

ENDOSCOPY

Endoscopy is a procedure that lets your doctor look inside your body. It uses an instrument called an *endoscope*, or *scope* for short. Scopes have a tiny camera attached to a long, thin tube. The doctor moves it through a body passageway or opening to see inside an organ. Sometimes scopes are used for surgery, such as for removing polyps from the colon.

There are many different *kinds of endoscopy*. Here are the names of some of them and where they look.

- Arthroscopy: joints
- Bronchoscopy: lungs
- Colonoscopy and sigmoidoscopy: large intestine
- Cystoscopy and ureterostomy: urinary system
- Laparoscopy: abdomen or pelvis
- Upper gastrointestinal endoscopy: esophagus and stomach
- Thoracoscopy: chest and especially the pleural cavity.
- Axilloscopy: axillary lymph nodes

LAPAROSCOPY.

Laparoscopic surgery, also called **minimally invasive surgery (MIS)**, **band aid surgery**, or **keyhole surgery**, is a modern surgical technique in which operations are performed far from their location through small incisions (usually 0.5–1.5 cm) elsewhere in the body. A small incision is made, usually in the navel, through which a viewing tube (laparoscope) is inserted. The viewing tube has a small camera on the eyepiece. This allows the doctor to examine the abdominal/ pelvic organs on a video monitor connected to the tube. Other small incisions can be made to insert instruments to perform procedures.

The key element in laparoscopic surgery is the use of a *laparoscope*, a long fiber optic cable system which allows viewing of the affected area by snaking the cable from a more distant, but more easily accessible location.

A laparoscope





Also attached is a fiber optic cable system connected to a 'cold' light source (halogen or xenon), to illuminate the operative field, which is inserted through a 5 mm or 10 mm cannula or trocar. The abdomen is usually insufflated with carbon dioxide gas. This elevates the abdominal wall above the internal organs to create a working and viewing space. Carbon dioxide CO₂ is used because it is common to the human body and can be absorbed by tissue and removed by the respiratory system. It is also non-flammable, which is important because electro-surgical devices are commonly used in laparoscopic procedures.

A laparoscopic tower

Laparoscopic surgery includes operations within the abdominal or pelvic cavities, whereas keyhole surgery performed on the thoracic or chest cavity is called ***Thoracoscopic*** surgery.

In many cases laparoscopy can be done instead of laparotomy surgery that uses a larger incision in the belly.

Indications.

Laparoscopy is done to:

- Check for and possibly take out abnormal growths (such as tumors) in the belly or pelvis.
- Do a biopsy.
- See whether cancer in another area of the body has spread to the belly.
- Check for damage to internal organs, such as the spleen, after an injury or accident.
- Fix a hiatal hernia or an inguinal hernia. A protrusion of internal abdominal contents through the abdominal wall.
- Take out organs, such as the uterus, spleen, gallbladder (laparoscopic cholecystectomy), ovaries, or appendix (appendectomy). Partial removal (resection) of the colon also can be done.
- Find the cause of sudden or ongoing pelvic pain.
- Check for and treat conditions such as endometriosis, ectopic pregnancy, or pelvic inflammatory disease (PID). Find conditions that can make it hard for a woman to become pregnant. These conditions include cysts, adhesions, fibroids, and infection.
- Do a tubal ligation. ("Having your tubes tied") in women to permanently prevent pregnancy.

Contraindications.

- Coagulation disorders
- Dense adhesions (scar tissue) from previous abdominal surgery
- Many patients with existing pulmonary disorders may not tolerate pneumo-peritoneum (gas in the abdominal cavity), resulting in a need for conversion to open surgery after the initial attempt at laparoscopic approach.
- Severe congestive heart failure
- Respiratory insufficiency
- Suspected acute, diffuse peritonitis- inflammation of the peritoneum.
- The elderly: - poor tolerance to pneumo- peritoneum.

Advantages.

There are a number of advantages to the patient with laparoscopic surgery versus an open procedure. These include:-

- Reduced hemorrhaging/ bleeding, which reduces the chance of needing a blood transfusion.
- Smaller incision, which reduces pain and shortens recovery time, as well as resulting in less post-operative scarring.
- Less pain, leading to less pain medication needed.
- Although procedure times are usually slightly longer, hospital stay is less, and often with a same day discharge which leads to a faster return to everyday living.
- Reduced exposure of internal organs to possible external contaminants thereby reduced risk of acquiring infections.

Although laparoscopy in adult age group is widely accepted, its advantage in pediatric age group is questioned. Benefits of laparoscopy appear to recede with younger age.

Limitations.

While laparoscopic surgery is clearly advantageous in terms of patient outcomes, the procedure is more difficult from the surgeon's perspective when compared to traditional, open surgery:

- The surgeon has limited range of motion at the surgical site resulting in a loss of dexterity.
- Poor depth perception.
- Surgeons must use tools to interact with tissue rather than manipulate it directly with their hands. These results in an inability to accurately judge how much force is being applied hence a risk of damaging tissue by applying more force than necessary and making delicate operations such as tying sutures more difficult.

- The tool endpoints move in the opposite direction to the surgeon's hands due to the pivot point, making laparoscopic surgery a non-intuitive motor skill that is difficult to learn. This is called the Fulcrum effect
- Some surgeries (carpal tunnel for instance) generally turn out better for the patient when the area can be opened up, allowing the surgeon to see "the whole picture" surrounding physiology. In this regard, keyhole surgery can be a disadvantage.

Risks.

Some of the risks are briefly described below:

- The most significant risks are from trocar injuries during insertion into the abdominal cavity, as the trocar is typically inserted blindly.
- Some patients have sustained electrical burns unseen by surgeons who are working with electrodes that leak current into surrounding tissue. The resulting injuries can result in perforated organs and can also lead to peritonitis. This risk is eliminated by utilizing *active electrode monitoring*.
- There may be an increased risk of hypothermia and peritoneal trauma due to increased exposure to cold, dry gases during insufflation. The use of Surgical Humidification therapy, which is the use of heated and humidified CO₂ for insufflation, has been shown to reduce this risk.
- Not all of the CO₂ introduced into the abdominal cavity is removed through the incisions during surgery. Gas tends to rise, and when a pocket of CO₂ rises in the abdomen, it pushes against the diaphragm (the muscle that separates the abdominal from the thoracic cavities and facilitates breathing), and can exert pressure on the phrenic nerve. This produces a sensation of pain that may extend to the patient's shoulders and pain when breathing. In all cases, however, the pain is transient, as the body tissues will absorb the CO₂ and eliminate it through respiration.
- Intra-abdominal adhesion formation is a risk equally associated with both laparoscopic and open surgery and remains a significant, unresolved problem. Adhesions are fibrous deposits that connect tissue to organ post-surgery. The use of Surgical Humidification therapy during laparoscopic surgery may minimize the incidence of adhesion formation.

Before laparoscopy:

Follow the instructions about when to stop eating, drinking and how to take your medicines prior to surgery.

Remove your jewelry, glasses, contacts, and dentures or a removable bridge before the laparoscopy.

You may be asked to use an enema or suppository several hours before or the day before the surgery to empty your colon.

You will be asked to sign a consent form that says you understand the risks of the procedure and agree to have it done.

How It Is Done



Laparoscopy is done by a surgeon or a gynecologist. General anesthesia is generally used, but other types of anesthesia, such as spinal anesthesia, may be used.

About an hour before the surgery, you will empty your bladder. You will get fluids and medicine through an intravenous (IV) in a vein in your arm. You may get a sedative to help you relax.

Several procedures may be done after you get your anesthesia and are relaxed or asleep.

- An airway will be placed in your throat to help you breathe if you get general anesthesia.
- A thin flexible tube (urinary catheter) may be put through your urethra into the bladder.
- Some of your pubic hair may be shaved.
- Your belly and pelvic area will be cleaned.

During laparoscopy, a small incision is made in the belly. More than one incision may be made if other tools will be used during the surgery. A hollow needle is put through the first incision and gas (carbon dioxide or nitrous oxide) is slowly put through the needle to inflate the belly. The gas lifts the abdominal wall away from the organs inside so your doctor can see clearly.

A laparoscope is then put through the incision to look at the organs. Other tools can be used to take tissue samples, fix damage, or drain cysts. A laser may be attached to the laparoscope to help with the surgery.

After the surgery, all the tools will be removed and the gas will be released. The incisions will be closed with stitches and covered with a bandage. The scar will be very small and will fade over time.

Laparoscopy takes 30 to 90 minutes, depending on what is done, but can take longer. After the laparoscopy, you will go to the recovery room for 2 to 4 hours.

How It Feels

If general anesthesia is used, you will be asleep and feel nothing. After you wake up, you will feel sleepy for several hours. You may be tired and have some pain for a few days after a laparoscopy. You may have a mild sore throat from the tube in your throat to help you breathe. Use throat lozenges and gargle with warm salt water to help your sore throat.

If you have other types of anesthesia, you may have pain for a few days when the initial numbness wears off.

After the Procedure

Some pain or throbbing is possible where the small cuts were made. The doctor may recommend a prescription or over-the-counter pain reliever.

If stitches were used, a follow-up appointment for removal of stitches may be scheduled in a week or two as directed.

Sometimes the carbon dioxide gas can trigger shoulder pain after the procedure. Some of the same nerves that reach the shoulder are present in the abdomen. The pain goes away over time.

Pressure from the gas may cause a sensation of needing to urinate more often and more urgently. This sensation goes away over time.

The doctor will determine when eating and drinking can be resumed.

Once a person has sufficiently recovered, he or she can be sent home. Someone else should drive.

You can usually do your normal activities the next day, but restrain from heavy lifting and strenuous activities until completely healed.

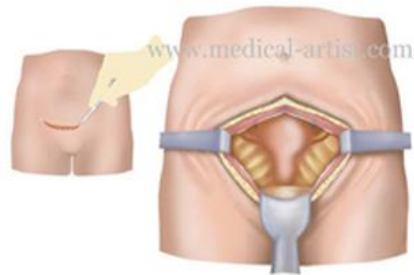
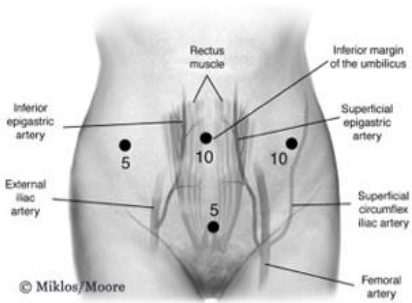
When to Seek Medical Care

If, after a laparoscopic procedure, a person develops any of these problems, a doctor should be contacted:

- Chills or fever
- Nausea or vomiting
- Bleeding, drainage, or redness from any of the small incisions
- Swelling of the surgical area
- Inability to urinate
- Pain that can't be controlled with prescribed medication



Laparoscopy Vs Laparotomy.



VS.

