

Pioneering heart surgery spectacle

Doctors show off robotic aid

With audience in Anaheim, Spokane operation goes smoothly

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Two days after the Rose Bowl, about 150 surgeons were once again glued to the television in Southern California.

They gathered at an Anaheim hotel Friday to watch a pair of Spokane doctors repair a heart valve in a patient at Sacred Heart Medical Center. After 18 years as a cardiovascular surgeon, Dr. Leland Siwek has repaired a lot of mitral valves, the valve between the left atrium and left ventricle. What made this surgery, with the assistance of Dr. Branden Reynolds, so special was the participation of a third "partner," a robot named da Vinci.

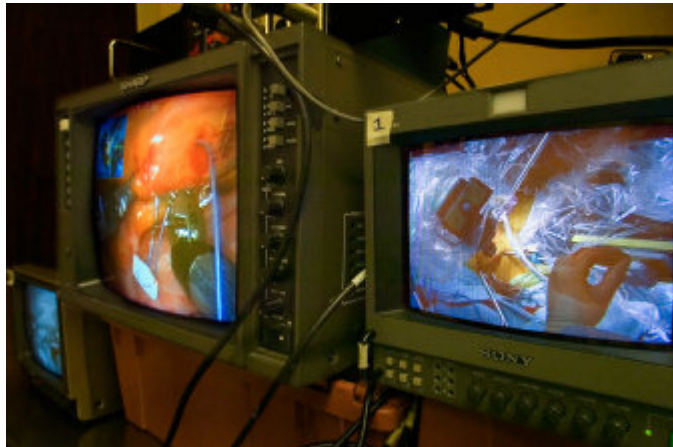
Only about four medical teams in the country have done as many robotic cardiac surgeries as Siwek and Reynolds, of Northwest Heart and Lung Surgical Associates – 35 procedures last year. Siwek first used Intuitive Surgical Inc.'s da Vinci on a patient two and a half years ago. Since then, he has achieved international acclaim and has trained dozens of surgeons in the use of the \$1 million robot.

Siwek said that initially candidates for the procedure were chosen selectively – relatively young patients who were not overweight and had minimal cardiovascular disease. Friday's patient, a middle-aged man, was such a candidate. His mitral valve was leaking blood back into the atrium because of a weak flap.

"As we got more comfortable, we became a little less selective," Siwek said of patients he is now willing to treat. "We also don't shy away from more complicated procedures."

So far, the team has repaired 50 mitral valves and replaced 10. There have been no conversions from repairs to replacements, no conversions to open surgery and no mitral regurgitation, meaning the valves don't leak after they are fixed. To a surgeon, those are pretty impressive statistics.

But there are at least two reasons a patient might prefer robotic surgery to open heart surgery. One is cosmetic. The robot leaves four small scars on a patient's side. Open surgery leaves one long scar right down the center of the chest.



Video monitors show the robotic heart procedure being performed by Drs. Leland Siwek and Branden Reynolds at Sacred Heart Medical Center on Friday. The screen at right looks down on the patient's chest, showing the ports for instruments and cameras while the one at left shows the instruments working on the heart. The two surgeons are pioneering the use of robotic equipment to minimize the invasive impacts of more traditional large opening procedures. O

The other reason is rapid recovery from surgery. The patient's rib cage doesn't have to be split open.

Before surgery on Friday, Reynolds and Siwek conducted a PowerPoint presentation for the Pacific Rim Robotics Symposium via video and audio feeds to the Hyatt Regency Hotel in Anaheim. While they spoke, their surgical team prepared the patient for heart and lung bypass by running two catheters up a vein and artery in the patient's groin.

Reynolds entered the operating room first and made the four incisions, one a "port" for a laparoscopic camera. Two ports accommodated the robot's two arms. The fourth was a working port, the one Reynolds used. Everyone in the room could see the surgeons' work in detail on overhead monitors.

There to record the procedure for the symposium in Anaheim was a video crew from Spokane's Station 3 Media. Siwek and Reynolds wore microphones and answered questions from a symposium moderator as they worked.

Da Vinci "docked" with the patient, its arms inserted into the ports. The lights in the room went dark to better see the video and vital-sign monitors around the room. Siwek gazed into a console not eight feet away from the operating table. Reynolds stood by the patient's side. Siwek, seeing through the robot's eyes in 3-D, cut through the pericardium with a cauterizing scalpel on the robot's right arm and a clamp, like an alligator clip, on the other.

Then the robot cut through the heart itself and found the mitral valve. A flapping piece of heart was cut off the "leaflet," or valve door, and Siwek and Reynolds working in tandem sutured the valve nice and tight so it would open and close properly.

The next step was to suture a horseshoe-shaped silicon-and-rubber band around the valve to give it structure.

Then the robot backed out the same way it came in. Its arms, manipulated by Siwek, sutured as they retreated. As many as a dozen nurses and surgical technicians watched the monitor, ready to leap into action should anything go wrong.

Siwek and Reynolds closed the atrium. The cardioplegia solution that helped stop the heart was removed as the heart was weaned off the bypass. A clamp was pulled off the aorta, and everyone watched the electrocardiogram as the heart returned to life on its own. The doctors checked for leaks, found one, and cauterized it.

The temperature in the room, which had been cooled to nearly 50 degrees so the patient would require less oxygen, slowly rose. The lights came back on. The lungs, which had been collapsed, giving the surgeons room to work, were ventilated. The robot was wheeled away from the patient. Catheters and cannulas were removed and wounds sutured.

Applause could be heard over the speaker from the hotel room far away. For now, Siwek and Reynolds are the only surgeons in the region who perform this surgery with a robot. In a few more years, as this procedure becomes more and more common, the doctors gathered at the Anaheim Hyatt will remember what they saw in Spokane on Friday.