

INTO THE LOOKING GLASS:

BEYOND GYNAECOLOGICAL ENDOSCOPY

Dr Ng Ying Woo

Consultant, Obstetrics & Gynaecology
MBBS (Singapore), M.Med (Singapore), FRCOG (London)
SBCC Women's Clinic

Brief Historical Development

Gynecological endoscopy began in the 1930s with the development of diagnostic laparoscopy, but it was not until the 1960s that operative laparoscopy was introduced, primarily for tubal sterilization. It then took at least a decade for the development of techniques to treat pelvic disease endoscopically, and by the latter part of the last century, endoscopy had become an essential part of gynecological surgery.

The introduction of endoscopic technology in the 1980s has been hailed as an important advancement in our healthcare system. With the convergence of technological breakthroughs, novel biological insights, changing disease patterns, and improved healthcare economics, laparoscopic





technology matured rapidly as it moved up the evolution curve of surgery. A large majority of gynecological surgeries in Singapore are now performed via the laparoscopic approach.

Novel breakthroughs emerged in the last few years, such as that of improvements in imaging systems to levels of 3D high definition, development of various energy sources for better and more secure haemostasis during surgery as well as robotic technology. Application of these advances enables the surgeon to reduce the number and size of incisions without compromising the quality and completeness of surgeries.

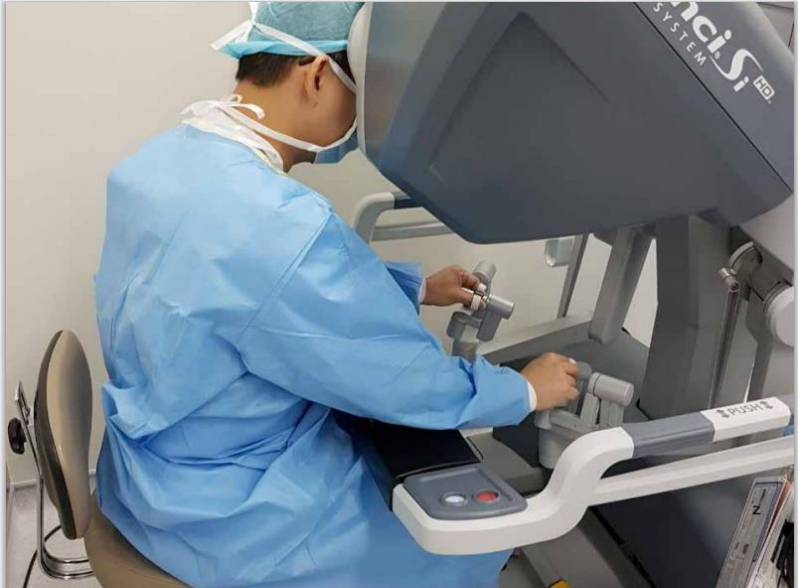
The following section discusses the current development of single incision laparoscopy

(SILS), application of 3D imaging technology and single-site robotic surgery (SSRS) in Singapore.

Single Incision Laparoscopy (Sils)

- "Almost scarless surgery"

SILS involves a single umbilical incision (less than 2cm) and the use of a multi-channel single port to perform the surgery. It leaves only a single "hidden" umbilical scar, and advocates of SILS report improved peri-operative outcomes in addition to aesthetic superiority. It is 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, hernia formation and perhaps even reduced needs for post-operative analgesia. However, research has also drawn attention to the lack of evidence for its



benefits, the high cost of the procedure and the steeper learning curve required to master the technique.

Nevertheless, single-incision surgery as an innovative approach is rapidly gaining recognition around the world. Its feasibility and safety have been demonstrated increasingly in a number of procedures such as adnexal and endometriosis surgery, adhesiolysis and hysterectomies. It is therefore timely for us to extrapolate these benefits for our local population in the coming years.

Three-Dimensional Vision in Gynaecological Procedures - A whole new world!

With 3D imaging technology supporting gynaecological surgeries, similar peri-operative outcomes of patients with no obvious increase in surgical complications have been reported in various case series publications. Despite some discomfort or headache experienced by surgeons using 3D imaging tools, the ease of dissection and suturing is a welcome enhancement to laparoscopic procedures.

Many experts have reported on the great potential of 3D imaging technology in improving operative outcomes of more complex laparoscopic surgeries, such as ureteric dissection in endometriosis surgery in view of the better image quality and resolution. Certainly, achieving more precise haemostasis with the help of 3D-HD imaging may lead to reduction in risk of ovarian damage during laparoscopic cystectomy.

"Dancing in a Tight Circle" – Single Site Robotic Surgery

Single Incision Laparoscopic Surgery was introduced in Singapore since 2009. In SILS, all laparoscopic instruments have to transverse a single small umbilical "hole", making the surgical

experience comparable to that of "dancing within a small circle". However, advancement in imaging enables SILS to gradually gain popularity in the surgical arena, and now it is recognised as a feasible and safe choice for most gynaecological procedures.

The use of the robotic arms in SSRS added a new dimension to gynaecological SILS procedures. SSRS utilises robotic technology to overcome the technical constraints faced in SILS, such as the lack of triangulation and the internal crossing and external clashing of surgical instruments. The robotic wrist platform enables more precise surgical actions by increasing the freedom of movement and restoring intuitive control of instruments.

In June 2017, I successfully performed the first case of Single Site Robotic System (SSRS) gynaecological surgery in Singapore. A large ovarian tumour was removed via a single umbilical incision using the Da Vinci® Surgical System with SSRS hardware.

The surgeon's experience amassed through increased SSRS surgeries will greatly enhance its deployment in gynaecological procedures. Technical improvements to the robotic system such as additional wrist mobility, reduction of instrument size and higher resolution vision will certainly enhance machine performance and deliver better results to patients in the near future.

Conclusion

In the last few decades, we have witnessed significant endoscopic advances in the arena of gynaecological surgery in Singapore. Current advances in the application of SILS, 3D imaging and SSRS have certainly brought the standard of our gynaecological healthcare system to the next higher level. I believe the pace of change is relentlessly marching ahead and will continue to add value to the healthcare of our patients through technological breakthroughs.

"I believe the pace of change is relentlessly marching ahead and will continue to add value to the healthcare of our patients through technological breakthroughs."

