens to discover potential novel therapeutic targets and biomarkers.

Contact Our Expert

To consult with John Ammori, MD, at UH Case Medical Center, call 216-844-1777, option #2, or e-mail John.Ammori@UHhospitals.org. To refer a patient, call 1-866-UH4-CARE (1-866-844-2273).
Case Study

Advanced Care for Severe Pediatric Trauma

A Level I Trauma Center and injury prevention program safeguard children’s health in northeastern Ohio

A 13-year-old girl presented with severe injuries to the abdomen from a motor vehicle accident. The girl had been riding in a car while wearing a seat belt when another vehicle crossed the centerline and hit her car head-on. She had injuries to her intestine and the mesentery, resulting in extensive internal bleeding in her abdomen. The girl was taken emergently into the operating room, but she had already lost a lot of blood during transport.

Treatment

Over several days, the patient underwent several surgeries, including multiple bowel resections and, ultimately, an ileostomy. Because of the blood loss and ensuing low blood pressure, the patient also sustained an ischemic injury to the brain. In addition, she had an injury to the iliac crest, which a pediatric orthopaedic surgeon treated. She remained in the pediatric intensive care unit for a good portion of her hospital stay. She stayed in the hospital for nearly a month before being transferred to a rehabilitation facility. She has since been discharged and is living at home. Although the girl has fully recovered from her brain injury and is able to walk without assistance, she is still completing some outpatient physical therapy.

Discussion

“This case illustrates two important points,” says Anthony DeRoss, MD, Director, Pediatric Trauma, University Hospitals Rainbow Babies & Children’s Hospital; and Assistant Professor, Surgery, Case Western Reserve University School of Medicine. “First, it helps people realize the importance of wearing a seat belt. Second, it shows the type of facility we have at Rainbow.

“Our facility is the only Level I Pediatric Trauma Center in northeastern Ohio,” says Dr. DeRoss. “We earned this verification from the American College of Surgeons Committee on Trauma based on a long list of criteria demonstrating our ability to provide all the services that patients need to recover from their injuries.”

The Pediatric Trauma Center at UH Rainbow Babies & Children’s Hospital provides the full spectrum of required services and facilities, including a pediatric emergency department, a pediatric trauma resuscitation room, a pediatric intensive care unit, pediatric operating rooms, and psychological support programs. All these units are staffed by board-certified pediatric surgeons and surgical subspecialists, pediatric anesthesiologists, pediatric nurses and other highly skilled pediatric experts.

Injury Prevention Center

“Rainbow has a very active center for injury prevention,” says Anthony DeRoss, MD. “They are a group of individuals who research and facilitate programs to prevent injuries, and they go out in the community in almost every way you can imagine.”

Services provided by the Rainbow Injury Prevention Center include advocacy to advance the health and safety of children and their families, partnerships with the Greater Cleveland Safe Kids/Safe Communities Coalition, numerous programs to promote injury prevention, a grant-funded Regional Child Passenger Safety Program and a Traffic Safety Program. In November 2011 at the Safe Kids USA Conference in Charlotte, NC, UH Rainbow Babies & Children’s Hospital and its Safe Kids Greater Cleveland Coalition were awarded “Coalition of the Year.”

Call Our Experts

For transfer and consultation information on pediatric trauma patients, contact Anthony DeRoss, MD, at UH Rainbow Babies & Children’s Hospital, at 216-844-3015, option #2, or call 216-844-KIDS (5437).
CME Opportunities

The University Hospitals Case Medical Center Department of Surgery, through Case Western Reserve University, has many upcoming Continuing Medical Education offerings. Visit isi-case.org for information on how you can attend, course details and a complete listing of upcoming Education Training Courses.

Per-Oral Endoscopy Myotomy Hands-On Course
Feb. 10, 2012
Directors: Jeffrey Ponsky, MD, and Jeffrey Marks, MD
Location: Case Western Reserve University, Cleveland, Ohio
This course is an update on new technology for research and clinical application of per-oral endoscopic myotomy for the treatment of achalasia and several other esophageal motility disorders. Case Western Reserve University School of Medicine designates this live activity for a maximum of 7 AMA PRA Category 1 Credits.

Pediatric Trauma Web Symposium
Feb. 17, 2012
Director: Todd Ponsky, MD
Location: Web Course
This course is a full-day Web symposium, led by worldwide opinion leaders, highlighting new concepts and controversies in pediatric trauma. The symposium will address common controversies that pediatric trauma specialists face day to day as well as explore state-of-the-art pediatric trauma care. Register at peds-trauma.com.

Therapeutic Endoscopy Web Symposium
March 16, 2012
Directors: Jeffrey Ponsky, MD, and Jeffrey Marks, MD
Location: Web Course
This is a Web symposium for general surgeons, gastroenterologists and other specialists to present and discuss new and innovative techniques or methods of dealing with specific intraoperative difficulties and intraprocedural challenges. Participants are able to view the show from a computer with an Internet connection. Please contact registration@isicase.org for more information.

PEDS Colorectal Controversies Web Symposium
April 11, 2012
Director: Todd Ponsky, MD
Location: Web Course

ENT Sinus Web Symposium
May 16, 2012
Director: Todd Ponsky, MD
Location: Web Course

Your Feedback Is Important

As a medical professional, your input is invaluable in helping us shape future issues of Innovations in Surgery. We want to know what’s important to you. Do you want to read about cutting-edge research, learn about the latest technology, or hear firsthand case studies of how others in your specialty are improving and saving lives? Tell us what you want to read about and your name will be entered to win one of two Apple iPad 2s! Simply visit UHhospitals.org/innovations.

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