

Getting to the heart of the matter

Robotics offer cardiac surgery patients faster recuperation and less pain through minimally invasive techniques

By Debra Gelbart

Until recently, open-heart surgery meant a long operation followed by a lengthy recovery. But a surgical robot being used at Scottsdale Healthcare Shea is changing how doctors and patients think of major cardiac surgery.

The daVinci surgical system includes a four-armed robot, directed by a surgeon from a computer console, that makes incisions — which sometimes cannot be performed by the human hand — in a well-lit, highly magnified, three-dimensional, high-definition field.

Scottsdale Healthcare Shea brought this new technology to Arizona in 2001, becoming the state's first hospital to use the daVinci robot in the operating room. The daVinci has been used in other medical specialties, such as urology and gynecology, for several years at Scottsdale Healthcare.

The daVinci robot also is used in heart surgery for mitral valve repairs. And that has made a huge difference for heart patients like Phoenix resident Armin Shafai.

In January, Shafai underwent minimally invasive surgery with the daVinci robot. Because the surgeon repaired his mitral valve using the robot instead of replacing the valve, Shafai was able to remain a commercial airline pilot.

"You can't keep your pilot's license if you've had a valve replacement," Shafai said. "But you can if you have a valve repair."

"I have a more efficient, stronger heart now, and I have more endurance than I did before the operation."

— Armin Shafai
Heart surgery patient



Cardiothoracic surgeon Michael Caskey, MD (left), poses with the da Vinci surgical robot, which he used to repair the mitral valve of pilot Armin Shafai. The valve repair, instead of a replacement, allowed Shafai to keep his commercial airline pilot's license.

Repair vs. replacement

Mitral valve repair is required when, through degeneration or disease, the valve starts to leak. Mitral valve replacement may be required if the valve is extensively damaged. That was not the case with Shafai, although he said at least one doctor had told him he could be a candidate for valve replacement.

"I just didn't want a replacement," said Shafai, 41, the father of twin daughters born in October. "Not only would I lose my pilot's license, I knew they'd have to crack open my chest, too, and it would take me a lot longer to recover."

The repair surgery with the daVinci robot avoided opening the chest to reach the heart. Instead, Shafai's cardiothoracic surgeon, Michael Caskey, MD, used the robot to help him make only small incisions.

With conventional minimally invasive heart surgery that doesn't use the robot, "you still have to cut the muscles between the ribs and spread the ribs," said Dr. Caskey. "When you use the robot, you don't have to spread the ribs."

Avoiding that step can save the patient about two weeks' recovery time. Typically, open-heart surgery requires six weeks just to

recover from breaking the breastbone, said Lynn Maliza, nursing supervisor of the heart team at Scottsdale Healthcare Shea.

"And the patient also spends two fewer days in the hospital right after the operation," when the breastbone is not broken, she said.

Shafai spent five days in the hospital after his surgery, and with each passing day, his pain level diminished. "My pain level had dropped drastically by the time I left the hospital," Shafai said. "And as the pain was reduced, my energy level increased."

Amazing visualization

The surgeon also gets significant advantages with the daVinci robot, which in turn benefits the patient.

"You get amazing visualization of the surgical field. It's better than the naked eye because you can zoom in," Dr. Caskey said. "And the surgical instruments can rotate like your own wrist."

Karen Fair, robotics coordinator at Scottsdale Healthcare Shea, noted that "the robotic system used now has been enhanced so that it's ideal for mitral valve repair."

This advanced technology "allows us to

give more patients who need it the opportunity to have minimally invasive heart valve surgery," said Jane Wagner, the director of surgical services at Scottsdale Healthcare Shea. "That will mean less invasive procedures and quicker recovery time for patients."

Investing in new technology

Scottsdale Healthcare Shea has two daVinci robotic systems that surgeons use almost around the clock.

"Scottsdale Healthcare believes hospitals are obligated to provide patients with the latest and greatest innovative research, equipment and instrumentation, and it's a commitment we take very seriously," said Robert Gianguzzi, associate vice president for heart and vascular services. "It's important for us to be innovative and invest in new technologies so we can provide the best medicine available."

Armin Shafai is grateful for that. "My cardiologist said that now he wouldn't be able to tell that I had any problem with my mitral valve," Shafai said. "I have a more efficient, stronger heart now, and I have more endurance than I did before the operation. I'm so glad I was able to have the kind of surgery I did."

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