

Laparoscopy and Endoscopy

Laparoscopy is an operation performed in the abdomen or pelvis using small incisions (usually 0.5–1.5 cm) with the aid of a camera. The laparoscope aids diagnosis or therapeutic interventions with a few small cuts in the abdomen.

Laparoscopic surgery, also called minimally invasive procedure, bandaid surgery, or (keyhole surgery), is a modern surgical technique.

There are a number of advantages to the patient with laparoscopic surgery versus an exploratory laparotomy:

- 1- Reduced pain due to smaller incisions
- 2- Reduced hemorrhaging,
- 3- Shorter recovery time.

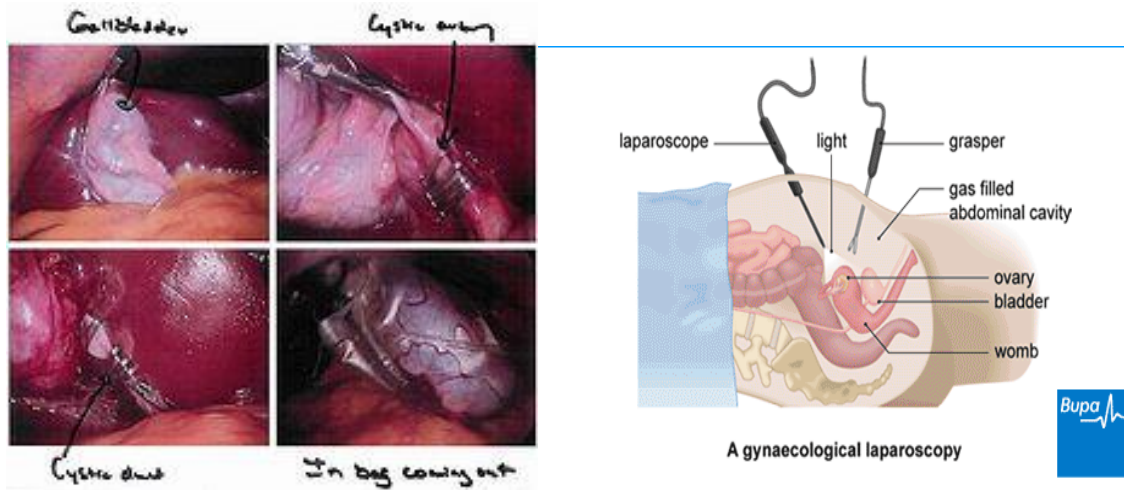
The key element is the use of a **laparoscope**, a long fiber optic cable system that allows viewing of the affected area by snaking the cable from a more distant, but more easily accessible location.

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

Specific surgical instruments used in laparoscopic surgery include

- 1- Obstetrical forceps,
- 2- scissors,
- 3- probes,
- 4- dissectors,
- 5- hooks
- 6- retractors.

Laparoscopic and thoracoscopic surgery belong to the broader field of endoscopy. The first laparoscopic procedure was performed by German surgeon Georg Kelling in 1901.



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. 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 electrosurgical devices are commonly used in laparoscopic procedures

Advantages

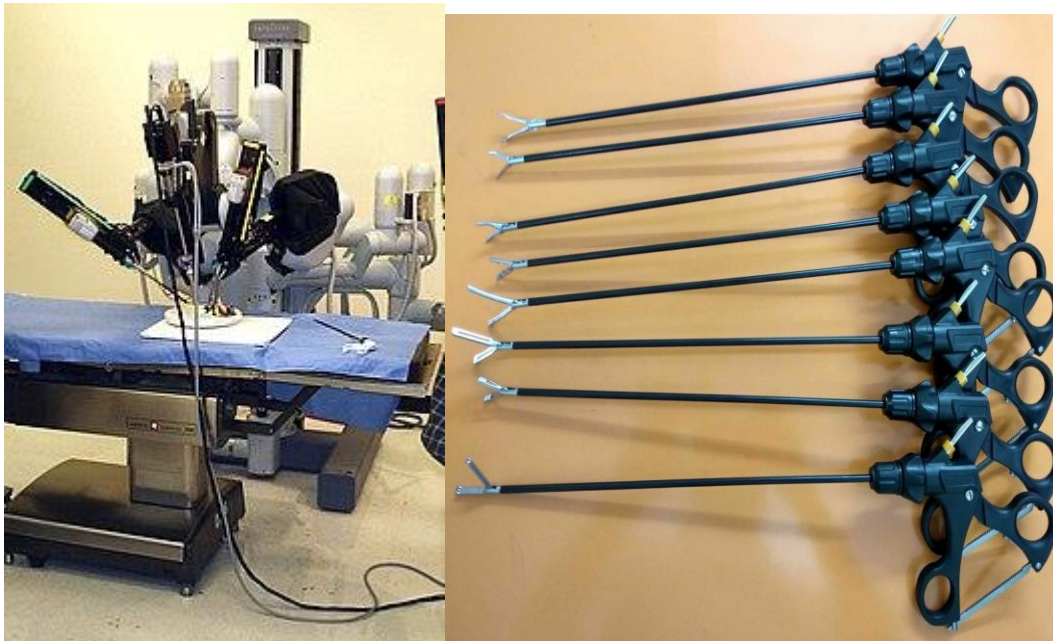
There are a number of advantages to the patient with laparoscopic surgery versus an open procedure. These include:

- 1- Reduced hemorrhaging, which reduces the chance of needing a blood transfusion.
- 2- Smaller incision, which reduces pain and shortens recovery time, as well as resulting in less post-operative scarring.
- 3- Less pain, leading to less pain medication needed.
- 4- Use of regional anesthesia (with the recommendation of using a combined spinal and epidural anaesthesia) for laparoscopic surgery, as opposed to general anesthesia required for many non-laparoscopic procedures, can produce fewer complications and quicker recovery.

- 5- 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.
- 6- Reduced exposure of internal organs to possible external contaminants, thereby reduced risk of acquiring infections.

Disadvantages

- 1- Laparoscopic surgery requires pneumoperitoneum.
- 2- The surgeon has a limited range of motion at the surgical site.
- 3- Surgeons must use tools to interact with tissue rather than manipulate it directly with their hands. (sometimes an important diagnostic tool, such as when palpating for tumors) and making delicate operations such as tying sutures more difficult.
- 4- 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.



Endoscopy

The endoscopy procedure uses an endoscope to examine the interior of a hollow organ or cavity of the body. Unlike many other medical imaging techniques, endoscopes are inserted directly into the organ.

There are many types of endoscopies. Depending on the site in the body and type of procedure, an endoscopy may be performed by either a doctor or a surgeon. A patient may be fully conscious or anaesthetised during the procedure. Most often, the term *endoscopy* is used to refer to an examination of the upper part of the gastrointestinal tract, known as an esophagogastroduodenoscopy.

Endoscopy may be used to investigate symptoms in the digestive system including nausea, vomiting, abdominal pain, difficulty swallowing, and gastrointestinal bleeding.

It is also used in diagnosis, most commonly by performing a biopsy to check for conditions such as anemia, bleeding, inflammation, and cancers of the digestive system.

Applications

Health care providers can use endoscopy to review any of the following body parts:

- The gastrointestinal tract (GI tract):
 - oesophagus, stomach and duodenum (esophagogastroduodenoscopy)
 - small intestine (enteroscopy)
 - large intestine/colon (colonoscopy, sigmoidoscopy)
 - Magnification endoscopy
 - bile duct
 - rectum (rectoscopy) and anus (anoscopy), both also referred to as (proctoscopy)
- The respiratory tract
 - The nose (rhinoscopy)
 - The upper respiratory tract (laryngoscopy)
 - The lower respiratory tract (bronchoscopy)
- The ear (otoscope)

- The urinary tract (cystoscopy)
- The female reproductive system (gynoscopy)
 - The cervix (colposcopy)
 - The uterus (hysteroscopy)
 - The fallopian tubes (fallopscopy)
- Normally closed body cavities (through a small incision):
 - The abdominal or pelvic cavity (laparoscopy)
 - The interior of a joint (arthroscopy)
 - Organs of the chest (thoracoscopy and mediastinoscopy)

An endoscopy is a simple procedure that allows a doctor to look inside human bodies using an instrument called an endoscope. A cutting tool can be attached to the end of the endoscope, and the apparatus can then be used to perform minor procedures such as tissue biopsies, banding of oesophageal varices or removal of polyps.

