San Diego's biggest medical provider is all in on robot-assisted surgery

May 28 2024, by Paul Sisson, The San Diego Union-Tribune

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Sharp HealthCare is among 11 medical providers worldwide to gain early access to the next generation of robot-assisted surgery. While this accomplishment may seem like a one-off upgrade, it actually signals a

years-long shift in how the region's largest health system operates.

When it announced its new da Vinci 5 system in March, Sunnyvale's Intuitive Surgical Inc. said its first installations would go to "those with mature robotic surgery programs," meaning that in order to have one of these new machines, Sharp had to have already made robotic surgery a priority in its day-to-day operations.

And that, said Chris Walker, chief operating officer for Sharp Memorial Hospital in Serra Mesa, is indeed the direction Sharp has taken in recent years. In 2019, he said, five of the medical center's 39 operating rooms were equipped with da Vinci robots. Now, the total is 14.

Given that each of these robots and the associated control equipment costs more than $1 million, it is a significant change in strategy.

While there remains active debate about whether robotic surgery offers proven gains over the hand-operated and less-costly "laparoscopic" methods it seeks to replace, Sharp officials say they have seen enough results examining their own data to make major commitments. Walker said examining five years of data on surgical results that compared and contrasted robots with other minimally-invasive methods, and with traditional "open" surgeries, found clear differences.

"We looked at the differences and we tried to understand where there was less complication so, less surgical site infection, less bleeding, less (intensive care unit) utilization, shorter total length of stay," Walker said. "It was pretty clear that robotic surgery was superior in outcomes and, in some cases, half the length of stay."

Those kinds of statements get immediate push back from researchers such as Dr. Kyle Sheetz, a University of Michigan transplant surgeon who studies the adoption of new technology in medicine. Having studied

robotic surgery trial results and having conducted his own research on the topic, he said he views claims of better results with skepticism.

"The evidence for whether it makes patient outcomes better is extremely mixed," Sheetz said. "There are in fact zero randomized controlled trials in any operation that show robotic surgery is better than laparoscopy."

He was part of a research team that published a paper in 2023 that analyzed more than 1 million gallbladder removal surgeries—technically called cholecystectomies—among Medicare beneficiaries from 2010 through 2019, finding a higher rate of bile duct injury for robotic procedures compared to the equivalent laparoscopic procedure. Technically, the robotic route had more than three times as much injury, though both methods saw such complications occur in less than 1 percent of cases.

Laparoscopy and robotic surgery, after all, have many essential similarities. Both rely on small half-inch abdominal incisions to provide access for long, thin surgical instruments and tiny video cameras. Using these tools simultaneously allows surgical teams to access locations in the abdomen, chest and pelvis without the large six-to-12-inch cuts needed to make enough room for surgeons to put their hands inside a patient's body.

For decades, doctors have stayed at the bedside, squeezing and twisting mechanical controls connected to tiny grasping, cutting and even electric cauterization tools, watching their work in real time on operating room video screens.

But robotics is removing surgeons from the bedside, sitting them at sleek consoles where they duck their heads into helmet-like headsets with separate screens for right and left eyes which are connected to right and left cameras, giving a three-dimensional view of anatomy.

Hands rest on digital joysticks connected electronically to four robot arms that move tools, cameras and lights inside the body.

However, this extra equipment, and its maintenance, create a per-surgery cost that is greater than is the case for laparoscopy. A 2022 study that compared hundreds of robot and laparoscopic cancer surgery cases found that direct costs were about $1,000 greater for robotic with about $1,600 more expense in supply cost.

Procedure cost, Walker counters, are only part of the picture. Medical providers are often paid one fee for a patient's total encounter, including preparation and recovery.

"People always say, 'well, robots cost more per case,'" Walker said. "You know, they do, but I don't get to measure things on case costs alone. I have to consider the total cost of care.

"If I have less bleeding, that means I'm exposing patients to less blood which means I don't have to pay for (replacement) blood ... if I have less surgical site infections, that's less cost, that's less hospital duration."

Critics, though, counter that many of those advantages are also applicable to other forms of minimally-invasive surgery.

Here, though, the change underway is also about the desires of the people doing the work.

While surgeons are free to use whatever tool they wish to get a given job done, and its hospitals still maintain full compliments of equipment for laparoscopic and open surgeries, Walker said that many of the people doing the work these days are simply demanding access to robotics.

Many newly hired surgeons, he said, have built up expertise using robots

in training. Some of those, he said, actually got worse results, in terms of complications or patient recovery time, when forced to use more manual methods due to lack of robot availability.

"When I started talking with the docs they said, 'look, I think my outcomes with robotic exceed (laparoscopy) or certainly open surgery, but you're not allowing us to practice the way we are most competent,'" Walker said.

Sharp's internal research, he added, has shown advantages in efficiency when surgeons do most of their work robotically, rather than splitting time between robots and other methods.

"All of our docs that are primarily robotic surgeons, they are either comparable or faster than the same doc using laparoscopic," Walker said.

At Sharp, Dr. Pamela Lee, chair of the Department of Surgery at Sharp Memorial, has gone so far in the digital direction that she only half jokingly insists that her favorite feature on the new da Vinci 5 is its cellphone charger. When a person spends as much time as she does at control consoles, she said, drained cellphone batteries can become an issue.

Of course, she added, the new machine's refinements — higher-resolution 3D screens, more comprehensive operator controls, force-feedback joysticks — do make the connection between person and machine more seamless.

But, she added, the chance to practice with those controls is even more critical. During the COVID-19 pandemic, she said, she began doing even comparatively-simple procedures such as appendectomies with a da Vinci, a decision that got her big push back in the surgeon's lounge.

Sheetz, the University of Michigan researcher, said that while plenty of surgeons across the United States have made similar moves, there is no evidence that doing so has any advantage over laparoscopy, which itself already delivers excellent results.

"For complex operations, if it's facilitating minimally invasive surgery, I can see why that may make sense," Sheetz said. "But for routine care where patients, overall, do quite well, it's hard to see how the incremental costs to do robotic surgery are being recouped by better outcomes."

But, Lee said she has personally learned the value of doing everything she can with her fingertips on those joysticks. Full commitment, she said, builds the kind of muscle memory that allows her to move more efficiently and precisely during more complicated and risky surgeries.

"Everybody is always saying, 'Oh, that surgeon takes too long on the robot,'" Lee said. "You know why? Because you're not providing access.

"When they're getting one day a week or a small block of time once per month, their times are not going to get incrementally lower. They're not getting that repetition that's needed to really become efficient."

For some, though, the gradual switch to robotics is as much about ergonomics as it is about finding the ultimate surgical method.

Dr. George Mueller, director of bariatric surgery at Sharp Memorial, said he fought switching away from his trusted laparoscopic instruments for decades. But at age 70, he now finds himself behind a da Vinci console for 100 percent of the weight loss surgeries he performs.

People don't realize, he said, just how many hours surgeons spend hunched over patients, pushing and pulling laparoscopic instruments into

position then holding them in place with the large muscles of their arms and shoulders while their fingers squeeze and turn to make tiny scissors and grippers manipulate tissue.

Wrestling with such equipment for decades, he said, left him with joint pain that had him thinking about retirement. But he said he was happy to use a tool that uses electric motors, rather than his own muscles and joints, to get tools to correct angles and hold them in position for as long as is necessary.

"The thing about the robot is that it does all of that positioning for me, and I can just concentrate with just my fingers on doing the dissection," Mueller said.

The other unexpected gain, he added, is that the da Vinci gives him direct control of all four surgical instruments, including the one that carries stereoscopic cameras and lights. Now, he can move the camera wherever he wants without having to repeatedly ask an assistant to do so for him as is the case with laparoscopic procedures.

These changes, he said, add up to an ability to do more work with heavier patients.

"It used to be, I would only do one super morbid case per day, then do regular cases after that," Mueller said. "Now I can do, you know, two, three super morbidly obese surgeries in a row and be none the worse for wear because I'm not doing all that torquing and pushing against the abdominal wall."