



healthpoints

In This Issue

- 1** Innovations in Aortic Surgery
- 2** Valve Sparing Root Replacement
- 2** TAVR: Minimally Invasive Approach for Aortic Stenosis
- 3** Advances in Mitral Valve Surgery
- 4** Hypertrophic Cardiomyopathy

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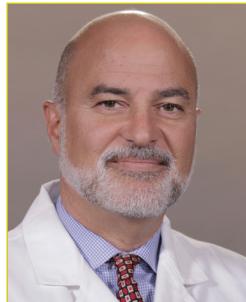


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Message from the Chief



Emile Bacha, MD

Advances in Cardiac Surgery

More than ever, cardiac surgical outcomes are scrutinized and refinements made to make sure every patient receives the safest, best care possible. At the same time, we are always discovering better, simpler ways to treat adults and children with heart disease.

The concept of 'Safe Innovation' has propelled many milestones in our division. Pivotal advances occur when forward-thinking surgeons have pushed the envelope. Dr's. Bowman and Malm first used the heart-lung machine and performed surgery to repair Tetralogy of Fallot in children in the 1970's. In 1984, our division performed the world's first successful pediatric heart transplant. We followed this with innovations in valve surgery and paradigm-shifting work on the ventricular assist device (VAD). Today, we are pioneering aortic surgery and endoscopic procedures, minimally-invasive mitral valve repairs, new heart valve therapies delivered through the skin, and new approaches to treat hypertrophic cardiomyopathy. Many of these options did not exist a decade ago.

Today previously inoperable patients are getting the care they need, and less invasive therapies are reducing the impact of cardiac operations. I invite you to read about some of our latest advances in this issue, learn more on our web site, and call us with your questions.

Warmly,

Emile Bacha, MD

Chief, Division of Cardiac, Thoracic, and Vascular Surgery

Innovations in Aortic Surgery



Luisa Dinardi

Luisa Dinardi, a teacher from Carmel, NY, had struggled for years with unexplained health problems: fatigue, unexplained weight loss, and unexplained fevers. Taking a shower was sometimes too much to bear. Then, when she was 36, she began feeling like pressure was building in her chest. Her doctors performed physical examinations, EKG testing, and more, but none of these revealed the source of her pain and general malaise. After various specialists tried different approaches, a CT scan revealed a bulge in her aorta – an aneurysm.

Luisa was quickly referred to the Aortic Center at NewYork-Presbyterian/Columbia University Medical Center, where **Michael A. Borger, MD, PhD, Director of the Aortic Center**, determined she needed emergency surgery. She remembers telling him, "It feels like I have a fever in my chest."

Dr. Borger repaired both her aorta and aortic valve using a special technique called the David procedure, which allowed her to keep her native aortic valve and avoid complications

Aortic Surgery~ Continued on page 4

Valve Sparing Aortic Root Replacement

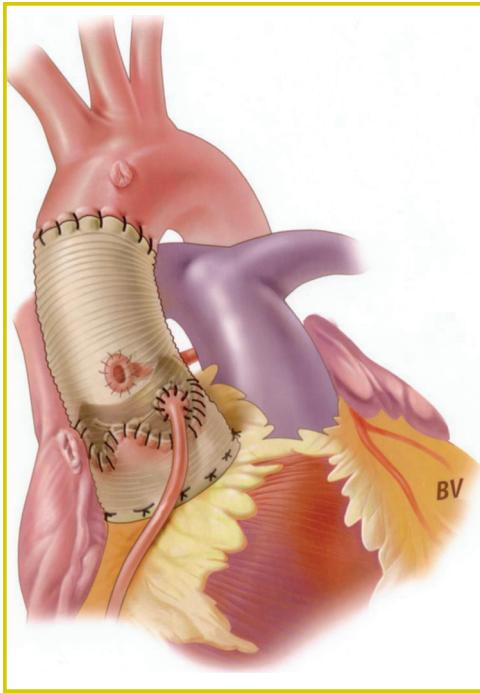


Illustration shows an aortic root repaired in a valve-sparing root replacement (David) procedure

The Aortic Center has expertise in treating aneurysms located at the juncture where the aorta extends from the heart, called the aortic root. An aneurysm is a bulge in the aorta that grows like a balloon filling up with air. If an aneurysm gets too large, it is at risk of tearing or bursting – a life-threatening event. Aortic root aneurysms are frequently found in young patients with Marfan disease or other connective tissue disorders. While repairing this type of aneurysm, many surgeons replace the aortic valve. However that means patients will have to take blood thinning medications for the rest of their lives.

The David Operation allows surgeons to repair aortic root aneurysms while leaving the patient's aortic valve intact, eliminating dependence on blood thinners. Dr. Michael Borger learned this technique from the physician who developed it. He and his colleagues at the NYP/Columbia Aortic Center are among the world's most experienced in this procedure, with a 0% mortality rate. Long-term results are excellent, with 96% of patients needing no further operation for this condition at five years after the David procedure. "Young patients with aortic root aneurysms, in particular, benefit," says Dr. Borger, "from this long-term solution that does not involve replacement of the aortic valve." ■

Please see the Spring, 2016 issue of Healthpoints for more about innovations in aortic aneurysm surgery and the comprehensive Aortic Center at NYP/Columbia.

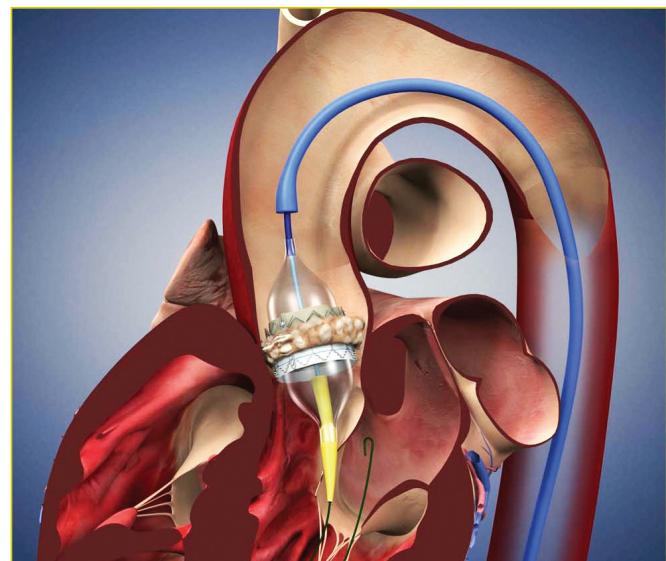
See www.columbiaheartvalve.org/ and www.columbiasurgery.org/clinical-trials for more on aortic clinical trials at NYP/Columbia.

TAVR: Minimally Invasive Approach for Aortic Stenosis

Narrowing of the aortic valve, aortic stenosis, is the most common heart valve condition affecting older people. Surgery is considered the gold standard for patients with severe stenosis.. However, 30-40% of these individuals aren't healthy enough to undergo this procedure. One of the most exciting developments in this field is transcatheter aortic valve replacement (TAVR)—a minimally invasive method of replacing damaged aortic valves. NYP/Columbia is in the forefront, leading both in volume of patients treated with TAVR and in clinical research. Open surgery requires placing the patient on cardiopulmonary bypass and stopping the heart. Yet TAVR allows surgeons to deploy a new aortic valve through a catheter. Since its introduction around 2000, the technology has advanced to the point where TAVR is now comparable, if not better, than surgery for high-risk patients.

Craig Smith, MD, Surgeon-in-Chief and Chairman, Department of Surgery, presented results of the PARTNER II trial at the American College of Cardiology conference in April, 2016 showing that TAVR was a safe and viable alternative and even superior to surgery for many patients.

Investigators at NYP/Columbia are conducting numerous other trials to evaluate long-term durability of TAVR devices, ways to make it even safer, and the use of TAVR in low-risk patients. Another trial is assessing a sutureless aortic valve that allows us to combine TAVR's new delivery with conventional aortic valve replacement surgery. ■



The interventional cardiologist or surgeon places the artificial valve in the diseased valve and inflates the balloon

For more information, please visit columbiasurgery.org. To schedule an appointment for TAVR EVALUATION, call 212.305.4134.

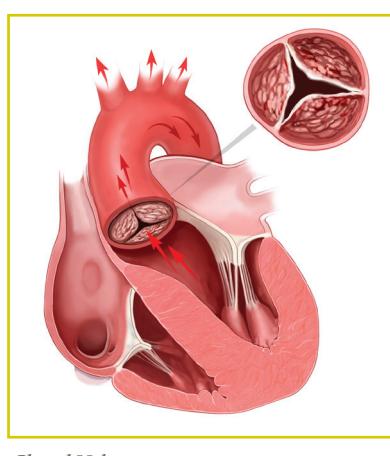
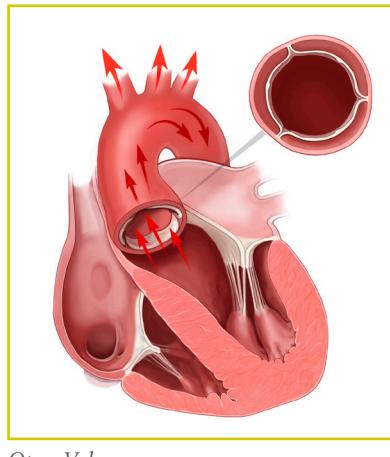
Advances in Mitral Valve Surgery

The mitral valve is like a one-way door between chambers of the heart; it allows blood to move from the atrium to the ventricle while preventing backflow (regurgitation.) A variety of conditions can cause it to malfunction. In some patients, the problem may be serious enough to require surgical repair or replacement of the valve.

For many years, patients had to choose between mechanical valves, which can last many years but come with a lifelong dependency on blood thinners, and animal valves, which do not require blood thinners but usually only last 8-12 years. Today mitral valve repair has emerged as an alternative to valve replacement, and is linked to improved long-term survival in many patients. According to **Michael Argenziano, MD, Section Chief of Adult Cardiac Surgery**, “Mitral repair is clearly superior to replacement for most patients with degenerative mitral regurgitation. It is also more technically demanding and many centers do not perform these operations on a regular basis.”

The cardiac surgery program at NewYork-Presbyterian/Columbia University Medical Center has been a leader in mitral valve repair since the 1990s, and today is one of the busiest mitral valve repair programs in the United States. Mitral repair is not a “one-size-fits-all” operation – instead, a range of specific techniques are required to handle the variety of valve abnormalities, and each patient’s operation must be tailored to address a specific valve problem. At NYP/Columbia, surgeons have expertise in the full spectrum of techniques, using minimally invasive approaches whenever possible.

These include both robotic and non-robotic mitral valve repair approaches, in which the surgeon accesses the mitral valve through small incisions between the ribs. Over 1500 such procedures have been performed at Columbia to date, and surgeons around the world have come to Columbia to learn these techniques. **Michael Borger, MD, PhD, Director of the Aortic Surgery Program and the Cardiovascular Institute**, also provides a thoracoscopic approach, where long, narrow instruments and a video camera are telescoped through very small incisions in the chest wall.



Percutaneous therapy

In this approach, a catheter is inserted usually, through a vein in the upper leg, then advanced into the heart. For repair, NYP/Columbia is using the MitraClip, a small device that is delivered via catheter. Our experts are also testing a number of new devices that will allow a nonsurgical approach for patients who need valve replacement. The patent for the technology used in the MitraClip was developed in Columbia’s research laboratory. It is now considered a first-line treatment for patients who are not good candidate for surgery. According to **Isaac George, MD, Surgical Director of the Heart Valve Center**, “The procedure has flourished for two primary reasons: it is extremely low risk, and patients feel better after the procedure.”

Hybrid therapy

Hybrid therapy combines minimally invasive surgical techniques and catheter-based technology. One such option that will soon be available at NYP/Columbia is the NeoChord operation, a minimally invasive repair performed through a small incision in the chest wall. A surgeon places Gore-Tex sutures on the portion of the mitral valve leaflet that is leaking. “This is an exciting technique that

allows mitral valve repair without using cardiopulmonary bypass,” says Dr. Borger.

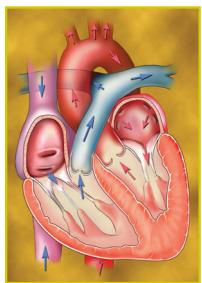
3D Echocardiography

The transition from minimally invasive to percutaneous therapy would not have been possible without the advance of 3D echocardiography. This revolutionary tool allows surgeons to see subtle changes in the patient’s anatomy and determine which forms of disease respond best to specific treatments. **Rebecca T. Hahn, MD, Director of Interventional Echocardiography**, the world’s foremost expert in valve echocardiography, has pioneered many of the standards used today. Although other centers in the country are beginning to adopt 3D echocardiography, its use remains limited because of its technical complexity.

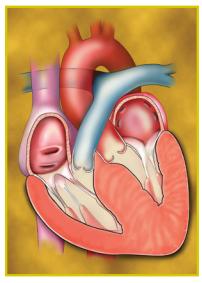
The multidisciplinary, collaborative program at NYP/Columbia has the knowledge, expertise, and technology to care for every form of valve disease using state-of-the-art transcatheter, surgical, and hybrid approaches. ■

*For more information, please go to columbiasurgery.org
To schedule an appointment, call 212.342.0444.*

Hypertrophic Cardiomyopathy Center at NYP/Columbia



Healthy Heart



Heart with HCM

Hypertrophic cardiomyopathy (HCM) affects approximately one in 500 Americans. It is the most common genetic condition affecting the heart and is a leading cause of heart failure symptoms and sudden cardiac death in the young, although it can affect patients well into their 80s and 90s. In this disease, the heart muscle becomes abnormally thick and stiff, limiting the heart's ability to pump. This can lead to a backup of blood into the lungs and a variety of symptoms: chest pain, shortness of breath, and dizziness on exertion. In addition, patients with HCM are at higher risk of sudden cardiac death due to abnormal rapid heart rhythms. A minority of HCM patients may experience heart failure and require transplantation.

The Hypertrophic Cardiomyopathy Center at NYP/Columbia is a comprehensive, multidisciplinary program that offers patients essentially every treatment option.

Jonathan Ginns, MD, Co-Director of the HCM Center, supervises the medical management of HCM patients. About 60 to 80% of patients develop obstruction of the left ventricular outflow tract (LVOT). Patients with this type of HCM are first treated with medications (beta blockers and calcium channel blockers). If these fail or if patients are intolerant to the medications, there are two surgical options.

Aortic Surgery ~ from page 1

associated with prosthetic aortic valves. After surgery, a biopsy of her tissue finally uncovered the source of her decades-long health problems. Luisa has Takayasu's arteritis, a rare autoimmune disease that causes inflammation of the blood vessels. Not only did the condition cause her unexplained fatigue and illness over time, but it had caused her potentially life-threatening aortic problems.

The Surgeons at NewYork-Presbyterian/Columbia routinely perform complex, emergency procedures such as Luisa's with superb outcomes. According to Dr. Borger, "Successful treatment of young patients with complex aortic disease

Alcohol Septal Ablation

Alcohol septal ablation (ASA) is performed in the cardiac catheterization laboratory without opening the chest. After threading the catheter through the aorta and into the heart, the specialist delivers a tiny amount of alcohol to the coronary artery branch that supplies the area of septum with abnormal thickening. This causes cell death in the thickened heart muscle, thus relieving the obstruction. The procedure can be repeated if more tissue needs to be treated. ASA is non-invasive and involves less discomfort. Most patients are hospitalized for two to three days.

Septal Myectomy

This surgical procedure cuts the thickened ventricular wall to relieve LVOT. Few centers offer it because it requires highly specialized training and experience. **Hiroo Takayama, MD, PhD, Co-Director of the HCM Center,** is considered one of the leading experts in "extended septal myectomy." Dr. Takayama removes a deeper, more extensive portion of the heart muscle than most surgeons. This produces longer lasting, more effective outcomes than standard myectomy, with extremely low risk. Dr. Takayama eliminates or substantially reduces LVOT obstruction in over 90% of patients, reduces mitral regurgitation, improves exercise capacity, and improves patients' quality of life—with less than a 0.5% mortality rate. ■

Learn more at columbiasurgery.org. To make an appointment at the HCM Center, please call 212.305.4600.

requires a multidisciplinary approach, as well as the surgical expertise." In addition to Dr. Borger, world-renowned experts at the hospital include **Susheel K. Kodali, MD, Director of the Heart Valve and Structural Heart Center** and a leading interventional cardiologist; **Isaac George, MD, Surgical Director of the Heart Valve Center;** and **Rebecca T. Hahn, MD, Director of Interventional Echocardiography.** ■

For more information, please go to columbiasurgery.org. To schedule an appointment, call The Aortic Center at: 844-RX-AORTA (844-792-6782)

Still can't find what you are looking for?

With almost 5000 pages on our web site, we probably have it covered. Use the search bar located on the top of every page at

www.columbiasurgery.org



or email us at info@columbiasurgery.org