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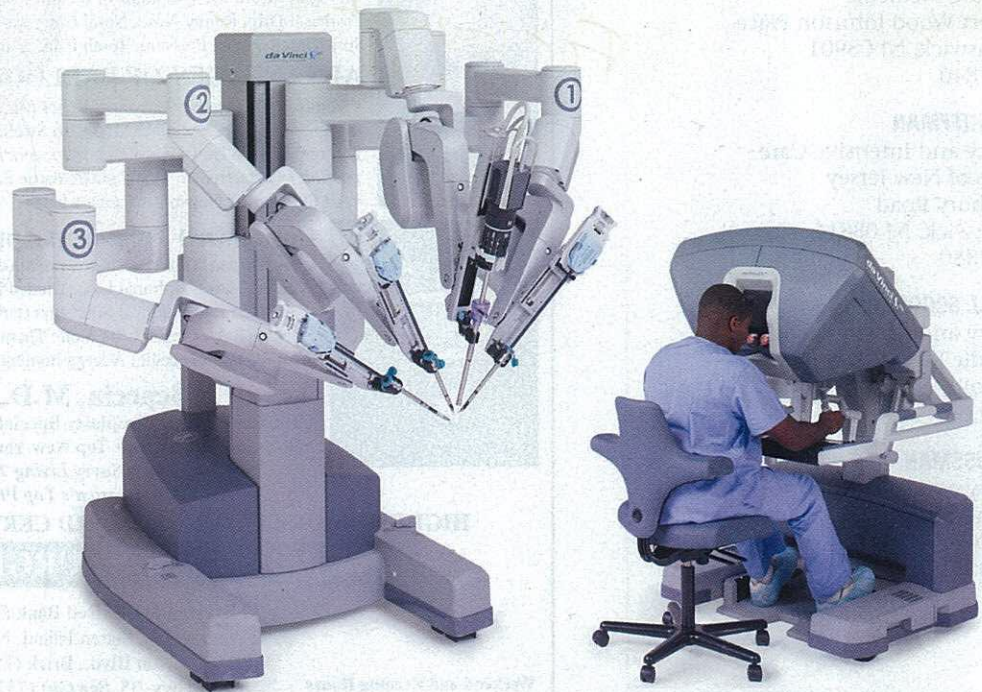
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DISPLAY UNTIL JUNE 21, 2010



The Wave of the Future — Robots in the 'OR'

Is there a robot in your future? Not the friendly R2D2 from “Star War” movies or the more menacing variety from “The Terminator,” but a super medical robot named “da Vinci” that’s revolutionizing surgery worldwide.

Used in 24 New Jersey hospitals and almost 40 countries, the da Vinci is one of the latest wrinkles on minimally invasive surgery — and the primary surgical robotic system in operating rooms today. (For more robotic applications, see page 75.)

The major benefits of robotic surgery, according to the experts, are less bleeding, trauma and pain, along with shorter recovery times. And many surgeons say robots are ideal for complex, delicate procedures.

HOW IT WORKS

The da Vinci Surgical System transfers the hands of a surgeon — who’s seated at a console

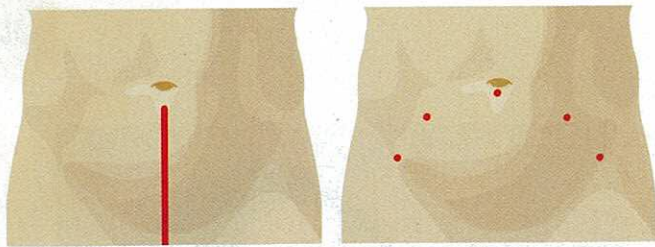
with video game-like joysticks — to inside a patient’s body, where four robotic arms perform intricate maneuvers through a few small holes, thus eliminating the need for large incisions.

The robots’ wrists, with 360 degree range of motion, allow surgeons to get into tight spots and cut, slice, tease and move tissues and organs before stitching a patient up. “This provides great precision when excising a tumor or suturing the kidney,” says Dr. Gregg E. Zimmerman of Morris Urology, a division of Garden State Urology, adding that robotic wrists and elbows mimic natural hand movements while laparoscopy is more like using chopsticks.

The robotic system also includes high definition, three-dimensional images that can be magnified up to 10 times on the surgeon’s console and on a screen in the operating room that’s about the size of a TV in a sports bar, says Dr. Daniel Smith, director of gynecologic



Top, da Vinci robot and surgical console; above, viewing screen with up to 10 times magnification
©2010 Intuitive Surgical, Inc.



Typical incisions for open (left) vs. robotic surgeries ©2010 Intuitive Surgical, Inc.

oncology at Hackensack University Medical Center. "A fingernail can be the entire screen," he notes.

So if you have a medical problem that requires surgery, including heart failure, cancer, uterine fibroids, acid reflux, urinary incontinence or even a reverse vasectomy, among more than two dozen procedures, you might be a candidate for robotic surgery.

IN DEMAND

"I just think it's just the most wonderful thing," says Dr. Smith, whose hospital has 50 surgeons certified in the use of robots. "That is a phenomenal number ... No matter what doctors think about it right now, patients want it," he says, noting that Hackensack has five da Vinci Systems.

Four years ago, Dr. Smith had his prostate removed robotically. "At the time, there was virtually nothing being done for women. The technology is so new," he says, adding that robotic training is now routine for residents in obstetrics and gynecology.

Since his own surgery, Dr. Smith says he hasn't done one "open" (traditional) surgery to remove a cancerous tumor unless he felt a woman had advanced disease.

PROSTATECTOMIES

One of the most common uses of robotic surgery is for prostate gland removal (prostatectomy), when a man has cancer. The prostate gland is the size of a walnut, and radical prostatectomy is a very arduous procedure because the prostate lies deep inside the pelvis near the bladder and penis.

The goal of a prostatectomy, besides removing cancer, is to preserve urinary continence and sexual function. Dr. Isaac Kim, chief of urologic oncology at The Cancer Institute of New Jersey, has done more than 600 robotic prostatectomies in the last four years. He developed a modification called the AIR (athermal intrafascial robotic) to help men regain sexual function and bladder control more quickly.

"The prostate or any organ in the body is wrapped in different layers, like Saran Wrap," he says, noting that the AIR system enables surgeons to hug the innermost layer so they can spare about 85 percent of the tissues surrounding the prostate.

Open prostate surgery requires at least a six-inch incision while robotic surgery is done through several dime-size "ports." As for blood loss, 10 percent of open surgery patients require transfusions, he says, noting that in all 600+ robotic prostate surgeries, he's never had to use a transfusion.

WOMEN

Moving into women's surgery, Dr. Khashayar Shakiba, an obstetrician/gynecologist, performs many robotic procedures at both Chilton Memorial Hospital and Hackensack University Medical Center. One of the most common operations is reconstruction of the pelvic area because of "prolapse," a falling of the vagina, uterus, bladder or rectum when connective tissues or muscles can't hold the pelvis in its natural position.

Symptoms include a feeling of heaviness, pelvic discomfort, urinary incontinence or sexual dysfunction. Women often put up with the discomfort or ignore it, thinking it's part of a natural process, says Dr. Shakiba. The surgery is a little like a facelift, he says, because the fallen tissues are lifted and secured. The women's response? "It's just amazing how grateful they become when you fix it," says Dr. Shakiba.

THE FUTURE

The FDA continues to approve more procedures for robotic-assisted surgery, with hysterectomies and cardiac care being among the fastest growing applications. Based on the numbers alone, there's no question that robotic surgery is here to stay.

Last year about 205,000 da Vinci procedures were performed, up 51 percent from the year before. The sales figures of Intuitive Surgical Inc., which makes the da Vinci, are also explosive. What other company — in the midst of a recession — could experience a 25 percent annual growth rate with a product that averages \$1.4 million dollars?

Continued on page 77.

RESOURCES

St. Barnabas Medical Center
Livingston, 973.322.5000
saintbarnabas.com

Cancer Institute of New Jersey
New Brunswick, 732.235.2465
cinj.org

Chilton Memorial Hospital
Pompton Plains, 973.831.5000
chilton.org

Hackensack University Medical Center
Hackensack, 201.996.2000
humc.com

Monmouth Medical Center
Long Branch 732.222.5200
saintbarnabas.com/hospitals/
Monmouth_medical

Morristown Memorial Hospital
Morristown, 973.971.4700
atlantichhealth.org/Morristown

Newark Beth Israel Medical Center
Newark, 973.926.7000
saintbarnabas.com/hospitals/
newark_beth_israel

Robert Wood Johnson
New Brunswick 732.828.3000
rwjuh.edu

Other Robotic Applications

Computer-assisted robots are being used in many medical procedures, including:

RADIATION THERAPY

A noninvasive alternative to surgery for tumors that uses a robotic arm to deliver high doses of radiation to malignant cells while minimizing radiation to adjacent cells by rotating around the tumor so only the center spot receives the maximum exposure. This compares to traditional low-dose radiation, which requires many more sessions to achieve the same dosage. The CyberKnife and the Varian Trilogy Linear Accelerator are two robotic systems currently in use today.


CARDIAC "MAPPING"

A magnetic system that steers catheters through delicate areas of the heart so doctors can more precisely map the heart and perform remote-controlled, image-guided procedures. The SteeTaxis GentleTouch Magnetic System is one such system.

KNEE SURGERY

A robot by MAKO Surgical Corporation prepares the knee for an implant by resurfacing the damaged area while sparing healthy bones and tissues around it.

MEDICATION MANAGEMENT

Robotic units automate the dispensing of medications with barcodes to speed delivery, improve safety and help reduce missing and returned prescriptions. 

RESOURCES

Deborah Heart and Lung Center
Browns Mills, 800.555.1990
deborah.org

Hunterdon Medical Center
Flemington, 908.788.6100
Hunterdonhealthcare.org

Jersey Shore University Medical Center
Neptune, 732.775.5500
Jerseyshoreuniversitymedical
center.com

Riverview Medical Center
Red Bank, 800.560.9990
Riverviewmedicalcenter.com

St. Peter's University Hospital
New Brunswick, 732.745.8600
Saintpetersuh.com