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COLUMBIA UNIVERSITY
MEDICAL CENTER

Department of Surgery
In affiliation with
NewYork-Presbyterian Hospital



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Innovations in Treating Heart Valve Disease

Hybrid procedures combine the best of bypass surgery and catheter-based interventions.

As minimally invasive surgical techniques continue to advance, surgeons are becoming more adept and more creative in applying them. For patients with heart valve disease and coronary artery disease, this means new and better options – and for many, the chance to avoid more traumatic surgeries.

The heart has four valves that control the flow of blood into and out of the heart. Most commonly, valvular disease affects the aortic valve. If the aortic valve becomes narrowed (stenotic), the heart must work harder to push blood into the aorta and to the rest of the body.

According to **Mathew R. Williams, MD**, *Surgical Director of Cardiovascular Transcatheter Therapies and Co-Director of the Heart Valve Program*, severe aortic stenosis usually requires replacement of the aortic valve. In some cases, patients who have had valve replacements will also need to have additional procedures to correct blocked arteries. Until recently, these procedures were traditionally both done through open surgery.

But open surgery may be too risky for certain patients, and may be particularly problematic for patients who have coronary artery disease, or who had prior heart surgery and need re-operation. If they were not able to withstand open bypass surgery, such patients previously had no choice but to endure their symptoms as their hearts grew weaker. Now, the advent of hybrid surgeries—which combine catheter-based procedures with minimally invasive surgical techniques—are providing a broader and better range of treatment options.

As Dr. Williams explains, “Hybrid procedures are done in order to minimize risk and simplify surgery in instances where combining two procedures into one would be simpler, safer, and more durable.” Dr. Williams is one of the only surgeons in the nation dually trained in both catheter-based (interventional) procedures as well as traditional cardiac surgery.

He says that hybrid valve procedures are most appropriate for older patients who need a valve replacement and who also have coronary artery disease (hardening of the arteries). Rather than performing a bypass operation to address the arteries and then a separate valve operation later, the hybrid procedure allows both problems to be corrected using minimally invasive incisions and catheter-



Mathew R. Williams, MD

Surgical Director of Cardiovascular Transcatheter Therapies and Co-Director of the Heart Valve Program

Peripheral Arterial Disease

New Critical Limb Ischemia program addresses all factors involved in peripheral arterial disease, providing options for diabetics and others with advanced arterial disease.



Danielle Bajakian, MD
Assistant Professor of Clinical Surgery
and Director, Critical Limb Ischemia
Program

Most people are familiar with atherosclerosis, also called hardening of the arteries. Atherosclerosis is responsible for a significant number of heart attacks and strokes in the United States every year. What people may not know is that the very same disease process – buildup of plaque within the heart blood vessels – can affect the arteries in the rest of the body as well.

When it occurs beyond the heart, blockage of the arteries is called peripheral arterial disease, or PAD. Patients with coronary artery disease are at risk for PAD and vice versa; the risk factors for both diseases include obesity, diabetes, hypertension, high cholesterol, cigarette smoking, and family history.

PAD most commonly affects the legs, but may occur elsewhere as well, says **Danielle Bajakian, MD**, Assistant Professor of Clinical Surgery, Columbia University College of Physicians and Surgeons, and Director, Critical Limb Ischemia Program, NewYork-Presbyterian Hospital/Columbia University Medical Center. Even if a person has no symptoms, the presence of PAD still indicates systemic disease that must be addressed. When symptoms do appear, they usually begin with claudication, or cramping in the back of the leg while walking. Such pain usually stops during rest, and then resumes while walking. Symptoms may occur in just one leg. "Mild disease can usually be treated with changes in lifestyle such as losing weight, smoking cessation, exercise, and managing blood glucose and cholesterol levels," says Dr. Bajakian.

If PAD progresses, blockages in the arteries can lead to more serious symptoms such as pain in the feet while lying down, wounds or ulcers in the legs and feet that don't heal, and in the most advanced stages, gangrene. This occurs more commonly in patients with diabetes or who smoke cigarettes but can occur in anyone. These symptoms indicate critical limb ischemia resulting from impaired circulation, and if untreated, could result in amputation of the leg. Moderate or severe disease may require treatment to open the blood vessels to restore circulation. "People with diabetes face a particular risk for critical limb ischemia,"

cautions **James F. McKinsey, MD**, Chief, Vascular Surgery and Endovascular Interventions. "Up to 20% of diabetics may eventually lose a limb if preventive measures and careful medical and surgical management are not part of their care."

To address the unique needs of diabetics and other patients who have PAD (or are at risk for it), the Division of Vascular Surgery and Endovascular Interventions at NewYork-Presbyterian/Columbia has established a dedicated program for the prevention and treatment of critical limb ischemia. This multi-disciplinary, comprehensive program not only treats PAD, but works with patients to treat all underlying risk factors. Formalized in 2010 under the leadership of Dr. McKinsey, the critical limb ischemia program includes a collaborative team of experts: vascular surgeons, endocrinologists, cardiologists, podiatrists, wound care specialists, and imaging specialists. The program offers many treatment options that are unavailable elsewhere, including the latest endovascular techniques for restoring circulation to both large and small arteries in the legs.

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Endovascular Procedures for PAD

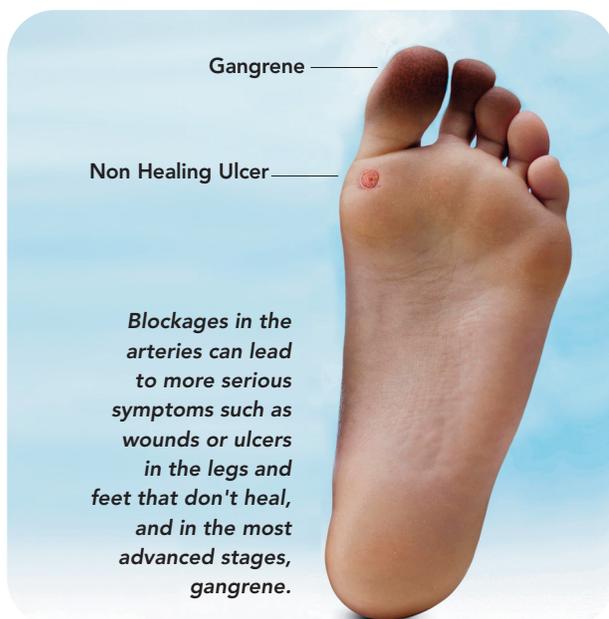
The Critical Limb Ischemia Program offers every available therapy to restore blood flow to the lower extremities, including new therapies to treat smaller vessels. Over 90% of patients who require surgery can be treated with minimally invasive endovascular techniques rather than open surgery. These minimally invasive techniques are performed under sedation and local anesthesia rather than general anesthesia, and most patients return home the following day.

- **Angioplasty:** After accessing the blockage through a catheter, angioplasty involves placing a balloon in the affected area and inflating it to keep the artery open.
- **Atherectomy:** Using mechanical devices (inserted through a catheter) to remove plaque in the artery.
- **Stenting:** Placement of a wire mesh strut within a narrowed area of the artery in order to keep it open.



Columbia HeartSource to Add Affiliate in Abu Dhabi, UAE

Peripheral Arterial Disease ~ Continued from Page 2



"In most places today, patients see multiple doctors who each address a single problem, but do not communicate with one another. Results for patients are not optimal," explains Dr. Bajakian. "Many patients need care for multiple problems, and receiving coordinated care is far more effective." She stresses that anyone who experiences pain in the legs with walking, or wounds that don't heal in six weeks — and particularly anyone who is overweight, has diabetes, or smokes — should seek an evaluation by a critical limb ischemia specialist "expeditiously." As Dr. Bajakian explains, "If you wait, it may be too late. The sooner you go in for evaluation, the higher the chance your leg, foot, or toes can be saved." She also notes that while many patients have been told elsewhere that they could not be helped, the program at NewYork-Presbyterian/Columbia can often provide treatment options. "Because of our comprehensive expertise, many times we can offer further treatments and save a limb when others cannot." ■

The critical limb ischemia program is actively researching new technologies including stents, bypass grafts, gene therapy, and autologous stem cell therapy to promote growth of new blood vessels. Learn more at www.columbiavasculard.org

NewYork-Presbyterian Hospital/Columbia University Medical Center is poised to expand its network of hospitals by partnering with Lifeline hospital in Abu Dhabi, United Arab Emirates.

The new affiliation is part of the Columbia HeartSource program, which helps other hospitals to establish or improve the quality of their cardiovascular programs. At this time, HeartSource currently works with 17 other hospitals to provide programmatic support including quality improvement, recruitment and transfer of innovation to community based hospitals. The affiliation in Abu Dhabi will be the second international program in the department and the first in the Middle East, according to Larry Beilis, Chief Financial and Administrative Officer of the Department of Surgery and HeartSource. Mr. Beilis visited Abu Dhabi in early February 2011, where he met with hospital administrators regarding the partnership.

"I think it is important to share Columbia's expertise and help programs abroad to provide great quality cardiac surgery," says Mr. Beilis. "The new heart surgery program in Abu Dhabi will provide a unique relationship that will benefit the United Arab Emirate region."

The Columbia HeartSource program has helped four hospitals to develop brand-new cardiac surgery programs, including Mary Imogene Bassett Hospital (Cooperstown, NY); Bon Secours Maryview Hospital (Portsmouth, VA); Robert Wood Johnson University Hospital (Edison, NJ); and Stamford Medical Center (Stamford, CT). Other hospitals in numerous states have enlisted HeartSource's expertise to restructure and improve the quality of their cardiovascular programs.

Centers in the Columbia HeartSource Community are able to claim affiliation with the Department of Surgery Division of Cardiothoracic Surgery after meeting rigorous requirements in training and education, implementation of surgical protocols, and quality oversight.

In Abu Dhabi, HeartSource will establish the adult heart surgery program first, possibly to be followed by other clinical services. ■

Heart Valve Surgery ~ Continued from page 1

based instruments. A valve can be surgically replaced through minimally invasive incisions in the chest, while the blocked arteries are fixed via the groin using catheter-based techniques and stents. Patients can recover more quickly after such hybrid procedures than after open surgery, and they do not need to return for multiple procedures. According to **Susheel Kodali, MD**, *Assistant Professor of Clinical Medicine and Co-Director of the Heart Valve Program*, "Valve replacement and bypass surgery require a full sternotomy (large chest incision). If the patient has had any prior cardiac surgery, this can be very complicated. Minimally invasive hybrid surgery can lower the risk in these patients by simplifying the procedure."

Hybrid surgery is gaining traction throughout the nation, but at this time remains available only in select institutions because of the need for specialized operating rooms and multidisciplinary expertise. Hybrid procedures require close

collaboration between interventionalists and surgeons, a type of cooperation not usually found in institutions with traditional departmental divisions. At NewYork-Presbyterian/Columbia, such cooperation underpins the newly established Heart Valve Program, where a multidisciplinary team from the Department of Surgery and the Center for Interventional Vascular Therapy collaborates to determine the best course for each patient. "Instead of having to go to separate appointments to see a cardiologist, surgeon, or other physicians," says Dr. Kodali, "patients can come to our clinic for a full evaluation including catheterization, echocardiography, and physical evaluation in one visit." ■

The Heart Valve Program at NewYork-Presbyterian/Columbia consists of a team of specialists who evaluate, treat and provide long-term care for patients with heart valve conditions. Learn more at www.columbiaheart.org or by calling 212.342.0444.

IN THE NEWS



After Daughter's Kidney Transplant, Mother Raises Funds for Transplant Patients

In July 2001, Jane Calem's daughter was suffering from end stage renal failure and received a successful kidney transplant at NewYork-Presbyterian/Columbia. Ten years later, Jane was inspired to mark her daughter's milestone by helping other patients in need. Despite having never done something like this, Jane raised more than \$12,000 to assist indigent patients with the cost of medications and travel to the renal transplant program at NewYork-Presbyterian/Columbia.

To read the full story, see the **Department of Surgery's blog**, www.columbiasurgery.net



Faculty Announcement: Yanghee Woo, MD

The Division of GI/Endocrine Surgery in the Department of Surgery at Columbia University Medical Center is pleased to welcome its newest faculty member, Yanghee Woo, MD. Dr. Woo offers open, laparoscopic and robotic surgery for diseases of the stomach, pancreas, and thyroid. Selected to lead the division's effort to deliver state-of-the-art care to patients with gastric cancer, Dr. Woo will collaborate with the division's medical oncologists, GI oncologists and other medical professionals to develop a Center of Excellence in Gastric Cancer as part of the Comprehensive Cancer Center at Columbia University Medical Center.



Annual Pancreatic Cancer Awareness Day 11/12/11, NYC

Experts from NewYork-Presbyterian Hospital, Columbia University Medical Center, The Pancreas Center and The Muzzi Mirza Pancreatic Cancer Prevention & Genetics Program will provide a free patient education program about screening and early detection of pancreatic cancer.

For more information and reservations, contact **Christine Rein**: Telephone: 201.346.7014 or email: cmr2146@columbia.edu Online registration: www.columbiasurgery.org



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