A less invasive valve surgery

The third time would not have been the charm for Michael Junker, 34, a former postal carrier from Pittsburgh. After undergoing two heart valve operations in 12 years, Junker faced a serious challenge with the return of valve stenosis, a condition in which the narrowing of the heart’s aortic valve blocks blood flow from the heart to the rest of the body.

“We knew that a third conventional valve replacement would have been too risky,” says Johns Hopkins cardiac surgeon John Conte. The only choice for Junker was a procedure called apical aortic conduit surgery, an operation in which surgeons use a synthetic tube-shaped graft with a mechanical valve to provide an alternative route for blood to leave the heart.

This type of surgery is considered only for patients in certain special circumstances. Junker, who had the procedure and is doing fine, says he is grateful that the apical conduit was a viable option for him.

Conte, however, believes that now there may be another possibility for patients like Junker: a less invasive way to replace a malfunctioning aortic valve that does not involve opening the chest. He and Johns Hopkins cardiologist Jon Resar are taking part in one of two major U.S. studies on the procedure—transcatheter aortic valve implantation (TAVI)—which has already shown considerable promise in Europe.

The minimally invasive procedure involves the use of a porcine (pig) valve encased in a stent, which is fed through the femoral artery, located in the thigh, to the heart. A balloon is opened inside the existing valve to push away the blockage and make room for the replacement valve. In its expansive new location in The Johns Hopkins Hospital’s new clinical building, the Heart and Vascular Institute provides the perfect clinical setting for performing TAVI. There, “hybrid” procedure rooms outfitted with sophisticated imaging and other technology allow medical and surgical specialists to work side by side to ensure that patients receive the most appropriate procedures in the safest possible environment.

Patients are eligible for the TAVI study if they are not good candidates for conventional surgery because advanced age, previous procedures or if multiple health conditions put them at high risk. They are randomized to receive either the transcatheter approach or surgical valve replacement. A second group of patients for whom surgery is totally ruled out will receive angioplasty.

To learn more about the TAVI study at Johns Hopkins, call 410-614-1131 or 410-955-1753, or email jresar@jhmi.edu or jconte@jhmi.edu.
When only an MRI will do

Having an MRI is often essential for diagnosing and treating a life-threatening condition. But for patients with a device implanted to regulate heart rhythm, an MRI has been for years considered unsafe, and often the procedure has been avoided—even if it was necessary for the health of the patient.

Such was the case with Jane Smith,* a 41-year-old New Jersey attorney. Nearly a decade ago, Smith had a grand mal seizure and temporarily lost her short-term memory. The following year, while pregnant, she had another seizure, was diagnosed with epilepsy and was put on antiseizure medicine.

Yet even with the medication, Smith’s seizures continued. Subsequent CT scans revealed what her doctors thought was a cyst in her brain. A neurosurgeon in New York urged her to have an MRI to know for sure. But five years earlier, she’d had a pacemaker implanted because of a very slow heart rate; because of the device, an MRI was thought to be unsafe.

Smith searched online and found the research of Henry Halperin, who began studying the issue of MRI safety with implanted heart devices about 15 years ago. “I contacted him and told him I really needed the test,” Smith says, “and he said I should come to Baltimore.” The MRI, performed without incident, revealed a benign brain tumor, which was surgically removed.

Halperin is not surprised. “We have safely performed MRI exams for more than 700 patients who have implanted defibrillators or pacemakers,” he says. The clinical safety protocol that he and his team developed, which includes knowing which devices can be reprogrammed to a safe mode and carefully monitoring the patient during the scan, is now being adopted by institutions around the world.

A clinical study at Hopkins looked at 438 patients with implanted cardiac devices who had more than 500 MRI scans combined. Only in three patients (1.5 percent) did the energy emitted from the scanner cause the heart device to revert to default settings. “This is a rare occurrence that warrants close expert monitoring during the test, but it is easily remedied after the test is completed,” says cardiologist Saman Nazarian, the study’s lead author and co-investigator. None of the three patients had device dysfunction during long-term follow-up of between 15 and 66 weeks. One patient completed four repeated MRI examinations during the study without any problems.

“With the advancing age of the population and the expanding indications for pacemakers and defibrillators, the capability to perform MRI in device recipients has become an increasingly important issue, and a lifesaving one for some patients,” says Nazarian. For many cardiac device patients who have come to Hopkins, MRI scans have detected tumors and other serious problems missed by other imaging tests, such as a CT or ultrasound exam. Without the MRI, these problems might never have been diagnosed or treated.

“I truly believe that having the MRI saved my life,” Smith says. Since her tumor was removed six years ago, she has not had any more seizures, does not need medication, and went on to have a second child. Twice each year, she comes back to Hopkins for follow-up MRI tests, and all is going well.

*Not her real name.
Stenting or endarterectomy? The debate continues

At 79, Doris Harrison felt unusually tired. She suspected something was wrong, and a doctor’s visit revealed that her carotid artery was more than 90 percent blocked. One year earlier, she’d had an endarterectomy at her local hospital to remove plaque from the same vessel. Now the blockage was back, along with the risk of stroke.

Her two treatment options were a second endarterectomy or the less invasive carotid artery stenting to open the vessel. For guidance, she turned to Bruce Perler, Johns Hopkins’ director of vascular surgery.

Perler had been one of the investigators in the landmark National Institutes of Health (NIH) study that compared the two procedures. Called the Carotid Revascularization Endarterectomy vs. Stenting Trial (CREST), it showed that endarterectomy and stenting are both safe and effective, but it provided no clear-cut answers for choosing between the two.

“The incidence of stroke was a little more than 4 percent with stenting as opposed to 2.3 percent with endarterectomy,” Perler says of the results. “On the other hand, the risk of heart attack was 2.3 percent for endarterectomy compared with 1 percent for stenting.”

Age makes a difference, the study showed. Younger people did better with stenting, while those 69 and older had fewer complications with endarterectomy. Older people often have more hardening of the arteries, which may explain their increased stroke risk with stenting, Perler explains.

Younger people tend to have healthier vessels, but some studies show that blood vessels are more likely to narrow again after stenting than after endarterectomy. “So if you have people in their 50s and 60s with a lot of years ahead of them, you may run into the problem of recurrent disease down the line that becomes very difficult to treat once the vessel has been stented,” Perler says.

Another consideration is the risk of silent infarctions, when microscopic bits of plaque go to the brain and may lead to vascular dementia. One study found silent infarctions among 50 percent of people following stenting compared with 15 percent after endarterectomy.

After monitoring Harrison for three months, Perler recommended a repeat endarterectomy. Testing showed that her blockage was worsening, and Perler believed that the most pressing concern was to avoid a stroke. He kept Harrison on cholesterol-lowering statin medication to further reduce the risk. Hopkins vascular surgeons were the first to show, in a 2005 study, that patients who take statins have a much lower rate of stroke, death and heart attack with the surgery.

Harrison’s energy returned after the surgery, and she continues to do well. Perler concludes that “although CREST was a very well-done study, it hasn’t really settled the issue of which is the optimum treatment across the board.” He believes that endarterectomy is a safer procedure than stenting, because of the lower stroke risk, “especially since the primary goal of opening a blocked carotid artery is to prevent a stroke in the first place.”

Johns Hopkins’ seventh AHA president

Gordon Tomaselli co-director of the Heart and Vascular Institute and director of Johns Hopkins’ Division of Cardiology, has taken on a new title as president of the American Heart Association (AHA).

With his appointment last summer, Tomaselli became the seventh cardiologist from Johns Hopkins to head the AHA, the oldest and largest organization devoted to fighting heart disease and stroke. No stranger to the AHA, Tomaselli also chaired its 2010–2011 Strategic Planning Task Force and earlier was program chair for its Scientific Sessions, a premier international conference for cardiologists.

A cardiac electrophysiologist and widely recognized expert in sudden cardiac death and heart rhythm disturbances, Tomaselli has focused his extensive research on understanding arrhythmias and finding new therapies to ward off the fatal varieties that claim more than a quarter-million lives in the United States each year.

Now, as AHA president, Tomaselli is especially committed to achieving the goals of the Million Hearts initiative, a federal preventive rather than “sick care” program supported by the Affordable Care Act. “Million Hearts” aims to reduce heart attacks and strokes in this country by 1 million over the next five years. Tomaselli is pushing for more research (he’s written more than 170 articles) and advocating for heart health and better lifestyle choices, such as eating right and exercising. Under his watch, the AHA is offering its expertise as well as ability for large-scale reporting and educating to advance the goal.

Tomaselli’s passion for cardiology is driven by family history. He had just completed his medical residency in 1985 when his mother went into cardiac arrest. A few weeks later, she received a heart transplant—an event that Tomaselli says “galvanized my desire to be a cardiologist.”
To close the door on grief

For nearly 15 years, Faye and Ron Morford thought of The Johns Hopkins Hospital—especially the Heart and Vascular Institute—as their second home. “They always treated us as people and not names on a clipboard,” says Faye. “We looked forward to going there because it was always such a positive experience.”

The Morfords’ frequent visits to Hopkins stemmed from Ron’s cardiovascular issues related to Marfan syndrome, a connective tissue disorder that affects many systems in the body, particularly the heart. Marfan syndrome can cause blood vessels to weaken and the heart’s valves to leak, among other life-threatening conditions.

Although Ron, blind since his late teens, had received care for many years at the National Institutes of Health, he was referred to Hopkins as the need for surgery became apparent. Thomas Traill was Ron’s cardiologist, and Duke Cameron was the surgeon who replaced Ron’s ascending aorta in 1998. A few months later, Ron had a valve replacement operation and then in 2007 another surgery with Cameron and vascular surgeon James Black to replace most of the descending aorta.

The last surgery went well—“The doctors were euphoric,” Faye recalls—but then came complications. Despite the medical staff’s best efforts, Ron died seven weeks later. He was 56.

Faye struggled with her grief. So accustomed to spending time at Hopkins, she returned one afternoon to say hello to the doctors and nurses she missed seeing on a regular basis. “Dr. Traill was stunned,” Faye says. “He gave me a big hug, and I knew then that I wanted to do something special for him and the Heart and Vascular Institute.”

In 2010, Faye gave $4,000 in honor of Traill and Black, as a thank-you for the excellent care they provided to Ron. In 2011, the year in which Ron would have celebrated his 60th birthday, Faye donated $100,000 to support the Readership in Cardiovascular Medicine, a project initiated by Traill.

The readership raises endowment funds to support the career of a junior cardiology faculty member who is passionate about clinical medicine. Similar to a professorship, a readership is an academic rank that is granted for four years and includes a stipend. Much like start-up funding for researchers, a readership frees the faculty member from financial worries so that he or she can focus on clinical study, teaching and writing related to patient care.

“Once I signed off on the paperwork, it was like closing the door on all my pain,” Faye explains. “My soul has finally settled down, and I’m so full of pride that I’m able to do this. It’s the final chapter in the grief process.”

Faye never imagined being able to make such a significant contribution. “When your heart knows it’s the right thing to do, then you’re comfortable with your decision.” When she found out a patient room would be named in memory of her husband, she was stunned—and thrilled. “Dr. Traill told me it will be an honor to take care of patients in Ron’s room,” Faye says.

Faye also made a gift to the National Marfan Foundation, which in an unexpected twist was awarded to Hopkins researcher Jennifer Pardo Habashi. The Morford Family Grant will fund two years of Habashi’s research to help reduce the risks associated with pregnancy for women with Marfan.

To learn more about the many ways the Heart and Vascular Institute is changing care, visit hopkinsmedicine.org/heart.

To make a gift to the Division of Cardiology or the Division of Cardiac Surgery, please call 410-516-6607 or email hopkinsheart@jhmi.edu.

To make a gift to the Division of Vascular Surgery, please call 410-516-6352.