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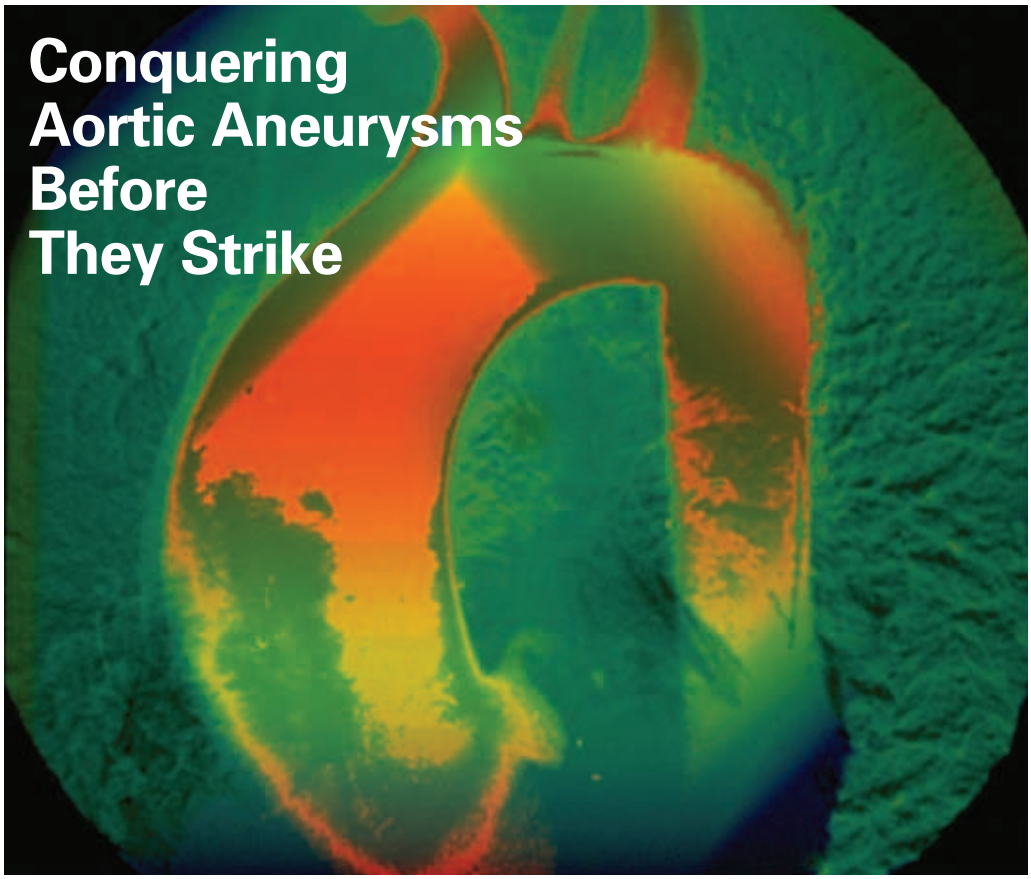
CONTENTS

Conquering Aortic Aneurysms Before They Strike



CNRI/Phototake

Massive aneurysm of aortic arch as shown by angiogram

Aortic aneurysms have finally entered the public eye, thanks to a flurry of recent media attention. A series of Wall Street Journal articles in 2003, and the deaths of prominent figures (including John Ritter and Lucille Ball from aortic dissection) have created widespread public awareness of aortic aneurysms, for perhaps the first time ever. As physicians, we can seize the opportunity created by this attention and use it to ultimately provide better care for our patients. By becoming more vigilant about diagnosing predisposing conditions such as the Marfan Syndrome, and more readily screening for aneurysms in patients at risk, we may make headway against this silent killer.

While aneurysms are less common than heart attacks, strokes and common cancers, their occurrence in 10 – 15 per 100,000 people is more common than most people realize. Many individuals with aneurysms remain asymptomatic until rupture, and most are not screened specifically for aneurysms unless their family history suggests a clear risk. Instead, the relatively few aneurysms that are discovered early (before rupture or dissection) are usually found incidentally during routine exams or during echocardiography, CT scan or chest X-ray to evaluate muscle or valve problems,

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Conquering Aortic Aneurysms

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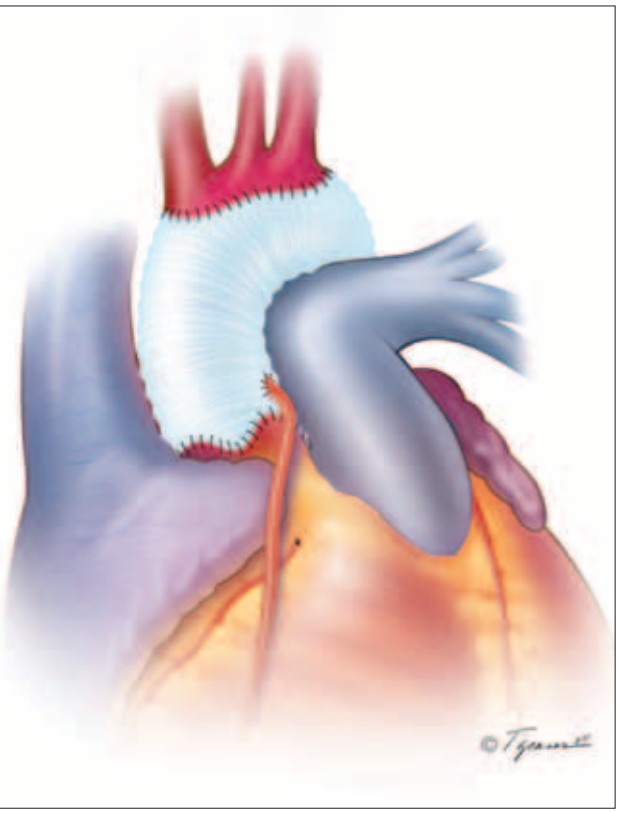

Valve sparing aortic root replacement in a patient with Marfan Syndrome

murmur or shortness of breath, or other symptoms. If an aneurysm is detected early enough, elective repair is successful greater than 95% of the time. Once an aneurysm ruptures, however, the operative mortality increases at least tenfold. Successful outcomes, then, depend on early detection and planned interventions to avoid emergency situations.

By definition, an aneurysm is the dilatation of any blood vessel twice its normal diameter. They develop when weaknesses in the aortic wall succumb to the constant pressure of rushing blood and begin to stretch outward. Atherosclerosis is responsible for a majority of cases: buildup of plaque in the arteries forms a barrier between the interior and exterior aspects of the vessel walls, leading to the degradation of important structural proteins such as collagen in the middle layer of the aortic wall.

In addition to atherosclerosis, predominant risk factors include smoking, hypertension, and inherited disorders such as Marfan Syndrome, Ehlers-Danlos syndrome and the Familial Aneurysm and Dissection Syndrome. Individuals who have a first-degree relative with an aortic aneurysm should be screened for aortic aneurysms; children of these patients may have inherited the genes for aneurysm formation as much as 50% of the time.

Like patients with Marfan Syndrome, individuals with bicuspid, or two leaflet, aortic valves are also at high risk for aneurysm formation due to structural protein deficiencies in the aortic wall. Fibrillin, elastin and smooth muscle cells are markedly fragmented and deficient in patients with both disorders. "In patients with bicuspid aortic valves, aneurysms arise because of connective tissue deficiency rather than the valve anomaly itself. This is much more of a connective tissue disorder than we knew as recently as five or six years ago," explains Leonard N. Girardi, MD. All patients with bicuspid aortic valves should be screened regularly with echocardiogram or CT scan, for as he cautions, "There is a good chance they may have an aneurysm."

Detection

The main screening tools are echocardiogram and CT scans, although MRI and ultrasound may also be used. Detection is easy enough with today's technology; the difficulty lies in bringing patients at risk to the screening itself. Many people with Familial Aneurysm and Dissection Syndrome remain unaware of their risk for aneurysms. Patients who know they have Marfan Syndrome are likely informed about their risk of aneurysms, but a significant percentage of affected individuals are never diagnosed, and therefore receive no adequate care for their condition.

Compounding these difficulties, screening for many patients at risk is not yet reimbursed by Medicare. National physicians' associations are working to lobby the congressional appropriations committee to change this policy. In the meantime, NewYork-Presbyterian Hospital/Weill Cornell now runs a continuing screening protocol. All family members of those with aneurysms or dissections are enrolled in the aneurysm database, they undergo lifelong measurements, and receive appropriate intervention on an elective basis.

Recommendations for Monitoring and Treatment

Roughly half of all aneurysms may remain stable for years, while half grow in size, with a typical growth rate of one to three millimeters per year. In the chest or abdomen, an aneurysm over five centimeters is considered a threat and should be carefully monitored.

"In patients with bicuspid aortic valves, aneurysms arise because of connective tissue deficiency… this is much more of a connective tissue disorder than we knew as recently as five or six years ago."

Once detected, imaging should be performed every six months. After one year, patients may be followed annually (unless individual circumstances warrant more frequent screening).

Surgery or stent-grafting is generally recommended for all aneurysms over five and a half centimeters in diameter. At this size, the risk for aneurysm rupture or dissection is approximately 15% per year with medical therapy. On the other hand, an elective operation at this size

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can be performed with a mortality risk of less than 2%,

Once an aneurysm reaches an appropriate size for intervention, its location, size and the patient's anatomy will dictate surgical options.

Aneurysms in the Ascending Aorta

Repair of aneurysms in the ascending aorta requires a standard, open operation. The aorta is replaced with a highly durable Dacron graft. The aortic valve, located at the base of the aorta, may require repair or replacement. If the valve is healthy and functional, i.e. not insufficient or stenotic, a majority of patients can have a "valve-sparing" aneurysm repair. In at least 70% of these cases, the native valve will continue to function well for the remainder of the patient's life. "Patient selection is the key to an enduring valve-sparing aneurysm repair. Patients with aneurysms closer to five centimeters in diameter and with valves that are only mildly or moderately insufficient can expect an excellent long-term result," says Dr. Girardi.

At NewYork-Presbyterian/Weill Cornell's thoracic aneurysm program, where surgeons have focused intently on refining the operation, mortality from elective surgery in the ascending aorta is currently only 1% with or without valve replacement. "The risks associated with surgery on the aortic root have fallen dramatically in the last decade," states Dr. Girardi. Improvements in graft technology and surgical technique allow 70% of patients to undergo "bloodless" surgery, avoiding the need for blood transfusions.

If left untreated, about half of patients with ascending aortic aneurysms greater than five and a half centimeters will dissect or rupture within two years. Once a dissection or rupture occurs, the surgical outcome may not be as good. According to results published by the *International Registry for Aortic Dissection* in December 2002 *Circulation*, operative mortality for aortic dissection repair is 32.5% in most centers. In striking contrast, the frequency and familiarity of caring for patients with aortic diseases at NewYork-Presbyterian/

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Cerebral Protection During Aortic Arch Surgery

Because of involvement of the great vessels, surgery on the aortic arch requires meticulous attention to brain protection. Profound hypothermia is the standard mode of neurologic protection in most institutions today: at 18 degrees Celsius, the metabolic activity of the brain is less than 1% that at normal temperatures. Surgeons at NewYork-Presbyterian Hospital routinely use two adjuncts for brain protection.

Retrograde cerebral perfusion (RCP) is performed while the patient's circulation is arrested. Cold blood is perfused backwards through the superior vena cava, providing a bloodless field for performing the arch reconstruction. In addition to keeping the temperature of the brain cold, potential debris and air is flushed out of the cerebral circulation. Dr. Girardi reports that surgeons at Weill Cornell have used this technique in nearly 400 cases over the last seven years, and have a stroke rate of less than 3%.

At the Columbia campus, Craig R. Smith, MD practices an alternative method: he augments brain protection with a method of selective cerebral perfusion (SCP), in which he places a catheter in one of the great vessels during arch repair. This catheter delivers cold blood to the brain through the carotid arteries, allowing the surgeon to reconstruct the arch in a more leisurely fashion. According to Dr. Smith, "Under circulatory arrest, the time pressure is intense. With SCP, excellent perfusion is guaranteed to at least one side of the brain, and in most people, both sides, which minimizes reliance on circulatory arrest and profound hypothermia for brain protection. This allows the surgeon to work more deliberately, under much less time pressure."

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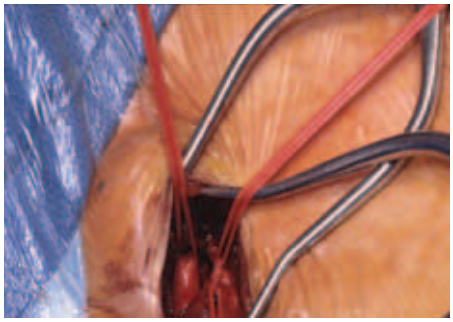

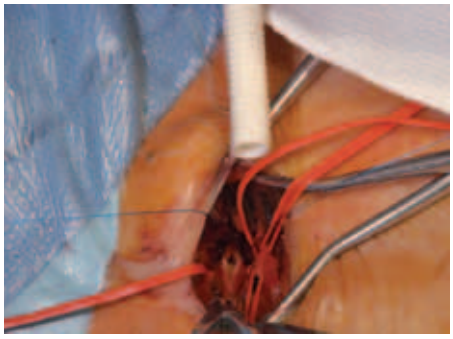

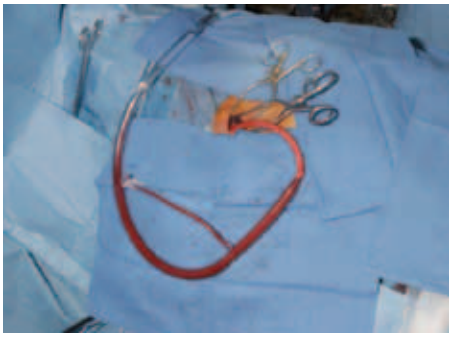

Dr. Smith initiates selective cerebral perfusion through axillary cannulation at moderate hypothermia.

He also initiates SCP through axillary artery cannulation rather than perfusion through the femoral artery. This allows for perfusion through a side branch graft under moderate hypothermia, while blood perfuses the brain through the right carotid artery and across the circle of Willis. "Axillary cannulation avoids pumping blood backwards across what is usually the most atherosclerotic portion of the aorta, possibly reducing the risk of stroke," explains Dr. Smith. "The perfusion achieved by this method is visually obvious. Blood virtually pours out of the left carotid artery, at a volume that is quite impressive compared to what you see in

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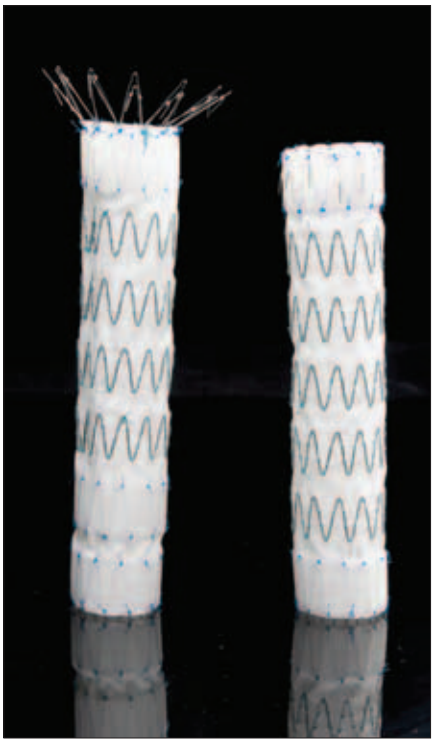
Aneurysms in the Descending and Thoracoabdominal Aorta

Currently under development and FDA-sponsored testing, endovascular stent grafts offer new alternatives to patients who are ineligible for open repair of aneurysms in the descending and thoracoabdominal aorta.

Conventional open repair continues to be the gold standard for aneurysms of the descending thoracic and thoracoabdominal aorta, particularly given the excellent results obtained by Dr. Girardi and his team at NewYork-Presbyterian Hospital. In occasional patients, however, the risk of open repair is prohibitive due to cardiac, pulmonary or medical co-morbidities. Fortunately for patients who are at high risk for conventional therapy, advances in technology and technical expertise have facilitated the development of a minimally invasive endovascular alternative. This alternative, endovascular repair of the thoracic and thoracoabdominal aorta, is currently under evaluation at both the Columbia and Weill Cornell campuses of NewYork-Presbyterian Hospital.

During endovascular stent grafting, an aneurysm is repaired by deploying a cloth-lined metal stent inside the aorta. Positioned in the normal aorta proximal to the aneurysm, it spans to the normal aorta distal to the aneurysm, thereby excluding the aneurysm from arterial blood flow and pressure. Consequently the risk of rupture is significantly decreased. This procedure is performed through one to two small incisions in the groin under local or regional anesthesia. Patients usually leave the hospital one to two days after surgery.

Endovascular aortic stenting can also be performed as an adjunct to open repair of complex aortic aneurysms, with a portion of the aneurysm repaired via open technique, and the remainder with a minimally invasive technique. "In some cases of complex anatomy, we may have to perform a standard bypass of one or more of the major arteries that arise from the aorta before performing endovascular grafting of the thoracic aorta," says James F. McKinsey, MD.



Modular thoracic aortic stent graft

Stent grafting for the descending thoracic aorta is still under investigation and has not yet been approved by the FDA. Three thoracic stent graft trials are currently underway at NYPH, including VALOR, TX2 and a physician-sponsored IDE. "With each trial focusing on a different type of graft, we can offer the full diversity of stent options to patients at high risk for a traditional open repair. These options allow us to treat even complex aneurysms with minimally invasive surgery," states Peter L. Faries, MD. Patients may be candidates for the procedure through an FDA sponsored trial if they are too old or if their lungs or heart are too weak to withstand open surgery. Contraindications to the procedure include generalized weakness of the aorta due to connective tissue disorders, or exceedingly wide diameter of the aorta above or below the aneurysm. Patients with involvement of the visceral vessels may require a bypass procedure prior to endovascular grafting.

"This is one of the most exciting areas of potential improvement in patient care," says Dr. McKinsey. "By having all options for repair of thoracic and thoracoabdominal aneurysms available, including the gold standard (conventional surgery) as well as the minimally invasive alternatives, we can offer optimal treatment for all patients with this disease, including those ineligible for open repair."

Moreover, recent advances in graft technology for infrarenal abdominal aortic aneurysms are now being applied to the descending thoracic aorta. "These advances will allow us to treat more complicated aneurysms in a safe but minimally invasive manner." Dr. McKinsey is enthusiastic about the potential versatility of thoracic stenting, citing the role that thoracic stents will play in facilitating hybrid procedures (combining traditional open surgery with the minimally invasive technology). Already he and Dr. Faries are working closely with cardiac surgeons to optimize aneurysm repair of the aortic arch. It is anticipated that advances in endovascular

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Aortic Aneurysm and Dissection in the Marfan Syndrome

For patients with Marfan Syndrome who receive timely diagnosis and monitoring for aortic aneurysms, current treatment options can offer significantly improved outcomes.

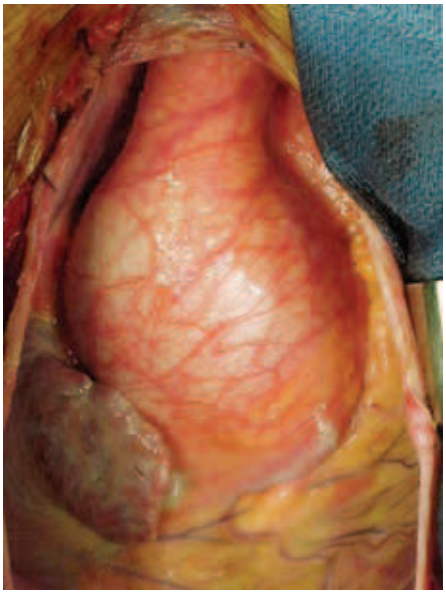
After atherosclerosis, inherited disorders such as the Marfan syndrome are predominant risk factors for aortic aneurysms and dissection. Although only 5% or fewer patients with aortic dissections have the Marfan syndrome, the risk of aneurysms in patients with the syndrome is exceedingly high. The overwhelming majority of Marfan patients will develop some enlargement of the aorta; 85-90% will develop at least a minor aneurysm, and many will require aortic surgery at some time in their lives. If an aortic aneurysm progresses to dissection, the result is a devastating rate of death, 1% per hour.

The tremendous risk among Marfan patients is caused by defects in elastin-associated microfibrils, predominately composed of fibrillin, which leave the aortic wall fragile and susceptible to dissection. Aortic dissection usually causes death via one of three primary routes:

- Cardiac tamponade due to rupture into the pericardial sac
- Congestive heart failure due to acute severe aortic regurgitation
- Exsanguination due to aortic rupture.

In addition, kidney failure or stroke may occur when dissection compromises blood flow to renal or cerebral arteries.

Prior to current medical and surgical therapies, patients with the Marfan syndrome had an average life expectancy of 45 years, according to research in 1972. The fact that life expectancy had increased by 25 years by 1995 "is one of the best accomplishments in any disease," says Richard B. Devereux, MD. Nevertheless, the challenges of the disease remain formidable.



Dilatation of the aortic root is common in the Marfan Syndrome.

While many cardiologists may treat one or two patients with the Marfan syndrome, most are not well versed in the care of such patients. "The biggest problem in caring for patients with the Marfan syndrome is recognizing that they have the disease at all," according to Mary J. Roman, MD. Because of its relative rarity (affecting one in 5,000-10,000 individuals), it goes undiagnosed in many patients until they present with a catastrophe such as aortic dissection.

Treating patients with the Marfan Syndrome

Serial imaging and appropriate intervention are required to avoid aortic dissection, emergency surgery, or death. Monitoring of the heart and aorta, usually by echocardiogram, should be performed every 6-12 months, depending on the size of the aortic aneurysm. MRI or CT scan may be used to visualize anatomy hidden by the lungs or air in the intestines. The majority of patients should receive beta-blockers to reduce aortic shear stress, although alternate drugs may be used if these are inadequate or contra-indicated.

Drs. Devereux and Roman usually recommend surgery in patients once the aorta reaches 5½ cm in diameter. They may send patients to surgery with even smaller aneurysms if the aorta is enlarging rapidly or if family history indicates a high risk of dissection at an early age.

Because the aortic root is the most common location of aneurysms in Marfan patients, the aortic valve has traditionally

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Called the "great imitator," aortic dissection is very commonly mistaken for heart attack or other problems. Because prompt recognition of dissection may reduce mortality from 90% to 5%, Dr. Devereux and colleagues at NewYork-Presbyterian/Weill Cornell and other institutions have created a 50-minute videotape to teach emergency medical personnel and responder programs how to recognize and treat such emergencies. The National Marfan Foundation has distributed over 1100 of the tapes, which are CME accredited for one credit. Cardiologists are encouraged to both view the tape and to have the emergency physicians at their institutions request copies for their use. Contact the National Marfan Foundation at 800-8-MARFAN (800.862.7326).

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First US Trial of Endovascular Mitral Valve Repair

Early but favorable study results suggest that valve repair may move from operating room to cardiac catheterization lab.

Physicians at NewYork-Presbyterian Hospital/Columbia are participating in EVEREST I, the first U.S. Phase I clinical trial of a non-surgical procedure for the treatment for mitral valve regurgitation. The technique entails endovascular placement of a tiny metallic clip, the Evalve® Cardiovascular Repair System (CVRS), on the mitral valve.

By holding the center of both leaflets together, the clip helps the mitral valve to close properly and reduce regurgitation in the same manner that the Alfieri surgical approach uses a single suture. Instead of opening the heart to place the device, however, the clip is delivered via a catheter advanced to the heart through the femoral vein. The high-tech clip, about the length of a dime, may be manipulated in any direction and may be moved one millimeter at a time under trans-esophageal echo guidance. The technology allows for the clip to be repositioned as many times as necessary to achieve optimal reduction of regurgitation. Once the clip is deployed and locked, it remains in place permanently. The procedure is performed in the cardiac catheterization lab under general anesthesia, and takes four to six hours. It involves a multi-disciplinary team including interventional cardiologists, echocardiographers, cardiac anesthesiologists, cardiac surgeons and nurses.

The trial, Endovascular Valve Edge-to-Edge Repair Study (EVEREST I), is being conducted at seven institutions in the U.S. As of June 30, 2004, twenty patients have been treated. The procedure was fully successful in seventeen patients, with regurgitation being significantly reduced to trace or mild from severe. There were no procedural complications, no major morbidities, and patients' recovery was comparable to that following routine coronary angioplasty. The procedure did not adequately reduce regurgitation in three patients, so the clips were removed and conventional open heart surgery was then performed electively, with no complications.

"This procedure makes it simpler and, hopefully, safer for the patient. I believe this is where the treatment of valvular heart disease is headed in the next five to ten years," says Hal S. Wasserman, MD, Principal Investigator of the trial at NewYork-Presbyterian/Columbia. Co-investigator Michael Argenziano, MD says "The goal of any minimally invasive surgical procedure has always been to achieve the technical success of surgery while minimizing trauma and recovery time. With the Evalve® approach, we hope to fully achieve just that goal."

In some instances, the failure of a single clip to adequately reduce regurgitation may now be solved by using two clips. After the first ten procedures were performed, the FDA has since approved the use of two clips, and Dr. Wasserman performed the first of these in April 2004.

The mitral valve Cardiovascular Repair System is one of a series of innovative non-surgical devices under study for the treatment of valve disease. According to Mehmet C. Oz, MD, "We want to have a number of repair techniques available in our armamentarium so that we may choose the best one for each patient." But its development represents something more than just another tool. "This procedure is the next step in the evolution of mitral valve repair for regurgitation – from open heart surgery to minimally invasive approaches to robotic valve repair, and now a non-surgical solution," says Allan

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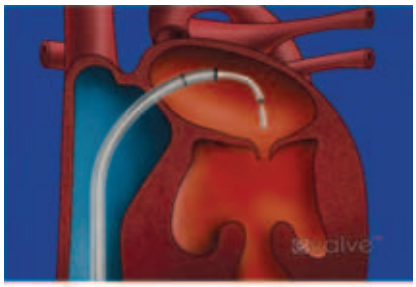
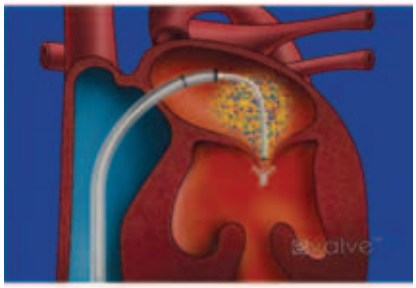
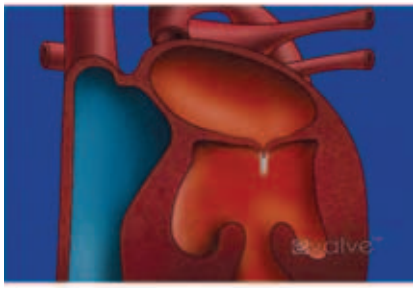


Accurate device position over valve before grasping valve leaflets



Leaking of the heart valve before placing clip



Procedure completed, clip in place, and leaking resolved

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RESEARCH REVIEW:

Discovering the Origins of Aneurysm Disease

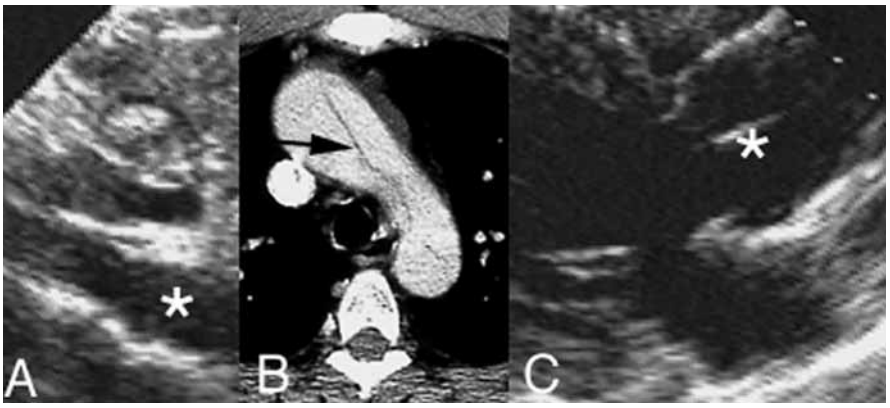
NewYork-Presbyterian /Weill Cornell researchers are identifying multiple single genetic defects that cause aortic aneurysm disease, work that will open new doors to the treatment of thoracic and abdominal aortic aneurysms.

Identification of people at risk for aortic dilatation, and treatment before aortic rupture or dissection, are critical goals for physicians. In the future, these goals will be attained through new approaches based on genetic research that investigates families in which aortic aneurysms are passed down from one generation to another.

Studies have found that approximately one fifth of aortic aneurysms may be caused by inherited disorders. However, only a small portion of these relate to rare complex connective tissue disorders such as Marfan or Ehlers-Danlos syndromes that affect organs and structures outside the heart. While it has been previously believed that familial aortic aneurysm disease (FAA) may represent a forme fruste of Marfan or Ehlers-Danlos disease, this theory has been disproven by the discovery of the locations of specific genetic causes of FAA in some patients who do not have Marfan or Ehlers-Danlos disease. "Thoracic and abdominal aortic aneurysms can be inherited as Mendelian traits even in the absence of systemic connective tissue diseases," says Craig T. Basson, MD. "Other genetic defects that cause isolated aneurysms, therefore, await identification." Importantly, clinical and molecular genetic studies have also demonstrated that both thoracic and abdominal aortic aneurysms may be manifestations of the same gene defects and that they should be considered together from both clinical and research perspectives.

Dr. Basson's team has already identified the location of a major genetic defect associated with aortic aneurysm disease. Although the specific gene mutation remains to be determined there, Dr. Basson's group showed that a novel FAA locus is located at chromosome 11q23.3-q24. Other genetic loci are also being identified. Dr. Basson's studies were published in *Circulation* in 2001. Based on this work, his team believes that multiple single gene defects can cause FAA.

In research sponsored by NIH at Weill Medical College of Cornell University, Dr. Basson is using positional cloning techniques to identify the genes responsible for monogenic autosomal dominant familial aortic aneurysm in many families. While polygenic forms of FAA also undoubtedly exist, the team is focusing on the identification of single genetic defects for several reasons. Firstly, they themselves may account for a significant proportion of aortic aneurysm disease. Secondly, earlier work on monogenic forms of cardiovascular disease has provided highly valuable information about aortic aneurysm pathogenesis. Thirdly, identifying single gene defects is also expected to reveal important candidate genes in whom more subtle abnormalities may relate to more complex aortic aneurysm disease phenotypes. Finally, once additional single genes are identified, they will prompt new molecular diagnostic tests, and the products of these genes will be ideal targets for novel medical approaches to the cure of aortic aneurysms without surgery or other invasive procedures. ■



Reprinted with permission, *Circulation*, vol. 103, No. 20, May 2001: 2470, AHA.

Clinical features of FAA aortic disease in one family ANA. FAA can affect all aortic segments in a given family's members. (A) Abdominal ultrasound of one individual demonstrates fusiform preaneurysmal dilatation of the abdominal aorta (*) at the level of the celiac axis. Aortic diameter at this level was 20 mm, 125% of upper limits of normal. (B) Another family member exhibited aneurysmal dilatation of all aorta segments that ultimately resulted in dissections of the thoracic and abdominal aorta. CT scan shows an aortic arch dissection flap (arrow). (C) Echocardiography of still another family member demonstrates that the proximal aortic root is dilated as well as the abdominal aorta. The sinuses of Valsalva (*) are 38 mm in diameter, 112% of upper limits of normal.

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The Cardiovascular Genetics Center at Weill Cornell is internationally renowned for the care and investigation of patients with inherited cardiovascular diseases such as aneurysms, congenital heart disease, cardiomyopathies, arrhythmias and heart tumors. Interested physicians and patients can contact the program's genetic counselor, Deborah McDermott MS, CGC, at 212.746.2054 or dam2001@med.cornell.edu.

Aortic Aneurysm and Dissection in the Marfan Syndrome

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been replaced with a composite valve graft. "Valve conduit surgery is very safe surgery when performed by surgeons with experience," says Dr. Roman. The mortality rate for elective surgery at New York-Presbyterian/Weill Cornell is less than 1%.

The ability to safely perform valve-sparing surgeries may potentially improve patients' quality of life by avoiding the need for lifelong anticoagulation therapy (Coumadin) and the complications associated with prosthetic valves. Whether these surgeries will translate into longer lifespans and reduced long-term morbidity, however, is not yet known. The durability of reconstructed valves has not been established by long-term studies, nor is it clear whether the benefits of preventing dissection through early surgery offset the risk of peri-operative mortality (1%) and post-operative morbidity. Says Dr. Devereux, "We are hopeful that the increased use of valve-sparing procedures and earlier surgeries will further improve quality of life and the survival of Marfan patients, but research is needed to document these benefits."

To answer these major clinical questions, the National Marfan Foundation is sponsoring the Aortic Valve Operative Outcomes in Marfan Patients Study. Beginning in July 2004, the study will compare surgical outcomes and quality of life after valve replacement versus valve-sparing surgeries. Results should be available within two to three years. NewYork-Presbyterian Hospital/Weill Cornell is among the participating institutions. ■

Aneurysms in the Descending and Thoracoabdominal Aorta

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graft technology, including branch vessel modular grafts, will provide treatment options to increasing numbers of patients with this life-threatening condition who are not candidates for standard surgical therapy. ■

Conquering Aortic Aneurysms Before They Strike

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Weill Cornell has resulted in a mortality rate of less than 5% for life-threatening aortic dissections.

"Caring for patients with aortic disease requires a team approach. The best surgical results are in centers where anesthesiologists, cardiologists, intensivists and nurses are constantly exposed to patients with aneurysms," says Dr. Girardi. Indeed, a study in the June 2003 *Journal of Vascular Surgery* reported that surgical outcomes for all thoracic and abdominal aneurysms is dramatically improved in hospitals doing high volume aneurysm surgery, with surgeons performing aneurysm repair on a regular basis. ■

Cerebral Protection During Aortic Arch Surgery

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circulatory arrest." Because this antegrade method maintains adequate perfusion at just moderate hypothermia, it avoids the risks associated with profound hypothermia and total circulatory arrest.

Nevertheless, Dr. Girardi states that most arch reconstructions can be performed without the need for axillary or femoral artery cannulation. "We cannulate the aneurysm like any other patient having open heart surgery. After the arch is reconstructed, we reinstitute cardiopulmonary bypass through a side branch graft on the arch graft." This eliminates the need for femoral or axillary incisions and the potential complications of injuries to vessels that can be atherosclerotic or friable. ■

CME SYMPOSIUM

Evolving Concepts in the Management of Atrial Fibrillation: Update 2004

October 27, 2004

New York Academy of Medicine
1216 Fifth Avenue
New York, NY

Information and Registration: 201.346.7003
http://www.columbiasurgeryCME.org

Advanced Strategies in the Treatment and Management of Heart Failure

September 29, 2004

New York Academy of Medicine
1216 Fifth Avenue
New York, NY

Information and Registration: 201.346.7003
http://www.columbiasurgeryCME.org

New Advances in Translational Research

A symposium presented by NewYork-Presbyterian/Columbia University Medical Center, and the Science Office of the Embassy of Italy

Leading EU and U.S. experts will discuss advances in translational research and developments in cardiology and oncology.

Course Directors:

Eric A. Rose, MD, Morris and Rose Milstein/ Johnson & Johnson Professor of Surgery; Associate Dean for Translational Research; Chairman, Department of Surgery, Columbia University College of Physicians & Surgeons.

Prof. Vittorio Daniore, MD, Science Attaché, Embassy of Italy in Washington, DC.

Date: October 12, 2004, 7:00 am – 8:30 pm

Location: The Italian Academy for Advanced Studies in America
Columbia University
1161 Amsterdam Ave @ 117th St.
New York, NY

Information and Registration: 201.346.7003
http://www.columbiasurgeryCME.org

This symposium is non-accredited.

Nationally Renowned Interventional Cardiology Group Joins Columbia and NewYork-Presbyterian

Clinical practice and research are dramatically strengthened at NewYork-Presbyterian Hospital/Columbia University Medical Center.

The recruitment of a renowned interventional cardiology group has transformed the interventional cardiology program at NewYork-Presbyterian/Columbia. This new program, called the Cardiovascular Interventional Therapy Program, consists of two complementary sections, cardiovascular research and clinical practice, and includes physicians, research scientists, and other staff.

The exceptional clinical group, which transferred from Lenox Hill Hospital in August 2004, is noted for its innovative approaches to tackling high risk and complex cases. Under the leadership of Dr. Jeffrey W. Moses, this practice is one of the nation's largest in interventional cardiology, having performed over 4000 interventions in 2003. In addition to the program's ten full-time faculty, visiting professors including Antonio Colombo, MD and Paul Teirstein, MD participate on a part-time basis. Collaborating closely with the clinical team, Martin B. Leon, MD and Gregg W. Stone, MD direct an extensive roster of research and educational activities.

Founded by Dr. Moses in 1987, the clinical group is unique in its dedication to incorporating advanced technologies and clinical trials into its practice. It has been instrumental in pioneering numerous key coronary interventions, most notably percutaneous angioplasty and coronary artery stenting. "Our group is well known for extending the use of techniques such as coronary artery stenting into broader groups of patients," says Dr. Moses.

Drs. Leon and Stone direct the program's research efforts under the auspices of the independent Cardiovascular Research Foundation (CRF), which was founded in Washington, DC in 1990. While at Lenox Hill Hospital, the researchers built an extensive infrastructure for investigation and clinical trials. Through its integrated, collaborative relationship with the clinical practice, CRF pioneered numerous devices, pharmacological therapies, and interventional technologies. "We have a long-standing relationship with collaborators including industry, and we participate in the investigation of virtually every major new therapy. Frequently we serve as national principal investigators of these trials," explains Dr. Leon. CRF is now an affiliate of Columbia University, which provides necessary state-of-the-art technology to support CRF's innovative work. "We are initiating approximately twenty new clinical trials at NewYork-Presbyterian/Columbia in our first two months," explains Dr. Leon.

Current research endeavors include:

- Drug-eluting stents: Drs. Stone, Leon, and Moses were principal investigators of the Cypher™, Taxus™, and Endeavor trials, and will bring additional studies of second and third generation drug-eluting stents to NewYork-Presbyterian/Columbia.
- Transcatheter Valve Therapy: The physician-scientists of the program are bringing several studies of transcatheter therapies for aortic and mitral valve repair.
- New specialty devices: The group is investigating filters and other devices aimed at preventing downstream debris in patients with obstructive vascular disease. The new faculty are principal investigators of studies on the Rubicon filter, Velocimed™ proximal occlusion device, Flowcardia, Safe-Cross® and other guidance systems for total occlusions.
- Groundbreaking research on anti-clotting agents, adjunctive pharmacotherapies, and cell-based therapies in conjunction with coronary vascularization will be conducted.

In conjunction with clinical research, educational efforts are central to the mission of the interventional cardiology program and CRF. Since 1988, CRF has hosted the world's largest meeting in interventional and endovascular therapies. This year's meeting, **Transcatheter Cardiovascular Therapeutics**, will take place in Washington, DC from September 27 to October 1, 2004, at the Washington Convention Center. With over 10,000 registrants from 80 countries and an international faculty of 600 scientists, the meeting will include live cases from 25 sites worldwide. NewYork-Presbyterian/Columbia will be a keynote site and will transmit eight hours of live cases from the catheterization laboratories of NewYork-Presbyterian Hospital.

The Interventional Cardiology faculty members are "exhilarated" about their move to NewYork-Presbyterian/Columbia. "We are especially thrilled about this move because the academic infrastructure at NYPH — excellence at every level — supports our clinical research and teaching activities. Meanwhile, this program will bring a new level of creativity, collaboration, and expertise to Columbia," explains Dr. Leon. Allan Schwartz, MD, Chief, Division of Cardiology and Vice-Chairman, Department of Medicine, concurs: "We at Columbia are fortunate to have recruited this outstanding group, which is building on the existing program in Interventional Cardiology and taking it to the next level." Says Dr. Leon simply, "NewYork-Presbyterian/Columbia will now have the most experienced group of interventional cardiologists in the world." ■

Jeffrey W. Moses, MD *is Director, Cardiovascular Interventional Therapy; Director, Cardiac Catheterization Laboratory, NewYork-Presbyterian Hospital/Columbia; and Professor of Clinical Medicine, Columbia University College of Physicians & Surgeons.*

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First US Trial of Endovascular Mitral Valve Repair

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Schwartz, MD, co-investigator in the EVEREST I Trial. Other investigators include Shunichi Homma, MD, Neal Goyal, MD, and Ervant Nishanian, MD (at the Department of Anesthesiology).

After enough safety data is established in the Phase I trial, a large randomized trial will likely follow, comparing this approach to conventional surgical repair. At this time, Medicare and some private insurers are reimbursing for this new procedure. ■

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NewYork-Presbyterian Heart is comprised of physicians of Columbia University College of Physicians & Surgeons and Weill Medical College of Cornell University representing medical and surgical disciplines working together with other health professionals in a collaborative process.

Faculty Highlights

Marlon S. Rosenbaum, MD *Director, Adult Congenital Heart Disease, NewYork-Presbyterian Hospital; Associate Clinical Professor of Medicine and Pediatrics, Columbia University College of Physicians & Surgeon; and Adjunct Assistant Professor of Medicine, Weill Medical College of Cornell University.*

The leadership of Marlon S. Rosenbaum, MD in the field of adult congenital heart disease is unquestioned. His determined efforts proved instrumental not only in creating the Adult Congenital Heart Disease center at NewYork-Presbyterian Hospital, but in promoting the now-accepted place of adult congenital heart disease as a unique medical specialty.

Dr. Rosenbaum's current research interests include the assessment of right ventricular function post Tetralogy of Fallot repair, and the effect of cardiac MRI on the management of adult congenital heart disease.

Dr. Rosenbaum coauthored *Congenital Heart Disease in the Adult* with Welton Gersony, MD in 2002.

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Daniel J. Lerner, MD *Assistant Professor of Medicine and Pharmacology, Division of Cardiology, Weill Medical College of Cornell University.*

Daniel J. Lerner, MD is using a novel approach to tackle a vital question: how do specific proteins affect the migration of leukocytes? Using knockout mice, his team has demonstrated the essential role of Lsc, one of about 60 Rho guanine nucleotide exchange factors (Rho GEFs), in normal leukocyte migration. Since inflammation is fundamental to atherosclerotic lesions, autoimmune diseases, and asthma, the prospect of modulating leukocyte migration holds tremendous clinical potential. Grants from the National Institutes of Health, the Arthritis Foundation, and the American Heart Association are supporting continued work on the role of Lsc in leukocyte and platelet function.

Dr. Lerner joined Weill Cornell in 2001 from the University of California at San Francisco, where he completed his medical education, residencies, and cardiology fellowships. His clinical expertise is in cardiac critical care medicine. He received the 2003-2004 J. James Smith Teaching Award from the Department of Medicine.

Recent publications include "The Rho guanine nucleotide exchange factor Lsc homooligomerizes and is negatively regulated through domains in its carboxyl terminus that are absent in novel splenic isoforms." *Journal of Biological Chemistry* 2003; Aug 15;278(33):30975-84.

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