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JMIG The Journal of Minimally Invasive Gynecology

Original Article

Incidence of Occult Uterine Malignancy Following Vaginal Hysterectomy With Morcellation

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ABSTRACT **Study Objective:** To determine the incidence and impact of occult uterine malignancy following vaginal hysterectomy and uncontained morcellation.

Design: An Institutional Review Board–approved retrospective cohort study (Canadian Task Force classification II-2).

Setting: Three academic medical centers.

Patients: All women who underwent vaginal hysterectomy between January 1, 2008, and August 31, 2015, at 3 institutions were considered for inclusion in the study.

Interventions: Total vaginal hysterectomy with and without morcellation.

Measurements and Main Results: A total of 2296 women underwent total vaginal hysterectomy without (n = 1685) or with (n = 611) vaginal morcellation performed via cold-knife wedge resection. All patients requiring morcellation had benign indications for hysterectomy. The incidence of occult uterine malignancy among hysterectomies requiring vaginal morcellation was 0.82% (n = 5) and included stage IA, grade I endometrial adenocarcinoma (n = 3; 0.49%) and low grade stromal sarcoma (n = 2; 0.33%). Demographic data for those with occult malignancy included mean age 48.8 years, mean body mass index 32.36 kg/m^2, and median parity 2. Indication for hysterectomy was abnormal uterine bleeding for the 5 patients who underwent morcellation and were found to have a malignancy. Final pathology revealed a mean uterine weight of 231.60 g. All patients have remained disease-free, and no deaths have occurred. Mean disease-free survival was 48.33 months (range, 33–67 months) for the patients with endometrial adenocarcinoma and 42.0 months (range, 19–65 months) for the patients with stromal sarcoma for the 5 patients who underwent vaginal hysterectomy with morcellation.

Conclusion: Among patients undergoing vaginal hysterectomy with morcellation, the incidence of occult uterine carcinoma is 0.82%. Uncontained vaginal morcellation when used concomitantly with vaginal hysterectomy does not appear to negatively impact patient prognosis or outcomes. Journal of Minimally Invasive Gynecology (2017) 24, 665–669 © 2017 AAGL. All rights reserved.

Keywords: Uterus; morcellate; cancer

Electromechanical morcellation has been available for many years and has allowed many women to undergo minimally invasive hysterectomy. Electromechanical morcellation has been at the forefront of scrutiny due to possible inadvertent morcellation of uterine malignancy. The challenges regarding cold-knife vaginal morcellation are not clear, however. Compared with intact removal, morcellation of a uterine leiomyosarcoma is associated with shorter disease-free survival and poorer overall survival [1]. Literature pertaining to vaginal morcellation is limited. Until further evidence regarding the safety of vaginal morcellation is available, it has been recommended that all morcellation techniques be treated equally. The AAGL recommends that morcellation be approached with caution or avoided altogether in patients with premalignant or malignant conditions, and in those at risk for malignancy [2].

Morcellation during vaginal hysterectomy is performed intravaginally when there is an intact uterine fundus. This appears to have a lower risk of disease dissemination compared with uncontained intraperitoneal morcellation. A series of 25 cases of uterine leiomyosarcoma with tumor morcellation, including a single case of morcellation of a leiomyosarcoma at the time of vaginal hysterectomy, has

The authors declare that they have no conflicts of interest.

A portion of this study was presented at the AAGL Global Congress in Orlando, Florida, November 2016.

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Submitted November 29, 2016. Accepted for publication January 5, 2017.
Available at www.sciencedirect.com and www.jmig.org

1553-4650/$ - see front matter
http://dx.doi.org/10.1016/j.jmig.2017.01.025

been reported [1]. That patient was analyzed with the other 24 patients who underwent morcellation of leiomyosarcoma at the time of myomectomy and laparoscopic-assisted vaginal hysterectomy using undescribed techniques [1]. The heterogeneity of that analysis makes conclusions regarding various morcellation techniques difficult.

Whether vaginal and electromechanical morcellation carry the same inherent risk is unclear. The clinical implications of morcellation of a uterine malignancy during vaginal hysterectomy on patient outcomes and prognosis remain unknown. The primary objective of this study was to determine the incidence and impact of uncontained morcellation of an occult uterine malignancy during vaginal hysterectomy.

Materials and Methods

Following approval from the Mayo Clinic Arizona Institutional Review Board, a cohort was obtained by searching the patient enterprise-wide database at Mayo Clinic for Current Procedural Terminology codes for vaginal hysterectomy in patients from Mayo Clinic Minnesota, Mayo Clinic Florida, and Mayo Clinic Arizona. All consecutive patients undergoing a vaginal hysterectomy for any indication with or without morcellation, adnexectomy, and colporrhaphy between January 1, 2008, and August 31, 2015, were included. Uncontained vaginal morcellation was performed using cold-knife wedge resection of the endometrium and myometrium without violating the serosa at the uterine fundus. Morcellation was continued until the intact uterine fundus was exteriorized from the vagina.

The primary study endpoint was the incidence of occult uterine malignancy found at the time of vaginal hysterectomy with morcellation. Secondary endpoints included perioperative data and long-term patient outcomes. Data were abstracted from patient medical records. Surgical reports were reviewed to confirm the primary procedure of vaginal hysterectomy with or without morcellation. Pathology reports were reviewed to assess for occult uterine malignancy.

Data were reviewed systematically for all occult malignancy cases. Variables used to assess predictability of occult malignancy included demographic information (age, race, body mass index [kg/m^2], parity, and menopausal status) and preoperative evaluation (diagnosis, endometrial sampling, and radiologic studies). Intraoperative findings, including final pathology and concomitant procedures, were assessed.

Patients with an occult malignancy were evaluated for subsequent treatment, disease-free survival, and mortality. Standard evaluation modalities were used to assess for cancer recurrence, including complete history and physical examination every 6 months for 3 years and annually thereafter, as well as annual chest X-rays. Data were summarized using descriptive statistics.

Results

A total of 2296 cases of total vaginal hysterectomy were identified, of which 1685 (73.39%) underwent vaginal hysterectomy without morcellation and 611 (26.61%) underwent vaginal hysterectomy with morcellation performed via cold-knife wedge resection, with or without associated adnexectomy and/or colporrhaphy. All hysterectomies were performed by gynecologists with subspecialty surgical training (female pelvic reconstruction or gynecologic oncology). Occult uterine malignancy was found in 10 of these 2296 patients (0.44%) undergoing total vaginal hysterectomy.

Pathological evaluation for patients undergoing vaginal hysterectomy without morcellation revealed a gynecologic carcinoma in 206 of 1685 patients (12.23%). Occult malignancy was found in 5 patients (0.30%). Stage IA, grade I endometrial adenocarcinoma was discovered in 4 patients (0.24%), and low-grade stromal sarcoma was found in 1 patient (0.06%).

Among the 611 patients who underwent vaginal hysterectomies with morcellation, 5 patients had an occult malignancy (0.82%), including 3 stage IA, grade I endometrial adenocarcinomas (0.49%) and 2 low-grade stromal sarcomas (0.33%); no patients had a uterine sarcoma. Demographic data for these 5 patients included a mean age of 48.8 years (range, 43–58 years), a mean body mass index of 32.36 kg/m^2 (range, 19.6-42.4 kg/m^2), and median parity of 2 (range, 0–3). Four patients (80%) were premenopausal, and all 5 patients (100%) were white. The indication for hysterectomy was abnormal uterine bleeding for these 5 patients (Table 1).

All 5 patients with an occult malignancy underwent endometrial sampling and pelvic imaging evaluation before the hysterectomy with uncontained vaginal morcellation. Of the 3 patients ultimately diagnosed with adenocarcinoma, 1 had dilation and curettage of the uterus 8 months before hysterectomy showing scant secretory endometrium and a pelvic ultrasound 9 months earlier that revealed 2 uterine leiomyomas. Within 30 days of her hysterectomy, the second of the 3 patients diagnosed with an adenocarcinoma underwent an endometrial biopsy that revealed benign endometrium and a pelvic ultrasound that revealed a thin endometrium. The third patient had dilation and curettage of the uterus intraoperatively, immediately before her hysterectomy, which showed atypical complex hyperplasia as well as a pelvic ultrasound during the month before her hysterectomy showing a diffusely thickened, hypervascular endometrium with cystic areas (Tables 1 and 2).

Of the 2 patients with low-grade stromal sarcoma found after vaginal hysterectomy with morcellation, 1 underwent endometrial biopsy and pelvic ultrasound within 30 days before the hysterectomy that revealed atrophy and uterine leiomyoma. The second patient had dilation and curettage of the uterus intraoperatively, immediately before hysterectomy, which showed benign endometrium, and also