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JMIG The Journal of Minimally Invasive Gynecology

Original Article

# Effect of Endometrial Ablation on Premenstrual Symptoms

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**ABSTRACT** **Study Objective:** To evaluate the effect of endometrial ablation on 6 premenstrual symptoms for up to 1 year after treatment.
**Design:** Prospective cohort of 59 women awaiting endometrial ablation (Canadian Task Force classification II-2).
**Setting:** University tertiary care hospital.
**Patients:** Adult women of childbearing age awaiting endometrial ablation for heavy menstrual bleeding were recruited through the gynecology clinic of the Centre Hospitalier Universitaire de Sherbrooke. Fifty-nine patients were recruited, of whom 9 were excluded. Women were eligible to participate after an initial self-evaluation of $\geq 3$ out of 10 for at least 1 premenstrual symptom.
**Interventions:** Women underwent endometrial ablation using the microwave, impedance-controlled, or rollerball technique.
**Measurements and Main Results:** Women had to fill out 2 surveys at 3 time points: before surgery, 4 months after surgery, and 12 months after surgery. The first survey consisted of visual analog scales for self-evaluation of 6 premenstrual symptoms (i.e., irritability, agitation/anxiety, depression/sadness, headache, swelling/bloating, and breast tenderness), and the second evaluated the heaviness of menstrual bleeding. The severity of all 6 symptoms decreased significantly ($p < .025$) up to 1 year after endometrial ablation. The greatest improvement was seen in swelling/bloating, with mean decreases of 4.1 on a scale of 10 at the 4-month follow-up and 3.1 at the 12-month follow-up. Women who reported the most severe symptoms before surgery appeared to have greater improvement compared with women with milder symptoms. Significant improvements were nevertheless observed in the mild severity subgroup for 4 of the 6 symptoms studied (i.e., irritability, depression, swelling/bloating, and breast tenderness).
**Conclusion:** Women reported significant improvement for the 6 premenstrual symptoms for up to 1 year following an endometrial ablation for heavy menstrual bleeding. The improvement of these symptoms appears to be linked to the efficacy of the procedure. Journal of Minimally Invasive Gynecology (2015) 22, 631–636 © 2015 AAGL. All rights reserved.

*Keywords:* Endometrial ablation; Premenstrual symptoms; Heavy menstrual bleeding

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Various physical, emotional, and behavioral symptoms are associated with so-called "premenstrual symptoms." Up to 85% of women of reproductive age are cyclically affected by at least 1 premenstrual symptom [1,2]. Between 20% and 40% of these women are affected by the premenstrual syndrome (PMS), and 5% to 8% of them suffer from a severe form of PMS, defined as premenstrual dysphoric disorder that affects daily functioning [1,3,4]. These symptoms may be responsible for many problems related to quality of life, professional productivity, and interpersonal relationships [1].

Even though premenstrual symptoms have been studied for several decades, their etiology has remained elusive. Some authors believe that the endometrium, prostaglandins, or central nervous system might play a role [1,3,5–9], whereas others propose individual-centered origins, such as susceptibility of women to hormonal variations or genetic

This study was supported by a grant from Microsulis Canada.
The authors declare no conflicts of interest.
Oral presentation at the 47th Annual Meeting of the Association of Obstetricians and Gynecologists of Quebec, La Malbaie, QC, Canada, June 1, 2013.
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Submitted October 31, 2014. Accepted for publication January 22, 2015.
Available at www.sciencedirect.com and www.jmig.org

1553-4650/$ - see front matter © 2015 AAGL. All rights reserved.
http://dx.doi.org/10.1016/j.jmig.2015.01.023

predisposition [1,3,8,9]. This lack of knowledge has made effective treatments difficult to identify.

A common related problem faced by women suffering from premenstrual symptoms and for which they consult is heavy menstrual bleeding. Many hormonal and nonhormonal treatments are available for the treatment of heavy menstrual bleeding, including oral contraceptives and nonsteroidal anti-inflammatory drugs [10,11]. Common permanent treatments for women who no longer wish to conceive include hysterectomy and endometrial ablation. Since its introduction in the 1990s [12], endometrial ablation has gradually come to replace hysterectomy for many women in this context, because of its numerous advantages in terms of adverse effects, recovery time, and health care costs [11]. Interestingly, it also has been observed that endometrial ablation may relieve the discomfort associated with premenstrual symptoms [5,13–16].

To further investigate whether endometrial ablation improves the psychological and physical premenstrual symptoms, we conducted a prospective study in women waiting to undergo endometrial ablation for heavy menstrual bleeding. The primary objective of this study was to determine whether endometrial ablation has a significant impact on the severity of psychological and physical premenstrual symptoms. Secondarily, we aimed to determine whether there is a correlation between symptom improvement and a successful operation.

## Materials and Methods

### *Patients*

The study was approved by our institutional Ethics Committee for Research on Human Subjects (project no. 10-007). Women waiting to undergo endometrial ablation were prospectively recruited by 3 physicians from their gynecology clinic in Sherbrooke, QC, Canada between March 2010 and October 2012. Adult women (age $\geq$18 years) having given full consent to participate and having an initial self-evaluation of $\geq$3 out of 10 on the visual analog scale (VAS) for at least 1 premenstrual symptom were eligible to participate. Exclusion criteria were current use of oral contraceptives or other drugs known to affect premenstrual symptoms, pregnancy, or menopause; breastfeeding; and known psychiatric illness. All endometrial ablations were performed between April 2010 and October 2012.

### *Study Design*

After informed consent was obtained, and before endometrial ablation was performed, the women evaluated the perceived severity of 6 premenstrual symptoms using 6 VASs, previously validated in a similar population [17], where a score of 0 represented an absence of symptoms and 10 represented the strongest imaginable intensity. They were instructed to fill out the VAS to reflect the greatest intensity of symptoms experienced in the 14 days before to their last menstruation. For inclusion in the study, women had to rate at least 1 of the symptoms a minimum of 3 of 10 at recruitment. For each of the symptoms studied, the fourth quartile was used to discriminate between severe and mild cases. Selected premenstrual symptoms were irritability, agitation/anxiety, depression/sadness, headache, swelling/bloating, and breast tenderness [17,18]. In addition, participants were asked to fill out a short survey about the presence, duration, and amount of menstrual bleeding to determine whether the endometrial ablation procedure was successful for treating the bleeding.

At 4 and 12 months postintervention, the women were asked to fill out these forms again. In the case of amenorrhea, women had to consider the worst symptoms experienced during the previous month on the VAS. A sample size of 44 women was required to achieve 80% power with a type I error of 0.05, based on an estimated mean decrease of 3 on a scale of 10. Anticipating 10% to 15% loss to follow up, a total of 50 women were enrolled.

### *Endometrial Ablation*

The Microsulis Microwave Endometrial Ablation System (Denmead, Hampshire, UK) was used for all procedures performed before September 2011. After that date, the NovaSure Impedance-Controlled Endometrial Ablation System (Hologic, Bedford, MA), Thermablate EAS Thermal Balloon Endometrial Ablation System (Idoman, Toronto, ON, Canada), or hysteroscopic rollerball endometrial ablation technique (Karl Storz, Tuttlingen, Germany) was used.

Using data collected from the questionnaires concerning the women's last menstrual period, 3 categories were defined: (1) amenorrhea, total absence of vaginal bleeding for $\geq$2 months; (2) hypomenorrhea, slight bleeding ($\leq$3 tampons or pads per day) lasting $<$5 days per month without clots; and (3) failure of procedure, bleeding exceeding the criteria for hypomenorrhea. Endometrial ablation was considered successful when the woman's menstrual periods met the criteria for categories 1 and 2 after the intervention, whereas the intervention was considered unsuccessful if the woman met the criteria for category 3.

### *Statistical Analyses*

Data were collected by a research assistant and analyzed using SPSS statistical software (SPSS, Chicago, IL). The severity of symptoms at 4 and 12 months was compared with that reported in the initial evaluation and analyzed according to the available collected data. Women were stratified on the last quartile for categorization of mild and severe cases. The success of the procedure was dichotomized as success or failure, where amenorrhea or hypomenorrhea were considered to indicate a successful procedure.

Data were analyzed by the paired *t* test for differences between baseline and the 4-month and 12-month evaluations. Differences were considered significant when the p value was $<$.025 to correct for the dual use of baseline values.