

# CESAREAN SCAR PREGNANCY - A RARE ENTITY: TWO CASE REPORTS

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## ARTICLE INFO

### Article History

Received : 01 December, 2017

Accepted : 11 December, 2017

Published : 31 December, 2017

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CR 16

DOI: <http://dx.doi.org/10.3126/bjhs.v2i3.18955>

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## Citation

Mahato K, Yu B. Cesarean Scar Pregnancy - A Rare Entity: Two Case Reports. BJHS 2017;2(3)4: 312-315

## ABSTRACT

Cesarean scar pregnancy is the implantation of an embryo within the myometrium of prior cesarean scar which is a rare variant of ectopic pregnancy. Such implantation is life threatening leading to uterine rupture, extensive hemorrhage and serious maternal morbidity. Making an early diagnosis minimizes risk of such major hemorrhage thus preserving the uterus and further fertility. In this case report we discuss two different management options: ultrasound guided intragestational methotrexate injection with sac aspiration; and transvaginal hysterotomy considering the severity of presenting symptoms.

## KEY WORDS

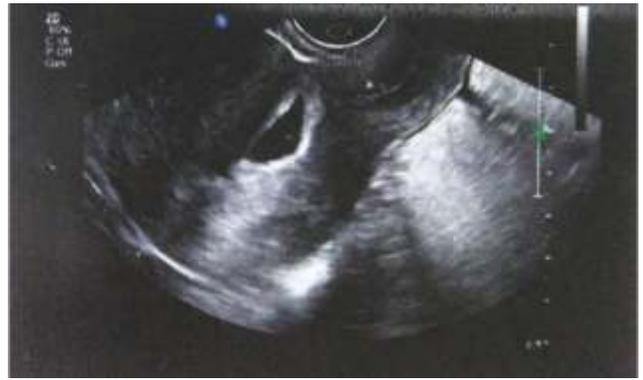
*Ectopic pregnancy; methotrexate; scar pregnancy; uterine rupture*

## INTRODUCTION

Cesarean scar pregnancy (CSP) is a rare variant of ectopic pregnancy which results in implantation within the previous incision scar of the lower uterine segment.<sup>1</sup> The incidence range from 1:1800 to 1:2216 of all pregnancies and 6.1% of all ectopic pregnancies in women with cesarean delivery.<sup>1,2</sup> With increasing incidence of cesarean delivery worldwide and use of ultrasonography in early gestation, more cases are diagnosed. A delay in diagnosis and proper treatment may land into a grave condition of severe uncontrolled bleeding, uterine rupture leading to hysterectomy and serious maternal morbidity. As a result of the progressive improvement of early diagnosis for CSP, several treatment modalities, such as local or systemic injection of methotrexate (MTX), dilatation and curettage (D&C), uterine artery embolization, laparoscopic removal, local resection of the ectopic gestational mass, hysteroscopic evacuation has been suggested achieving satisfactory results.<sup>3,4</sup> However, no universal treatment guidelines have been established till date and actual experience with CSP continues to be based on individual case reports, small series. We present two cases of CSP with different management strategies opted at our institution. In this article we discuss the clinical features, diagnosis and various modes of treatment along with review of literature.

## CASE 1

A 37 year old G6P2A3 presented with vaginal bleeding and six weeks of amenorrhea. She had two cesarean deliveries and three induced abortions in between the deliveries. There was lower abdominal tenderness on deep palpation and the ultrasonography showed a gestational sac containing yolk sac of 2.1 × 1.1 cm located in the anterior lower uterine wall in the area adjacent to her prior cesarean scar (Figure 1). Serum β-hCG at the presentation was 28501mIU/mL. So with the diagnosis of CSP, the patient was planned for local methotrexate injection into the chorionic sac under transabdominal ultrasound guidance using a 22-gauge needle, the amount of MTX being 50mg/m<sup>2</sup>, without anesthesia. Following the procedure, the level of β-hCG showed an initial increment to 29885 mIU/mL followed by gradual decreasing pattern. However even after a week there was persistent mild vaginal bleeding with residual mass evident in USG; although there was a drop in β-hCG to 4533mIU/mL. Hence, ultrasound guided suction and evacuation of sac was done under IV anesthesia (Figure 2). There was no complication and the symptoms along with the β-hCG level subsided gradually. She was discharged and followed up after three weeks with pelvic sonogram showing complete resolution of mass and β-hCG level being declined to negligible level.



**Figure 1.** Transvaginal ultrasonogram showing 2.1 × 1.1 cm gestational sac implanted in the anterior lower segment of the uterus.

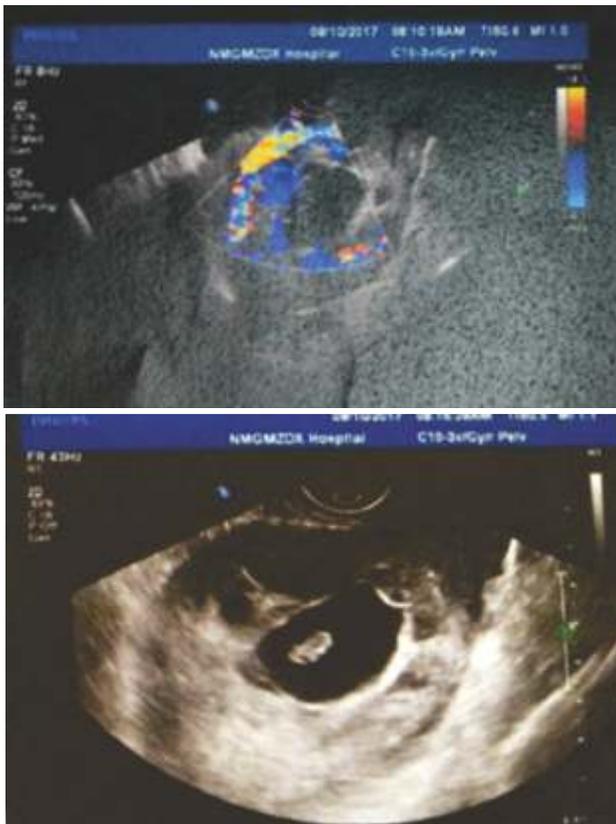


**Figure 2.** Intraoperative image demonstrating transabdominal USG guided suction aspiration of sac.

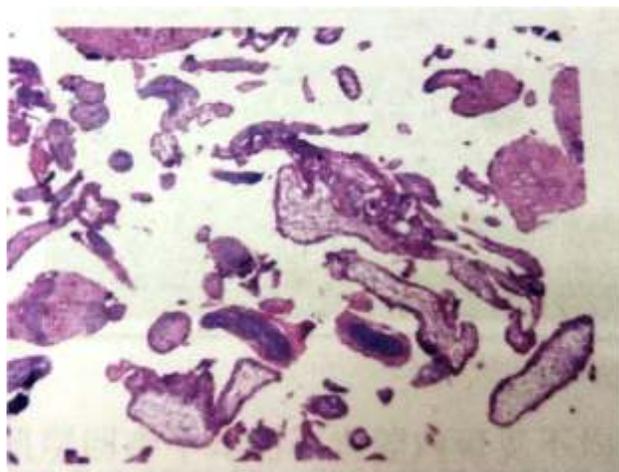
## CASE 2

A 29-year-old, G2P1 attended the emergency with acute lower abdominal pain, vaginal bleeding and amenorrhea of twelve weeks. She had a cesarean delivery nine months ago. On further investigation the serum β-hCG was 20596 mIU/mL and transvaginal sonography revealed bulged anterior myometrium with a gestational sac of 4.9 × 3.0 cm diameter containing non viable fetus with a crown-rump length of 1.2cm at anterior wall of the uterine isthmus around previous cesarean scar. A mixed hypoechoic lesion of 3.7 × 2.9cm was also present around the implantation site surrounded by vascular flow as demonstrated by color Doppler (Figure 3). Due to significant ongoing bleeding we planned for transvaginal hysterotomy and excision of ectopic mass under GA. The patient was placed in lithotomy position with the vaginal retractors inserted into the anterior and posterior vaginal wall, sufficient enough to expose the cervix. With the Allis forceps placed on the anterior cervix, a continuous traction was applied to pull the cervix down to the vagina to completely visualize the cervix. A transverse incision was made at the anterior cervicovaginal junction and the bladder was dissected away until the anterior peritoneal reflection was identified. After retracting

the bladder upward, the implantation of the ectopic mass in the isthmic portion of uterus was identified. A transverse incision was made over the most prominent area of the mass containing the gestational sac. The ectopic tissue was then removed and curettage through the incision. After complete removal of the scar tissue the uterine wall defect was closed with absorbable sutures. There was minimal vaginal bleed at the end of procedure. Postoperatively there was gradual decline in  $\beta$ -hCG with disappearance of the mass. She followed after three weeks with negligible  $\beta$ -hCG.



**Figure 3.** Color Doppler transvaginal USG showing a gestation sac  $4.9 \times 3.0$  cm with a mixed echogenic mass of diameter  $3.7 \times 2.9$  cm in the lower segment cesarean scar



**Figure 4.** Histology showing interstitial trophoblastic cell hyperplasia within the fibro muscular tissue of scar.

## DISCUSSION

CSP is a rare condition where the implantation of conceptus takes place within the uterine scar of a previous CS. The gestation of CSP is located within the area surrounded by myometrium and fibromuscular tissue of the scar.<sup>3</sup> Its incidence is rapidly increasing due to increase in number of CS and improved diagnostic methods. Timely diagnosis and appropriate management is essential because if left untreated, it may lead to serious complications such as uterine rupture, hemorrhage, hypovolemic shock, disseminated intravascular coagulation, and even maternal death. This abnormal form of implantation occurs through microtubular tract created between the previous CS scar and the endometrium canal, following into the myometrium. The tract is formed due to uterine manipulation such as curettage, cesarean sections.<sup>5</sup> It is not certain whether the risk of CSP is related to the number of previous CS, however there are evidence correlating the indication of CS and occurrence of CSP. Maymon et al. reported an interesting association between cesarean deliveries for breech and subsequent scar pregnancies.<sup>6</sup> The underdevelopment of lower uterine segment in the conditions like breech cesarean delivery, preterm cesarean delivery or following failure of labor progression predisposes to CSP. Another factor for abnormal implantations may be the change in surgical technique from double to single layer closure in uterine repair however no such evidence is reported in literature.<sup>3</sup> The duration between CS and occurrence of CSP is not clearly understood as some CSP occur within months whereas some reported many years apart.<sup>1</sup> Transvaginal sonography and Doppler USG imaging are the diagnostic tool to facilitate early detection of CSP. Apart from prior CS, amenorrhoea and a higher than normal  $\beta$ -hCG level, there are various transvaginal sonography criteria for the diagnosis. The sonographic criteria are: no gestational sac in the uterine cavity; empty cervical canal; gestational sac located in the long narrow section of the anterior uterine wall; unhealthy myometrium between bladder and the gestational sac.<sup>7</sup> CSP is confused with cervical pregnancy, spontaneous abortion in progress, and a low implanted intrauterine pregnancy hence the sonographic criteria should be followed to confirm the diagnosis.<sup>2</sup> Most cases of CSP are generally diagnosed in the first trimester and termination of pregnancy is recommended once diagnosis is confirmed. Risk involving if allowed to progress to term results in massive bleeding and uterine rupture leading to hysterectomy and other serious catastrophic complications. Because of uncommon occurrence of such implantation, no universal treatment protocol is established. The management is relatively controversial and current standards of therapy have been derived from limited cases.

There are different treatment methods of CSP ranging from medical to surgical or sometimes, a combination of these. The medical managements are systemic or local methotrexate or combined, local embryocides (local potassium chloride or hyperosmolar glucose) whereas the surgical modalities being laparotomy /laparoscopic evacuation; hysteroscopic evacuation; dilation and curettage; vaginal hysterotomy

and repair; selective UAE; sac aspiration.<sup>3,4</sup> The treatment method is selected on the basis of clinical presentation and treating clinician's skill and experience. We had excellent results in both cases. There is no agreement on the best treatment methods of CSP in the published literatures and the decision of treatment modalities have been made mostly by the individual physicians according to their skill and experience. Every literature has emphasized their own modalities of treatment with best results. Peng et al. performed a clinical study on 104 CSP patients and summarized that local MTX injection is more effective over systemic in terms of remission of serum B-hCG and uterine mass disappearance<sup>8</sup> whereas Timor-Tritsch et al. had excellent results with combined intramuscular and local MTX injection in 26 patients.<sup>9</sup> Wang et al. treated 71 patients with Methotrexate therapy (local or IM) with or without suction curettage and concluded that both could treat majority of CSP successfully, but the combination has better outcome.<sup>10</sup> Seow et al. also had better results with local methotrexate over surgical or invasive techniques, including dilatation and curettage which accounted for high morbidity and poor prognosis.<sup>1</sup> There has been some reports with local injection of KCL. Salomon et al. reported the first case of heterotopic pregnancy which was successfully treated with USG guided KCL injection.<sup>11</sup> Our second case was treated with transvaginal hysterotomy which is a less invasive approach with a short operative time, minimum blood loss and reducing the overall hospital

stay. Kang et al. and He et al. successfully treated patients with this approach and achieved excellent results.<sup>12,13</sup> Hysteroscopic or laparoscopic removal replacing laparotomy has also been described in literature for CSP. Yang et al evaluated 39 CSP and concluded that hysteroscopic removal was feasible and safe procedure.<sup>14</sup> Similar results with hysteroscopy and laparoscopy has been attained by Wang et al.<sup>15</sup> UAE followed by hysteroscopy or suction curettage has also been proven to be effective treatment. Li et al. evaluated 124 CSP and treated with three different modalities and concluded that UAE with hysteroscopy to be the most efficient.<sup>16</sup>

## CONCLUSION

CSP life threatening condition so early diagnosis and making reasonable choice of treatment seems critical to conserve the women's reproductive future. From the articles reviewed we come to a conclusion that among the several treatment modalities available, the combinations of different techniques is useful than any method used alone. This review is to create an awareness of the potentially risky clinical condition, as curettage is routinely performed due to increase rate of induced abortions which predispose to this condition. Whatsoever treatment option we opt for, our primary goal is to reduced the associated morbidity and mortality associated with this condition and to retain patient's future fertility.

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