



Short communication

Natural orifice transvaginal endoscopic surgery myomectomy: An innovative approach to myomectomy

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ABSTRACT

Objective: This study aims to describe the feasibility of treating uterine leiomyoma with myomectomy by natural orifice transvaginal endoscopic surgery (NOTES).**Materials and methods:** Women with leiomyoma underwent myomectomy by transvaginal NOTES in a tertiary referral medical center and surgical outcomes were measured.**Results:** Three patients underwent the surgery at a mean age of 46.7 [standard deviation (SD), 6.2] years and mean body mass index of 21.6 (SD, 2.1) kg/m². The average operative time was 128 (SD, 55) minutes. The average blood loss in the operation was 317 (SD, 207) mL without blood transfusion. No intra- or postoperative complications were noted. No cases were converted to traditional laparoscopy or laparotomy.**Conclusion:** Our preliminary results showed the safety and feasibility of transvaginal NOTES in laparoscopic myomectomy. It is one of the minimally invasive surgeries and results in scarless healing. However, it should be evaluated in more cases.

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Introduction

This is the first study in natural orifice transvaginal endoscopic surgery (NOTES) for myomectomy. At least 20% of women of reproductive age develop clinically detectable uterine fibroids. The indications for treatment of uterine fibroids include metrorrhagia with anemia, pelvic pain, or pelvic pressure that interferes with daily life, ureteral compression, rapid tumor growth, tumor growth following menopause, and infertility.¹

Watchful waiting is the most common approach to uterine fibroids, followed by medical treatment. However, no long-lasting effects of medical treatment have been reported, and surgery is, therefore, still considered to be the best means of treating symptomatic fibroids. Surgical treatments include hysterectomy and myomectomy. Hysterectomy is the definite treatment for uterine

fibroids, which is commonly applied to patients who have completed their family planning. As for patients who still desire fertility in the future, myomectomy seems to be the most feasible resolution. Myomectomy can be accomplished by different approaches, including transabdominal (via laparotomy or laparoscopy) and transvaginal (with or without hysteroscopy) approaches.² Laparoscopic approach for myomectomy has shown several advantages over the abdominal route (including conventional laparotomy and minilaparotomy), and is considered the standard procedure.³

It is well known that minimally invasive surgery has been developed for better surgical and cosmetic outcomes. NOTES is one of the minimally invasive surgeries, which offer scarless healing.⁴

We had established a new method of transvaginal NOTES to perform adnexal surgery⁵ and extended NOTES to myomectomy procedures in this study.

Materials and methods

Three patients with uterine leiomyoma, eligible for laparoscopic myomectomy, were recruited to undergo NOTES in Chang Gung Hospital at Linkou, Taoyuan, Taiwan.

Conflicts of interest: The authors have no conflicts of interest.

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These three patients were operated at the age of 38 years, 50 years, and 52 years, respectively. None of them had received abdominal surgery previously. The first patient presented with hypermenorrhea for 1 year with anemia, which deteriorated despite oral ferric supplement. The second patient presented with menorrhagia for 6 months, and her hemoglobin level was 8.8 g/mL at admission. Therefore, blood transfusion with two units of packed red blood cells was performed prior to surgery. The third patient presented with low back soreness for 3 months. In these three cases, solitary posterior uterine leiomyoma was suspected by transabdominal or transvaginal ultrasonography (Figs. 1–3). Under the impression of uterine leiomyoma, they underwent myomectomy via the transvaginal NOTES approach.

All patients undergoing surgical management gave their written informed consents. All surgeries were performed by experienced gynecologic endoscopists.

Surgical techniques

Under general anesthesia with endotracheal intubation, patients were placed in Trendelenburg position with legs bandaged and supported in the stirrups. An intermittent catheter for urine drainage was indwelled. We gave all the patients an intravenous infusion of oxytocin 10 IU in 1000 mL normal saline solution to decrease blood loss.⁶

- (1) Posterior colpotomy: With tractions on uterine cervix by two tenaculum, the operation began with an incision of the posterior fornix. The peritoneal cavity was checked first, and the peritoneum was found to be smooth without tumor seeding.
- (2) Establishing the vaginal channel for endoscopic surgery: A Lagiport kit multiple-instrument access port (Lagis Enterprise Co., Ltd., Taichung, Taiwan) was inserted into the vagina, with its inner rim fixed against the posterior wall of the uterus and posterior cul-de-sac; one 10 mm and two 5 mm cannulas were inserted (Fig. 4). We used a 10-mm, 0-degree endoscope (Karl Storz GmbH & Co. KG, Tuttlingen, Germany), and a 5-mm bipolar LigaSure system (Covidien Company, Boulder, CO, USA) designed for laparoscopy was used as the energy source.
- (3) Endoscopic management of the uterus: We create pneumoperitoneum from posterior colpotomy up to 15 mmHg of CO₂ insufflation and insertion of the endoscope to explore the pelvis. After laparoscopic identification of the location of the fibroid, pitresin was injected and the protruding site was excised by a monopolar scissors. Enuclation of the fibroid with Ligasure (pierce and push method)⁷ was performed by NOTES, similar to laparoscopy. Then the mass was removed vaginally. Repair of the uterine defect with a single layer or

double layers and hemostasis were performed vaginally with conventional instruments or under laparoscopic guide, using conventional laparoscopic instruments (Fig. 5). Then the Lagiport was draped again around the rim of the wound retractor, and the endoscope reintroduced to check hemostasis and look into the whole pelvis and abdomen. We chose Hyalobarrier to prevent adhesion and applied it on the uterine surface wound.⁸

- (4) Completion of the procedures: Finally, the vaginal wound was closed with 2-0 Vicryl suture.

Prophylactic antibiotics with preoperative cefazolin, and postoperative cefazolin and gentamicin for 1 day were given. Nonsteroidal anti-inflammatory drugs were also routinely prescribed after operation. Patients were discharged, according to our national regulations, with an afebrile status for at least 24 hours, without evidence of surgical complications.

Results

Three patients with a mean age of 46.7 [standard deviation (SD), 6.2] years and the mean body mass index of 21.6 (SD, 2.1) kg/m² underwent myomectomy via the transvaginal NOTES approach for the treatment of uterine leiomyoma. These three patients were primiparous, nulliparous, and multiparous, respectively [median (range), 1 (3)]. One of them had cesarean section once, and the others had vaginal deliveries. All of them denied having hypertension, diabetes mellitus, and heart diseases, or other abdominal surgical histories. Their demographic data, and intra- and postoperative surgical outcomes are shown in Table 1. The mean operative time was 128 (SD, 55) minutes. The mean specimen weight was 269 (SD, 25) g. The average blood loss during the operation was 317 (SD, 207) mL, and no patients required intraoperative blood transfusion. In the laboratory data survey on the 1st postoperative day, their mean hemoglobin level decreased to 2.8 (SD, 0.3) g/dL on average. The median postoperative hospital stay was 2.33 (range, 1) days.

The final histology was uterine leiomyoma in all three cases. No intra- or postoperative complications were noted.

Discussion

To our knowledge, our study is the first report in the literature about employing NOTES in laparoscopic myomectomy. Transcervical myomectomy has been performed for years and is still the route of choice when submucosal myomectomy is required. However, transcervical myomectomy has limitations that restrict its clinical applications, such as poor visualization of surgical fields, limited space for procedures, and difficult approach in patients with intramural myoma or a mass of > 5 cm.

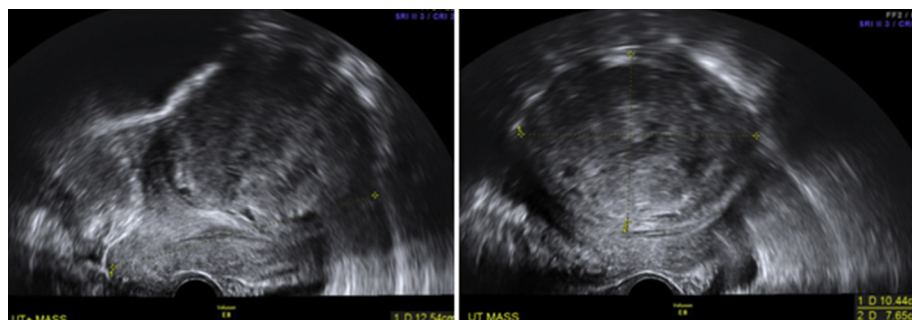


Fig. 1. Transvaginal sonography of the first patient.

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