Ruptured Cesarean Scar Ectopic Pregnancy: A Case Report

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ABSTRACT

Cesarean scar ectopic pregnancy (CSEP) is a rare but potentially life-threatening form of ectopic pregnancy. We report a case of a 30-year-old G4P3 woman who presented at 12 weeks + 5 days of gestation with lower abdominal pain and severe vaginal bleeding. She had a history of three prior cesarean deliveries. Clinical evaluation and intraoperative findings confirmed a ruptured cesarean scar pregnancy. CSEP can remain undiagnosed until rupture occurs. High clinical suspicion, early imaging, and timely intervention are essential to reduce both maternal morbidity and mortality.

INTRODUCTION

CSEP is a rare form of ectopic pregnancy in which the gestational sac implants at the site of a previous cesarean section scar. It is estimated to occur in approximately 1 in 1,800–2,500 pregnancies[1].

A possible mechanism is that trauma caused by a caesarean section creates microscopic tracts or defects in the scar area allowing trophoblasts to invade the myometrium through dehiscent or poorly healed uterine incision and grow in scar niche[1,2].

The primary and most reliable diagnostic tool for CSEP is transvaginal ultrasound (TVUS) and transabdominal ultrasound (TAS). In equivocal cases, magnetic resonance imaging (MRI) can be considered or in cases where additional anatomical details are needed for surgical planning. If not diagnosed and managed early, CSEP may progress to uterine rupture, massive hemorrhage, and even maternal death, especially in the first or early second trimester[3]. Here, we present a case of a ruptured cesarean scar ectopic pregnancy at 12 weeks of gestation, emphasizing the importance of early diagnosis and timely surgical management.

CASE PRESENTATION

A 30-year-old female, G4P3, presented to the emergency department (first visit in current pregnancy) at 12 weeks + 5 days of gestation with the complaint of lower abdominal pain and 1-day history of moderate to severe vaginal bleeding. Her obstetric history included three prior cesarean sections. The most recent c-section was performed in 2024 and the operative notes indicated a thinned lower uterine segment with placenta previa marginalis.

On clinical examination:
The patient appeared pale,vitally stable (BP 110/70 mmHg, HR 95 bpm). Per abdominal examination there was tenderness over the lower abdomen. Per speculum examination showed a closed cervix with moderate vaginal bleeding.

Investigations:
Hemoglobin: 9.2g/dL
β-hCG: 22269 mIU/mL

Initial TAS and TVUS demonstrated a gestation sac in the lower abdomen adjacent to the uterus yet, located outside the uterine cavity containing a viable fetus at 12 weeks. The endometrial and cervical canal were empty with moderate amount of free fluid noted in the pelvis. Repeated ultrasound was performed in the radiology department which further reinforced the findings and raised suspecion of an abdominal ectopic pregnancy or ruptured rudimentary horn pregnancy, see Figure 1 and Figure 2.

Figure 1. Transabdominal ultrasound showed the gestation sac and fetus corresponding 12 wks GA.

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The patient was taken for emergency laparotomy after cross matching 2 units of blood, high risk consent was obtained prior to the procedure. A mini-laparotomy was performed under general anesthesia. Upon entry into the peritoneal cavity, approximately 1000 mL of haemoperitoneum, consisting of fresh and clotted blood, was noted. The gravid uterus showed scar rupture with expulsion of the fetus in the peritoneal cavity which was attached by the umbilical cord to the placenta which was protruding through the ruptured uterine site. Both fallopian tubes and ovaries appeared grossly normal, with no evidence of additional pelvic pathology, see Figure 3 and Figure 4.

Those findings established the diagnosis of ruptured scar ectopic pregnancy.The placental tissue was carefully evacuated from the scar site, the uterine defect was then debrided and repaired in multiple layers using absorbable sutures to restore uterine integrity and abdominal cavity was thoroughly irrigated before closure. She had an uneventful post-operative course and was discharged home day 3 post-laparotomy. She made a full recovery on reviewed four weeks later and was couseled about contraception and she requested tubal ligation.

DISCUSSION

CSEP is a serious obstetric complication resulting from implantation of the embryo within the myometrial scar of a previous cesarean section. Its diagnosis is often missed or delayed due to non-specific symptoms and the rarity of the condition, especially when antenatal care is delayed or absent.

The pathophysiology involves implantation into a microscopic tract or niche in the uterine scar, which may be caused by poor healing or surgical technique during repair of prior cesarean delivery[4]. This abnormal implantation site predisposes to early trophoblastic invasion of myometrium and vascular disruption, increasing the risk of uterine rupture and catastrophic hemorrhage. The classic presentation may mimic a threatened miscarriage or cervical pregnancy, but CSEP has a higher risk of uterine rupture as the pregnancy advances which is usually around 7-12 wks. This is similar to our case with uterine rupture at 12 weeks+ 5 days[3].

Figure 2. Transvaginal ultrasound showing empty uterus and cervix, gestational sac outside the uterine cavity adjacent to uterus.

Figure 3. intraoperative image showing ruptured scar pregnancy.

Figure 4. intraoperative image showing fetus attached by umbilical cord to placenta at site of ruptured cesarean scar.

TVUS is the gold standard for early diagnosis, ideally showing the following:

- An empty uterine cavity and cervical canal.
- Gestational sac located in the anterior lower uterine segment.
- Thin or absent myometrial layer between the sac and bladder[2].

Adjunctive imaging with color Doppler and MRI may improve diagnostic accuracy, particularly in complex or ambiguous cases, by better delineating the extent of myometrial invasion and vascularity[5]. In our case TVUS demonestared free fluid but failed to cleary identify the gestational sac within the uterine scar due to rupture. The diagnosis of ruptured cesarean scar pregnancy was made intraoperatively during emergency mini-laparotomy.

Management options depend on gestational age, clinical stability, presence of rupture, fertility preservation, patient's desire, surgical expertise and resources:

- Early unruptured CSEP: May be managed medically (methotrexate), or surgically (laparoscopic or hysteroscopic removal)[6,7].
- Methotrexate (MTX) is more successful in early gestation and with a β-hCG value less than 5000IU/L. Uterine artery embolization (UAE) and expectant management are suitable for stable patients but require close monitoring to avoid risk of uterine rupture.
- Surgical treatment, successful in 96%, is the most definitive treatment option that removes the gestation and offers an opportunity to repair the uterine defect and a chance of future fertility[8,9].
- Recent studies have explored combined medical and surgical approaches to optimize outcomes and preserve fertility like MTX plus UAE, or local MTX with sac aspiration demonestrated lower rates of emergency surgery , less blood transfusion and short resoulution time than single madality[10,11].
- Minimally invasive approaches, such as cervical double-balloon catheter placement,which often used to control bleeding after medical or surgical intervention have shown promising results in preserving fertility[12].
- Ruptured CSEP: need immediate surgical intervention which is typically performed via laparotomy and the goals are evacuation of gestaional tissue, control of haemorrhage, and reconstruction of the uterine wall[6] as seen in this patient.

Adjunctive measures, such as uterine artery ligation, or temporary double-balloon tamponade, may be used to reduce blood loss in rupture cases .

Multicenter data suggest that reproductive outcomes after surgical management can be favorable, In this case, we managed a cesarean scar pregnancy surgically with preservation of the uterus. Similar to findings by Yin et al (2025), surgical management of CSEP can have favorable reproductive outcomes. In their multicenter retrospective study of 105 patients, the overall re-pregnancy rate after surgical

treatment was 51.7%, with a recurrent cesarean scar pregnancy (RCSP) rate of 13.3%. The study highlighted that the number of prior cesarean sections is an independent risk factor for recurrence, while removal of the uterine scar tissue during surgery serves as a protective factor.

These findings support the rationale for careful surgical excision of scar tissue in CSEP cases, not only to treat the current ectopic pregnancy but also to potentially reduce the risk of recurrence. meticulous surgical technique aims to help preserve fertility and reduce the likelihood of RCSP, consistent with the outcomes reported by Yin et al[13].

Prevention of (CSEP) involves both surgical technique and patient-centered strategies. Meticulous double-layer closure of the uterine incision, preserves myometrial integrity and reduces the risk of scar defects or niches that predispose to abnormal implantation. Additional intraoperative measures include gentle handling of uterine tissue, minimizing electrocautery, proper alignment of endometrial and myometrial layers, and elimination of dead space during closure. Beyond the surgical approach, patient education regarding the risks associated with multiple cesarean deliveries, encouraging early antenatal booking in future pregnancies, and performing early ultrasound surveillance to confirm correct intrauterine implantation are essential. Finally, minimizing unnecessary cesarean sections helps reduce the formation of scar defects and the overall risk of CSEP. Combining these surgical and patient-focused measures is key to preventing CSEP and optimizing reproductive outcomes[13,14].

CONCLUSION

Ruptured cesarean scar ectopic pregnancy is a rare but critical emergency that can present with subtle symptoms. In women with prior cesarean deliveries presenting with early pregnancy bleeding or abdominal pain, clinicians must maintain a high index of suspicion for CSEP. Early ultrasound and prompt intervention can be life-saving.

This case emphasizes the vital importance of early antenatal care and imaging, especially in high-risk patients, to allow timely diagnosis and reduce maternal morbidity and mortality. Multidisciplinary care involving obstetricians, radiologists, and anesthesiologists is essential for optimal management of this potentially fatal condition.

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