Henry Ford Health System

CARDIO BEAT

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COAPT Trial Results: Transcatheter Mitral-Valve Repair in Patients with Heart Failure Provides New Option

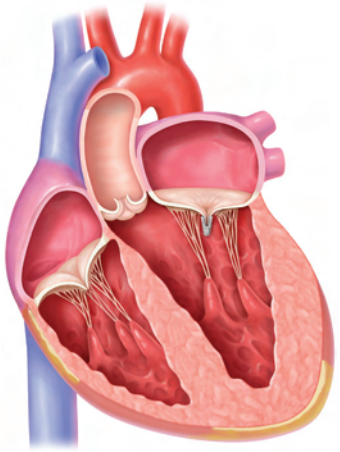
Perhaps one of the most clinically impactful, landmark studies conducted in recent years, the Cardiovascular Outcomes Assessment of the Percutaneous Therapy (COAPT) trial results were shared in September. The results highlight the work of the Structural Heart physicians at Henry Ford Hospital. Participation in this trial for the past eight years has made it possible to bring a new treatment option to Henry Ford patients with heart failure.

The COAPT study is a randomized, controlled, multicenter clinical trial evaluating medication-only treatment versus catheter-based non-surgical repair of the leaky mitral valve with the MitraClip device. Results of the COAPT study were shared at the annual Transcatheter Cardiovascular Therapeutics (TCT) conference late-breaking clinical trial session in San Diego, was received with an unprecedented three rounds of applause from the audience of over 5,000 attendees. The results were published in the September issue of *New England Journal of Medicine*.

The results of the COAPT study showed that patients with severe functional MR who received a MitraClip, when compared to those who underwent medical treatment, experienced:

- a 40 percent reduction in hospital readmission for heart failure;
- improvement in overall quality of life;
- a significant increase in longevity at two-year follow up;
- a decrease in all-cause mortality.

The MitraClip device has been used in Europe and the United States for over 10 years for patients with degenerative or diseased mitral leaflets. It had not been used for patients with mitral valve disease due to a poorly functioning left ventricle heart muscle. A total of 610 patients with moderate to severe leaky mitral heart valve were enrolled in the COAPT study, and randomized equally to guideline-based medical care versus intensive medication regimen and MitraClip implantation. William W. O'Neill, M.D., medical director of the Center for Structural Heart Disease at Henry Ford says, "This is one of the most rigorous studies conducted in recent time. Patients underwent intensive screening, were provided the optimal medical therapy yet still had moderate to severe leaky valves before being enrolled in the randomized study."



Gregg W. Stone, M.D., lead investigator of the COAPT trial of NewYork-Presbyterian/Columbia University Irving Medical Center stated, "The benefit the MitraClip provides to appropriate patients is quite dramatic and important. Heart failure doctors now need to

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INSIDE

STAFF UPDATE

Hisham Bassiouny, M.D.
Vascular Surgery

MEDICAL SCHOOL EDUCATION
Cairo University School of Medicine, Egypt

RESIDENCIES & INTERNSHIPS
Maryland General Hospital / University of Maryland, Baltimore, MD
Surgical Internship

Henry Ford Hospital, Detroit, MI
General Surgical Residency

FELLOWSHIPS
Henry Ford Hospital, Detroit, MI
Clinical Vascular Fellow

University of Chicago
Cardiovascular Post-Doctoral Research Fellow

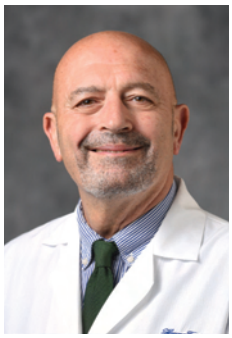
BOARD CERTIFICATION
Diplomate of the American Board of Surgery - Recertification in General Surgery

Certificate of Added Qualifications in General Vascular Surgery - Recertification in General Vascular Surgery

RESEARCH INTERESTS
Dr. Bassiouny's research interests are in mechanisms in carotid plaque rupture and cerebrovascular events, biomechanical forces in atherosclerosis and restenosis, aortic aneurysms, dissection, and repair, acute aortic syndromes, and lower extremity revascularization.

A Distinguished Fellow of the Society for Vascular Surgery and a member in many professional societies, Dr. Bassiouny has more than 150 publications and spent most of his career as University of Chicago faculty. He has extensive experience in clinical care, education and administration of medical services.

Dr. Bassiouny also speaks French, German and Arabic.


Hisham Bassiouny, M.D.

Alice Lee, D.O.
Vascular Surgery

MEDICAL SCHOOL EDUCATION
Western University of Health Sciences, Pomona, California
Doctor of Osteopathy

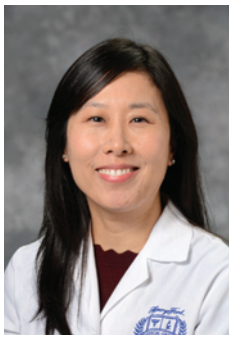
RESIDENCIES & INTERNSHIPS
Hackensack Meridian Health-Palisades Medical Center, North Bergen, NJ
Residency, General Surgery

Palms West Hospital, West Palm Beach, FL
Traditional Rotating Internship

FELLOWSHIPS
Newark Beth Israel/Robert Wood Johnson Barnabas Health, Newark, NJ - Fellow, Vascular

BOARD CERTIFICATION
Board Eligible

RESEARCH INTERESTS
Management of complicated Type B dissections, renal artery stenosis in native and transplant kidneys.


Alice Lee, D.O.

Ryan Gindi, M.D.
Cardiology

MEDICAL SCHOOL EDUCATION
Sackler School of Medicine, Tel Aviv, Israel

RESIDENCIES & INTERNSHIPS
University of Illinois, Chicago, IL
Internal Medicine Residency

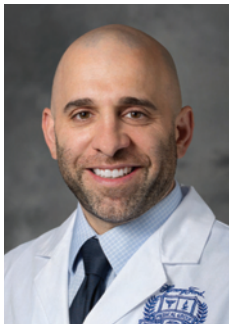
FELLOWSHIPS
Henry Ford Hospital, Detroit, MI
Cardiology Fellowship

BOARD CERTIFICATIONS
American Board of Internal Medicine

American Board of Internal Medicine – Board Eligible in Cardiovascular Disease

RESEARCH INTERESTS
Dr. Gindi's research interests include echocardiography, preventative cardiology, sports cardiology, refractory angina.

Dr. Gindi is a member of the American College of Cardiology.


Ryan Gindi, M.D.

RESEARCH UPDATE

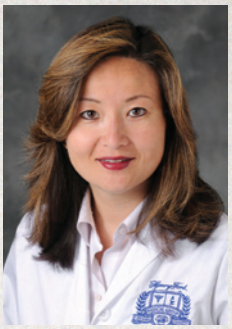
ATTRACT Multicenter Trial Results

Approximately half of patients with proximal deep-vein thrombosis will develop post-thrombotic syndrome within two years, despite the use of anticoagulant therapy. Common symptoms of post-thrombotic syndrome are chronic limb pain and swelling. These symptoms can progress to cause major disability, leg ulcers, and impaired quality of life.

The Acute Venous Thrombosis: Thrombus Removal with Adjunctive Catheter-Directed Thrombolysis (ATTRACT) trial aimed to determine whether pharmaco-mechanical thrombolysis prevents the post-thrombotic syndrome in patients with proximal deep-vein thrombosis. The primary outcome was development of the post-thrombotic syndrome between six and 24 months. Pharamaco-mechanical catheter-directed thrombolysis (pharmaco-mechanical thrombolysis) is the delivery of fibrinolytic drug into the thrombus with concomitant thrombus aspiration or maceration.

Patient Population

Judith Lin, MD, MBA, a vascular surgeon and the site principal investigator for the ATTRACT study at Henry Ford Hospital explains, "This Phase 3, multicenter clinical study, sponsored by the National Heart, Lung, and Blood Institute of the National Institutes of Health, was an open-label, assessor-blinded, and controlled study."



Judith Lin, MD, MBA

The researchers randomly assigned 692 patients with acute proximal deep-vein thrombosis to receive either anticoagulation alone (control group) or anticoagulation plus pharmaco-mechanical thrombolysis (catheter-mediated or device-mediated intrathrombus delivery of recombinant tissue plasminogen activator and/or thrombus aspiration or maceration, with or without stenting).

Patients with symptomatic proximal deep-vein thrombolysis involving the femoral, common femoral, or iliac vein (with or without other involved ipsilateral veins) were enrolled at 56 clinical centers throughout the United States, which included Henry Ford Hospital. Patients younger than 16 or older than 75 years of age were excluded, as were pregnant women.

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Cori Russell, M.D.

Cardiology

MEDICAL SCHOOL EDUCATION
University of Minnesota Medical School
Minneapolis, MN

RESIDENCIES & INTERNSHIPS
Brigham and Women's Hospital, Boston, MA
Internal Medicine Resident

FELLOWSHIPS
Hospital of the University of Pennsylvania, Philadelphia, PA
Cardiology Fellow

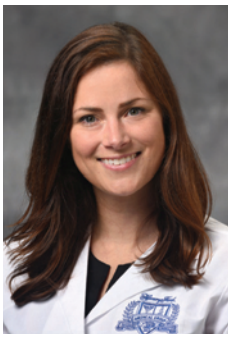
Advanced Cardiovascular Imaging
Echocardiography, Nuclear, CT and Vascular Ultrasound

BOARD CERTIFICATION
ABIM Certification

RESEARCH INTERESTS
Cardiovascular inflammation reduction, mesenteric venous thrombosis, and cardiovascular disease prevention in women

Dr. Russell is also interested in quality improvement and efficiency of transition from inpatient Cardiology service to the outpatient setting and holds a Bachelor's degree in Finance and Entrepreneurial studies.

Dr. Russell also speaks Spanish and Italian.



Cori Russell, M.D.

NEW PROCEDURE

First Patient in the U.S. Receives Device for Hard-to-Treat Angina

Cardiologists at Henry Ford Hospital performed the first implantation in the United States of a device approved for use in Europe for hard-to-treat angina.

The Neovasc Reducer™ was successfully implanted in a middle-aged, Detroit-area man on June 19, 2018. Henry Ford Health System cardiologist Gerald Koenig, M.D., Ph.D., led the procedure, with support from doctors Ryan Gindi, M.D., and Janakkumar Kansagra, M.D., former interventional cardiology fellow, and cardiac electrophysiologist Claudio Schuger, M.D.

"Angina affects millions of people in the United States," said Dr. Koenig, research director for the Cardiac Catheterization Laboratory at Henry Ford Hospital and catheterization lab medical director at Henry Ford West Bloomfield Hospital. "Unfortunately, bypass and medical intervention provides little relief to some. So we are hopeful that this procedure can be of some benefit."

A minimally invasive procedure similar to implanting a coronary stent, the "reducer", a stainless steel, hourglass-shaped mesh that is three millimeters in diameter at its smallest point, was advanced through the internal jugular vein and placed inside the coronary sinus. The procedure typically takes about 20 minutes.

Within six to eight weeks, tissue grows over the mesh, narrowing the passageway. The procedure attempts to address angina by creating a backflow pressure into the heart by narrowing the area of the heart where blood flows out the coronary sinus. That backflow pressure pushes blood into areas that need additional oxygenation.

"They saw a dramatic improvement in a vast majority of patients," Dr. Koenig said. "Seventy percent of patients had some relief of their angina."

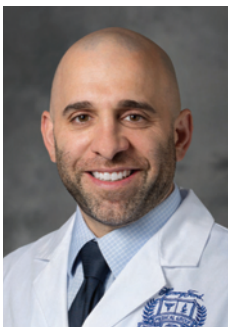
Prior to the Henry Ford patient's procedure, he told his doctors he could walk about two blocks before experiencing angina, which he rated a 7-8/10 on a pain scale. He also used nitroglycerin two to three times per week to alleviate symptoms. At his 12-week follow-up appointment, he reported walking several miles without any symptoms and taking nitroglycerin one or two times per month. He said he was rarely experiencing chest discomfort, and any chest pain was rated at a 2-3/10.

Background

"The idea originated in the 1950s with Dr. Claude S. Beck, prior to the development of heart bypass surgery or the use of stents," Dr. Koenig explains. In an open heart surgery, Dr. Beck stitched the coronary sinus to a narrower three millimeters.

Doctors had stopped using the procedure with the development of heart bypass in the 1960s and coronary stenting in the 1980s. But it drew interest again as a non-invasive approach in the early 2000s. The Reducer device has been commercially available in Europe since 2015, according to the Canadian manufacturer, Neovasc Inc. The product is still in development in the United States, and U.S. trials are pending. An animation of the procedure can be viewed at: https://bit.ly/2D5XaFE

Gerald Koenig, M.D., Ph.D.



Ryan Gindi, M.D.

In the case of the Henry Ford Hospital patient, Henry Ford administration and the U.S. Food & Drug Administration (FDA) permitted the device to be used as a "compassionate use" case. In those situations, there are no other medically viable, commercially approved options available for the patient.

"We participate in trials and strive to work with patients who have been told they are out of options," said cardiologist Henry Kim, M.D., medical director of the Edith and Benson Ford Heart & Vascular Institute at Henry Ford Health System. "At Henry Ford, we're continually working to advance science in the field of cardiology to provide the best care available to our patients."

To refer a patient, call 844-725-6424 or visit www.HenryFord.com/hvi. Your patients can take an online heart quiz to check their own cardiovascular health, at www.HenryFord.com/hearthealth.

UPDATE

National CSI Preliminary Results Show a 50 Percent Jump in Survival

Results of from The National Cardiogenic Shock Initiative (National CSI) confirm the effectiveness of a protocol established in Detroit to treat heart attack patients in cardiogenic shock. The National CSI preliminary study results found 80, or 77 percent of the 104 patients who have been treated to date with the protocol survived their heart attack. The typical survival rate for patients in cardiogenic shock had been about 50 percent before pioneering cardiologist William W. O'Neill, M.D., director of the Center for Structural Heart Disease at Henry Ford Hospital in Detroit, and his colleagues developed the protocol in Detroit.

Data from "One Year Outcomes from the Detroit Cardiogenic Shock Initiative Pilot Study," was presented by Henry Ford cardiologist Babar Basir, D.O., accompanied by Dr. O'Neill and National CSI coordinator Michael Hacala at Transcatheter Cardiovascular Therapeutics (TCT) annual conference, one of the world's largest educational meetings specializing in interventional cardiovascular medicine.

Key to the protocol is medical personnel recognizing cardiogenic shock in patients as soon as possible, said Dr. Basir.

"If they think the patient needs medication to raise the blood pressure, that's when they should be thinking, 'Get them someplace where they can get a pump implanted,'" Dr. Basir explained.

As of October, the protocol is being voluntarily replicated by 56 hospital sites across the United States. An additional 30 sites are preparing to join the Initiative, and the study is ongoing. "This proves the National CSI protocol can save lives anywhere," said Dr. O'Neill. "We're thrilled for the sites across the country that we were able to increase survival rates for their patients so drastically."

The devastating heart attack complication of cardiogenic shock affects approximately five to eight percent of heart attack patients in the United States annually. In these patients, the pump function of the heart is severely depressed, causing low blood pressure and vital organs to be deprived of sufficient blood supply. Despite contemporary treatments, an average of about 50 percent of patients experiencing the condition historically died. But heart attack survival rates increased dramatically in cardiogenic shock patients who were treated using the Impella® heart pump.

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	SHOCK	IABP-SHOCK	IMPRESS	CULPRIT SHOCK	National CSI
N (#)	302	600	48	686	104
Age (years)	66	70	58	70	64
Male (%)	68	69	75	76	74
Vasopressors (%)	99	90	96	90	81
Cardiac Arrest (%)	28	45	92	54	65
HR (bpm)	103	92	81	91	84
SBP (mmHg)	89	90	81	100	78
DBP (mmHg)	54	55	58	60	50
Lactate (mg/dL)	N/A	4.1	8.2	5.1	5.1
Survival (%)	53	60	52	49	77

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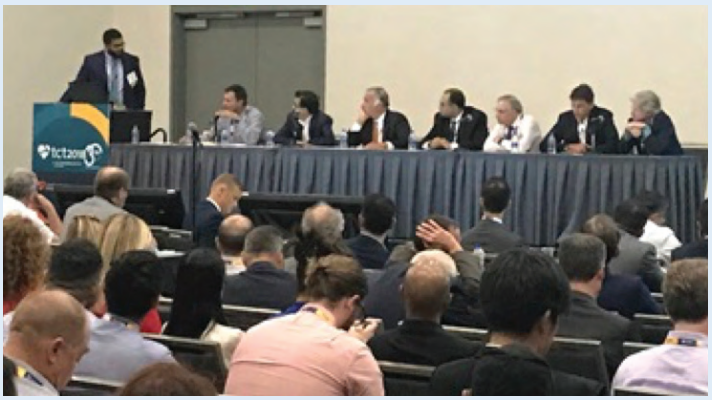
Doctors following the rapid hemodynamic support protocol insert an Impella®, a straw-sized pump approved by the FDA in 2016 for the treatment of cardiogenic shock. The pump is inserted through a catheter in the groin and into the heart to keep blood pumping throughout the body.

The basis for the protocol used retrospective data collected by the pump's manufacturer, Massachusetts-based Abiomed, in 15,529 patients – 72 percent men and an average age of 63 – treated between 2009 and 2017. The investigators noticed that survival rates in patients treated with the Impella® pump fluctuated wildly by hospital. A third of hospitals experienced a 25 percent survival rate; a third, 50 percent survival; and a third, 75 percent.

"Key to the protocol is medical personnel recognizing cardiogenic shock as soon as possible," said Dr. Basir.

"There was a huge variation in outcomes between the centers, between the lowest performing and highest performing centers," Dr. O'Neill said. "It looked as though putting the Impella® in soon, before you do anything else, is connected to survival."

Inserting the pump first ensures the patient's other vital organs are supported, buying time for cardiologists to open the blocked arteries to restore natural blood flow. The hospitals with high survival rates also used less inotropes and catheters to monitor heart pressure, Dr. O'Neill added.



Preliminary results of National CSI were presented at TCT's September conference.

To test the best practices, Dr. O'Neill organized five hospital systems in southeast Michigan to follow a specific protocol in acute myocardial infarction patients who showed signs of cardiogenic shock between July 2016 and April 2017. Of the 41 patients supported with the Detroit Cardiogenic Shock Initiative protocol, 31 or 76 percent survived – replicated by the results of the National CSI. "The most exciting aspect of the National CSI is that it represents the largest working group evaluating treatment options in patients with cardiogenic shock," said Dr Basir. "We are helping hundreds of patients across the country and helping institutions worldwide improve their ability to care for patients with cardiogenic shock."

For more information on the initiative or protocol, visit HenryFord.com/cardiogenicshock

PROGRAM EXPANSION

Regional ECMO Program At Henry Ford For Support of the Heart and Lung Expands

Support for patients with severely compromised lung and or heart function is available through a newly expanded Henry Ford Hospital regional extracorporeal membrane oxygenation (ECMO) program. ECMO is approved by the Food and Drug Administration (FDA) for short-term use, but is being used off-label for long-term use to support oxygenation. The use of ECMO is complex, explained Victor Coba, M.D., Cardiac Surgery ICU and ECMO medical director, "Simply stated, ECMO is able to re-oxygenate and pump the patient's blood to temporarily support the patient's heart and or lungs until the organs are able to recover."

Crystal Jones, ECMO program manager explains, "For many reasons it was the right time to expand the regional ECMO program. One reason is the improved technology. The once-huge ECMO machines are much more efficient and smaller to work with at the bedside and enable patient mobility."

Development of an ECMO-certified program provides support throughout Henry Ford Hospital for the sickest patients.

COAPT Trial Results: Transcatheter Mitral-Valve Repair in Patients with Heart Failure Provides New Option

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re-look at their patients to identify those who are remain symptomatic with severe secondary mitral regurgitation despite optimal medical therapy. Such patients may markedly benefit by MR reduction, leading to immediate symptomatic improvement, reduction in heart failure hospitalizations and improved survival."

Dee Dee Wang, M.D., director of Structural Heart Imaging at Henry Ford Hospital, explains "The study is unprecedented in the fact that it brings a mitral valve and heart failure treatment option to patients who had been told in the past their heart failure was no longer treatable."

Even the doctors involved in the study doubted that fixing the leaky valve would help to achieve the study's goals to reduce hospitalizations and death. Michael Mack, M.D., medical director of Cardiovascular Surgery, Baylor Health Care System, and one of the lead researchers, admitted on the Dr. Oz television program there were a "lot of non-believers in this study, even I was pleasantly surprised at the preliminary outcomes when the data was opened."

Results

From December 27, 2012 through June 23, 2017, 614 patients were enrolled; 302 were assigned to the device group and 312 to the control group. After two years, there were 160 total heart failure hospitalizations among those who received the MitraClip versus 283 for the control group. The annualized rates of heart failure hospitalization were 35.8 percent per patient-year in the device group versus 67.9 percent per patient-year in the control group (hazard ratio, 0.53, 95 percent confidence interval 0.40 to 0.70; $p<0.001$). In addition, the 12-month rate of freedom from device-related complications was 96.6 percent (lower 95 percent confidence limit, 94.8 percent), which exceeded the performance goal of 88.0 percent for the primary safety endpoint ($p<0.001$). All-cause mortality at 24 months with the device was 29.1 percent compared to 46.1 percent in the control group (hazard ratio 0.62, 95 percent, confidence interval 0.46 to 0.82; $p<0.001$).

The preliminary conclusions demonstrate that among patients with heart failure and moderate-to-severe or severe secondary mitral regurgitation who remained symptomatic despite the use of maximal doses of guideline-directed medical therapy, transcather mitral-valve repair resulted in a lower rate of hospitalization for heart failure and lower all-cause mortality within 24 months of follow-up than medical therapy alone. The rate of freed from device-related complications exceed a prespecified safety threshold.

Transcatheter mitral-valve repair in patients with heart failure. *New England Journal of Medicine,* 2018 Sept 23. Doi: 10.1056/NEJMoa1806640

For example, some patients in cardiogenic shock may need temporary ECMO support along with the Impella® heart pump. Other patients may need a heart or lung transplantation or have complex cardiovascular and pulmonary diseases or illness causing an intensive care unit stay.

With flu season quickly approaching, Dr. Coba reminds, "It is important for our regional colleagues to consider some patients may require ECMO for lung support in severe respiratory illness situations, especially those mechanically ventilated patients who do not improve after three to four days." His advice, "Outcomes are better the sooner a patient is placed on ECMO—sooner is better after all standard treatments have been exhausted." Dr. Coba explains, "Our outcomes are comparable to those on a national level gathered by Extracorporeal Life Support Organization (ELSO). We are currently working on quality improvement initiatives and tools to improve our communication and expectation for ECMO with patients and families." The Henry Ford ECMO program has seen an increase from its start in 2015 with 26 patients. A total of 215 ECMO cases have been seen to date.

Victor Coba, M.D.

To transfer a patient to the Henry Ford Hospital ECMO program, call The Critical Care Transport Team at 1-866-HFH-BEDS (1-866-434-2337)

RESEARCH

4th Patient In U.S. Benefits From BASILICA At Henry Ford

Julie Oldani

Activities of everyday life became burdensome for Julie Oldani, of Bloomfield Hills, as she struggled to breathe and keep up with her busy schedule. "It seemed that I couldn't walk five steps without resting or catching my breath," says Julie.

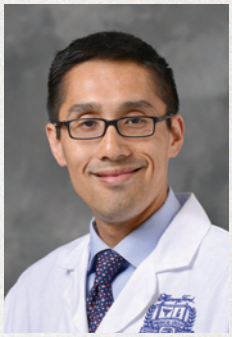
Henry Ford Cardiologist Stephen Smith, M.D., provided a thorough exam and performed an electrocardiogram in February. Julie's results necessitated immediate ambulance transport to Henry Ford Hospital for cardiac catheterization.

Admitted to the intensive care unit, Julie was on the verge of cardiogenic shock. The cardiac team supported her heart with an Impella® heart pump and three stents were immediately inserted. Additional testing confirmed Julie needed an aortic valve replacement.

Julie was a candidate for Transcatheter Aortic Valve Replacement (TAVR). However, she would also require the newly developed BASILICA procedure—performed during TAVR. The acronym BASILICA stands for Bioprosthetic Aortic Scallop Intentional Laceration to prevent Iatrogenic Coronary Artery obstruction.

On February 14, Marvin Eng, M.D., director of Research for the Center of Structural Heart Disease and Structural Heart Disease fellowship director and the National Institutes of Health Team, performed the BASILICA procedure, making Julie the 4th patient in the world to have this life-saving procedure.

Dr. Eng explains, "In some patients the native valve's leaflets block the flow of blood to the coronary arteries as the new valve's scaffolding opens. The complication is fatal unless corrected and is prevented during traditional open heart surgery by cutting away the native valve itself.



Marvin Eng, M.D.

"The BASILICA procedure solves this issue by weaving an electrified wire the size of a sewing thread through a catheter using it to slice the patient's native aortic leaflet. The slice prevents the flap from blocking critical blood flow through the heart when the doctor deploys the new valve."

"That Valentine's Day, a new life was breathed into me," says Julie.

After almost three weeks in the ICU, Julie began the Henry Ford Cardiac Rehabilitation Program's two to three weeks of rehabilitation, but Julie's breathing improved so well that she finished after five days. "Now I have no restrictions. I can walk for several miles and continue my busy professional and volunteer careers without experiencing any previous symptoms," she says.

Julie credits the entire team at Henry Ford with her extraordinary recovery. "There is not a day that goes by that I fail to reflect on how fortunate I am to have experienced such excellent care at Henry Ford," says Julie. "I faced extremely challenging health issues and each person who cared for me along the way respected my personal dignity. The words 'thank you' seem inadequate."

To refer a patient for Cardiology services, call (844) 725-6424.

ATTRACT Multicenter Trial Results

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Methods

Patients were assigned in a 1:1 ratio to the pharmaco-mechanical-thrombolysis group or the control group with no procedural intervention. Each treatment group received initial and long-term anticoagulant therapy consistent with published guidelines, including the option of rivaroxaban when it became available. At the 10-day follow-up visit and every six months following, patients were provided sized-to-fit, knee-high, elastic compression stockings which provided 30 to 40 mm Hg of pressure.

Approximately half of patients with proximal deep-vein thrombosis will develop post-thrombotic syndrome within two years, despite the use of anticoagulant therapy.

Pharmaco-mechanical catheter-directed thrombolysis was consistent with published guidelines and performed by board-certified physicians whose credentials were approved by the trial leadership.

Recombinant tissue plasminogen activator (rt-PA) at a dose of <35 mg was delivered into the thrombus by one of three methods. If the popliteal vein was occluded or the inferior vena cava was involved, physicians were required to use "infusion-first" therapy, which started with rt-PA infusion through a multi-sidehole catheter of the physician's choice for no longer than 30 hours.

For the remaining patients, physicians were required to first attempt single-session thrombus removal with rapid delivery of rt-PA through the AngioJet Rheolytic Thrombectomy System (Boston Scientific) or the Trellis Peripheral Infusion System (Covidien) and then to infuse rt-PA for no longer than 24 hours if residual thrombus was present.*

Dr. Lin explained, "The results indicated that between six and 24 months, there was no significant difference between groups in the percentage of patients with post-thrombotic syndrome, with 47 percent in the pharmaco-mechanical-thrombolysis group and 48 percent in the control group" (risk ratio, 0.96; 95 percent confidence interval, 0.82 to 1.11; P=0.56).

Pharmaco-mechanical thrombolysis led to more bleeding events within 10 days (1.7 percent vs. 0.3 percent, P=0.049). Severity scores for the post-thrombotic syndrome were lower in the pharmaco-mechanical thrombolysis group than in the control group at 6, 12, 18 and 24 months of follow-up (P<0.01 for the comparison of the Villalta scores at each time point). But the improvement in quality of life from baseline to 24 months did not differ significantly between treatment groups.

"Among patients with symptomatic, acute proximal deep-vein thrombosis, the addition of pharmaco-mechanical catheter-directed thrombolysis to anticoagulation did not result in a lower risk of post-thrombotic syndrome, but did result in a higher risk of major bleeding," concluded Dr. Lin, who is one of the study's co-authors of the manuscript published in *New England Journal of Medicine*.

*Complete study treatments and analysis can be found in the article published in *New England Journal of Medicine* on December 7, 2017.

To connect with a Henry Ford physician, call:

Heart & Vascular Institute

1-877-434-7470

Center for Structural Heart Disease

1-855-518-5100

Heart & Vascular Institute
Henry Ford Hospital
2799 West Grand Boulevard
Detroit, MI 48202

IN THE NEWS

Henry Ford Wyandotte Hospital Cath Lab Grand Opening

A ribbon cutting on Aug. 23 officially opened Henry Ford Wyandotte Hospital's state-of-the art cardiac catheterization lab. The new minimally-invasive procedure room offers improved technology, a larger space and more efficient layout for even more life-saving and life-improving work.

Photo by Gina Joseph, Digital First Media

HENRY FORD MACOMB HOSPITAL UNVEILS NEW HYBRID OR

Macomb County's first operating room designed to treat patients both surgically and with catheter-based procedures, described as the "hybrid OR," is now open at Henry Ford Macomb Hospital. Additional new rooms replace several current operating rooms and are part of the $37 million upgrade. The next phase of the project, opening in November, will include a new Cath Lab and interventional radiology treatment area.