

The Beat Goes On



WORKING WITH YOU TO PROVIDE LIFE-SAVING SUPPORT

Many patients develop medical conditions that are life threatening, and medical professionals are often helpless in preventing a bad outcome. Sudden cardiac arrest and arrhythmias secondary to coronary artery disease are often fatal, with many people dying before they can receive medical attention. But thanks to timely and comprehensive medical interventions, one such patient survived his complications to receive life-saving care — first through mechanical circulatory support and then transplant — from the multidisciplinary heart failure team at Rush.

Robert S.D. Higgins

Robert S.D. Higgins, MD
Chairperson, Department of Cardiovascular-Thoracic Surgery

Mechanical Circulatory Support Provides Life-Saving Help for Patients With Advanced Heart Failure

Presentation

Mr. B., a 65-year-old male with a history of coronary artery disease treated with coronary artery bypass surgery, was referred by his physician in Michigan to the Advanced Heart Failure, Heart Transplant and Mechanical Circulatory Support Program at Rush University Medical Center for evaluation. Fourteen years after his coronary bypass, Mr. B. developed evidence of progressive heart dysfunction, congestive heart failure, severe pulmonary hypertension and malignant arrhythmias requiring the placement of an automatic internal cardiac defibrillator. Within months he became more short of breath, and in spite of aggressive medical therapy, his symptoms worsened.

Treatment

Because his overall cardiovascular function was continuing to deteriorate, members of the heart failure team, led by José Méndez, MD, and Barbara Pisani, DO, medical co-directors of the heart failure program, recommended a heart transplant for Mr. B. After comprehensive evaluation by the multidisciplinary transplant team, including medical, surgical and psychosocial assessments, he was listed for transplantation. After just a few months, he was admitted to Rush University Medical Center following a near fatal ventricular arrhythmia.

Because Mr. B.'s physicians exhausted all medical options available to a patient with advanced congestive heart failure, Mr. B. underwent urgent placement of a left ventricular assist device, the HeartMate LVAD, which provided mechanical circulatory support for his failing heart. This life-saving technology provided the opportunity for Mr. B. to rehabilitate himself with the assistance of dozens of physical and occupational therapists, nurses, and nutritionists. In addition to helping Mr. B. gain physical strength and improve his nutritional status, this team of specialists provided emotional support so that he could become a better candidate for transplantation.

Following implantation of the LVAD, Mr. B. developed complications, including bleeding and right ventricular failure, that required the placement of a right ventricular assist device to support the right side of his heart. He was in surgical intensive care for six weeks, and thanks to the outstanding care he received from the critical care nurses and physicians in the intensive care unit, his complications resolved and his physical and emotional status improved to the point where he could undergo the rigors of a transplant.

Two months later, a suitable donor heart was found. Robert S.D. Higgins, MD, surgical director of the transplant program, and his team successfully removed the left and right ventricular assist devices and performed the heart transplant. Mr. B. had the mechanical ventilation and medications supporting his new heart removed within 10 days postsurgery. With the help of his team of nurses, dietitians, physical and occupational therapists, and rehabilitation specialists, Mr. B. was out of bed and ambulating without difficulty within a week. After a successful recovery, he was discharged to home three weeks after transplant.

Conclusion

Three months after presenting to the hospital with his original arrhythmia, Mr. B. returned to his home town in Michigan, where he enjoys supporting his favorite college football team. His case demonstrates that mechanical circulatory support in patients with advanced congestive heart failure can provide life-saving support until they recover from complications related to their disease. It truly is a bridge to a brighter future for many patients.



Figure 1

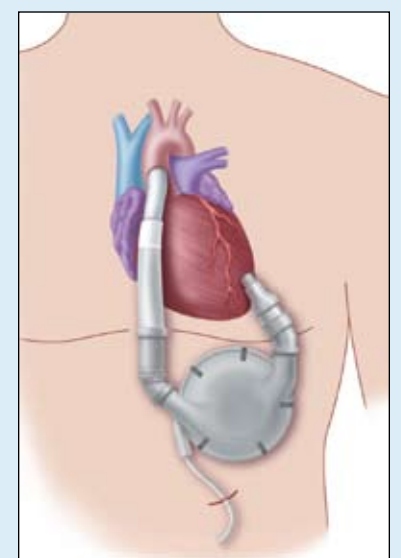


Figure 2

Figure 1: Surgical implantation of mechanical circulatory support device

Figure 2: Illustration of left ventricular device hook up

Focus on Quality

Support for Patients With Structural Disease

The Advanced Heart Failure, Heart Transplant and Mechanical Circulatory Support Program at Rush provides comprehensive, state-of-the-art care for heart failure patients. The program offers advanced mechanical and surgical care at every stage of the process and features one of the region's most experienced cardiac transplant teams; in fact, the team completed 11 successful transplants in 2008.

Investigational strategies are also being studied by cardiologists at Rush, such as intramyocardial stem cell therapy to reduce angina episodes in patients with refractory chronic myocardial ischemia.

The team at Rush has extensive experience in the surgical implantation of ventricular assist devices as destination therapy or as a bridge to transplantation, including the VentrAssist left ventricular assist device (see below), a third-generation implantable pump designed for long-term use in patients with end-stage heart failure.

Clinical Trial

VentrAssist Left Ventricular Assist Device Trial

The Ventracor VentrAssist is a third-generation left ventricular assist device that is being tested both as a bridge to heart transplant and as destination therapy in advanced stage heart failure patients. The device weighs only 10 ounces and measures 2.5 inches in diameter, making it suitable for both pediatric and adult applications. It connects to the left ventricle of the diseased heart to help improve function and aids in restoring a better quality of life.

Participants must meet the following criteria:

- Be 18 years of age or older
- Be able to sign informed consent
- Have a body surface area of greater than or equal to 1.5 meters square or between 1.2 and 1.5 meters squared
- Be listed with the United Network for Organ Sharing on status 1
- Be approved for transplant by the transplant committee at Rush

**For more information, contact
Jaclyn Janoski, MS, research
coordinator, at (312) 563-2374 or
jaclyn_janoski@rush.edu.**

Referral Criteria

When to Refer Patients to the Advanced Heart Failure, Heart Transplant and Mechanical Circulatory Support Program

Consider heart failure or transplant evaluation as a second opinion or in the following situations:

- Patient has New York Heart Association class 3 or 4 heart failure despite medical therapy (especially if patient has renal insufficiency and/or pulmonary hypertension).
- Patient's ventricular tachycardia is not amenable to medication or to interventional therapy.
- Patient's angina is not amenable to revascularization (percutaneous or surgical).
- Patient's peak exercise oxygen consumption (PvO₂) <15ml/kg/min.
- Patient has had two or more heart failure admissions in a six-month period.
- Patient has a poor psychosocial situation that might benefit from heart failure or transplant resources (education, social work, etc.).
- Patient planning to undergo high-risk coronary artery bypass graft/valve surgery has a low ejection fraction and may benefit from mechanical circulatory support as a bridge to recovery or to transplantation.
- Patient's heart failure medications cannot be titrated due to hypotension or other symptoms.
- Patient requires high doses of diuretics (1.5 mg/kg of furosemide or equivalent).
- Patient requires inotrope therapy.
- Standard medical therapy has failed, and patient is considering a mechanical assist device as a bridge to transplant or as destination therapy.
- Standard medical therapy has failed, and patient is considering experimental drug therapy.

Meet Our Physicians

Advanced Heart Failure, Heart Transplant and Mechanical Circulatory Support Program

Advanced Heart Failure and Heart Transplant Cardiology

José C. Méndez, MD

Areas of interest: Heart failure; heart transplantation; critical care cardiology; cardiac mechanical assist devices; cardiac catheterization; cardiac intensive care; clinical trials

G. Martin Mullen, MD

Areas of interest: Heart failure; heart transplantation; cardiovascular disease

Barbara Pisani, DO

Areas of interest: Heart failure; heart transplantation; cardiovascular disease

Heart Transplantation

Robert S.D. Higgins, MD

Areas of interest: Adult cardiac surgery, specializing in coronary revascularization and valve repair; management of end-stage ventricular disease; cardiac transplant; mechanical assist device

Anthony Perez-Tamayo, MD, PhD

Areas of interest: Adult cardiac surgery; heart transplantation; mechanical circulatory support; heart failure

Douglas Smego, MD

Areas of interest: Adult cardiac and aortic reconstructive surgery; use of deep hypothermic circulatory arrest in complex aortic cases; mitral valve repair

Physician Assistants and Nurse Practitioners

Maria Bayas, RN, APN

Cardiac and vascular surgery

Diane Martin, MSN, APN, ACNS-BC

Heart failure and heart transplant surgery

Katie Schaefer, MS, PA-C

Cardiac and vascular surgery

Anne-Marie Tasler, RN, APN

Cardiac and vascular surgery

Please call (312) 563-2762 for a consultation, an appointment or additional information.

PLEASE NOTE: All physicians featured in this publication are on the medical staff of Rush University Medical Center. Some of the physicians are in private practice and, as independent practitioners, are not employees or agents of Rush University Medical Center.