

Laparoscopic Surgery

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What is laparoscopic surgery?

Laparoscopic surgery refers to a special technique by which the surgeon performs the surgery through several small holes in the abdomen with the aid of a camera. It is also known as “minimally invasive surgery”. These incisions are much smaller than would have been required using traditional surgical techniques. Generally the operation that is performed is still the same operation, even though the incisions are much smaller.

What advantages does laparoscopic surgery have over conventional surgery?

Laparoscopic surgery usually results in reduced hospital stays, fewer wound infections, less pain, and a faster recovery time. From a surgeon’s perspective, laparoscopic surgery may allow for easier dissection of abdominal scar tissue (adhesions), less surgical trauma, and improved outcomes in certain groups like the elderly and extremely overweight individuals.

What are the indications for laparoscopic surgery?

These days, many surgeries that were once performed “open” (longer incisions of the abdominal wall allowing direct visualization of abdominal contents) can be performed laparoscopically. The laparoscopic surgeon can operate upon many organs, including but not limited to the colon, small intestine, stomach, gallbladder, liver, and pancreas. Any previous surgery can create scar tissue in the abdomen making a laparoscopic procedure more technically difficult. The surgeon would decide if a laparoscopic approach is the best choice for you. Certain conditions or disease states lend themselves well to laparoscopic intervention.

In the **colon**, the major indications for laparoscopic intervention are diverticulosis (see the ACG patient web page on diverticulosis), removal of large growths called polyps that are unable to be completely resected by colonoscopy, and colon cancer. The operation is typically performed by making four or five small abdominal incisions with the largest one being used to remove the specimen from the body. In general, these operations result in less blood loss during the surgery, less need for blood transfusions, and quicker time to eating a meal after surgery. Despite the accessibility of the colon by a laparoscope there has been much debate over the past decade regarding the safety of laparoscopic surgery for colorectal cancer. The main concern involves the possibility of spreading tumor cells to the surrounding tissue when the laparoscopic instrument contacts the tumor. Recent research presented at various national and international conferences by experienced



laparoscopic surgeons indicates that laparoscopic surgery for colorectal cancer appears to be safe in expert hands.

The **stomach** is very accessible by the laparoscope. Repair of a perforated (ruptured) or bleeding peptic ulcer as well as removal of some stomach tumors can be performed laparoscopically. Another procedure that has received a lot of media attention is laparoscopic surgery for obesity or bariatric surgery, an operation designed to enable weight reduction. (see below).

Gallbladder surgery is one of the most common operations performed in the United States, and lends itself well to the laparoscopic approach. The advent of laparoscopic gallbladder surgery has benefited many patients tremendously. In addition to not having to endure a cosmetically displeasing scar, patients can be quickly discharged from the hospital and return to their normal lifestyle within several days. This is in contrast to twenty to thirty years ago, when gallbladder surgery by the traditional open incision method routinely resulted in a 5 to 7 day hospital stay followed by several additional weeks of recovery time.

For conditions of the **small intestine**, laparoscopic surgery may be performed to repair hernias, perforations (ruptures of the wall), and remove short segments of the intestine that contain tumors or focal areas of active inflammatory bowel disease. A hernia is a weakness in the muscle wall through which a portion of the small intestine can be trapped, causing pain and reducing the blood supply to the trapped tissue. Laparoscopic surgery of hernias provides the surgeon the opportunity to repair the weak muscle wall so the tissue cannot be trapped and allows earlier return to normal activities. Infections as can occur at the site of a ruptured diverticulum, or focal areas of inflammation as in Crohn's disease can be treated laparoscopically.

The liver is a vascular (many blood vessels) organ that can bleed easily if cut, and until recently was not accessed laparoscopically. Indications for laparoscopic intervention of the **liver** include drainage of cysts, abscesses, and biopsies of growths. Ablation (destruction by laser or chemical means) of some liver tumors can be performed laparoscopically. In recent years, skilled laparoscopic liver surgeons have performed segmental (partial) resections of the liver as well.

Laparoscopic surgery involving the **pancreas** is usually a "staging laparoscopy" when there is concern for a cancer or benign (non-cancerous) tumor. During this procedure, the surgeon examines the entire abdomen for signs of tumor spread beyond the pancreas. Pancreatic tumors are often very tiny and may not be detected by x-rays. If a pancreatic tumor has spread far from the site of origin, surgical resection of the primary tumor cannot be done. In learning this information during the staging process, the patient is saved from undergoing a more extensive operation.



What is anti-reflux surgery?

One of the most important options for certain patients with chronic and severe gastroesophageal reflux disease is anti-reflux surgery. In normal individuals, reflux of acid from the stomach up into the esophagus is prevented by a barrier created by a ring of muscle in the lower esophagus called the lower esophageal sphincter (LES). If the LES becomes weak, free reflux of acid can occur, resulting in inflammation and ulcerations in the esophagus. Chronic reflux may be associated with development of Barrett's esophagus, a condition that has a small but real risk of esophageal cancer. Laparoscopic surgery can effectively reestablish this barrier in carefully selected individuals, resulting in control of symptoms long-term (in some studies, reported as high as 90%) and avoiding the need for chronic acid suppression medications. This operation, referred to as "fundoplication", consists of wrapping the upper part of the stomach around the lower end of the esophagus.

Prior to the development of proton pump inhibitors, the most common indication for anti-reflux surgery was the inability to control GERD on medical therapy. However, this is rarely the case now with the use of proton pump inhibitors or high-dose H₂ receptor antagonists. On the other hand, these drugs are expensive and generally require at least daily dosing for symptom control. Other indications for anti-reflux surgery include difficult to manage strictures, rare non-healing ulcers, severe bleeding from esophagitis and aspiration symptoms. The presence of Barrett's esophagus alone is not an indication for anti-reflux surgery. Neither surgical nor medical series have consistently shown the regression or resolution of Barrett's esophagus with effective acid suppression.

The menu for successful anti-reflux surgery is both simple and complex. The primary criteria are the right surgeon and the right patient. The surgeon should be experienced and skillful. The diagnosis of GERD must be well established prior to referral for surgery. All patients require a comprehensive evaluation of gastroesophageal function prior to operation. The minimal evaluation should include upper GI endoscopy, esophageal manometry, primarily to identify a weak esophageal pump and exclude achalasia or scleroderma, and 24-hour pH monitoring, especially in patients without esophagitis, selected patients may also require gastric emptying studies, if there are symptoms of nausea, vomiting, or bloating.

In summary, laparoscopic intervention may be an option in a wide variety of digestive disorders. At present, laparoscopic gallbladder surgery is readily available in most community hospitals. Some surgeries may require the skill of a surgeon who has completed advanced laparoscopy training, therefore, an understanding of a surgeon's training and experience is recommended prior to the procedure. If at any time during a laparoscopic procedure the surgeon feels it important to view the entire abdomen they could remove the laparoscope and revert (change) to an open procedure. Obviously, this would only be done in the interest of patient safety and trying to assure the best outcome. You should consult with your doctor whether some type of laparoscopic surgery is most suitable for your needs.

