

A Simple Approach to Specimen Retrieval via Posterior Colpotomy Incision

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ABSTRACT

Introduction: Posterior colpotomy incision for specimen retrieval is infrequently used in gynecologic laparoscopic surgery unless a concomitant hysterectomy is performed. We aim to describe a simple and unique technique for creating the colpotomy incision and to describe intraoperative and postoperative outcomes.

Methods: Fifty patients underwent adnexal specimen retrieval through a posterior colpotomy incision. After devascularization and detachment of the adnexal specimen, the posterior cul-de-sac was visualized. The colpotomy incision was created by introducing a 12- or 15-mm laparoscopic trocar through the vagina into the posterior vaginal fornix under direct visualization. Specimens were placed into laparoscopic bags and removed through the vagina. The colpotomy incision was closed vaginally. Charts were reviewed for intraoperative and postoperative outcomes.

Results: Twenty-nine women underwent adnexal surgery for an adnexal mass, 14 women underwent surgery for pelvic pain, and 7 women underwent adnexal surgery for primary prevention of malignancy. The specimens removed ranged in size from 2 to 16 cm (mean 5.7). The mean time patients were under anesthesia was 103 minutes (SD 57.3). There were no operative complications related to the colpotomy incision and no cases of postoperative vaginal cellulitis or pelvic infection were reported. Only 1 woman with a prior vaginal delivery reported dyspareunia postoperatively.

Conclusion: This simple technique for posterior colpotomy incision can easily be added to the gynecologic

surgeon's armamentarium and can be safely used for most women.

Key Words: Adnexal surgery, Posterior colpotomy, Specimen retrieval.

INTRODUCTION

Laparoscopy has become increasingly popular in gynecologic surgery. The complexity of surgeries performed has evolved from simple tubal surgery, with very small specimens, to complex hysterectomies, myectomies, and adnexal surgery, with large specimens.^{1,2} Removal of large specimens without concomitant hysterectomy typically requires enlarging a port site by extending the skin and fascial incisions. Prior studies have demonstrated that these extended port sites tend to account for many of the postoperative wound complications.³ Various alternative techniques have been used, including creation of a mini-laparotomy or using morcellation, although each has their own significant limitations.⁴

Increasingly, many surgical subspecialties have adopted transvaginal retrieval via a posterior colpotomy incision as a method for removing surgical specimens.⁵ Prior case reports and case series have documented successful transvaginal retrieval of various organs, including the appendix, gallbladder, kidney, stomach, pancreas, and colon.⁶⁻¹¹ Studies comparing traditional laparoscopic approaches with transumbilical specimen retrieval versus transvaginal approaches have demonstrated decreased postoperative pain from using the transvaginal approach.¹²⁻¹⁴ Furthermore, studies have demonstrated no increased risk of postoperative infection or incidence of sexual dysfunction or pelvic pain.^{2,12,14}

Despite increasing literature supporting the benefits of transvaginal specimen retrieval, with the exception of specimens removed with concurrent hysterectomy, colpotomy incisions are infrequently used in gynecologic surgery.^{2,15} This may be a result of concerns regarding possible postoperative vaginal infections, dehiscence, difficulty accessing the colpotomy incision vaginally, or sexual dysfunction.^{2,12} In addition, this may be related

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to lack of surgeon comfort in creating the colpotomy incision.

In this case series, we describe a simple technique for creating a posterior colpotomy incision for the removal of adnexal specimens. The objective was to assess the feasibility of this technique in women undergoing laparoscopic surgery for adnexal masses. We also aimed to report our outcomes with this technique, including complications, postoperative infections, and pelvic pain.

MATERIALS AND METHODS

This study was approved by the Institutional Review Board at Bridgeport Hospital (Bridgeport, Connecticut). Fifty women underwent adnexal specimen retrieval through a posterior colpotomy incision after gynecologic laparoscopy for benign indications from July 2011 through December 2013. Only 1 surgeon at this institution performs this technique, and thus cases were identified from a database of those surgeries. All patients who underwent colpotomy incision during the study period were included in the study. The decision to remove specimens via a colpotomy incision was made by the patient at the surgeon's discretion, and this was included in the patient's surgical consent. Demographic and clinical data were abstracted from the medical records, including age, parity, body mass index, prior surgery, medical comorbidities, indication for surgery, and preoperative pelvic pain or dyspareunia. Data relating to the surgery were also collected, including surgical procedure performed, estimated blood loss, operative time, intraoperative complications, postoperative complications, specimen size, final pathologic findings, and postoperative pain.

Surgical Technique

Women undergoing laparoscopic adnexal surgery by a single surgeon were counseled that the specimen would be removed transvaginally. All women received intravenous prophylactic antibiotics before the skin incision. After induction of general anesthesia, all women were placed in the dorsal lithotomy position with their legs supported in Allen Pal Stirrups (Allen Medical Systems Inc., Action, Massachusetts) and their arms tucked at their sides. A vaginal preparation was performed with betadine, and the abdomen was prepped with chlorhexidine. A disposable uterine manipulator without a colpotomizer ring was used.

A pneumoperitoneum was established with a Veress needle using the STEP access/insufflation needle with a Ver-

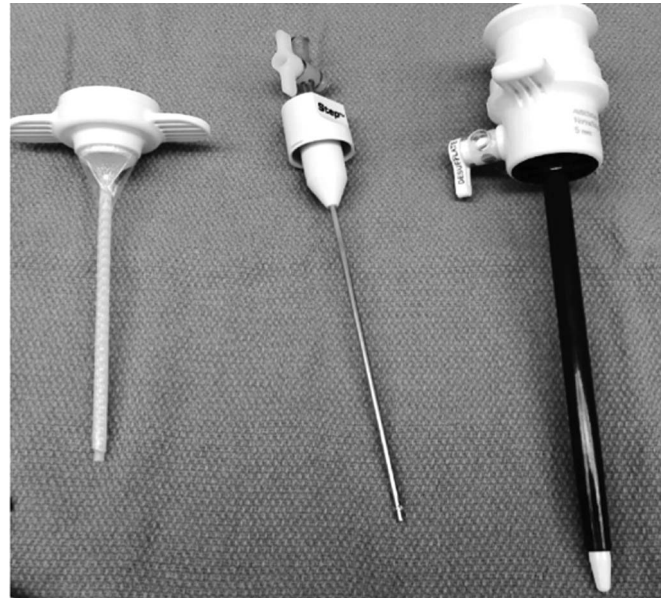


Figure 1. Step access needle with a VersaStep radially dilating sheath and a 5-mm bladeless trocar (Covidien).

saStep radially expandable sleeve (Covidien, Mansfield, Massachusetts) (**Figure 1**). After insufflation, a 5-mm trocar was placed in the umbilicus and a 5-mm laparoscopic camera was introduced. If the patient had a history of a vertical midline incision, a Palmer point entry technique was substituted. Two or three 5-mm ancillary trocars were inserted under direct visualization, typically in the right lower quadrant, left lower quadrant, and/or above the pubic symphysis. The patient was then placed in the Trendelenburg position and the adnexal surgery was performed.

After the specimen was freed, the uterus was anteverted and the space between the uterosacral ligaments at the level of the cervical-vaginal junction was visualized (**Figure 2[A]**). If scarring or adhesions were noted in the posterior cul-de-sac, they were released surgically. A STEP access needle with a VersaStep radially expandable sleeve was placed through the vagina into the posterior cul-de-sac between the uterosacral ligaments under direct visualization (**Figure 2[B]**). A 12-mm trocar was then placed through the expandable sleeve (**Figure 2[C]**). In the event that a 15-mm specimen bag was needed, a 15-mm trocar was placed in a similar fashion. The specimen was then placed in a laparoscopic specimen retrieval bag, which was removed with the trocar, and large specimens were morcellated vaginally within the bag if necessary. The colpotomy incision was then closed vaginally with a #0 braided absorbable suture (**Figure 2[D]**).

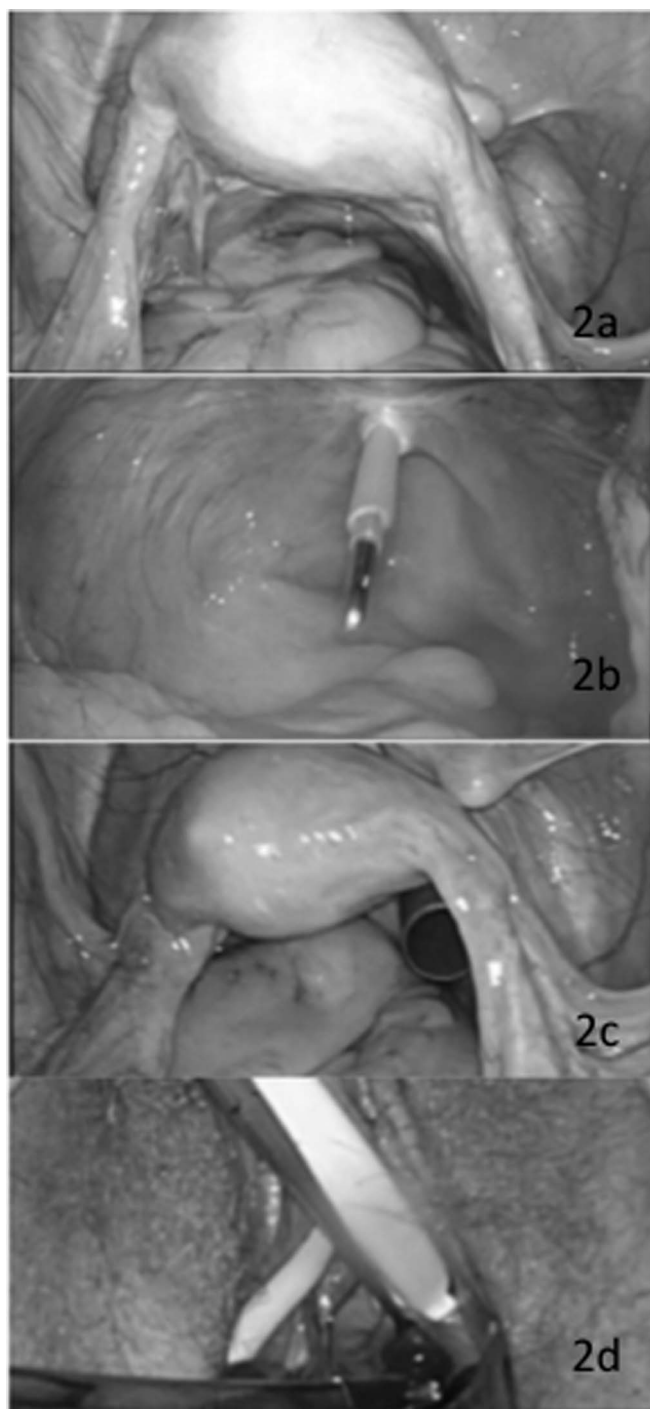


Figure 2. A, The uterosacral ligaments are visualized. B, The Veress needle in the radially dilating sheath is passed between the uterosacral ligaments. C, A 12-mm bladeless trocar is guided through the sheath to retrieve the specimens. D, The posterior colpotomy incision is closed vaginally.

Table 1.
Baseline Demographics

N = 50	Mean	(SD)*	Range
Age (y)	49.9	(11.5)	18–89
BMI (kg/m ²)	27.6	(7.0)	17.7–46.9
Indication for surgery	N	(%)	
Adnexal mass	29	(58)	
Pelvic pain	14	(28)	
Prophylactic	7	(14)	
Race			
White	35	(70)	
Black	6	(12)	
Hispanic	5	(10)	
Other	4	(8)	
Prior surgeries	36	(72)	
Prior hysterectomy	8	(16)	

BMI, Body mass index.

Statistical Analysis

Descriptive statistics were used to analyze the data. Continuous variable results were reported as mean ± SD and range. Categorical data were reported as percentages of the total. Statistical analysis was performed with GraphPad Prism version 6 (GraphPad Software, San Diego, California).

RESULTS

From July 2011 through December 2013, 50 women underwent adnexal surgery for benign indications with specimen retrieval through a posterior colpotomy incision. Women ranged in age from 18 to 89 years (mean 49.9, SD 15.2) (**Table 1**). The mean body mass index was 27.6 kg/m² (SD 7.0, range 17.7–46.9). Twenty-four women (48%) had never had a prior vaginal delivery, 36 (72%) had prior abdominal or pelvic surgery, and 8 (16%) had a prior hysterectomy. The indications for the adnexal surgery included pelvic pain (n = 29), adnexal mass (n = 14), and prophylactic surgery (n = 7). The adnexal specimens ranged in size from 2 to 16 cm (mean 5.7, SD 3.6), and the mean specimen weight was 35.3 g (SD 28.8, range 3–129) (**Table 2**). The median operative time was 103 minutes (SD 103.0, range 34–326), and the mean estimated blood loss was 37 mL (SD 29.9, range 10–150).

Two women sustained intraoperative complications. One patient with deep infiltrating endometriosis had a bladder

Table 2.

A Comparison of Intraoperative and Postoperative Outcomes in Women with Prior Vaginal Deliveries Versus No Prior Vaginal Deliveries

N = 50	Mean	(SD)	Range
Mean size of mass (cm)	5.7	(3.6)	2–16
Weight of mass (g)	35.3	(28.85)	3–129
Operative time (min)	103	(57.27)	34–326
Blood loss (mL)	36.6	(29.91)	10–150
Complications	N	(%)	
General complications	2	(10%)	
Colpotomy complications	0	(0%)	
New pelvic pain or dyspareunia	1	(5%)	
Postoperative infection	0	(0%)	

injury, and a second patient with a history of a laparotomy and severe adhesions had an incidental enterotomy during adhesiolysis. Both injuries were recognized intraoperatively and repaired laparoscopically. No patients had complications related to creation of the colpotomy incision or retrieval of the specimen. In addition, no patients had postoperative vaginal infections or pelvic abscesses. When evaluated at their 3-month postoperative check, 10 women with pain preoperatively continued to report postoperative pain. Only 1 patient reported new onset of dyspareunia after the surgery.

DISCUSSION

Transvaginal surgical specimen retrieval through a posterior colpotomy incision is not widely used for removal of an adnexal specimens. A survey study of European gynecologists found that <30% of providers surveyed would recommend a transvaginal approach for specimen removal in their patients.¹⁶ The providers cited concerns regarding postoperative infection, pain, and infertility after the procedure as reasons for not recommending this procedure. An additional concern may be the surgeon's level of comfort with using this technique.

Despite these theoretical concerns, there have been many case series reporting the safety of this procedure. In the general surgery literature, Ghezzi et al reported no increase in infection rate for transvaginal removal of the appendix, and Pulvirenti et al similarly noted no increase in infection rate when removing the gallbladder transvaginally.^{6,7} These findings were affirmed in the gynecologic literature: a 2012 review of transvaginal specimen retrieval for gynecologic

procedures demonstrated no significant increase in infection rates or sexual dysfunction.^{2,17} Furthermore, these findings are consistent with prior studies that have found no increased incidence in sexual dysfunction and dyspareunia after total hysterectomy, where a colpotomy incision is created, versus a supracervical hysterectomy.^{18,19} Although limited data exist on pain after specimen retrieval via posterior colpotomy incision, 1 randomized study demonstrated decreased postoperative pain in women after adnexal specimen retrieval via posterior colpotomy compared with retrieval via extension of the umbilical incision.¹²

Our study supports prior findings that transvaginal specimen retrieval after minimally invasive surgery for benign gynecologic conditions is a safe and feasible procedure. Furthermore, this study does not suggest that this technique is associated with higher rates of pelvic or vaginal infections or new-onset pelvic pain and dyspareunia, compared with all other types of gynecologic surgery.²⁰ Based on increasing data in the gynecologic literature regarding the positive outcomes associated with this technique, gynecologic surgeons should become more familiar with creating a posterior colpotomy incision without performing a concomitant hysterectomy. This paper adds to the literature by describing a simple and reproducible technique for specimen retrieval via trocar insertion for the creation of a posterior colpotomy incision that can be easily learned and incorporated as part of routine adnexal surgery for benign indications.

This is a large case series with consistent postoperative outcomes. Our patient population represents a fairly diverse population, with a wide range of ages and body mass indices, allowing the results to be generalizable to a random gynecology population. A limitation of this case series is that it may be underpowered to detect rare complications, including postoperative sexual dysfunction. Further research in the form of a cohort study or randomized controlled trial should be performed with a larger number of patients and a control group for comparison.

CONCLUSION

In conclusion, our data suggest that transvaginal specimen retrieval through a posterior colpotomy incision is safe, effective, and technically feasible for the gynecologic laparoscopic surgeon and should be considered as an alternative to extending umbilical or accessory abdominal ports.

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