

## Successful Vaginal Delivery in a Woman with Previous Caesarean Scar Ectopic Pregnancy: A Case Report and Literature Review

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Submitted: 21 May 2019; Accepted: 29 May 2019; Published: 03 June 2019

### Abstract

**Background:** Caesarean scar implantation is a rare form of ectopic pregnancy. Subsequent pregnancies following CSP is usually associated with complications such as first or second trimester miscarriage, placenta previa or accreta causing life threatening haemorrhage, emergency hysterectomy and uterine rupture threatening lives of mother and fetus. Given the lack of consensus on treatment modalities of CSP and subsequent pregnancy, babies are usually delivered by caesarean section at term. We report on a case describing uncomplicated pregnancy course and successful vaginal delivery of a woman who had had caesarean scar ectopic pregnancy previously.

**Case:** We report on a case of 38 year old, Gravida 7 P2+4, who was diagnosed with a CSP in her 5th pregnancy and was managed by evacuation of caesarean scar ectopic pregnancy. She presented to us again on her 7th pregnancy in early pregnancy assessment unit (EPAU) at 7+6 weeks. As she had recurrent miscarriage, Aspirin, Tinzaparin and Cyclogest were started after dating scan. She also developed gestational diabetes, hence, Metformin and Insulin was initiated. She was induced with Dinoprostone at 37+3weeks of pregnancy. Labour was conducted under epidural analgesia and the fetus was continuously monitored throughout labour. Obstetric management was largely based upon current literature and professional experience as there are not sufficient relevant cases published in literature neither specific guideline for the management in subsequent pregnancy after CSP.

**Results:** A Healthy baby of birth weight 3.19kg was delivered without complications with second degree perineal tear.

**Conclusion:** Although, subsequent pregnancy following caesarean scar pregnancy is associated with significant morbidity at all stages of pregnancy, hence, is recommended to deliver women by caesarean section at term, this case demonstrates that vaginal delivery is an option with careful case selection, close monitoring and informed consent from patient.

**Keywords:** Pregnancy, Caesarean Section Scar Ectopic Pregnancy, Vaginal Delivery

### Introduction

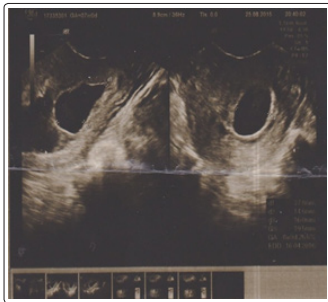
Caesarean scar ectopic pregnancy (CSP), a rare form of ectopic pregnancy, is one of the iatrogenic complications of caesarean section. It is characterised by implantation of blastocyst within endometrial defect of a prior caesarean section incision [1]. With an increasing caesarean section rate and widespread use of ultrasound in early first trimester, the incidence of caesarean scar ectopic pregnancy (CSP) has been rising in last few decades since the first reported case in 1978 [2]. Apart from prior caesarean section, prior dilatation and curettage, manual removal of placenta or any previous uterine trauma are predisposing factors for CSP [2]. Patients may present with varied clinical scenarios with at least 40% of detected cases

being asymptomatic [2]. However, this type of ectopic pregnancy is extremely dangerous as it is associated with life threatening haemorrhage, uterine rupture, risk of hysterectomy and maternal death if treatment is delayed [1,3]. Transvaginal ultrasound (TVUSS) is the mainstay of diagnosis but MRI can be used as a second line investigation if TVUS is inconclusive and to estimate the extent of potential trans-serosal invasive placentation when present [2]. The criteria for diagnosis of CSP are: a) Presence of an empty uterine cavity, b) Gestational sac or solid mass of trophoblast located anteriorly at the level of the internal os embedded at the site of the previous lower uterine segment caesarean section scar c) Thin or absent layer of myometrium between the gestational sac and the bladder d) Evidence of prominent trophoblastic/placental circulation on Doppler examination e) Empty endocervical canal [4]. Because of severity of complications and poor outcome, termination of

pregnancy is recommended [3]. Although, there is no consensus on optimum treatment for CSP, various treatment modalities have been used including local or systematic methotrexate with or without uterine artery embolisation, dilatation and curettage, wedge resection etc. There are many cases in the literature mentioning successful term pregnancy following CSP [3,5-8]. However, subsequent pregnancy after CSP is associated with many complications such as recurrent CSP, miscarriage, placenta previa or accreta, uterine rupture leading to hysterectomy and maternal death [8]. Given the low incidence of CSP, there is no consensus on mode and timing of delivery in women with subsequent pregnancy after CSP, hence, delivery is usually by caesarean section. We report on a case describing an uncomplicated pregnancy course and successful vaginal delivery in a woman who had a caesarean scar ectopic pregnancy previously.

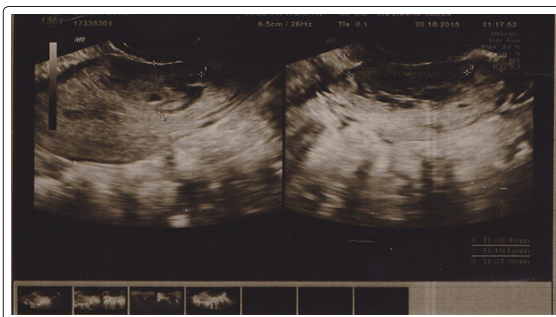
### Case

A 38 year old female, Gravida5 Para2 +2, presented to recurrent miscarriage clinic at North Middlesex University, Hospital at 8 weeks of gestation for early pregnancy care after positive pregnancy test. She had her viability scan and diagnosed to have CSP [Fig 1].



**Figure 1:** Transvaginal sonogram of a 6+3wks pregnant uterus presenting the ectopic sac at the lower uterine segment on the caesarean scar and empty uterine cavity

From the previous obstetric history, it was noted that the patient had caesarean section 13 years ago followed by successful forceps vaginal birth after 3 years of caesarean section. It was also noted that she had two recent surgical management of miscarriages. With another scan in tertiary centre for the confirmation, she underwent evacuation of caesarean scar ectopic pregnancy. Follow up scan was done at 6 weeks following surgery finding complete resolution of scar ectopic [Fig 2].



**Figure 2:** Transvaginal sonogram of a non pregnant uterus 6 weeks post Surgical Management of CSP presenting empty uterine cavity

After three years after CSP, she presented to us again during her 7th pregnancy. She had dating scan at 7+6 weeks and confirmed to have viable intrauterine pregnancy. According to protocol for recurrent

miscarriage, Aspirin 75mg once a day, Tinzaparine 4500 IU once a day and Cyclogest 400mg twice a day was commenced after dating scan. She developed gestational diabetes at 31 weeks, hence, Metformin was started. Eventually, insulin was also administered from 34 weeks of gestation. She was induced at 37+3 weeks of pregnancy with dinoprostone 10mg with Bishops score of 4 after giving 2 doses of dexamethasone. Membrane was ruptured artificially after 24.15 hours of induction. She had uncomplicated vaginal delivery at 29 hours after induction with second degree perineal tear and gave birth to 3.19kg, male baby. She was discharged on day1 following delivery.

### Discussion

Caesarean scar pregnancy (CSP) is rare form of ectopic pregnancy with incidence of 1:3000 to 1:2200 pregnancies in general population [1]. It constitutes 6% of all ectopic pregnancies in women who have had at least one previous CS [2]. Maymon et al., reported proportion of caesarean scar ectopic pregnancies detected in patients with a history of at least 1 cesarean delivery is 4.2% [5]. The first description of this condition dates to 1978 [9]. However in the last decade the number of reported cases has increased significantly. The rise in the prevalence of scar implantation may reflect increasing number of caesarean section, increasing performance of in vitro fertilisation, widespread use of ultrasound scanning in early pregnancy and increased awareness of the condition. However, several studies have mentioned that risk of caesarean scar ectopic does not correlate with number of previous caesarean sections [10].

The pathogenesis of a CSP is thought to involve implantation of blastocyst through a microscopic dehiscence tract which may be result of previous caesarean section, manual removal of placenta or any other uterine trauma [11]. Intramural implantation may occur in in-vitro fertilization and embryo transfer in the absence of any previous uterine surgery [11].

Factors thought to predispose CSP are poor myometrial healing during the original caesarean section such as in preterm gestation, breech presentation, caesarean following failure to progress in early labour and closure of the hysterotomy with monolayer non-inverting running suture [1]. Other common predisposing factors are prior dilatation and curettage, prior manual removal of placenta and adenomyosis [2].

Clinical presentation of CSP varies. The most common clinical presentation of CSP is nonspecific (40%) and are mostly found incidentally [2]. However, patients may present with abdominal pain, vaginal bleeding and sometimes hemodynamic instability [2].

Transvaginal ultrasound is the mainstay of diagnosis, with a reported sensitivity of 85% [2]. Colour Doppler can be used in detecting trophoblastic flow surrounding a viable gestational sac [2]. Pelvic MRI can be used as adjunctive tool for confirmation and also in delineating possible extension of placental tissue [2].

Although, cases of secondary infertility have been mentioned in previous literature Gao et al, 2016, have reported in their case series that conception rate of patients with previous history of CSP who desired to conceive was 87.5%, comparable to previous study [3,7]. They also found that live birth rate was 62.5% with 100% caesarean section rate [3].

Miscarriage is one of the other complications women experience in subsequent pregnancy after CSP. Gao et al, 2016, reported miscarriage rate of 25% in their case series of eight patients [3]. However, another study showed nearly 35% of clinically diagnosed CSPs miscarry during the first trimester of pregnancy out of twenty patients [7].

Placenta accreta is another serious complication in subsequent pregnancies following CSP. It is known to be highest amongst women with placenta previa, previous caesarean section and prior CSP [3].

Uterine rupture is one of the tragic complications in women with subsequent pregnancy following CSP [8]. They reported a case of uterine rupture, at 38 weeks of gestation ending in death of both mother and her fetus, in a woman with subsequent pregnancy following CSP. They believe that poor muscle quality and tightness of scar put women with subsequent pregnancies after CSP at high risk of uterine rupture. Hence, the authors suggested that patients with previous CSPs should be offered elective caesarean delivery as soon as fetal lungs become mature and before the onset of labour because elasticity of the scar cannot adapt to rapid uterine enlargement in the late third trimester. However, in another study by Nagi et al, 2007, all patients had been reported to have uncomplicated elective caesarean section at term [7]. Similarly, Wang et al, 2015, also reported cases with previous CSP, who were managed by UAE and D&C, progressed to term without complication and had uncomplicated caesarean section at 37-38 weeks [5].

There is still no consensus on the optimal mode of delivery and time of delivery in subsequent pregnancy after caesarean scar ectopic pregnancy. Nagi et al, 2007, believe that subsequent pregnancy if implanted normally within uterine cavity carries low risk and women can be managed in a same way as those with previous history of uncomplicated caesarean section [4]. Similarly, in another study, the authors recommend that women with history of CSP can be closely followed up to term before elective caesarean section, given she has easy access to well-equipped hospital with blood transfusion facilities, resuscitation and surgical expertise [3].

To date, in a majority of cases of subsequent pregnancy after CSPs, delivery is usually by caesarean section because of paucity of data and lack of consensus. Zahumensky et al, 2008, reported a case of a woman, who had previous history of CSP, followed by an uncomplicated pregnancy and delivered a healthy baby vaginally at 39 weeks after being induced with PGE2 1.5mg [12]. However, the authors do not mentioned the parity of the patient and whether she had a previous history of vaginal delivery or VBAC. The patient in our case report had had one successful VBAC hence increasing the success rate of vaginal birth. If the patient had a history of previous vaginal delivery, particularly previous successful VBAC, then the success rate of planned VBAC would be 85-90% [13]. Our management of subsequent pregnancy after CSP included early sonography to assess viability and ruling out recurrent CSP, monitor of fetal growth and excluding abnormal placentation, thorough discussion with patient regarding the options of caesarean section or VBAC and successful uncomplicated vaginal delivery.

## Conclusion

The case study demonstrates that vaginal delivery could be the possibility for women who had previous caesarean scar ectopic after careful evaluation of cases given those possible complications

is thoroughly discussed with patient, fetus being monitored continuously; delivery is conducted in a well-equipped hospital with facilities for emergency surgical expertise and blood transfusion.

## Acknowledgement

Our sincere gratitude to the patient for letting us uses her case anonymously for this review.

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