



## Removal of Gestational Chamber on Cesarean Scar in Twin Pregnancy

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### Abstract

A Cesarean Scar Pregnancy (CSP) is a peculiar and rare complication of a pregnancy after caesarean delivery. It is the implantation of a gestational sac in the hysterotomy scar and it may cause several he coauthors outcomes such as abnormal implantation of placenta, vaginal or intra-abdominal bleeding, uterus rupture or mother death. The commonest clinical practice is to offer termination of pregnancy to avoid the consequences of this condition. The type of CSP treatment method depends on many factors such as size of pregnancy, bHCG level, presence or absence of uterine continuity, patient's hemodynamic state, other contemporary pregnancies and fertility preservation. In this case report a woman at 6<sup>o</sup> week of amenorrhea presented twin pregnancy: One gestational sac was on the bottom and one on the hysterotomy scar. The women decided to continue with the intrauterine pregnancy so we proposed her to perform selective voluntary abortion of the hysterotomy scar pregnancy to protect mother health and the other pregnancy.

### Introduction

A Cesarean Scar Pregnancy (CSP) is the implantation of a gestational sac in the hysterotomy scar and it is a peculiar and rare complication of a pregnancy after caesarean delivery [1,2]. The true incidence is unknown. The available estimates in literature report the range from 1/1800 to 1/2500 of all caesarean delivery performed [3,4]. The only risk factor is one or more previous caesarean sections. Vaginal bleeding of different degrees may be the first sign of a caesarean scar pregnancy, while pain is usually not a typical presenting symptom. Often the patient is asymptomatic and it is diagnosed when detected by the US. First-line imaging modality to diagnose caesarean pregnancy is transvaginal US especially in early pregnancy [5]. The initial and early US (between 5 and 7 weeks) are critical to avoid misdiagnosis. The differential diagnoses are: cervical pregnancy and a miscarriage in progress. US diagnosis criteria are: empty uterine cavity and empty endocervical canal with detection of an early gestational sac and/or placenta in close proximity of the hysterotomy scar/niche, an absent or thin myometrial layer between the gestational sac and the anterior uterine wall and an abundant peri-trophoblastic blood flow at Doppler examination [5]. In advanced pregnancy (above 12 weeks), the US may not be decisive and final diagnosis is possible only during surgery. Moreover magnetic resonance imaging may also be useful in CSP diagnosis [6], but the US provides the precise diagnosis in almost all cases with no need for additional modalities [5]. If the pregnancy continues it may develop a placenta accreta or percreta, and it may cause very several outcomes that require lifesaving surgical procedures, such as vaginal or intra-abdominal bleeding, uterine rupture, hysterectomy and shock [5,7]. The optimal management of CSP has not been completely clarified yet [2]. The commonest clinical practice is to offer termination of pregnancy to avoid the consequences of this condition [7-9].

### Materials and Methods

A 25-year-old Sri Lanka woman, GP 1001, presented herself to Pontedera Hospital for blood loss at 6+6 weeks of amenorrhea with urine pregnancy test positive. She was sent to Pisa Hospital because it was finding a heterotopic pregnancy and one of the two gestational chambers was on the hysterotomy site of the previous caesarean. The woman did a caesarean section an year before in Sri Lanka. The pregnancy was studied with transvaginal and abdominal ultrasound exam that described: "Anteverted uterus, inside which is displayed a 21 mm gestational sac on the bottom with a single embryo with BCE, 7 mm CRL and biometry corresponding to 6+2 weeks. Area of organized hematoma of 42 mm × 37 mm. Another gestational sac of 18 mm at isthmic level that reaches the hysterotomy scar, with a single embryo with BCE, 5 mm CRL. The thickness of the myometrium above the scar is regular and not invaded by the trophoblast." Pregnancy arising on

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Figure 1: Gestational sac on hysterotomy scar.



Figure 2: Gestational sac on the bottom.

the hysterotomy site was very dangerous for the mother and for the pregnancy itself. As pregnancy progressed, it could cause uterus rupture with consequent loss of the second gestational chamber and risk of death for the mother. Furthermore, between the two gestational chambers there was a large hematoma of unclear origin (detachment area?) which was probably the cause of the woman's blood loss. The patient was hemodynamically stable. At first we waited three days to monitor the conditions of the woman and the twin pregnancy. The maternal blood loss progressively stopped, the two embryos grew regularly, both had a heartbeat and the hematoma between them remained stable compared to previous checks. The woman wished to continue with the intrauterine pregnancy, so we proposed her to perform selective voluntary abortion of the embryo located on the previous hysterotomy site. This attitude was intended to preserve the other pregnancy and to avoid bad consequences for the mother but it was not without risk. The abortion of the first embryo would have eliminated the risk of a future uterus rupture but could also lead to the abortion the second fetus. To carry out the abortion we decided to use aspiration of part of the sac contents and the injection of 2% KCl inside the gestational chamber because it minimizes the risks posed to the coexisting intrauterine pregnancy. We decided to abort the pregnancy on the caesarean scar but to leave the residual gestational sac in place to let it reabsorb on its own because removing it could cause the loss of the other pregnancy.

The operation was performed with local anesthesia and sedation. After a thorough disinfection of the vagina and external genitalia, the Criyagen transvaginal ultrasound probe was inserted and highlighted the two gestational chambers, one of which on the hysterotomy site and the hematoma organized between them. An oocyte retrieval needle was inserted through the posterior vaginal fornix with which 5 cc of intracavitary fluid were aspirated and 1 cc of intracardiac KCl 2 mEq/mL solution was injected into the embryo in the isthmus. We saw the arrest of the ECB of the embryo. At the end of the procedure, in the US exam the heartbeat of the embryo on the bottom was present (Figures 1-3).

After the procedure we carefully monitored the woman with serial clinical, blood chemistry and transvaginal ultrasound checks. The days after there was minimal blood loss that stopped after a few days. At the US exams was described on the bottom of the uterus a single embryo with BCE, increasing CRL corresponding to the weeks.



Figure 3: Injection of intracardiac KCl 2 mEq/mL solution through an oocyte retrieval needle.

On the previous hysterotomy site there was a residual gestational sac in resorption. The thickness of the myometrium above the scar was regular and not invaded by the trophoblast. Upon discharge, the mother was sent back to normal pregnancy management by Pontedera Hospital. The pregnancy continued regularly, the growth of the remaining fetus was regular. The patient underwent an elective caesarean section at Lucca Hospital at 39 weeks and the fetal outcome was excellent.

## Result and Discussion

The optimal management of CSP has not been completely clarified yet [2]. It is a common clinical practice to offer termination of pregnancy in view of the reported high rate of morbidity associated [2,7,8]. If the embryo has no heartbeat, it can follow a waiting procedure because a spontaneous abortion could occur. If the heartbeat is present it is better to perform an interruption of pregnancy because the risks of uterus rupture and other complications become greater [2]. There are pharmacological treatments and surgical treatments. Operative methods include laparotomy, uterine artery embolization, hysteroscopy and curettage with suction. Dilatation and curettage with subsequent intrauterine Foley catheter insertion may be simple

and effective but it is not recommended because it carries significant risk of bleeding and of secondary hysterectomy with fertility loss [10]. Pharmacological treatment options include systemic or local administration of Methotrexate (MTX), local administration of hyperosmolar glucose solution, chloride potassium, prostaglandin or combination of the medications. These substances can be used in laparoscopic assistance or directly injected into the gestational sac. Some authors reported local or systemic methotrexate administration as a most effective treatment but systemic methotrexate treatment can't be used on the routine due to relatively low efficacy (fibrous tissue is poorly vascularized and drug penetration is insufficient) and high risk of various adverse effects [11]. It is believed that MTX treatment is effective when serum bHCG levels are lower than 5000 mIU/ml [12-14]. Ultrasound imaging is not only used to diagnose but it is also used as a part of a combined approach. In fact, under ultrasound guidance, we can inject local methotrexate therapy in fetal sac (or both in fetal sac and in fetal pole) to end the pregnancy and to offer fertility preservation in asymptomatic pregnant patients without concomitant hemodynamic disorders [15]. If the CSP exceeding 3 cm, local methotrexate administration can be followed by laparoscopic or laparotomy surgical correction of the caesarean section scar [16]. Promising results have also been obtained with the innovative HIFU technique that utilizes high intensity focused ultrasound [17]. The most effective way to manage caesarean scar pregnancy is synchronous use of different treatment methods. The combination of local methotrexate with simultaneous aspiration of gestational tissues under ultrasound guidance seems one of the better and minimally invasive attitudes [17]. It is the technique that we choose: Intracavitary fluid was aspirated and 1 cc of intracardiac KCl 2 mEq/mL solution was injected into the embryo. We have been very careful to inject methotrexate only in CSP and we have tried to be minimally invasive: Not to break the gestation sac and not to stimulate uterine contraction or spontaneous expulsion to protect the other pregnancy. We couldn't use systemic methotrexate because there were two pregnancies. After this stage, the remaining gestational tissues could be removed hysteroscopically with later vascular coagulation of the implantation site. In our case the remaining gestational tissues couldn't be removed without damaging the pregnancy on the bottom, so we decided to leave it in place and to have it reabsorbed over time. As time passed the gestational material gradually reabsorbed while the bottom pregnancy continued to grow steadily. With this combined minimally invasive approach we have therefore saved the woman's life and preserved her fertility.

## Conclusion

A definitive consensus of CSP treatment hasn't established yet and the type of treatment method depends on many factors. It is necessary to adapt the treatment to each individual patient taking into account size of pregnancy, bHCG level, presence or absence of uterine continuity, patient's hemodynamic state, other contemporary pregnancies and fertility preservation [16].

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