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CASE REPORT

Natural Pregnancy Associated with Uterine Inversion after Combined Laparoscopic and Hysteroscopic Septum Resection: A Case Report

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Introduction

Septate uterus has a high incidence among the different uterine malformations and is caused by failure of septal absorption after the fusion of the left and right paramesonephric ducts. The birth rate associated with this condition is the lowest [1]. Herein, we report the case of a patient who achieved two successful pregnancies along with uterine inversions after experiencing recurrent miscarriages. The patient underwent a combined laparoscopic and hysteroscopic septum resection to prevent uterine perforation.

Case Report

The study was approved by the appropriate ethics committee [blinded for peer review], and the patient provided oral and written consent to publish this Case report. The patient was a 28-year-old woman with a previous pregnancy and no live births. The patient's medical and family history was unremarkable. After a natural conception, the patient had a miscarriage at 9 weeks' gestation and was referred to our hospital for detailed evaluation and management. After undergoing dilation and curettage at our hospital, pelvic magnetic resonance imaging (MRI) showed no depression in the uterine fundus (Fig. 1). Hysteroscopy and hysterosalpingography revealed two uterine cavities, and bilateral tubal patency was demonstrated. Thus, the patient was diagnosed with a septate uterus. Pregnancy by natural conception was achieved 6 months later. However, the patient had a miscarriage at 8 weeks and 2 days gestation and underwent dilation and curettage. Investigations to assess the cause of recurrent miscarriages revealed no risk factors other than a uterine malformation. Thus, a septum resection was planned.

A combined laparoscopic and hysteroscopic septum resection was planned to avoid the risk of uterine perforation. The cervical canal was dilated using a cervical dilator (Lamicel®: Tokyo, Japan, Medtronic) 1 day preoperatively. The patient was placed in the lithotomy position in the operating room, and surgery was performed under general anesthesia. The uterine septum was resected under hysteroscopic guidance using a monopolar electrode (Fig. 2). During hysteroscopic surgery, a 5-mm trocar was inserted into the navel while the assistant observed the abdominal cavity using a laparoscope. By turning off the light source of the laparoscope and allowing the light from the hysteroscope to shine through, we avoided uterine perforation and myometrium thinning (Fig. 2). Resection was performed up to the height of the bilateral tubal ostia, and no damage to the myometrium was observed. The histopathological diagnosis of the excised septum revealed the presence of endometrial and smooth muscle tissues in the early stage of proliferation. There were no findings suggestive of malignancy. There were no perioperative complications, and the patient was discharged 1 day postoperatively. Hysterosalpingography, 3 months postoperatively, showed no residual uterine septum. Sonohysterography, hysteroscopy, and MRI confirmed the absence of a septum or lesions in the uterine cavity, thereby permitting the occurrence of pregnancy.

Six months postoperatively, she conceived naturally and had no pregnancy-related problems. A placenta accreta was located at the uterine fundus. However, MRI performed at

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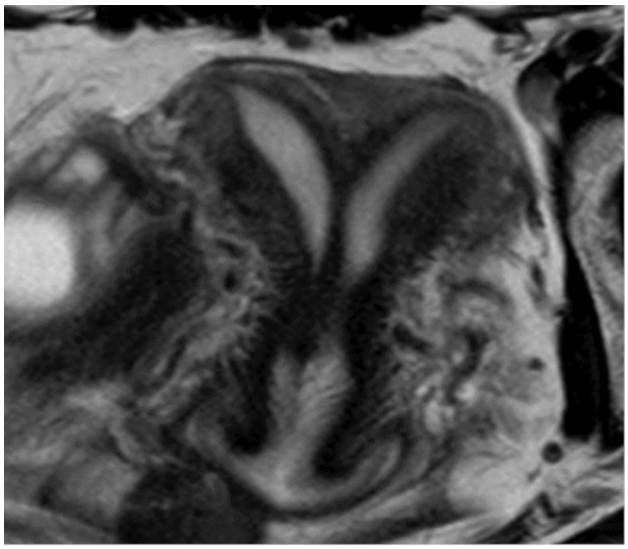

Fig. 1 Preoperative pelvic MRI

34 weeks' gestation did not reveal a placenta accrete and thinning of the uterine wall. At 38 weeks, the patient went into labor and delivered vaginally. The baby weighed 2,525 g and had 1- and 5-min Apgar scores of 8 and 9 points, respectively. However, the placental separation did not occur, and the lower part of the uterus was partially inverted when the placenta was manually peeled off. The uterus was manually repositioned. During labor, the volume of blood loss was 2,759 ml, blood pressure, 70/42 mmHg; pulse rate, 80 bpm; shock index, > 1; and hemoglobin levels, 6.3 mg/dl, indicating severe anemia. Therefore, 4 units of red blood cells were transfused. There were no complications in the subsequent postpartum period, and both mother and child were discharged 5 days after delivery.

Two years after delivery, the patient conceived naturally. The placenta was observed to be adherent from the uterine fundus to the posterior wall, and MRI performed at 34 weeks' gestation showed no evidence of placenta accreta. A selective cesarean section was performed at 38 weeks 1 day because of a breech presentation. The baby weighed 2,855 g and had 1- and 5-min Apgar scores of 8 and 9 points, respectively. During placental separation, the bottom of the uterus was inverted, and some adhesions were observed (placental accreta). Thus, the placenta was bluntly peeled from the muscular layer, and the uterus was manually repositioned. The volume of blood loss was 630 ml, including amniotic fluid. The postoperative course was uneventful for both mother and child, who were discharged 7 days postoperatively.

Discussion

Septate uterus is often diagnosed during an infertility evaluation. The incidence of uterine septa has been noted to be higher than in the other uterine malformations, suggesting a link with infertility caused by deficient vascular endothelial growth factor in the endometrium of the uterine septum [2]. Furthermore, the septum tissue is hard, which restricts fetal growth due to poor uterine distensibility and lack of blood vessels in the septum causing deficient endometrium [1, 2].

Septate uteri have been implicated in pregnancy loss and poor obstetrical outcomes. Plural meta-analysis evaluated the effect of septal incision on pregnancy outcomes and showed that women who underwent septal incision had a significantly decreased probability of spontaneous abortion compared to women who did not undergo treatment [2, 3]. In the present case, early miscarriage occurred twice; hence, surgical intervention was performed.

Jones and Jones, Tompkins, etc., are examples of surgery via laparotomy to repair a uterine septum. However, after surgery, cesarean section remains the only option for delivery as new factors may lead to infertility due to intra-abdominal adhesions. In contrast, hysteroscopic surgery has a shorter hospital stay, lesser bleeding, and fewer adhesions. It is relatively minimally invasive, and vaginal delivery is considered possible after surgery if there is no thinning of the myometrium or abnormal placental adhesion.

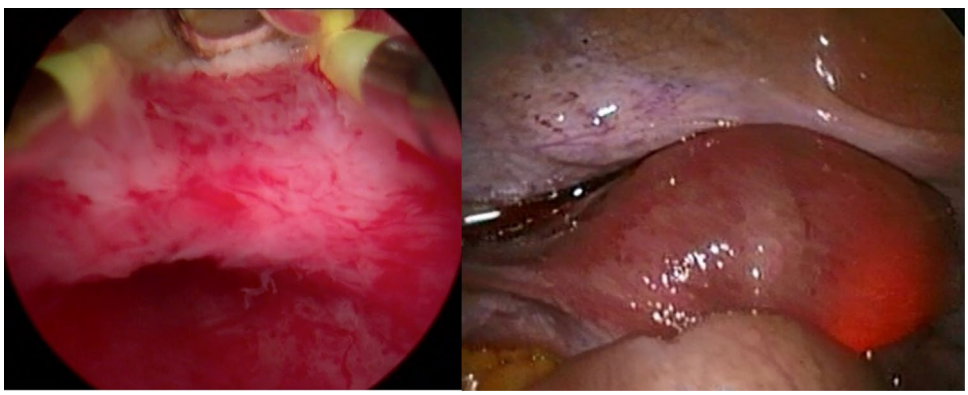

Fig. 2 Hysteroscopic and laparoscopic findings during hysteroscopic septum resection.

Hysteroscopic surgery alone involves the risk of thinning the uterine wall and uterine perforation during surgery, which poses a risk of damage to other organs and rupturing the uterus during pregnancy and delivery. Therefore, in the present case, hysteroscopic surgery was performed in combination with laparoscopy to prevent uterine perforation.

Attention must be paid to perinatal management after hysteroscopic septum resection because of high rates of preterm birth and uterine rupture [1, 3]. In the present case, there were no complications and both children were delivered at full term.

Since the development of the decidua may be impaired at the site of septal resection, placental accreta could occur. This is caused by defects in the endometrium and decidua and is thought to involve muscular infiltration of the trophoblast in early pregnancy [4]. Prepartum diagnosis of placenta accreta without associated previa is often difficult. As in the present case, uterine inversion, possibly induced by placenta accrete, was observed twice after delivery, and diagnosis before delivery was impossible. After surgical resection of the septum, careful monitoring is needed to identify placenta accreta. Additionally, preemptive perinatal management must be considered.

Conclusion

Hysteroscopic septum resection is a minimally invasive procedure that effectively improves the prognosis of pregnancy, and hysteroscopy combined with laparoscopy may be used to remove the uterine septum safely and reliably.

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Data Availability All data generated or analyzed during this study are included in this published article.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethics Approval The study was approved by the Ethics Committee of the International University of Health and Welfare Hospital (reference number: 20-B-431) and was performed in accordance with the 1964 Declaration of Helsinki or comparable standards.

Consent to Participate The patient provided written informed consent for participation.

Consent to Publication The patient provided written informed consent for the publication of this case report and accompanying images.

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