

# PhysicianUpdate

NEWS FOR PHYSICIANS FROM JOHNS HOPKINS MEDICINE

WINTER 2017

## The Ins and Outs of the Minimally Invasive Whipple

Surgeons at The Johns Hopkins Hospital have performed more than 5,000 Whipples since 1980. Today, the mortality rate is less than 1 percent—thanks to the efforts of pancreatic surgeon **John Cameron**, who drastically refined the procedure. Now, in select patients, surgeons at The Johns Hopkins Hospital are applying a minimally invasive approach to this operation.

“We are now routinely removing tumors safely with smaller incisions using the laparoscopic and robotic approaches,” says surgical oncologist **Matthew Weiss**.

In 2010, surgeon **Marty Makary** pioneered the laparoscopic Whipple at The Johns Hopkins Hospital. Surgical oncologist **Jin He**, a fellow at the time, attended Makary’s operations and is now using his experience to perform open and minimally invasive Whipples.

The principle for the minimally invasive Whipple is identical to an open Whipple but requires particular expertise. “It demands the skills of an expert pancreas surgeon and an expert minimally invasive surgeon,” says Weiss. “You have to know how to do the traditional open operation and minimally invasive procedures.”

Since 2014, Weiss, He and **Christopher Wolfgang**, director of hepatobiliary and pancreatic surgery, have performed more than 30 Whipples using a robotic approach. Preliminary data show zero infections at the surgery site and oncologic outcomes equivalent to those for open Whipples.

“People may think you leave some tumor behind or you get less lymph nodes with a minimally invasive approach, but our data show equivalent oncological outcomes when the patient is a good candidate,” says He.

Approximately 50 percent of those who have open Whipples at The Johns

“WE ARE NOW ROUTINELY REMOVING TUMORS SAFELY WITH SMALLER INCISIONS USING THE LAPAROSCOPIC AND ROBOTIC APPROACHES.”

—MATTHEW WEISS

Hopkins Hospital could be potential candidates for a minimally invasive approach. The robotic approach is appropriate for many cysts and tumors of the pancreas, including intraductal papillary mucinous neoplasms, neuroendocrine tumors and pancreas cancer.

However, Weiss says, each patient is different and has individual needs. Some of the factors the surgical oncologists consider when deciding on a surgical approach include type of tumor, prior surgical history, position of anatomy and major vessel involvement.

Even though the procedure takes longer than an open approach—six or seven hours, compared to three or four—the incision is much smaller. Afterward, patients stay in the hospital for about a week, and the smaller surgical site provides less opportunity for infection and less need for narcotics.

“We’re a high-volume pancreas surgery center with great outcomes,” says Weiss. “Now we are combining our extensive experiences in both pancreas surgery and minimally invasive approaches.” ■

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When deciding on a surgical approach, Jin He, left, and Matthew Weiss consider the type of tumor, prior surgical history, position of anatomy and major vessel involvement.

### Fast Facts: Johns Hopkins Minimally Invasive Whipple

30+  
Robotic  
Whipples  
since 2014



Technique is identical to open but uses a smaller incision (3 versus 20 centimeters).



Causes less postoperative pain, meaning less need for narcotics.



Results in fewer postoperative infections.



Oncological outcomes are similar to open.



Length of stay is similar to open.



Pediatric neurosurgeon Shenandoah Robinson, left, and Mt. Washington Pediatric Hospital physical therapist Sharon Selko assess patient Justin Thompson's range of motion.

## Maximizing the Benefits of Spasticity Surgery

**H**aving deep experience in performing surgery to reduce spasticity and improve motor function in children with cerebral palsy (CP) reduces the risk of complications and increases the likelihood of a good outcome, says pediatric neurosurgeon **Shenandoah Robinson**.

Robinson should know—she's been doing the procedure for 15 years now. But what makes as much of a difference in achieving the goal of the child being able to walk independently, she adds, is a multidisciplinary team approach and patient selection.

"Outcomes are greatly influenced by having the resources of a team of pediatric neurosurgeons and neurologists, anesthesiologists, intensivists, orthopaedic surgeons and physiatrists, which we're fortunate to have," says Robinson. "Screening for patients and families who are committed to intensive physical therapy for up to a year following the surgery is paramount."

In the surgery, called selective dorsal rhizotomy, Robinson divides certain sensory nerve fibers entering the spinal cord from leg muscles, interrupting the abnormal circuit of nerve impulses in patients with CP that result in high muscle tone and spasticity. These patients, Robinson explains, lack inhibitory signals from the brain to dampen this feedback loop.

"We cut a fraction of the sensory nerve roots to help restore the feedback loop into a more normal range and give patients more selective control of their muscles," she says.

Before cutting these nerve roots, however, Robinson, with the aid of a microscope, separates bowel, bladder and motor nerve roots to protect them. In another innovation, Robinson also uses a minimally invasive approach to minimize the removal of lamina covering spinal vertebrae.

After the four-hour surgery, patients may report their legs feel different and, in some cases, weaker—a consequence of losing their abnormal muscle tone in the surgery. But as spasticity is reduced, patients find it easier to increase their strength with therapy and exercise.

In that regard, Robinson notes that her patients benefit from Johns Hopkins' close relationship with Mt. Washington Pediatric Hospital and the Kennedy Krieger Institute, both recognized for their pediatric physical therapy and brain injury rehabilitation programs.

"Our goal is to get these kids to be as normal as possible and to maintain that as they enter young adulthood and go off to college," she says. ■

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## More Effective Treatment of Peritoneal Tumors

**C**ancers that originate in the abdomen and spread throughout the peritoneal cavity used to be universally fatal, says surgeon **Fabian Johnston**, who joined the Johns Hopkins faculty in May 2016. Surgically removing the many metastatic sites seemed like an impossible task, and systemically delivered chemotherapy doesn't penetrate deep enough into the peritoneal lining to catch budding, as-yet-invisible tumors.

However, he explains, a technique that's been slowly gathering steam over the past few decades could offer patients a chance at extended survival or even a cure. Known as hyperthermic intraperitoneal chemotherapy, or HIPEC, it involves flooding the cavity with a warm chemotherapy solution—catching errant malignant cells and small, imperceptible tumors before they develop a foothold in the abdomen or metastasize elsewhere in the body.

The treatment can be an option for patients with appendiceal, colon, ovarian, gastric or primary peritoneal cancers, Johnston says, because these

cancers tend to spread locally at first, colonizing the peritoneal cavity.

To perform HIPEC, he and the surgical team must first perform a complete cytoreduction of all visible disease throughout the entire abdomen, checking for evidence of lesions on the diaphragm, liver, bladder, bowel and paracolic gutters—anywhere cancerous cells might have traveled throughout the cavity. This initial part of the procedure might take two hours or up to 12 depending on the extent of cancer spread.

"It's a very exhaustive surgery to get patients down to an extremely low level of disease," Johnston says.

Once cytoreduction is complete, the next step is to fill the peritoneal cavity with a chemotherapeutic solution heated to 42 degrees Celsius, about the temperature of a warm bath, and allow it to circulate up to 90 minutes. Heating the solution allows the selected chemotherapeutic drug to enter cells more easily, increasing its killing power. And since its activity is confined to the abdomen, patients avoid some side

effects common with systemically delivered chemotherapies.

Performing HIPEC successfully isn't possible without a multidisciplinary team with expertise on this technique, Johnston says, which isn't available at many institutions. For example, he says, due to the nature of these cancers, many patients aren't optimally nourished before surgery. Working with nutritionists gets patients on track before HIPEC, which helps ease the postoperative period. Anesthesiologists familiar with HIPEC also use protocols that fast-track recovery, including epidurals instead of narcotics and minimal use of fluid, which allow patients' bowels to recover faster and let patients receive oral nutrition earlier.

"I always tell patients that this procedure is a marathon," Johnston says. "HIPEC is like nothing they've ever been through before. Our entire team works together to give patients the best recovery and outcome."

Besides achieving excellent clinical outcomes, Johnston notes that it's important for him and other surgical team members to make sure that



**"I always tell patients that this procedure is a marathon," says Fabian Johnston. "HIPEC is like nothing they've ever been through before. Our entire team works together to give patients the best recovery and outcome."**

patients and their families are cared for like family.

"We hold the entire team to the same standard of care we'd want for our own families," he says. ■

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## A Team Approach to Twin Anemia Polycythemia Sequence

The 37-year-old patient had already given birth to a set of fraternal twin boys after an in vitro fertilization procedure three years ago. But she and her husband wanted just one more child, so they underwent a single embryo transfer. At the initial ultrasound, they received shocking news—not one, but three embryos appeared brightly on the screen, identical triplets sharing a single placenta.

Such monochorionic pregnancies not only have the risks that come with any multiple gestation, such as a higher chance of premature birth, gestational diabetes, pre-eclampsia and anemia, but also their own specific risks, including problems that result from having a commingled blood supply on the placenta, such as twin-to-twin transfusion syndrome.

Aware of some of these risks after their earlier twins, the couple contacted the Johns Hopkins Multiple Gestation Clinic, says clinic director and maternal-fetal medicine specialist **Linda Szymanski**. “They were initially interested in reducing the pregnancy,” she explains. With the clinic’s close relationship with the Johns Hopkins Center for Fetal Therapy, Szymanski arranged for the couple to be seen at nine weeks gestation by fetal therapy colleagues **Ahmet Baschat** and **Jena Miller**.

After performing another ultrasound to evaluate the fetuses’ orientations, sizes and connections to the placenta, the team recommended that the patient continue the pregnancy. “A reduction would require an invasive procedure unique to monochorionic multiples that could be dangerous to the whole pregnancy,” says Miller. “We all decided to keep a close eye out for any complication that might arise.”

Every two weeks, the patient came for regular prenatal care appointments at Johns Hopkins, seeing either maternal-fetal medicine or fetal therapy specialists—or sometimes both—at each visit. “That way, we could screen, monitor and treat any complications that arose at the same time with the expertise of both groups,” Baschat says. “That type of comprehensive care exists at few centers anywhere in the world.”

The pregnancy proceeded smoothly until 23 weeks, when the patient contracted influenza, which landed her in the hospital for a few days, but she eventually had a full recovery. But then, at 26 weeks, her care team noticed a few abnormal findings on an ultrasound that had the potential to be more serious and long lasting. One fetus’ sac had started to expand, showing an increase in amniotic fluid that suggested increasing blood volume. Eventually, through



**Ahmet Baschat and Jena Miller demonstrate the use of a fetoscope for fetal laser surgery. Inset, left to right, Baschat, Miller and Linda Szymanski.**

Doppler that tracked blood flow, the doctors diagnosed the fetuses with twin anemia polycythemia sequence (TAPS), a form of twin-to-twin transfusion syndrome.

TAPS occurs when small-caliber arteriovenous anastomoses join, allowing unequal blood flow among fetuses. At 26 weeks, the fetuses had a reasonable chance of viability outside the womb, but they were also vulnerable to complications that can arise from prematurity. The only treatment for TAPS is fetal laser surgery to close off and separate the blood vessels—a potentially risky proposition for a triplet pregnancy.

“Making the right decision was agonizing for the entire team, the patient and her family,” Szymanski says. In the end, however, the consensus was to move ahead, with

Baschat and Miller performing the surgery. As the fetuses recovered in the days afterward, repeated ultrasounds showed that it was a success.

Blood volume among the triplets gradually normalized. At 34 weeks, on the same birthday as their older twin siblings, the babies—three boys—were delivered jointly by Szymanski and Miller, born healthy, with nearly identical weights and blood counts.

“At every turn, the patient and her family knew that they had an entire team caring for them,” Szymanski says. “It’s the kind of care we strive to deliver to every patient who comes through our doors.” ■

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## HEPATOLOGY

## Liver Care and Transplant for DC-Area Patients

Patients in the national capital region who need liver transplants needn’t make their way to Baltimore for their many workup and evaluation appointments. Instead, Johns Hopkins comes to them.

Hepatologist **Kirti Shetty** has found that many of her patients in the Greater Washington region prefer to stay close to home for their care. “Patients with complex liver disease are pleased to have access to Johns Hopkins specialists right in their own neighborhoods,” she says.

As director of hepatology for Sibley Memorial Hospital, Shetty leads a Johns Hopkins regional transplant outreach and care program. The Johns Hopkins transplant program serves patients throughout the national capital region. A multidisciplinary team of Johns Hopkins specialists performs evaluations in Bethesda and Frederick, Maryland. In a single day, patients can consult with members of a diverse group of Johns Hopkins experts—something that would otherwise only be possible with multiple appointments at different locations. “Following the transplant evaluation, we are able to provide ongoing care at the clinic closest to them,” she explains. “Through Johns

Hopkins Community Physicians, we have clinics all over the region.”

Patients may be hospitalized at the two Johns Hopkins Medicine hospitals within the region, Sibley and Suburban, with the transplant procedure being performed at The Johns Hopkins Hospital. Patients then transition back to their own communities for follow-up care. “This seamless, integrated system combines the expertise of one of the world’s leading transplant programs with the convenience of care close to home,” Shetty says. ■

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**Hepatologist Kirti Shetty leads a Johns Hopkins regional transplant outreach and care program.**

### The Johns Hopkins Comprehensive Transplant Center

The Liver Transplant Program of the Johns Hopkins Comprehensive Transplant Center has the highest patient survival rate in the mid-Atlantic region and the best one-year patient and graft survival rates in Maryland. With some of the leading liver specialists in the country gathered in one location, this multidisciplinary clinic provides the Washington, D.C., area access to the highest-quality care and the most up-to-date treatments of advanced liver disease and liver tumors.

## YOUR VITAL LINKS

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### Hopkins Access Line (HAL)

Your 24/7 connection with Johns Hopkins faculty physicians in any specialty.

☎ 1-800-765-5447

(Continental United States)

☎ +1-410-955-9444

(Baltimore area/International calls)

### Online Referral Directory

Find a Johns Hopkins physician by name, specialty and more.

[hopkinsmedicine.org/doctors](http://hopkinsmedicine.org/doctors)

### Johns Hopkins USA

Residents from outside of Maryland

1-855-695-4872

[hopkinsmedicine.org/usa](http://hopkinsmedicine.org/usa)

### Johns Hopkins Medicine International

Patients from outside the United States and for non-English-speaking residents  
+1-410-502-7683  
[hopkinsmedicine.org/international](http://hopkinsmedicine.org/international)

### Clinical Trials

[trials.johnshopkins.edu](http://trials.johnshopkins.edu)

### CME Programs

[hopkinscme.cloud-cme.com](http://hopkinscme.cloud-cme.com)

410-955-2959

[cmenet@jhmi.edu](mailto:cmenet@jhmi.edu)

### Johns Hopkins CareLink

A web-based portal for real-time access to your patients' medical records; notification of your patients' visits, admissions and discharges; and secure messaging with Johns Hopkins specialists.  
[hopkinsmedicine.org/carelink](http://hopkinsmedicine.org/carelink)

## ICD-10 IS HERE

When referring patients to Johns Hopkins Medicine, please be sure to include ICD-10 codes.

For more information, visit



[www.cms.gov/Medicare/Coding/ICD10/](http://www.cms.gov/Medicare/Coding/ICD10/)

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This newsletter is published for the Johns Hopkins Clinical Practice Association by Johns Hopkins Medicine Marketing and Communications

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PAID  
Permit No. 5415  
Baltimore, MD

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