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PHILADELPHIA INTERNATIONAL MEDICINE® NEWS BUREAU
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For immediate release:
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Editors note: Research, new techniques and improved facilities by Philadelphia International Medicine hospitals and physicians may lead to new ways to treat some of our most challenging diseases. Below are just some examples from our hospitals.

Thomas Jefferson University Hospital Launches Totally Robotic Cardiothoracic Surgery for Mitral Valve Repair

Philadelphia — Cardiothoracic surgeons at Thomas Jefferson University Hospital began performing wholly-robotic cardiac surgeries, beginning with mitral valve repairs. "This is the next step in the advancement of our robotics program," said Howard Weitz, MD, director of the Jefferson Heart Institute and Bernard L. Segal Professor of Clinical Cardiology. The division of Cardiothoracic Surgery has been conducting partial robotic surgeries for several months, using the robotic arm for access and better visualization in and around the heart.

The mitral valve, made up of two small but important flaps that control the flow of blood between the atrium and ventricles of the heart, are essential in regulating blood flow to the lungs, aorta and the body. As the atrium fills with blood the pressure pushes open the mitral valve allowing blood to flow into the left ventricle. It immediately closes behind to prevent a reversal of blood flow.

The valve can malfunction in the form of stenosis, a thickening, stiffening or fusing together of the valve flaps and regurgitation or backflow of blood into the atrium. If not treated, advanced heart valve disease can cause heart failure, stroke or blood clots.

Cardiothoracic surgeon Gurjyot Bajwa, MD, formerly on staff at the Cleveland Clinic, was recently hired to further support Jefferson's robotics program.

"The teams' comprehensive robotics training will help us achieve quality outcomes for our patients," said James Diehl, MD, director of the division of Cardiothoracic Surgery at Jefferson.

Robotics provides surgeons with three-dimensional visualization in and around the heart, a "miniaturized" field for operating, and three robotic hands. This allows for a more precise surgery, less scarring and blood loss and faster recovery for patients.

Fighting Liver Tumors with TACE at Temple University Hospital

Retired Government worker Clarence Branch is no quitter. Three years ago, when the 56-year-old ex-Marine and Vietnam Veteran learned that he had a large, malignant tumor on his liver, he was prepared for battle to overcome the problem — even if it meant having a liver transplant. But certain criteria must be met to be eligible to receive a new liver and Branch didn't — his liver tumor was too large.

Plan B was surgery, exploiting the liver's unique ability to regenerate. If the diseased portion of his liver were surgically removed, the remaining healthy part could grow back. The problem was, Branch's tumor covered so much of the right side of his liver, surgery would have left too little healthy liver tissue for him to survive.

Thanks to the multidisciplinary Temple Liver Disease Program, and its sophisticated array of therapies, patients like Branch who have serious or complicated forms of liver disease have a fighting chance. Temple's experts from interventional radiology, hepatic surgery, hepatology, pathology, transplant surgery, gastroenterology, and oncology meet weekly to discuss patients' case histories, images and laboratory findings to come up with the consensus-based treatment plans, often combining therapies to optimize their effectiveness.

That's exactly what they did for Branch, who initially was neither a candidate for transplant nor surgery. His interventional treatment was directed by Gary Cohen, MD, chief of Vascular and Interventional Radiology at TUH, and co-director of Temple's Multidisciplinary Liver Tumor Program.

Dr. Cohen performed two procedures: first killing the tumor, then stimulating growth in the healthy portion of the liver until it was large enough for surgery to remove the diseased portion. Three years since his diagnosis, Branch proudly beams: “I’m still here, still standing!”

The initial priority was to try to keep the tumor from progressing further, and even shrink it somewhat. Branch underwent transarterial chemoembolization (TACE) — a technique that delivers tiny polymer pellets saturated with chemotherapy agents to the tumor via venous injection, says Dr. Cohen.

“We showered the tumor with three cancer-fighting drugs — delivering them inside the blood vessel to target their flow directly to the tumor,” Dr. Cohen explains. The drug-saturated polymer pellets, delivered in an oil suspension, stick to the tumor and allow the chemo to stay in the tumor for a long time. TUH performs about 100-150 of these TACE procedures a year, notes Dr. Cohen.

TACE successfully killed the tumor and would have extended Branch’s life, but there was a high risk of recurrence. So Dr. Cohen followed the TACE procedure with a second: choking off the tumor’s blood supply.

The liver has a unique, dual blood supply which Dr. Cohen is able to exploit, as it is nourished by both the hepatic artery and the portal vein. Because the portal vein feeds the right lobe of the liver — the site of Mr. Branch’s tumor — Dr. Cohen was able to restrict that blood flow without compromising blood flow to the healthy left portion of Branch’s liver. Dr. Cohen did this by performing a procedure known as percutaneous portal vein embolization (PVE), in which a catheter is used to inject tiny particles into the vein, causing a blockage that redirects blood flow away from the diseased portion of the liver and toward the healthy side, actually stimulating growth on the healthy side.

Within a few months of PVE, the left lobe of the liver had grown large enough to function sufficiently to allow safe removal of the diseased right lobe. He was then ready for surgery, and had a resection of the right lobe of his liver, performed by Temple liver surgeon Andreas Karachristos, MD, PhD, who is also co-director of the Temple Liver Program.

Since his surgery in 2008, Branch has not had a recurrence of his liver tumor. He returns every six months to see his liver specialist, Temple hepatologist Martin Black, MD, who has been his physician for over ten years. When asked about a liver transplant, Branch replies: “Maybe when I’m 70 or 80. My liver functions great, and I'm healthy now.”

Clarence Branch's success is a testament to the team approach Temple takes to patient care. "Being a multidisciplinary tertiary care center, with nationally-renowned hepatologists, makes us particularly well-prepared to meet the needs of our patient population in a thoughtful fashion," says Dr. Cohen. "I think our approach of offering a variety of aggressive treatment options, with a positive attitude for the patients, really keeps our patients coming back," he adds.

New Half-Match Bone Marrow Transplant Procedure at Jefferson Yields Promising Outcomes for Cancer Patients

Half-matched bone marrow or stem cell transplants for blood cancer patients have typically been associated with disappointing clinical outcomes. However, a clinical trial conducted at the Kimmel Cancer Center at Jefferson testing its unique, two-step half-match procedure has produced some promising results: the probability of overall survival was 45 percent in all patients after three years and seventy-five percent in patients who were in remission at the time of the transplant.

Reporting in the journal *Blood*, Neal Flomenberg, MD, chair of the Department of Medical Oncology at Thomas Jefferson University Hospital, Dolores Grosso, DNP, co-principal investigator and lead author of the article, and colleagues discuss the results of twenty-seven patients treated on this phase I/II trial who had diagnoses that included leukemia, lymphoma and myelodysplasia.

The patients received their transplant in two steps. First, after receiving radiation therapy to further treat their disease, the patients were given a specified dose of T cells (a type of immune cell that fights infection) from their half-matched family donor. The donors were parents, siblings or children of the patient. The patients next received the drug cyclophosphamide to help the newly infused donor T cells to be more tolerant to the patient's body. The second step of the transplant occurred when the patients received a dose of their donors' stem cells to help their blood counts return to normal and further strengthen their new immune system.

Dr. Flomenberg and his team found that after a follow-up of 28 to 56 months, overall survival for the patients after one year was 54 percent and 48 percent at three years. Patients in remission at the time of the transplant fared better with an overall survival of 75 percent. Seventeen of the 27 patients—with a median age of 52 years old—were alive six months after their transplant, which was the official end point of the trial.

While more recent studies have shown promising increases in overall survival for patients undergoing half-match transplants, historically, clinical outcomes for these types of transplants have been poor, which has limited the use of this type of procedure.

The results of the Jefferson trial represent a very promising improvement in this area.

Bone marrow or stem cell transplants are performed in order to replace a patient's diseased immune system with that of a healthy donor. Traditionally, the use of a genetically fully matched donor has been associated with the best results in bone marrow transplant, but many patients lack a fully-matched related or unrelated donor. Conversely almost every patient will have a half-matched donor (also known as a haploidentical donor) in their family.

The successful use of haploidentical donors would greatly expand the number of donors available to a patient, extending this therapy to almost everyone who would benefit from receiving a transplant. This would include patients with sickle cell anemia, who do not have as many fully-matched unrelated donors available to them.

"Our half-match bone marrow transplant results open up many doors for different types of patients who can't find an exact match," said Dr. Flomenberg. "It also justifies recommending that patients at high risk for relapse should consider having a half-match transplant early in the treatment of their disease."

"Jefferson's two-step procedure provides promising results that could serve as the basis for further exploration and optimization of the technique," he added.

Jefferson medical oncologists' approach is unique in that the dosage, timing and treatment of donor T cells was carefully controlled and optimized. No other transplant regimen controls the exact amount of donor T cells given. The investigators believe that dosing the T cells in this way helped avoid many of the life-threatening side effects of this type of transplant.

"We believe the dosage and timing of T cells from the donor into the patient is essential for success. In fact, it's equally as important as prescribing specific doses of radiation and chemotherapy to initially treat the disease," said Dr. Grosso. "The goal of this two-step regimen was to develop a better technique for half-matched patients with relapsed blood cancers initially, but we also showed that it can be appropriate for high risk patients earlier in their disease who lacked fully matched donor options."