IMC Journal of Medical Science
July 2025; Vol. 19(2):004
DOI: https://doi.org/10.55010/imcjms.19.013

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Case Report

Cesarean scar ectopic pregnancy: Reports of two cases

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Abstract

Cesarean scar ectopic pregnancy (CSEP) is a rare but increasingly recognized form of ectopic pregnancy, in which the blastocyst implants within the myometrial tissue at the site of a previous cesarean section scar. The global rise in cesarean delivery rates has led to a corresponding increase in the prevalence of CSEP, currently estimated at approximately 1 in 1,800 to 1 in 2,226 pregnancies. This condition poses a significant risk of life-threatening complications, including uterine rupture, massive hemorrhage, and potential loss of fertility if not diagnosed and managed promptly.

We present two clinically distinct cases of CSEP managed at a tertiary care hospital in Dhaka. Both patients had a history of prior cesarean delivery and presented with different gestational ages and clinical manifestations. The first case involved a viable 8-week pregnancy implanted in the cesarean scar, diagnosed via transvaginal ultrasonography and managed surgically with hysterotomy. The second case presented as a missed abortion at 22 weeks and was later identified as an advanced cesarean scar ectopic pregnancy, requiring emergency laparotomy due to uterine wall protrusion and fetal demise.

These cases underscore the importance of early diagnosis through imaging and individualized treatment planning based on the gestational age, viability, patient stability, and fertility desires. Prompt recognition and appropriate management are critical in minimizing maternal morbidity and optimizing outcomes.

Introduction

Cesarean scar ectopic pregnancy (CSEP) is a rare but increasingly recognized form of ectopic pregnancy, characterized by implantation of the gestational sac within the fibrous tissue of a previous cesarean section scar. It accounts for less than 1% of all ectopic pregnancies but carries a disproportionately high risk of severe maternal morbidity and mortality if not identified and managed early [1,2].

The incidence of CSEP has risen in recent decades in parallel with the global increase in cesarean delivery rates. In the United States, for example, cesarean sections accounted for 20.7% of births in 1996 and rose to 32.1% by 2021, reflecting a global trend that increases the population at risk for this condition [3].

Clinically, CSEP may present with nonspecific symptoms such as vaginal bleeding and lower abdominal pain, or it may be asymptomatic and

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discovered incidentally during early pregnancy imaging. If unrecognized, it can lead to catastrophic outcomes including uterine rupture, massive hemorrhage, placenta accreta spectrum (PAS), hysterectomy, and maternal death [4–6]. Therefore, a high index of suspicion is essential, especially in patients with a history of cesarean delivery presenting in early pregnancy.

Diagnosis is most reliably achieved through high-resolution transvaginal ultrasonography (TVUS), often supported by Doppler imaging. Hallmark features include an empty uterine cavity, an empty cervical canal, and a gestational sac embedded at the anterior lower uterine segment at the cesarean scar site [7,8].

Management of CSEP is complex and must be individualized, taking into account the patient's hemodynamic stability, gestational age, desire for future fertility, and institutional resources. Options include medical therapy (e.g., methotrexate), surgical excision via laparoscopy or laparotomy, hysteroscopic removal, and uterine artery embolization. Expectant management is generally contraindicated due to the high risk of severe complications [9,10].

We present two clinically distinct cases of cesarean scar ectopic pregnancy managed at a tertiary care center, highlighting diagnostic challenges and therapeutic considerations.

Case Presentation

Case 1

A 34-year-old woman, gravida 4 para 1, presented with complaints of 8 weeks of amenorrhea, lower abdominal pain for 2 days, and 1 episode of per vaginal bleeding. She had a history of two first-trimester spontaneous abortions respectively 6 and 2 years earlier and one cesarean section delivery 7 years earlier.

On examination, her vital signs were stable. Abdominal assessment revealed mild suprapubic tenderness, and on per vaginal examination, the cervix was closed with scant vaginal bleeding.

Initial laboratory investigations showed a hemoglobin level of 11.4 g/dL and a serum TSH of 1.76 µIU/mL. A transvaginal ultrasound revealed a single live intrauterine gestation implanted within the myometrium at the site of the previous cesarean section scar. The endometrial cavity was empty, and a live embryo was identified with a crown-rump length of 16 mm, corresponding to a gestational age of 8 weeks and 1 day. Fetal cardiac activity was present with a heart rate of 156 beats per minute. Based on these findings, a diagnosis of cesarean scar ectopic pregnancy (CSEP) was made.

Given the presence of fetal cardiac activity and the potential risk of uterine rupture, the patient was scheduled for surgical intervention rather than conservative management. under spinal anesthesia, laparoscopic hysterotomy was performed. Intra-operative findings included a bulging area at the site of the previous uterine scar, confirming the location of the ectopic pregnancy. The gestational sac was successfully extracted, and intra-operative bleeding was within normal limits (around 200 ml). Histopathological examination of the tissue confirmed the presence of products of conception consistent with a scar pregnancy. The patient had an uneventful postoperative recovery and was discharged in stable condition on the third postoperative day.

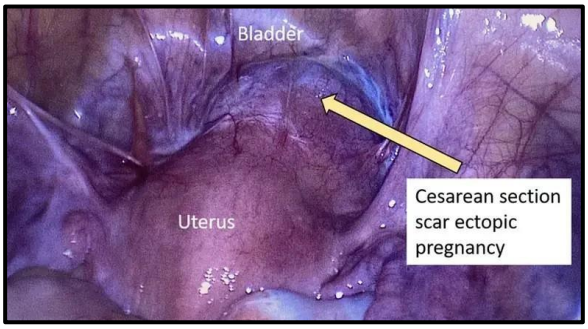

Figure-1: *Intra-operative image showing a bulging in the previous uterine scar indicating cesarean section scar ectopic pregnancy.*

Case 2

A 30-year-old woman, gravida 3 para 1, presented with a 22-week pregnancy complicated by a missed abortion and gestational hypertension. Her obstetric history included one lower segment cesarean section and one prior spontaneous abortion accordingly 4 and 6 years back. An initial

ultrasound indicated a 21-week missed abortion. She was managed with misoprostol for induction of labor; however, on clinical examination, the uterus was consistent in size with a 20-week pregnancy, and the cervix remained closed despite repeated induction attempts.

Figure-2: *Intra operative image of cesarean scar pregnancy*

Figure-3: *Macerated baby*

Due to the failure of medical induction, a follow-up ultrasound was performed and the imaging revealed findings consistent with a 19-week cesarean scar ectopic pregnancy, with the gestational sac protruding through the anterior uterine wall at the site of the previous cesarean scar. Given the advanced gestational age and the risk of rupture, the decision was made to proceed with an emergency laparotomy.

Intra-operatively, the amniotic sac containing a macerated fetus was found protruding through the anterior uterine wall at the previous scar site. The fetus and placental tissue were carefully extracted, and hemostasis was achieved. A fetus weighing 340 grams and a placenta weighing 150 grams were delivered. The postoperative course was uneventful, and the patient was discharged in stable condition on the fifth postoperative day.

Discussion

Cesarean scar ectopic pregnancy (CSEP) is a rare but serious form of ectopic pregnancy where the gestational sac implants within the myometrium at the site of a previous cesarean section scar. Its incidence is increasing globally due to rising cesarean delivery rates and improved imaging modalities.

In our report, Case 1 presented at 8 weeks and 1 day of gestation with mild abdominal pain and a single episode of per vaginal bleeding, while Case 2 was diagnosed much later at 19 weeks gestation after failed attempts at medical induction in a case of presumed missed abortion. These two cases illustrate the broad clinical spectrum of CSEP and the consequences of delayed or missed diagnosis.

The mean age of patients diagnosed with CSEP in the literature predominantly falls within the early to mid-30s. This trend underscores the association between increased maternal age and the risk of CSEP, possibly due to factors such as higher parity and the cumulative effect of uterine surgeries like cesarean sections. Recent study supports the association between increased maternal age and the risk of cesarean scar ectopic pregnancy (CSEP).

A 2022 study by Tang et al. reported a mean maternal age of 34.16 ± 4.4 years among CSEP patients, with 67.16% of cases occurring in women aged 30–39 years [11]. This trend underscores the link between advanced maternal age and the risk of CSEP, possibly due to factors such as higher parity and the cumulative effect of uterine surgeries like cesarean sections

In these presented cases, the patients were aged 34 and 30 years, respectively, aligning with the age range reported in the literature. This consistency reinforces the importance of heightened clinical vigilance for CSEP in women within this age bracket, especially those with a history of cesarean delivery.

According to the literature, the mean gestational age at the time of diagnosis is approximately 8.6 ± 2.2 weeks, with most cases identified during the first trimester due to routine early pregnancy ultrasonography and increasing clinical awareness [2]. This is consistent with Case 1, who was correctly diagnosed at around 8 weeks gestation. However, Case 2 highlights a significant delay in diagnosis, which is unusual but reported, especially when the diagnosis is missed initially or when the implantation is misinterpreted in structurally abnormal uteri such as bicornuate uterus [11]. This case progressed to the second trimester, which significantly increased the risk of uterine rupture and maternal morbidity.

The most common symptoms in CSEP include vaginal bleeding and lower abdominal pain, as seen in Case 1. Literature reports that around 70–80% of patients present with vaginal bleeding, and 30–40% complain of abdominal pain [13]. However, asymptomatic cases have also been documented, typically diagnosed during routine early ultrasound scans [12]. Case 2 had no classic CSEP symptoms and was managed as a case of missed abortion with failed induction, until the final diagnosis was made intra-operatively, reflecting the challenge of diagnosing atypical or advanced CSEP.

Transvaginal sonography (TVS) remains the gold standard for the early diagnosis of CSEP. Key sonographic features include an empty endometrial cavity and cervical canal, and a gestational sac embedded in the anterior uterine wall at the site of a cesarean scar with thin or absent myometrial tissue between the sac and bladder [14]. In Case 1, these findings were clearly noted at 8 weeks, supporting early and accurate diagnosis. In contrast, in Case 2, despite multiple sonographic evaluations, the CSEP diagnosis was delayed, possibly due to atypical presentation and anatomical challenges such as a suspected bicornuate uterus, highlighting the need for high clinical suspicion and experienced interpretation.

Management of CSEP depends on gestational age, fetal viability, patient's hemodynamic status, and desire for future fertility. Medical management with systemic or local methotrexate is preferred in early and stable cases, while surgical intervention is indicated in advanced gestation, failed medical therapy, or hemodynamic instability [1].

In Case 1, a hysterotomy and extraction were performed successfully at an early gestation, preserving fertility and avoiding complications. In Case 2, emergency laparotomy was necessary due to advanced gestation and failed medical induction. The fetus and placenta were removed surgically, and although the patient recovered well, the case underscores the increased risks associated with delayed diagnosis, including uterine rupture, massive haemorrhage, and potential fertility loss.

These two cases highlight the clinical variability and diagnostic challenges of CSEP. While early diagnosis as in Case 1 allows for safer, conservative surgical management, delayed recognition, as in Case 2, can lead to significant complications and necessitate more invasive procedures. A high index of suspicion, especially in women with prior cesarean deliveries, combined with early TVS evaluation, is essential for prompt diagnosis and optimal management. Surgical intervention becomes necessary in cases where the diagnosis is delayed, gestational age is advanced or when there is active bleeding or failed medical management. Surgical options include laparotomy, laparoscopy and hysteroscopic resection. In cases of ongoing haemorrhage or suspected rupture laparotomy remains the most rapid and definitive approach [4]. Continuous clinician education and awareness are crucial to reduce morbidity and preserve reproductive potential in these women.

Conclusion

Management of CSEP should be individualized and often requires a multidisciplinary approach involving obstetricians, radiologists, anaesthesiologist and in some cases intervention radiologists. Timely intervention is essential not only to prevent catastrophic complications but also to preserve future fertility. Increasing awareness among clinicians, early diagnostic vigilance in high-risk patients, and

evidence-based, patient-centered management strategies are essential to improving clinical outcomes and reducing the burden of this rare but serious form of ectopic pregnancy.

Conflict of interest

Nothing to declare.

Informed consent

The patients have given consent for publication.

Funding source

None

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Cite this article as:
Naher N, Maherunnessa, Rinky MJ, Ashfaq S. Cesarean Scar Ectopic pregnancy: Reports of two Cases. *IMC J Med Sci.* 2025; 19(2):004.
DOI:https://doi.org/10.55010/imcjms.19.013