

# Reoperative Hysteroscopic Surgery in the Management of Patients Who Fail Endometrial Ablation and Resection

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## Abstract

**Study Objective.** To determine the safety and efficacy of reoperative hysteroscopic surgery for women who fail endometrial ablation and resection.

**Design.** Retrospective chart review and follow-up (Canadian Task Force classification II-2).

**Setting.** Private office practice.

**Patients.** Twenty-six women who had undergone endometrial ablation or resection and experienced failure characterized by intolerable pain, bleeding, or asymptomatic hematometra.

**Intervention.** Sonographically guided hysteroscopic endomyometrial resection.

**Measurements and Main Results.** Mean length of time from initial treatment for abnormal uterine bleeding and reoperative hysteroscopic surgery was  $41.2 \pm 47.9$  months. Five (19.2%) women required simple dilatation and 21 (80.8%) required endocervical resection to achieve access to the uterine cavity. There were no operative complications. Mean operating time was  $20.3 \pm 9.5$  minutes. Mean specimen weight was  $6.7 \pm 4.9$  g. Adenomyosis was present in 15 (57.7%) specimens. Women were followed for a mean of  $23.2 \pm 22.7$  months. Twenty-three (88.5%) achieved satisfactory results and avoided hysterectomy. Three women (11.5%) eventually required hysterectomy because of recurrent pain or bleeding.

**Conclusion.** Reoperative hysteroscopy is useful in managing women after failed endometrial ablation and resection. It produces excellent results in achieving amenorrhea and relief of cyclic pelvic pain, thereby avoiding hysterectomy in most patients.

(*J Am Assoc Gynecol Laparosc* 8(2):272-277, 2001)

Techniques of endometrial destruction, whether ablation or resection, are accepted in treatment of menorrhagia and other forms of abnormal uterine bleeding. Numerous authors<sup>1-5</sup> reported success and failure of both hysteroscopic and global methods to treat an Asherman-type syndrome. Failure of these methods causes persistent postoperative pain, disabling menstrual blood loss, or asymptomatic hematometra. Pain, cyclic or acyclic, may be secondary to the postablation tubal sterilization syndrome<sup>6</sup> or, more commonly, to hematometra or adenomyosis.<sup>7</sup> Whether from recur-

rent vaginal bleeding, incapacitating cyclic abdominal pain,<sup>8</sup> or asymptomatic hematometra, women who fail treatment may undergo hysterectomy or operative hysteroscopy.

Technical difficulties of hysteroscopic surgery in a woman who has already undergone endometrial ablation or resection may be related to four causes. First, normal anatomy of the uterus may be altered by partial or complete obliteration of the endometrial cavity. Second, the internal os and endocervical canal may be stenotic or sealed, impeding introduction of a

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Accepted for publication January 22, 2001.

Reprinted from THE JOURNAL OF THE AMERICAN ASSOCIATION OF GYNECOLOGIC LAPAROSCOPISTS, May 2001, Vol. 8 No. 2  
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gynecologic resectoscope into the uterine cavity. Third, myometrium may be quite thin in a previously treated uterus, thus increasing the risk of uterine perforation. Finally, there may be sequestered areas of endometrium and accompanying hematometra that are separate from the uterine cavity and may escape detection. As a result of these technical challenges, reoperative procedures should be considered precise and demanding operations that have the potential to expose the patient to increased risk and failure compared with primary endometrial ablation or resection.

To overcome challenges of reoperative hysteroscopic surgery, we performed ultrasound-guided hysteroscopic uterine resection that allows the surgeon to remove sequestered areas of endometrial tissue. This technique produces excellent operative outcomes as well as a tissue specimen for histologic analysis. In 26 women this method was associated with a high degree of success and an acceptably low failure rate.

## Materials and Methods

### Patients

Twenty-six women were treated between August 1993 and February 2000. They all had undergone endometrial ablation or endomyometrial resection for abnormal uterine bleeding. Eighteen women (69.2%) had undergone previous endomyometrial resection (EMR), three (11.6%) had had EMR and myomectomy, three (11.6%) had had electrosurgical endometrial ablation, one (3.8%) had undergone ablation with a neodymium:yttrium-aluminum-garnet laser, and 1 (3.8%) had been treated with a thermal balloon. The mean age of patients at the time of original procedure was  $38.8 \pm 5.01$  years (range 27–48 yrs) and at retreatment it was  $41.8 \pm 4.82$  years (range 33–51 yrs). The average interval between original and repeat procedures was  $41.2 \pm 47.9$  months (range 4–244 mo).

Pain was a common indication for retreatment; 14 patients (53.8%) experienced cyclic pain accompanied by bleeding and 8 (30.8%) had acyclic pain accompanied by uterine bleeding. In two women (7.7%) cyclic pain was the only indication of failed therapy. Eleven patients (42.3%) had hematometra. In two of them (7.7%) asymptomatic hematometra were detected at annual ultrasound examination. No woman experienced increased bleeding without accompanying pain.

All patients underwent complete history and physical examination. Transvaginal sonography was per-

formed in those with a postoperative complaint of persistent vaginal bleeding or pelvic pain. No patient received medical pretreatment. Informed consent was obtained before each procedure, detailing its nature, complications, and alternatives.

### Operative Procedure

All procedures were carried out under general anesthesia in a hospital outpatient setting. A 26F continuous-flow resectoscope (Karl Storz Endoscopy, Culver City, CA) or a 21F pediatric urologic resectoscope (Karl Storz Endoscopy) was used in all cases. The distention medium was either glycine 1.5% or mannitol 5% and was supplied by a gravity-fed system. In all cases a Foley catheter was inserted into the urinary bladder and saline was infused to create an anterior acoustic window. Real-time ultrasound imaging was performed with an Acoustic Imaging 5200 system (Acoustic Imaging, Phoenix, AZ) equipped with either a 3.5- or a 5.0-MHz abdominal transducer.

Access to the uterine cavity was gained by one of three methods. In five women (19.2%) dilatation alone was necessary to introduce the resectoscope into the uterine cavity. In these instances, dilatation was performed under ultrasound guidance to be certain that a false passage was not created. In the remaining 21 patients dilatation could not be accomplished satisfactorily. Instead, endocervical resection was performed under ultrasound guidance using one of two techniques described previously.<sup>9</sup> In most cases this involved introducing a reconfigured loop electrode under sonographic guidance. These reconfigured electrodes were fashioned by narrowing electrode width to 3 to 4 mm and increasing the angle from 77 to 155 degrees at the tip (Figure 1). When the endocervical canal could be seen hysteroscopically, the loop was extended and retracted in such a fashion as to shave the endocervical canal until the uterine cavity could be entered (Figure 2). In women in whom the endocervical canal was obliterated, a zero-degree electrode was inserted under sonographic guidance through the center of the cervix until the uterine cavity was reached. Power settings varied from 50 to 100 W of pure cutting current. No blended or coagulation current was used, as this appeared to induce electronic interference, making ultrasound interpretation difficult.

In all cases the uterine cavity, or its remnant, was successfully identified. All endometrial remnants were resected using an endomyometrial resection technique<sup>5</sup>

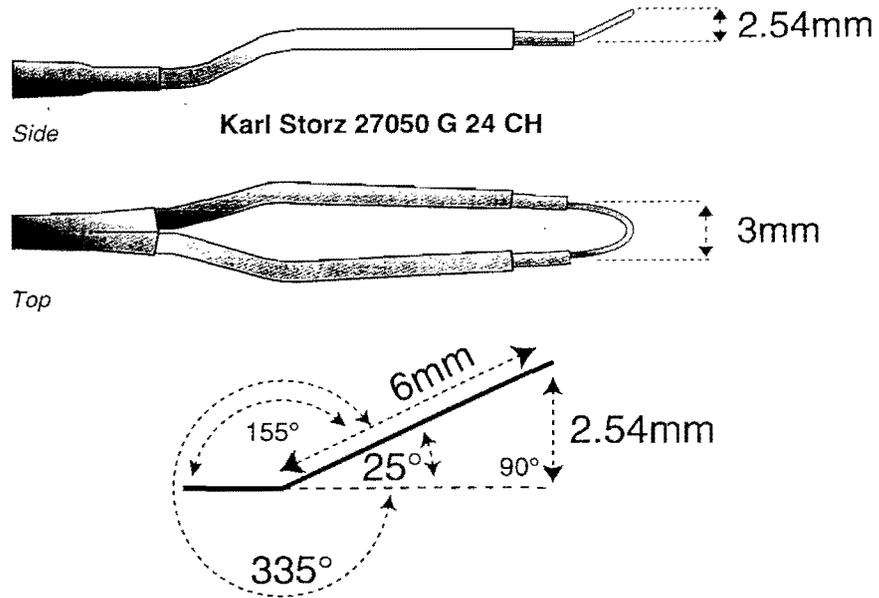


FIGURE 1. Reconfiguration of a standard loop electrode for use in endocervical resection.

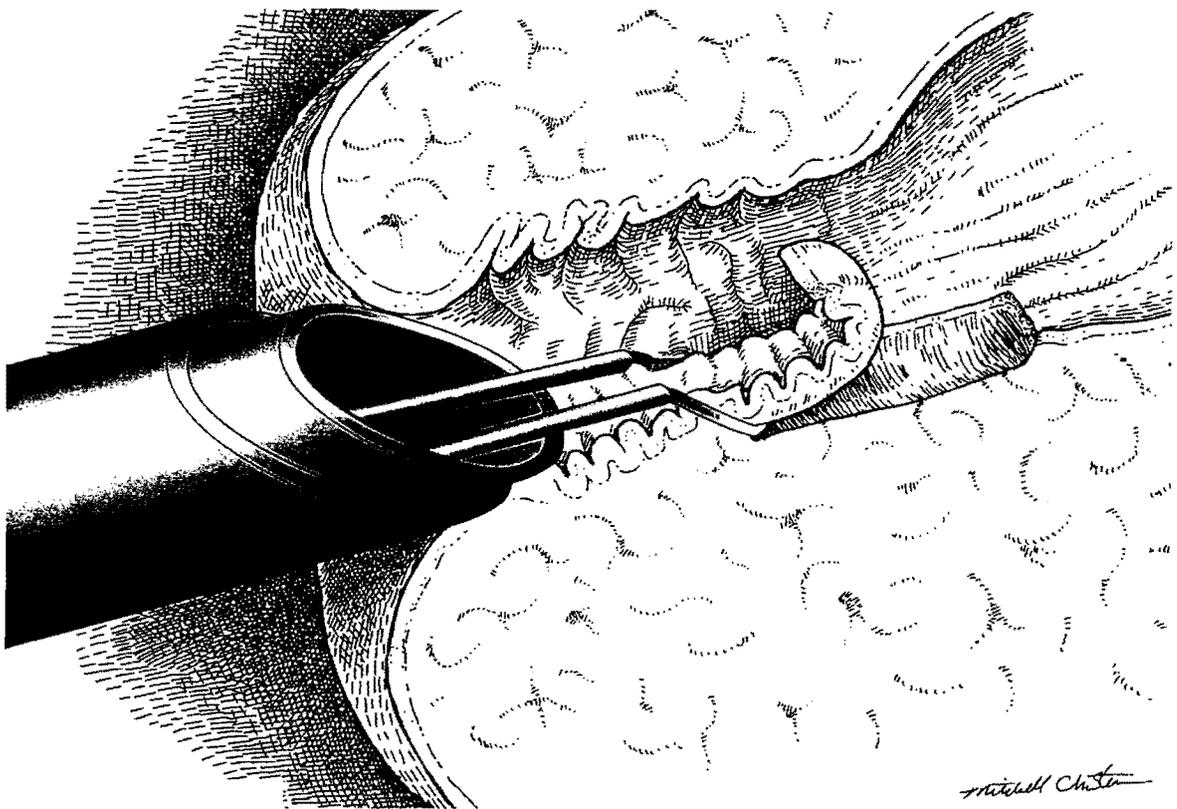


FIGURE 2. The reconfigured loop is retracted, producing a strip of endocervical tissue 3 mm wide and 2.5 mm deep. (Reproduced from reference 9 with permission.)

under sonographic guidance. The depth of resection was tailored to each patient's individual anatomic limitations and varied from 2 to 5 mm.

Average operating time was  $20.3 \pm 9.5$  minutes (range 3–37 min) and mean specimen weight was  $6.7 \pm 4.9$  g (range 2–26 g). Mean volume of distention fluid used was  $7958 \pm 3922$  ml and average fluid absorption was  $381 \pm 423$  ml (range 0–1500 ml). There were no operative complications.

## Results

In all, 26 repeat endomyometrial resections were performed. Tissue specimens were available for 21 patients (80.8%). Of these, five (23.7%) had adenomyosis. Of three women whose original surgery included myomectomy, two had coexisting adenomyosis. Twenty-one subjects (80.8%) required endocervical resection<sup>8</sup> to gain entrance to the uterine cavity. Two women also underwent diagnostic laparoscopy because of acyclic pelvic pain of uncertain origin. In both of them no pertinent laparoscopic findings were noted. Four patients underwent concomitant myomectomy, three of whom had had previous myomectomies. Three of the four had adenomyosis on reoperation.

Histologic evidence of adenomyosis was detected in 15 specimens (57.7%). Ten patients (38.5%) had proliferative endometrium, four (15.4%) had secretory endometrium, six (23.1%) had endometrium of unspecified type, and three (11.5%) had inactive endometrium. Three women (11.5%) had histologic evidence of myomata.

All 26 patients were followed for a mean of  $23.2 \pm 22.7$  months (range 6–84 mo). Nineteen (73.1%) became amenorrheic and four (15.4%) hypomenorrheic. There were no recurrent hematometra in this group during follow-up. The remaining three women (11.5%) eventually required hysterectomy because of recurrent bleeding (1) or pain (2). One hysterectomy was performed for persistent bleeding 6 months after retreatment. Another was performed because of cyclic pain associated with a recurrent hematometra 17 months after reoperative hysteroscopy. The third was performed because of recurrent cyclic pain without bleeding or demonstrable hematometra.

## Discussion

Failure of endometrial ablation or resection may cause recurrent vaginal bleeding, pelvic pain,<sup>8,10,11</sup> or

development of an asymptomatic hematometra discovered only on routine transvaginal sonography. Although reasons for persistent bleeding and hematometra are generally obvious (endometrial regrowth, inadequate endometrial destruction), the etiology of pelvic pain after endometrial destruction can be a bit more challenging to determine. Pain is linked to various etiologies including hematometra,<sup>12,13</sup> iatrogenic adenomyosis,<sup>14</sup> postablation tubal sterilization syndrome,<sup>6,15</sup> and inadequate destruction of cornual endometrium.<sup>15</sup> The frequency of endometrial ablation or resection failure varies and depends on the method, length of postoperative observation, patient selection, and operator skills. Twenty-three (16.1%) of 143 women experienced persistent bleeding or pain after endometrial ablation.<sup>16</sup> Similarly, 21 (8.4%) of 228 women who had undergone transcervical resection of endometrium were dissatisfied with the procedure and underwent late reoperation during a mean observation period of 24 months (range 4–48 mo).<sup>10</sup> We reported a similar rate of reoperation, 8.9%, in a series of 304 women who underwent endomyometrial resection and were followed for a mean of 31.8 months (range 6–75 mo).<sup>7</sup>

Whether or not reoperative hysteroscopy is a worthwhile procedure has rarely been addressed in the medical literature. Only one report describes the outcome of the procedure, with encouraging results in 16 women who requested repeat endometrial ablation.<sup>16</sup> None of them required hysterectomy during follow-up, and the authors concluded that "gynecologists should not hesitate to offer repeat ablation since the results will usually be excellent." Of interest, they did not report findings of hematometra or difficulty accessing the uterine cavity with an operative hysteroscope. However, they admitted that transvaginal sonograms were not performed in any patient.

In our 26 patients, entrance to the uterine cavity by simple dilatation alone was possible in only 5 (19.2%). Eleven women (42.3%) had demonstrable hematometra on ultrasound examination, a sharp contrast to the previous report.<sup>16</sup> Whether or not this reflects differences in the original surgery or whether or not the difference resulted from increased sensitivity of routine transvaginal ultrasound cannot be determined. Clearly, however, hematometra is a common sequela to hysteroscopic endometrial ablation or resection, and adequate retreatment of women who fail these methods mandates that occult hematometra be excised together with all functional endometrial elements.

The use of real-time ultrasound during hysteroscopic surgery has been reported by several authors.<sup>17-19</sup> The importance of intraoperative ultrasound guidance is 3-fold: it affords safe access to the uterine cavity; it ensures that no islands of functioning endometrial tissue are undetected; and it is critical in preventing uterine perforation and visceral injury. Our results clearly indicate that aggressive hysteroscopic surgery can be performed in women who fail endometrial ablation and resection with minimal risk while ensuring excellent outcomes as measured by avoidance of hysterectomy.

The importance of a tissue specimen for histologic analysis cannot be overstated, as three reports in the literature describe endometrial adenocarcinomas after endometrial ablation.<sup>20-22</sup> Vigilance demands that patients who have undergone endometrial destructive techniques and complain of pelvic pain, recurrent bleeding, or asymptomatic hematometra have the benefit of a reassuring histologic assessment. Two women in this study had asymptomatic hematometra detected by routine ultrasound follow-up. Further studies should address whether or not routine yearly ultrasound screening should be the standard of care in women who have undergone endometrial ablation or resection.

Finally, a cautionary note. Although results of this study are encouraging, such surgery should be undertaken only by the most skilled hysteroscopic surgeons working in concert with an experienced sonographer. As complications are most likely to occur in early phases of the learning curve, patients must be selected carefully with the expectation that many potential candidates will be rejected until the skills of reoperative hysteroscopic surgery are mastered.

## References

1. Garry R, Shelly-Jones D, Mooney P, et al: Six hundred endometrial laser ablations. *Obstet Gynecol* 85:24-29, 1995
2. Chullapram T, Song JY, Fraser I: Medium-term follow-up on women with menorrhagia treated by rollerball endometrial ablation. *Obstet Gynecol* 88:71-76, 1996
3. Meyer WR, Walsh BW, Grainger DA, et al: Thermal balloon and rollerball ablation to treat menorrhagia: A multicenter comparison. *Obstet Gynecol* 92:98-103, 1998
4. Magos AL, Baumann R, Lockwood GM, et al: Experience with the first 250 endometrial resections for menorrhagia. *Lancet* 337:1074-1078, 1991
5. Wortman M, Daggett A: Hysteroscopic endomyometrial resection: A new technique for the treatment of menorrhagia. *Obstet Gynecol* 83:295-299, 1994
6. Townsend DE, McCausland A, Fields G, et al: Post-ablation tubal sterilization syndrome. *Obstet Gynecol* 82:422-424, 1993
7. Wortman M, Daggett A: Hysteroscopic endomyometrial resection. *J Surg Laparosc Surg* 4:197-207, 2000
8. Mints M, Radestad A, Rylander E: Follow up of hysteroscopic surgery for menorrhagia. *Acta Obstet Gynecol Scand* 77:435-438, 1998
9. Wortman M, Daggett A: Hysteroscopic endocervical resection. *J Am Assoc Gynecol Laparosc* 4:63-68, 1996
10. Steffensen AJ, Schuster M: Endometrial resection and late reoperation in the treatment of menorrhagia. *J Am Assoc Gynecol Laparosc* 4:325-329, 1997
11. Seeras RC, Gilliland GB: Resumption of menstruation after amenorrhea in women treated by endometrial ablation and myometrial resection. *J Am Assoc Gynecol Laparosc* 4:305-309, 1997
12. Hill D, Maher P, Wood C, et al: Complications of operative hysteroscopy. *Gynaecol Endosc* 1:185-189, 1992
13. Jacobs SA, Blumenthani NJ: Endometrial resection follow up: Late onset of pain and the effect of depo-medroxyprogesterone acetate. *Br J Obstet Gynaecol* 101:605-609, 1994
14. McLucas B, Perrella R: Does endometrial resection cause adenomyosis? *Gynaecol Endosc* 4:123-127, 1995
15. Loffer FD: Complications of hysteroscopy—Their cause, prevention, and correction. *J Am Assoc Gynecol Laparosc* 3:11-26, 1995
16. Gimpelson RJ, Kaij J: Endometrial ablation repeat procedures. *J Reprod Med* 37:629-635, 1992
17. Shalev E, Shimoni Y, Peleg D: Ultrasound controlled operative hysteroscopy. *J Am Coll Surg* 179:70-71, 1994
18. Lin BL, Iwata Y, Miyamoto N, et al: Three-contrasts method: An ultrasound technique for monitoring transcervical operations. *Am J Obstet Gynecol* 156:469-472, 1987

19. Dabirashrafi H, Mohamad K, Moghadami-Tabrizi N: Three contrasts method hysteroscopy: The use of real-time ultrasonography for monitoring intrauterine operations. *Fertil Steril* 57:450-452, 1992
20. Margolis MT, Thoen LD, Boike GM, et al: Asymptomatic endometrial carcinoma after endometrial ablation. *Int J Gynaecol Obstet* 51:255-258, 1995
21. Ramey JW, Koonings PP, Given FT, et al: The process of carcinogenesis for endometrial adenocarcinoma could be short: Development of a malignancy after endometrial ablation. *Am J Obstet Gynecol* 170:1370-1371, 1994
22. Copperman AB, DeCherney AH, Olive DL: A case of endometrial cancer following endometrial ablation for dysfunctional uterine bleeding. *Obstet Gynecol* 84:640-642, 1993