

Heart Health Updates from UA

New Pulmonary Valve Procedure Avoids Open-Heart Surgery

Veronica Smith, age 26, was the first person in Arizona to receive a new pulmonary valve without having open-heart surgery.

The procedure, known as the Melody Transcatheter Pulmonary Valve (TPV) Therapy, was approved by the FDA in 2010 and performed in March at the University Medical Center cardiac catheterization laboratory by pediatric interventional cardiologists Ricardo Samson, MD, G. Michael Nichols, MD, and the UMC catheterization lab team.

Veronica was born with the congenital heart defect known as tetralogy of Fallot and has undergone a previous heart surgery to replace the pulmonary valve in her heart.

“Over time, the artificial valve wears out such that it would need to be replaced approximately every seven to 10 years,” says Dr. Samson, a UA Sarver Heart Center member. “In the past, pediatric patients who had their artificial valve placed during their first decade of life had to face multiple open-heart surgeries over the course of their lifetime. So, placing the Melody TPV by catheterization saves them from having numerous surgeries.” ♥



The “hybrid team” includes UA Sarver Heart Center members Karl B. Kern, MD, chief of cardiology and director of the cardiac catheterization lab; Robert S. Poston, MD, chief of cardiovascular and thoracic surgery; and Molly A. Szerlip, MD, interventional cardiologist.

Hybrid Surgery-CathLab Gives Patients Best of Both Worlds

UMC’s catheterization lab opened a new hybrid room that gives surgeons and cardiologists the ability to work in phases to do procedures that are most appropriate for an individual patient’s needs. Many factors are considered when physicians decide whether a blocked artery should be unblocked by bypass surgery or catheterization. “For example, we consider the size of the arteries and veins, how hard it is to get to a spot and whether the patient also needs valve surgery,” explains Molly Szerlip, MD, an interventional cardiologist.

When teaming up with Robert Poston, MD, chief of cardiothoracic surgery, his robotic skills for bypass surgery combined with a cardiologist inserting a stent with a catheter make

these procedures less invasive for more patients.

The first patient was a 54-year-old man with unstable angina and a left main blockage who had very small vessels. “In the past, this patient would have been treated with a full sternotomy (cutting the breastbone) and two bypass grafts. The hybrid procedure technically was more advantageous for his circumstances, giving him the minimally invasive nature of stenting and the longevity of connecting the LIMA to the LAD,” says Dr. Poston. (That is, connecting the left internal mammary artery to the left anterior descending coronary artery.) Next, Dr. Szerlip inserted a stent in the left circumflex artery (the artery to the bottom part of the heart). ♥

Developing a Catheter that Can Map and Zap

Electrophysiology cardiologists who specialize in heart rhythm disorders soon may be able to place sensitive electronics inside their patients’ hearts with less invasiveness, enabling more sophisticated and efficient diagnosis and treatment of arrhythmias.

Electrophysiologists often use multiple catheters for mapping arrhythmia patterns

in the heart—often in a point-by-point fashion as the catheter is maneuvered in search of irregularities. They then use a specialized ablation catheter to cauterize the site where the arrhythmia originates.

“The new catheter is all in one, so it maps and zaps,” says John A. Rogers, PhD, a professor of materials science and engineering at the University of Illinois, who led a research team that included Marvin Slepian, MD, of the UA Sarver Heart Center. He worked

with other cardiologists to determine features that would be most useful for patient care. For example, the researchers added temperature sensors and mapped temperature distribution on actual tissue as areas were ablated. “Adding such a feature gives us greater insight as to what we are actually doing to the tissue,” said co-author Dr. Slepian. “This will enhance the safety and effectiveness of ablation catheters, providing a new level of precision that we have not had to date.” ♥