



CEDARS-SINAI MEDICAL CENTER®

**NEWS**

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**HIGHLIGHTS:**

A new device that temporarily assists a weakened heart can be threaded into position through blood vessels. The procedure, accomplished in a cardiac catheterization lab, is a potential lifesaver for patients who arrive in the emergency room after experiencing damaging heart attacks and those whose hearts are too frail to undergo major procedures without temporary support. Cedars-Sinai's Cardiovascular Intervention Center is one of the first locations in the western states to provide this therapy.

**MINIMALLY INVASIVE PROCEDURE INSERTS DEVICE TO PROVIDE TEMPORARY SUPPORT FOR DAMAGED HEART**

**LOS ANGELES (Aug. 4, 2004)** – For patients who suffer severe heart damage during a heart attack and those with weak hearts who must undergo high-risk procedures, a new ventricular assist device that can be inserted without open-chest surgery assumes 85 percent of the heart's pumping function for several hours or more than a week. The potentially lifesaving device benefits patients who arrive in the emergency room after experiencing damaging heart attacks, as well as those whose hearts are too frail to undergo major procedures without temporary support.

David Doerfler, Lancaster, CA, credits the TandemHeart system and Raj Makkar, MD, co-director of Cedars-Sinai Medical Center's Cardiovascular Intervention Center and co-director of the Interventional Cardiology Research Program, with saving his life.

"I couldn't have been in better hands. If it wasn't for Dr. Makkar, I wouldn't be here right now," said Doerfler, 45, who apparently suffered a heart attack last October or November while working to remove concrete in his father's yard.

"I live in Lancaster, which is 60 miles north of LA, and my father is a doctor. I guess I had a heart attack and didn't realize it. A month and a half went by and I thought I had pneumonia or something," Doerfler recalled. "I would get up out of bed, go to my kitchen, go to my bathroom, and I'd barely make it back to my bed, completely out of breath."

When he finally went to a nearby emergency room, doctors found that he had serious blockages in several coronary arteries and his heart was enlarged, a common sign of congestive heart failure. His father, a family practice specialist, contacted a colleague who recommended Dr. Makkar.

"Mr. Doerfler had a very dramatically reduced left ventricular ejection fraction, a measure of the heart's pumping ability. Angioplasty would have been fraught with a high risk of complications," Dr. Makkar said. "Therefore, we supported his heart with the LVAD, which gave us extra assurance and increased the safety of

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the procedure while we opened his arteries.”

Today, Doerfler takes medications to keep his diabetes under control, thin his blood and control his blood pressure. He’s following his father’s advice to get some exercise. And he’s thankful to be alive.

Cardiologists at Cedars-Sinai were the first on the West Coast and among the first in the nation to use the TandemHeart PTVA® device, which is inserted into the heart by way of the femoral artery – similar to the approach used in balloon angioplasty. In fact, like angioplasty, the procedure is completed in the hospital’s cardiac catheterization laboratory.

Approved by the Food and Drug Administration about six months ago for short-term use, the small, six-bladed, centrifugal impeller is guided through blood vessels and placed in the heart’s left atrium, according to Dr. Makkar.

By diverting oxygenated blood into arterial circulation at a rate of four liters per minute, it dramatically reduces the workload of the left ventricle, the major pumping chamber. The internal device is connected by thin tubes to a small, lightweight pump that remains outside the body. The system’s power supply unit, mounted on a portable cart, is controlled and monitored by a primary and backup microprocessor.

For a patient arriving at the hospital after suffering a major heart attack, the PTVA (percutaneous trans-septal ventricular assist) system is potentially life-saving. In such situations, damage to the heart muscle can prevent it from pumping as much oxygenated blood as the body’s organs need to survive. Since the late 1960s, cardiologists have inserted an intra-aortic balloon pump (IABP) that inflated and deflated to help push blood into the coronary arteries. But the IABP reduced the heart’s work by only about 15 percent and most patients died within a short time.

The new device quickly takes over about 85 percent of the heart’s pumping function, making it an attractive option in several circumstances.

“Some patients have a hemodynamic compromise that is rather temporary. We can put in the device to support the heart while interventions and rest allow it to improve naturally,” said Dr. Makkar.

“The device is also useful for treating very sick patients whose hearts are extremely weak and in need of aggressive therapies,” he added. “If we subject them to major surgery or a very high-risk angioplasty without support, the chance of major complications or death is very high. In these cases, the device enables patients to undergo procedures that may not have been available to them before. And for those who are waiting for transplantation, the TandemHeart system can serve as a bridge, helping them survive until a donor heart becomes available.”

Although the device has been left in place for up to three weeks in Europe, it is approved for short-term use in the United States and not intended to replace surgically implanted ventricular assist devices (VADs). The implantable devices are used as a bridge to recovery or a bridge to transplantation for days, weeks, months or even years until the heart is able to function on its own or until a donor heart becomes available. Cardiothoracic surgeons at Cedars-Sinai specialize in implanting the longer-term devices and they collaborate with biomedical engineers and manufacturers to develop and fine-tune new generations of technology.

“Because implantable devices require a much bigger surgery and much more expense, the minimally invasive approach is a very appealing alternative when patients need immediate intervention and temporary support,” Dr. Makkar said. “Cedars-Sinai has a respected team of cardiothoracic surgeons, cardiologists, nurses and other professionals who work together to offer a wide range of interventions to meet an equally wide range of patient needs.”

In July, *U.S. News & World Report's* special edition on the best hospitals ranked Cedars-Sinai among the top three hospitals in the west and top 14 in the nation for heart care and heart surgery.

Cedars-Sinai is one of the largest nonprofit academic medical centers in the Western United States. For the fifth straight two-year period, it has been named Southern California's gold standard in health care in an independent survey. Cedars-Sinai is internationally renowned for its diagnostic and treatment capabilities and its broad spectrum of programs and services, as well as breakthroughs in biomedical research and superlative medical education. It ranks among the top 10 non-university hospitals in the nation for its research activities.

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