

Hernia Repair

New robotic procedures

By Mark Reiner, MD, FACS



Surgical procedures for the repair of inguinal hernias (the most common hernia type, affecting the groin) have advanced dramatically over the last 20 years. The newest trend employs Intuitive Surgical, Inc.'s da Vinci Surgical System, a robotic tool that allows for smaller incisions, greater precision, lower rates of complications, and quicker patient recovery time when compared to open inguinal hernia repairs.

By the numbers

Inguinal hernias are a pervasive problem in the United States. Males have a 25 percent to 40 percent chance of developing an inguinal hernia in their lifetimes. Females have a much lower rate, accounting for 4 percent of all inguinal hernia repairs. Patients who have an inguinal hernia on one side have at least a 30 percent chance of developing a second hernia on the opposite side during their lifetime.

Most groin hernias fall into one of four types: an indirect defect, a direct defect, a femoral defect, and a sports-related defect. The first three are anatomically different, but the repairs remain the same. The sports hernia can often be fixed with the same techniques as the other three defects, but not always.

Whatever kind of hernia, it is essential for it to be surgically repaired because a piece of intestine or fat can become lodged in the defect (incarcerated). A surgical repair prevents gangrene (loss of blood supply) of the incarcerated structure. Hernias can also cause severe pain and discomfort, often affecting one's daily life—physically and cosmetically.

Once a hernia is diagnosed, many patients will show no symptoms. However, within two years, 70 percent of those patients will develop symptoms that can be attributed to the defect. The risk of the hernia causing incarceration and gangrene is under 1 percent.

Approximately 750,000 inguinal hernia surgeries are performed annually in the U.S.

Earlier surgical techniques

In the 1970s, most inguinal hernias were repaired on an inpatient basis, with moderate size groin incisions (open technique) requiring up to seven days in the hospital for recovery. Patients were out of work from four to six weeks and had to refrain from significant physical activity for up to three months following their surgery. The recurrence rate of developing another hernia on the same side was between 10 percent and 30 percent.

The Shouldice Clinic in Ontario, Canada, started to popularize an outpatient technique for inguinal hernia repair, but this didn't become popular in the U.S. until the early 1980s. The outpatient technique was an improvement, but patients were still out of work

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for a few weeks, and did not return to full physical activity for about one month. Patients still had significant post-operative pain that limited physical activity. Recurrence rates in the best series were slightly under 2 percent, but the average surgeon still had a recurrence rate approaching 10 percent.

In 1984, Irving L. Lichtenstein, MD, popularized the “tension free” open hernia repair using synthetic material to bridge the defect in the groin wall caused by a hernia. This technique was less painful, had a quicker return to full activity, and, in good hands, a recurrence rate of only 1 percent to 3 percent. However, patients were still out of work for at least one to four weeks and did not return to significant activity for approximately five weeks. Wound- and nerve-related complications also remained significant.

Laparoscopic repairs

The most significant change in inguinal hernia repair in the last 50 years was the development of the laparoscopic technique in 1990. This new procedure dramatically reduced postoperative morbidity, reduced pain, and limited recovery time.

Laparoscopic surgeons insert a thin, lighted tube through a small abdominal incision, allowing them to view the patient’s abdominal organs. With laparoscopy, over 70 percent of patients return to work within three days, and are back to near full activity

in seven to nine days. It is not pain free, but because the patients are encouraged to start limited exercise within the first 24 hours following surgery—and can do so because of reduced pain levels—the discomfort dramatically diminishes, falling off to just mild discomfort on the third post-operative day.

Today, only 34 percent of all inguinal hernias are done with the laparoscopic technique, while almost 100 percent of gall bladders removals in this country are done laparoscopically.

The laparoscopic approach is not yet universally used for hernia repairs because surgeons need to complete 200 to 250 procedures before feeling comfortable executing the procedure with minimal surgically related complications and recurrence.

Two laparoscopic techniques are used for inguinal hernia repairs:

- **Transabdominal Preperitoneal Inguinal Hernia Repair (TAPP)** breaches the abdominal cavity, allowing the surgeon to see all of the abdominal contents. This technique attempts to keep the mesh used for the repair away from the intestine, but this is not always possible.
- **Total Extraperitoneal Inguinal Hernia Repair (TEP)** uses a space developed between the abdominal wall and the

Some 750,000 inguinal hernia surgeries are performed annually.

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peritoneum, a lining that surrounds the intestines, meaning that they are not visible during the procedure. It is considered safer because it keeps the mesh out of contact with the intestines. It also allows a larger piece of mesh material to be placed without difficulty, preventing inadvertent bowel injury and minimizing post-operative bowel obstruction.

The da Vinci robot

The da Vinci robot eases the steep learning curve required for both laparoscopic procedures and offers additional benefits for surgeons. The da Vinci robot’s 3D optics, image magnification, and 360-degree range of rotation (compared to the 180-degree rotation of “straight stick laparoscopy”) allow the surgeon to operate with a precision comparable to the much larger surgical openings of open techniques.

The da Vinci robot’s optics and controls also make the procedure simpler to master for surgeons who are not trained or adept in laparoscopic hernia repairs. During a laparoscopic repair the mesh may occasionally move or migrate from its anatomically correct

position. To prevent this, many surgeons anchor the mesh in place with metallic staples or tacks, which may increase the risk of nerve injury or chronic pain, especially in inexperienced surgical hands.


The robot makes sewing the mesh with absorbable material an easier option, helping to minimize complications.



A precision comparable to the much larger surgical openings.

Advantages

The da Vinci robot has simplified the technical aspects of the TAPP approach, but until recently was not an option with the TEP approach. In 2014, approximately 50 percent of the laparoscopic repairs were done as TEP and 50 percent as TAPP. Laparoscopic repairs are safe, with low recurrence and complication rates when performed by well-trained and experienced surgeons.

The da Vinci robot will make it easier for surgeons to develop this training and experience, and to offer their patients the best procedures with the lowest complication rates, earliest return to work, and quickest time until full activity. 

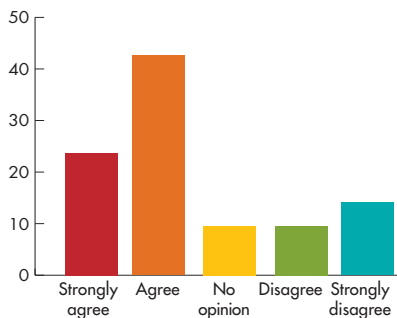
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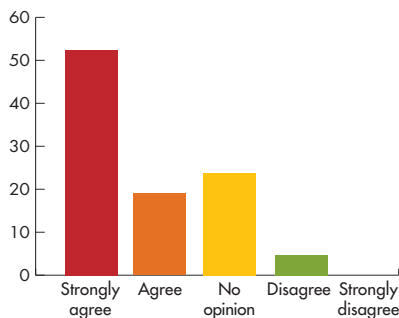
SURVEY

Each month, members of the Minnesota Health Care Consumer Association are invited to participate in a survey that measures opinions around topics that affect our health-care delivery system. There is no charge to join the association, and everyone is invited.

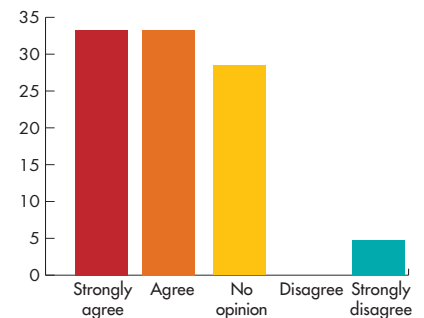
1. I understand what is meant by the term bioethics.



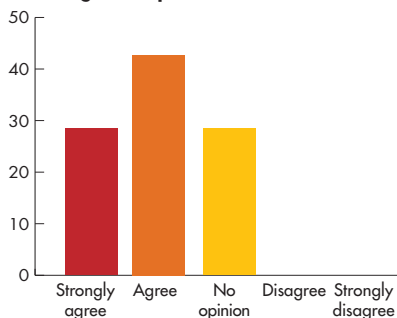
2. I believe bioethics should be established and maintained as a field without political or economic attachment.



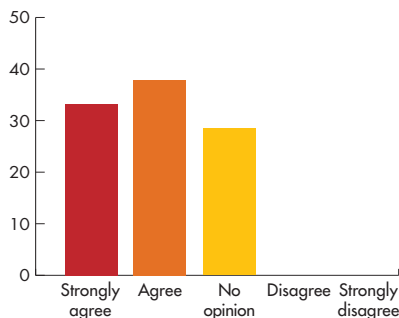
3. I believe bioethics should play a role in the development of health care policy.



4. I believe a patient should have access to a bioethics professional if they need assistance in making a complex medical decision.



5. I believe bioethics is an important area that needs to be developed further.



For more information, please visit www.mnhcca.org. We are pleased to present results of the most recent survey.