

Chapter 19

Single Incision Laparoscopic Surgery

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What is Single incision Laparoscopic Surgery?

Traditional laparoscopy requires 3 to 4 incisions ranging from 5 to 10 mm, to perform the surgery. Single incision laparoscopic surgery is performed using a single incision of 20 to 25 mm, in the umbilicus, to perform the surgery.

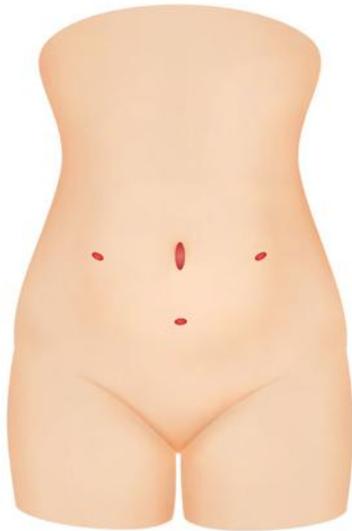


Figure 19.1 Incisions for traditional 4 port laparoscopy



Figure 19.2 Incision for single incision laparoscopic surgery

How is it performed?

There are several ways to perform single incision laparoscopic surgery. One method is to use commercially available devices such as the SILS Port and Gel Port. In this technique, a single incision measuring 2 to 2.5 cm, is made in the umbilicus. The incision is extended into the abdominal cavity by cutting the rectus sheath and the peritoneum and the device is then fixed in place. Carbon dioxide (CO₂) insufflation is done. Trocars measuring 5mm to 10mm are placed into the port to introduce a laparoscope and instruments to perform the surgery.



Figure 19.3 Commercially available single incision devices

The second method is performed without using any special device but with only trocars that are generally used during traditional laparoscopic surgery. After making the skin incision measuring 2.5 cm, the skin is detached from the rectus sheath and a space with a distance of about 1.5 cm is created all around the incision. This is to release the skin from the rectus sheath. After this, an instrument called a Veress needle is used to pass carbon dioxide into the abdominal cavity. This is to separate the abdominal wall from the abdominal organs. A trocar with a rubber band attached to it is inserted into the abdomen in the middle of the incision. A laparoscope attached to a camera is passed into the abdomen and video images captured by the video camera are displayed on a video monitor. A powerful light source is channeled into the abdominal cavity for the purpose of illumination. Another two, 5mm trocars are placed lateral to the first trocar on either side to allow the passage of instruments such as laparoscopic scissors and graspers to perform the surgery.

At the end of the surgery, all the instruments are removed and the CO₂ gas is released. The umbilicus is then reconstructed.



Figure 19.4 Port placement in single incision laparoscopic surgery (top view)



Figure 19.5 Port placement in single incision laparoscopic surgery (side view)



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Watch Video 19.1

How is single incision laparoscopic surgery performed

<http://vimeo.com/149741718>

What are the advantages and disadvantages of these 2 different techniques?

The advantage of using commercially available devices is that these devices are designed to fit into the abdominal incision tightly so as to prevent the leakage of carbon dioxide. It is also easy to change trocars from 5mm to 10mm during surgery. However, these devices are expensive and are disposable. The distances between the trocars are also small, making surgery especially suturing difficult.

The advantage of using only the trocars is that this technique is cheaper because no other extra device is necessary. The trocars can also be placed quite far apart, so that there is more space, for easy dissection and suturing. The disadvantage of this technique is that, if the incisions made in the rectus sheath are large, leakage of carbon dioxide may cause surgery to be difficult. It is also more difficult to change trocars that have already been placed in the abdomen.

Advantages of Single Incision Laparoscopic Surgery?

Single incision laparoscopic surgery has as many advantages as traditional laparoscopic surgery. This includes:

- Less postoperative pain
- Quicker return of bowel function.
- Quicker return to solid food.
- Quicker return to daily activities.
- Reduced chances of scar formation in the abdomen.
- Reduced infection rate.
- Reduced bleeding during surgery.
- Shorter hospital stay.
- Video magnification offers the surgeon a better view of diseased organs and its surrounding vessels

The added benefit of single incision laparoscopic surgery is that there will be only 1 scar (see Figures 19.4 and 19.5) and it is hidden in the umbilicus. Due to a single incision, the postoperative pain is also believed to be lesser than in traditional laparoscopic surgery.



Figure 19.6 umbilical wound at the end of the surgery



Figure 19.7 umbilical wound 3 months after single incision laparoscopic surgery

What are the disadvantages?

It is technically more demanding for the surgeon to perform this surgery. There is crowding of instruments in the umbilicus and this will cause limitations to the movement of these instruments (triangulation).

Suitable candidates for single incision laparoscopic surgery		
1	Single incision bilateral tubal ligation with Filshie's clip	Scan Me  Watch Video
2	Single incision laparoscopic salpingoophrectomy	Scan Me  Watch Video
3	Single incision laparoscopic cystectomy for ovarian cysts	Scan Me  Watch Video
4	Single incision laparoscopic salpingectomy for ectopic pregnancy	Scan Me  Watch Video
5	Single incision Total Laparoscopic Hysterectomy	Scan Me  Watch Video
6	Single incision laparoscopic myomectomy	Scan Me  Watch Video

Summary

Single incision laparoscopic surgery is performed using a single incision of 20 to 25 mm in the umbilicus. There are several ways of performing this operation. It is a technically demanding surgery for the surgeon but it has several advantages for the patient.