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Techniques of Laparoscopic Single Site Left Giant Ovarian Cystectomy Utilizing Traditional Instruments

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Study Objective: Single-site laparoscopy surgery is the most minimally invasive surgery for a gynecologic procedure, but traditional laparoscopic surgery has the limitation of lack of exposure and limited surgical space when using traditional surgical instrumentation, such as in a giant ovary cyst. Trans-umbilical natural orifice transluminal endoscopic surgery (NOTES) offers similar benefits of traditional laparoscopy surgery but also expands the horizon of traditional laparoscopy surgery by allowing the surgeon to perform procedures that are typically limited to an abdominal approach. The advantages of NOTES may include no incisional pain as well as a better cosmetic outcome. These benefits help outweigh the obstacle of learning this novel approach. Our objective is to demonstrate the trans-umbilical NOTES technique as a combination of traditional laparoscopy surgical skill with single-site surgical skill.

Design: Stepwise demonstration of the trans-umbilical NOTES technique for giant ovarian cystectomy with the ability to present video footage.

Setting: Academic tertiary care hospital.

Patients or Participants: A 27-year-old woman.

Interventions: Trans-umbilical NOTES giant ovarian cystectomy with combined abdominal surgical and single-site surgical skills.

Measurements and Main Results: A 27-year-old woman (gravida 1 para 1) with pelvic MRI: giant cyst of left ovary, size 145.6 * 83.1 * 170.1 mm, no papillary structure requested ovary removal with ovary preservation. She presented with a 1-year history of left pelvic pain. The giant ovary cyst was removed with minimal blood loss, and pathology revealed a ovarian teratoma. The patient had resolution of her left-sided pelvic pain.

Conclusion: Combined with traditional abdominal surgical skill, single-site surgical skills allow the surgeon to access the entire abdomen and perform ovarian cystectomy through a trans-umbilical single port. Trans-umbilical NOTES giant ovary cystectomy is not only possible but allows ovarian cystectomy to be performed with minimal abdominal incision.

Incidence and Risk Factors for Intruterine Adhesions Following Myomectomy

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Study Objective: To determine the incidence & risk factors for intrauterine adhesions (IUA) following myomectomy.

Design: Retrospective cohort.

Setting: Academic practice.

Patients or Participants: 158 women undergoing robotic (RM), laparoscopic (LM), abdominal (AM) or hysteroscopic (HM) myomectomy between 2007-2017 with post-procedure hysteroscopy within 12 months of surgery were included. Women with a history of IUA were excluded.

Interventions: IUA’s were ranked by two authors as minimal, moderate, or severe.

Measurements and Main Results: The most common indications for myomectomy were infertiltiy (57%) abnormal uterine bleeding (39.9%), and pain/bulk symptoms (27.8%). The overall incidence of IUA was 10.1% (n=16), 75% of which were categorized as “minimal” and 25% as “moderate”. The incidence of IUA was highest for LM (14.3%), followed by HM (12.0%), AM (9.1%), and RM (8.8%). Women with a history of prior uterine surgery had more IUA’s identified (12.5 vs 9.3%). Women with 1 fibroid removed had a similar incidence of IUA as those with 2-4 removed (8.7 vs 8.9%). Those with ≥ 5 fibroids had the highest incidence of IUA (11.9%). Women with at least 1 submucosal fibroid had an incidence of IUA of 14.6%. Those with at least 1 intramural fibroid had an incidence of 11.7%. Fibroids requiring ≥ 4 layers of closure had an IUA incidence of 14.6% compared to requiring <3 layers (5.8%). There was no difference in IUA incidence when using carbon dioxide vs non-carbon dioxide suture to close the deepest fibroid layer (10.3 vs 9.6%). Cavity entry was associated with an increase in incidence of IUA (14.6 vs 7.2%). A concurrent diagnosis of adenomyosis was associated with an increase in incidence of IUA (25 vs 9.7%).

Conclusion: IUA can occur without intraoperative breech of the uterine cavity. Adenomyosis, 4-layer closure, ≥ 5 fibroids, and history of prior uterine surgery may increase risk for intrauterine adhesion formation, but larger studies are needed to definitively determine risk.

A Method of Improving Representation of Endometriosis Ultrasound Data By Using Local Phase Tissue Signatures

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Study Objective: Endometriosis is a gynecological condition affecting 10-15% of women in their reproductive years. Early and accurate diagnosis requires the development of noninvasive, cost effective and safe imaging technology. Ultrasound could overcome some of the MRI challenges. However, noise, high inter- and intra-variability during ultrasound imaging reduces image quality and reproducible reading. Deep learning has increased its role in imaging analysis and has been applied to automatic ultrasound image analysis. The main objective is the investigation of how new computational methods, can improve the representation of endometriosis tissue in ultrasound data.

Design: We have developed computational method for processing B-mode ultrasound data. Our algorithms are based on the extraction of local phase tissue signatures, are intensity invariant. These features are not affected by the ultrasound transducer operating frequency, ultrasound machine settings, and the body mass index of the patient.

Setting: Clinical ultrasound sites.

Patients or Participants: The proposed computational methods will be validated on 3D ultrasound images obtained from the standard transvaginal ultrasound examinations.

Interventions: Both RF signals and B-mode data will be normalized to [-1, 1] and then rescaled to size (4096, 256, number of slices) using bilinear interpolation before inputting to our proposed networks. Training of the proposed CNNs will be achieved by investigating various methods based on gradient descent and variants such as adam, adagrad, adelta.

Measurements and Main Results: 100 B-mode US and RF US scans will be collected from each patient bringing the dataset size to 27,400 (B-mode and RF US). A sample size of 274 (137 healthy, 137 diseased) subjects is sufficient to estimate a high Area Under the Curve.

Conclusion: New tissue signatures provide valuable information and improved representation of the endometriosis. Future work will involve the development of artificial intelligence, specifically methods based on deep learning, methods to derive models that yield individual-level accurate, early diagnosis in the context of endometriosis management.

Quality of Life in Women with Heavy Menstrual Bleeding Associated with Uterine Fibroids: Baseline Disease Burden from Elaris UF-1 and UF-2

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**Study Objective:** Report baseline Uterine Fibroid Symptoms Quality of Life Questionnaire (UFS-QoL) data from Elaris UF-1 and UF-2 to characterize disease burden from heavy menstrual bleeding (HMB) associated with uterine fibroids (UF).

**Design:** Elaris UF-1 (NCT02654054) and UF-2 (NCT02691494) were identical, phase 3, double-blind, randomized, placebo-controlled studies investigating safety and efficacy of elagolix alone or combined with hormonal add-back therapy for HMB associated with UF.

**Setting:** Outpatient in clinic/office.

**Patients or Participants:** Premenopausal women (n=790) aged 18−51 years with diagnosed UF and HMB (menstrual blood loss [MBL] ≥80 mL/cycle for ≥2 menses).

**Interventions:** N/A

**Measurements and Main Results:** A modified UFS-Qol (4-week recall) was conducted before study drug administration. UFS-QoL is a self-administered, 37-item, disease-specific questionnaire that measures symptom severity and health-related QoL (HRQoL; calculated from 6 subscales and scored 0–100). Lower HRQoL scores indicate worse QoL. At baseline, mean (standard deviation [SD]) age was 42.4 (5.4) years, and MBL was 239.7 (158.7) mL. Baseline total HRQoL score was low, reflecting lower QoL (mean [SD], 42.9 [23.2]). Mean (SD) scores were generally low across HRQoL domains (concern, 28.1 [24.6]; activities, 40.9 [27.0]; energy/mood, 47.4 [25.3]; control, 54.2 [28.3]; self-consciousness, 39.9 [30.7]; sexual function, 47.5 [35.4]). In each HRQoL domain, the questions most frequently answered ‘most’ or ‘all’ of the time were how often symptoms made patients: feel concerned about soiling underclothes (80%; concern); decrease the amount of time on exercise or other physical activities (59%; activities); feel tired or worn out (68%; energy/mood); feel less productive (50%; control); feel conscious about the size and appearance of their stomach (57%; self-consciousness), and avoid sexual relations (46%; sexual function).

**Conclusion:** There was considerable baseline disease burden. Patients reported the greatest impacts to concern and self-consciousness. Common issues included concerns about soiling underclothes (80%; concern); decrease the amount of time on exercise or other physical activities (59%; activities); feel tired or worn out (68%; energy/mood); feel less productive (50%; control); feel conscious about the size and appearance of their stomach (57%; self-consciousness), and avoid sexual relations (46%; sexual function).

**Transcervical Fibroid Ablation (TFA) in an Ambulatory Surgical Center Setting: Utility during the COVID-19 Pandemic**

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**Study Objective:** To describe the experience of TFA with the Sonata® system in the ambulatory surgicenter (ASC) setting, relative to current recommendations by medical societies for elective procedures during the COVID-19 pandemic.

**Design:** Prospective, longitudinal, multicenter controlled trial.

**Setting:** 22 clinical sites in the US and Mexico.

**Patients or Participants:** 147 premenopausal women between the ages of 25 and 50 with heavy menstrual bleeding secondary to nonpseudociliated fibroids.

**Interventions:** Transcervical, intrauterine ultrasound-guided radiofrequency ablation with the Sonata system. Pain scores were recorded after each procedure using a scale from 0–10. Length of stay (LOS) was measured from procedure start through discharge.

**Measurements and Main Results:** Of 147 treated patients, 49 were treated in an ASC setting and 98 were treated in other outpatient settings. Fifty-five percent of patients treated in an ASC had general anesthesia and 45% had conscious sedation vs 48% and 52%, respectively for non-ASC population. Average number of fibroids treated per patient was 3.2±0.0 and 2.9±0.1 in ASC and non-ASC, respectively. Mean LOS was 2.1±0.9 hours vs. 2.8±1.3 hours for ASC and non-ASC patients, respectively. Mean procedure pain scores were 0±0% for the ASC patients (0.4±1.1 for non-ASC patients). Mean return to normal activity for patients treated in ASC was 1.7±1.4 days (2.4±2.5 for non-ASC patients). Mean 12-month improvements in SSS and HRQL scores were -34.8±23.9 and 48.6±26.2 points, respectively, in ASC patients (-30.4±19.3 and 41.0±23.0, respectively, in non-ASC patients).

**Conclusion:** Current surgical guidance during the COVID-19 pandemic encourages avoidance of endotracheal intubation when appropriate and minimizing exposure time for patients and staff. Transcervical Fibroid Ablation with the Sonata system is performed without pneumoperitoneum or a requirement for intubation, providing short LOS, minimal pain scores and improved outcomes while potentially reducing risk to healthcare personnel and patients alike.

**Telemedicine for Delivery of Postoperative Care Following Minimally-Invasive Gynecologic Surgery: A Randomized Controlled Trial**

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**Study Objective:** Determine if patient satisfaction is greater after delivering postoperative care via teledmedicine following minimally invasive gynecologic surgery.

**Design:** Randomized controlled trial

**Setting:** University based outpatient clinic.

**Patients or Participants:** Between 18 and 60 years of age scheduled to undergo laparoscopic hysterectomy or laparoscopic excision of endometriosis.

**Interventions:** Eligible patients were randomized to receive postoperative care either through a traditional office visit or via teledmedicine.

**Measurements and Main Results:** 41 patients were analyzed out of which 25 were allocated to the office group and 16 to the teledmedicine group. Groups were homogeneous to age (41.4 v 43.3 p=.48), BMI (31.9 v 30.6 p=.52), distance in miles from home (12.7 v 12.4 p=.92) and parity (p=.51). PSQ-18 questionnaire was scored and each category was compared between the office and teledmedicine groups. When comparing medians (IQR), the general satisfaction and time spent with doctor categories were significantly higher in the teledmedicine group (4.0 (4.0, 4.5) v 4.5 (4.5, 5.0) p=.05), (4.0 (4.0, 4.5) v 4.5 (4.0, 5.0) p=.05). The remainder of the categories analyzed were not different between groups (Technical Quality (4.0 (3.8, 4.5) v 4.5 (3.9, 5.0) p=.13), Interpersonal Manner (4.0 (4.0, 4.5) v 4.5 (4.0, 5.0) p=.34), Communication (4.5 (4.0, 4.5) v 4.5 (4.3, 5.0) p=.21) and Accessibility and Convenience (4.0 (3.5, 4.5) v 4.0 (3.6, 4.5) p=.84)). A chart review was performed, examining the first 30 days after surgery. One (4%) patient in the office group visited the ER following the postoperative visit, and 0 in the teledmedicine group (p=.42). Regarding phone calls to the clinic after postoperative visit, 5(20%) patients in the office group incurred in at least one call and 4(25%) did so in the teledmedicine group (p=.92).

**Conclusion:** Postoperative care via teledmedicine after gynecologic surgery results in higher patient satisfaction, and does not appear to increase the risk of complications.

**Robotic Radical Trachelectomy Using the Double Bipolar Method- Aiming for a Bloodless Operative Field**

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**Study Objective:** To report the application of the double bipolar technique in a patient with 1b1 cervical cancer who wished to preserve her fertility potential.

**Design:** After experiencing 105 cases of laparoscopic and robotic radical trachelectomy with a 5 year survival rate of 98% and the birth of 29 babies