

Successful Conservative Treatment of Cesarean Scar Ectopic Pregnancy with Local Injections of Absolute Ethanol

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Abstract

Cesarean scar ectopic pregnancy (CSEP) is becoming more common worldwide. Here, we report a case of cesarean scar pregnancy successfully treated using transvaginal ethanol injection. A 31-year-old female (gravida 3, para 2) with two prior cesarean sections presented at 9 weeks and 3 days of pregnancy. Her serum human chorionic gonadotropin level was 91,798 mIU/mL. CSEP was confirmed by transvaginal ultrasonography, pelvic magnetic resonance imaging, and color Doppler ultrasonography. Transvaginal absolute ethanol local injection under transvaginal ultrasound guidance was performed. She was discharged 7 days after treatment with no complications and resumed normal menses 1 month after treatment. We describe a safe and successful treatment option for CSEP.

Keywords: Absolute ethanol local injection, cesarean scar ectopic pregnancies, cesarean scar, ectopic pregnancies, transvaginal ultrasound

INTRODUCTION

Although cesarean scar ectopic pregnancy (CSEP) is rare, it is becoming more common because of the increasing number of cesarean section deliveries. Several patients with CSEP have undergone hysterectomies because of massive bleeding from difficulties with hemostasis when removing the gestational tissue and during follow-up. The efficacy and safety of using absolute ethanol local injection for ectopic pregnancy management has been reported previously.^[1] Here, we report a case of CSEP, in which the uterus was successfully preserved using absolute ethanol local injection.

CASE REPORT

A 31-year-old female (gravida 3, para 2) who twice underwent low transverse cesarean delivery presented to our hospital for amenorrhea. Physical examination indicated stable vital signs, whereas bimanual examination revealed a slightly

enlarged uterus with no adnexal masses. The cervical os was closed with no vaginal bleeding. Transvaginal ultrasonography demonstrated an enlarged uterus, empty uterine cavity, and cervical canal, and a gestational sac (GS) situated in the lower part of the anterior uterine wall at the cesarean section scar site [Figure 1a]. The crown-rump length was 22 mm (corresponding to 9 weeks and 3 days of pregnancy); a fetal heartbeat was observed, and the lower anterior uterine wall had thinned out. Upon color Doppler imaging, the cesarean scar site revealed sufficient blood flow. Pelvic magnetic resonance imaging (MRI) confirmed a GS implanted within the anterior myometrium of the lower uterine segment in the previous cesarean scar site [Figure 1b]. The serum human chorionic gonadotropin (hCG) level was 91,798 mIU/mL; the general physical examination was normal. Therefore, CSEP was diagnosed. Because of fetal cardiac activity and high serum

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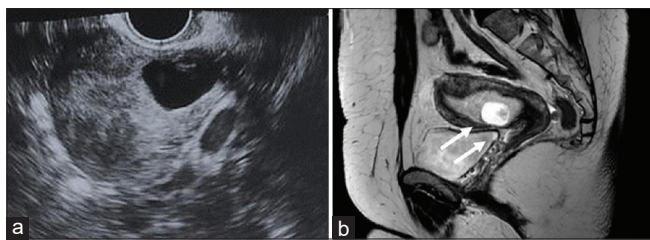


Figure 1: Ultrasound and magnetic resonance images of cesarean scar ectopic pregnancy. Uterus section image and magnetic resonance image showing a gestational sac implanted within the anterior myometrium of the lower uterine segment in the cesarean section scar site (a and b)

hCG levels, the risk of bleeding was considered high if the gestational tissue was immediately removed with dilation and curettage. The patient wished to bear children; therefore, preservation of fertility was required.

After counseling, we selected absolute ethanol local injection into the CSEP site, which can be effective and safe for ectopic pregnancies;^[1] there was no genital bleeding, and the patient's general condition was stable. Absolute ethanol (1.2 ml; Maruishi Pharmaceutical Co., Ltd., Osaka, Japan; C₂H₆O > 99.5 volume%) was injected directly into the GS and its surrounding area using a 22G needle (Hakko Sonoguide Needle Type B; HAKKO Co., Ltd, Nagano, Japan) under transvaginal ultrasonographic guidance (ProSound Alpha7; Hitachi Aloka Medical, Ltd, Tokyo, Japan).^[1] At the time of injection, the GS fluid was aspirated to decrease the internal pressure. Serum hCG measured 2 h after injection was 74,270 mIU/mL, indicating an approximate 20% decrease. Subsequently, her serum hCG levels declined favorably; nevertheless, the hCG decrease slowed down 4 days after admission, prompting a second absolute ethanol local injection. Hysteroscopy performed 5 days after admission revealed a poorly distended GS within the uterine isthmus anterior wall [Figure 2]. Blood flow surrounding the GS decreased; therefore, ultrasound-guided manual vacuum aspiration was performed 6 days after hospitalization. No massive bleeding was observed postoperatively. The patient was discharged 7 days after hospitalization. During outpatient follow-up, there was a small amount of vaginal bleeding that was not thought to have been caused by absolute ethanol local injection. Histopathological examination findings revealed deciduae and chorionic tissues. Menses resumed 1 month after treatment; the disappearance of uterus anterior wall lesions was confirmed using transvaginal ultrasonography and MRI. Since then, the patient is being followed up regularly, and her progress remains good without any notable findings such as thinning of the pregnancy site (cesarean section scar).

DISCUSSION

CSEP, a rare form of ectopic pregnancy, is becoming more common because of the increasing number of cesarean



Figure 2: Hysteroscopic image of the cesarean scar ectopic pregnancy. The endometrial cavity is empty, and the gestation sac is implanted in a niche located in the anterior endocervical wall, corresponding to the previous cesarean section scar site

deliveries; it occurs in 0.15% of pregnant women with prior cesarean sections and accounts for 6.1% of ectopic pregnancies with prior cesarean sections.^[2] The speculated mechanism of developing CSEP is infiltration from an incompletely healed cesarean scar site or from a pathway between the endometrium and cesarean scar site into the myometrium. Because CSEP may cause massive bleeding from an adherent placenta or uterine rupture, it requires early diagnosis and treatment.^[2]

CSEP treatment methods include total hysterectomy, focal wedge resection, hysteroscopic resection, methotrexate (MTX) administration, uterine artery embolization (UAE), and dilatation and curettage. Nevertheless, there is no consensus regarding optimal treatment. Dilatation and curettage monotherapy is less effective and carries a high risk of uterine perforation and massive bleeding despite being positioned as a first-line therapy.^[3] One should consider the patient's age and desire to bear children when selecting treatment.

The efficacies of conservative therapies – MTX therapy and UAE – have been reported. Nevertheless, MTX is frequently ineffective in more advanced pregnancies, patients with high serum hCG levels, or patients with positive fetal heart rates. Because the effect is not immediate, controlling massive bleeding becomes challenging.^[4]

Developments in interventional radiology have led to successful UAE cases, resulting in fertility preservation. Nevertheless, the use of UAE in cases requiring fertility preservation has not been sufficiently evaluated, and no conclusions have been reached. UAE may cause ovarian insufficiency from the direct insertion of embolic material into the ovaries or blood flow interruption in the collateral blood vessels. The impact of UAE on fertility in terms of ovarian hypofunction caused by blood flow obstruction has

been discussed since the early stages. One patient who became amenorrhoeic after UAE despite low follicle-stimulating hormone levels has been reported,^[5] revealing that serious issues regarding fertility after UAE exist in the uterus itself. Decreased or interrupted blood flow in the endometrium after UAE leads to direct endometrium injury, endometritis, adhesions in the intrauterine cavity due to local infection, and uterine amenorrhea due to endometrial atrophy.^[6] In an evaluation concerning patients who conceived or delivered after UAE, the rates of natural abortion, massive bleeding after delivery, premature delivery, cesarean section, fetal growth retardation, and malpresentation were higher than the corresponding rates in cases of spontaneous pregnancy.^[7] In patients who conceived after UAE, a higher incidence rate of abnormal placentation, including placenta accreta and previa, has been reported.^[8] UAE may lead to ovarian hypofunction, endometrium injury, and complications during pregnancy/delivery. Therefore, careful consideration is required when selecting UAE for patients who wish to bear children.

In the present case, absolute ethanol local injection was provided as a novel treatment of CSEP as an alternative to UAE and MTX. As a 10%–30% decrease in the serum hCG level is observed 2 h after an absolute ethanol local injection, the treatment effect occurs sooner than after MTX. This is probably because absolute ethanol dehydrates and denatures chorionic tissues, thereby leading to faster declines in serum hCG levels. In addition, no massive bleeding is observed after absolute ethanol local injection treatment. The probability of developing an infection following treatment is low because of the bactericidal effects of absolute ethanol, making it effective for transvaginal management. Because small-diameter needles are used, and there is no bleeding or pain, anesthesia is not required. The cost of ethanol is lower than that of MTX, thereby placing a smaller economic burden on the patient. When multiple administrations are required, for example, in persistent trophoblastic disease, anticancer drugs such as MTX are associated with adverse drug reactions. Alcohol fixation has a local effect; therefore, it can be repeatedly injected for the persistent trophoblastic disease.^[1] In the present case, absolute ethanol local injection was administered twice for persistent trophoblastic disease with no adverse reaction. The patient had high serum hCG levels, which ruled out MTX treatment; nevertheless, fertility was preserved using absolute ethanol local injection treatment.

Reports referring to pregnancy prognosis following CSEP are limited; there is no evidence regarding the acceptable duration of contraception until the next pregnancy or the CSEP recurrence rate. Approximately 50% of patients conceive after CSEP treatment with an interval of 3–34 months until

the next pregnancy. Clinical outcomes vary: some patients deliver at term by cesarean section, whereas others develop recurrent CSEP. In some cases, implantation occurs in the corpus uteri, eventually resulting in stillbirth because of uterine rupture or maternal death. Some patients develop massive bleeding due to placenta accreta and must undergo a total hysterectomy.^[9,10] It is necessary to suspect CSEP in the early stages of pregnancy using sonography combined with Doppler flow imaging for pregnancy management after CSEP treatment; even when there is a normal pregnancy, uterine rupture and placenta accreta should be considered to avoid complications resulting from late or erroneous diagnoses. Local therapy with ethanol may be a suitable therapeutic alternative for CSEP.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published, and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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