

# Single Incision Surgery In Gynaecology

Surgery without Scars

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Laparoscopy has been hailed as a major paradigm shift in the evolution of surgery in the 21st century. The benefits of laparoscopy over traditional open surgery have been well documented through randomised controlled trials, which include reduced post-operative pain, quicker recovery and improved cosmesis. In addition, the laparoscopic approach bears surgical advantages such as magnification of view and improved access. These benefits have positioned laparoscopic surgery as the current standard of care in many gynaecological procedures.

Since the introduction of minimally invasive surgery in the 1990s, laparoscopic surgery has steadily evolved towards less invasive techniques with a reduction in the number and size of ports used during surgery. These have helped to reduce peri-operative morbidities and improve aesthetic outcomes.

From this framework emerged single-incision laparoscopic surgery (SILS), which involves a single umbilical incision with a multi-channel single port and has since garnered great research interest. While this technique was first introduced by Wheeler<sup>1,2</sup> in 1969 for single-incision tubal ligation, it did not take off due to technical limitations. However, with today's advancements in optical imaging and specialised laparoscopic instruments, the technique is fast becoming a feasible and common surgical method.

SILS offers enhanced aesthetic results because it only leaves a single "hidden" umbilical scar. Advocates of SILS support improved peri-operative outcomes in addition to its aesthetic superiority. It is also argued that the need for less trocar use in SILS may also be associated with fewer risks of vascular and visceral injuries, decreased rates of wound infection and hernia formation and perhaps, even reduced needs for postoperative analgesics. However, research has drawn



**Figure 1:** Various single ports

attention to the lack of evidence for its benefits, the high cost of the procedure and the steeper learning curve in mastering the technique.

### Techniques and Technical Challenges of SILS

A number of multiple-channel single ports for SILS are available. **[Figure 1]** Typically, the single port is inserted via an intra-umbilical skin incision using the open (Hasson) entry technique. The incision can vary between 10mm and 20mm, depending on the size and type of port used, as well as the nature of the procedure performed. These ports have three to four available channels ranging between five and 15mm that can accommodate the laparoscopic instruments and facilitate easy retrieval of specimens.

While the steeper learning curve of the technique is commonly cited as a reason

for the uncommon use of SILS, it is also possible that a change in the perspective in the laparoscopic skills, rather than technical difficulty, has deterred many doctors from attempting SILS. **[Figure 2]** For example, triangulation required in laparoscopic surgery can be viewed in the "vertical" plane instead of the horizontal plane in SILS. This perspective can be demonstrated easily during ovarian cystectomy by peeling the cyst with "to & fro" method, rather than our usual left-right/up-down approach.

### Why SILS Is Particularly Suited To Gynaecological Surgeries?

While the use of SILS in gynaecology is still growing, its feasibility and safety have been demonstrated increasingly in a number of procedures such as adnexal and endometriosis surgery, adhesiolysis and hysterectomies.



**Figure 2:** Pictures of SILS surgery

**The SILS approach is also suitable for gynaecological procedures as majority of such cases do not require suturing or dissection, which can be completed over a short operating time. With access through the vagina, SILS provides an additional hidden port that can be used for uterine manipulation to expose the adnexae, thereby facilitating the SILS approach.**

SILS is particularly suited for young gynaecological patients who tend to be concerned about attaining satisfactory aesthetic results. Even among women who have had previous abdominal surgery such as a caesarean section, SILS is increasingly becoming the choice for surgery to treat gynaecological conditions because of the more favourable cosmetic results.

Another strength of the method is that a patient with a higher-than-average BMI would also be eligible for SILS. This is considering the incision is at the umbilicus where entry is easily achieved using the open (Hasson) entry technique.

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Comparing case reports of adnexectomies (e.g ectopic pregnancies)<sup>3</sup> that were dealt with using SILS and conventional laparoscopic surgery, the peri-operative outcomes appeared equivalent, but SILS showed a higher cosmesis and patient satisfaction. In the case of ovarian cystectomies, using SILS may be more challenging as the technique restricts good traction-countertraction during cyst wall stripping. As for hysterectomies, SILS compared to conventional laparoscopic hysterectomies revealed no difference in complications, operating time and length of hospital stay.

NUH performed the first SILS case in Singapore in 2009.<sup>4</sup> Since then, we have continued to explore the capabilities of SILS in over 100 cases, ranging from simple tubal ligation to the complex hysterectomy.

Preliminary reports have also suggested a potential role for SILS in gynaecologic oncology, especially in the surgical treatment of early endometrial cancer.<sup>5</sup>

## Future Development

As the uses of SILS in gynaecology continue to expand, it is anticipated that the next stage of development of this surgical method is the merging of robotic platforms with SILS.<sup>6</sup> For instance, features like 3D vision and "wrist" articulation of the robot can be incorporated into the SILS arena.

## Conclusion

Single-incision surgery is an innovative approach that is rapidly gaining recognition around the world. With more studies indicating that SILS is feasible and safe, it would be timely for healthcare institutions in Singapore to extrapolate these benefits to the local population in the coming years. **IMG**

### References

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