# Successful Management of A Caesarian Scar Pregnancy with Systemic Methotrexate Administration

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Cesarean scar pregnancy (CSP) is a rare form of ectopic pregnancy in which the embryo implants into a repaired uterine section excision site. Prompt diagnosis is crucial because uterine rupture can lead to a life threatening hemorrhage. We report here the medical management of a CSP with multiple dose methotrexate and review the risk factors for CSP development and therapeutic approaches used to treat this condition.
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**Key Words:** Ectopic pregnancy, Cesarean scar, Methotrexate

Cesarean scar pregnancy (CSP) is a rare, iatrogenic form of ectopic pregnancy that is potentially life-threatening. The prevalence of CSP varies from 1:1800 to 1:2216 normal pregnancies.[1] In CSP, the conceptus is thought to invade the myometrium through a microscopic dehiscence or a defect in the scar secondary to poor vascularization of the lower uterine segment and accompanied by fibrosis and incomplete healing.[2] Because a delay in CSP diagnosis may result in rupture, a prompt and accurate diagnosis is critical, with transvaginal ultrasonography (TV USG) being the primary diagnostic modality. Since CSP is a rare condition, experience is based primarily on case series, and no universal therapeutic protocols have been established. Herein, we present a case of CSP diagnosed by TV USG and treated successfully with systemic methotrexate (Mtx). We also discuss possible diagnostic and therapeutic modalities for CSP.

## Case Report

A 37 year old woman was admitted to hospital due to a gestation located in an unusual site. Her last menstrual period was 7 1/2 weeks prior. Her medical history was unremarkable except for an elective cesarean section 7 years earlier. One week earlier, she was evaluated in another hospital and diagnosed with CSP, following which 75 mg Mtx was administered intramuscularly. At that time, her initial serum βhCG concentration was 17.000 mIU/ml.

TV USG revealed a gestational sac (GS) of diameter 20 mm, with yolk sac and embryonic pole, located in the anterior isthmic part of the uterus, above the endometrium and close to the adjacent urinary bladder (Figures 1 A, 1B). Pulsed wave Doppler detected no cardiac activity. The diagnosis of CSP was confirmed, and the patient was informed of possible treatment options, complications, and follow up related to this type of pregnancy. We opted to continue medical management, and, due to increasing serum βhCG concentrations, she was administered a second 50 mg/m$^2$ dose of Mtx (Figure 2). During both courses of Mtx injections, her complete blood count and liver transaminase concentrations remained within normal limits. The patient was advised to undergo weekly TV USG and measurements of serum βhCG level. During follow up, the shape of the GS gradually became distorted and her βhCG concentrations decreased. Three weeks after the first injection of Mtx, the patient was admitted to the hospital after experiencing moderate bleeding, The conceptus was detected in the external os and removed using ring forceps uneventfully and she was discharged from the hospital by prescribing 300 mg daily Roxythromycin. The patient was examined for a control visit 10 days later without any complaint and remarkable finding. Serum βhCG levels gradually decreased to almost undetectable levels by 42 days.

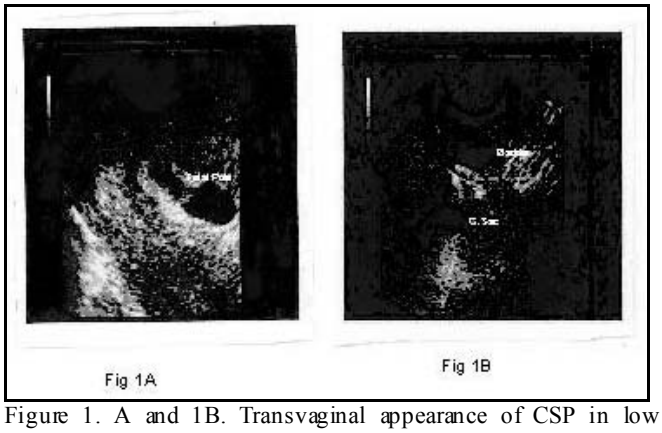

Figure 1. A and 1B. Transvaginal appearance of CSP in low segment of the uterus and in relation to the urinary bladder

## Discussion

The incidence of first trimester pregnancies in uterine scars resulting from previous cesarean deliveries has increased over the last decade.[3] This increase may be due to the more liberal use of TV USG during the first trimester and to

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the worldwide increase in the number of cesarean deliveries, with 54% of these patients having undergone multiple (≥2) cesarean sections.[3] Surprisingly, pain as a presenting symptom was not as frequent as expected; one third of these patients were completely asymptomatic, and approximately 40% had only painless vaginal bleeding.

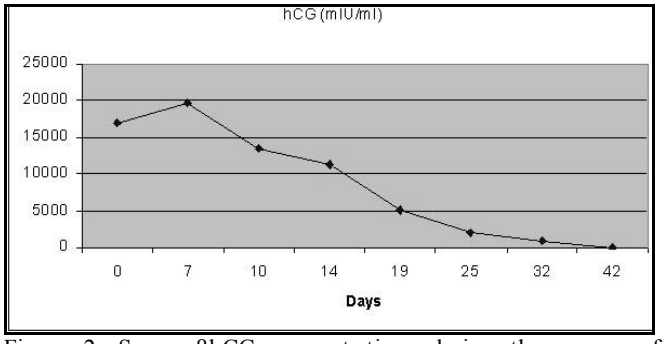


Figure 2. Serum βhCG concentrations during the course of treatment

Advanced trophoblast invasion into the defective myometrium following implantation into the fibrous tissue cesarean scar is associated with abnormally high vascularities and varicosities in the anterior lower segment of the uterus with advancing gestation. The underlying mechanism is thought to involve an increase in scar surface many years after the cesarean section, accompanied by deficiencies in the anterior uterine wall due to poor vascularity, fibrosis, and impaired healing.[4] Consequently, the likelihood of implantation into such a scar is increased. Moreover, many cesarean deliveries are being performed for elective reasons, and lower uterine segments are poorly developed, leading to faulty healing after repair with a single noninverting running suture, a commonly used method.[5] The women at risk for pregnancy in a cesarean section scar appear to be those with a history of placental pathology, ectopic pregnancy, multiple cesarean sections, and cesarean breech delivery.[6]

TV USG is the standard methodology used to diagnose CSP. It can be used to visualize a very thin myometrium between the bladder and GS, as well as trophoblastic tissue located between the bladder and the anterior uterine wall. Fetal parts are not embedded into the uterine cavity. Catastrophic hemorrhage may occur when surgical evacuation is attempted because the defective myometrium and uterine cervix are less capable of fibromuscular contraction to control the bleeding.

Most uterine scar pregnancies managed medically resolve within 3-9 months.[7-8] Continuation of cardiac activity or growth of the sac indicates failure. In more than half of the reported cases complications occurred, ranging from bleeding to uterine rupture, which frequently necessitated additional therapy or hysterectomy.[3] Due to the rarity of this condition, however, there are no universal treatment guidelines for its management. The successful treatment modalities include resection with either laparotomy, laparoscopy or, hysteroscopy, evacuation by dilatation and curettage, selective uterine artery embolization, systemic, local or combination of Mtx administration, local fetocides and direct sac aspiration via ultrasound.[1,3]

Patients with a history of pregnancy in a cesarean delivery scar should be advised of the risk of future rupture of the pregnant uterus. Uterine rupture and placenta accreta are serious complications that may occur even if the initial treatment was successful. An early cesarean section, before overextension of the uterus and spontaneous labor, may prevent uterine rupture. Thus a cesarean hysterectomy may be the treatment of choice.[9]

Early diagnosis of CSP, based on the physician's suspicions, can lead to the use of management modalities that reduce invasive interventions, which may result in complications. The case presented here demonstrates the importance of early diagnosis which enabled to manage the patient non invasively.

We cannot personally comment about the style of repair of uterine incisions during cesarean sections, but there is no doubt that CSP will be detected more frequently, not only because of advanced diagnostic modalities, but because of the increased rate of elective cesarean sections.

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