CASE SERIES

A Series of Cesarean Scar Ectopic Pregnancies: Unusual Presentations with Customized Management Pathways

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ABSTRACT

Pregnancy developing in the scar of a previous lower segment cesarean section (LSCS) is a rare occurrence. Scar ectopic pregnancy is difficult to diagnose and manage, and if not treated effectively in the early stages of pregnancy, it may cause significant maternal morbidity or fatality. In this case series, we have discussed the different clinical presentations, blood profiles, imaging, and different treatment modalities. Customized surgical approaches were employed to successfully manage all the patients. Awareness and knowledge regarding this entity among clinicians and radiologists is imperative in order to avoid potentially fatal complications such as uterine rupture, torrential hemorrhage, and death.

Keywords: Cesarean scar pregnancy, Maternal mortality, Obstetric hemorrhage, Scar implantation, Scar rupture.

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INTRODUCTION

The term “cesarean scar ectopic pregnancy” (CSEP) was originally used in a 1978 study by Larsen et al. The first USG diagnosis of CSEP was reported in a publication later in 1990.¹ The frequency of CSEP ranges from 1:1800 to 2216. It encompasses 6.1% of all ectopic pregnancies and 0.15% in women with prior lower segment cesarean section (LSCS).² However, with increasing cesarean section rates and boom in vitro fertilization (IVF) pregnancies, they are more frequently encountered nowadays. The following criteria should be fulfilled for a transvaginal ultrasonic diagnosis of CSEP: (1) Pregnancy is not present in the uterine cavity or cervix and endometrium is clearly seen. (2) Implantation is visualized at the scar on anterior wall of uterus. (3) “Sliding organ sign” is present, which reveals little or no myometrium between the gestational sac and bladder. (4) Doppler confirms blood flow at the scar site.³

The following case series has been documented after obtaining prior consent from all the patients and maintaining their confidentiality. Institutional Ethics Committee approval was taken.

Case 1

A 36-year-old patient with 1.5 months of amenorrhea and previous 4 LSCS presented to casualty with bleeding per vagina (P/V) for 5 days and history of MTP pill ingestion. Patient was in hemorrhagic shock, shock index – 1.67. Local examination revealed active bleeding and uterine size of 6–8 weeks. Ultrasonography gave a differential diagnosis of incomplete abortion or scar ectopic. She was taken for suction evacuation under anesthesia, but due to profuse and intractable vaginal bleeding, laparotomy was performed.

Intra-op

Uterus was 6 weeks size with previous cesarean scar thinned out and products of conception bulging out (Fig. 1). There was scar dehiscence and torrential bleeding. In view of hemodynamic instability, decision for obstetric hysterectomy was taken with one cycle of massive blood transfusion. The post-op patient was shifted to ICU and recovery was uneventful. Histopathology report was s/o scar site ectopic pregnancy. Figure 2 shows the cut section of the uterus showing scar site ectopic pregnancy.

Fig. 1: Scar site ectopic pregnancy
A 28-year-old multigravida, previous one LSCS and previous 2 Dilatation and Evacuation (D&E) was referred with 6 weeks of suspected tubal ectopic pregnancy. Despite 2 doses of Inj. Methotrexate, beta-HCG was in increasing trend. Data were recorded 48 hours apart (3325–7500). The patient was vitally stable on admission.

Intra-op
A bulge was noted on previous LSCS scar (Fig. 3). There was no hemoperitoneum. Dissection of the UV fold revealed the abnormal pregnancy. The patient underwent scar ectopic pregnancy excision and repair of uterus under spinal anesthesia.

Ultrasonography showed a bulky uterus with gestation sac in the lower uterine segment (Fig. 4) thickness of myometrium anterior to gestational sac was 4.4 mm, suggestive of CSEP. The patient was posted for laparotomy.

Case 3
A 39-year-old G3P2L2 patient with 7 weeks of pregnancy, previous two LSCS was referred for mild lower abdominal pain and spotting P/V for 1 day. She took MTP pills before 2 weeks. Beta-HCG on admission was—2153 IU/L, Pulse—114/min, BP: 140/80 mm Hg. Patient was pale. On P/A: soft, non-tender. On TVS: the uterus showed a 3.8 × 2.7 cm heterogeneous area in the anterior uterine wall in the lower uterine segment with significantly raised vascularity.

The patient decided on definitive treatment after discussing the results of ultrasound, potential risks of continuing a cesarean scar pregnancy, and their reproductive objectives. She underwent an uncomplicated abdominal hysterectomy. This is a definitive treatment for resolution of the problem in women whose reproductive desire has been fulfilled. During surgery, upon separating bladder from the uterus, the bulge of gestational sac could be clearly identified in the previous scar with great vascularization (Fig. 5). The uterus did not show any other abnormality. Two units of packed transfusion was given. Post-op recovery was uneventful. Histopathology report was suggestive of CSEP as shown in Figure 6 (The hematoxylin and eosin stained slide from the scar tissue show few chorionic villi lined by cytotrophoblast and syncytiotrophoblasts with few ghost villi, changes of decidualization and areas of hemorrhage).

Case 4
A 34-year-old G3P3L2 patient, previous three LSCS with 2 months of amenorrhea was referred for bleeding P/V. On presentation
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Case 5
A 32-year-old G3P2L2 patient with previous two LSCS presented with complaints of heavy bleeding p/v for 3 days after taking MTP pills. Ultrasonography showed retained products in the lower uterine segment. D&E was attempted at local hospital. During procedure, the patient had torrential bleeding and was referred with hemorrhagic shock.

*Intra-op*
Bladder was densely adherent to scar. Scar pregnancy was revealed on dissection of bladder fold. There was a massive hemoperitoneum and in view of deteriorating hemodynamics, total obstetric hysterectomy was performed. Six PCV and four FFP were given during surgery. The patient was discharged with no morbidity.

Case 6
A G6P2A3L2 patient with previous two LSCS and bleeding P/V for 20 days was referred for further evaluation. On admission, the patient had tachycardia and abdominal tenderness. USG scan suggested CSEP. Laparotomy findings were consistent with ruptured scar ectopic (Fig. 8). Obstetric hysterectomy was performed as family wanted definitive treatment.

Case 7
A G3P1A1L1 patient with 9 weeks of pregnancy, previous one LSCS complained of lower abdominal pain for 3 days. Ultrasonography suggested missed abortion or CSEP. Laparotomy and excision of scar ectopic with repair was done. The patient was discharged with no morbidity.

Case 8
A 36-year-old G4P2L2 patient, 9.3 weeks, previous one LSCS was taken for D&E for missed abortion. Heavy bleeding ensured and patient was taken for laparoscopy which revealed CSEP. The excision of scar ectopic with repair was done.

**Discussion**

Pathophysiology
Uncertainty surrounds the cause of this illness. Scar implantation may occur as a result of microtubular tract defects in the scar that result from inadequate healing of prior trauma from repeated cesarean sections, scars on the myometrium due to fibroid removals, hysterotomy and Dilatation and Curettage (D&C). Other contributing factors could be abnormal placentation, and manual removal of the placenta. A CSEP is unlike placenta accrete spectrum. The absence of the decidua basalis in the placenta accreta causes trophoblastic tissues to invade into the myometrium up to variable degrees, but implantation occurs inside the uterine cavity. In a CSEP, gestational sac is outside the cavity and within the myometrium and fibrotic tissue of the scar. Clinical features are obscure with painless vaginal bleeding being the most consistent presentation (55%). Some may
offer a history of amenorrhea and lower abdominal pain, while others may be asymptomatic (45%).

Cesarean scar ectopic pregnancy can mimic a cervical pregnancy or missed abortion (with a cervical location). Diagnosing CSEP might be challenging. Typically, TVS (transvaginal ultrasound) is the most reliable way to identify CSEP. Transvaginal ultrasound was employed to diagnose the cases of CSEP in this case series. In recent times, 3D ultrasound is emerging as a promising modality in this direction.

Three approaches are available for managing any ectopic pregnancy: expectant, medical, and surgical. Each case must be customized according to the patient’s clinical features, the type of ectopic, and the necessity to protect the uterus. The majority of scar ectopic pregnancies (67%) require surgical treatment, and expectant care is typically not recommended.6

Surgical management options include hysterectomy followed by suction evacuation, removal of the scar along with pregnancy either laparoscopically or by laparotomy and hemostatic techniques that include double balloon catheter tamponade, embolization of uterine arteries and hysterectomy.7 Minimally invasive procedures are gaining popularity in this direction as well, and laparoscopic scar excision with repair is a fertility preserving option.

Medical treatment with methotrexate can sometimes offer successful outcomes as demonstrated by Pal S and Gopinath and Sivapragasam.8,9 The limiting factors could be the initial β-HCG levels, size of G-sac and hemodynamic stability of the patient.

Ping Peng described successful outcome with both systemic and intralesional methotrexate in 104 patients when the level of β-HCG was less than 5,000 mIU/mL and lesion (<3.0 cm in diameter).10 Patients should be counseled for long-term follow-up and the likelihood of surgical interventions, including removal of the uterus.

Surgical treatment is often the only option in patients with scar rupture or deteriorating vitals. Most of our cases presented late or were referred from periphery and were already symptomatic. The selection of surgical method depends upon many factors such as type of scar ectopic, patient’s condition, experience and expertise of surgeon, facilities available and patient’s choice. Surgical treatment offers definitive treatment with minimum or no risk of recurrence.11

Primordial prevention for this entity should be aimed at reducing the rate of primary cesarean sections while primary prevention should be aimed at effective and careful closure of uterine wounds. A recent study by Taheremanesh et al. from Iran suggested a unique method of uterine wound closure by Babu and Mangon technique to ensure the integrity of uterine scar at primary surgery. This could prevent the development of both scar ectopic and placenta accrete spectrum.12

In this case series, each patient received individualized treatment plan. The guiding principles were the general condition of the patient on presentation, past obstetric history which included future desire of fertility and serum beta-HCG levels. The low incidence of this entity precludes fixed guidelines and treatment protocols.

**Conclusion**

Cesarean scar ectopic pregnancy poses a diagnostic challenge and may escape notice from both obstetricians and sonologists. Uterine rupture, massive hemorrhage and maternal mortality may result from a missed diagnosis and delayed treatment. Even in settings with low resources, equipment for imaging and training of personnel should be easily available. A system should be in place for identifying at-risk individuals and a strategy to send ambiguous cases for an MRI. The likelihood of elective procedures, which lower morbidity and death, increases with early diagnosis.

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**References**