



Case report

Hysteroscopic intervention in septate uterus and intrauterine synechiae

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ABSTRACT

Three-dimensional transvaginal ultrasonography was used to diagnose a septate uterus in a 24-year-old woman with infertility for 2 years. On infertility workup, semen analysis of her husband also revealed oligoasthenoteratospermia. Hysteroscopic metroplasty was performed successfully to resolve the uterine septum; however, subsequent *in vitro* fertilization and intracytoplasmic sperm injection yielded a blighted ovum requiring dilatation and curettage. After curettage, the patient had hypomenorrhea secondary to intrauterine synechiae and was treated with a hysteroscopic resectoscope and lysis of adhesions. Following these procedures, assisted reproductive technology was again implemented and resulted in a successful pregnancy. In our experience, three-dimensional transvaginal ultrasonography is a noninvasive, accurate, and easy method for the diagnosis of Müllerian duct anomalies, including septate uterus. Hysteroscopic metroplasty helps to normalize intrauterine cavity architecture. Additionally, it is important to repeat hysteroscopic examination when intrauterine adhesions are highly suspected.

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Introduction

The prevalence of congenital uterine anomalies is approximately 5.5% in the general population, 8% in the infertile population, and approximately 13.3% in women with history of miscarriage.¹ In high-risk populations, septate uterus is the most common anomaly associated with infertility and recurrent miscarriage. The application of three-dimensional transvaginal ultrasonography is an easy and noninvasive tool in the field of infertility and reproductive endocrinology²; it can assess uterine anomalies and intrauterine pathologies such as septate uterus and intrauterine adhesions. Hysteroscopic metroplasty can achieve normal uterine architecture and has good reproductive outcomes, increasing overall pregnancy rates to 60% and live birth rates to 45% in women with uterine septa.³ Here, we present a case of infertility with septate uterus managed by serial hysteroscopic interventions to improve pregnancy outcome.

Case report

A 24-year-old woman with regular menstrual cycles and no significant medical history presented with a complaint of infertility for 2 years. During infertility workup, three-dimensional transvaginal ultrasonography revealed a septate uterus (Fig. 1A and B) and semen analysis showed severe oligoasthenoteratospermia. Hysteroscopic metroplasty followed by *in vitro* fertilization and intracytoplasmic sperm injection was planned for the treatment of this patient's infertility.

On hysteroscopy, the patient's diagnosis of septate uterus was confirmed (Fig. 2A) and subsequently resected without complications (Fig. 2B and C). An intrauterine device was placed in the uterine cavity to prevent further uterine synechiae and was removed 2 months later (Fig. 2D). In addition, estrogen was also given after surgery to prevent further uterine synechiae. Follow-up three-dimensional ultrasonography confirmed an improved uterine septate (Fig. 1C).

Four months following the initial uterine septum resection, the patient underwent her first cycle of *in vitro* fertilization and intracytoplasmic sperm injection due to male factor infertility. Transvaginal oocyte retrieval yielding a single 6-cell and two 5-cell embryos were successfully transferred into the uterine cavity under

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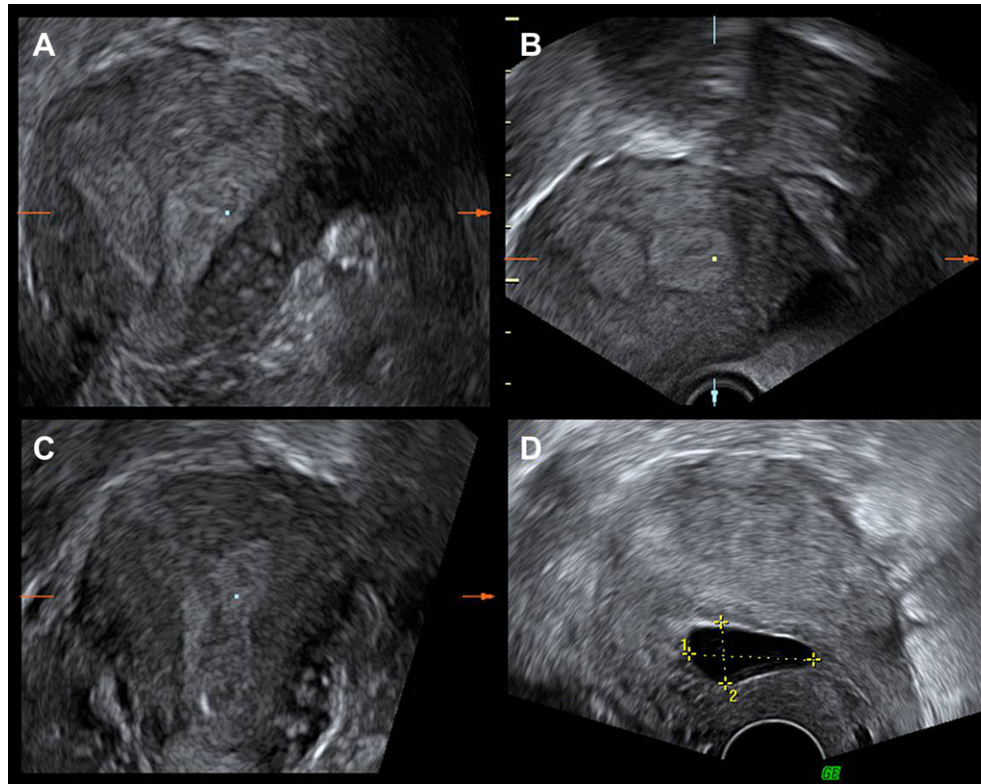


Fig. 1. Three-dimensional ultrasound images. (A) Axial view of the uterus. The outer contour of the fundus is smooth with an intrauterine septum. (B) Coronal view of the uterus. The septum separates the endometrial cavity into two. (C) Axial view of the uterine cavity after hysteroscopic septectomy. The fundus only demonstrates minimal indentation. (D) An intrauterine gestational sac was noted after assisted reproductive technology.

transabdominal ultrasound guidance. During prenatal follow-up, however, a blighted ovum was diagnosed (Fig. 1D). Suction dilation and curettage were performed to evacuate the contents of the uterus; however, the patient continued to have increased vaginal bleeding. Two weeks later, the patient was anemic and retained products of conception were diagnosed requiring a second evacuating curettage procedure. Pathology confirmed necrotic gestational tissue.

After her second curettage, the patient began to have hypomenorrhea and decreased menstrual cycle length. Intrauterine synechiae were highly suspected. After failure of another two cycles of embryo transfer procedures, repeat hysteroscopy was arranged, which revealed severe intrauterine synechiae on the right side of the uterine cavity (Fig. 2E). Hysteroscopic lysis of intrauterine synechiae with blunt dissection was done under the guidance of transabdominal ultrasound (Fig. 2F). Again, an intrauterine device was placed after hysteroscopic lysis and removed 2 months later. A second hysteroscopic examination revealed minimal intrauterine adhesions. The patient recovered well after these procedures and another cycle of assisted reproductive technology was initiated 2 months later. Four good quality embryos were transferred into the uterine cavity under transabdominal guidance without difficulty and a subsequent successful pregnancy was achieved. A male fetus was delivered at the gestational age of 38 weeks via cesarean section due to malpresentation.

Discussion

It is important to rule out the possibility of congenital uterine anomalies in women with infertility. Three-dimensional ultrasonography with image reconstruction can easily assess uterine anatomy to assist in the diagnosis of Müllerian duct abnormalities,

especially in the differentiation of septate from bicornuate uteri for preoperative surgical planning.⁴ Three-dimensional transvaginal ultrasound is less expensive and less invasive than hysterosalpingography in the evaluation of uterine anatomy. It is more accurate and cost-effective in the diagnosis and classification of uterine anomalies than office hysteroscopy and pelvic magnetic resonance imaging.⁵ In this present case, three-dimensional transvaginal ultrasonography clearly revealed a septate uterus and uterine synechiae.

Hysteroscopic metroplasty is an effective, safe, and rapid surgical procedure to correct a septate uterus and achieve normal uterine architecture while maintaining a good reproductive outcome. The overall intra- and postoperative complication rate after hysteroscopic metroplasty is 1.7% and the rate of re-hysteroscopy is 6%.³ In this case, our patient received three hysteroscopic examinations without any complications. She had a good pregnancy outcome despite one miscarriage and intrauterine synechiae following dilatation and curettage. Intrauterine adhesions are a possible complication following curettage, particularly in a pregnant or recently pregnant uterus. The prevalence of uterine synechiae confirmed by hysteroscopy following abortifacient dilation and curettage is 37.6%. This does not correlate with the number of previous abortions and curettage procedures performed in a patient.⁶ Hysteroscopy is the standard method to both diagnose and treat intrauterine adhesions for restoring menstrual function and fertility. Hysteroscopy can also preserve more endometrium and reduce injury to the muscle layer.⁷ In severe Asherman's syndrome, hysteroscopic lysis of intrauterine adhesions is best done under transabdominal ultrasound guidance to ensure that dissection is performed in the proper tissue planes.⁸

Serial hysteroscopic blunt adhesiolysis for recurrent synechiae could maintain the patency of the uterine cavity after a primary

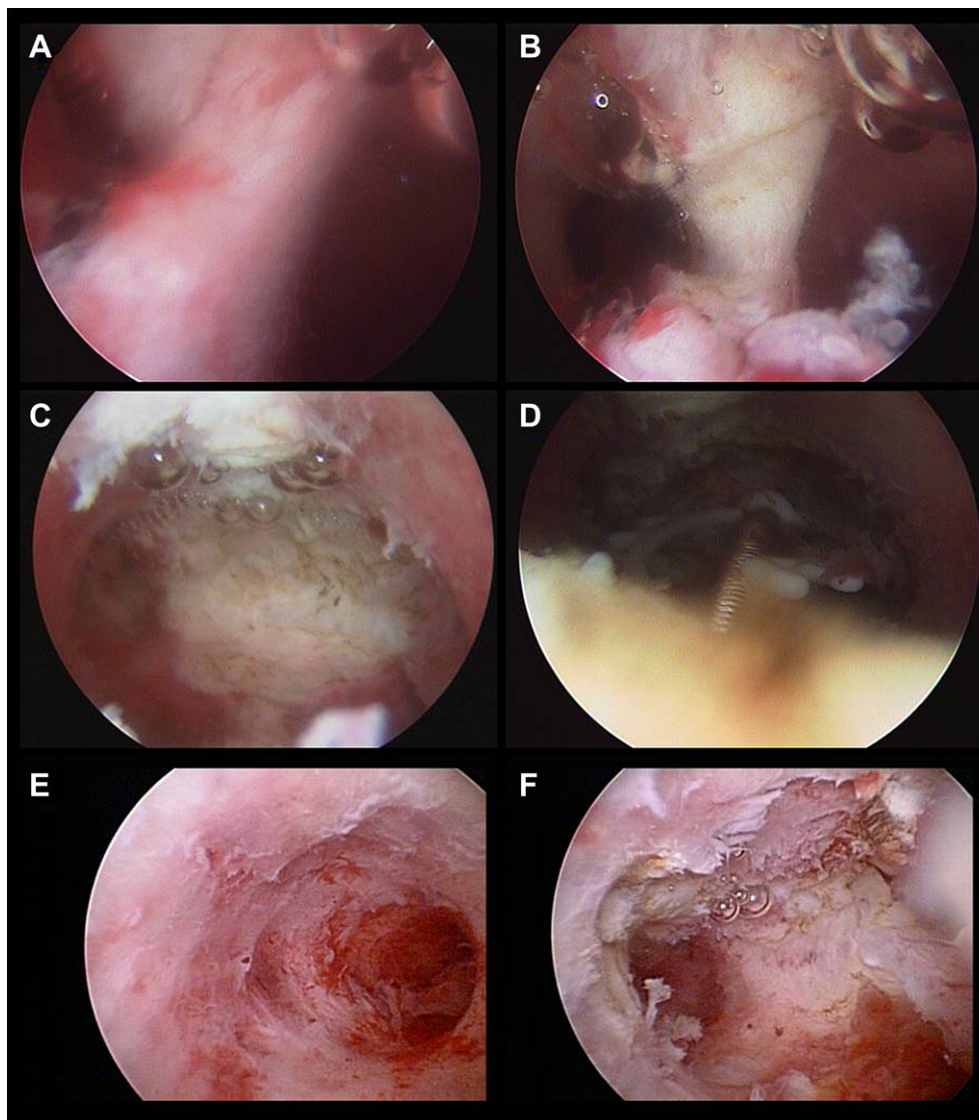


Fig. 2. Images from hysteroscopy. The uterine septum: (A) before hysteroscopic metroplasty; (B) during excision; (C) after excision; (D) an intrauterine device was placed into the uterine cavity after hysteroscopic metroplasty; (E) intrauterine synechiae were found with fibrous bands over the right side of the uterine cavity; (F) after hysteroscopic lysis of the adhesions.

hysteroscopic procedure and may be a better method of preventing further intrauterine adhesions.⁹ Approximately 25% of patients had persistent disease, and especially more than 40% of patients initially diagnosed with severe stages of Asherman's syndrome still had adhesions after the primary surgery. It means that postoperative hysteroscopy is necessary to visualize newly forming lesions and should be applied any time if indicated to decrease the time interval for resumption of normal uterine function.

In women desiring fertility, postoperative estrogen therapy and follow-up studies are mandatory to ensure the resolution of scarring after hysteroscopic lysis of adhesions.¹⁰ Even a course of estrogen supplementation prior to hysteroscopic surgery can stimulate endometrial development to improve endometrial thickness.⁸ As in our case, we prescribed postoperative estrogen therapy to stimulate endometrial regrowth, postoperative placement of a copper intrauterine device to maintain separation of the cavity, and performed a second hysteroscopy to assess adhesion reformation. It is important to repeat hysteroscopic examination when intrauterine adhesions are clinically suspected before the patient attempts to conceive. The above comprehensive

management can optimize a patient's reproductive potential. In this case, septate uterus and intrauterine synechiae were managed by hysteroscopy successfully.

There are some newly developed intrauterine barrier methods which may be significant in preventing recurrence of intrauterine adhesions. For example, auto-crosslinked hyaluronan gel significantly lowered the incidence of postoperative adhesions compared to patients who underwent standard surgery only.¹¹ Although there are many adjuvant management techniques to prevent intrauterine synechiae, gentle and careful intrauterine management is still very important to preserve the integrity of the uterine cavity.

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