

Hysteroscopic metroplasty of the complete uterine septum, duplicate cervix, and vaginal septum

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Objective: To determine if sectioning of the cervical septum in hysteroscopic metroplasty of the complete uterine septum is associated with intraoperative bleeding, cervical incompetence, and secondary infertility.

Design: Multicenter, randomized, controlled clinical trial.

Setting: University hospitals.

Patient(s): Twenty-eight women with a diagnosis of complete uterine septum who had a history of pregnancy wastage or infertility. They were randomized into two groups: group A underwent metroplasty including section of the cervical septum; group B underwent the same procedure with preservation of the cervical septum.

Intervention(s): Hysteroscopic metroplasty was performed for all patients in the two groups.

Main Outcome Measure(s): Operating time, distending media deficit, total distending media used, intraoperative bleeding, complications, and reproductive outcome.

Result(s): Operating times were 36.40 ± 10.67 minutes and 73 ± 14.40 minutes in group A and group B, respectively. Distending media deficit was 456.66 ± 165.68 mL in group A, while in group B it was 673.84 ± 220.36 . Two cases of pulmonary edema and three cases of significant bleeding (>150 mL) were seen in group B. The cesarean section rate was significantly higher in group B. There were no significant differences in the reproductive outcome in the two groups.

Conclusion(s): Resection of the cervical septum during hysteroscopic metroplasty of complete uterine septum makes the procedure safer, easier, and less complicated than the procedure with preservation of the cervical septum. This procedure is recommended for all cases of complete uterine septum. (Fertil Steril® 2006;85:1473–7. ©2006 by American Society for Reproductive Medicine.)

Key Words: Complete uterine septum, cervical septum, vaginal septum, hysteroscopy, metroplasty

Congenital uterine anomalies have long been associated with reproductive failure and obstetric complications. Uterine septum is by far the most common congenital anomaly of the female reproductive tract, with an incidence of 80%–90% of all major malformations in both women with recurrent pregnancy loss and in the general population (1–4).

This anomaly may be associated with poor reproductive performance, including the high incidence of abortion, premature delivery, and infertility (5, 6). Although the septum is usually restricted to the uterine corpus, it may extend through the cervix and vagina. Visual inspection and pelvic examination shows complete longitudinal vaginal septum and cervical duplication that are usually misdiagnosed as uterus didelphys (7, 8).

Diagnostic laparoscopy and hysteroscopy were used to differentiate between complete septate uterus and uterus didelphys (9–11). Hysteroscopic metroplasty (HMP) is the treatment of choice for the symptomatic septate uterus (12). This procedure may be problematic in the case of a complete

septate uterus with two external cervical orifices. According to current opinion, the cervical septum should not be spared because it may cause intraoperative bleeding and cervical incompetence (7, 8, 13).

Many investigators suggest methods in which only the corporal portion of the septum is incised (7, 8, 14). HMP including a section of the cervical septum was suggested by some investigators, with good obstetrical outcomes (2, 8, 15). We reported the same procedure in 14 cases with good results (16). This multicenter, randomized clinical trial was designed to compare the surgical difficulty, complications, and pregnancy outcome between two groups of women undergoing HMP including section Vs conservation of the cervical septum.

MATERIALS AND METHODS

Subjects

We recruited 66 women with Müllerian dysgenesis who had a history of repeated pregnancy loss or infertility. They were evaluated and managed from March 1999 to February 2005 at the referral centers, Division of Infertility and Gynecological Endoscopy, Medical School, Shiraz University of Medical Sciences, Shiraz, Iran, and Diako Teaching Hospital, Gotingen University, Bremen, Germany.

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Procedures

The correct diagnosis had not been made in any patients before referral. The uterus didelphys was the most common misdiagnosis in the majority of cases. Visual inspection confirmed the presence of two separate cervixes. All patients had a complete longitudinal vaginal septum. Operations were performed by the two surgeons involved in the study. After complete physical examination, we did hysterosalpingography, ultrasound, magnetic resonance imaging, and, recently, sonohysterography for all patients. Patients who had abnormalities other than complete uterine septum were excluded.

Inclusion criteria were determined locally and consisted of all patients with a complete septate uterus who had a history of at least one first-trimester or second-trimester pregnancy loss and who had undergone preoperative evaluation to exclude other causes of reproductive failure, premature delivery, or unexplained infertility.

The Ethics Committee of the university approved the study. Each woman gave informed consent. After routine preoperative workup, eligible patients were randomly assigned to undergo either HMP with section of the cervical septum (group A) or the same procedure with preservation of the cervical septum (group B).

Randomization was performed using the random table in advance by a nurse who was not a member of the study group. The operative procedures were scheduled either in the early proliferative phase or after pretreatment of the patients with GnRH agonists. General anesthesia was used for all patients.

In group A, vaginal septa were incised by Metzenbaum scissors between two hemostatic clamps and the anterior and posterior vaginal wall were sutured with 2/0 chromic catgut in continuous lock fashion. To incise the cervical and uterine part of the septum, we followed the technique that was suggested by Vercillini et al. (17). The cervical septum was incised with Metzenbaum scissors, and the corporal portion incision was made by resectoscope under laparoscopic guidance.

In group B, after incising the vaginal septum, diagnostic hysteroscopy was carried out in both cavities. The details of this procedure have been described by Rock et al. (7). In brief, after dilatation of the cervix, a pediatric Foley catheter was inserted into one cavity and the balloon was inflated. This balloon catheter served as a means of orientation for the first incision of the corporal septum.

A resectoscope was placed in the other cavity, and the cavity was distended with D/W 5%. The septum was incised with a needle electrode of the resectoscope at a level above the internal cervical os until the balloon was visualized. After the first incision, the corporal part of the septum was incised by loop resectoscope as routine until the hysteroscope could be moved freely all around the uterine cavity and both tubal ostia could be visualized.

The procedure was performed under direct laparoscopic guidance to limit the risk of uterine perforation. In all cases, fluid balance was calculated as the difference between the amount of solution instilled into the uterus and the amount that was recovered from the pelvic cavity, the hysteroscopic outflow channel, and the plastic drapes that funneled fluid escaping through the cervix. The total volume of distending media used was also calculated. Two cases in group B were complicated by small perforations with moderate to severe bleeding (>150 mL) that was self-limiting and did not require any further treatment.

In all cases of group A, blood loss was minimal (<100 mL). Two of three women with significant bleeding were complicated by uterine perforation, and in the third patient, uterine bleeding occurred 12 hours after surgery. Bleeding was controlled by intrauterine insertion of a large Foley catheter and inflation of its balloon. Follow-up ultrasound and, recently, sonohysterography were performed for all patients of the two groups at 2 months after surgery to assess the contour of the uterine cavity.

Statistical Analysis

Statistical analysis was carried out using the two-sample *t*-test for age, gravidity, total volume of distending media, distending media deficit, operative time, and period of follow-up. We tested normality of data using the Kolmogorov-Smirnov test before applying the *t*-test. Fisher's exact test was used to analyze other parameters. $P < .05$ was considered statistically significant. Values are expressed as mean \pm SD.

RESULTS

Between March 1999 and February 2005, 66 women with Müllerian dysgenesis and recurrent pregnancy loss or infertility were evaluated, and 32 were enrolled in the study. Of all women enrolled, three from group A and one from group B were lost to follow-up and excluded. The final measurements were made on 28 patients. Table 1 summarizes participant baseline characteristics.

Women in group A and group B did not differ significantly at baseline with respect to age, gravidity, parity, pregnancy wastage, and infertility. Total volume of distending media used and distending media deficit were higher in group B. The differences were statistically significant ($P < .05$) (Table 2). The operative time as measured from the initial incision of the vaginal septum to the final removal of the hysteroscope from the uterine cavity varied between 20 and 55 minutes in group A (mean, 36.40 minutes), while this parameter for group B was between 56 and 96 minutes (mean, 73 minutes). The difference was statistically significant ($P < .05$) (Table 2).

All cervical and uterine septa were successfully and easily removed in group A without any intraoperative or early postoperative complications. Placing the resectoscope in the

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