

## Ventracor Bridge to Transplant Trial

by Danny Goldstein, MD

**O**UR SUBJECT PATIENT, MR. GAVEJIAN, A 60-YEAR-OLD MAN, WAS REFERRED TO THE MONTEFIORE-EINSTEIN HEART CENTER FROM NEW JERSEY WHERE HE WORKS AS A SUPERIOR COURT JUDGE.



His past medical history is significant for dilated cardiomyopathy with severe left ventricular dysfunction, chronic atrial

fibrillation, dyslipidemia, prior aortic valve replacement with a St. Jude mechanical valve, and coronary bypass surgery. He has undergone placement of a defibrillator and had hip replacement surgery in 2003. He was first seen in our CHF clinic in October 2007, at which time he was found to be acutely decompensated and was admitted for medical management of his heart failure. Evaluation for possible left ventricular assist device (LVAD) implantation and cardiac transplantation ensued. After fine-tuning his medical regimen he was discharged home with appointments for follow up.

He was readmitted in November with worsening dyspnea and fatigue. He was again treated with intravenous diuretics and inotropes and again was discharged home after improvement. He was

admitted in December with fluid overload and renal dysfunction. He underwent a right heart catheterization which revealed poor hemodynamics, and the decision was made to implant an LVAD.

After discussing alternative devices, he chose to enroll in the Ventracor Bridge to Transplant Trial and was implanted with a VentrAssist LVAD (pictured) on December 17, 2007. He was the first patient to receive this novel miniaturized device at Montefiore and one of the first implanted with this device in the New York metropolitan area.

Mr. Gavejian and his family received full instruction to care for his LVAD. The controller and batteries are encased in a backpack that can also be worn across the shoulder allowing few limitations. He was discharged home on POD # 17.

Mr. Gavejian said that before he got the LVAD his activities of daily living were very limited. He expressed amazement at how quickly he recovered from the surgery and at how many activities he was able to resume. The day after discharge he was dining out

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*A Minimally Invasive Approach  
to the Baby with Hypoplastic  
Left Heart Syndrome  
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# Minimally Invasive Approach to the Baby With Hypoplastic Left Heart Syndrome

by Mark Travin, MD

**R**ESULTS OF SURGERY FOR NEONATES WITH HYPOPLASTIC LEFT HEART SYNDROME (HLHS) AND OTHER COMPLEX FORMS OF SINGLE VENTRICLE HAVE BEEN IMPROVING, BUT ARE STILL SUBOPTIMAL.

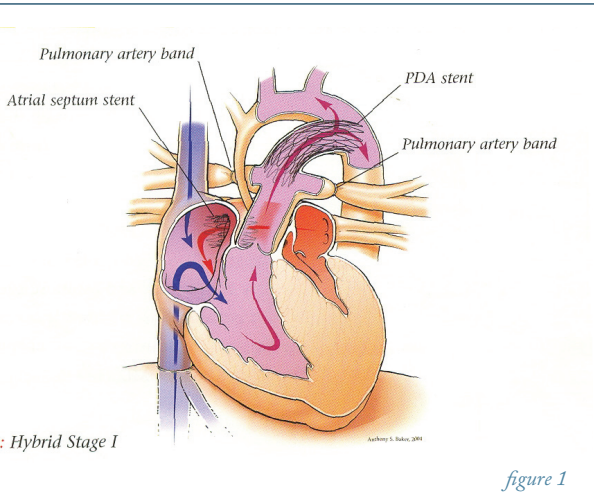


figure 1

A report from the Congenital Heart Surgeon's Society registry, surveying 29 institutions that treat this disease, demonstrated only a 54% survival after five years following the traditional approach of three bypass surgeries. Additionally, increasing data suggest worse neurologic outcomes in this patient group when compared to children who have not undergone open heart surgery in early infancy. Thus, despite advances in the surgical management of HLHS, there is still significant work to be done to improve outcomes.

The operations allow the circulation to be redirected to the lungs, as well as make the right ventricle do the work of the hypoplastic left ventricle. Goals for the first operation are 1) creating an unobstructed atrial septum 2) create unobstructed cardiac output as the right ventricle takes over the work of the hypoplastic left ventricle and 3) create balanced

pulmonary blood flow (Figure 1). The second and third operations allow the child to accept passive venous blood flow to the lungs, with a Glenn Shunt (superior vena cava to the right pulmonary artery) and Fontan Operation (inferior vena cava to pulmonary arteries). In most series reviewing results of HLHS palliative surgeries,

it is quite clear that most of the morbidity and mortality is related to the extremely complex first of these surgeries ("Stage I palliation") that requires cardiopulmonary bypass and often circulatory arrest.

The Pediatric Heart Center at The Children's Hospital at Montefiore has adopted a minimally invasive approach to this first operation in an attempt to attenuate the risk to the newborn baby. With a hybrid technique of combining surgical and interventional cardiology procedures, neonates can have their cardiopulmonary status palliated without bypass at all. This avoidance of the need for cardiopulmonary bypass and circulatory arrest in the early months of life may potentially allow patients to avoid some of the serious risks associated with both bypass support of the neonate as well as the complexity of this surgery. At the second surgery, the aortic arch is reconstructed and it

is hoped that having this surgery performed at a somewhat older age may improve ease of the procedure as well as surgical success.

Through a traditional skin incision, pulmonary blood flow is controlled with small bands of prosthetic material, and surgical access allows placement of a stent to allow for unobstructed right ventricular flow to the descending aorta as well as the diminutive ascending aorta and coronary vessels (Figure 2). The atrial septum can be opened before, during or after this procedure.

After the infants have undergone this hybrid procedure, they are seen weekly in close follow up until it is time for the second operation. In this setting, the second operation not only allows for the Glenn Shunt, but for permanent aortic reconstruction. At this age and size, however, the reconstruction is often better tolerated and a wider variety of perfusion techniques are available to decrease morbidity to the child.

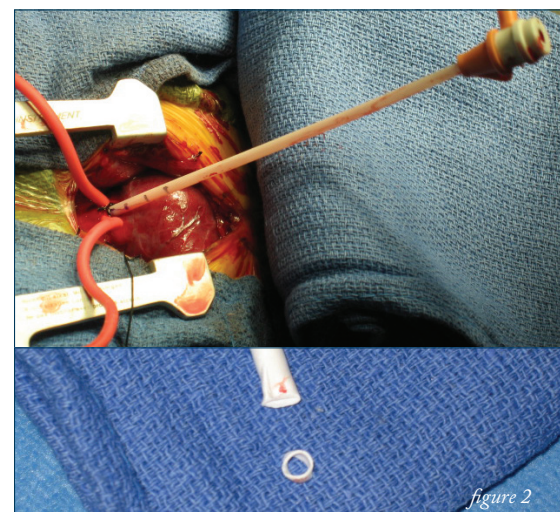


figure 2



## Hypoplastic Left Heart Syndrome *(continued from page 2)*



The data are still being collected, but it is felt that by reducing morbidity at the first stage of palliation for HLHS mortality can be reduced through all three stages. Early data for this approach are promising with morbidity and mortality rates that are as good as or better than the more traditional approach, despite this approach being relatively new.

With increasing levels of experience with this technique, it is hoped that both short and long-term results will continue to improve resulting in improved survival and quality of life for children with HLHS.

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## Prevention Regimens Save Lives by Rob Ostfeld, MD

**A**S MOST OF YOU KNOW, CARDIOVASCULAR DISEASE IS THE NUMBER ONE KILLER OF BOTH ADULT MEN AND WOMEN. NUMBER ONE. WHEN PATIENTS HAVE CARDIOVASCULAR DISEASE, IT PUTS INORDINATE STRAIN ON THEIR HEART AND BLOOD VESSELS.

Thinking of the body as a turbo charged engine, when one has cardiovascular disease, the turbo engine is no longer running as smoothly as it could or should. Nobody wants that.

At the Montefiore-Einstein Heart Center, in addition to treating all aspects of cardiovascular disease, we work to prevent it from ever happening in the first place. Fortunately, by living a healthy lifestyle, which includes eating healthfully and exercising, not smoking, treating high blood pressure and high cholesterol, cardiovascular disease can be prevented up to 85% of the time.

It is important to share with patients that it is never too early to begin a prevention regimen. Amazingly, up to 66% of persons 12 years of age have early signs of cardiovascular disease. And, it is

never too late to start a prevention program, as patients will benefit from a healthy lifestyle even if they already have cardiovascular disease.

At the Montefiore-Einstein Heart Center, we ask our patients to sign “contracts” in which they promise to exercise regularly and to lose weight. In studies published in a major cardiac journal, we found that after our patients signed these “contracts,” they actually did exercise more. And, our patients lost more weight when compared to those who did not sign the “contracts.”

We were very excited by these results and we continue to work in a team effort with our patients in order to improve their health. At the Montefiore-Einstein Heart Center, we work together to achieve healthier lifestyles and healthier hearts.



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# Groundbreaking Electrophysiologist Leads Arrhythmia Service

by Danny Goldstein, MD

**T**HE MONTEFIORE-EINSTEIN HEART CENTER ARRHYTHMIA SERVICE ENJOYS INTERNATIONAL RENOWN, THANKS IN LARGE PART TO THE CONTRIBUTIONS OF ITS LONG-TIME DIRECTOR, JOHN D. FISHER, MD. FISHER TOOK THE HELM OF THE SERVICE IN 1975 AND MADE AN IMMEDIATE IMPACT BY ADDING ELECTROPHYSIOLOGY TO MONTEFIORE'S INTERNATIONALLY PROMINENT PACEMAKER PROGRAM HEADED BY SEYMOUR FURMAN, MD.

Still an active clinician and professor, his leadership and influence as a researcher, practitioner, academician, administrator and contributor to the literature have left an indelible mark on the field.

“Without question, Dr. Fisher is one of the best electrophysiologists in the world,” says Richard N. Kitsis, MD, chief of the Cardiology Division at the Montefiore–Einstein Heart Center. “Dr. Fisher was there from the start, spearheading the effort to understand, diagnose, and develop treatments for electric disorders in the heart,” adds Dr. Kitsis.

Dr. Fisher earned his B.A. from Yale University and his medical degree from Wayne State University School of Medicine. He completed his medical residency at Boston City Hospital and New York Hospital–Cornell Medical Center, as well as postgraduate Cardiology and Electrophysiology fellowships at Montefiore and the Royal Postgraduate Medical School (now the Imperial College Medical School)—Hammersmith Hospital in London, England.

His fellowship at Hammersmith would prove to be a watershed moment in Dr. Fisher's early career, as it was there that he began to immerse himself in the study of Hypertrophic Cardiomyopathy under the tutelage of Prof. John

F. Goodwin, who was pioneering the field at the time. It was also there, while researching patterns of arrhythmia symptoms [with Dr. D.M. Krikler], that Dr. Fisher pioneered serial exercise testing for the diagnosis and treatment of patients who developed abnormal rapid heart rhythms when excited or under stress. This condition is now known as “catecholaminergic polymorphic ventricular tachycardia”. The original family that benefited from this therapy remains in contact with Dr. Fisher, and the diagnosis was confirmed in 2007 by newly developed genetic testing.

Dr. Fisher has spent three decades as director of Montefiore's Arrhythmia Service (which now includes both Electrophysiology and Pacemakers/ICDs) and as a Professor of Medicine at the Albert Einstein College of Medicine. He has held a number of critical administrative and institutional roles during that period, including serving for 11 years as chief of Montefiore's Cardiology Division. His contributions to the medical community as a whole have been no less impressive, through active participation in key national and international medical societies and his position as editor-in-chief of “Pacing and Clinical Electrophysiology” (PACE). Dr. Fisher has published extensively on subjects ranging

*“Without question, Dr. Fisher is one of the best electrophysiologists in the world.”*

from antitachycardia pacing, serial electropharmacologic testing, early ablation of WPW and early transvenous defibrillation. The Montefiore–Einstein Heart Center's Arrhythmia Services concentrates on patient care and comfort while providing a full battery of invasive and non-invasive diagnostic testing to secure accurate diagnoses and to deliver the best course of treatment. “Our Heart Center is committed to providing state of the art, compassionate care, maintaining an internationally renowned staff, and pushing the limits of current medical knowledge with extensive clinical research, and Dr. Fisher is the personification of that commitment,” notes Dr. Kitsis. “Patients, who are understandably frightened to learn that there is something interfering with their normal heart rhythms, immediately sense and are reassured by Dr. Fisher's caring and expertise.”

You can reach Dr. John Fisher at 718-XXX-XXX or via email at: xxxxxx@montefiore.org



# Noninvasive Cardiology Keeps Lab at the Cutting Edge

by Daniel Spevack

**T**HE NONINVASIVE CARDIOLOGY LAB AT THE MONTEFIORE-EINSTEIN HEART CENTER IS ONE OF THE LARGEST IN THE REGION, PERFORMING IN EXCESS OF 25,000 ECHOCARDIOGRAPHIC PROCEDURES EACH YEAR. INFORMATION TECHNOLOGY HAS BECOME A KEY ASPECT OF MANAGING AN OPERATION OF THIS SIZE.



In turn, Montefiore has invested in a large upgrade to the PACS computer system that stores and displays echo images for the interpreting physicians

and also allows for timely and accurate reporting of test results. This Enterprise PACS system allows referring physicians to view

echo reports alongside the echo images while in their offices at the click of a button.

Montefiore has also invested in keeping only state-of-the-art echo machines, enabling the improved image quality and novel echo techniques to be utilized. The lab regularly makes use of 3D- and 4D- imaging and other advanced imaging techniques, such as automated ejection fraction measurement. Other novel techniques that measure the degree of ventricular synchrony during contraction, such as tissue synchronous imaging and speckle tracking are also employed.

The noninvasive lab staff is committed to excellence. All echo exams are performed by professional board certified sonographers. All exams are interpreted by board certified cardiologists who are level II and level III trained in echocardiography.

Initiatives to improve access to echo scheduling via phone, fax or email have also been initiated. These initiatives demonstrate Montefiore-Einstein Heart Center's commitment to excellence and service.

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## Cardiothoracic Surgery Team Travels to El Salvador



*(Left to right) Dr. Sam Weinstein, Isaac Hammond, Roxanne Pisa, Heather Tucker, David Falloon, David Stern, Dr. Rob Michler, Suzanne Courtwright, Mike Gardocki, Dr. Carlene Broderick, Dr. Lari Attai.*

Robert E. Michler, MD, surgeon-in-chief and chairman of the Departments of Surgery and Cardiothoracic Surgery at Montefiore Medical Center, is pictured with a team of Montefiore-Einstein Heart Center physicians and staff in San Salvador, El Salvador. The team joined 80 other healthcare workers from around the U.S. and Latin America to treat congenital heart conditions in children and young adults under the auspices of Heart Care International, an organization that Dr. Michler founded in 1994. To date, Heart Care International has performed over 600 operations worldwide.

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*Ventracor (continued from cover)*

and the following day he went shopping for a door at Home Depot.

He said that the LVAD has allowed him to do things that he was restricted from doing previously. “My legs were always swollen, making it very difficult for me to get around,” he said. “When I went to court, although it was only a couple of blocks, I had to have my secretary drive me. I would get very tired all the time; I would take naps at home and at work.”

But since receiving his LVAD, Mr Gavejian adds, “I go to the office with my LVAD, and plug myself in. There are two flights of steps in the front of the building,

I am able to walk up both flights which I wasn’t able to do before. People notice how awake I am in conversation. I smile more.”

Mr. Gavejian often expresses his satisfaction with his LVAD and the treatment he received at Montefiore. He said he is “honored to be the first one with this new device.” He said “from a patients’ perspective, the team is important, you don’t just see your doctor; he sees a nutritionist, the coordinators, the Physicians Assistant (PA), and everyone contributes to my care and well being”. Mr. Gavejian has become an advocate of this therapy and often speaks with prospective LVAD patients, telling them about life with a LVAD.

*For further information about Ventracor and the LVAD bridge to transplant, contact Dr. Daniel Goldstein at 718-920-2144 or via email at: [dgoldste@montefiore.org](mailto:dgoldste@montefiore.org)*



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