

Is transvaginal natural orifice transluminal endoscopic surgery (vNOTES) indicated in patients with previous extensive pelvic surgeries? A case report

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ABSTRACT

Transvaginal natural orifice transluminal endoscopic surgery (vNOTES) has been increasingly applied to perform multiple gynecologic procedures. However, evidence is lacking on whether this surgical approach is feasible for patients with prior extensive abdominopelvic surgeries.

We report a case of prophylactic bilateral salpingo-oophorectomy (BSO) performed in a 51-year-old patient with previous laparotomic radical hysterectomy and pelvic lymphadenectomy for cervical cancer. The patient underwent rectovaginal examination and evaluation of the transvaginal sonographic sliding sign as preoperative screening to exclude the obliteration of the pouch of Douglas. The abdominal cavity was accessed by cautious endoscopic access to the pouch of Douglas. The BSO was realized in accordance with risk-reducing surgery guidelines. No intraoperative or postoperative complications were observed.

We suggest that selecting patients carefully prior to operation and adapting intraoperative techniques could be a safe method for conducting vNOTES interventions in patients with extensive abdominopelvic adhesions.

1. Introduction

Transvaginal natural orifice transluminal endoscopic surgery (vNOTES) is an emerging form of minimally invasive surgery that permits access to the peritoneal cavity through the vagina. In recent years, vNOTES has been increasingly applied to perform a large number of gynecologic procedures, and knowledge concerning this surgical approach has improved considerably [1]. Compared with conventional laparoscopy, vNOTES appears to be associated with reduced blood loss, less postoperative pain, shorter hospitalization time, improved cosmetic results, and decreased postoperative morbidity [1–3]. Another interesting feature it offers is the ease and safety of access to the abdominal cavity, avoiding passage through the abdominal wall. This could be even more important in patients presenting peritoneal adhesions, which are subject to a substantial risk of complications during abdominal laparotomy or laparoscopy.

A consensus exists regarding some contraindications to vNOTES interventions, such as known rectovaginal endometriosis and a history of pelvic radiotherapy [2]. A history of pelvic surgery does not seem to represent a contraindication to vNOTES [4], but little is known about

whether vNOTES is feasible in patients with previous highly adhesive interventions such as extensive surgeries for gynecological cancers.

Here, we describe a case of bilateral salpingo-oophorectomy (BSO) by vNOTES in a patient with previous laparotomic radical hysterectomy with bilateral pelvic lymphadenectomy for cervical cancer. In addition, we propose preoperative and intraoperative tips for evaluating the feasibility of vNOTES in patients with potentially extensive pelvic adhesions.

2. Case Presentation

A 51-year-old, menopausal, and nulliparous woman was consulted who required a prophylactic BSO and was motivated by a positive non-BRCA-related familial history of ovarian cancer. Her personal history was marked by a radical hysterectomy with pelvic lymphadenectomy by supraumbilical midline laparotomy for cervical cancer, stage FIGO IB1. The patient was operated on 22 years earlier without any adjuvant therapy and showed no cancer recurrence.

Abbreviations: vNOTES, transvaginal natural orifice transluminal endoscopic surgery; BSO, bilateral salpingo-oophorectomy.

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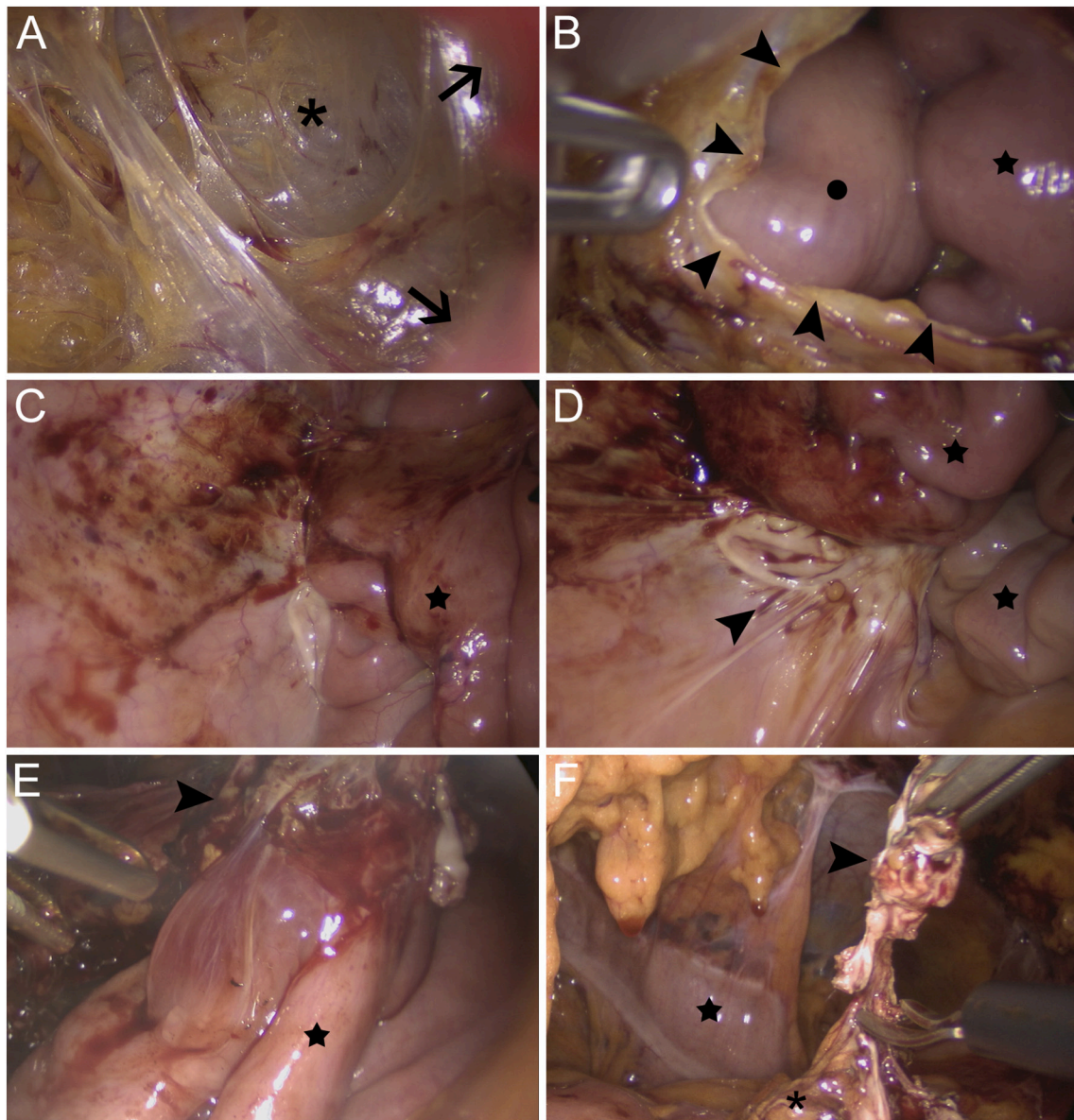


Fig. 1. Images of transvaginal natural orifice transluminal endoscopic surgery (vNOTES).

(A) vNOTES view showing the retroperitoneal space before opening the peritoneum overlying the pouch of Douglas (*black asterisk*) and the retroperitoneal portion of the anterior rectal wall (*black arrows*). (B) vNOTES view after opening the peritoneum covering the pouch of Douglas (*black arrowheads*) with access to the peritoneal cavity, near the intact rectum (*black circle*) and small intestine (*black star*). (C) vNOTES view showing dense peritoneal adhesions between the right lateral pelvic wall and the small intestine (*black stars*). (D) vNOTES view showing the right ovary (*black arrowhead*), which is hidden by dense adhesions between the lateral pelvic wall and the small intestine (*black stars*). (E) vNOTES approach to perform the right salpingo-oophorectomy with careful dissection of the adhesions between the right ovary (*black arrowhead*), the lateral pelvic wall, and the small intestine (*black star*). (F) vNOTES approach to complete the dissection of the peritoneal adhesions between a separated piece of ovarian tissue (*black arrowhead*) and the colon (*black asterisk*). In the background are important adhesions between the small intestine (*black star*) and the anterior abdominal wall.

2.1. Preoperative Work-Up

Given the potential presence of extensive peritoneal adhesions, we tried to identify the most appropriate surgical approach. To reduce the risk of transabdominal access-related complications, we proposed performing a BSO by vNOTES.

To evaluate the patient for obliteration of the pouch of Douglas, which would contraindicate a transvaginal approach, we performed a careful rectovaginal examination and checked for the transvaginal sonographic sliding sign. This examination requires gentle pressure of the transvaginal probe to assess whether the rectum slides freely over the posterior vaginal wall (i.e. positive sliding sign) [5]. In our patient, an unremarkable clinical examination and a positive sliding sign

suggested an unobliterated pouch of Douglas. The ultrasound exam showed no suspicious adnexal lesions. Therefore, we decided to use the vNOTES approach for the intervention.

2.2. Surgical Technique

The patient was placed in a dorsal lithotomy position under general anesthesia and received prophylactic intravenous antibiotics (1.5 g cefuroxime and 500 mg metronidazole).

A horizontal incision was made on the posterior vaginal wall, 5 mm below the previous vaginal scar. No further dissection was performed, and a 7-cm Mini GelPOINT V-Path Transvaginal Access Platform (Applied Medical, Rancho Santa Margarita, CA, USA) was inserted into

the vagina. We insufflated carbon dioxide into the vagina and opened the peritoneum of the pouch of Douglas under endoscopic vision (Fig. 1A). The pouch of Douglas appeared unobliterated, and we were able to access the peritoneal cavity without complications (Fig. 1B). We created a pneumoperitoneum at a pressure of 12 mmHg, and the operating table was tilted to a 20° Trendelenburg position. We used 3 trocars to insert a 10-mm rigid 30° camera and 5-mm instruments such as Johan and bipolar graspers, cold scissors, and a Caiman® articulating sealing device. After peritoneal washing was collected, we carefully inspected the entire peritoneal cavity.

We observed significant peritoneal adhesions concentrated on the lateral pelvic walls and between the intestine and the anterior abdominal wall (Fig. 1C and D). Both adnexa initially were completely inaccessible (Fig. 1E). We performed careful adhesiolysis to restore the pelvic and abdominal anatomy to normal (Fig. 1D). Further inspection demonstrated no suspected adnexal or peritoneal lesions. After the ureters were identified, we performed a BSO with complete excision of both ovaries and fallopian tubes (Fig. 1F). The excisions were enlarged to include approximately 2 cm of the infundibulopelvic ligaments. The recommendations for risk-reducing BSO were respected [6]. The specimens were removed transvaginally and sent for histopathological analyses. At the end of the procedure, the colpotomy was closed with a running suture using a Stratafix Spiral PDS 0. The intervention lasted 151 min, and we observed no intraoperative complications.

2.3. Postoperative Follow-Up

The patient was discharged on the first postoperative day. Clindamycin vaginal cream was administered once a day for the first 7 postoperative days. No complications were observed within the first 20 postoperative weeks, and the definitive histopathological examination showed no adnexal abnormalities. The patient appeared satisfied with the treatment outcomes, and no additional visits were planned.

3. Discussion

To the best of our knowledge, this is the first report of a pure vNOTES intervention in a patient with previous laparotomic radical hysterectomy and lymphadenectomy. We decided to perform a prophylactic BSO by vNOTES in order to reduce the risk of complications associated with access into the abdominal cavity. In this study, we propose an approach to preparing for and performing vNOTES interventions in patients with potentially extensive abdominopelvic adhesions.

The presence of peritoneal adhesions is a well-known risk factor for surgical complications in patients who have previously undergone surgery. Up to 50% of patients with a history of midline laparotomy have extensive adhesions [6,7], increasing the risk of urological, intestinal, and vascular lesions associated with extensive adhesiolysis and abdominal entry [8,9]. A vNOTES approach could be a valid alternative for avoiding transabdominal access in these high-risk patients. However, patients with previous extensive pelvic surgeries may also present an increased risk of complications associated with transvaginal access. Specific conditions seem to contraindicate the use of vNOTES, such as rectovaginal endometriosis or pelvic radiotherapy [2], whereas it appears feasible in cases involving previous hysterectomy [4]. However, evidence is lacking on the feasibility of vNOTES in patients with previous extensive pelvic surgeries. Only a few cases of vNOTES interventions have been reported for patients with extensive pelvic adhesions [10,11], and there are no clear indications concerning their safety and feasibility.

To assess the safety of vNOTES access in our patient, we evaluated the state of her pouch of Douglas through a rectovaginal examination and the transvaginal sonographic sliding sign [5]. Vanhooren and Baekelandt recently reported promising results and proposed this screening to assess the feasibility of vNOTES interventions in patients presenting previous laparotomic, laparoscopic, or vaginal hysterectomies [4]. The assessment of the transvaginal sliding sign is an easy and accessible

sonographic tool that may help to detect firm pelvic adhesions contraindicating vNOTES interventions [5,12]. In addition, to increase the procedure's safety, we proposed opening the pouch of Douglas under endoscopic view. By inflating the vagina using the GelPort after making an incision limited to the vaginal wall, we were able to perform careful endoscopic dissection to access the peritoneal cavity. Compared with conventional transvaginal access, this type of dissection allows better exposure and magnification of the tissues, to highlight the presence of structures (e.g., the bladder or rectum) obliterating the pouch of Douglas.

Prophylactic BSO by vNOTES seems to be realizable in accordance with risk-reducing surgery guidelines [13]. Although extensive pelvic adhesiolysis appeared feasible, the limited triangulation of instruments can make this procedure more challenging than conventional laparoscopy. The use of articulating instruments and adequate training of surgeons can help overcome these difficulties.

3.1. Conclusions

Combining careful preoperative screening with peritoneal cavity access through careful endoscopic opening of the pouch of Douglas could be a safe method with which to realize vNOTES in patients presenting with extensive abdominopelvic adhesions. This transvaginal approach could be advantageous for these high-risk patients by presenting the benefits of endoscopic surgery while reducing the risk of transabdominal access-related complications. Data are currently lacking, and more studies are needed to evaluate the safety of this approach in a larger number of patients.

Contributors

Yannick Hurni contributed to the preparation of the original draft preparation, and to reviewing and editing.

Fabien Romito performed the surgery, and contributed to data curation, and preparation of the original draft.*

Daniela Emanuela Huber performed the surgery, and contributed to conceptualization, methodology, reviewing and editing, and supervision.

Yannick Hurni and Fabien Romito equally contributed to this work

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Patient consent

Informed consent was obtained from the patient.

Provenance and peer review

This article was not commissioned and was peer reviewed.

Conflict of interest statement

The authors declare that they have no conflict of interest regarding the publication of this case report.

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