[Case Report]

# Pregnancy After Hysteroscopic Metroplasty Under Laparoscopy in a Woman with Complete Septate Uterus: A Case Report

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***Abstract*** **:** A 31-year-old nulligravid woman with a 3 year history of infertility visited our hospital. After consultation and a transvaginal ultrasound and MR imaging, her uterine anomaly was identified as complete septate uterus: class V (a) by the American Fertility Society (AFS). She had a doubled uterine cervix and a vaginal septum. Hysteroscopic metroplasty was performed with the aid of a laparoscopy. Both tubal patencies were confirmed with indigocarmine in a laparoscopic image. Laparoscopic electronic cautery was also done on the left ovarian endometrioma (stage 1 endometriosis; the revised American Society for Reproductive Medicine (rASRM) classification 4 point minimal). We distrained an intrauterine device in the uterine cavity and removed it after two cycles of menstruation. The patient subsequently became pregnant during her third menstrual cycle and the current progress of her pregnancy is favorable.

***Keywords*** **:** septate uterus, hysteroscope, metroplasty, pregnancy.

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## Introduction

Septate uterus, known as the most common uterine malformation, results from incomplete resorption of the paramesonephric Müllerian ducts during the first trimester of pregnancy. A uterine septum affects female reproductive health, including obstetric complications, infertility, and recurrent miscarriages [1, 2]. Grimbizis GF *et al*. postulated that septate uterus may influence fertility by hindering embryo implantation [2]. Thus, treating septate uterus improves fertility [3].

The only remedy for septate uterus used to be surgical treatment. The conventional technique was an abdominal operation such as Strassmann's metroplasty, Jones and Jones metroplasty, or Tompkins metroplasty, but in recent years, the hysteroscopic technique has become common. Hysteroscopic metroplasty is considered to be an easier and more minimally invasive way to treat septate uterus than an abdominal operation by a conventional technique.

Here we report a case in which a woman with a septate uterus treated by hysteroscopic metroplasty became pregnant.

## Case

A 31-year-old nulligravid woman was referred to our hospital because of a 3 year history of primary infertility. Her basal body temperature was diphasic and her baseline hormonal levels were in the normal range.

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Pelvic examination revealed normal external genitalia, with the presence of a longitudinal vaginal septum and two uterine cervices (Fig. 1). Transvaginal ultrasonography (TVUS) and magnetic resonance imaging (MRI) with intravenous contrast showed the presence of a uterine cavity with a complete septate uterus without indentations in the uterine serous membrane (Fig. 2, 3). The TVUS graphic showed two uterine cavities, and the septum gradually thickened as it approached the uterine fundus. Moreover, we could diagnose the septum as a hypointense thin longitudinal septal in the center of the endometrium by an MRI T2 emphasized axial image. These results indicated that her uterine anomaly was class V (a) by American Fertility Society (AFS) [4].

A vaginal septectomy and hysteroscopic metroplasty were performed with the aid of a laparoscopy. We performed the standard 3-port laparoscopic surgery first and confirmed intraperitoneal. The shape of the uterus was normal and there was no adhesion in the pelvis (Fig. 4). The left ovary had a small endometriosis (stage 1 endometriosis; revised American Society for Reproductive Medicine (rASRM) classification 4 point minimal). We cauterized the endometrioma laparoscopically, then performed metroplasty using a hysteroscope (Resect scope system (OLYMPUS Co., Ltd, Tokyo, Japan)), under laparoscopic surveillance. We measured the length from the uterine os to the septum on the MR image because she had a complete septate uterus, and it was 5.5 cm. We inserted the hysteroscope to the same length as we measured (5.5 cm), then we resected the septum by a loop type monopoles electrode. Figure 5(A) shows the hysteroscopic image before resection. The septum was fenestrated by resection twice. We inserted the hysteroscope into the right os and looked at the septum hole from the opposite cavity. We confirmed the hole and continued resecting the septum. Figure 5 (B, C) shows the image when we cut the septum. We stopped resecting the septum where the septal thickness gradually increased. We performed these processes while observing by laparoscope and confirmed that the uterus was not twisted. We watched both the tubal corneal and fundus by hysteroscopy. Both tubal patencies were confirmed by chromotubation using indigocarmine and we distrained the intrauterine device (IUD; FD-1 Fuji Latex Co., Ltd) in the uterine cavity. The operating time was 1 hour 58 minutes, and there was only a small amount of bleeding. We used Uromatic S (Baxter Co., Ltd) as a perfusate.

**Fig. 1. Complete septum evidenced by two vaginal cavities.**

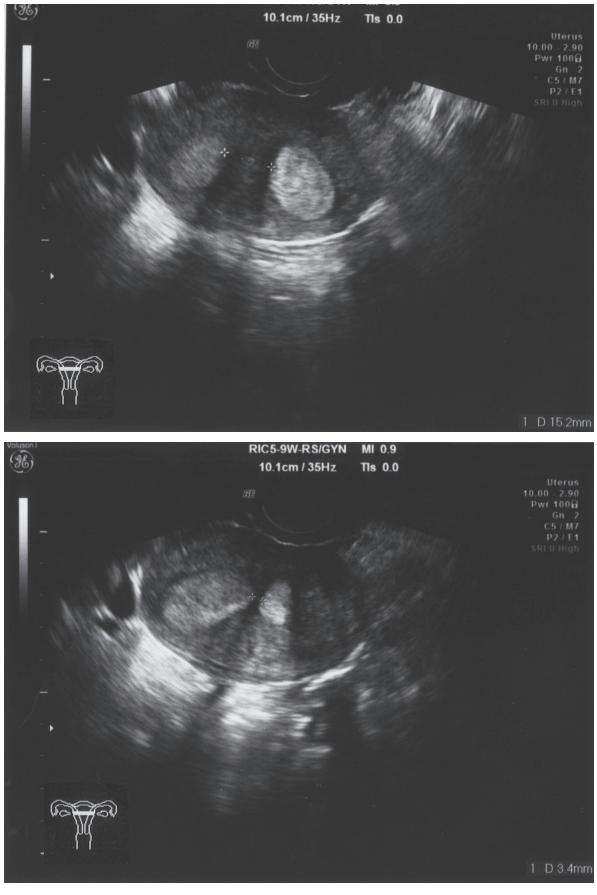


**Fig. 2. Transvaginal ultrasound shows septate uterus.**

There was no problem in the postoperative course, and the patient was discharged on the third day after the operation. We directed her to prevent contraception for two times of menstruation. We removed the IUD after two cycles of menstruation, and she subsequently became pregnant within three menstrual cycles. The current progress of her pregnancy is favorable.

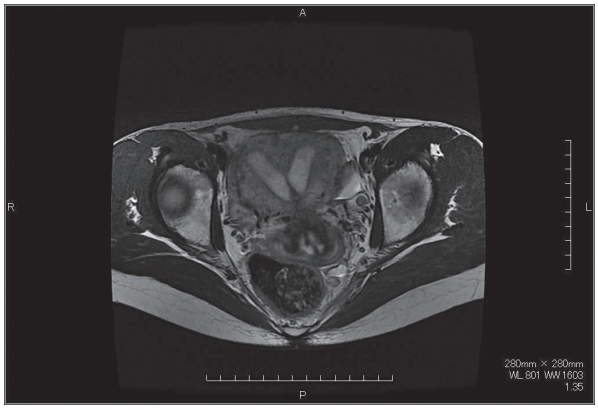


**Fig. 3. Pelvic image of magnetic resonance.** T2 emphasized image shows septate uterus and two uterus cavities.

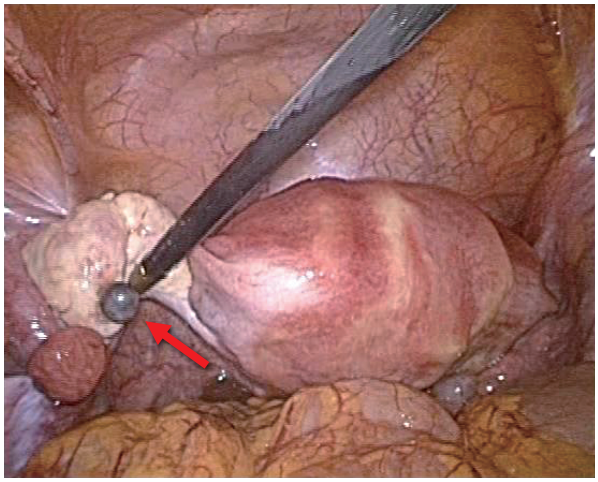

**Fig. 4. Laparoscope image of intraperitoneal.** Uterus was normal shaped and there was no adhesion in the pelvis. Left ovarian small endometrioma was detected. Arrow: endometrioma.

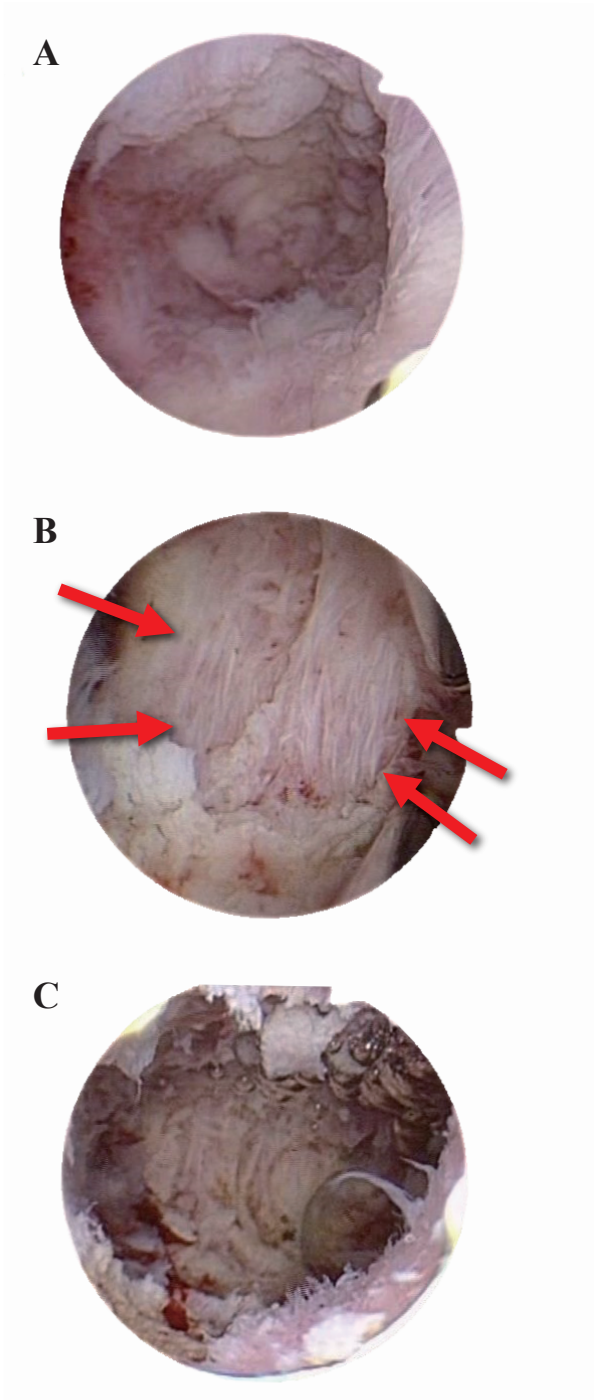


**Fig. 5. Image obtained by hysteroscopy showing the endometrium.** A: The left endometrial cavity before resection of the septum. B: The resecting septum in progress. Arrows: the resecting septum in progress. C: The endometrial cavity after resection of the septum.

## Discussion

Uterine malformation is caused by nonfusion of the Müllerian duct. Septate uterus does not have concavity in the uterine fundus and is classified as complete (class Va) or partial (class Vb) [4]. Complete septate uterus has a septum from the fundus to the cervix, and some complete septum uteruses have a double cervix. This kind of septate uterus accounts for a large percentage of uterine malformation, and some researchers have said that the abortion rate is 40~80%, while the rate of live birth is only 43% [1, 2].

Hysteroscopic metroplasty is an easy, safe, minimally invasive method compared to conventional methods such as Strassmann's metroplasty, Jones and Jones metroplasty, or Tompkins metroplasty [5]. After the operation, a patient can walk and be discharged earlier than with an abdominal operation. In fact, our patient left the hospital three days after the operation. In addition, with the abdominal methods, postoperative adhesion could cause infertility [6]. Moreover, a Caesarean section is not required after hysteroscopic metroplasty, unlike after abdominal metroplasty. Strassmann or Jones & Jones metroplasty increases the risk of hysterorrhexis, after which patients generally need a Caesarean section when giving birth [7]. There are no reports of hysterorrhexis after hysteroscopic metroplasty, however, and patients can give birth by vaginal delivery.

In comparisons of these two methods, it has been reported that hysteroscopic metroplasty was better than abdominal metroplasty for normalization of the form of the uterus, fertility rate, and the rate of live birth [7]. These facts show that the hysteroscopic method has many advantages compared to the abdominal methods.

Conversely, the biggest complication in hysteroscopic metroplasty is perforation (rate 0.76) [8]. Fedele L and Bianchi S noted that use of a laparoscope or ultrasound assistance was useful in preventing perforation [9]. As mentioned previously, in our case we could assay the uterine septum by MRI and check the uterine rotation by the use of the laparoscope, making it possible to conduct our operation without complications. Moreover, diagnostic laparoscopy can provide chromotubation and adhesiolysis. Almost all patients with septate uterus complain of infertility, so using laparoscopy in metroplasty is useful for such patients.

Hysteroscopic surgery for partial septate uterus is easier than for complete septate uterus because the surgeon can determine the cut end of the septum easily. In contrast, it is difficult to determine the cut end of the septum when we administer this technique to patients with complete septum. Therefore, we measured out the length from the cervix to the septum on the MRI image and we inserted the hysteroscope to the same length as we measured. Moreover, it is important to accomplish this surgery while observing uterine rotation by a laparoscope so as not to puncture the myometrium.

As mentioned above, the main composition of the septum is fibroelastic tissue, which has poor blood flow. Accordingly, hemorrhaging from the cutting plane shows the end of the septum, and this could be a marker for complete cutting of the septum. Fedele L *et al*. reported that a slight remaining septum is not related to sterility. In short, forming a cavity completely and carefully is not important. Rather, there is a risk of perforation [10]. Kikuchi *et al*. reported that inserting a Hegar's dilator into other sides of the uterine cavity is useful for the prevention of perforation [11]. However, this technique has been adapted to partial septate uterus only, so we didn't use it in our case.

After surgery, it is important to insert an IUD for three months to prevent endometrium adhesion. Kikuchi I and Takeda S noted that it is desirable to perform Kaufmann's treatment about three months after surgery [11].

In conclusion, hysteroscopic metroplasty could be the first choice for a patient who is infertile due to septate uterus because of its simplicity, safety, and minimal invasiveness. However, some characteristic complications of the hysteroscopic technique are concealed. It is necessary to be careful that these accidents do not occur.

## Conflicts of Interest

We declare that we have no conflicts of interest in connection with this paper.

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# 完全中隔子宮に対し腹腔鏡補助下子宮鏡下中隔切除術を施行後に妊娠成立した1例

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**要　　旨**：症例は31歳, 0経妊0経産．不妊を主訴に当科初診された．不妊期間は3年間あり, 精査の結果完全中隔子宮が指摘された．中隔子宮以外にその他の不妊の原因となりうる異常は指摘されず, 子宮鏡下子宮中隔切除術が実施された．手術は腹腔鏡補助下に行われ, 合併症なく終了した．また, 腹腔鏡補助下の手術であったため, 術中に卵管通色素検査を施行し, 両側卵管の通過を確認できた．術後にIUDを子宮内に挿入し, 月経が2回起こるまで不妊期間を設け, その後抜去した．IUD抜去翌月, 術後3か月で妊娠成立を確認し, 現在当科にて妊娠経過観察中である．

**キーワード**：中隔子宮, 子宮鏡, 子宮中隔切除術, 妊娠.

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