Safe vaginal uterine morcellation following total laparoscopic hysterectomy

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The minimally invasive approach for hysterectomy with proven benefits and lower morbidity has become the gold standard, even in women with large uterine masses. Most women with a malignant condition present with abnormal vaginal bleeding and/or suspicious imaging such that few are diagnosed by final histopathology after surgery. However, if a malignancy is not diagnosed preoperatively, intraabdominal morcellation for uterus extraction has an increased risk for potential tumor spread and peritoneal metastases, especially in cases of unexpected leiomyosarcoma. We describe a simple method to wrap the uterus in a contained environment with a plastic bag through the posterior vaginal fornix prior to conventional coring morcellation for vaginal extraction in total laparoscopic hysterectomy. We further describe our experience with a risk stratification and treatment algorithm to implement this procedure in daily routine. A video and an illustrating sketch demonstrate the simplicity and safety of the procedure.

Key words: morcellation, total laparoscopic hysterectomy, uterine leiomyosarcoma

Cite this article as: Günthert AR, Christmann C, Kostov P, et al. Safe vaginal uterine morcellation following total laparoscopic hysterectomy. Am J Obstet Gynecol 2015;212:546.e1-4.

Problem: risk of intraabdominal tumor

Intraabdominal morcellation is an easy and safe method to extract large uterine fibroids or a uterus as part of total laparoscopic hysterectomy (TLH), but it bares the risk of intraabdominal tumor spread if the specimen contains a malignancy, peritoneal metastases, and poor outcome (Figure 1).[1-3] Wright et al[4] reported a 0.27% rate of uterine cancer in women who underwent morcellation during a minimally invasive hysterectomy. The low risk of intraabdominal dissemination of tumor might be reduced by preoperative risk assessment and morcellation of uncertain specimens in a bag.

Our solution

We developed a simple method to wrap the uterus in a contained environment with a plastic bag (Auto Suture Endo-Catch II 15 mm; Covidien/Tyco Healthcare, Norwalk, CT) through the posterior vaginal fornix prior to conventional coring morcellation for vaginal extraction in TLH (Figures 2 and 3 and Video). After completing the circular colpotomy, the uterine manipulator was removed and replaced by the EndoCatch II system embedded in a Colpo-Pneumo-Occluder system (CooperSurgical, Pleasanton, CA) to avoid the loss of intraabdominal air pressure. The dissected uterus was wrapped with the bag device through the posterior vaginal fornix, beginning

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Received Sept. 9, 2014; revised Nov. 14, 2014; accepted Nov. 17, 2014.

The authors report no conflict of interest.

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0002-9378/$36.00
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http://dx.doi.org/10.1016/j.ajog.2014.11.020

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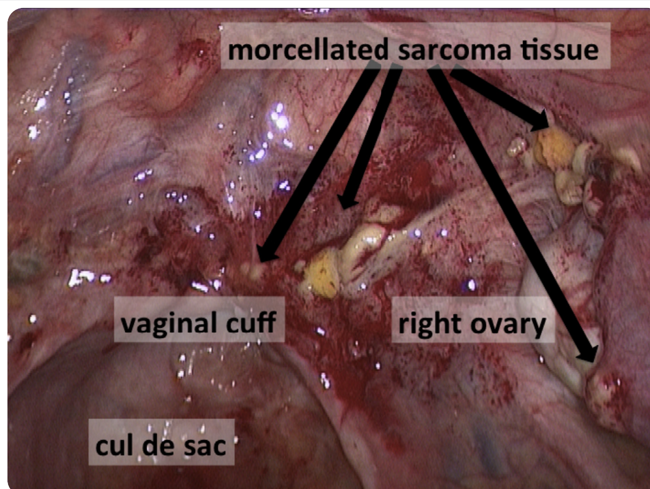
FIGURE 1
Patient with peritoneal metastases of leiomyosarcoma during second-look laparoscopy



Forty-seven year old patient with peritoneal metastases of leiomyosarcoma during second-look laparoscopy 6 weeks after morcellation of a uterus with assumed leiomyoma.

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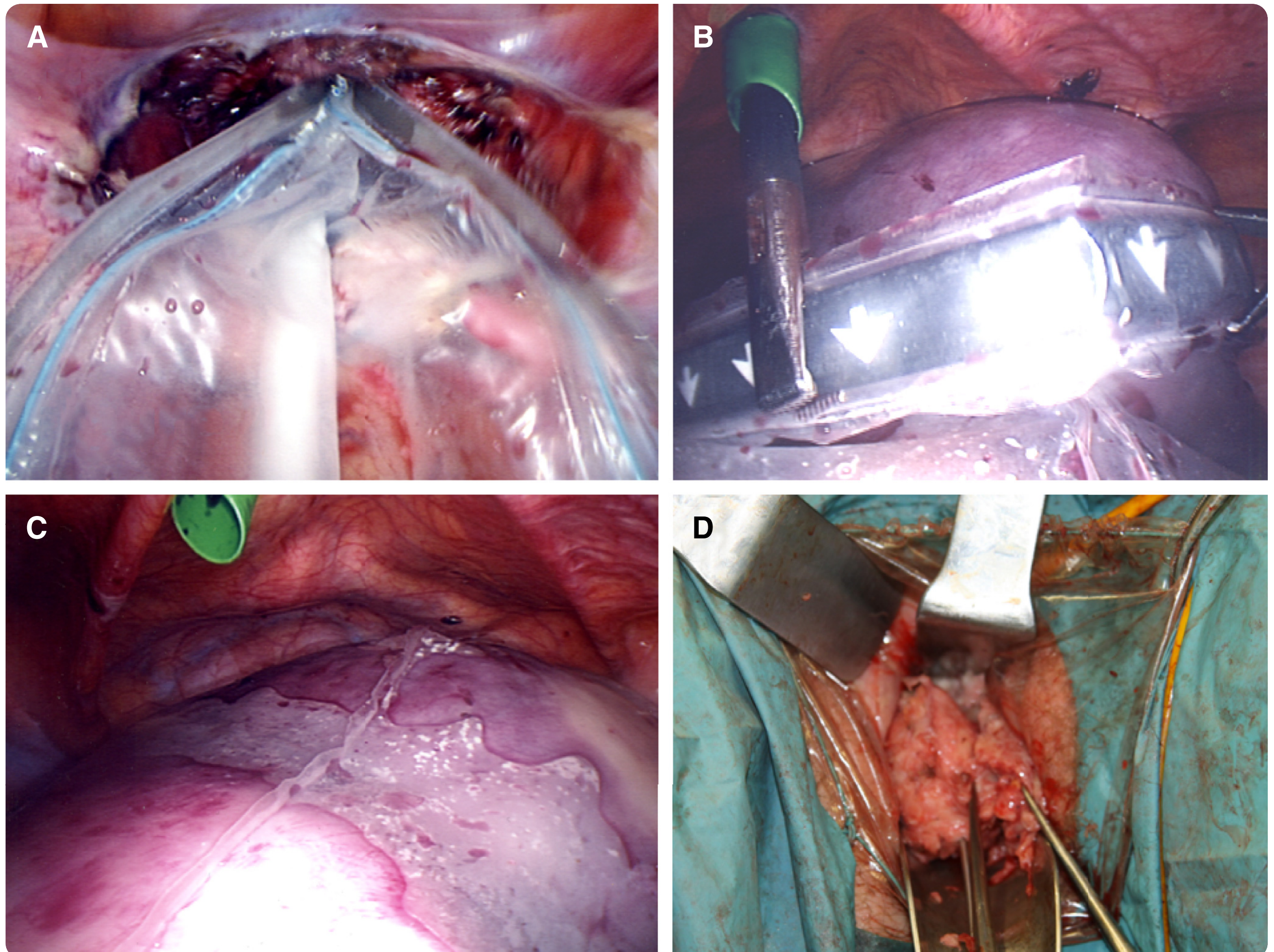
FIGURE 2
Intraoperative setting after completion of colpotomy



A, The device enters the abdomen through the posterior vaginal fornix and the bag is open. **B,** The uterus is wrapped with an EndoCatch II plastic bag (Covidien/Tyco Healthcare), assisted by laparoscopic forcipes. **C,** After complete wrapping, the orifice is delivered to the vulva. **D,** The uterus is morcellated by conventional coring in the plastic bag.

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in the cul de sac, assisted by laparoscopic forcipes. The orifice of the bag and the cervix uteri were then delivered to the vulva. The completely covered specimen was then morcellated by conventional coring in the vagina for safe extraction without intraabdominal dissemination or destruction of the serous surface of the uterus (Figures 2 and 3 and Video).

Technical limitations were extreme vaginal narrowing or a transversal uterine diameter exceeding 15 cm. There was no significant learning curve of this minimally invasive approach with wrapping time less than 5 minutes on average. For larger uterine specimens, bigger bags without frame (LapSac; Cook Medical, Bloomington, IN) were applied, although the placement and wrapping were more difficult and took much more time.

We implemented this procedure, along with a risk stratification algorithm, in 2 tertiary referral hospitals, both of which were specialized centers for gynecological endoscopic surgery and gynecological oncology (Inselspital Bern in 2010 and Cantonal Hospital of Lucerne in January 2013).

All women planning TLH underwent preoperative imaging assessment by transvaginal ultrasound including power Doppler sonography; if incomplete or nonconclusive, a magnetic resonance imaging was performed. We defined concerning history as a growing uterine mass or uterus after menopause or fast-growing uterine fibroids in premenopausal women.

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