

LAPAROSCOPY AND LAPAROSCOPIC SURGERY

The aim of the study was to consider the problems laparoscopy can be used and treat, methods of performing laparoscopic operations, its benefits and drawbacks as well as side effects associated with laparoscopic techniques.

Laparoscopy is a surgical procedure which uses a special surgical instrument called a laparoscope to look inside the body or to perform certain operations. This procedure is also known as keyhole surgery or minimally invasive surgery.

Laparoscopic surgery has been developed over many decades and it is difficult to pinpoint one individual as pioneer of the approach. It was in 1902 that Georg Kelling from Dresden in Germany performed laparoscopic surgery using dogs and in 1910, Hans Christian Jacobaeus from Sweden used the approach to operate on a human. Over the next couple of decades, the procedure was refined and popularized by a number of people. The introduction of the computer chip television camera was a key event in the development of laparoscopy, as the procedure could then be conducted while viewing a projected image of the abdominal contents. [5.]

At first, laparoscopy was only been performed on young, healthy adults, but the use of this technique has greatly expanded. Populations on whom laparoscopies are now performed include infants, children, the elderly, the obese, and those with chronic disease states, such as cancer. The applications of this type of surgery have grown considerably over the years to include a variety of patient populations, and will continue to do so with the refinement of laparoscopic techniques.

A laparoscope is like a thin telescope with a light source. It is used to light up and magnify the structures inside the abdomen. A laparoscope is passed into the abdomen through a small cut (incision) in the skin.

The different components involved in the process of laparoscopy are:

the Light Source. This device is the source of illumination (via Halogen or lately Xenon lamps) and is connected to the laparoscope;

The Insufflator. This is a special device which is connected to a gas cylinder (a CO₂ gas cylinder) and transmits the gas to the abdomen to fill it up and distended it resulting in the abdominal organs being pushed down and a space being created for surgery to be performed.

Camera. This is a special high resolution camera connected to the laparoscope.

Trocar & Cannula . This is a two piece instrument with a sharp component inside a hollow cylinder. The sharp part (trocar) helps in penetrating the abdominal wall and placing the hollow cylinder (cannula) inside the abdomen. The laparoscopic instruments then are introduced through the cannula into the abdomen for performing surgeries.

Laparoscopic Instruments. These special instruments (laparoscopic scissors, laparoscopic dissectors, laparoscopic cautery) are used to perform the surgical procedures. They are thin and long (approx. 33 cm in length)

The Laparoscopic Tower. The above equipment is arranged in a tower inside the Operation Theater (OT)

A laparoscopy may be done to find the cause of symptoms such as abdominal pain, pelvic pain or swelling of the abdomen or pelvic region. Or, it may be done if a previous test such as an X-ray or scan has identified a problem within the abdomen or pelvis [7,c.101].

A laparoscopy enables a doctor to see clearly inside your abdomen. Some common conditions which can be seen by laparoscopy include: endometriosis, pelvic inflammatory disease, ectopic pregnancy, ovarian cyst, appendicitis.

Laparoscopic surgery. In addition simply to looking inside, a doctor can use fine instruments which are also passed into the tummy (abdomen) through another small cut (incision) in the skin. These instruments are used to cut or trim tissues, perform sample-taking (biopsies), grasp organs, etc, inside the abdomen.

Laparoscopic surgery can be used for various procedures. Some commonly performed operations include: removal of the gallbladder (a laparoscopic cholecystectomy); removal of the appendix; removal of patches of endometriosis; removal of parts of the intestines; female sterilisation; treating ectopic pregnancy; taking a biopsy of various structures inside the abdomen .Compared with traditional surgery, with laparoscopic surgery there is usually: less pain following the procedure; less risk of complications; a shorter hospital stay and a quicker recovery; a much smaller scar.

Laparoscopy and laparoscopic surgery are usually done whilst a patient is asleep under general anaesthesia. The skin over the tummy (abdomen) is cleaned. The surgeon or gynaecologist then makes a small cut (incision) about 1-2 cm long near to the belly button (navel). Some gas is injected through the cut to 'blow out' the abdominal wall slightly. Currently, carbon dioxide is the most frequently used gas for this purpose. This makes it easier to see the internal organs with the laparoscope which is gently pushed through the incision into the abdominal cavity. The surgeon or gynaecologist then looks down the laparoscope or looks at pictures on a TV monitor connected to the laparoscope. [6,c.62].

If a patient has a surgical procedure, one or more separate small incisions may be made in the abdominal skin. These allow thin instruments to be pushed into the abdominal cavity. The surgeon can see the ends of these instruments with the laparoscope and so can perform the required procedure. A more recent technique called single-port laparoscopy involves operating through the same incision through which the laparoscope was passed and does not require additional cuts to the abdomen. [3,c.32].

When the surgeon has finished, the laparoscope and other instruments are removed. The gas is let out of your abdomen, the incisions are closed using stitches and a dressing is applied.

As any operation laparoscopy may have some risks. The most common risks associated with laparoscopy are bleeding, infection, and damage to a blood vessel or other organ, such as the stomach, bowel, bladder, or ureters. However, these are rare occurrences. [2,c.31].

After the procedure, it's important to watch for any signs of infection. A patient may experience: fevers or chills, abdominal pain that becomes more intense over time; redness, swelling, bleeding, or drainage at the incision sites; continuous nausea or vomiting; persistent cough; shortness of breath; inability to urinate; lightheadedness.

Robotic surgery. A new stage in the development of laparoscopic surgery is the use of specialized robots, one of the most famous among them is "daVinci".

"daVinci" is a computer-assisted robotic system that expands a surgeon's capability to operate within the abdomen in a less invasive way during laparoscopic surgery. "daVinci" system allows greater precision and better visualization compared to standard laparoscopic surgery. [1] The "daVinci" System allows minimally-invasive surgery to be performed with greater precision and improved functional and cosmetic results. It is expected to reduce length of stay in the hospital, complications and postoperative pain.

The difference with robotic surgery is that the surgeon sits at a computer and uses hand controls to manipulate the robot – rather than holding and manipulating the tools themselves, as with laparoscopic surgery. And the imagery is three dimensional, high definition and magnified – all of which allow for better vision and greater precision.

The other distinguishing factor is that the instruments used for robotic surgery are “wristed” – they move like a hand. This provides greater range of motion and more precision, which can mean less manipulation of tissues, less bleeding and less post-operative pain than with laparoscopic surgery. [4]

Most doctors and patients would agree: minimally-invasive surgery is preferable to open surgery. The decision to perform an operation using a laparoscopic approach is individualized per patient. Certain factors such as a patient’s past medical history, prior surgeries and a patient’s general health are factors that affect the decision to perform a surgery laparoscopically. Only you and your doctor can decide which is best in your case.

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