

# ROBOTS IN THE OPERATING ROOM

More procedures being done with help of robotic technology

By Michaela Ramm, The Gazette

As technology continues to evolve, money transactions can be done on mobile phones, smart speakers can help with household chores and people may not have to drive their own cars.

But what if a robot is the one that does your surgery?

We're not there yet and surgeons may never entirely be eliminated from the equation, health care experts say. But it's becoming more likely a patient's operation might be done with the help, at least, of robots.

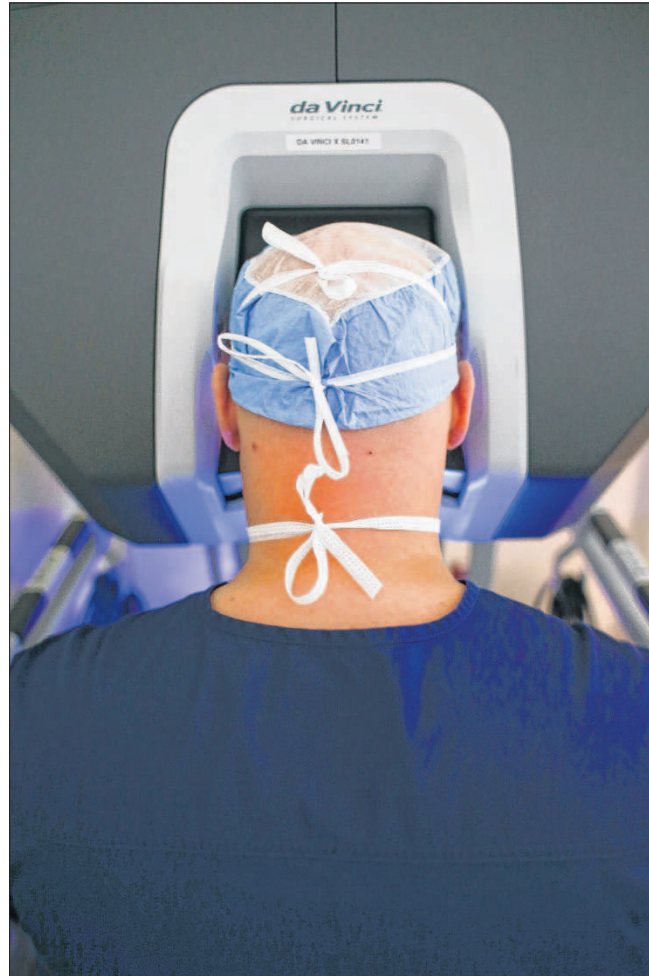
"The reality of training and the reality of robotics now is that it is mainstream. There are lots of programs in lots of different hospitals now," said Dr. Jonathan Rippenrot, a urologist at Physicians' Clinic of Iowa and director of minimally invasive surgery at UnityPoint Health-St. Luke's Hospital.

Both Cedar Rapids hospitals and the University of Iowa Hospitals and Clinics in Iowa City deploy machines for certain procedures. That opens the door to another form of minimally invasive surgery that is faster to perform and easier for patients to recover from.

"It's just a better tool than what we had before," said Dr. Jason Rexroth, an obstetrician/gynecologist and the medical director of robotics surgery at Mercy Medical Center.

However, other surgeons caution that while the technology has clear benefits, it is not ideal for every patient or every procedure.

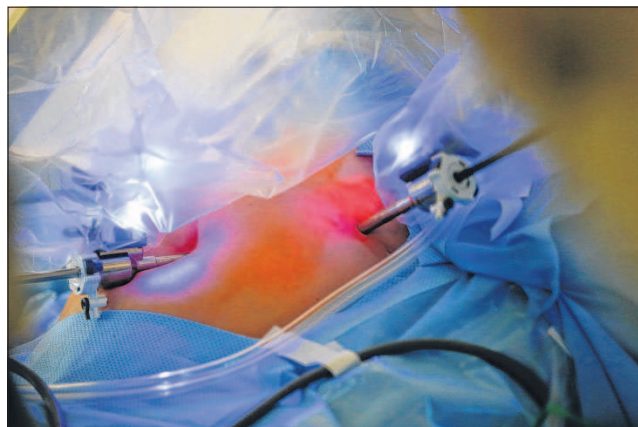
"I think with evolution of technology and more hands-on clinical experience, we will be able to push the envelope for better and safer robotic surgery with uncompromising clinical outcomes," said Dr. Evgeny Arshava, cardiothoracic surgeon at UIHC.



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Dr. Jason Rexroth, an obstetrician-gynecologist, looks into a 3D imaging device July 18 as he performs a robot-assisted hysterectomy at Mercy Medical Center in Cedar Rapids. The device controls instruments inserted into a patient's stomach, which he controls remotely using foot pedals and robotic hands that mimic the motions of his own.

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ABOVE: Robotic instruments and a camera are inserted in a patient's abdomen during a July 18 robot-assisted hysterectomy at Mercy Medical Center in Cedar Rapids.



RIGHT: Dr. Jason Rexroth, an obstetrician-gynecologist, displays the probe used to hold robotic instruments in a patient's abdomen during a robot-assisted hysterectomy. Both Mercy Medical Center and UnityPoint Health-St. Luke's Hospital have three da Vinci-brand robotic systems.

# Robots/Recovery time is often faster

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Surgical tools are connected to a robotic device controlled by a surgeon seated at a remote console, who operates the instruments through small incisions in the patient.

These surgeries typically are done in place of procedures that traditionally would require large incisions, which are more painful and require a longer recovery time.

Da Vinci surgical systems, created in 2000 and produced by Silicon Valley-based Intuitive Surgical, is the most commonly used machine in the Corridor, area surgeons say.

The system first was approved for urology surgeons, who used the device for prostatectomies — removal of part or all of the prostate. Rippentrop estimated 90 percent of these procedures are done with the help of a robotic system.

Then, Food and Drug Administration approval came for gynecology and general surgery, Rexroth said.

"In the past three years, 100 percent of my robotic hysterectomies have gone home the same day," Rexroth said. "For a surgery that used to stay in the hospital a week, now it's an outpatient surgery because of the robot."

Since 2002, there have been more than 40,000 surgical cases performed in Iowa by a da Vinci system, said John Greenwood, senior clinical sales representative for Intuitive Surgical. In 2017 alone, more than 6,500 surgical cases were done by 36 da Vinci systems in 24 hospitals across the state, he added.

The company expects that caseload to reach about 7,300 this year.

St. Luke's and Mercy Medical in Cedar Rapids each have had a robotic program for more than a decade, and each



Rebecca F. Miller photos/The Gazette

The da Vinci surgical system is made up of several machines that operate in tandem to give surgeons and surgical technicians video feedback of the operation as it is underway.

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have three da Vinci systems in their hospitals.

Mercy Medical recently acquired three of the systems' newest models for its operating rooms, a move that indicates more surgeons are using the tool as the technology becomes conducive to other types of procedures.

"If you think about it, we barely knew about the blood

types 100 years ago and solid organ transplants did not happen until a few decades ago. Smartphones have become the most important technology in the last decade," UIHC's Arshava noted.

"Similarly the robotic technology will get better with time. We'll probably be able to do complex surgeries with this technology, and it'll be easier

to use."

However, even with advancements in recent years, Arshava said the technology does not benefit every patient. Depending on certain circumstances — such as the patient's anatomy or the severity of the condition — an open surgery could be better for some individuals over a minimally invasive approach.



The da Vinci robot's arms fold in on themselves after a July 18 robot-assisted hysterectomy at Mercy Medical Center in Cedar Rapids.

"Right now, I believe that not all patients benefit from this technology," Arshava said. "Appropriate selection of patients who would have the most benefit from robotic technology is the key to success. That's why (surgeons) have got to be selective and these type of procedures have to be done in experienced centers."

Because of this, Mercy Medical's Rexroth said he thinks that human element won't go away.

"If you look at a car, maybe a robot mechanic can fix something on the car because cars are all the same, but people are never all the same. There's differences," Rexroth said. "Typically when we're doing surgery, we're doing it for an anatomical problem, so you have to be able to react to whatever anatomy you see, and I think that's a little bit difficult."

"There are so many variables, I don't see doctors going away."

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