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Original Article

Predicting Pelvic Pain After Endometrial Ablation: Which Preoperative Patient Characteristics Are Associated?

May S. Thomassee, MD*, Howard Curlin, MD, Amanda Yunker, DO, MSCR, and Ted L. Anderson, MD, PhD

From the Division of Minimally Invasive Gynecologic Surgery, Vanderbilt University Medical Center, Nashville, Tennessee (all authors).

ABSTRACT **Study Objective:** To determine which patient characteristics are associated with an increased risk of postablation pelvic pain.
Design: Canadian Task Force classification II-2.
Methods: Data were collected from a retrospective cohort of patients who underwent endometrial ablation between January 2006 and September 2010 at a large academic medical center. Patients were identified via *Current Procedural Terminology* codes (58563, 58353, and 58356) for any type of endometrial ablation (rollerball or global); the sample size was 437 women. Multiple conditions and comorbidities were recorded for each patient. Bivariate analysis of patient demographics and the incidence of pain after endometrial ablation were evaluated using the chi square, Fisher exact, and independent *t* tests where appropriate. A final multivariate analysis with logistic regression was conducted to determine the exact patient characteristics that are associated with pelvic pain after endometrial ablation.
Results: Of 437 women who underwent endometrial ablation, 20.8% reported pain after their ablation. Patients were followed for up to 6.5 years postablation with a median follow-up of 794 days. The median number of days for the development of pain after ablation was 301 days, with 75% of patients who developed pain reporting it within approximately 2 years of their procedure. The median time to hysterectomy for those with pain was 570 days. Other postablation treatments included hormonal therapies in 9.4% of the total population. A total of 20.8% of patients reported postablation pelvic pain, but only 6.3% underwent subsequent hysterectomy for that indication. Preablation patient characteristics significantly associated with the development of postablation pain include dysmenorrhea (aOR = 1.73), smoking status (aOR = 2.31), prior tubal ligation (aOR = 1.68), and age less than 40 (aOR 1.90). Although not statistically significant, a diagnosis of endometriosis appears to be related to postablation pain (aOR = 2.24). Adenomyosis (suggested on ultrasound) and body mass index associations were not statistically significant. A patient with all 4 risk factors for postablation pain (i.e., dysmenorrhea, smoking, prior tubal ligation, and <40 years old) has a 53% (95% confidence interval, 0.40–0.66) chance of experiencing postablation pain.
Conclusion: The observed incidence of pelvic pain is 20.8% after endometrial ablation and is more frequently observed in women with preablation dysmenorrhea, tobacco use, prior tubal ligation, age less than 40, and possibly endometriosis. One should consider these preexisting conditions when counseling patients regarding outcome expectations after an endometrial ablation procedure. Journal of Minimally Invasive Gynecology (2013) 20, 642–647 © 2013 AAGL. All rights reserved.

Keywords: Endometrial ablation; Pelvic pain

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Endometrial ablation is a commonly performed minimally invasive gynecologic procedure for the treatment of abnormal uterine bleeding in the premenopausal patient. Its efficacy has been well established since the early 1980s; however, a significant number of patients will fail this therapy and require a further procedure, most commonly hysterectomy [1]. Analysis of large databases have reported a subsequent failure rate of 16% at 5 years postablation, with failure defined as the need for repeat ablation or

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Corresponding author: May S. Thomassee, MD, Department of Obstetrics and Gynecology, Vanderbilt University Medical Center, B-1100 MCN, Nashville, TN 37232-2519.
E-mail: may.s.thomassee@vanderbilt.edu

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hysterectomy for persistent abnormal bleeding or pain [2]. More recently, Shavell et al [3] reported hysterectomy rates of 13.4% within 64 months postablation. Reasons for patient dissatisfaction in that study were postablation bleeding and pain (up to 38% of patients who failed therapy), whereas pain alone was reported by 21.4% of all patients undergoing subsequent hysterectomy. Although it has been recognized that the majority of postablation hysterectomies are performed within 2 years after ablation [3–7], Longinotti et al [6] described a 26% probability of undergoing hysterectomy up to 8 years postablation, with 22% (166/754) of those being performed for pain alone.

Most postablation studies evaluate failure in the context of bleeding and pain. Few address postablation pain alone or attempt to identify causes of pain after ablation. Adenomyosis has been implicated as a possible risk factor for dysmenorrhea and also chronic pelvic pain after ablation. Indeed, Longinotti et al [6] reported adenomyosis in 23.6%, with myomas and adenomyosis in 22.4%. Conversely, Carey et al [8] reported that adenomyosis was not significantly increased in those patients who failed ablation for reasons of bleeding or pain based on pathologic confirmation in hysterectomy specimens. This suggests that adenomyosis may not be strongly implicated as an independent cause for postablation pain.

Importantly, postablation tubal sterilization syndrome has been described and implicated as a cause of postablation pelvic pain [9,10]. In a study by Mall et al [10], patients who had undergone a tubal ligation before an endometrial ablation were 3.3 times more likely to undergo postablation hysterectomy. El-Nashar et al [2] reported age less than 45 years old, prior tubal ligation, history of dysmenorrhea, and parity greater than 4 as predictive factors for ablation failure. Failure in their study was defined as subsequent hysterectomy or repeat ablation for pain or bleeding complaints. Their population had a 5.1% rate of subsequent pelvic pain.

Most studies that have looked at failure of ablation have grouped bleeding and pain together or reported pain as a secondary outcome. Although these studies have attempted to identify an etiology of postablation pain, we are unaware of previous studies that have specifically focused on identifying predictors for pelvic pain alone after endometrial ablation.

The goal of this study was to determine which patient characteristics can be identified as risk factors associated with experiencing pelvic pain after endometrial ablation. To address this question, we performed a retrospective chart review from a single institution with a large volume of hysteroscopy and ablation procedures. We hypothesized that some of the same characteristics associated with failure to control heavy bleeding also would be implicated in the development of subsequent pelvic pain.

Materials and Methods

This study is a retrospective cohort of patients from our center who had an endometrial ablation between January 2006 and September 2010. Approval was obtained from the Vanderbilt Institutional Review Board. The patients were identified via the following *Current Procedural Terminology* codes: 58563 (hysteroscopy, surgical, with endometrial ablation), 58353 (endometrial ablation, thermal, without hysteroscopic guidance), and 58356 (endometrial cryoablation with ultrasonic guidance).

Our goal was to determine which preoperative patient characteristics might be associated with the development of pelvic pain after endometrial ablation. Postablation pain was defined as the development of persistent cyclic pelvic pain outside of the immediate postoperative interval of 6 weeks. Patient demographic data were abstracted, including type of ablation, age at ablation, parity, smoking status, body mass index, uterine size, and history of prior tubal ligation or prior uterine surgery. Preablation comorbidity diagnoses including endometriosis, dysmenorrhea, leiomyomata, hypertension, diabetes, and preexisting chronic pain conditions were also recorded. A presumptive diagnosis of adenomyosis was noted from pelvic ultrasound results. Postablation outcomes recorded included bleeding; pain; and subsequent treatment with hysterectomy, repeat ablation, hormone-based interventions, and/or analgesics.

Tobacco smoking status was simply defined as "current smoking" at the time of ablation and not further categorized. Preablation diagnoses such as endometriosis or dysmenorrhea were recorded as "yes" or "no" if they were documented in the outpatient records. Not all cases of endometriosis were specifically confirmed by us with surgical or pathological diagnosis. Leiomyomas were defined as submucosal, intramural distorting endometrial cavity, or intramural not distorting the cavity. This description was gathered by the ultrasound reports and preablation hysteroscopic findings. Preexisting chronic pain conditions included patients on chronic narcotics or those with a diagnosis of interstitial cystitis, fibromyalgia, migraines, or chronic back pain.

Stata v.11 statistical software (College Station, TX) was used for all analyses. Bivariate analysis of patient demographics and the incidence of pain after endometrial ablation was performed with the chi-square, Fisher exact, and independent *t* tests where appropriate. Confounders, effect modifiers, and significant bivariate variables were identified. A final multivariate analysis with logistic regression was conducted to determine which patient characteristics were associated with pelvic pain after endometrial ablation. Once the significant variables were identified, it was noted that age was collinear with tubal ligation status. We controlled for collinearity of age and tubal ligation status by analyzing these variables independently.

Results

Our study population is described in Table 1. Patients were followed for a median number of 794 days (range 0–2376). Of 437 women who underwent endometrial ablation at our institution, 91 (20.8%) reported pain after their ablation