Minimally Invasive Surgery Goes Mainstream

Smaller incisions, less pain, quicker recovery — the pros (and cons) of minimally invasive surgery (MIS) are well known, yet few people, even specialists, can rattle off the list of the procedures now performed in this way, much less separate established techniques from those that remain investigational.

To bring consistency, quality control, oversight and economies of scale to this evolving area, more than 20 surgeons at the University of Chicago Hospitals have combined to form the Center for Minimally Invasive Surgery.

This newsletter is too brief to list all the MIS procedures — from pediatrics to bariatrics — now performed at our center. It is designed, instead, to inform physicians about some of the more innovative procedures available here and on a quarterly basis to review the new and established minimally invasive services at our institution.

University of Chicago urologic surgeons used the DaVinci Surgical System to perform radical prostatectomy on nearly 40 patients in 2003. They are studying the ability of this approach to maintain good tumor control, speed recovery and reduce complications such as incontinence and impotence.
Laparoscopy, and Robotics, Enter Urology

Laparoscopic nephrectomies, prostatectomies and adrenalectomies are now performed at the University of Chicago, where Dr. Shalhav is using standard laparoscopy and a robotic system.

Urologic surgeon Arieh Shalhav, MD, uses laparoscopic surgery for virtually every type of kidney surgery — including radical and partial nephrectomies for cancer — as well as for radical prostatectomies, and adrenalectomies. “We can perform laparoscopic surgery in 90% of our patients,” said Shalhav, compared with a national rate of 40%.

LAPAROSCOPIC NEPHRON-SPARING SURGERY

Laparoscopic techniques now allow the surgeon to partially remove kidneys, preserving kidney tissue and reducing patients’ future risk for renal failure and dialysis. The laparoscopic approach to nephron-sparing surgery is feasible when the tumor is peripheral or exophytic and up to 4cm in size.

This approach reduces the size of the incision from six inches in thin patients (and up to 25 inches in obese patients) to an up to two-inch incision for specimen removal in patients undergoing laparoscopic surgery. In addition, four 5mm “keyholes” are made for the laparoscopic instruments.

Patient comfort is increased. Open surgery requires an incision under the rib cage, which causes pain during recuperation, but the laparoscopic approach requires only a bikini incision to remove large tumors. The recovery period is about a quarter or a third of that with open surgery, with patients going home a day or two afterwards, compared to four to six days following open surgery. Patients can return to work a week or two after laparoscopic surgery compared with at least four weeks after open surgery.

ROBOTIC SURGERY FOR PROSTATE CANCER

Dr. Shalhav and his colleagues are the only urologic surgeons in the Chicago area and among the few in the country who use the DaVinci Surgical System to perform robotically assisted laparoscopic surgery for the management of prostate cancer. Patients treated with the robotic system leave the operating room with four keyholes and a one-inch incision for specimen removal, instead of the standard incision from the navel to the pubic bone. They often go home the next day and resume normal activities within a week.

The robotic system provides several advantages over standard laparoscopic techniques. Instead of standing to hold protruding instruments, the surgeon sits at a console, guiding the robot’s arms with his hands connected to glove-like sensors. The surgeon has a three-dimensional view, and the device deletes tremor. “Robotically assisted surgery provides greater precision and control than the older laparoscopic techniques,” said Shalhav.

To inquire about referring a patient or for more information please call (773) 834-9889.
Robotic Surgery Means Less Pain, Smaller Scars and Faster Recovery for Children with Congenital Cardiac Defects

Only four centers nationally offer this option: Stanford, Boston Children’s, the University of Michigan, and the University of Chicago Hospitals, which is the only site in the Chicago area.

Pediatric surgeon Emile Bacha, MD, is pioneering robotic pediatric cardiac surgery, which can spare children from some of the pain traditionally associated with chest surgery. The technique makes median sternotomy unnecessary because instruments are introduced through four or five small ports on the side of the chest, in between the ribs.

Patients experience less pain because the sternum is not divided and, “as a result,” said Bacha, “they need less postoperative pain medication.” Patients recover faster, spending two to three days in the hospital after robotic surgery compared with three to five days with open surgery. More important, patients return to normal activity faster, after one to three weeks compared to three to six weeks following traditional surgery.

Dr. Bacha uses robotic techniques several times per month and that frequency is increasing. He has performed atrial septal defect closure, mitral valve repair, vascular ring division and patent ductus arteriosus ligation with the robotic system.

Historically, thoracoscopic instruments were too large to be used on children and some of the tools, such as the rods with scissors on the end, were inflexible. New instruments now make this approach available to younger patients. Robotic instruments offer multiple articulations, including six degrees of freedom at the tip. Because the robotic arm is so much smaller than a human arm, it can be introduced in the chest and can reach locations not easily accessible to traditional instruments.

To inquire about referring a patient or for more information please call (773) 702-2500.
Minimally invasive techniques are now used at the University of Chicago to perform transforaminal lumbar interbody fusion with instrumentation and to remove intradural tumors, including Schwanomas and neurofibromas.

The University of Chicago Hospitals now offer minimally invasive techniques for most spinal surgery. “Approximately 90 percent of my surgery is done this way,” said Richard Fessler, MD, chairman of neurosurgery, who has pioneered new minimally invasive procedures.

Fessler uses minimally invasive techniques for: cervical discectomies, decompression of cervical stenosis, some forms of cervical instrumentation, thoracic discectomies, some thoracic instrumentation, lumbar discectomies, re-do discectomies, lumbar stenosis, lumbar fusion, lumbar instrumentation and removing intradural tumors. The only exception is multi-level fusions with instrumentation.

“It’s almost easier to list the procedures in which we don’t use minimally invasive surgery in my practice,” he said.

Although several neurosurgeons in the Chicago area do minor minimally invasive procedures, no program in the Chicago area can do as much. Dr. Fessler is currently the only U.S. surgeon performing a transforaminal lumbar interbody fusion with instrumentation or MIS for removal of intradural tumors, including Schwanomas and neurofibromas — a procedure he developed.

Minimally invasive surgery dramatically reduces discomfort for spinal surgery patients, letting them avoid six-inch incisions and dissection of muscle and removal of the entire posterior elements of the spine. Only a two-centimeter incision is required for minimally invasive surgery. The time patients spend in the operating room is the same or less, and MIS reduces the amount of anesthesia required and also reduces the blood loss. Hospitalization is reduced from four to five days to one day and in many cases the MIS procedures can be done on an outpatient basis.

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Minimally Invasive Approach Comes to Colorectal Surgery

Laparoscopic surgery for total abdominal colectomies, segmental resections, small bowel resections for Crohn's disease and ileo-anal pouch anastomosis are now available in the Chicago area.

Colorectal surgeon Alessandro Fichera, MD, routinely performs laparoscopic colorectal surgery, and has completed more than 50 cases — including total abdominal colectomies, segmental resections, small bowel resections for Crohn's disease and ileo-anal pouch anastomosis — in recent months. The technique is rarely performed at other Chicago area hospitals and Dr. Fichera is only surgeon in the area who performs laparoscopic restorative proctocolectomy with ileo-anal pouch anastomosis.

With colorectal laparoscopy, four or five small incisions are made for the instruments and camera. In addition, a five- to ten-centimeter incision is made at the bikini line to remove the specimen. In contrast, with conventional surgery, depending on the size of the patient, a 20- to 50-centimeter incision is made.

Two prospective studies have shown that laparoscopic patients recover faster. “They have less pain,” said Fichera, “require less narcotic medication and as a result experience faster recovery of respiratory and bowel function leading to faster resumption of oral intake.” Laparoscopic patients go home one to two days sooner than patients who have undergone open surgery.

Formation of adhesions inside the abdomen, which are responsible for the vast majority of postoperative episodes of intestinal blockage requiring hospitalization and, rarely, reoperation, seems to be reduced after laparoscopy.

In addition, patients, whether young or old, who have undergone laparoscopic surgery tend to return to normal activities faster. For example, young patients with Crohn's disease tend to return to work after two to three weeks, while those undergoing open surgery return to work after four to five weeks. Older patients who have laparoscopic surgery, even those in nursing homes and in rehabilitation hospitals, regain mobility quicker and can resume normal activity.

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Bypassing Incisions for Aortofemoral Bypass

Vascular surgeons Tina Desai, MD, and Daniel Katz, MD, are the only surgeons in Chicago and among the few in the United States who are performing aortofemoral bypass surgery laparoscopically.

With the laparoscopic approach, six one-centimeter port incisions are made; two of the port incisions are later joined to make an eight-centimeter incision to perform the anastomosis. Drs. Katz and Desai are now training on robotic surgical techniques, which could eliminate the larger incision.

As with traditional open procedures, the surgeons attach new blood vessels to the aorta above the blockage and connect them to the femoral arteries below the blockage. Traditional open surgery requires a 25-centimeter incision in the middle of the abdomen or on the side, up to a week in the hospital and a recovery lasting a month or longer. In contrast, the laparoscopic procedure has required a three-day hospital stay and one patient returned to work a week after the surgery.

Laparoscopy Lets Patient Get On With Life
On January 24, 2003, Drs. Katz and Desai used laparoscopic techniques to perform an aortofemoral bypass restoring circulation to the legs of Sandra Brown, a 51-year-old high school history teacher.

She was discharged from the Hospitals on January 28, three-and-one-half days after surgery. She returned to work as a teacher one week later.

Brown, who has had previous operations for Crohn’s disease, said she felt “three times better” than she did after traditional surgery. With MIS, “you feel more like yourself when you wake up,” she said. “You can get on with your life.” It enabled her to get out of the hospital quicker, “and that,” she added, “is the name of the game.”

“Patients experience less pain with the laparoscopic procedure, because surgeons can see the field from a variety of angles using a video camera and so do not have to retract tissue or pull on the abdominal wall, which occurs with the open operation.”
Daniel Katz, MD

The team has performed the procedure on two patients with good results and has scheduled several more. The surgeons have not encountered bleeding complications, thanks to extreme care and caution in dissecting the blood vessels. They are preparing to extend the technique to abdominal aortic aneurysms.

To inquire about referring a patient or for more information please call (773) 702-6128.
Less Invasive Operation Boosts Living Donors

With reduced risks and quicker recovery following minimally invasive surgery, more living donors offer kidneys for transplantation.

“MIS has lowered the threshold for people to consider living donation,” said Robert Harland, MD, director of kidney and pancreas transplant at the University of Chicago Hospitals, who has been performing laparoscopic nephrectomies since 1999.

The minimally invasive procedure takes longer: three to four hours compared with two to three hours with open nephrectomies.

However, instead of a long, painful incision under their ribs to remove the donor organs, MIS patients have only a nine-centimeter incision just above the pubic bone.

In addition, the minimally invasive operation requires four to five ports, most of which are 5 millimeters, but one of which is 12 millimeters to make room for a stapling device.

Donors stay in the hospital one or two days with laparoscopic nephrectomies compared with three or four days with the traditional method. Recovery is much faster. Patients require less pain medication and avoid the chronic nerve pain that can follow an open operation.

“Patients get back to driving in about three weeks as opposed to six weeks following the open operation,” said Harland. The easier recovery enables more spouses to donate to each other because the donor can return to work and take charge of child care more quickly. That kind of practical issue “comes into play, a lot,” he said.

Minimally invasive surgery can also be used to treat lymphocele, a complication that rarely requires treatment. When it does, said Harland, “it’s nice to do it laparoscopically, because patients can go home the next day.”

To inquire about referring a patient or for more information please call (773) 702-6104.

A Kinder Cut for Kinder Donors

Since June 20, 2002, Willie Morris of Chicago has been kept alive by a kidney that was donated — to whomever needed it — by Bill Van Pelt of Frankfort. In response to Van Pelt’s offer two years before, transplant physicians and ethicists set up guidelines for how a “good Samaritan” donation such as this should be handled.

They decided that within certain limits, altruistic donation was acceptable, even laudable. The donor had to be sincere, with appropriate motives, able to pass a rigorous psychiatric screening and well informed of the risks.

The donation had to be free, anonymous and without restrictions. The donor would receive no compensation and could not choose who would receive the kidney or even be told who received it without the recipient’s permission.

The kidney would be allocated as if it came from a cadaver donor — going to the person highest on the Hospitals’ waiting list who was biologically compatible with the donor.

Van Pelt recovered quickly and left the hospital after only two days. Within a few weeks, he returned to playing tennis. He was back at work within six weeks and now feels “completely normal.”
Recovery with minimally invasive techniques can be as brief as a couple days compared to as long as six weeks with many operations, such as spinal fusion. In contrast, full recovery from conventional spinal fusion can require six-months or more.

Eventually, minimally invasive spinal surgery techniques will be widely available. “But right now,” he said, “we can do several procedures that are not available anywhere else in the United States.”

To inquire about referring a patient or for more information please call (773) 702-9385.