

# Pregnancy achieved following IVF-ET after surgery for infertility with perforate transverse vaginal septum and incomplete septate uterus: case report

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## Summary

Transverse vaginal septum is a rare congenital anomaly. Imperforate transverse vaginal septum causes marked clinical symptoms, and is diagnosed at a young age in most cases. Perforate transverse vaginal septum is difficult to detect due to the absence of symptoms. In this study, we report a case of a 33-year-old infertile female with a perforate transverse vaginal septum and incomplete septate uterus who had wished to bear a child for over ten years, and consulted our hospital. Transverse vaginal septum was considered to be an etiological factor for infertility. After surgery for transverse vaginal septum, in vitro fertilization achieved pregnancy.

**Key words:** Perforate transverse vaginal septum; Incomplete septate uterus; IVF-ET.

## Introduction

Among vaginal anomalies, a longitudinal vaginal septum is often detected. However, transverse vaginal septum is a rare congenital anomaly, which was initially reported by Lodi [1] in 1951. In most cases, it is diagnosed during childhood or adolescence. In this study, we report a 33-year-old female with transverse vaginal septum who had wished to bear a child for over ten years, and consulted our hospital. After surgery for transverse vaginal septum, in vitro fertilization (IVF) achieved pregnancy.

## Case Report

The patient was a 33-year-old nullipara. Her medical history showed she had undergone a laparotomy for intussusception at the age of one year. The family history revealed her father had diabetes mellitus. Her age at the first menstruation was 11 years. The menstrual cycle was 28 days (regular) and the duration of menstruation was five days. The amount of blood loss during the menstrual period was large. Menalgia was moderate.

She got married at the age of 26. After marriage, sexual intercourse occurred once a month without contraception. However, intravaginal projectile ejaculation was impossible and dyspareunia also occurred. With a six year/nine-month history of primary infertility, the patient consulted our hospital (at 33 years of age).

Her height was 158 cm and body weight 47.5 kg. On physical examination the breasts, pubic hair, and vulva were normal. The vaginal cavity length was short (7 cm). The vaginal cavity was narrow; stenosis was observed in a two-third area (5.5 cm) from the vaginal orifice (1 finger passed). On speculum examination, the vaginal portion of the cervix could not be confirmed. Internal examination did not reveal any abnormalities in the uterus or bilateral adnexa. Transvaginal ultrasonography was performed and sagittal sections of the uterus showed a trans-

verse vaginal septum and an echo-free space above it (Figure 1A). On transverse sections of the uterus, the endometrium was separated (Figure 1B). The clinical course showed the patient was positive for Chlamydia trachomatis antibody, IgA, and IgG (December 24, 1998). Therefore, an antimicrobial agent, clarithromycin, at 400 mg/day was orally administered for two weeks. As the vaginal portion of cervix was not seen due to a transverse vaginal septum, general examinations of infertility such as hysterosalpingography (HSG) and a post-coital test (PCT) could not be performed. Under a diagnosis of primary infertility with disturbance of sexual intercourse and transverse vaginal septum (sexual intercourse was impossible), three courses of a regimen consisting of the administration of an oral ovulation-inducing agent (clomifene citrate) and artificial insemination with the husband's semen (AIH) into the vagina were performed. However, pregnancy was not achieved.

Anterior and posterior vaginal wall plasty for the transverse vaginal septum was performed on August 19, a year after the initial consultation. To avoid postoperative cicatrization-related stenosis, the septum was incised and sutured without resecting it. After surgery, the stenotic site enlarged, and a small vaginal portion of cervix with the external ostium was exposed (Figure 2), allowing HSG and intrauterine insemination with the husband's semen (IUI). On September 7, HSG revealed an anomaly of the uterus in which the corpus uteri was separated into two portions. Contrast medium passed through the right fallopian tube, but the left fallopian tube was swollen, showing occlusion (Figure 3). After surgery, the vaginal cavity remained narrow and short, and sexual intercourse was difficult. Nine courses of a regimen consisting of IUI in combination with clomifene citrate as well as two courses of FSH and IUI were performed (a catheter for IUI was inserted only into the right uterine cavity, and treated sperm were infused on the ipsilateral side). However, pregnancy was not achieved.

On July 27, 2000 two years after the initial visit, laparoscopic surgery was performed for detailed examination and treatment. A previous laparotomy-related scar in the periumbilical region showed excavation, suggesting periumbilical intraperitoneal adhesion. For laparoscopic surgery, the first puncture was performed via the ninth left intercostal space, not via the periumbilical region as a routine route, to avoid intestinal injury.

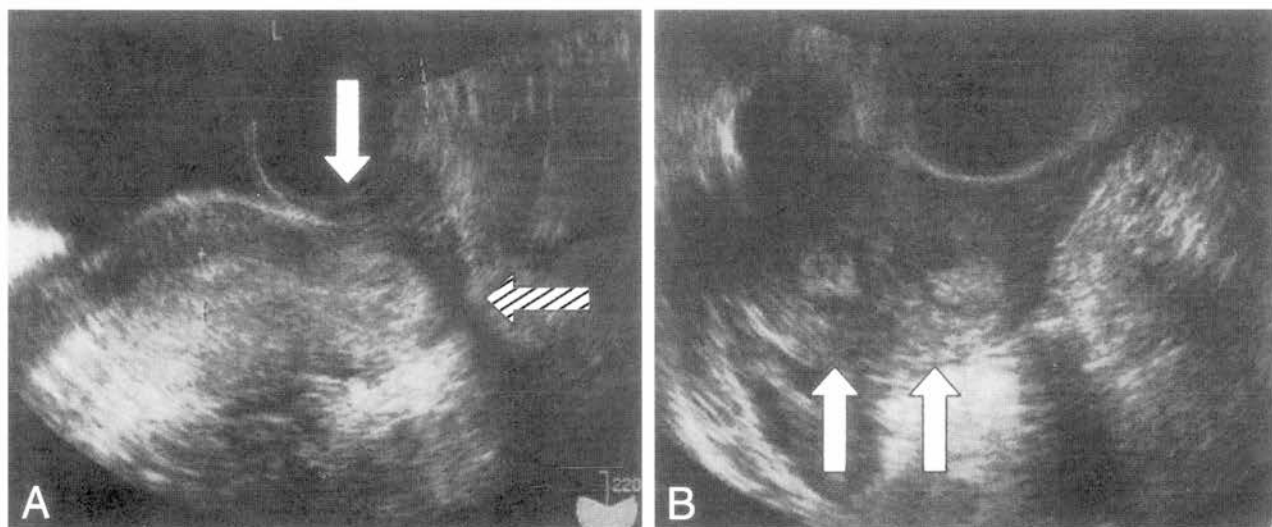


Figure 1. — Ultrasound of the uterus and vagina. A: white arrow, transverse vaginal septum; arrow containing oblique line, dead space of the vagina; B: two white arrows indicating two separate endometriums.

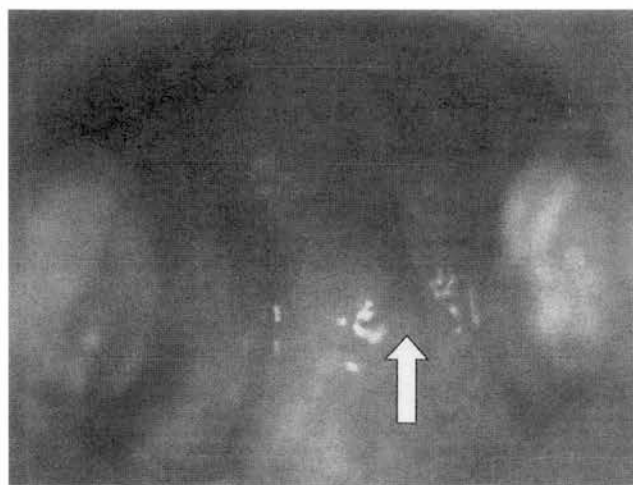


Fig. 2

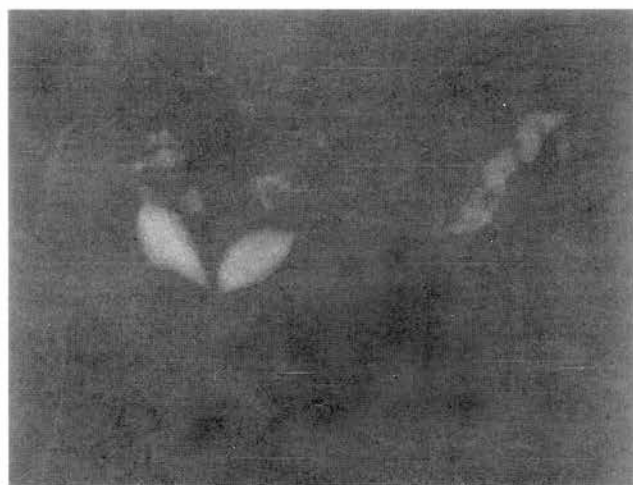


Fig. 3

Figure 2. — Speculum examination after reconstruction of the vagina; white arrow, external os of the uterine cervix.  
Figure 3. — Hysterosalpingogram showing two separate uteri.

Intraperitoneal examination showed marked adhesion of the intestines and greater omentum to the abdominal wall involving an area immediately below the umbilicus to the upper abdomen, which was consistent with the previous laparotomy-related scar. There was no excavation at the fundus uteri, suggesting septate uterus. Periovarial adhesion with the left fallopian tube, left fallopian tube passage disturbance of a dye, and right fallopian tube passage were observed. Endometriosis (Re-AFS score: 16 points) was noted. Therefore, we performed adhesiolysis of the left fallopian tube. After laparoscopic surgery, one course of a regimen consisting of the administration of clomifene citrate and IUI as well as one course of FSH and hCG therapy with IUI were performed. However, pregnancy was not achieved.

On February 22 2001, three years after the initial consultation, IVF-ET was performed at another clinic. On March 14, the pregnancy test using a urine sample showed a positive reaction. However, spontaneous abortion occurred. On April 6, we performed dilatation and curettage (D&C). On July 29, frozen embryo transfer was performed. However, pregnancy was not achieved. On November 24, three ova were collected on the second IVF. On November 26, ET was performed using two

embryos (one stage 2-blastomere embryo and one stage 4-blastomere embryo). On December 14, a pregnancy test using a urine sample showed a positive reaction. The subsequent course of the pregnancy was uneventful. At 38 (2/7) weeks of pregnancy, stenosis of the vaginal cavity related to transverse vaginal septum was observed, and we considered transvaginal delivery difficult. On August 6 2002 (at the age of 37 years), selective cesarean section was performed. A male weighing 2,706 g was born (10 years after marriage). The intraoperative findings included swelling of the right side of the uterine fundus (Figure 4A) and septum of the septate uterus (Figure 4B).

## Discussion

In this study, we have reported on a patient with refractory infertility complicated by a reproductive anomaly. After surgery, infertility treatment was performed. Finally, IVF-ET achieved pregnancy, and a healthy neonate was born.

Transverse vaginal septum indicates the presence of the

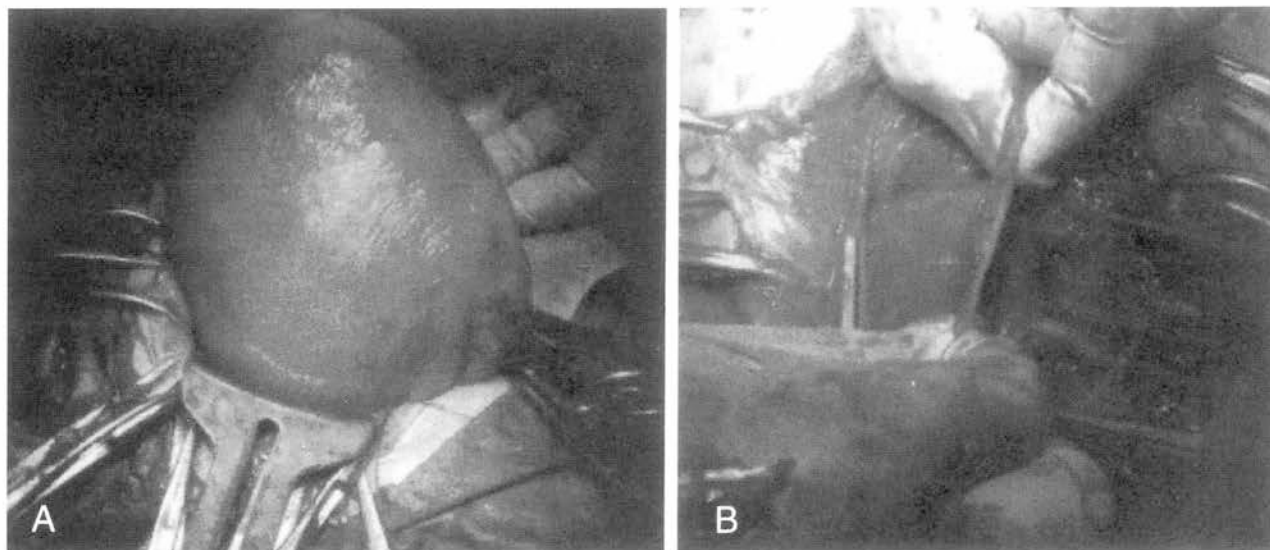


Figure 4. — Intraoperative findings at cesarean section; A: swelling of the right side of the uterine fundus; B: septum of the septate uterus.

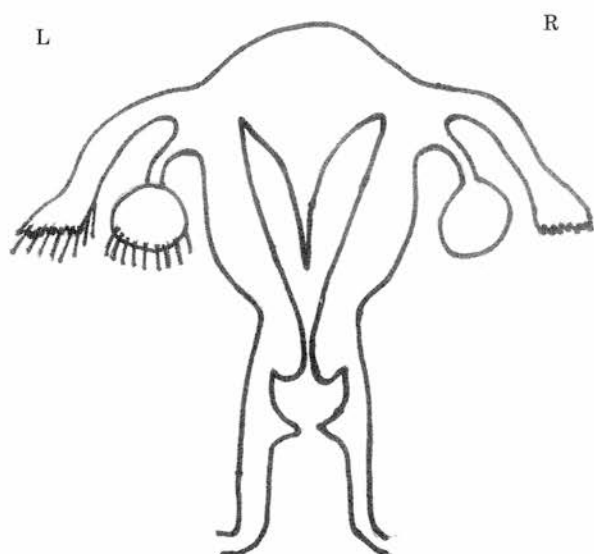


Figure 5. — Diagram of the internal genital organ; a perforate transverse vaginal septum, incomplete septate uterus and periovarian adhesion with the left fallopian tube due to endometriosis.

septum vertical to the longitudinal axis of the vagina, which is rare. The incidence is reported to be 1/30,000 to 84,000 females [2]. Many studies have reported assimilation failure between the müllerian duct and urogenital sinus as an etiological factor [3]. The common site is a one-third superior area of the vaginal cavity. Concerning symptoms, when a pore is absent on the septum, muco-colpos, hematocolpos, hematometra, primary amenorrhea [4-6], and menstrual molimen [1] occur. However, when a pore is present on the septum, this disorder is asymptomatic, and some patients consult a physician for sexual intercourse disturbance. Generally, there is no concurrent development of other urogenital anomalies. Examination procedures such as ultrasound, HSG [7], magnetic resonance imaging [8, 9], and vaginography are useful. When

transvaginal ultrasonography is difficult, transperitoneal sonography [10] and sonocolpography [11] are useful.

This disorder should be differentiated from vaginal defects, testicular feminization, and Turner's syndrome. Furthermore, it may be an etiological factor for infertility. Concerning treatment, surgery (resection, incision) [7] is recommended. In the present case, a transverse vaginal septum developed in a one-third superior area of the vaginal cavity, and a pore was present on the septum. The symptoms included sexual intercourse disturbance and infertility (primary infertility over 7 years). In addition, septate uterus and endometriosis were noted (Figure 5), suggesting refractory infertility. We initially performed less invasive treatment, and promoted infertility treatment step by step. In our patient, sexual intercourse disturbance was possibly associated with a transverse vaginal septum with porosity. Sperm may not have reached the uterus, leading to infertility. Initially, noninvasive intravaginal artificial insemination with the husband's semen was performed above the septum. However, this procedure did not achieve pregnancy, and vaginal wall plasty was performed. The uterovaginal region was exposed, facilitating HSG and IUI. HSG revealed an anomaly of the uterus and occlusion of the left fallopian tube. In addition, IUI did not achieve pregnancy. Therefore, laparoscopy was performed, and the patient was diagnosed as having ovarian adhesion of the left fallopian tube, septate uterus, and endometriosis. Transverse vaginal septum-related menstrual disturbance may have caused endometriosis [12]. In the present case, transverse vaginal septum was complicated by septate uterus with the risk of spontaneous abortion, and the first IVF-ET achieved pregnancy, but spontaneous abortion occurred. The second IVF-ET also achieved pregnancy, and a healthy baby boy was born via selective cesarean section after the course without spontaneous abortion. Our results suggest that the accurate diagnosis and treatment of reproductive anomalies are necessary for infertility treatment.

## Conclusion

We encountered an infertile female with perforate transverse vaginal septum and incomplete septate uterus. After surgery, IVF-ET was performed. Pregnancy was achieved. A healthy baby boy was born ten years after marriage.

## References

- [1] Lodi A.: "Vaginal malformations in the Mangiagalli University Hospital from 1906-1950, Anale". *Obstet. Gynecol.*, 1951, 73, 1246.
- [2] Polasek P.M., Erickson L.D., Stanhope C.R.: "Transverse vaginal septum associated with tubal atresia". *Mayo Clin. Proc.*, 1995, 70, 965.
- [3] Paul B., Alexander S.: "Complete imperforate transverse vaginal septum, report of a case". *Obstet. Gynecol.*, 1965, 25, 135.
- [4] Ahmed S., Morris L.L., Atkinson E.: "Distal mucocolpos and proximal hematocolpos secondary to concurrent imperforate hymen and transverse vaginal septum". *J. Pediatr. Surg.*, 1999, 34, 1555.
- [5] Wang J., Ezzat W., Davidson M.: "Transverse vaginal septum. A case report". *J. Reprod. Med.*, 1995, 40, 163.
- [6] Rana A., Manandhar B., Amantya A., Baral J., Gurung G, Giri A. *et al.*: "Mucocolpos due to complete transverse septum in middle third of vagina in a 17-year-old girl". *J. Obstet. Gynaecol. Res.*, 2002, 28, 86.
- [7] Levy G., Warren M., Maidmann J.: "Transverse vaginal septum: case report and review of the literature". *Int. Urogynecol. J. Pelvic Floor Dysfunct.*, 1997, 8, 173.
- [8] Lopez C., Balogun M., Ganesan R., Olliff J.F.: "MRI of vaginal conditions". *Clin. Radiol.*, 2005, 60, 648.
- [9] Feng F., Liu Z.F., Pan W.D., Meng W., Jin Y., Jin Z.Y.: "Magnetic resonance imaging of congenital vaginal anomalies". *Zhongguo Yi Xue Ke Xue Yuan Xue Bao*, 2005, 27, 103.
- [10] Meyer W.R., McCoy M.C., Fritz M.A.: "Combined abdominal-perineal sonography to assist in diagnosis of transverse vaginal septum". *Obstet. Gynecol.*, 1995, 85, 882.
- [11] Thabet S.M., Thabet A.S.: "Role of new sono-imaging technique 'sonocolpography' in the diagnosis and treatment of the complete transverse vaginal septum and other allied conditions". *J. Obstet. Gynaecol. Res.*, 2002, 28, 80.
- [12] Rock J.A., Zacur H.A., Dlugi A.M., Jones H.W. Jr., TeLinde R.W.: "Pregnancy success following surgical correction of imperforate hymen and complete transverse vaginal septum". *Obstet. Gynecol.*, 1982, 59, 448.

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