

## Case Reports

# Postablation Tubal Sterilization Syndrome with Hematometra After Thermal Balloon Ablation

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### Abstract

Endometrial ablation has become an acceptable alternative to a hysterectomy for treating women with menorrhagia. The endometrial ablation techniques have fairly low complication rates and satisfactory outcomes; however, complications, including uterine perforation, fluid overload, acute bleeding, infection, hematometra, and postablation tubal sterilization syndrome (PATSS), can occur. Initially described in 1993, PATSS is thought to occur due to postablation adhesions, leading to menstrual reflux into the blocked fallopian tubes. This rare complication has been shown in the literature following hysteroscopic rollerball endometrial ablation, but has only been documented once following global thermal balloon ablation. In this paper, we present a case of PATSS and hematometra 4 months after a thermal balloon endometrial ablation. (J GYNECOL SURG 25:17)

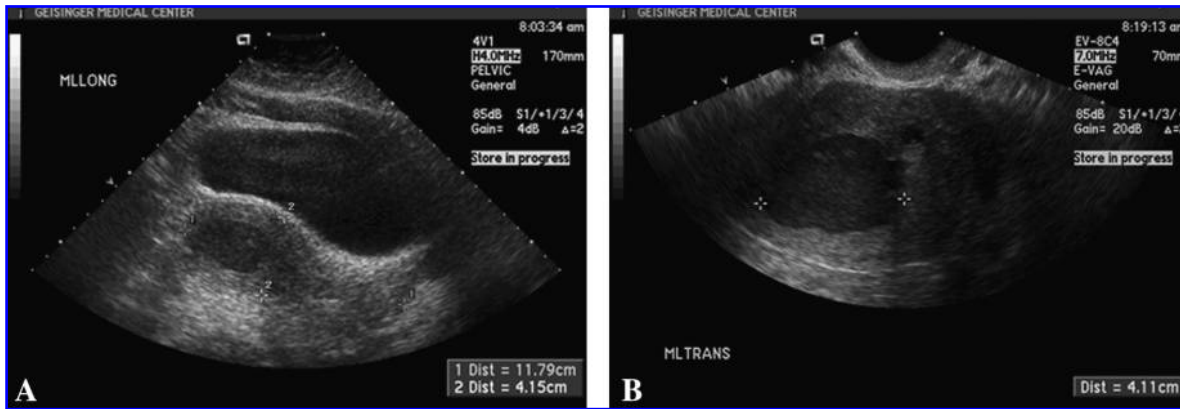
### Introduction

**E**NDOMETRIAL ABLATION, using various techniques, has become a popular method and an acceptable alternative to a hysterectomy for treating women with menorrhagia. Hysteroscopic methods of endometrial ablation require a higher level of hysteroscopic skill (Nd: YAG laser, rollerball electrocoagulation, or vaporization and loop excision), in comparison to global endometrial ablation techniques (e.g., cryotherapy,

thermal balloon, radiofrequency electro-surgery, microwave energy, or diode laser energy). Overall, these endometrial ablation techniques have fairly low complication rates and satisfactory outcomes, including decreased menstrual bleeding, reduced dysmenorrhea, and even amenorrhea. However, intra- and postoperative complications can occur, as reported by Lethaby et al. in the Cochrane Database, with 15% experiencing nausea and vomiting, 2% hemorrhage, 1.5% fluid overload, 1.8% endometritis, 1.4%

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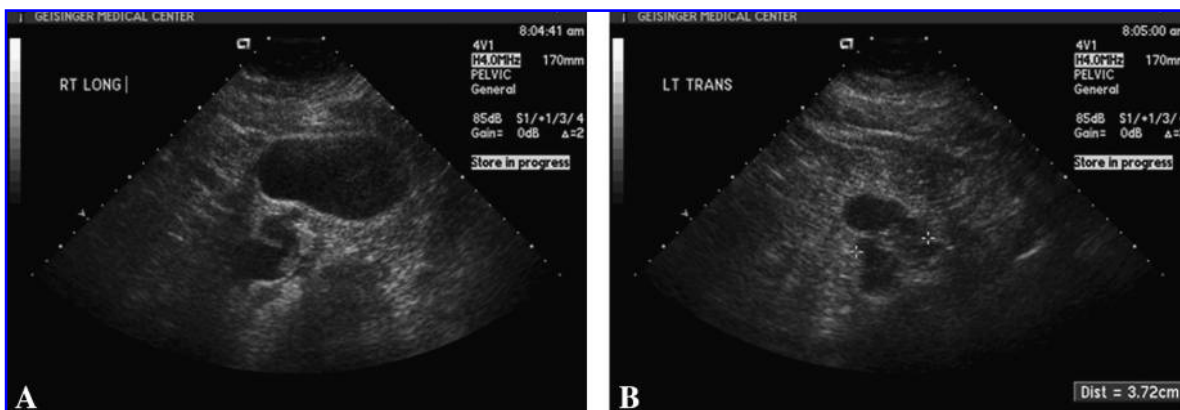
**FIG. 1.** Ultrasound images showing (A) the uterus measuring 11.8 cm in the sagittal dimension and 4.2 cm in the anterior posterior dimension, with the larger of the two hypoechoic areas visualized within the uterus, and (B) a second view of the large hypoechoic area in the right-lateral portion of the uterus.

hematometra, 0.7% perforation, and 0.4% hydrosalpinx.<sup>1</sup> One of the potential late complications that can occur is post-ablation tubal sterilization syndrome (PATSS). Described by Townsend et al. in 1993, PATSS was believed to occur in women who had a tubal sterilization followed by an endometrial ablation.<sup>2</sup> The symptoms that occur with PATSS are similar to ectopic pregnancy symptoms, including unilateral or bilateral, severe, cramping pelvic pain and intermittent vaginal bleeding. This rare complication has been demonstrated in the literature following hysteroscopic techniques for endometrial ablation, including the rollerball.<sup>2-5</sup> PATSS has only been docu-

mented once following global thermal balloon ablation.<sup>6</sup> In this paper, we present a case of hematometra and PATSS 4 months after a thermal balloon endometrial ablation.

### Case Report

A 40 year-old married, nonsmoking, Caucasian G3P2012 female initially presented with a complaint of menorrhagia over the last 10 years. Combination oral contraception pills had improved bleeding for approximately 1 year, but the abnormal bleeding had resumed over the last 4 months. She stated that her cycles were lasting 15–20 days. Her past surgical



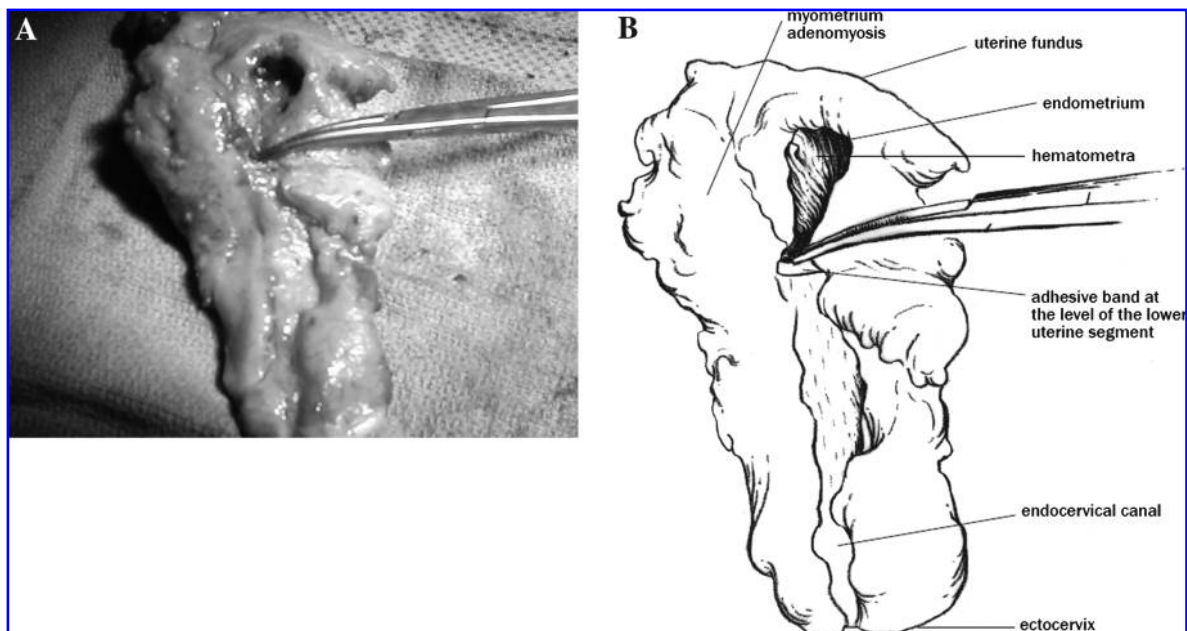
**FIG. 2.** Ultrasound images showing (A) a hypoechoic serpiginous structure in the right-adnexal area and (B) a hypoechoic serpiginous structure in the left-adnexal region.

history was positive for a dilation and curettage (D&C) for spontaneous abortion, a postpartum tubal ligation, and a D&C 6 years prior secondary to abnormal bleeding. The patient's documented height was 1.60 m (63 in) and her weight was 95.26 kg (210 lb). A bimanual exam was unremarkable. Pelvic ultrasound revealed a uterus measuring  $9.7 \times 4.3 \times 5.8$  cm with multiple small intramural fibroids and an endometrial stripe of 8 mm.

Given the options of management, the patient decided to proceed with hysteroscopy, D&C, and endometrial ablation. The patient underwent a hysteroscopy, showing a normal appearing endometrial cavity, curettage with endometrial sampling, and a Thermachoice™ thermal balloon (Gynecare Thermachoice Uterine Balloon Therapy System, Ethicon Women's Health and Urology, Somerville, NJ) endometrial ablation without difficulty. Pathology revealed a proliferative endometrium. At postoperative follow-up, the patient was without complaints,

had negligible spotting since the procedure, and her physical exam was unremarkable.

Four (4) months following the procedure, the patient presented to the emergency room (ER) with a sudden onset of left-lower quadrant abdominal pain. She denied vaginal bleeding. A physical exam was remarkable for left adnexal tenderness on palpation, and no cervical motion tenderness was noted. She noticed pain relief following intravenous pain medication. A diagnosis of ruptured ovarian cyst was made, and she was advised to follow-up with her obstetrics/gynecology physician. She presented back to the ER 5 days later with the complaint of continuing diffuse pelvic pain. The results of a complete blood count were as follows: white blood cells (WBCs) 14.28 K/uL, hemoglobin (Hgb) 13.8 g/dL, hematocrit (HCT) 40.1%, and platelets 320 K/uL. A pelvic ultrasound was obtained, which showed a uterus measuring  $11.8 \times 4.2 \times 8.2$  cm with a large hypoechoic structure ( $3.2 \times 2.6 \times 4.1$  cm) in the right-lateral



**FIG. 3.** (A) Gross pathology picture showing the uterus with a lower uterine segment adhesion and one of the hematometra cavities within the uterus. (B) Medical artist rendition of the gross pathology picture of the surgically removed uterus. Drawing by Diane Blue-Latranyi, medical illustrator, Geisinger Medical Center, Danville, PA.

portion of the uterine cavity and a smaller one (1.1×2.3 cm) toward the left-lateral portion of the uterine cavity (Fig. 1). There were also serpiginous structures in both adnexal regions, consistent with bilateral hydrosalpinges (Fig. 2). Both ovaries appeared normal on ultrasound.

A diagnosis of PATSS was made and options for management were discussed, including attempting to break down any uterine adhesions in the office, hysteroscopy with lysis of adhesions, or hysterectomy. The patient decided to proceed with hysterectomy. She underwent a vaginal hysterectomy and bilateral salpingectomy without difficulty. Findings included an 8-week-sized uterus with hematometria noted within the uterine cavity, an adhesive band across the lower uterine segment, and bilateral hydrosalpinges (Fig. 3). The fallopian tubes were both noted to be filled with clot-like material. Foci of endometriosis were present in the muscular wall of the left fallopian tube.

## Discussion

Endometrial ablation, a procedure routinely performed to help in controlling abnormal uterine bleeding or menorrhagia in patients with benign pathology, destroys the endometrial lining of the uterus. Endometrial ablation techniques are categorized as either standard hysteroscopic ablation, which utilizes the operative hysteroscope and an energy source, or minimally invasive hysteroscopic ablation, which refers to multiple new ablation technologies that do not require a hysteroscopy. Our patient underwent a diagnostic hysteroscopy followed by a minimally invasive hysteroscopic ablation with a Thermachoice thermal balloon.

The Thermachoice thermal balloon utilizes a silicon balloon, which is inserted through the cervix into the uterine cavity via a 4–5-mm probe. The balloon is in-

flated with saline to a pressure of 160–180 mmHg and the fluid inside is heated to approximately 87°C for 8 minutes. This procedure is limited by the size (<6 or >10 cm) and shape of the uterine cavity, such as myomas, polyps, or intrauterine synechia.

Cervical stenosis and adhesion formation likely predisposed this patient to the formation of bilateral cornual hematometra, which, in theory, can lead to PATSS. A study done by Leung et al. evaluated 22 women with hysteroscopy after thermal balloon ablation. Eight (8) of 22 (36.4%) had intrauterine adhesions.<sup>7</sup> However, they did not report any patients with PATSS with a mean follow-up of 11 months (range, 6–16).<sup>7</sup>

As in this case, ultrasound can be a useful diagnostic tool to evaluate the adnexa and the uterine cavity for evidence of fluid collections. Functional endometrial tissue can exist in the uterus following an ablation due to either the regeneration of tissue or residual tissue in the cornual region. Hematometra form when tissue and secretions are unable to pass through the cervix due to adhesion formation or the fallopian tubes secondary to sterilization. PATSS refers to the development of severe, cyclic, unilateral, or bilateral pelvic pain usually occurring 5–10 months after an endometrial ablation is performed in women with a history tubal sterilization. The pain, similar to the constellation of symptoms seen with an ectopic pregnancy, occurs when the proximal portion of one or both of the fallopian tubes fills with blood and becomes distended. Treatment can consist of either salpingectomy or hysterectomy, based on the absence or presence of hematometra. Our patient underwent a hysterectomy, which is the end result in one third of the women within 5 years following an endometrial ablation.<sup>8</sup>

In Leung's study, the follow-up hysteroscopies performed 6–16 months after

a thermal balloon ablation showed that most of the adhesions developed in the fundal region of the uterus.<sup>7</sup> The first two generations of thermal balloons were designed to only partially enter the cornual regions to avoid potential thermal injury to the adjacent bowel, while the newer generation of the thermal balloon contours to the uterus better. The scar tissue formed in the fundal region could be problematic in women whose tubes are occluded, not allowing retrograde menstruation to occur.

### Conclusions

This case demonstrates hematometra and PATSS following a thermal balloon ablation. Due to the drastic increase in the number of global ablations being performed, including on women with tubal ligation, one must be able to recognize this infrequent, but possible, complication.

### Disclosure Statement

No competing financial interests exist.

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