Veronica Lerner MD
NYU Women's Health
Minimally Invasive Surgery and Female Pelvic
Medicine and Reconstructive Surgery

INFORMATION FOR PATIENTS
OPERATIVE LAPAROSCOPY AND PELVIC SURGERY

Overview

Laparoscopy is an extremely valuable procedure in gynecology. It may be performed to establish a diagnosis, such as determining the cause of infertility or pelvic pain. It is often used as therapy, such as removing ovarian tumors or destroying endometriosis. It is also a preferred way to do a hysterectomy (if it is not possible to do it vaginally) or do surgery on ovaries and fallopian tubes.

Having Surgery

No surgery is "minor." Although we as surgeons may make the distinction between major and minor procedures, nothing done to you requiring anesthesia, should ever be considered "minor." We recognize that surgery, no matter how "minimally invasive," represents a significant stress to the body and is associated with some risk. Although the risks associated with laparoscopic surgery in general are smaller (on a percentage basis), we are always cognizant of them and seek to prevent them as much as possible.

In preparing for surgery, you should maintain an appropriate diet and hydration, unless instructed otherwise by your physician. In general, you should not put anything in your mouth after midnight on the night before surgery. In some cases it is okay to take an important medication with a sip of water on the morning of surgery, but this should be discussed with your surgeon and anesthesiologist in advance.

For gynecologic/pelvic surgery, there is usually no need for bowel preps or enemas prior to the surgery. Likewise, shaving or clipping hair is also unnecessary and may be associated with higher risks for infection. If clipping is necessary, it will be done by your surgeon in the operating room, as this is associated with the lowest risk of infection. Aspirin and similar medications called NSAIDs—non-steroidal anti-inflammatory drugs (e.g., Motrin, Ibuprofen, Advil, Aleve) may increase bleeding in the operating room and therefore should be avoided starting at least one week prior to surgery. Tylenol (acetaminophen) does not cause bleeding problems and may be used.

Surgical Assistants

Either residents (doctors who finished medical school and are undergoing specialization in obstetrics and gynecology) or physician's assistants will be present and will function as surgical assistants. Medical students are at times present during a surgery as well. The role of residents as surgical assistants varies depending on the case, but they are supervised and directed at all times by an attending surgeon.

Procedure Specifics

Laparoscopy:

- The operation is usually performed with the patient asleep (general anesthesia). With the patient appropriately anesthetized, an instrument (cannula) is placed in the cervix and secured with a tenaculum. These instruments enable the surgeon to position the uterus and aid the pelvic assessment. A catheter is placed in the urinary bladder to drain it.
- The abdomen is inflated with a gas (usually carbon dioxide) to allow adequate intraabdominal visualization. An incision is then made at the navel or above, through which a telescope (laparoscope or a camera) is inserted. One to four 5-12 mm incisions (in some cases, additional incisions of the same size are needed) are then placed in the lower abdomen. These incisions leave scars one-quarter to one-half inch in length. Through these incisions the surgeon inspects the pelvic structure and performs indicated procedures. A photograph of the pelvic structures is often taken to document the finding; this also helps the patient to understand what was found and done. After the operation has been completed, the gas is allowed to escape from the abdomen, all instruments removed, and the abdominal incisions are closed with sutures. Often fluid and medications are placed in the abdomen to prevent adhesion (scar tissue) formation.

Robotically assisted laparoscopy:

- In some cases, computer-enhanced technology called “robotically-assisted surgery” is suggested by your surgeon. Surgical techniques and recovery process is similar to conventional laparoscopy. For more detailed information, please refer to http://www.davincisurgery.com/da-vinci-gynecology/ and http://www.davincisurgery.com/da-vinci-surgery/safety-information.php.

Follow-up

The patient might experience pain in her shoulder, chest, and upper abdominal areas caused by the gas. She will also experience tenderness at the incision sites. These discomforts usually diminish markedly after 2 days. Because fluids are often left in the abdomen to prevent adhesion formation, the patient will frequently leak fluid from the incisions and observe swelling in these areas. This fluid leakage and swelling should disappear within 2 days. There is usually some bruising at the incision sites. This disappears in approximately 2 weeks. Most patients go home the day of the surgery and need to be accompanied home by a responsible adult.

Risks of Surgery

As with all surgery, the degree of risk depends upon the patient (age, health status, medical condition, uterine size, pelvic adhesions). This risk assessment will be performed by your doctor during your pre-operative evaluation and shared with you. Risks listed below are described in detail, but they are not limited to what is listed.

- Anesthesia:
  - Anesthesiologists have made significant advances in improving patient safety; however, anesthetic accidents still happen. There are very safe and effective methods of anesthesia although exceedingly rare catastrophic complications can occur. All patients having surgery will speak with an anesthesiologist during pre-surgical testing 1-2 weeks before surgery and/or on the day of surgery prior to the procedure, during which the risks/benefits of anesthesia will be discussed.

- Bleeding:
  - Bleeding will occur during and following most operations. Fortunately, an average amount of bleeding resulting in mild anemia is well tolerated by most patients and does not typically require transfusions of blood. We will only transfuse blood when there is more significant anemia potentially threatening to a patient's health. Blood is carefully screened by the blood bank in order to reduce the risks of infectious diseases, including HIV and hepatitis. As an alternative, some patients may choose to donate blood for themselves prior to surgery or have blood donated by a relative or friend. Information regarding directed donor blood (donating blood for yourself several weeks prior to surgery) is available in your surgeon's office. The amount of bleeding can be affected by a patient's age, health, previous surgery (scar tissue) and variations in anatomy. Excessive bleeding and vascular injury can occur when developing the portals of entry in the abdominal wall, as well as during pelvic dissection. Both events are in infrequent and can usually be dealt with laparoscopically, but laparotomy (conversion to an open incision) is sometimes required.

- Infections:
  - Prophylactic antibiotics are administered in the operating room for many gynecologic/urogynecologic procedures to try to decrease the risk of infection. Still, some patients do get infections following surgery.
  - The most common type of infection is a urinary tract or bladder infection. This generally gives symptoms of painful urination, urgency/frequency of urination, burning with urination and sometimes, blood in the urine. These infections are usually easily treated with a course of oral antibiotics.
  - Infrequently an incision will become infected, requiring warm compresses, antibiotics, and drainage.
  - More significant infections of the surgical incisions are much less common, often respond to antibiotics, but sometimes need further treatment, such as opening and cleaning of the infected areas. When infections are significant or involving internal organs (e.g., abscess in the abdomen/pelvis, near/around intestines), they

may require surgical treatment.

- Injuries to Organs:
  - The pelvic organs are surrounded by adjacent organs of the urinary and intestinal tracts. There is, therefore, a small risk of injury to these structures during gynecologic/urogynecologic procedures. The risk of injury to organs surrounding the uterus is about 6 in 1,000 operations (approximately 1% or less). Previous abdominal/pelvic surgery and pelvic infections will increase the risk for these problems. Your surgeon will evaluate for the possibility of such injury during surgery and address any problem thus identified. In some cases, problems do not become evident until some time after the initial surgery. When a problem in one of these systems arises, it may need to be treated with more extensive surgical and invasive procedures. Examples of these types of issues would include bowel obstruction (usually caused by adhesions/scar tissue) and fistula formation (abnormal connection between two organs/areas not normally connected), usually arising from infections and inflammatory/healing issues.

  - Gastrointestinal injuries: Injuries to the intestinal tract (small and large intestine, rectum) occur approximately 1 per 500 operations but varies from case to case. This may happen when establishing the portals of entry from the instruments as well as during pelvic dissection. This is a serious complication and must be rectified. The repair usually requires major surgery. Although a colostomy is a possibility, it is a remote one.

  - Urologic injury: Because much dissection is done around the drainage tubes from the kidney (ureters) or the urinary bladder, there is always the possibility of injury to one of these structures. These may be minor or serious, resulting in major surgery and even, rarely, loss of a kidney.

  - Neurologic injuries: Pelvic nerve injuries may occur when extensive pelvic dissection is required. These are most often characterized by temporary numbness or tingling in the abdomen or lower extremities, but muscle weakness may occur rarely and be permanent. Similarly, weakness of the upper extremity has been reported, but fortunately, is very infrequent.

  - Neurologic Symptoms: Rarely, patients whose legs are in the positions utilized for gynecologic/urogynecologic procedures will develop problems with sensation or movement in their lower extremities after surgery. When they occur, these symptoms typically resolve within a few days to weeks. In some cases, patients require physical therapy for improvement and extremely rarely, surgery.

- Scarring:

  - Internal scarring with creation of adhesions could occur with all abdominal surgeries. In rare cases, it can cause infertility, pelvic pain and intestinal obstruction that need to be treated with surgical measures.

- Failure to Cure Symptoms/Recurrence of Symptoms:
    - The intent of surgeries for prolapse and incontinence is to affect a long-term cure of these symptoms. However, there are several factors which may contribute to these symptoms returning, including strength and healing of the tissue used in the repair and chronic increases in pressure on the pelvis, which may occur due to constipation/straining, lifting, obesity and heavy exercise. Patients who experience a recurrence of symptoms should be evaluated and should be aware that there may be other treatment modalities utilized to improve their condition.

- Failure to remove all the diseased tissue:
    - With certain conditions like endometriosis and fibroids, not all abnormal tissue can be removed due to its proximity to vital structures or other procedure and disease-specific factors.

- Phlebitis:
    - The patient may experience tenderness along the vein used for intravenous administration of fluids and medications. This responds to warm compressed and is usually temporary. Occasionally, a small lump at the intravenous site will persist.

- Allergic reactions:
    - Several medications are used during surgery, and there is always possibility of a reaction to one or more of them. Appropriate steps are taken to counteract it.

- Ovarian failure:
    - The ovary (ies) may go into permanent failure after surgery. This is usually associated with extensive ovarian surgery, such as removal of cysts and rarely after a hysterectomy.

- Painful Intercourse:
    - A small percentage of patients will develop painful vaginal intercourse after pelvic procedures. This presumably relates to scar tissue. Some, but not all, patients will find improvement over time. In some cases, use of vaginal estrogen may also help patients with these symptoms.

- Blood Clots:
    - Formation of potentially life-threatening blood clots may occur during these procedures. When blood clots occur they typically develop in blood vessels of the

calf or pelvis and can break off and go to the lungs. When this occurs, it is usually several days to a week after surgery. Your surgeon will take precautions in the operating room to decrease this risk, such as placing special intermittent compression boots ("massagers") on your lower extremities to help blood keep flowing during the surgery. Depending on the type of surgery, these may remain on afterwards until you are walking well. Some patients who are at higher risk for clots may also receive blood thinners to decrease the risk. These medications are not used for everyone because they may also increase your risk for bleeding.

- Failed procedure:
    - Occasionally the surgeon will have to terminate the operation due to technical problems or because the procedure is inappropriate for the disease, as in the discovery of a pelvic malignancy. Major surgery would be done at that time only for an urgent problem, and, if appropriate, after consultation with the family.

- Conversion to open surgery:
    - In a case when procedure cannot be completed laparoscopically (for instance, difficult anatomy, extensive scar tissue, bleeding that cannot be controlled or other unexpected findings), open incision needs to be made to complete surgery. Converting the procedure to open could mean a longer operative time, long time under anesthesia, and could lead to increased complications.

- Patients should consider that risks of *any* surgery include:
    - Potential for human error
    - Potential for equipment failure

- Risk specific to minimally invasive surgery may include: a longer operative time compared to open procedure but faster recovery and other benefits.

- Death and chronic disability: catastrophic complications resulting in death of the patient are rare. Re-operations to correct complications are at times needed. The risk of death from a hysterectomy is 6 in 10,000 for all women; 3 in 10,000 for women aged 35-44; and 37 in 10,000 when the operation is performed to remove cancer because of more extensive surgery.

- Risks of laparoscopic morcellation:
    - In some laparoscopic surgeries such as laparoscopic myomectomies or hysterectomies fibroids or uterus with fibroids are removed via a technique that is called "laparoscopic morcellation." Because in those cases surgery is done via small incisions and fibroids are often quite large, they cannot be removed via

those small incisions or via vaginal incision. Therefore, in order to avoid large incision on the abdomen, which would result in more pain and longer recovery, your surgeon might employ this technique. An instrument called a morcellator fragments fibroids into smaller pieces, which then allows them to be removed through small incisions (like peeling an apple). While this technique is considered to be safe and is an accepted standard of care in the medical community, because the uterus or fibroid are not removed as a whole, it has some implications in cases where cancer is found unexpectantly as an after fact during pathological examination. The risk of missing this rare cancer (called leiomyosarcoma) despite proper evaluation prior to surgery is thought to be 1:1000 or less, but some hospitals report this to be 1:400. In addition, in some rare cases, tiny fibroid fragments incidentally left behind might grow into "parasitic myomas" on the inside of the abdomen and cause pain in some cases, needing surgical removal. A lot of work is being put into investigating this further at this time, as well as looking for alternative techniques but at this time there is no practical alternative other than making a large open incision (called a laparotomy).