ELSEVIER

THE JOURNAL OF
MINIMALLY INVASIVE
GYNECOLOGY

Original Article

New Challenges in Detecting, Grading, and Staging Endometrial Cancer After Uterine Morcellation

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ABSTRACT **Study Objective:** To evaluate the accuracy in diagnosing endometrial disease after uterine morcellation.
Design: Prospective case series.
Setting: University medical center.
Patients: Five women undergoing hysterectomy without morcellation because of benign indications and 5 women with endometrial cancer.
Interventions: Uterine specimens were obtained from all 10 study patients. The uteri were sent for pathologic analysis, processed, and fixed according to standard protocols. A single investigator then morcellated all 10 uteri. A single pathologist blinded to specimen group reviewed each specimen.
Main Results: The pathologist identified endometrial cancer in 4 of 5 specimens of known cancer. The fifth specimen was interpreted as benign despite the presence of grade 1, stage IA endometrial adenocarcinoma. None of the morcellated specimens could be staged.
Conclusion: The increasing use of uterine morcellation will result in new challenges for gynecologic oncologists secondary to difficulty in detection, and accurate grading and staging of endometrial cancer. Journal of Minimally Invasive Gynecology (2012) 19, 313–316 © 2012 AAGL. All rights reserved.

Keywords: Uterine morcellation; Uterine cancer; Cancer staging

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Performance of total and supracervical laparoscopic hysterectomy with morcellation has increased over the last 20 years. Uterine morcellation enables gynecologic surgeons to perform hysterectomies using minimally invasive techniques such as laparoscopy and robotic-assisted laparoscopy. During uterine morcellation, small pieces of uterine tissue may be dispersed into the peritoneal cavity. Case reports of single iatrogenic peritoneal myomas and peritoneal implants disseminated throughout the peritoneal cavity after uterine morcellation have been reported in the medical literature [1–8]. One study reported a series of 4 patients who were seen between 2 and 16 years after uterine morcellation with pelvic masses, one of whom had an incidental endometrial cancer in the pelvic mass [9]. Another case series reported that 8 of 1405 patients developed pelvic symptomatic adenomyotic masses at 2 to 9 years after undergoing laparoscopic supracervical hysterectomy with morcellation. Most patients reported pain and dyspareunia [10].

Another complication of uterine morcellation is the finding of a malignant lesion after a hysterectomy with morcellation performed to treat what was thought to be a benign condition. The literature reports a rate of 0.4% of undiagnosed uterine malignant lesions in patients undergoing hysterectomy because of presumed benign indications [11]. There is also a case report of a woman who underwent laparoscopic supracervical hysterectomy because of abnormal uterine bleeding, and was seen 5 months later with

The authors have no commercial, proprietary, or financial interest in the products or companies described in this article.
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Submitted November 3, 2011. Accepted for publication December 21, 2011.
Available at www.sciencedirect.com and www.jmig.org

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doi:10.1016/j.jmig.2011.12.019

a pelvic mass that was determined to be an undifferentiated adenocarcinoma [12]. The initial morcellated pathology specimen was benign; however, after the recurrent disease, a retrospective review of the morcellated hysterectomy specimen revealed clusters of malignant cells [12]. Little evidence exists to guide the treatment of incidental findings of uterine or endometrial malignant disease on final pathologic analysis of a morcellated specimen. Einstein et al [13] reported a retrospective case series of 17 patients who underwent either supracervical hysterectomy or hysterectomy with uterine morcellation because of presumed benign indications but in whom a malignant lesion was diagnosed at final pathologic analysis. They concluded that incidental uterine malignant disease after morcellation should be managed with repeat operation and staging [13].

The objective of the present study was to determine the accuracy of diagnosis of endometrial disease after uterine morcellation.

Materials and Methods

After receiving institutional review board approval from Loyola University Stritch School of Medicine, we prospectively identified 10 women undergoing total hysterectomy without uterine morcellation on the gynecologic oncology or benign gynecology services. Five of the women had uterine malignant disease, and 5 had benign uterine disease. Five women underwent preoperative endometrial biopsy, which confirmed endometrial malignancy. The other 5 women underwent benign preoperative assessment, and preoperative endometrial biopsy was performed on only one patient based on her history of menorrhagia. The institutional review board waived the need for consent by study participants. After either abdominal, vaginal, or laparoscopic total hysterectomy, all uteri were processed according to the usual protocol for our pathology department. All specimens were weighed and evaluated grossly for abnormalities, and then bivalved to display the endometrial cavity. For unmorcellated specimens, each uterus was then sectioned longitudinally from the cervix to the fundus, and representative samples were submitted for processing. For specimens morcellated in vitro, representative samples of uterus and cervix (if it was possible to identify) were submitted for formalin fixation. Each specimen was processed using standard techniques both before and after morcellation.

A single gynecologic pathologist (A.S.) evaluated the specimens, and then prepared the pathology reports and placed them in each patient's electronic medical record, according to routine institutional guidelines. Specimens were then de-identified, and another investigator (C.R.) blinded to specimen origin morcellated all uteri using a tissue morcellator (Gynecare Morcellex; Ethicon, Inc., Somerville, NJ). Once fully morcellated, each de-identified specimen was again processed and grossly evaluated by the same pathologist, who re-read each specimen and created a second report without knowing whether the original diagnosis was benign or malignant. If the pathologist identified a uterine or endometrial malignancy, she attempted to stage the malignancy. The standard 2010 FIGO staging system for endometrial cancer was used for all specimens. This staging was also included in the report.

Pathology reports from the routine and morcellated uterine specimens were compared for diagnosis, stage, and other pathologic abnormalities. Commercially available software (SPSS version 17.0; SPSS, Inc., Chicago, IL) was used for database management. Descriptive statistics are provided.

Results

Ten women with mean (SD; 95% CI) age 55.8 (16.5; 43.9–67.6) years were included in the analysis. The indications for hysterectomy because of benign disease were persistent cervical dysplasia (n = 2), menorrhagia (n = 1), pelvic organ prolapse (n = 1), and dysmenorrhea with menometrorrhagia (n = 1). The indication for hysterectomy because of malignant disease was either grade 1 or grade 2 endometrial adenocarcinoma based on a biopsy sample.

After uterine morcellation, the pathologic diagnosis remained the same in 6 patients (3 of 5 with benign disease, and 3 of 5 with malignant disease), whereas in 4, the diagnosis was misclassified (2 of 5 with benign disease, and 2 of 5 with malignant disease). The gynecologic pathologist identified only 4 of 5 uterine malignant lesions. The original pathology report showed grade 1, stage IA endometrial adenocarcinoma, whereas the report after morcellation was read as secretory phase endometrium and adenomyosis. The original pathology diagnosis and the diagnosis after morcellation in patients with benign findings or malignant disease are given in Tables 1 and 2, respectively. The pathologist could not stage any of the malignant specimens because none of the sections contained a full-thickness portion of uterine wall.

Of the hysterectomies performed because of benign indications, there were 2 significant discrepancies between the premorcellated and postmorcellated specimens. Two of these were read as complex atypical hyperplasia when in fact they were truly benign. In the malignant cases, there were more significant inaccuracies in the morcellated specimens. In 1 specimen, the malignancy was completely missed, and was instead read as secretory endometrium and adenomyosis. One specimen was read as grade 1 when in fact it was grade 2. None of the specimens were able to be staged because there was never a sample with the entire myometrial thickness; thus, the pathologist was never able to fully assess the depth of invasion.

Conclusions

This study highlights the difficulty in pathologic diagnosis of a morcellated uterine specimen. Our gynecologic pathologist was able to identify only 4 of 5 known malignant lesions after morcellation. After morcellation, a grade 1,