CASE REPORT

Conception by IVF-ET after four previous laparotomies, but requiring extraperitoneal cesarean section at 33 weeks due to hypertension and deteriorated renal function

Maika Oishi, Kanji Tanaka, Hitomi Chiba, Asami Ito, Rie Fukuhara, Hideki Mizunuma

Department of Obstetrics and Gynecology, Hirosaki University Graduate School of Medicine

A 35-year-old patient (gravida 0, para 0) with a history of four previous laparotomies, including two previous episodes of postoperative intestinal obstruction, conceived by means of in vitro fertilization and embryo transfer (IVF-ET), but was temporarily admitted for hypertension at 19 weeks of pregnancy. One week after discharge, she was readmitted due to re-elevation of blood pressure. Although renal function improved temporarily after the placement of ureteric stents and nephrostomy to treat bilateral hydronephrosis and ureteric dilation, she developed intestinal obstruction at 32 weeks. An extraperitoneal cesarean section was performed at 33 weeks. The patient had intraperitoneal adhesions due to previous multiple laparotomies, and postrenal dysfunction due to the enlarged pregnant uterus, which was the likely cause of hypertension. In patients with similar conditions, it is important to sufficiently explain the risks of serious complications before commencing infertility treatment.

Introduction

Despite the difficulties in natural conception, the number of pregnancies in recent years has increased due to advancements in infertility treatment and surgical techniques. Consequently, there is an increased risk of various complications. We encountered a patient with a history of four previous laparotomies, including two episodes of postoperative intestinal obstruction, who conceived after undergoing in vitro fertilization and embryo transfer (IVF-ET). However, she required an extraperitoneal cesarean section at 33 weeks due to renal dysfunction, hypertension, and intestinal obstruction.

Case

A 35-year-old patient (gravida 0, para 0) with a height of 150 cm and non-pregnant body weight of 47 kg presented to our hospital. Her past medical history included surgery for megacolon at 1 year of age, left adnexectomy and adhesiolysis for left pyosalpinx (postoperative intestinal obstruction) at 17 years, right ovarian cystectomy and adhesiolysis of the right ovarian tumor at 19 years, tubectomy, drainage of right pyosalpinx, and myomectomy for uterine myoma (intraoperative small bowel perforation and bladder injury, and postoperative intestinal obstruction) at 32 years. Due to the patient’s desire to maintain fertility, she was examined at our hospital and conceived following IVF-ET. No remarkable abnormalities were observed in blood pressure or blood test results before or during the early stages of pregnancy. The patient underwent prenatal examinations at our hospital during the early stages of pregnancy. At 19 weeks, she developed edema, with a blood pressure of 150/97 mmHg and a 5-kg weight gain in 2 weeks. The patient was admitted and prescribed bed rest and dietary therapy. At the time of admission, no remarkable abnormalities were observed in blood test results. Urinary protein and antinuclear antibody tests were negative. Urinary vanillylmandelic acid (VMA), aldosterone, and renin activity were within normal ranges. Blood pressure decreased as a result of...
bed rest and dietary therapy alone, and with a decrease in the edema, the patient was discharged at 21 weeks. At 22 weeks, her blood pressure was again elevated (167/104 mmHg) and she was readmitted to the hospital. Her blood pressure was stabilized as a result of rest and dietary therapy alone, but her renal function worsened, as evidenced by a blood urea nitrogen (BUN) level of 17 mg/dl, creatinine (Cre) level of 1.27 mg/dl, and 24-h creatinine clearance rate of 36.7 ml/min. As it was deemed important to terminate the pregnancy within a few days, the patient was transferred to the Perinatal Medical Center of Aomori Prefectural Central Hospital at 24 weeks. Laboratory test results after transport were as follows: urinary osmolality, 286 mOsm/kgH₂O; urinary Cre to serum Cre ratio, 33; urinary BUN to serum BUN ratio, 16.4; BUN to Cre ratio, 13.1; urinary sodium, 46 mEq/l; N-acetyl-β-D-glucosaminidase (NAG), negative; and β-2 microglobulin, negative. Ultrasonography at the Perinatal Medical Center revealed bilateral ureteric dilatation and hydronephrosis. Based on these results, the patient was suspected of having postrenal failure, and was treated via bilateral ureteric stent placement (Figure 1). However, as no improvement was observed on the right side, nephrostomy was performed. Thereafter, her renal function improved, with a BUN level of 11.4 mg/dl and Cre level of 0.88 mg/dl. At 32 weeks, the patient developed abdominal distension and vomiting, and was diagnosed with intestinal obstruction. Despite fasting and receiving fluid supplementation, her renal function continued to worsen (BUN, 22 mg/dl; Cre, 1.29 mg/dl), and liver dysfunction also developed, as shown by an aspartate aminotransferase (AST) level of 197 U/l and alanine aminotransferase (ALT) level of 223 U/l.

Since continuing the pregnancy beyond this point was considered too great a risk, the patient was returned to our hospital at 33 weeks. Two days later, a male infant weighing 2,132 g was delivered by cesarean section. The infant’s Apgar scores at one and five minutes were 7 and 8, respectively. Extraperitoneal cesarean section was performed because the scarring from multiple previous surgeries made intraperitoneal entry impossible. Blood pressure decreased postoperatively, test results improved rapidly, and the intestinal obstruction resolved. The ureteric stents were removed and the nephrostomy was closed on postoperative day 7. The patient was discharged on day 17.

Discussion

The present patient had a history of four laparotomies prior to pregnancy. Conception was achieved via IVF-ET infertility treatment, due to fallopian tube factors. The development of assisted reproductive technology (ART) has enabled women with difficulties conceiving naturally to become pregnant. However, as the childbearing age has increased in recent years, so too have the chances of requiring surgery prior to conception. Therefore, the frequency of complications is also likely to increase. When ART is performed after laparotomy, intestinal obstruction may develop due to uterine enlargement. Thus, careful and highly attentive perinatal management is required. Symptoms of intestinal obstruction during pregnancy are similar to those observed in non-pregnant patients, and include abdominal pain, vomiting, and constipation. However, uterine enlargement causes pain in various locations, which increases the possibility of delayed diagnosis. In addition, bacterial shock and intrauterine fetal death have also been reported during

![Figure 1. Bilateral ureteric stents.](image)
The patient was suspected of having postrenal failure, for which bilateral ureteric stents were placed.
Preterm C/S after polysurgery and IVF

The number of deliveries by women who have undergone ART is increasing annually. In general, the risks of ART-induced pregnancy include ovarian hyperstimulation syndrome, ectopic pregnancy, multiple pregnancy, miscarriage, preterm labor, placenta previa, pregnancy induced hypertension (PIH), placental abruption, and gestational diabetes. Pregnancy by ART has been reported to cause increases in low birth weight infants due to multiple pregnancies, as well as increases in congenital malformations and chromosomal anomalies. Furthermore, an increased occurrence of preeclampsia, cesarean section, and maternal hemorrhage has been reported in pregnant patients who develop PIH after receiving ART. The present patient had intraperitoneal adhesions due to multiple laparotomies and postrenal failure due to the enlarged pregnant uterus. This led to hypertension and was further complicated by intestinal obstruction. The deterioration of renal function, in spite of stent placement, is likely due to dehydration resulting from ileus.

As no hypertension or renal failure was evident before pregnancy, it might not have been problematic for this patient to receive infertility treatment. In the future, the number of patients who, despite having difficulty conceiving naturally, achieve conception due to advances in surgical techniques and ART (i.e., our patient) is expected to increase. In such cases, it is important that the risks during pregnancy are sufficiently predicted and explained to the patient before starting infertility treatment. Furthermore, if renal failure is indicated (e.g., elevated blood pressure and edema) in a patient with a history of multiple laparotomies, we should not overlook the possibility of postrenal failure and check the presence of hydronephrosis and hydroureter by ultrasonography.

In patients with similar conditions, it is important to sufficiently explain the risks of serious complications before commencing infertility treatment.

Conflict of interest

None.

References