



A Second Trimester Type II Cesarean Scar Pregnancy with Placenta Implantation and Rupture in the Right Wall of the Lower Segment of the Uterus: A Case Report

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Abstract

Background: Cesarean Scar Pregnancy (CSP) is the implantation of pregnant tissue in the scar of a prior cesarean. With the progression of pregnancy, the embryo grows deeper and wider around the scar which can cause placenta implantation and even uterine rupture. In early pregnancy, CSP often shows no symptoms or only little vaginal bleeding, and some patients may ignore it. Routine ultrasound examination is most commonly performed for diagnosis of CSP, but when the pregnant tissues with blood clots locate in the whole uterine cavity it is less accurate. Especially in the second trimester, with the growing of pregnant tissue and blood clot occupying nearly the whole uterine cavity inclusive of the lower segment of the uterus, it is difficult for ultrasound or even MRI examination to distinguish it.

Case Report: We report a case of a second trimester II type CSP, where the patient, G4P2, had two previous cesareans and two artificial aspiration abortions. The patient presented to our hospital when she was 12+1/7 weeks pregnant with slight vaginal bleeding and occasional mild abdominal pain. Missed abortion was diagnosed because ultrasound examination shows the pregnant sac in the uterine cavity without embryo. Medical abortion was performed. After 3 days, curettage under ultrasound monitoring was performed for incomplete abortion with pregnant tissue residue. During the operation, the ultrasound monitoring revealed CSP with placenta implantation and massive vaginal bleeding occurred. When the uterine contraction drugs failed to stop the bleeding, the laparotomy was performed.

Conclusion: CSP is dangerous for patients and difficult to treat especially when the clinician cannot find it in time. Sometime the symptom is not very severe just with little vaginal bleeding and occasional mild abdominal pain. But with the progression of pregnancy especially in II CSP, it will rupture or implant deeply in the uterine muscle even to bladder. So, with many cesareans and curettages, patients must be informed of the danger of pregnancy and receive medical examination and treatment in time. For clinicians we must be vigilant of the CSP for every patient with history of cesarean, we can choose MRI examination when necessary.

Keywords: Cesarean scar pregnancy; Second trimester; Placenta implantation; Hysterectomy; Massive bleeding

Introduction

With the increased incidence of cesarean deliveries, the incidence of Cesarean Scar Pregnancy (CSP) also increased and gradually attracted clinical attentions [1]. However, the diagnosis and treatment guidelines in the first, second, and third trimesters of CSP still need a worldwide consensus. At present, most studies are about first trimester CSP. CSP can be classified to type I and II [2]. Type I is characterized by trophoblast implantation that is shallow in the cesarean scar but grows toward the uterine cavity. Type II is characterized by deep infiltration of pregnant tissue in the scar growing toward the uterine muscle, serosal surface, and even penetrating the bladder. A previous study of 326 patients with type I CSP showed that the cure rate of type I CSP can reach 98.8% with Uterine Artery Embolization (UAE) combined with suction and 100% with local lauromacrogol injection with suction aspiration [3]. However, uterine rupture has also been reported, and hysterectomy is performed occasionally in type I CSP [4]. Compared with the first trimester type I CSP, the second trimester type II CSP is less studied. The longer the pregnancy in CSP, the higher the risk in both CSP types. A uterine rupture occurred in 2.5% of patients in CSP of ≤ 9 weeks and in

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7.5% of patients in CSP of >9 weeks. Emergency hysterectomy was performed in 3.7% of patients in CSP of ≤ 9 weeks and in 16.3% of patients in CSP of >9 weeks [5]. The treatment of second trimester CSP is a challenge for clinicians because it can progress to massive bleeding, which requires hysterectomy. We report a case of a patient with second trimester type II CSP who underwent a transabdominal hysterectomy. Histopathological examination showed pregnant tissue infiltrating the cesarean scar and nearly penetrating the whole wall of the lower segment of the uterus.

Case Presentation

We report the case of a 37-year-old woman, G4P2, with two previous cesarean sections each 13 and 11 years ago, two artificial suction abortions each in 12 and 5 years ago. The menstrual cycle of the patient was 25 to 27 days, and the menstrual period was 4 to 5 days without dysmenorrhea or vaginal spotting. The patient presented to our hospital for amenorrhea of 12+1 weeks with the confirmation of pregnancy by positive urine pregnancy test and ultrasonic examination 1 day ago in another hospital. During the amenorrhea two intermittent little vaginal bleeding events occurred, which the patient considered as abnormal menstruation; therefore, she did not go to the hospital. However, she had transient abdominal pain 2 days before going to hospital, and the pain subsided spontaneously. After hospitalization, an ultrasound examination revealed a gestational sac mass of 83 mm × 59 mm × 53 mm in the uterine cavity and a blended echo block of 49 mm × 45 mm × 49 mm located in the sac mass. The patient was diagnosed with missed abortion, and medical abortion was performed with mifepristone and misoprostol. An antibiotic drug was used for infection because of the high leukocyte count (14.96×10^9) and CRP levels (38.26 mg/L), with a low fever of 37.3°C 2 days before undergoing an abortion.

During the administration of mifepristone and misoprostol, the patient had no abdominal pain and only experienced slight vaginal bleeding. Three days after the medical abortion, an ultrasound revealed a lot of residual pregnant tissues in the uterine cavity, and curettage monitored by ultrasound was performed after obtaining the consent of the patient. During curettage, the bleeding was massive and some pregnant tissue residue could not be scraped out, ultrasound examination showed some pregnant residue implanting in the scar of the cesarean which means the CSP. Oxytocin was injected in the cervix combined with an intravenous injection. After the cervical injection of ergonovine, the bleeding gradually decreased.



Figure 1: Rupture of the right wall in the lower segment of the uterus during the operation.



Figure 2: The whole uterus with cesarean scar pregnancy in the anterior wall and the ruptured right wall in the lower segment of the uterus.



Figure 3: Normal cervix with a length of 2.5 cm.



Figure 4: The resection of the uterus with pregnant tissue implanted in the whole layer of the lower uterine wall, blood clots in the lower segment cavity, normal uterine body, and empty uterine cavity.

The patient was in the operation observation room, and the bleeding was evaluated by weighing. After 1 h and 30 min, the total blood volume reached approximately 1,500 mL, and the bleeding continued profusely and could not be stopped by uterine contraction drugs. The patient and her husband were informed of the risk of CSP, the need for signed consent for exploratory laparotomy and a high possibility of hysterectomy. The operation was performed immediately when blood loss reached approximately 2,000 mL. During the operation, we found the enlargement of the lower segment of the uterus, which was even bigger than the uterine body, the serosal surface of the anterior wall was swollen and purple-blue, and the right wall of the

lower segment ruptured with implantation by the pregnant tissue (Figure 1). The situation immediately was informed to the husband and the husband chose hysterectomy and provided signed consent for the operation. Hysterectomy was performed, and the whole uterus was resected (Figure 2, 3). When resecting the uterine specimen, we found that the anterior lower segment was infiltrated by pregnant tissue with a thin serosal layer, and the whole right wall of the lower segment was penetrated by pregnant tissue while the uterine cavity was normal (Figure 4). One day after the surgery, a blood routine examination showed that the patient's hemoglobin levels were only 43 g/L; therefore, the patient was transfused with four units of red blood cell suspension. Hemoglobin levels elevated to 71 g/L 2 days after the surgery. Histological examination showed that the decidual tissue and villi were located in the anterior lower segment of the uterus and infiltrated the whole layer of the right wall. The patient recovered and was discharged 4 days after the surgery.

Discussion

In our case, the villus and decidua infiltrated the whole layer and penetrated the right wall of the lower segment due to the rupture of the uterus, while the serosal layer of the anterior cesarean scar was intact. The rupture site was not in the cesarean scar but in the lateral lower segment, the reason may be that the niche of the cesarean scar extended to the right wall of the lower segment, the residual muscular layer in this position is the thinnest and is more likely to be implanted and penetrated. Another reason is that there may be another severe scar defect located in the right wall, with a bigger range and more complicated morphology than the anterior one. The defect of the endometrium-myometrial interface led to failed normal decidualization and enabled deep trophoblast infiltration. The depth of the penetration correlated with the extent of the damage. The more cesareans and gynecological surgeries a patient undergo, the more complicated of the scar defect in morphology and the higher the risk for placenta increta. According to one study composed of 380,775 deliveries, the relative risk for abnormal placental implantation was 1.5, 2.7, and 5.1 in one gynecological procedure, two procedures, and three or more procedures, respectively [6,7]. Because this patient had two cesareans and two dilations and curettages, which can cause two cesarean scars, the relative risk for placenta increta was high [8]. One study found that cesarean can also contribute to the posterior placenta increta even without scar defect [9]. Therefore, lateral placental implantation may also be possible even without obvious scar defect because some microstructure damages, such as fibrinoid depositions, come from multiple intrauterine operations between the utero-placental interface, which also can cause placenta implantation [10]. One study showed that women who underwent cesarean delivery had a higher ratio of bacterial colonies (89.6%) in the cervical canal compared with those who did not undergo cesarean delivery (49.7%) [11]. Therefore, the patient may have had infection in the lower segment, which caused a low-degree fever and elevated serum infection markers. Whether this type of infection is associated with placenta accrete remains to be studied. On the first visit to the hospital, the patient had been pregnant for 12+1 weeks. When CSP progresses to a higher gestational age, the risk of placenta implantation, life-threatening bleeding, uterine rupture, and hysterectomy also increases [12]. CSP evolves to placenta implantation when it cannot be treated during the first trimester [13]. The treatment for CSP includes systemic or local injection of Methotrexate (MTX), dilation and curettage, and Uterine Artery Embolization (UAE) alone or combined. One meta-analysis found that when management for CSP

was performed, 63% of patients required hysterectomy because of placental implantation or second trimester uterine rupture [14]. The patient had almost rupture of the right wall in the lower segment of the uterus, which was dangerous. At present, successful treatments for second trimester type II CSP have not reached a worldwide consensus, and relative studies also are limited. To preserve fertility, the treatments are more complicated, and the help of an experienced Multiple Disciplinary Team (MDT) and combined methods are necessary [15,16]. The early management of CSP is important to avoid further hysterectomy due to life-threatening bleeding during the second trimester [17,18]. The patient visited the hospital too late and missed the optimal opportunity for diagnosis and treatment. The patient was not diagnosed with CSP and placenta accreta in the first ultrasound examination. Because the negative image results may be a likelihood of approximately 20% for placenta implantation both in the ultrasound and MRI examinations [19]; therefore, we should be alert about the high risks of CSP with placenta implantation in cases of multiple cesarean deliveries, dilation and curettages, and vaginal bleeding with amenorrhea. MRI examination is preferred for patients who are at a high risk because MRI has a higher diagnosis value in sensitivity, specificity, and Area Under Curve (AUC) than an ultrasound examination according to one study of 948 patients with CSP [20]. However, MRI is expensive and the examination results cannot be obtained simultaneously; meanwhile, transvaginal three-dimensional ultrasound combined with color Doppler also has more accurate diagnostic performance than only three-dimensional ultrasound in patients with CSP [21]. These combinations of ultrasound examinations are another viable option.

Conclusion

Early diagnosis with more accurate inspections and early treatment are equally important in preserving fertility and avoiding life-threatening bleeding in CSP. Women with high risks for CSP, such as those who have undergone multiple prior cesarean sections and gynecological procedures, must be vigilant of amenorrhea and abnormal vaginal bleeding.

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