JOHNS HOPKINS MEDICINE

Physician Update

NEWS FOR PHYSICIANS FROM JOHNS HOPKINS MEDICINE

WINTER 2016

Joining Forces to Thwart Lung Cancer

Coordination across specialties is leading to better patient outcomes.

Radiation oncologist Russell Hales, thoracic surgeon Richard Battafarano and medical oncologist Julie Brahmer have teamed up to provide lung cancer treatment in one clinic, at the Sidney Kimmel Cancer Center on the Bayview Campus.

Johns Hopkins has long been recognized for having some of the strongest individual departments for fighting lung cancer, with world-class experts in thoracic surgery, medical oncology and radiation oncology. But recently, says radiation oncologist **Russell Hales**, it's become increasingly clear that having robust but separate departments isn't what's most important for many patients.

"When they come to us," says Hales, "they're not interested in pillars of care where they go from experts on one side of the institution to the other. They come in with lung cancer and want it treated by all of their doctors together, ideally in one place."

That's why Johns Hopkins Bayview Medical Center launched a multidisciplinary lung cancer program within the Johns Hopkins Kimmel Cancer Center. While these three departments were previously separate, requiring separate appointments and multiple treks across campus, now all providers are physically based in the same new, state-of-the-art facility on that campus, which opened in 2015.

Such close proximity provides a patient's care team an easier way to consult frequently about progress and proposed treatment plans, says thoracic surgeon **Richard Battafarano**. "Being in a shared space facilitates dialogue to an almost 24-hours, seven-days-a-week, 365-days-a-year degree," he explains.

The new facility also makes visits exponentially easier for patients, adds medical oncologist **Julie Brahmer**. "It's more patient-centered care," she says.

Coordinators can book new patients with a suspected diagnosis of lung cancer for multiple appointments the first time they visit the center, explains Brahmer, with each of the appointments taking place at the Kimmel Cancer Center on the Bayview Campus. Although it often makes for a long day, patients can book scans and other diagnostic tests along with appointments with multiple specialists on the same visit. "By the end of the day," she says, "patients walk out with a treatment plan agreed upon by all the specialties."

Such collaboration among multiple departments also eases the burden on referring physicians, adds Battafarano. Rather than needing to choose which type of specialist to initially see their patient—a process often complicated by uncertainty about patient diagnosis and staging—physicians can turn to a panel of Johns Hopkins experts who work together to decide which experts are best suited to care for patients based on their evaluation and workup.

Having a coordinated care team for each patient also greatly simplifies communication with referring physicians, says Hales, providing one point of contact and communication.

In addition to making lung cancer care easier for both patients and referring physicians, the program has had an additional and unexpected benefit: better outcomes for patients. By comparing outcomes data from recent years before the multidisciplinary clinic launched to afterward, ongoing research by Hales and his colleagues suggests that patients treated in a coordinated fashion live longer, with improvements comparable to those achieved by the latest therapeutic advances, such as new pharmaceuticals and targeted therapies.

"A better system of health care delivery seems to have advantages that can play in the big leagues as much as any new, innovative therapy out there today," says Hales.

This new approach is bringing patients ever closer to the ultimate goal, says Brahmer: a cure for their lung cancer. "Our hope is that patients' lung cancer will be eradicated and they'll never have to worry about it again," she says. "We're working toward that through patient-centered, coordinated and personalized care." ■

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Up and Away Go the Pounds

The Food and Drug Administration recently approved a promising new tool in the arsenal against obesity.

Endoscopic placement of a silicone balloon in a patient's stomach is designed to help patients augment their more traditional weight loss efforts.

"Until now, despite the huge problem with obesity in the U.S., there were no endoscopic devices approved for weight loss," says Johns Hopkins gastroenterologist **Vivek Kumbhari**. "So we're very excited about FDA approval of the intragastric balloon."

Kumbhari has performed the balloon insertion procedure in countries where it's already approved. "I've done about 30 of these," says the native of Australia, "and I've seen patients lose significant weight."

The FDA approved two different balloon devices within a few weeks of each other. Both perform the same function, says Kumbhari, who describes the balloon insertion as a quick, simple and safe procedure.

"The patient is sedated and, using the endoscope, we go down to the stomach and inflate the balloon with 600 to 900 cubic centimeters of saline fluid," he explains. "There's a self-detaching mechanism, and the balloon stays in the stomach when we remove the endoscope. The procedure takes about 15 minutes, and the patient goes home."

The balloon remains in the patient's stomach for six months. Kumbhari says the removal is as simple as the insertion.

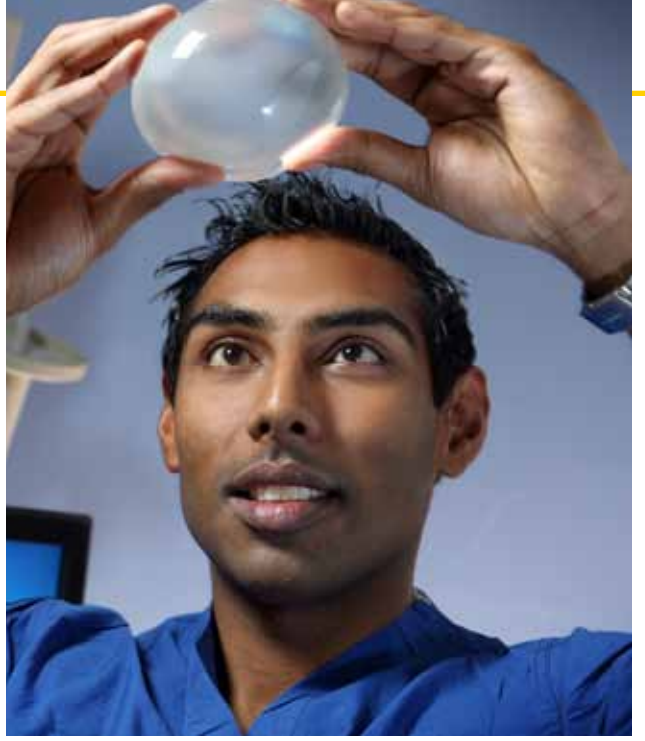
Patients who've had the balloon report feeling full earlier.

"There might be some nausea in the first week or so," Kumbhari says. "But I've had patients tell me they played tennis three days after getting the balloon. You get accustomed to it very soon, and after a few days, it starts working."

In clinical trials, patients with a body mass index between 30 and 40 lost 30 percent greater excess body weight compared with controls.

Kumbhari cautions that the balloon doesn't work on its own. "The balloon helps change behavior, but it's not magic. The patient definitely has to take some ownership.

"One of the good things at Johns Hopkins is that we have an integrated service, where patients work with a dietitian, an exercise physiologist, a psychologist, a gastroenterologist and a surgeon. We don't just put in a balloon. We work closely together to look at all facets of obesity." ■



Though the intragastric balloon is newly approved by the FDA, Vivek Kumbhari has done the procedure about 30 times in other countries.

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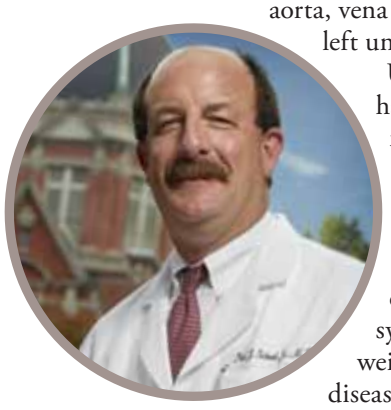
A Nonsurgical Solution to Retroperitoneal Fibrosis

While surgery has traditionally been the only option for patients suffering from a rare condition known as retroperitoneal fibrosis (RPF), Johns Hopkins researchers have now developed a medical therapy to treat and cure this progressive disorder.

The condition begins with inflammation surrounding the infrarenal aorta. As the disease progresses, the inflammation leads to fibrosis, with compression of the aorta, vena cava and ureters—and if left untreated, kidney failure.



Until recently, physicians have relied on surgery to relieve the obstruction, using stents followed by open or laparoscopic ureterolysis to relocate the ureter. "But that approach doesn't address systemic symptoms, such as pain, weight loss and anemia, or the disease's underlying causes—inflammation and fibrosis," notes **Paul Scheel**, director of the Division of Nephrology at Johns Hopkins.

Scheel has pioneered a new nonsurgical approach to RPF that combines two drugs—prednisone and mycophenolate mofetil (MMF)—that are administered daily until resolution of the retroperitoneal mass. In an initial study of 31 patients with RPF, all who received the drug therapy saw their systemic symptoms resolve, and nearly all of their obstructed ureters (30 of 32) were obstruction-free after the drug therapy ended, Scheel notes.

Buoyed by these results, he and his colleagues have now used the prednisone/MMF combination therapy to treat 234 patients with RPF at Johns Hopkins. Using the drug therapy, they've achieved a response rate of 95 percent and a recurrence rate of just 5 percent.

"The prednisone/MMF drug combination has sparked a paradigm shift in the treatment of RPF," says Scheel. "The disorder, which was treated for many years with surgery alone, was associated with significant morbidity. It can now be treated medically, resulting in a complete resolution of disease in the vast majority of cases and with few side effects."

As Scheel and his colleagues have emerged as world leaders in the clinical care of RPF—which typically develops in late middle age and is more common in men than women—they are now turning their attention to the disease's root causes, about which little is known. Using blood collected from RPF patients, they are working with collaborators in Italy to uncover the genetic basis of the disorder.

They have also expanded their clinical practice to include other diseases of the retroperitoneum. For example, the Johns Hopkins Division of Nephrology is one of three national centers of excellence in managing patients with Erdheim-Chester disease, a rare non-Langerhans histiocytosis that can also lead to inflammation and fibrosis around the kidneys. ■

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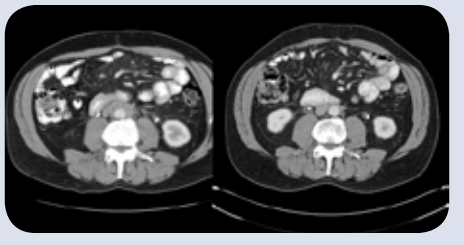
Diagnosing Retroperitoneal Fibrosis

Until now, ambiguity surrounding the diagnosis of RPF has hampered formal studies of the disease and its treatment. To facilitate clinical research, diagnosis and treatment, nephrologist Paul Scheel and his Johns Hopkins colleagues have developed the following diagnostic criteria for RPF:

- A soft tissue, homogenous density surrounding the infrarenal aorta or iliac vessels, identified through contrast-enhanced CT or MRI
- The presence of abdominal/flank pain, weight loss, lower extremity edema
- Laboratory evidence of anemia and systemic inflammation
- Absence of a concurrent malignancy
- Absence of a systemic fibrotic process, such as IgG4-related disease or Erdheim-Chester disease



CT scan of the abdomen with IV contrast before, left, and 18 months, right, following treatment of RPF. Note near-total resolution of peri-aortic soft tissue mass.

ORTHOPAEDIC ONCOLOGY

When Rotationplasty Is the Right Fit

Maya Oberstein was diagnosed with osteosarcoma of the distal femur in 2012, at age 9. After she completed chemotherapy, Maya's treatment options were an above-knee amputation, limb salvage with an internal prosthesis or a more unconventional approach: rotationplasty.

Carol Morris, chief of Johns Hopkins' Division of Orthopaedic Oncology, is one of a select group of surgeons in the United States who perform this alternative reconstructive procedure. Morris counseled Maya and her family on the available options. "She was the first doctor who asked me how I was feeling," says Maya, "how I was doing."

Developed in 1930 to treat femoral deficiency in a patient with tuberculosis, rotationplasty today may be indicated for lower-extremity bone sarcoma. The procedure involves resecting the knee while retaining the femoral artery and sciatic nerve. The distal segment is rotated 180 degrees and reattached to the proximal segment, converting the reversed ankle joint into a functional knee joint. The foot acts as a tibia, fitting into a modified transtibial prosthesis.

Rotationplasty presents unique challenges that Morris considers when preparing for the procedure. In younger patients, she says, "you have to calculate how much growth they have left in the foot and in the ankle of that side so when they're done growing, the heel matches the level of the knee on the other side. Cosmetically, if you're sitting, it's nice if the knees are even."

Morris recalls her initial reluctance about the procedure. "I thought it was a physically challenging thing to do to a child when prosthetics had made tremendous advancements," she says. "As I gained more experience in the field, I began to appreciate the limitations of internal prostheses and the functionality rotationplasty could provide. For the right parents and the right child, under the right set of circumstances, rotationplasty is a good operation. It's much more functional than an above-knee amputation."

Since Maya Oberstein's initial 9.5-hour procedure, Carol Morris has been following up every six months to monitor her progress.

Traditional prostheses, especially growing protheses, are more restrictive than the modified ntranstibial prosthesis, limiting a patient's ability to participate not only in sports, but in typical activities such as running, dancing and jumping.

"It's a great option for patients with cancer around the knee. It's great for kids who want to be very athletic. It's even great for adults who want to maintain a high level of function," says Morris.

Although there is concern that the cosmetic issue could affect quality of life, Morris says patients who choose rotationplasty "turn out to be some of my happiest patients." ■

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Three years after her surgery, Maya has adjusted well to the prosthesis. She is an active cyclist and gymnast, and she recently completed a 25-mile bicycle ride to raise money for cancer research.

CARDIAC SURGERY

A Bloodless Tetralogy Repair

More than half of cardiac surgeries require blood transfusion—a lifesaving measure, but one that nevertheless could fuel short- and long-term complications ranging from temporary immune suppression to graft-versus-host disease.

Shetarra Walker, Luca Vricella and Narutoshi Hibino say teamwork is key in preparing patients for a transfusion-free heart operation.

For several years, use of blood conservation techniques in cardiac surgery has been gaining momentum, and Johns Hopkins is among the hospitals that have launched protocols to reduce the use of blood products. Even so, totally bloodless heart operations in infants remain rare.

Recently, Johns Hopkins cardiac surgeons performed a totally blood-free tetralogy of Fallot repair in a 2-month-old, 6-kilogram infant—the youngest and smallest in the institution's history to undergo heart surgery without a single drop of foreign blood. The baby was discharged home on day six following the operation and has had a smooth, complication-free recovery.

"It's a conditioned assumption that blood transfusions are unavoidable," says **Luca Vricella**, director of pediatric cardiac surgery. "In small babies, it's medically, clinically and logistically challenging, but it can be done."

Identifying and treating anemia preoperatively is vital, says pediatric cardiologist **Shetarra Walker**. Patients get erythropoietin injections for several weeks leading up to surgery to enhance their hematocrit. Blood conservation is also done intraoperatively. Collecting blood from the patient before the surgery to fend off any blood loss is a common approach that can be modified for use in Jehovah's Witnesses patients by using a closed circuit technique that allows the blood to be recirculated directly back into the body. Any spilled blood during surgery is siphoned and reintroduced into the circulation, says pediatric cardiac surgeon **Narutoshi Hibino**, who operated on the infant with Vricella.

During surgery, triggers are established that signal the need for transfusion. For example, if brain oximetry starts trending downward, a transfusion is initiated promptly to prevent tissue hypoxia. The transfusion threshold must be individualized because it's predicated on factors such as age and comorbidities, including overall cardiopulmonary reserve.

"The question we ask is, what is the lowest level of hemoglobin a patient can withstand without compromising tissue oxygenation?" Hibino says. "That varies from person to person."

Postoperatively, clinicians can further minimize blood loss by reducing the number of phlebotomy draws, Walker says. At 6 kilos, for example, a child's blood volume is less than 500 CCs, so every little draw can quickly add up.

"All pediatric cardiac surgeries are ensemble pieces," Vricella says. "But nothing illustrates the power of teamwork like orchestrating bloodless surgery in a little infant." ■

Information: 877-474-8558

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