



Is a Minimally Invasive Procedure the Right Option for You?

Many experts consider laparoscopic surgical techniques the biggest technical advance in the field in several decades.

By [Linda Marsa](#), Contributor | Sept. 18, 2017, at 9:42 a.m.

Last year defense attorney Charles LoPresti of Pittsburgh faced the worst adversary of his life: [pancreatic cancer](#). His only chance for a cure was the Whipple procedure, a highly complex surgery that removes part of the pancreas, the gallbladder and surrounding lymph nodes. But instead of cutting him open, the traditional practice, surgeons at the University of Pittsburgh Medical Center removed his tumor plus 24 lymph nodes through a 2-inch incision. He went home three days later and was back in court within the month. "My recovery was very fast," says LoPresti, who vacationed in Italy with his wife this summer. "I feel better than I have in years."

LoPresti's experience is becoming more common as surgeons adopt minimally invasive or [laparoscopic surgical techniques](#), which many consider the biggest technical advance in the field in several decades. These procedures are a stark contrast to conventional operations, which typically entail inches-long incisions that can leave patients debilitated for weeks and susceptible to infections and other postoperative woes. In fact, complications from surgery cost about \$25 billion annually, a 2013 Harvard study showed, resulting in an average hospital payment increase of \$39,000 per surgical patient. Less invasive techniques can greatly lessen the number of costly – and potentially deadly – side effects.

Minimally invasive surgical incisions can be under half an inch long; the team inserts thin instruments and a high-resolution fiber optic video camera through the tiny "keyhole" openings. The camera transmits images of the internal organs onto a monitor as a guide.

[See: [7 Innovations in Cancer Therapy](#).]

"Visualization is way better" than with open techniques, says Dr. Paul Wetter, chairman of the Society of Laparoendoscopic Surgeons and an emeritus professor at the University of Miami

Miller School of Medicine. "You have a camera right inside [and] can see things you'd miss otherwise."

In spite of the advantages, you can't make the assumption that surgeons even "at a big brand name hospital" will be doing these procedures, warns Dr. Marty Makary, a surgeon and professor of health policy at Johns Hopkins who has researched the issue. Most patients who are good candidates for these procedures but don't have them were never told of the choice, he has found. Partly, he says, that's because surgeons who aren't skilled in the procedures may "downplay the options." In addition, insurers now pay the same or less for minimally invasive procedures, which works against a switch. In a value-based system, that may change "to reward hospitals that do better, safer, more effective care," Makary says.

In the meantime, experts strongly advise patients faced with surgery to ask about a minimally invasive option. Not everyone is a good candidate: People who have extensive scar tissue from previous procedures or have another underlying medical condition may not be suitable for minimally invasive surgery. But studies show that more than 80 percent of all common operations, including hysterectomy, colon removal, prostate surgery and appendectomy, can be done through keyhole incisions, Makary says.

That awareness, plus growing familiarity with the technology, has even made it standard for operations once considered too difficult to do without opening up a patient. Surgeons now routinely replace leaky heart valves by threading replacement parts through the femoral artery, or patch damaged arteries with bypass grafts without stopping the heart and cracking open the chest. When Clay Barker, a 28-year-old nursing student from Victoria, Texas, donated a kidney to his ailing mother in March, surgeons at [Houston Methodist Hospital](#) removed his organ

through a 3-inch incision. "I had virtually no pain afterwards," Barker marvels.

Besides lower rates of pain and infection, the technique results in less trauma to nerves, muscles and tissues; and shorter hospital stays. "People are often back to their normal life in less than a week," says Wetter.

One 2014 Hopkins study that looked at complications for four common procedures – [appendectomy](#), hysterectomy, lung lobectomy and [colectomy](#) – found that serious complications such as infections, sepsis, pneumonia and death were substantially lower for all four types of operations performed this way. And the savings can be substantial – from \$280 million to \$340 million a year, according to a Hopkins study.

If the choice is not available at your hospital, a second opinion elsewhere is a good idea. Pick a surgeon who has done your procedure frequently; studies consistently show that complication rates drop considerably with a rise in surgeons' number of cases. For a routine operation like a hysterectomy, you'd want to see at least one or two a week, experts say. A high-volume academic center is a good place to look, advises Dr. Scott Melvin, vice chairman of clinical surgery at [Montefiore Medical Center](#) in New York.

[See: [10 Lessons From Empowered Patients.](#)]

Integrated health systems like Kaiser Permanente, the not-for-profit HMO with nearly 12 million members in eight states and the District of Columbia, have been leaders in adopting minimally invasive techniques; besides being better for patients, reducing complications curbs costs. Payment at Kaiser Permanente involves a set amount for each member rather than a fee for every service provided, so the emphasis is on preventing disease and the need for treatment. Moreover, within such organizations

where doctors are salaried employees, the organization can decide on surgical policy and hire surgeons who are already trained.

Patients at Kaiser Permanente are referred to a well-practiced surgeon. For example, about 90 percent of [gastric cancer](#) procedures are done through keyhole incisions, and in Northern California, all are performed at two hospitals "to maximize their volumes," says Dr. Robert Pearl, until recently executive director and CEO of The Permanente Medical Group. "We want to make sure the surgeon and the surgical team – nurses, anesthesiologists – have enough experience to optimize their skills."

Other institutions are looking at ways to better prepare surgeons for 21st-century technologies. "It's hard for surgeons to leave busy practices and be away from their own operating rooms to learn these complex techniques, which are not something that can be picked up in a weekend course," says Dr. Brian Dunkin, head of surgical endoscopy at Houston Methodist Hospital and medical director of the Methodist Institute for Technology, Innovation and Education, an educational and research institute. Training centers like the Methodist Institute are attempting to fill this gap by devising longitudinal educational programs that combine hands-on sessions with mentoring afterward. In a recent pilot program, for example, selected surgeons came to the Houston campus for four days of classes in which they practiced doing laparoscopic colon surgery on a cadaver under the watchful eyes of expert coaches. Then they were joined by members of their surgical teams, including nurses and technicians, to do two similar surgeries. When surgeons returned home, the teaching surgeons at Houston Methodist guided them remotely by videoconference in the OR. "It's a simple concept," says Dunkin of the telementoring. "But there's a lot of science validating that it works."

At the University of Pittsburgh Medical Center, surgical residents as well as practicing physicians from all over the country are being trained in the next generation of minimally invasive techniques: [robotic or computer-assisted surgery](#). Instead of bending over an operating table, surgeons sit in front of a console nearby with a magnified 3-D screen that gives them a much better view than regular laparoscopic or open incisions. They operate by moving two controllers that manipulate robotic arms equipped with tiny surgical instruments so intricate they can sew together a grape peel. Computer software takes the place of actual hand movements, making movements very precise.

Robotic technology has its downsides. For one thing, it's expensive – robots cost about \$2 million, and their use adds anywhere from \$1,500 to \$2,000 per patient. Experts think prices will tumble within the next few years as more companies enter the market. Also, because surgeons don't get the tactile stimulation they get when they're cutting directly into tissue, there's a risk of injuring adjacent organs or nicking blood vessels or nerves. And so far, research has not found that robotic surgery improves outcomes.

[See: [10 Ways to Prepare for Surgery.](#)]

At UPMC, surgeons first practice on a simulator, akin to how pilots learn to fly, and then gain experience working on lifelike bioartificial organs before they move on to assisting in real surgeries. The learning curve is shorter than it is with regular laparoscopic procedures, says Dr. Herbert Zeh, chief of gastrointestinal surgical oncology at UPMC, because robotics provide that "all-important 3-D vision and improved dexterity." The next generation of robots will help surgeons even more: The

technology will rely on the science of haptics to simulate for the doctors at the controls the sense of touch that they lose by not holding the instruments, and allow them to overlay scans taken just before the patient enters the OR on the real-time images of his or her anatomy. Such augmented reality will guide surgeons in ways that are unimaginable today, predicts Zeh. "That's the future," he says. "And it's going to happen."