

PATIENT CARE / EDUCATION / RESEARCH / COMMUNITY SERVICE

NEWS UPDATE FROM THE
DEPARTMENT OF SURGERY
STONY BROOK UNIVERSITY
MEDICAL CENTER
FEBRUARY 2007

POST-OP

STONY BROOK
UNIVERSITY
MEDICAL CENTER

Stony Brook Heart Surgery in Focus

2006: Reviewing Our Progress



PHOTO BY HENRY LEUTWYLER

Dr. Frank C. Seifert with patient(s) he saved, Roseann Errante and her triplets, by complex aortic repair hailed as medical marvel in "Best Doctors" issue of *New York Magazine*, in June.

We are very pleased to provide this update on the progress made by our Division of Cardiothoracic Surgery during the past year, which was distinguished by major advances in program development, modernization of our infrastructural support, and quality outcomes.

The greatest focus of our efforts has been to ensure the highest quality of care for our cardiac surgery patients.

In this regard, our 2006 coronary bypass surgery mortality rate of 1% is less than half the most recently reported average (for 2004) in New York State, and by that standard, our program is in the top 10% of cardiac surgery programs in the state.

Our 2006 outcomes should place us considerably above the state average for the performance of heart surgery, and likely in the very highest tier of institutions.

Our quality initiatives go well beyond improved mortality rates. Our first initiative of the year, for instance, was directed toward assuring a uniformly low rate of infection in our patients. This effort included the recruitment of the chief of epidemiology at Johns Hopkins University Hospital, who initially performed an on-site review of our program.

Our intensive glycemic control program and our conversion to a nearly universal use of minimally invasive endoscopic saphenous vein harvest are part of an ongoing infection control and

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Fixing Hearts, Saving Lives

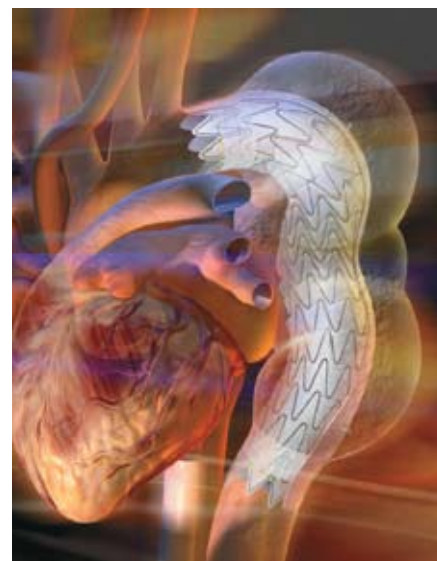
Our cardiothoracic surgeons perform the only heart surgery in Suffolk County, and specialize in high-risk and tertiary care types of surgical interventions. Our surgeons provide consultation and surgical care for patients with advanced heart disease.

We perform surgery to treat all forms of heart disease, including high-risk states after acute myocardial infarctions and congestive heart failure; valve repair; ventricular reconstruction; mechanical device support implantation; electrophysiological surgery, including the maze procedure for arrhythmias (irregular heartbeats); and minimally invasive heart surgery, including mini-thoracotomy and off-pump coronary artery bypass procedures, and also endovascular

thoracic aortic aneurysm repair, the new "internal bypass" stent procedure (pictured at right).

Our surgeons manage University Medical Center's 10-bed cardiovascular intensive care unit, which is capable of providing postoperative care for the highest-risk heart patients.

Our surgical team now performs over 500 heart operations annually.



Since 1980, when our heart surgery program was established, we have provided surgical care for well over 10,000 patients.

Stony Brook Heart Surgery in Focus

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monitoring program arising from this review.

The success of these efforts is reflected in the absence of even a single deep sternal or saphenous harvest site infection occurring in the last six months of the year (nearly 300 patients).

FURTHER PROGRESS

We are also pleased to announce similar initiatives in “bloodless” surgery to minimize the risk of transfusion; protection of the brain (cognition) during surgery that includes “off-pump” surgery and the expanded use of epi-aortic echocardiography to detect and avoid potential aortic sources of atheroembolic debris; and enhanced coronary revascularization that includes minimally invasive “hybrid” bypass to avoid sternotomies.

These quality initiatives come in the context of our expanding our clinical services in order to provide a comprehensive array of state-of-the-art cardiac surgery procedures, including minimally invasive valve surgery; ventricular reconstruction and “destination therapy” for patients with end-stage heart failure; aortic stenting for the treatment of thoracic aortic aneurysms; and atrial maze procedures for the treatment of atrial fibrillation.

We have also initiated participation in a number of clinical research trials to ensure that our patients have access to the most advanced available treatments for heart disease. The RESTOR-MV and SYNTAX trials are two of them (see page 9).

To further enhance access and communications, we have established a patient “concierge” program with two veteran intensive-care nurses. These nurses function as dedicated liaisons between patients, physicians, and families; fa-

cilitate transfers; and address patient needs beyond the routines of their medical care.

This initiative is complemented by our launch of the “Apollo” computerized data access program that will provide same-day delivery of brief operative notes and discharge summaries to our referring physicians’ offices, and also provide discharge reports to our patients when they leave the hospital.

We are creating a new telecommunication program in the form of a dedicated phone line—(631) 44 HEART—that will allow one-call access to all heart care services at Stony Brook.

Finally, we are pleased to announce that we anticipate the re-launch of our pediatric cardiac surgery program in 2007 with the recruitment of a full-time, on-site surgeon.

All told, our mission remains the same: to provide our patients with the most sophisticated, compassionate cardiac surgical care available today.

This past year saw us implementing several additional efforts to improve our patients’ experience before and after surgery, including:

- **Use of interactive, web-based patient education (“Emmi”) that complements our informed consent process, and that helps to minimize operative risks.**
- **Use of wallet-sized “op cards” sent home that diagram our patients’ operative procedures.**
- **Major remodeling of the cardiothoracic surgery intensive care unit (planned for this winter).**
- **Use of an upgraded inpatient binder that allows patients to track their hospital progress.**
- **Expansion of our program of postoperative, outpatient educational seminars.**

We have also just established an integrative medicine program (see page 4) that includes acupuncture, massage, and music therapy, and that further reflects our commitment to providing comprehensive pre- and post-operative care to our patients.

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OUR CARDIOTHORACIC SURGERY TEAM



Dr. Todd K. Rosengart, professor of surgery and chief of cardiothoracic surgery, is board certified in thoracic surgery and general surgery, with extensive experience in heart surgery, including both conventional and novel techniques, for treating high-risk and complex adult heart disease. Selected for inclusion in the 2006 edition of the Castle Connolly Guide, *America's Top Doctors*, as well as the 2006 *Guide to America's Top Surgeons* published by the Consumers' Research Council of America.



Dr. Thomas V. Bilfinger, professor of surgery, is board certified in thoracic surgery, general surgery, and surgical critical care, with extensive experience in both heart surgery and chest surgery. He is director of our **program in thoracic surgery** that includes management of lung cancer. Selected for inclusion in the 2006 *Guide to America's Top Surgeons* published by the Consumers' Research Council of America.



Dr. Allison J. McLarty, assistant professor of surgery, is board certified in thoracic surgery and general surgery, with extensive experience in heart surgery for treating all forms of adult heart disease. She heads our **program in thoracic aortic surgery** and our **program in integrative medicine**. Selected for inclusion in the 2006 *Guide to America's Top Surgeons* published by the Consumers' Research Council of America.



Dr. Frank C. Seifert, associate professor of surgery, is board certified in thoracic surgery, general surgery, and surgical critical care, with extensive experience in heart surgery for all forms of adult heart disease. He heads our **program in minimally invasive bypass surgery**. Selected for inclusion in the 2006 *Guide to America's Top Surgeons* published by the Consumers' Research Council of America.

Our cardiothoracic surgeons see patients at Stony Brook University Medical Center. For consultations/appointments, please call (631) 444-1820.

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Heart Surgery Performed at Stony Brook

- **Coronary artery bypass surgery**
 - Primary and reoperative coronary artery bypass graft (CABG)
 - Off-pump coronary artery bypass (OPCAB)
 - Minimally invasive direct coronary artery bypass (MIDCAB)
 - Thoracoscopic CABG
 - Radial artery bypass conduits
 - Total arterial revascularization
- **Transmyocardial revascularization (TMR)**
- **Valve surgery**
 - Primary and reoperative valve repair/replacement
 - Homograft and prosthetic root replacement
 - Trans-cardiac repair devices
 - Minimally invasive access
- **Arrhythmia surgery**
 - Microwave maze surgery
 - Minimal access maze surgery
- **Pacemaker implants**
- **Automatic cardioverter-defibrillator (ACD)**
- **Ventricular resynchronization**
- **Cardiac reconstructive surgery**
 - Left ventricular reconstruction (Dor procedure)
 - Left ventricular aneurysmectomy
- **Adult congenital heart surgery**
- **Idiopathic hypertrophic subaortic stenosis (IHSS) surgery**
- **Major aortic surgery**
 - Aortic aneurysm
 - Aortic dissection
 - Traumatic aortic rupture
 - Aortic stenting
- **Ventricular assist devices**
 - Intra-aortic balloon pump (IABP) assist device
 - Biventricular assist device
 - Destination therapy

2006 Heart Surgery Highlights



Achievement of **coronary bypass surgery mortality rate of only 1%** and **overall operative mortality rate of 3.1%** based on data from January through December—both rates lower than the most recent New York State data (2002-2004) reported in June by the Department of Health (i.e., statewide [unadjusted] averages of 2.1% and 6%, respectively).

- Arrival of our **new chief of cardiothoracic surgery** in January.
- Expansion of **blood conservation program** (including the use of cell salvage and autologous donation).
- Expansion of a **cognitive protection program** (including the expanded use of epi-aortic echocardiography).
- Implementation of the interactive, web-based **Emmi patient education program** in April.
- **First minimally invasive endovascular thoracic aortic stent grafting** performed in May.
- Dr. Seifert honored for contribution to **one of ten "Medical Marvels"** featured in *New York Magazine* ("Mother of one, pregnant with triplets. Torn aorta about to burst."; June 19, 2006) for life-saving aortic surgery performed in August 2005.
- Start of **SYNTAX clinical trial** (SYnergy between percutaneous coronary intervention with TAXus and cardiac surgery) in July.
- Start of **RESTOR-MV** clinical trial (Randomized Evaluation of a Surgical Treatment for Off-pump Repair of the Mitral Valve) in August—first patient on Long Island to be treated with "closed heart" minimally invasive mitral valve repair technique.
- Start of **CLEVER clinical trial** (CLAudication: Exercise Versus Endoluminal Revascularization) in August.
- **First minimally invasive endosurgical heart valve surgery** performed in September.
- **Renovation/upgrade** of our ICU waiting room, completed in September.
- Inauguration of our **patient "concierge" program** in November.
- Establishment of **integrative medicine program** in November.
- Acquisition initiated in December for technology (HeartMate device) to establish **"destination therapy" program**.



(left to right) Karen Sanders, RN, and Donna Albergo, RN, the service coordinators of our new patient "concierge" program, who function as dedicated liaisons between patients, physicians, and families; facilitate transfers; and address patient needs beyond the routines of their medical care.

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Integrative Medicine For Heart Surgery Patients



Sometimes referred to as complementary and alternative medicine, integrative medicine is defined by the National Institutes of Health as a group of diverse health systems and practices not currently considered part of conventional medicine.

Adoption of some of these techniques in the practice of heart and chest surgery has been increasing over the past six years, since they have proven effective in helping to further enhance a patient's natural healing ability.

Through our newly-established integrative medicine program for patients having cardiothoracic surgery, we now offer four forms of integrative medicine in an effort to provide every advantage to our patients. Allison J. McLarty, MD, assistant professor of surgery, directs this program.

The specific integrative medicine services we provide are guided imagery, therapeutic touch (reiki), therapeutic massage, and acupuncture—before and after surgical procedures.

Stony Brook's team of board-certified anesthesiologists and licensed clinical therapists are committed to patient safety and comfort before, during, and after surgery. The integrative medicine services we offer are intended to complement their more conventional efforts.

As part of our integrative medicine program, the physical, spiritual, and emotional aspects of a patient's life are individually assessed to help guide the patient through the healing process.

For more information about our integrative medicine program, please call (631) 444-3920/-2010.

HEART DISEASE IN NEW YORK STATE

Heart disease, together with stroke, is the leading cause of death in New York State, killing more than 70,000 residents each year. It is no longer thought of as a disease that primarily affects men as they age. It is a killer of people in the prime of life, with more than half of all deaths occurring among women.

For every person who dies of a heart attack or angina, 18 people live with these conditions. For every person who dies of a stroke, seven people cope with the consequences of a non-fatal event. Many of these survivors are disabled and cannot lead productive lives. They also are at high risk for additional events. These numbers are increasing as the epidemic of heart disease and stroke continues.

—New York State Department of Health

Introducing Emmi

*Better Outcomes Through
Better Educated Patients*

At Stony Brook we believe that the more active role patients take in their own care the healthier they will be. Many medical decisions are ultimately in the hands of our patients themselves, and therefore we want them to know as much as possible about their own health and the care we can provide in partnership with them.

This is especially true when patients are preparing to have heart surgery. To help them in this process, we started last April to offer a unique form of patient education, called Emmi, to our patients about to have coronary artery bypass graft surgery and valve replacement surgery.

The interactive, web-based Emmi heart surgery programs are used to help educate, improve patient satisfaction, and manage risk.

Emmi stands for expectation management and medical information. It is interactive, web-based, and specifically designed to help patients and their family members understand everything they need to know about the cardiac procedure that they are about to undergo. It helps to educate them and let them know exactly what they can expect before, during, and after their surgery.

The more knowledge patients have, the better their outcome. It is well known that effective patient education makes the healthcare process easier for both physicians and nurses, as well as patients, and such education ultimately helps to improve all touch points along the continuum of care.

Emmi can be viewed at our patients' own pace in the hospital (bedside) via laptop computer or in the comfort of their own home, when the surgery they need does not have to be done on an emergency basis.

Since Emmi is on the web, patients can share their heart surgery program with friends or loved ones anywhere in the world as long as they have access to the Internet.

The Emmi heart surgery programs describe for patients their medical condition, the risks and benefits of treatment, and what to expect before and after their procedure.

Stony Brook has always been a leader in bringing the newest treatment and technologies to improve the quality of care that we offer. In this tradition of excellence, we are proud to use the Emmi heart surgery programs with our patients.

All Emmi programs are developed by board-certified surgeons in their respective fields. Our chief of cardiothoracic surgery, Todd K. Rosengart, MD, professor of surgery, contributed to the development of the Emmi heart surgery programs.

First "Closed Heart" Minimally Invasive Mitral Valve Repair Performed on Long Island First Time Shoreham Woman Can Decorate For Holidays in Three Years

STONY BROOK, NY, December 13, 2006—Two weeks ago, Denise Rocker, 46, did not have the energy to walk up and down a flight of stairs in her Shoreham home; she could not make more than three passes with the lawn mower before she had to sit down for a rest. Last Friday, her neighbor got nervous when he saw her sleeping against a tree.

"He came right over to check on me . . . he thought I was dead," she said. "Turns out I had had a minor heart attack—that makes five since my first in 1990."

Denise was rushed to her community hospital and transferred to Stony Brook for cardiac catheterization by cardiologist Ravina Balchandani, MD, who told Rocker her mitral regurgitation (MR) condition, which she had been managing with medication for six years, had reached the point where it required immediate intervention.

Dr. Balchandani introduced Rocker to Todd K. Rosengart, MD, chief of cardiothoracic surgery at SBUMC, who together with cardiothoracic surgeon Thomas V. Bilfinger, MD, ScD, and cardiologist Smadar Kort, MD, is contributing to an FDA-regulated research study called RESTOR-MV (Randomized Evaluation of a Surgical Treatment for Off-pump Repair of the Mitral Valve).

The RESTOR-MV is a prospective, randomized clinical trial that will include up to 25 centers in North America and up to 250 patients.

Stony Brook is the only participating center on Long Island; Rocker is the first patient on Long Island to undergo the procedure.

Rocker was initially uncertain about agreeing to surgery because of what she'd seen her father go through when he had quadruple bypass at a young age. (Rocker also had 100% blockage in her distal right coronary artery and had to undergo triple bypass surgery when she went in for the valve repair procedure.)

"Dr. Rosengart was down to earth," she said. "He was very decisive and knew what had to be done. After seeing the echo, he told me I was an excellent candidate, but I still wasn't sure. Then I found out that Myocor, the company that makes the device is based in Maple Grove, Minnesota. My brother moved there two years ago, and I thought, 'okay, this is a sign, I'll do it.'"



The happy patient, Denise Rocker, with her cardiologist, Dr. Ravina Balchandani, and her surgeon, Dr. Todd K. Rosengart.

LAUREN SHEPPOW | HOSPITAL MEDIA RELATIONS

Dr. Balchandani encouraged Rocker not to wait, not to leave the hospital before receiving the appropriate care. "Denise's progression was such that she needed to be treated immediately to enhance her chances for improvement," she said.

"I got scared when Dr. Balchandani told me I couldn't come back to fix it after Christmas," said Rocker. "But I believed her when she said I needed to have it done right away."

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The multidisciplinary team of Stony Brook's Heart Center that provides the best cardiac surgical care available today: our surgeons, anesthesiologists, perfusionists, operating room technicians, physician assistants, nurse practitioners, nurses, and support staff.

Photo by Media Services, Stony Brook University.

Background image from Jacques Fabian Gautier d'Agoty's *Anatomie générale des viscères* (General Anatomy of the Internal Organs), 1752. National Library of Medicine.

Providing “Destination Therapy”

*Using the Latest Technology
To Improve Patient Lives*

Cardiovascular diseases today are the leading cause of death throughout the world. One of the most prevalent forms of heart disease is congestive heart failure, in which the heart is too damaged or diseased to produce adequate blood flow. In the United States alone, an estimated five million people suffer from this heart failure, with another 550,000 new cases diagnosed each year.



Destination therapy patient enjoying life.

Advances in technology now offer hope, and it is estimated that as many as 100,000 heart failure patients per year in the United States could be helped by a new treatment option called destination therapy.

As part of our commitment to offering the latest in technology for treating heart failure, Stony Brook’s heart team will soon be providing destination therapy. Our acquisition of the high-tech medical device that makes this therapy possible was initiated in December 2006, and its initial use is planned for the spring.

Providing destination therapy will further reflect how committed we are to advancing clinical outcomes associated with mechanical circulatory assist devices and other advanced therapies in the treatment of heart failure.

The American Heart Association selected the HeartMate XVE LVAS, in 2001, as the second-most important medical

advance in the treatment of heart disease.

Destination therapy involves the implantation of the HeartMate eXtended Lead Vented Electric (XVE) made by Thoratec, a manufacturer of medical devices for circulatory support, vascular graft, blood coagulation, and skin incision applications.

Thoratec’s HeartMate XVE is the only left ventricular assist device (LVAD) that is approved by the Food and Drug Administration for destination therapy. This device has also been used as a bridge-to-transplant therapy for patients waiting a donor organ.

Now approved as destination therapy for patients with congestive heart failure who are not eligible for heart transplant, the HeartMate is the only implantable long-term LVAD designed to take over the pumping function of the heart.

The HeartMate LVAD is a fist-sized device using titanium parts that do not destroy blood cells. The inner surface of the device becomes lined with the patient’s own endothelial cells as blood flows through it allowing for long-term usage.



WHAT IT IS

The HeartMate XVE LVAD is an enhanced version of the HeartMate SNAP-VE (Sutures Not Applied) device approved in November 2002 for use for destination therapy; that is, permanent support for congestive heart failure patients who are not eligible for cardiac transplantation.

That FDA approval marked the first time that a ventricular assist device has been approved to provide permanent support for these patients.

While a similar HeartMate device has been approved as a bridge to cardiac transplantation since 1994 and used successfully in several thousand patients worldwide, destination therapy offers a breakthrough treatment option for patients with congestive heart failure.

The HeartMate device assists the heart’s left ventricle, which becomes weakened in congestive heart failure. The LVAD lets blood pass from the left ventricle to the aorta, which supplies oxygen-rich blood to the brain and the rest of the body.

Two New Clinical Trials

Advancing Heart Surgery

Our cardiothoracic team is actively involved in research aimed at advancing the surgical care of heart patients. In addition to several ongoing studies, the past year saw the launch of two clinical trials of new therapeutic approaches as part of multi-center studies.

HeartMate XVE LVAD implanted for destination therapy. Surgeons implant the pump, which is the size of a compact disc player, into the upper part of the abdominal wall or in the peritoneal lining. A tube on the device enters the left ventricle and drains blood from the ventricle into the device. The pump sends the blood to the aorta. Another tube attached to the pump extends outside the body, and is attached to a videotape-sized battery pack, which is worn on a shoulder holster. Patients wear a beeper-sized control system on a belt.

The XVE reflects technological advances based on the device experience learned in the landmark REMATCH (Randomized Evaluation of Mechanical Assistance for the Treatment of Congestive Heart Failure) clinical trial.

The REMATCH trial was a multicenter study supported by the National Heart, Lung, and Blood Institute to compare long-term implantation of the HeartMate SNAP-VE with optimal medical management for patients with congestive heart failure who require, but do not qualify to receive, cardiac transplantation.

FDA approval of destination therapy was based on the results of that trial, which compared the experience of patients supported by the HeartMate SNAP-VE with those being treated with optimal medical management (i.e., regimen of drug therapies, diet, and exercise).

The results of the REMATCH trial demonstrated meaningful survival benefits and improved quality of life for patients supported by the device.

RESTOR-MV

We are now participating in the nationwide effort to evaluate the Coapsys Annuloplasty System in an FDA-regulated clinical trial called the RESTOR-MV; that is, Randomized Evaluation of a Surgical Treatment for Off-pump Repair of the Mitral Valve. As a result of this participation, we performed the first “closed heart” repair of the mitral valve to have ever been done on Long Island (see page 5).

This newly-developed technology makes possible the repair of a patient’s damaged mitral valve during minimally invasive off-pump bypass surgery.

As part of the RESTOR-MV trial, the Coapsys device is implanted on a beating heart during an off-pump bypass procedure. The device is intended to reduce the amount of blood flowing backwards from the left ventricle (mitral regurgitation). It is also designed to improve cardiac function and potentially reduce overall treatment costs.

This new procedure will likely extend the promise of minimally invasive off-pump heart surgery to now include patients with mitral valve disease.

SYNTAX

We have also been participants in the multicenter, multinational clinical trial called SYNTAX (SYNergy between percutaneous coronary intervention with TAXus and cardiac surgery).

Changes in the treatment of coronary artery disease both surgically and percutaneously have rendered the major randomized trials historical. Furthermore, the restrictive criteria of previous trials excluded most patients treated in daily practice.

Although coronary surgery is still considered the current, evidence-based, gold-standard treatment of left main and three-vessel coronary disease, the added benefit of drug-eluting stents has further expanded the use of percutaneous coronary intervention beyond less complex populations in daily practice.

The SYNTAX trial aims to compare the safety and efficacy of a certain type of drug-eluting coronary stent for patients with three-vessel or left main disease with what has previously been the standard therapy for coronary artery bypass grafting (CABG).

The overall study goal is to assess the optimum revascularization treatment for patients with three-vessel coronary artery disease or left main disease by randomizing patients to either percutaneous coronary intervention with TAXus stents or CABG.

For more information about the RESTOR-MV trial and the SYNTAX trial, please call our heart program’s clinical research coordinator at (631) 444-5454.

A Patient Testimonial



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Diane Passantino just had multiple procedures in a single operation—mitral valve replacement, tricuspid valve repair, and maze surgery:

I’ll be honest: I was thinking I should go to a smaller hospital, but I’m glad I didn’t. I was very happy with everything at Stony Brook. My surgeon was confident and caring and very compassionate. The care I got was very good. I felt good after surgery, too. Now I would recommend Stony Brook for heart surgery.

Performing Minimally Invasive Heart Surgery

Minimally invasive efforts in cardiac surgery translate to performing cardiac procedures either without the use of cardiopulmonary bypass (heart-lung machine) or with the avoidance of midline sternotomy, the standard approach to the heart. These approaches seek to remove the hallmarks of what was considered an “open heart case.” Minimally invasive efforts in cardiac surgery at Stony Brook are advancing on a number of fronts:

Since 1997, an aggressive off-pump program—avoiding the use of the heart-lung machine—has been led by Frank S. Seifert, MD, associate professor of surgery, along with Thomas V. Bilfinger, MD, ScD, professor of surgery. The off-pump procedures performed here include multi-vessel OPCAB (off-pump coronary artery bypass; through sternotomy) and MIDCAB (minimally invasive direct coronary artery bypass; without sternotomy).

Well over 2,000 of these off-pump procedures have been performed at Stony Brook, and they constitute approximately 50% of the coronary bypass surgery done here.

We have served as a national preceptor training site for teaching these techniques. We have reported on reduced blood utilization, shortened intubation times, and decreased ICU days with the off-pump approach compared to prior experiences with conventional on-pump surgery.

Off-pump, multi-vessel coronary artery bypass grafting (CABG) through thoracotomy and thoracoscopic harvesting of the internal mammary artery, providing for even less chest wall trauma, are additional forthcoming advances in our minimally invasive armamentarium.

As an appropriate complement to our off-pump CABG program, we are now participating in the national RESTOR-MV study (see page 9). The Coapsys device, a myocardial splint that reduces or eliminates mitral regurgitation, is applied to patients with ischemic mitral regurgitation in addition to off-pump CABG.

MINIMALLY INVASIVE HEART VALVE SURGERY

Until recently, cardiopulmonary bypass has been an absolute requirement for valvular surgery. The off-pump technique is particularly compelling for this high-risk group of heart surgery patients who are enjoying spectacular results in the early pilot studies.

During the past year, we expanded our program in minimally invasive heart valve surgery to facilitate mitral and aortic valve surgery via small thoracotomy (incision between the ribs).

In the first cases under this program, our cardiac surgery team used endosurgical instrumentation to correct mitral valve leakage in patients via a 4-inch “mini-thoracotomy” incision placed under the right breast.

Our use of technologically advanced valve surgery further reflects the current trend at Stony Brook and at other top heart centers nationwide, where patients requiring valve repair or replacement now have a minimally invasive procedure.

A growing body of clinical evidence indicates that minimally invasive techniques may soon become more widespread for patients requiring surgical treatment of valvular heart disease. By minimizing the operative incision and the amount of trauma and pain, these techniques

generally shorten the postoperative recovery time and, thereby, offer considerable benefits to patients.

USING NEW TECHNOLOGY TO BENEFIT PATIENTS

Over the past few years, our physician’s assistants have also mastered endoscopic vein harvesting, which substitutes a 1-inch incision for the traditional 24-plus-inch incision in the leg of CABG patients. Nearly all our CABG patients typically have their vein harvested by this technique, and thereby benefit from significant reduction in post-op pain and complication rate.

This past May, we started performing the newly-developed minimally invasive endovascular stent grafting repair of thoracic aortic aneurysms.

In conjunction with the vascular surgery service, Dr. Bilfinger and Allison J. McLarty, MD, assistant professor of surgery, have now performed a number of stent procedures to treat thoracic aortic aneurysms (see page 11). This new stenting procedure will soon be applied to traumatic aortic disruptions, a common cause of death in automobile accidents.

The stents used are large scale and are deployed as a percutaneous device or as part of a surgical procedure. Application to aortic dissection will follow in the near future.

All told, these minimally invasive approaches represent a significant advance in our efforts to reduce the risk and morbidity of cardiothoracic surgery.

Performing Endovascular Thoracic Aortic Stent Grafting

A Minimally Invasive Option For Repair of Aortic Aneurysms

Thoracic aortic aneurysm (TAA)—a bulge in the major artery from the heart—is a life-threatening condition that potentially may cause death as a result of rupture or dissection (tearing) and subsequent internal bleeding.

The entire operation is done within the aorta itself, via its branches in the groin, using the endovascular approach (*endo-*, within + *vascular*, vessel) with the aid of special technology and instrumentation.

“This is a huge plus for the patient,” explains Allison J. McLarty, MD, assistant professor of surgery and head of thoracic aortic surgery, “given the significant morbidity and mortality, extended hospital stay, and lengthy recovery that may be experienced by patients who have traditional open repairs of their TAAs.”

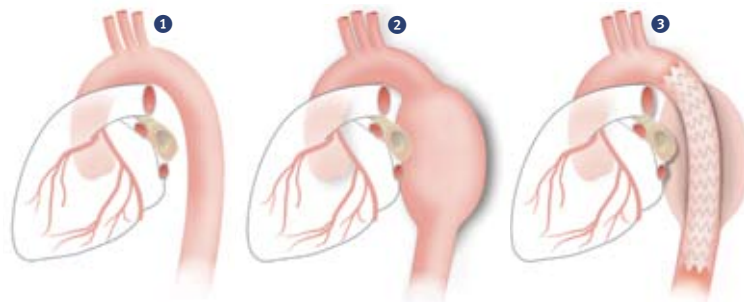
(left) Endovascular route of delivery catheter (blue) for placement of stent, going from within femoral artery in upper groin, via small incision (circled in red), to thoracic aorta of heart.

The endovascular technique is particularly valuable in older, sicker patients who would be unable to withstand the traditional surgery.

Because endovascular surgery involves a smaller incision, and also avoids the need for extracorporeal perfusion (use of heart-lung machine), it causes less disruption of the patient’s physiology, or vital processes. Consequently, the hospital stay is usually much shorter and the patient’s recovery much faster and less painful. A smaller scar is another major benefit.

Traditional operative management of TAAs has involved extensive surgery requiring a 12- to 14-inch incision in the chest to place a synthetic graft to repair the diseased artery. This method can result in long hospital stays and painful recoveries.

The good news is that our cardiovascular specialists—cardiothoracic and vascular surgeons working together—are now performing the newly-developed minimally invasive endovascular stent grafting repair of TAAs.



1) A normal heart. 2) Aneurysm (bulge) in descending thoracic aorta. 3) Repaired aorta with endovascular stent bypass graft that seals off blood flow into aneurysm.

ILLUSTRATIONS BY KATHLEEN GEBHART
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The stent device we currently use in the endovascular repair of TAAs is a flexible tube that resembles a child’s finger-trap toy. It is composed of an expanded polytetrafluoroethylene

(ePTFE; similar to Gore-Tex fabric) graft with an outer self-expanding nitinol (nickel-titanium alloy) support structure to combine both device flexibility and material durability.

First “Closed Heart” Minimally Invasive Mitral Valve Repair Performed on Long Island

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“Denise had mitral regurgitation (MR), a condition in which the mitral valve does not adequately close, resulting in the blood flowing backwards from the left ventricle back into the atrium and pulmonary vasculature,” says Rosengart. “The result of this backward flow is that the heart has to work harder without proportional benefit to the body.”

As part of the RESTOR-MV trial, Dr. Rosengart implanted the Coapsys device on Rocker’s beating heart without the use of cardiopulmonary bypass (heart-lung machine) and without needing to make an incision to open her heart for the repair. The device is intended to reduce the amount of blood flowing improperly backwards from her left ventricle.

Two days following MR repair and triple bypass surgery, Denise was walking up and down a flight of stairs as part of her rehabilitation—something she struggled with for over three years. She expects to be discharged within a week of the surgery.

“We’re very proud of Denise; she did very well,” said Dr. Rosengart. Rocker, who has been entertaining the nurses with her battery operated Christmas bulb necklace during her hospital stay, is looking forward to being discharged and to putting up real holiday lights at home.

“I have not been able to put up Christmas decorations for the past three years because I keep them upstairs and it was too hard to go up and down,” said Denise. “If I had waited, like I wanted, I wouldn’t have been able to decorate this year either. Now I’m going home and I’m finally going to be able to decorate this year.”



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