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## Consideration of function preservation in laparoscopic ovarian surgery

Currently, laparoscopic surgery is the gold-standard treatment for endometriosis. More specifically for ovarian endometriomas, laparoscopic stripping is considered to be the best therapeutic approach. Among existing laparoscopic techniques, stripping is usually favored because of decreased symptom recurrence rates and increased pregnancy rates. However, concern has arisen regarding the impact of ovarian cyst stripping on ovarian reserve. Ovarian reserve can generally be defined as the reproductive potential at a certain point in time and is determined by a quantitative and qualitative analysis of the ovarian follicular pool. A reduction of ovarian reserve after laparoscopic stripping might be attributable to irreversible damage caused by the use of bipolar electrocoagulation for hemostasis. This damage could be secondary to thermal effects on the ovarian stroma and vascularization, and/or to inadvertent excision of healthy ovarian follicles during cyst excision.

It is of utmost importance to better define the effect of bipolar electrocoagulation during laparoscopic endometrioma stripping on ovarian reserve, because this could alter surgical treatment approaches for patients with reproductive goals. Endometriosis itself causes diminished ovarian reserve, so any further reduction associated with laparoscopic endometrioma stripping would be a concern. Pregnancy success rates and rates of premature ovarian failure could be increased among women who have undergone this type of surgery.

In conclusion, the present findings indicate a reduction in ovarian reserve caused by the use of bipolar hemostasis during laparoscopic ovarian endometrioma stripping. Consequently, alternative hemostasis methods such as laparoscopic suturing and/or hemostatic matrix should be used to preserve the ovarian reserve, especially in infertile women with endometriosis who have reproductive goals. The use of bipolar electrocoagulation should be kept to a minimum; this technique should only be used after failure of alternative hemostasis methods. Further RCTs with long-term postoperative follow-up are needed to better define the impact of different hemostasis techniques on the ovarian reserve.

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### Laparoscopic myomectomy in females with plans for conception

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Uterine ruptured during pregnancy after laparoscopic myomectomy is rare, however, is a tragedy. Uterine rupture was most commonly reported at gestational age of 26 to 36 weeks, and commonly not during labor. Fetal demise usually occurred at smaller gestational ages. Based on literature reports, some factors were found more closely related to uterine rupture during pregnancy after laparoscopic myomectomy and could be the potential causes of this complication. Laparoscopic myomectomy without multiple layer suture and over-coagulation over the incision wound were more frequently seen in these cases. These suggest good suture technique and limited use of electrocauterization during laparoscopic myomectomy are essential steps to prevent uterine rupture after future pregnancy. Unfortunately, uterine rupture during pregnancy also occurred in women after robotic myomectomy, which could provide good instrumentation for excellent suture. Contradictory, some authors reported no uterine rupture during pregnancy after single layer suture in laparoscopic myomectomy. Preservation of myoma pseudocapsule could be a key factor to prevent uterine rupture during pregnancy after laparoscopic myomectomy. In addition, no endometrial penetration is an important factor for successful vaginal delivery in subsequent pregnancy after laparoscopic myomectomy.

In conclusion, the follow technical pearls for laparoscopic myomectomy are important in females with plans for conception to have success live births without risk of uterine rupture:

- 1.Preservation of uterine pseudocapsule.
- 2.Good suture technique with well approximation of the surgical plan.
- 3.Avoid excessive fulguration.
- 4.No endometrial penetration.
- 5.Adjuvants application to prevent adhesion.

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### Office Hysteroscopy - concepts, applications, and recent advances

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With the advances of the miniature instruments, office hysteroscopy on conscience patient has been the standard to explore the intrauterine pathology, with the ability to perform some minor procedures concomitantly [1, 2]. It provides reliable information for the anatomical status of the vagina, the cervical canal, the tubal ostia, and the uterine cavity. Vaginoscopy, an alternative method for performing hysteroscopy, negates the usage of a vaginal speculum and instruments applied to the cervix, hydro-distends the lower vagina and then be manipulated to identify the external cervical os, to allow for passage into the cervical canal and uterine cavity through gentle movements [3]. Both take the advantages of minimally invasiveness of the vagina and/or cervix to undergo evaluations even in cases of virgin. Hysteroscopy should be performed in the proliferative phase of menstrual cycle. Indications includes the abnormal uterine bleeding (AUB), suspicious lesions or foreign body involving the endometrial cavity, endometrial thickening, as well as Mullerian anomalies. However, known pregnancy as well as genital tract infections, such as pelvic inflammatory disease (PID), pyometra, and active herpetic or condyloma infections, are contraindications to hysteroscopy [4].

Hysteroscopic examination can offer better accuracy for diagnosis of endometrial lesions. Target biopsy can be performed whenever needed for diagnosis. Patients usually appreciate the directly “see and treat” procedures with minimally discomfort, and the avoidance of anesthesia and the inconvenience of going into the operating room. Study found that the accuracy tended to be higher among postmenopausal women and in the outpatient setting. Measurement of endometrial thickness with TVS is an easy and effective way for an initial survey; however, when compared with results of hysteroscopy, the sensitivity and specificity of transvaginal ultrasound were 0.60 and 0.88, respectively; while the sensitivity and specificity of endometrial biopsy were 0.04 and 0.83, respectively. A systematic review of the accuracy of the hysteroscopy reported the overall sensitivity for endometrial cancer 86.4% (95% confidence interval [CI], 84.0% - 88.6%) and specificity 99.2% (95% CI, 99.1% - 99.3%) [5, 6].

Several studies indicate that uterine septum is strongly associated with early/recurrent pregnancy loss and preterm birth, therefore, hysteroscopic removal of a uterine septum is recommended. The procedure is simple, safe, and was reported effectively increased the pregnancy rate and live birth rate. The septum can be transected with 5 Fr scissors in vaginoscope, avoiding potential injury to the endometrium from electrosurgery.

One of the sequelae of hysteroscopic septal excision which makes opposing wound and breaks through the endometrial basalis is the formation of fibrotic adhesion bands between the two opposing surfaces and causes intrauterine adhesions. One study of various hysteroscopic surgeries found 88% of the patients had new IUA formation after septal incision and that the de novo IUA formation is an important factor influencing endometrial wound healing [7]. Careful postoperative evaluation with repeated adhesiolysis procedures with office hysteroscopy are needed to achieve the successful treatment.

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## Robotic-assisted surgeries in gynecology: its advantages and prospects

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Ever since the approval of da Vinci robotic surgical system for gynecologic surgery by FDA in 2005, robotic surgical devices continue to evolve and are now more frequently utilized in the management of gynecologic diseases. The da Vinci system is a cutting-edge technology that enables magnified view, high-definition 3D vision, computer assistance and accurate transcription of the complex wristed instruments of surgeon's hands into the patient's abdominal cavity with small incisions and minimal scars. The fourth generation da Vinci Xi model is the latest robotic platform with new features that allows four-quadrant surgery with greater facility and better access to more parts of the body than the prior da Vinci S (2nd generation) and da Vinci Si (3rd generation) models. Rather than multiple small incisions, the da Vinci Xi model also adds the feature of a single port surgery. The robotic single-port surgery reduces multiple port site complications, and allows the utilization of a multi-channel port system through a small incision in the patient's umbilicus. Many institutions have published several series documenting the feasibility and benefits of robotic surgery over laparoscopic surgery in the management of gynecologic diseases. The intraoperative benefits of the robotic technique include minimal blood loss, minimal postoperative peritoneal adhesions, and better visual perspective. Extensive surgery for the evaluation of the pelvic and aortic lymph node status can be performed as pre-treatment assessment, as part of surgical procedures, or as reassessment of inadequately gynecologic patients. In my experience, the complication rate of robotic surgeries is much lower than that of laparoscopic surgery in the hands of experienced gynecologists. However, due to the cost of robotic surgery, this technique has not been widely adopted in Taiwan. I believe, in the future, when the robotic surgery is covered under the Taiwan National Health Insurance System, it will become a popular and widespread alternative to conventional surgery in the management of gynecologic diseases by gynecologists.

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## Recent advances in laparoscopic pelvic reconstructive surgery

Pelvic Organ Prolapse (POP) is a worldwide health problem affecting about one third of women, especially on aging, parity and conditions increasing abdominal pressure are risk factors of POP. Apical prolapse of POP is the most troublesome reported in 5 to 15% women needed management.

Apical prolapse of POP can be surgically corrected by abdominal or transvaginal approach. For advanced POP, higher recurrence rates between 6% and 40% in native tissue repair have raised the need of other treatment opinions. Lower recurrence rate was reported with transvaginal mesh(TVM) repair as compared with native tissue repair in cochrane review. However, high complications of mesh erosion, pain, and dyspareunia after TVM procedures. On April 16,2019, The U.S.A. FDA ordered all manufactures of surgical mesh products intended for TVM of anterior compartment prolapse to stop selling and distributing their products immediately. Since then, Laparoscopic Abdominal sacrocolpopexy (ASC) became the trends in advanced POP surgical treatment in minimal invasive surgeons. But, there are still some difficulty of ASC procedures in longer learning curve, time-consuming, and procedure-related morbidity needed to be overcome. LSC ASC is a well-known technique in POP management and considered as the gold standard procedure for apical prolapse of POP repair.

Recently, a new LSC technique for apical prolapse repair was developed and called "pectopexy" was presented in 2011 by Dr. Bannerjee and Dr. Noe. LSC pectopexy offered more simple surgical procedure, reduced surgical difficulty, shortened the learning curve and operative time. In recently literature, LSC pectopexy has been used as an alternative method in patients having difficult to perform LSC ASC. There are many surgical procedures for POP correction. In my clinical experience, when consider the risk of post-operative dyspareunia for younger patients, LSC pelvic reconstruction is highly suggested. For the elder patients, when consider the risks of anesthesia, surgical time, and post-operative care, transvaginal approach is suggested. But which is the best selective procedure for patient needed to consider surgeon' s experience, patient' s intention, functional recovery and risk of operative complication. Surgeon remember to inform the patient conservative methods of physical therapy or vaginal pessary finally.

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## How to Perform a Successful Endoscopic Oncologic Surgery: A Reappraisal of the LACC Study

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The debacle continues whether minimally invasive surgery for early-stage cervical cancer should continue or be abandoned in favor of findings in a prospective, randomized trial. Although minimally invasive radical hysterectomy has been shown to be associated with poorer outcome in LACC study, many centers worldwide performing minimally invasive radical hysterectomy have data and experience that prove otherwise. Systematic reviews and meta-analysis found no significant difference in 5-year overall survival and disease-free survival for patients undergoing either open or minimally invasive radical hysterectomy.

It is well known that the standardization of surgical technique is difficult, and individual surgeons perform differently from one another, but adequacy of radicality and sticking to principle of oncologic concepts are the key points in treating cervical cancer with high survival rate. The Asia Pacific Association for Gynecologic Endoscopy and Minimally Invasive Therapy has embarked on the Minimally Invasive Therapy Versus Open Radical Hysterectomy trial in an attempt to clarify the issue at hand. Strict selection criteria and standardization of surgical technique are the main focus of the said trial.

From our experience, the 100 percent 5 Year Disease Free Survival Rate for Cervical Cancer is achievable provided the following criteria is followed:

1. Early detection of Cervical Cancer
2. Standardization of "Radicality technique" in Radical Hysterectomy
3. Adhere to "Tumour-Free" Concept
4. Administration of Adjuvant Therapy in Timely and Appropriate Manner
5. Performance of surgery by qualified Surgeons in Minimally Invasive Surgery Centres