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Uterine Pathology in Hysterectomies Performed for Treatment of Pelvic Organ Prolapse

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Abstract

Objective: To determine the rate of uterine pathology in hysterectomies performed during surgery for treatment of uterovaginal prolapse.

Methods: In this retrospective cohort study, we evaluated all patients undergoing hysterectomy during treatment of uterovaginal prolapse at a single academic institution from 2008 to 2013. Demographics, risk factors for uterine malignancy, operative data, and pathology reports were reviewed. Patients with history of concerning uterine pathology were excluded.

Results: 339 subjects were included; none were excluded. Mean age of patients undergoing hysterectomy was 63.2 years with 85.5% post-menopausal. Mean BMI was 27 kg/m^2 and mean uterine weight was 71 grams. Abnormal pathology was identified in 0.8% (3/339) subjects: complex atypical hyperplasia (1), grade 1 endometrial adenocarcinoma (1), and low-grade B-cell lymphoma (1). 49% of specimens contained fibroids and no sarcomas were identified. Total hysterectomy was performed in 88%. 12% (40/339) underwent supracervical hysterectomy with morcellation. One specimen with abnormal pathology (complex atypical hyperplasia) was morcellated. Patients undergoing procedures requiring morcellation were younger (57.3 vs. 63.3, p=.001, 95%CI 2.52, 9.52) and less likely to be postmenopausal (69% vs. 88%, p=.021, 95%CI .067, .300). Risk factors for uterine malignancy were not different between groups.

Conclusions: We found a low rate of incidental uterine pathology in hysterectomy specimens from prolapse surgery. Half of uterine specimens had leiomyomas. Specimens with fibroids had a higher mean weight than leiomyoma-free specimens. Risk factors for cancers among patients undergoing morcellation versus intact removal were not different. Further study is needed to clarify the role of morcellation in this low-risk population.

Keywords: Uterine pathology; Morcellation; Prolapse

Introduction

Current estimates of pelvic organ prolapse in the US indicate that approximately 40% of women will develop prolapse [1] and 20% of women will undergo surgery for a pelvic floor disorder [2]. The likelihood of surgery for pelvic organ prolapse is estimated at 11.8% [2]. The most common indication for hysterectomy in postmenopausal women in the US is pelvic organ prolapse. When hysterectomy is performed for pelvic reconstruction, it does not reflect uterine pathology but rather is done to facilitate technical aspects of reconstruction. This reconstruction can be performed with native tissue or with graft material. Sacral colpopexy with mesh is a gold standard for treatment of apical (uterine or vaginal vault) pelvic organ prolapse. The most common mesh-related complication is vaginal mesh erosion [3]. The risk of mesh erosion decreases with retention of the cervix for mesh attachment from as high as 14-23% to 0-5% [4,5]. For this reason most hysterectomies performed at the time of concomitant sacral colpopexies are supracervical and, when performed minimally-invasively, the specimen is usually morcellated.

The recent morcellation controversy has limited the options for many women undergoing minimally-invasive sacral colpopexy with hysterectomy. The FDA discouraged the use of the laparoscopic power morcellator for hysterectomy or myomectomy for uterine fibroids [6]. Many institutions interpreted this as a broader safety concern for the use of power morcellation in all hysterectomies. Following this, AAGL [7], ACOG [8] and American Urogynecologic Society [6] issued statements affirming that use of a specific surgical technique should be left to the discretion of the physician and patient. The patient undergoing pelvic reconstructive surgery with hysterectomy may have a different risk profile for uterine pathology. Thus we aimed to evaluate the risk of uterine pathology in patients with prolapse undergoing hysterectomy.

Materials and Methods

We conducted a retrospective cohort study at a single academic tertiary care center. The study was approved by the IRB. The Female Pelvic Medicine and Reproductive Surgery (FPMRS) division has three full-time FPMRS board-certified specialists. Billing data from July 2008 to July 2013 was electronically retrieved for all hysterectomies performed for prolapse. Current Procedural Terminology (CPT) codes for all methods of hysterectomy were included (58152; 58260; 58262; 58290; 58541; 58542; and 58552). We excluded subjects with known uterine malignancy or pre-malignancy. Women with concerning

symptoms, such as abnormal uterine bleeding, had appropriate preoperative endometrial assessments before surgery. Data was collected from the electronic medical records, including demographic data, family history, reproductive history, and factors associated with risk of gynecologic malignancy. The operative reports were reviewed and hysterectomy type (total or supracervical) and method (laparoscopic, robotically-assisted laparoscopic, vaginal, laparoscopically-assisted vaginal, or laparotomy) were recorded. Pathology reports were reviewed noting uterine weight, endometrial and myometrial findings. All abnormal uterine pathology prompted further review for preoperative symptoms, additional diagnostic procedures or treatments. We categorized patient into two groups: total or intact hysterectomy and power morcellated hysterectomy specimens. Our primary outcome was the incidence of previously unidentified malignant or pre-malignant uterine pathology in morcellated and intact hysterectomy specimens during surgery for the treatment of pelvic organ prolapse. Our secondary outcome was the incidence of uterine leiomyomas in hysterectomy specimens in these groups. Data were analyzed using descriptive statistics for demographics and uterine pathology risk factors. Confidence intervals were calculated for incidence of uterine pathology. Statistical analysis, including chi-square for dichoctomous variables and ANOVA for continuous variables, was performed (Stata 13).

Results

Demographic data is summarized in Table 1.

	All (n=339)	Morcellated uteri (n=40)	Intact uteri (n=299)	p-value
Age (years)	62.4 (10.7)[#] [61.49-63.79][**]	57.3 (9.5)[#] [54.30-60.34][**]	63.4 (10.7)[#] [62.13-64.57][**]	0.001
BMI (kg/m^2)	26.9 (4.7)[#] [26.35-27.34][**]	26.2 (3.3)[#] [25.12-27.24][**]	26.9 (4.7)[#] [26.39-27.48][**]	0.335
Parity	3 (0-10)[*] [2.58-2.87][**]	2 (0-5)[*] [1.96-2.59][**]	3 (0-10)[*] [2.62-2.94][**]	0.029
Race (%) –				0.111
White	88	83	89	
Black	4	0	4	
Hispanic, non-black	5	12	4	
Other	3	5	3	
Tobacco use (%)	4	5	4	0.786
Diabetes (%)	4	8	8	0.961
Hx breast cancer (%)	8	5	9	0.426
Hx SERM use (%)	5	0	5	0.139
Regular exercise (%)	57	71	55	0.087
Post-Menopause (%)	86	69	88	0.002
HRT use, including vaginal estrogen (%)	25	35	23	0.129
Hyst type (%)—				N/A
TVH	85	0	96	
LSCH	7	58	0	
RaSCH	5	42	0	
LaVH	2	0	1	
TAH	1	0	3	
[#]Standard deviation; [*]Range, [**]95% Confidence interval				

Table 1: Demographics and clinical characteristics of women undergoing hysterectomy for prolapse.

We identified 339 subjects who underwent hysterectomy for prolapse during this five year period. No patients met exclusion criteria. Total hysterectomy was performed in 88% (299/339) and supracervical hysterectomy with power morcellation in 12% (40/339). All subjects with supracervical hysterectomies had additional mesh sacral colpopexy. We identified three subjects with malignant or

premalignant pathology, 0.8% (3/339). The intact group had two subjects: grade 1 endometrial adenocarcinoma (1), and low-grade B-cell lymphoma (1). One premalignant specimen, complex atypical hyperplasia, was morcellated, Table 2. Patients undergoing procedures including power morcellation were younger (57.3 vs. 63.3, p=.001, 95%CI 2.52, 9.52) and less likely to be postmenopausal (69% vs. 88%, p=.021, 95%CI .067, .300). Risk factors for gynecologic cancers including BMI, presence of uterine fibroids, tobacco use, diabetes mellitus, breast cancer, or selective estrogen receptor modulator use were not significantly different between groups. The patient whose specimen was morcellated with complex atypical hyperplasia did not have any risk factors of uterine malignancy. She did not require any additional surgeries. She has no evidence of disease on ongoing surveillance.

Definitions: BMI (Body Mass Index); Hx (History); SERM (Selective Estrogen Receptor Modulator); HRT (Hormone Replacement Therapy); Hyst (Hysterectomy); TVH (Total Vaginal Hysterectomy); LSCH (Laparoscopic Supracervical hysterectomy); RaSCH (Robotically-assisted Supracervical Hysterectomy); LaVH (Laparoscopic-assisted Vaginal Hysterectomy); TAH (Total Abdominal Hysterectomy).

	All (n=339)	Morcellated uteri (n=40)	Intact uteri (n=299)	p-value
Uterine wt (gms)	71.06 (3.97)# [63.25-78.87]**	65.97 (48.9)# [49.16-82.77]**	71.68 (73.86)# [63.13-80.21]**	0.656
Fibroids present (%)		55 (22/40)	48 (144/299)	0.417
Adenomyosis (%)		23 (9.2/40)	22 (66/299)	0.891
Endometrium (n)—				0.411
Normal / Benign	336	39	297	
Complex hyperplasia	1	1	0	
Endometrial cancer	1	0	1	
Other malignancy	1	0	1	
#Standard deviation *Range **95% Confidence interval				

Table 2: Pathology specimen characteristics in women undergoing hysterectomy for prolapse.

	All (n=339)	Fibroids present (n=166)	Fibroids absent (n=173)	p-value
Uterine wt (gms)		55.05 (34.71)# [49.74-60.38]**	87.43 (93.49)# [72.69-102.17]**	0.0001
#Standard deviation *Range **95% Confidence interval				

Table 3: Uterine weight in pathology specimens according to presence of leiomyoma.

Discussion

We found that patients undergoing hysterectomy for prolapse had a very low, less than 1%, incidence of malignant and premalignant uterine pathology. We did not identify significant differences in uterine pathology risk factors between morcellated and intact groups, although the patients in the morcellation group were younger and more likely to be premenopausal. Nearly half of all patients had uterine leiomyomas and no sarcomas were identified. There was a difference in mean uterine weight in the fibroid and fibroid-free groups, although all patients were asymptomatic pre-operatively from these fibroids. The clinical significance of this difference in weight is unlikely to be relevant. There was no difference in presence of fibroids in morcellated and intact uteri specimens.

The incidence of less than 1% malignant and pre-malignant pathology in our study is substantially lower than that quoted in the FDA and ACOG statements concerning use of the power morcellator for the minimally invasive removal of the uterine fundus [6,8]. This suggests that patients requiring hysterectomy for prolapse should be considered separately from those undergoing hysterectomy due to benign uterine pathology.

We found no difference between the incidence of uterine pathology in the morcellated group when compared to the intact group. Although the concern regarding spread of malignancy is real, it is rare, even in the group that might benefit from morcellation of a specimen. The incidence of mesh erosion after sacrocolpopexy is as high as 14-23% when mesh is placed over an incision, such as in a total hysterectomy. Cervical retention can reduce this risk to 0-5% [4,5]. Mesh erosion can confer significant morbidity in the form of infection, painful intercourse, and additional surgeries to repair the erosion. These risks should be weighted appropriately when considering morcellation in a patient undergoing hysterectomy for prolapse.

In our study we identified leiomyomas in nearly half of the uterine specimens. However, while there was a 32 gram difference in mean weight between the two groups, all patients were asymptomatic and the mean size of fibroid was 1.5 centimeters, thus unlikely to be clinically significant. There were no sarcomas identified in either group. Uterine leiomyosarcomas are malignancies which spread more aggressively if morcellated in the abdomen, presumably via intraperitoneal seeding of microscopic sarcoma cells, and morcellation of specimens containing sarcomas can upstage the cancer. In our study, it appears that the small leiomyomas common in prolapse patients do not confer risk for leiomyosarcoma similar to those reported in large fibroid uteri.

The risk of malignant or premalignant uterine pathology is uncommon in women undergoing hysterectomy for prolapse, even in those whose specimens contained fibroids. While a substantial number of women undergo hysterectomy and thus there could be women with unidentified abnormal pathology that is morcellated, the risks of all alternative procedures should be considered however. The risk of vaginal mesh erosion when mesh is placed over a vaginal incision and its subsequent morbidity is an important consideration. A long-term follow-up study of patients with incidentally identified abnormal uterine pathology would be useful. Patients should be counseled regarding the risks of morcellation and mesh erosion, and together with their surgeon make an informed decision regarding the route and method of uterine removal.

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