

Characteristics of Patients Undergoing Hysterectomy for Failed Endometrial Ablation

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ABSTRACT

Background and Objectives: Endometrial ablation is a minimally invasive procedure for menorrhagia. High success rates are documented with >90% of patients experiencing satisfaction. However, adequate relief after endometrial ablation is not obtained in a cohort of patients. The purpose of this study is to identify the characteristics of patients for whom endometrial ablation fails due to persistent symptoms, causing them to choose hysterectomy for definitive treatment.

Methods: We conducted a retrospective chart review of patients who underwent hysterectomy for persistent menorrhagia, pain, or both, who previously had endometrial ablation. We reviewed medical records including pathology reports from hysterectomy. We compared demographics to a group previously studied at our institution that were identified as satisfied 5 years after ablation.

Results: The number of patients in our study group was 51 (n = 51). Median age of patients was 39 (range 29–50) years. Average body mass index was 31 (range 19–47) kg/m². Average parity was 1.9. Sixty-nine percent underwent tubal ligation. The majority were nonsmokers (75%). Ninety-six percent were Caucasian. Compared with the previously studied satisfied group, the only statistically significant difference was age.

Of 51 patients, 11 (22%) noted pelvic pain as their chief concern. Menorrhagia was the chief concern in 22 (43%). Eighteen patients (35%) complained of both. The most common diagnosis was endometriosis, which was identified in 35 patients (68%). Leiomyomata were present in 33 patients (64%). Adenomyosis was identified in 22 patients (43%).

Conclusions: Patients who present for hysterectomy after endometrial ablation have a high rate of endometriosis, adenomyosis, and leiomyomata, with endometriosis being the most common finding.

Key Words: Endometrial ablation techniques, Endometriosis, Leiomyoma Hysterectomy.

INTRODUCTION

Menorrhagia is a common complaint that brings patients to the gynecology office. Abnormal uterine bleeding can greatly affect a patient's life, causing discomfort and lost time from activities of daily living, including absence from the workplace. Previously, medical management and hysterectomy were the only options for treatment of menorrhagia. Since the 1980s, endometrial ablation has emerged as a minimally invasive treatment option. Many methods have been used to accomplish endometrial ablation. Endometrial resection, rollerball cautery, radiofrequency ablation, and thermal ablation have shown excellent success.¹ The different techniques have limitations based on the size and shape of the patient's uterine cavity. However, they have been shown to have similar efficacy with >90% satisfaction among treated patients. Compared with hysterectomy, endometrial ablation has a number of advantages, including decreased operative time, decreased recovery time, and overall decreased cost.²

Success rates for endometrial ablation are high, with many studies confirming up to 90% satisfaction.³ Many groups have focused investigations on the successes and failures of endometrial ablation to identify the appropriate patient population for this intervention. Several possible risk factors for failure of endometrial ablation have been identified, including age, history of tubal ligation, and uterine size.^{4–7}

The purpose of this study is to identify common characteristics of patients who previously had undergone an endometrial ablation procedure as treatment for menorrhagia and subsequently chose to undergo a hysterectomy. This retrospective chart review was undertaken to identify patients in our population at risk for failure of

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endometrial ablation. We specifically investigated the common pathological findings at the time of hysterectomy.

METHODS

This study was approved by the internal review board of the Milton S. Hershey Medical Center. The internal review board at our institution waived informed consent for this study. Patient information was kept in a locked database only accessible by the investigators. A retrospective chart review was conducted and included patients who presented for hysterectomy after previous endometrial ablation. All patients who underwent hysterectomy during the period of July 1, 2007, to June 30, 2010, in the Department of Obstetrics and Gynecology, Division of Urogynecology/Minimally Invasive Gynecology (Uro/MIS) after a prior endometrial ablation were included in this study. Our institution serves as a referral center for patients from many other providers. Therefore, many of the patients included in this study underwent their ablation procedure at outside institutions and presented to our institution for hysterectomy. We identified patients for this study using *International Classification of Disease, Ninth Revision* coding for laparoscopic hysterectomy, laparoscopic supracervical hysterectomy, laparoscopic assisted vaginal hysterectomy, vaginal hysterectomy, and abdominal hysterectomy. All providers who perform hysterectomies in Uro/MIS were included in this study. Two Uro/MIS surgeons performed all the hysterectomies in our study.

We reviewed medical records including preoperative history and physicals, operative reports, and pathology reports from the hysterectomies. The demographic data points recorded included the patients' age, parity, body mass index, race, smoking status, and history of tubal ligation. The patients' chief concern at presentation for

hysterectomy—pain, menorrhagia, or both—was also recorded. Both surgical and pathological diagnoses at time of hysterectomy were recorded. Standard pain scores or validated pain questionnaires were not available for inclusion in our study. In addition, we compared the demographics of our cohort of patients who desired hysterectomy after a prior endometrial ablation with a previously studied group of patients identified as satisfied after endometrial ablation.

RESULTS

Our study included 51 patients (n = 51) who underwent a hysterectomy from July 1, 2007, to June 30, 2010, in Uro/MIS for the diagnosis of failed endometrial ablation. These patients were identified using *International Classification of Disease, Ninth Revision* codes for hysterectomy and endometrial ablation. Patient demographics are shown in **Table 1**. Median age of patients in this study was 39 years with a range of 29 to 50 years. Average body mass index was 31 kg/m² with a range of 19 to 47 kg/m². These patients had an average parity of 1.9. Sixty-nine percent of these patients had undergone tubal ligation for contraception. A majority of our patients were nonsmokers, with 75% identifying themselves as such. Ninety-six percent were identified as Caucasian.

Our population was compared with a previously studied population at the Milton S. Hershey Medical Center. Of this group of 178 patients, 89% identified themselves as overall satisfied 5 years after endometrial ablation. The previous study population was similar to our patient population. A 2-sample *t* test was used to compare the age, body mass index, and parity of both populations. The demographics of tubal ligation and nonsmoking status were compared using a χ^2 test. A Fisher exact test was used to compare the race of both populations. There was

Table 1.
Patient Demographics

	Unsatisfied Cohort, n = 51	Satisfied Cohort, n = 178	P Value
Age, y	39 (29–50) SD 6.32	44 (25–73) SD 7	<.0001
BMI, kg/m ²	31 (19–47) SD 6.4	29 (19–60) SD 8	.1023
Parity	1.9 (0–4) SD 0.9	2.1 (0–6) SD 1.05	.2178
Tubal ligation	69% (35/51)	54% (96/178)	.0615
Nonsmokers	75% (38/51)	83% (147/178)	.1969
Caucasian ethnicity	96% (49/51)	91% (159/178)	.1758

BMI, body mass index; SD, standard deviation.

a statistically significant difference in age between the 2 groups of patients. The population with failed endometrial ablation was statistically a younger cohort than the previous subject group identified as satisfied. No other demographic parameters were statistically different.

Most patients included in this study had a thermal balloon ablation technique for their endometrial ablation. There were 46 patients who had a thermal balloon ablation. One patient had a Novasure endometrial ablation. There were 4 patients from outside institutions for whom we did not have records of the types of their endometrial ablation.

The chief concern of patients who desired hysterectomy after endometrial ablation was also noted (**Figure 1**). Of 51 patients, menorrhagia was cited as the chief concern in 22 patients (43%). Eleven patients (22%) noted pelvic pain as their chief concern. Another group, 18 patients (27%), expressed concern about both pain and menorrhagia.

Of the 51 patients in the cohort studied, 92% (47 patients) underwent a hysterectomy by a laparoscopic approach: total laparoscopic hysterectomy, laparoscopic supracervical hysterectomy, or laparoscopic assisted vaginal hysterectomy (**Figure 2**). A vaginal hysterectomy was performed in 4 of these patients. No patients underwent an abdominal hysterectomy. Therefore, most of our patients had a laparoscopic pelvic evaluation.

We obtained both surgical and pathological diagnoses at the time of hysterectomy. All patients had benign diagnoses. Many patients had multiple benign diagnoses. The most common diagnosis was endometriosis, which was identified in 35 patients or 69% of the cohort (**Figure 3**). These patients had either endometriosis alone or endometriosis in association with another benign diagnosis (**Figure 4**). Leiomyomata were present in 63% of patients

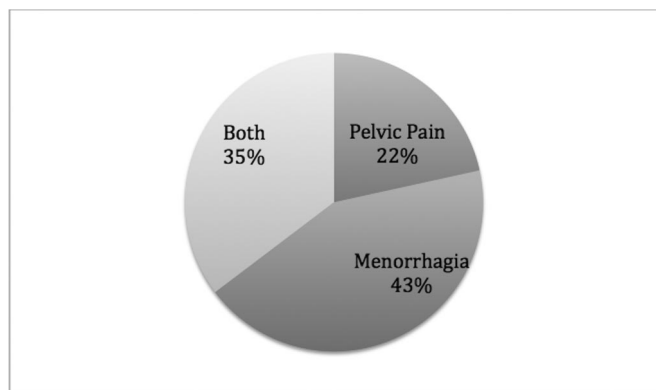


Figure 1. Presenting symptoms: Patient complaint at the time of hysterectomy.

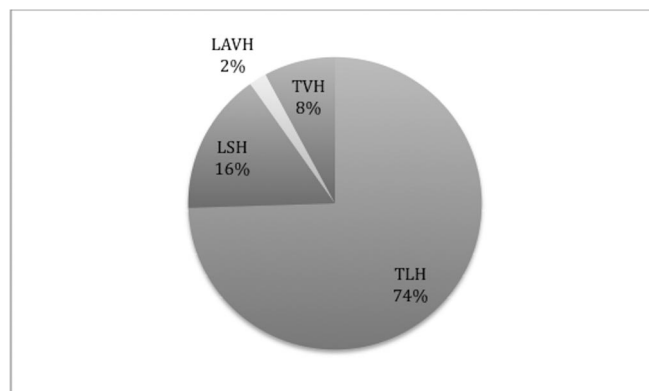


Figure 2. Type of hysterectomy: All hysterectomies were performed through a minimally invasive approach. Over 90% of patients had a laparoscopic evaluation of the pelvis. LAVH, laparoscopic assisted vaginal hysterectomy; LSH, laparoscopic supracervical hysterectomy; TLH, total laparoscopic hysterectomy; TVH, total vaginal hysterectomy.

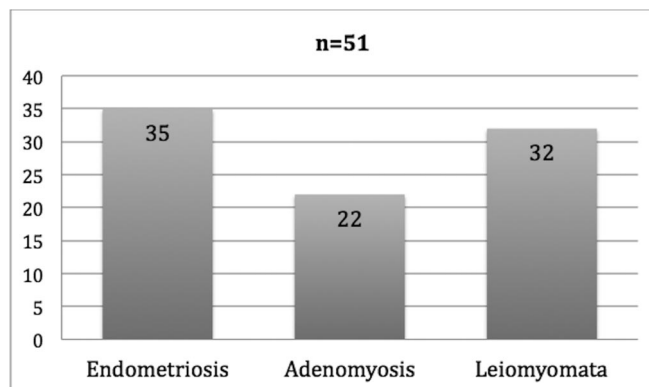


Figure 3. Pathology: Breakdown of benign gynecologic findings.

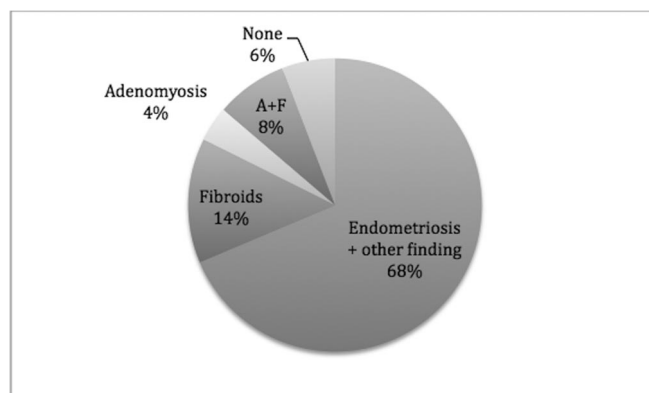


Figure 4. Pathology: Over two-thirds of patients in this study were diagnosed with endometriosis. A + F, adenomyosis and leiomyomata.

(n = 32), and adenomyosis was identified in 43% of patients (n = 22) (**Figure 3**). Only 3 patients (6%) in this study had no benign pathology diagnosed. Each of these 3 patients had undergone vaginal hysterectomy; therefore, no laparoscopic examination was performed.

DISCUSSION

Endometrial ablation offers a convenient, minimally invasive outpatient approach for the treatment of menorrhagia. Most patients who undergo endometrial ablation find adequate relief of their symptoms. However, a small cohort of patients does not appreciate satisfaction after endometrial ablation and desires further definitive management with hysterectomy. In our referral hospital setting, we continue to see a consistent number of patients who present desiring definitive management with hysterectomy after a previous endometrial ablation. The aim of this study was to identify common characteristics of patients who desired further definitive treatment with hysterectomy after endometrial ablation. Our goal of identifying specific characteristics of patients with failed endometrial ablation may guide us to better counsel patients who present seeking options for menorrhagia.

Compared with our previous study population,³ which showed a success rate compatible with the national rate, the population in our current study cohort had the same demographic parameters overall. The only significant demographic difference between the 2 study populations was age. The cohort of patients who did not have satisfactory results from their endometrial ablation and who presented seeking a hysterectomy were a younger group of patients than the patients who rated themselves satisfied 5 years after endometrial ablation. This characteristic is consistent with prior studies and may reflect the incidence of failure particularly associated with endometriosis. We can surmise that patients with endometriosis may present at a younger age for menstrual abnormalities such as dysmenorrhea.

Although we are able to identify the most common pathologic finding in our patients undergoing hysterectomy after prior endometrial ablations, the exact mechanisms by which it contributes to the perceived failure of the patient's endometrial ablation remains elusive. There may be several possibilities. Endometriosis may place patients at higher risk for postablative pain syndrome. Endometriosis may also result in endometrial regeneration in a similar fashion to adenomyosis causing postablation menorrhagia.

The pathologic diagnosis of adenomyosis has been identified previously as a risk factor for failure of endometrial ablation.⁸ The specific role that adenomyosis plays in this process is unclear. Adenomyosis has been linked to endometrial regeneration, which is known to contribute to postablation bleeding.⁸ Previous studies have also noted an association between adenomyosis and postablation pain.⁹

Submucosal fibroids are another known pathology that confers risk for failure of endometrial ablation. Fibroids potentially distort the uterine cavity, making ablation technically difficult and often unsuccessful. Even when uterine cavity preservation occurs in the setting of intramural fibroids, patients may still experience failed ablations.¹⁰ Some groups have postulated that patients with intramural fibroids may have successful outcomes.¹¹ More studies are needed to specifically characterize the relevance of the location of fibroids and failed endometrial ablation.

Our study has several limitations including the retrospective design. Because many of the patients underwent their ablation procedure at outside facilities, we were unable to access their specific complaints at the time of initial presentation for endometrial ablation. In addition, a pain assessment tool was not used to quantify the patients' preoperative and postoperative pain scores. Future research will include a pain and bleeding assessment tool to prospectively quantify patients' symptoms. Because many of our patients presented in consultation at our referral center, there are 3 patients included who had unknown type of ablation. Our high rate of laparoscopic hysterectomies affords us the advantage of adequate pelvic evaluation for endometriosis at the time of surgery. The diagnosis of endometriosis can be made under direct visualization with laparoscopy and by histological criteria of glandular and stromal elements.

CONCLUSIONS

Endometrial ablation remains a viable option for treatment of menorrhagia in many patients. However, in a small cohort of patients, endometrial ablation will fail. Review of pathology specimens showed an association between failed endometrial ablation and endometriosis, leiomyomata, and adenomyosis with the strongest association between endometriosis and failed endometrial ablation. We may consider using this information to counsel patients regarding risk stratification of procedure failure in the setting of endometriosis, adenomyosis, or leiomyomata.

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