



Harry Aslanian, MD

Hillary Drumm, APRN

# SCOPING OUT THE BENEFITS

## OF SMILOW'S ADVANCED ENDOSCOPY PROGRAM

Any adult who has had a routine colonoscopy is intimately familiar with an endoscope—defined most simply as a slender, flexible, steerable, tube-shaped instrument with a light and a camera for viewing the inside of the body or removing tissue. “All gastroenterologists are trained in standard upper endoscopy and colonoscopy,” explained James Farrell, MD, Professor of Medicine (Digestive Diseases) and Director of the Yale Center for Pancreatic Disease. But during his training, Dr. Farrell became captivated by the potential for endoscopes to do even more, not just with screening, but with early diagnosis,

treatment, and even relieving pain and blockages in patients who are critically ill. “It was clear to me that if I wanted to develop a career that involved the diagnosis and management of gastrointestinal cancers, I would need an additional set of skills, beyond standard endoscopy.”

While standard endoscopy is typically used to detect large polyps and tumors in the colon and issues in the upper digestive tract, at Smilow Cancer Hospital, the advanced endoscopy team primarily focuses on the bile duct and the pancreas—two areas that can be difficult to access with standard endoscopic instruments. Using techniques

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including endoscopic retrograde cholangiopancreatography (ERCP)—which combines upper-GI endoscopy and X-ray—and endoscopic ultrasound (EUS), a combination of ultrasound and endoscopy, “We can, for instance, detect precancerous and cancerous lesions earlier, which makes a tremendous difference in terms of curative treatments,” said Thiruvengadam Muniraj, MD, FRCP, Assistant Professor of Medicine (Digestive Diseases) and Associate Chief for Endoscopy. “When we use these instruments to do a biopsy and give patients an immediate diagnosis, you feel like you’re touching someone’s life and changing things for them in a big way.”

#### A BRIDGE TO NEW TREATMENTS

It can help to think of advanced endoscopy as “a bridge” between endoscopy and open surgery, explains Priya Jamidar, MD, FACP, FASGE, Director of Endoscopy at Smilow Cancer Hospital and Professor of Medicine (Digestive Diseases). “It allows us to do a lot of things in a minimally invasive way that just a few years ago would have required open surgery.” One example: Removing gall stones that are left behind in a patient’s bile duct after a gallbladder attack. “In the past, they would have had to undergo a surgical exploration of the bile duct, which generally means a week in the hospital and six weeks of recovery,” explained Dr. Jamidar. “With advanced

endoscopy, we can put a catheter into the bile duct, remove the stone, and have the patient home in a day or two, and back to work in a week, which is tremendously impactful.”

Advanced endoscopic techniques can also be used to remove larger polyps in the colon that would have also once required a major surgical procedure. “We use a technique known as endoscopic mucosal resection to lift the polyp off the lining of the colon and cut it out,” explained Dr. Jamidar.

#### ENDOSCOPY ON STEROIDS

The team thanks souped up technology for these advances, including high-definition imaging, and microscopes with resolution powerful enough to allow surgeons to look at individual cells. “What that means is that we can now see very early-stage cancers in the lining of the stomach, esophagus, and colon, as well as do fine needle biopsies in places we can’t get to with a regular endoscope,” said Dr. Muniraj.

With EUS, for instance, “There’s a probe at the tip of the scope that enables us to see structures outside the intestinal tract, which is important for hard-to-detect pancreatic diseases,” said Harry Aslanian, MD, Professor of Medicine (Digestive Diseases) and Director of Endoscopic Ultrasound.

Some of the technology is worthy of a James Bond movie, and it’s evolving fast. “One of the newest tools is called SpyGlass, a tiny camera used in conjunction with

ERCP to go into the bile duct and create images on a large screen TV,” said Dr. Muniraj.

#### HANDS ON TREATMENT—AT EVERY STAGE

As important as technology is to Smilow’s advanced endoscopy team, what comes first is patient-centered care. The team has a commitment to getting patients in quickly for their first appointments and follow up visits, which is especially important for individuals coping with difficult-to-treat diseases like pancreatic, esophageal, and bile duct cancers, where early detection is so crucial. With pancreatic cancer, for instance, “We now have the ability to use endoscopic ultrasound to screen individuals who may be at higher risk for developing the disease, with a view toward diagnosing possible cancer earlier and managing it better,” said Dr. Farrell.

If cancer is discovered, EUS allows the team to look at the cells more closely, to take a biopsy with a small needle, to stage the cancer along with colleagues in Yale Pathology, and to determine if surgery is possible. Another advance: Inserting very small 3mm or 10mm gold metallic markers known as fiducials into the tissue of the cancerous organ—typically around the periphery of a tumor—to define its location. “This helps our radiation oncologists know exactly where to focus, especially for very small tumors that can be tough to see on a CT scan,” explained Dr. Farrell. “The

fiducials provide guidance that makes for a more focused, effective treatment that is safer for the patient.”

That’s precision medicine, and advanced endoscopy facilitates it in a very real way. “In 2022, with the help of this technology, we can get down to a molecular level and work with oncologists and radiologists to suggest treatment options based on any mutations we identify,” said Dr. Farrell. “We’ve gone from the ability to merely diagnose a tumor to specifying the type of treatment best suited for each patient.”

#### EASING PAIN AND OTHER SYMPTOMS

Advanced endoscopic techniques can also be used in a palliative way, producing results that lengthen and improve quality of life for cancer patients and a measure of relief for their families. “A person with cancer should never suffer from pain,” Dr. Jamidar emphasized. With advanced endoscopic tools, it’s possible to inject anesthetic directly where it’s needed. “We do a procedure known as a celiac

plexus block, injecting an anesthetic into the network of nerves behind the pancreas to alleviate pain caused by tumors.”

“ERCP can also be used to place a stent in the pancreas to bypass an obstruction in a minimally invasive way, to relieve jaundice, or enable a patient with blockages to begin eating again,” added Dr. Farrell.

Another minimally invasive technique, known as radiofrequency ablation (RFA), can shrink tumors by delivering radio waves directly to lesions in the bile duct through a tiny probe. “This can increase longevity for patients with bile duct cancer,” explained Dr. Jamidar.

#### TEAM EFFORT

While advanced technology is all well and good, Smilow’s advanced endoscopy team values the multidisciplinary teamwork even more—that’s what results in the best possible outcomes for patients. “The Advanced Endoscopy team provides a unique set of services, including

very precise diagnosis and staging for patients with liver, bile duct, or pancreatic cancer and related GI malignancies,” said Kevin Billingsley, MD, MBA, FACS, Professor of Surgery (Oncology) and Chief Medical Officer of Smilow Cancer Hospital, who works closely with the advanced endoscopy team. “The diagnostic and staging information they provide is crucial to helping us make the most accurate multidisciplinary treatment decisions.”

And with technology continually being fine-tuned and upgraded, the treatments and patient experiences will only get better. “The types of things we can do through a scope, more safely and effectively than with standard methods, are continually evolving,” said Dr. Aslanian. “It’s a very visual field, very hands-on. You are able to do a lot of problem solving because you get a visual immediately and can go right to the therapy,” he enthuses. “That’s incredibly gratifying.”

**DOCTORS FROM LEFT TO RIGHT:**  
HARRY ASLANIAN, MD | PRIYA JAMIDAR, MD, FACP, FASGE,  
JAMES FARRELL, MD | THIRUVENGADAM MUNIRAJ, MD, FRCP

