# Hysteroscopic septum resection of complete septate uterus with cervical duplication, sparing the double cervix in patients with recurrent spontaneous abortions or infertility

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**Objective:** To evaluate the safety and efficacy of hysteroscopic septum resection of the complete septate uterus with cervical duplication in patients with recurrent spontaneous abortions or infertility.
**Design:** Prospective consecutive clinical study.
**Setting:** University hospital for obstetrics, gynecology, and reproductive medicine.
**Subject(s):** Twenty-five patients with a complete septate uterus, cervical duplication, and history of recurrent spontaneous abortions (13 cases) or infertility (12 cases) were included.
**Intervention(s):** Hysteroscopic septum resection and sparing the double cervix using a bougie served as a means of orientation and blockage of internal cervical os.
**Main Outcome Measure(s):** Intraoperative and postoperative complications, and postoperative anatomic identification of the uterus.
**Result(s):** No intraoperative and postoperative complications were encountered. Postoperatively, ultrasound revealed minor fundal septal remnants in 7 (31.8%) of 22 patients receiving the ultrasound detection, and no residual septum in the other 15 cases (68.2%).
**Conclusion(s):** By using a bougie technique, hysteroscopic correction of complete septate uterus with cervical duplication and sparing the double cervix can be performed successfully. (Fertil Steril® 2009;91:2643–9. ©2009 by American Society for Reproductive Medicine.)

**Key Words:** Hysteroscopy, infertility, recurrent abortions, septum resection, uterine septum, cervical duplication, vaginal septum, laparoscopy, ultrasound

Müllerian anomalies are a heterogeneous group of genital malformations. The exact incidence is difficult to determine, because most of the available data are derived from reports of complicated obstetrics and infertility. The septate uterus is one of the most common müllerian anomalies and may cause infertility or spontaneous miscarriage (1–3). Based on the work of Buttram and Gibbons (4), the American Fertility Society classified the anomalies of septate uterus (class Va: complete; class Vb: partial). The complete septate uterus may have two distinct cervices (5). The complete septate uterus with cervical duplication should be a special type of class Va septate uterus. Complete septate uterus with cervical duplication and a longitudinal vaginal septum is a rare uterine anomaly (6). Hysteroscopic metroplasty for partial septate uterus is generally simple and is widely used. When the uterine septum is complete and with cervical duplication, the dissection of the septum is more difficult. To avoid the hypothetic risk of iatrogenic cervical incompetence in subsequent pregnancies, our recommendations and those of other authors are to spare the cervical portion (cervical duplication). The dissection of the corporal portion of the septum can be difficult, because the first connection between the two cavities is a "blind perforation" and because distending medium is lost through the second cervix. To solve these problems, some authors developed the use of the balloon technique (a balloon catheter) for dissection of the corporal septum in cases of a complete uterine septum (7, 8). Under laparoscopic and ultrasound guidance, using Hank bougies (graduated metal dilators) technique, we have made a hysteroscopic septum resection for complete septate uterus with cervical duplication, and spared the double cervix, in women with recurrent spontaneous abortions or infertility.

The aim of the present observational study was to evaluate the safety and effectiveness of hysteroscopic septum resection under laparoscopic and ultrasound guidance, using a Hank bougie technique, for the treatment of complete septate uterus with cervical duplication in women with recurrent spontaneous abortions or infertility.

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## PATIENTS AND METHODS

### Patients

From September 2004 to October 2007, 25 Chinese women who underwent hysteroscopic septum resection for complete septate uterus with cervical duplication at Women's Hospital, School of Medicine, Zhejiang University, China, were included in the study. Among these women, 23 cases of longitudinal vaginal septum, one case of oblique vaginal septum, and one case with vestige of longitudinal vaginal septum (which was resected 1 year before in a clinic) were observed. The 25 Chinese women were aged 28 ± 4 years (range 22–39 years) and presented to our hospital with complaints of recurrent spontaneous abortions (two or more previous spontaneous miscarriages) or infertility. The infertility criteria for inclusion in this study were the inability to conceive after ≥12 months of unprotected intercourse. The preoperative reproductive performance of the women with recurrent spontaneous abortions or infertility is summarized in Table 1.

The 25 patients all had a regular menstrual cycle (24 to 35 days), and underwent preoperative evaluation to exclude other causes of reproductive failure, including basal body temperature, serum reproductive hormones, thyroid gland hormone, cervical screening for ureaplasma and chlamydia, semen analysis, and, in couples with previous miscarriages, karyotype determined in peripheral leukocytes in both the woman and her partner. All patients were interested in pregnancies at the time of septate resection.

The mean duration of infertility was 3.5 ± 2.0 years (range 1.0–8.0 years) and 2.5 ± 0.7 years (range 2.0–3.0 years) for primary and secondary infertility, respectively. Among the 12 patients, 2 had mildly dysspermic partners, and 10 had normospermic partners.

Preoperatively, all of the patients signed a surgical consent form for the surgery. The research protocol was approved by the Medical Research Review Board of the Women's Hospital, School of Medicine, Zhejiang University, Hangzhou, China.

No preoperative hormonal treatment was applied to thin the endometrium.

**TABLE 1**

**Reproductive performance in women with complete septate uterus and cervical duplication before septum resection.**

| | Infertility | Recurrent abortions |
|---|---|---|
| Patients, n | 12 | 13 |
| Ages (yrs) | 26 ± 3.3 | 29 ± 4.1 |
| Pregnancies, n | 4[a] | 31 |
| Early abortions, n (%) | 2 (50.0) | 22 (71.0) |
| Late abortion, n (%) | 0 | 9 (29.0) |
| Tubal pregnancy, n (%) | 1 (25.0) | 0 |
| Preterm deliveries, n | 0 | 0 |
| Term deliveries, n | 0 | 0 |
| Induced abortion, n (%) | 1 (25.0) | 0 |

[a] Patients with secondary infertility.

*Wang. Complete septate uterus with double cervix. Fertil Steril 2009.*

### Preoperative Assessment and Postoperative Definite Diagnosis

The preoperative diagnosis of the complete septate uterus with cervical duplication and vaginal septum was based on a combination of two-dimensional (2D) and three-dimensional (3D) transvaginal ultrasound (TVS; Fig.1) and routine gynecologic exam. A definite diagnosis of the disease was confirmed by hysteroscopy and laparoscopy after the septate surgery.

Medison Voluson 530D Colorflow Doppler 3D Ultrasound System with 2D/3D transvaginal and transabdominal probe was used.

### Surgical Procedures

The hysteroscopic resection of the uterine septum was scheduled in early follicular phase of the menstrual cycle to obtain the best conditions of visibility. The operation was performed under general anesthesia or epidural anesthesia. In this study, 23 cases of longitudinal vaginal septum and 1 case of oblique vaginal septum were resected at first. In the greater hemicavity of uterus, the cervix was gradually dilated to 10.5 mm by Hank bougies to insert the hysteroscope, and then a 27-Fr hysteroresectoscope (Olympus, Hangzhou City, Japan) with a specific cutting knife electrode or cutting wire loop electrode was introduced during operation. In the other hemicavity of uterus, the cervix was gradually dilated to about 6 mm (the size of bougie is different according to the size of the cervical canal) by Hank bougies, and the ~6 mm bougie inserted into the hemicavity of uterus from the hemicervix served as a means of orientation for the first perforation of the corporal septum, and to prevent leakage of the distending medium from the opposite uterine cavity through the hemicervix. A continuous irrigating flow of 5% glucose injection was used to provide uterine distension and for draining purposes at an inflow pressure of 70–100 mm Hg. The inflow and outflow fluid volumes were measured to ensure that the difference never exceeded 700 mL. The transabdominal ultrasound (TAS) monitoring during the operative hysteroscopy with half-full bladder allowed control of the tip of the instrument and of the security of uterine wall, which should be about 10 mm thick. A laparoscopy was performed at the same time, primarily to assess the pelvis for causes of infertility and to make a clear differentiation between complete septate uterus and uterus didelphys. The septum was electrosurgically incised with a cutting knife electrode, at a point above the internal cervical os, until the Hank bougie was visualized, and then the resection was performed between the anterior and posterior uterine walls, extending up to the fundus rather than into the fundal myometrium from the lower