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# Decreasing Postoperative Pain Following Endometrial Ablation

*Jordan Klebanoff[1]*, Nima R. Patel[2] and Matthew K. Hoffman[1]*

[1]Department of Obstetrics & Gynecology, Christiana Care Health System, USA

[2]Division of Minimally Invasive Gynecology, Christiana Care Health System, USA

## Abstract

**Objective:** We sought to determine if paracervical injection of local anesthesia decreases postoperative pain in women undergoing endometrial ablation under general anesthesia.

**Design:** We performed a retrospective cohort study of consecutive women who had a second-generation (Radiofrequency Ablation (RFA), Hydrothermablation (HTA) or Thermachoice II (UBA)) endometrial ablation for benign indications under general anesthesia. Our primary outcome was postoperative pain at 1 h assessed using a validated 10-point visual analog scale (VAS). Our primary exposure was injection of local anesthetic as a paracervical block. Secondary outcomes included immediate postoperative pain, postoperative pain at discharge, amount of postoperative narcotics, and need for anti-emetics.

**Setting:** Single academic affiliated community hospital.

**Patients:** Our study included 124 women who underwent second-generation endometrial ablation between August 2015 and October 2015 at a single institution.

**Intervention:** Paracervical block following second-generation endometrial ablation.

**Results:** Device distribution was as follows: 93 RFA (75%), 26 HTA (21%), and 5 Thermachoice II ablations (4%). 82 women (66%) received a paracervical block immediately following completion of the ablation. Comparing those women who received a paracervical block with those that did not, there was no statistically significant difference for immediate postoperative pain (median=0 vs. 0, p=0.26), postoperative pain at 1 hour (median=2 vs. 2, p=0.42), or pain at time of discharge (median=3 vs. 2 respectively, p=0.77). Mean amount of postoperative morphine required was 5.1 mg for women with no paracervical block versus 5.2 mg for women receiving a paracervical block (p=0.52).

**Conclusion:** Local anesthesia in addition to general anesthesia does not confer any significant reduction in postoperative pain following endometrial ablation, nor does it reduce the amount of narcotic administered.

**Keywords: Endometrial ablation; Hydrothermablation; Radiofrequency Ablation; Local anesthesia**

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***Correspondence:***
*Jordan Klebanoff, Department of Obstetrics & Gynecology, 4755 Ogle town-Stanton Road, Suite1905 Newark, DE 19718, USA. Tel: (215) 738-8894; E-mail: Jklebanoff@christianacare.org*

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## Introduction

Destruction of the endometrial lining to control abnormal uterine bleeding may provide a means to avoid major surgery in women desiring symptom relief. Endometrial ablation is ideally performed in premenopausal women with normal uterine cavities who have completed childbearing, and are bothered by their menstrual bleeding [1]. These procedures are commonly performed in either physician's offices or short-stay surgical centers. In these settings, patient comfort must be a priority to allow the patient to remain an outpatient, and as such, a variety of anesthetic techniques are utilized. Depending on the practice climate, physician preference, or institution protocols, the type of anesthesia utilized for the procedure may vary from general to local.

Data have shown that local anesthesia in the form a paracervical block is an acceptable anesthetic technique when performing office endometrial ablations [2-8]. However, data are scarce regarding postoperative pain following endometrial ablations performed under general anesthesia. The aim of this study is to evaluate the efficacy of local anesthesia as an adjunct to general anesthesia, in our large patient population, in meaningfully decreasing postoperative pain.

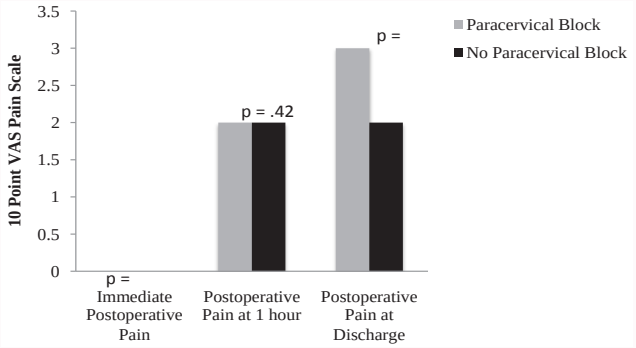


**Figure 1:** Postoperative pain following endometrial ablation in women with and without a paracervical block.

## Materials and Methods

Once institutional review board approval had been received, we performed a retrospective chart analysis of women who had undergone an endometrial ablation from July 2015 through October 2015. Women were included if they were between the ages of 18 to 55 and had undergone a Radiofrequency Ablation (NovaSure RFA; Cytyc Surgical Products, Palo Alto, California), Hydrothermablation (HTA, Hydro ThermAblator, Boston Scientific, Marlborough, Massachusetts), or Thermachoice II Uterine Balloon Ablation (UBA, ThermaChoice; Gynecare, Somerville, New Jersey) for a benign indication at our single academic-affiliated community hospital surgical center. All patients were identified using the hospital's contemporaneous electronic database. Data was extracted by using relevant Current Procedural Terminology (CPT) codes for endometrial ablation. Women were excluded if they had a diagnosis of gynecologic malignancy, if their endometrial ablation was performed by a modality other than RFA, HTA, or UBA, or if the endometrial ablation was not attempted. Data regarding the device utilized, indication, and procedure completion was obtained from review of individual operative reports. The choice of device utilized, as well as the use of additional local anesthesia in the form of a paracervical block, was based on physician preference.

At the study institution, all endometrial ablations are performed in the on-site outpatient surgical center. All patients undergoing endometrial ablations do so under general anesthesia in accordance with institutional policy. Intraoperative narcotics and non-steroidals are administered as needed and this decision is left to the discretion of the anesthesia provider. For all paracervical blocks the injected solution is 0.25% Bupivacaine (Marcaine™, Bupivacaine Hydrochloride Injection, Pfizer Inc., New York City, NY). The technique and amount injected was at the discretion of the operating physician. All patients undergoing a procedure under general anesthesia at our institution must remain in the post-anesthesia care unit (PACU) for a minimum of 1 h. The PACU at the study center is divided into two phases. Phase 1 is the initial recovery and patients must remain there for a minimum of 30 min. Each patient's postoperative pain is assessed every 10 min by a registered nurse while in Phase 1. Once advanced to Phase 2, patients are assessed every 15 min by a registered nurse. Patients must remain in Phase 2 also for a minimum of 30 min. Advancement from Phase 1 to Phase 2 is dependent upon a patient's clinical presentation, hemodynamic stability, and the discretion of the PACU nurse. If postoperative pain scores are greater than 4 out of 10 at any point in PACU, patients are offered intravenous or oral narcotics based on their ability to swallow pills at the time of the assessment. At each assessment, patient's vital signs are monitored, as well as complaints of nausea or vomiting; anti-emetics are utilized as needed.

**Table 1:** Characteristics of study participants.

| Variable | No Paracervical Block (N=42) | Paracervical Block (N=82) | P-Value |
|---|---|---|---|
| Age (years) | 42.1 | 43.3 | 0.89 |
| Body Mass Index | 29.7 | 31 | 0.81 |
| (BMI) | | | |
| Race | | | 0.58 |
| African American | 9 | 22 | |
| White | 31 | 57 | |
| Asian | 1 | 0 | |
| Other | 1 | 3 | |
| Insurance | | | 0.99 |
| Private | 22 | 43 | |
| Government | 20 | 39 | |

The primary outcome evaluated was immediate postoperative pain following the procedure. Pain scores were based on a visual analog scale from 0 through 10. Secondary outcomes included postoperative pain at 1 h from completion of the procedure, pain at the time of discharge, age, body mass index (BMI), race/ethnicity, insurance, and use of a paracervical block, ablation device utilized, postoperative narcotics administered, and postoperative anti-emetics administered. All data were extracted through electronic chart review by the principal investigator. All narcotics administered in PACU were converted to morphine equivalents based on the institution's conversion chart [9].

## Results

Between July and October of 2015 we identified 124 women who underwent an endometrial ablation at our academic-affiliated community hospital. Device distribution was as follows: 93 (75%) RFA (NovaSure RFA; Cytyc Surgical Products, Palo Alto, California), 26 (21%) HTA (Hydro Therm Ablator, Boston Scientific, Marlborough, Massachusetts), and 5 (4%) UBA (Therma Choice; Gynecare, Somerville, New Jersey). There was no statistically significant difference between groups regarding basic demographic data (Table 1). The mean age (± standard deviation) at the time of ablation was 42.9 ± 5.4 years and mean BMI was 30.5 ± 7.5. The majority of women in this study identified as white (71%) with the next most represented race being African American (25%).

82 (66%) women received a paracervical block at the completion of the procedure; 42 (34%) women received no additional local anesthesia. There was no statistically significant association between women receiving a paracervical block and type of ablation device utilized (p=0.32). Comparing those women who received a paracervical block with those that did not, there was no statistically significant difference for immediate postoperative pain (median=0 vs. 0, p=0.26), postoperative pain at 1 h (median=2 vs. 2, p=0.42), or pain at discharge (median=3 vs. 2, p=0.77) (Figure 1). Mean amount of postoperative morphine equivalents was 5.2 (95%CI 3.9-6.4) mg for women receiving a paracervical block and 5.1 (95%CI 3.2-7.0) mg for women not receiving a paracervical block (p=0.52). There was no statistically significant difference in amount of postoperative antiemetic administered between women who received a paracervical block and those that did not (Zofran p=0.68; Phenergan p=0.32).

## Discussion

We identified 124 women who underwent an endometrial ablation in a 4-months study period. All endometrial ablations were performed under general. The majority of these women, 66%, received local anesthesia, in the form of a paracervical block, in addition to general anesthesia. We found that administering a paracervical block following an endometrial ablation under general anesthesia does not confer any significant reduction in postoperative pain. There was no statistically significant difference in the primary outcome, immediate postoperative pain, or in any of the secondary outcomes evaluated.

Paracervical block has been a proven anesthetic technique for patients undergoing endometrial ablations [2-4] Wallage "et al." [2] compared local anesthesia to general anesthesia with regard to patient acceptability, intraoperative pain, and postoperative recovery. This study found that local anesthesia was acceptable to a majority of women undergoing microwave endometrial ablation; however, there was no recovery advantage to local anesthesia and 10% of women starting with local anesthesia were converted to general secondary to intraoperative discomfort [2]. When assessed using a 10-point visual analog scale, pain scores following endometrial ablation are generally low regardless of anesthetic technique [4,10]. In a prospective cohort study of 33 women performed in a single teaching institution, 23(69%) had a pain score of 0 after 24 h [4]. In a prospective randomized cohort study of 41 women randomized to either a fentanyl patch or paracervical block the median pain scores over a 24 h period from the time of procedure completion for the paracervical block group was 5.2/10 [5]. Low postoperative pain scores combined with the convenience of local anesthesia make endometrial ablation a very acceptable office procedure. However, at this study institution all endometrial ablations are performed under general anesthesia with intraoperative narcotics administered at the discretion of the anesthesia provider. All patients, unless contraindicated, also receive intravenous Ketorolac following the procedure.

This study has several limitations. The findings are limited to the retrospective nature of the study, which has inherent bias. Due to the small cohort size, this study may lack the power to detect a difference in immediate postoperative pain following endometrial ablation. The technique for paracervical block and amount of local anesthetic injected could not be standardized, and was based on physician preference. Endometrial ablations, in general, are well tolerated and patients tend to have minimal postoperative pain thereby making it difficult to detect a significant difference in pain scores between patient groups without a very large sample size. In addition, there was no way to control for variance in anesthesia practice in terms of how much and when narcotics were administered to the patient in the operating room during and immediately following the procedure, which certainly can influence a patient's postoperative pain. Due to the design of this study there was no way to accurately assess for patient gravity/parity, uterine size, or presence of uterine pathology.

Strengths of this study come from the inclusion of all the ablation methods available during the study time period as well as the diversity of surgeons. This illustrates the generalizability of the results. To the author's knowledge this is the first evaluation of postoperative pain following endometrial ablation under general anesthesia. This data can help providers make evidence based decisions when performing ablations under similar circumstances. More prospective data is needed to determine if there is any significant benefit to patients by performing an additional procedure, such as a paracervical block, during endometrial ablation under general anesthesia.

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