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Scar wars: A viable cesarean scar pregnancy mimicking cervical pregnancy and abortion in progress diagnostic clues from First-Trimester Ultrasound

Dr. Manasa Prakash[1], Dr. Siddharth Pandey[1], Dr. Yashaswi[2], Dr. Sahana A[3], Dr. Vidhya Rani R[4]
[1] Junior Resident, Department of Radiodiagnosis, Sapthagiri Institute of Medical Sciences and Research Centre, Bangalore, Karnataka, India
[2] Department of Obstetrics and gynecology, Sapthagiri Institute of Medical Sciences and Research Centre, Bangalore, Karnataka, India
[3] Department of Radiodiagnosis, Sapthagiri Institute of Medical Sciences and Research Centre, Bangalore, Karnataka, India
[4] Professor, Department of Radiodiagnosis, Sapthagiri Institute of Medical Sciences and Research Centre, Bangalore, Karnataka, India
Corresponding Author: Dr. Siddharth Pandey
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Abstract
Cesarean scar pregnancy (CSP) is a rare form of ectopic pregnancy in which implantation occurs within a previous cesarean section scar. Early diagnosis is crucial because delayed recognition may result in uterine rupture, massive hemorrhage, and loss of fertility. We report a case of a viable first-trimester CSP in a woman with a prior cesarean delivery, presenting for routine pregnancy viability assessment. Ultrasonography demonstrated a live gestational sac implanted within the anterior lower uterine segment at the site of the previous cesarean scar, with marked thinning of the overlying myometrium measuring approximately 2 mm. The imaging findings enabled differentiation from cervical pregnancy and abortion in progress. Surgical excision of the cesarean scar ectopic pregnancy confirmed the preoperative diagnosis. This case highlights the pivotal role of first-trimester ultrasound in identifying characteristic features of CSP and facilitating timely management to prevent potentially life-threatening maternal complications.

Keywords: Cesarean scar pregnancy, scar ectopic pregnancy, ultrasonography, first trimester, cesarean section scar, ectopic implantation

Introduction

Cesarean scar ectopic pregnancy (CSP) is an uncommon form of ectopic implantation in which the gestational sac develops within the myometrial defect of a previous cesarean section scar rather than the endometrial cavity [1, 2]. Although rare, its incidence has increased over recent decades, largely paralleling the worldwide rise in cesarean delivery rates and the widespread use of high-resolution transvaginal ultrasonography during early pregnancy assessment [1-3]. Current estimates suggest that CSP occurs in approximately 1 in 1,800–2,500 pregnancies among women with a prior cesarean section and accounts for a small but clinically significant proportion of all ectopic pregnancies [2, 3].

Timely recognition of CSP is essential because progressive trophoblastic invasion into the scar tissue may lead to severe obstetric complications, including uterine rupture, massive hemorrhage, placenta accreta spectrum disorders, hysterectomy, and, in rare instances, maternal death [1, 4, 5]. Early diagnosis can be challenging because CSP may bear a resemblance to other causes of a low-lying gestational sac, particularly cervical pregnancy and abortion in progress [6]. Careful assessment of the implantation site, relationship to the cesarean scar, myometrial thickness, and cervical canal is therefore critical for supporting diagnostic accuracy and clinical management [1, 6]. We report a case of a viable first-trimester cesarean scar pregnancy diagnosed on transvaginal ultrasonography and discuss the imaging features that aided differentiation from important mimics.

Case Report

A woman with a history of previous cesarean section in 2022, presented for an early pregnancy viability scan. Her last menstrual period was reported as 23 January 2026, corresponding to a gestational age of 9 weeks.

Transabdominal ultrasound examination revealed a single gestational sac [fig 1] implanted within the anterior myometrium of the lower uterine segment at the site of the previous cesarean section scar.

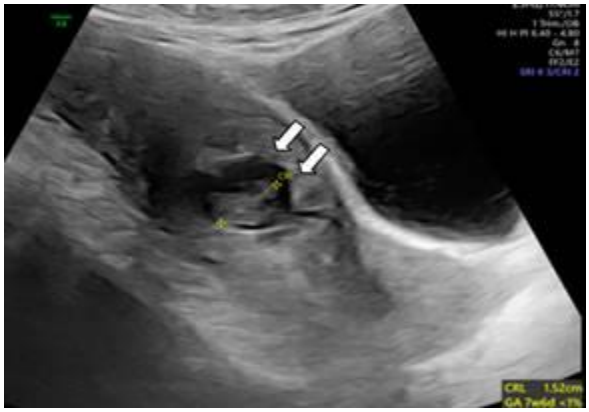

Fig 1

Fig 1: Ultrasound examination of the pelvis in the mid-sagittal plane demonstrates a gestational sac located within the lower uterine segment, immediately superior to the internal cervical os. A fetal pole is identified with a crown-

rump length (CRL) of 1.52 cm, corresponding to a gestational age of 7 weeks and 5 days.
The gestational sac was surrounded by a thin layer of myometrium [fig 2], with the anterior myometrial thickness measuring approximately 2 mm.

Fig 2: Mid-sagittal ultrasonography of the uterus reveals a gestational sac with markedly thinned anterior myometrium measuring approximately 2 mm anterior to the sac.

A yolk sac and fetal pole were identified within the gestational sac. Fetal cardiac activity was present.
Fetal biometry demonstrated [fig 1]:

- Crown-rump length (CRL): 1.52 cm
- Corresponding gestational age: 7 weeks and 6 days
- Fetal heart rate: 131 beats/minute

The decidual reaction appeared adequate. The cervix was normal in length, measuring 3.1 cm, and the internal os remained closed [fig 4].

Fig 4: Ultrasound of the pelvis in the mid-sagittal plane shows a cervical length of approximately 3.1 cm. The internal and external cervical os are closed, and there is no evidence of free fluid in the pelvis and cervical canal.

Both ovaries were visualized. The left ovary measured 3.1 × 1.4 cm and appeared normal. The right ovary measured 6.2 × 3.4 cm and contained a simple cyst measuring 4.1 × 3.0 cm, likely representing a corpus luteum cyst [fig 6].

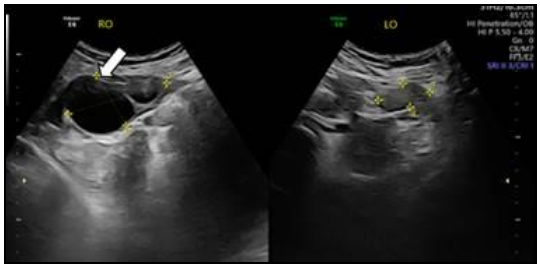

Fig 6: Transverse dual-screen pelvic ultrasound of both ovaries reveals a right ovarian anechoic cyst with smooth contours and posterior acoustic enhancement, likely representing a simple cyst. The left ovary appears normal with physiological follicular pattern.

Few hyperechoic foci were noted within the endometrial cavity [fig 5]. No evidence of free fluid was identified.

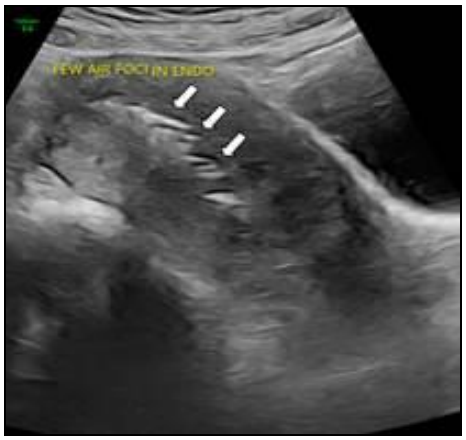

Fig 5: Mid-sagittal ultrasonography of the uterus reveals intraluminal echogenic foci within the endometrial cavity demonstrating dirty acoustic shadowing, consistent with the presence of intrauterine air.

Based on the ultrasound findings of a gestational sac embedded within the lower anterior uterine wall at the site of a previous cesarean scar, associated with a markedly thinned myometrial layer and a viable embryo, a diagnosis of viable cesarean scar ectopic pregnancy was considered.
The patient subsequently underwent exploratory laparotomy and cesarean scar ectopic pregnancy excision under combined spinal and epidural anesthesia on 27 March 2026. Intraoperatively, the previous cesarean scar was found to be markedly thinned [fig 7, 8].

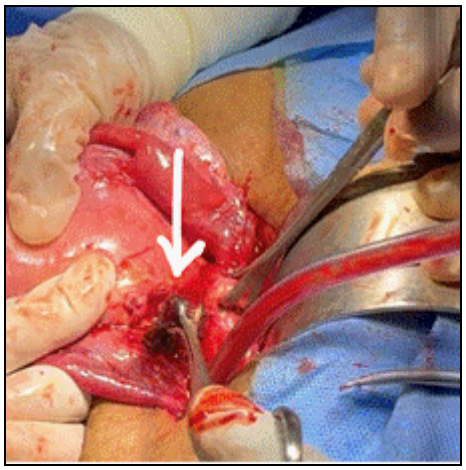

Fig 7: Intraoperative image showing the previous cesarean section scar site (arrow) in the lower anterior uterine segment.

Fig 8: Intraoperative photograph demonstrating the previous cesarean section scar site (arrow), showing scar dehiscence with gapping and marked thinning of the lower uterine segment myometrium. These findings correspond to the site of implantation of the cesarean scar ectopic pregnancy and confirms the preoperative ultrasound findings of a gestational sac embedded within the cesarean scar with a markedly thinned residual myometrial layer.

A gestational sac measuring approximately 3 × 3 cm was identified at the scar site, confirming the preoperative imaging diagnosis. Dense adhesions between the urinary bladder and the uterine scar were noted. Careful dissection was performed and senior surgical staff along with a urologist were consulted intraoperatively.

The gestational sac was opened, and the products of conception were removed [fig 9].

Fig 9: Postoperative photograph demonstrating the products of conception removed from the cesarean scar implantation site during surgical management of the cesarean scar ectopic pregnancy.

The uterine defect was repaired with single-layer closure. Bladder integrity was assessed and confirmed to be intact by the attending urologist. Hemostasis was achieved successfully. Bilateral fallopian tubes and ovaries appeared normal. Approximately 500 mL of clear urine was drained at the end of the procedure. Estimated blood loss was 300 mL. The products of conception were sent for histopathological examination.

The intraoperative findings closely correlated with the ultrasound diagnosis, highlighting the crucial role of early imaging in establishing the diagnosis of cesarean scar ectopic pregnancy and facilitating timely surgical management before catastrophic complications such as uterine rupture or severe hemorrhage could occur.

Discussion

Cesarean scar pregnancy is one of the least common forms of ectopic pregnancy but is being diagnosed with increasing frequency because of rising cesarean section rates and improved early pregnancy imaging techniques [1-3]. The condition is believed to result from implantation of the blastocyst within a microscopic tract or area of dehiscence in a previous cesarean scar, allowing trophoblastic tissue to invade directly into the myometrium and surrounding fibrous tissue [2, 4]. Several factors have been associated with CSP, including previous cesarean delivery, uterine curettage, myomectomy, manual placental removal, and assisted reproductive techniques [2, 4].

Accurate diagnosis during the first trimester is crucial because untreated CSP may progress to uterine rupture, severe hemorrhage, placenta accreta spectrum disorders, disseminated intravascular coagulation, and loss of fertility due to emergency hysterectomy [1, 4, 5]. One of the principal diagnostic challenges is distinguishing CSP from cervical pregnancy and abortion in progress, both of which can present with a low-lying gestational sac and similar clinical symptoms, including vaginal bleeding and pelvic pain [6-8].

Cervical pregnancy is characterized by implantation of the gestational sac within the endocervical canal below the level of the internal os [7]. Sonographic findings typically include a gestational sac located within a distended cervix, an empty uterine cavity, and a barrel-shaped cervical appearance [7, 8]. In contrast, CSP demonstrates implantation within the anterior lower uterine segment at the site of a previous cesarean scar, often with marked thinning or absence of the myometrium between the gestational sac and the urinary bladder [1, 6]. In the present case, the cervical canal was empty, the cervix maintained a normal morphology and length, and the gestational sac was embedded within the anterior lower uterine segment corresponding to the prior cesarean scar. Additionally, only 2 mm of myometrium separated the gestational sac from the bladder. These findings strongly favored CSP and effectively excluded cervical pregnancy.

Another important differential diagnosis is abortion in progress. In such cases, the gestational sac may be visualized within the lower uterine segment or cervical canal and may simulate both CSP and cervical pregnancy [8]. However, unlike CSP, the gestational sac in a spontaneous abortion is not implanted within surrounding tissue and often demonstrates mobility within the cervical canal during transvaginal examination, a feature described as the positive sliding sign [6, 8]. Conversely, CSP is typically associated with a negative sliding sign because the sac is firmly implanted within the scar niche. Furthermore, aborting gestational sacs generally exhibit less vascularity than CSP, which commonly demonstrates prominent peritrophoblastic blood flow on Doppler interrogation [6]. The fixed

implantation site, viable embryo, and characteristic scar location observed in this patient strongly supported the diagnosis of CSP and made abortion in progress unlikely.

Ultrasonography remains the primary imaging modality for diagnosis. Widely accepted sonographic criteria include an empty uterine cavity, an empty cervical canal, a gestational sac located within the anterior lower uterine segment at the site of a previous cesarean scar, and a thin or absent myometrial layer between the gestational sac and the bladder [1, 6]. The present case fulfilled these criteria, with a viable embryo demonstrating a crown-rump length of 1.52 cm and fetal cardiac activity of 131 beats per minute.

Early diagnosis is essential because progression of the pregnancy may result in uterine rupture, severe hemorrhage, placenta accreta spectrum disorders, disseminated intravascular coagulation, and the need for emergency hysterectomy [1, 4]. Various treatment modalities have been described, including systemic methotrexate, local methotrexate injection, ultrasound-guided gestational sac aspiration, hysteroscopic resection, laparoscopic scar excision, uterine artery embolization, and combined approaches [2, 4, 6]. The choice of management depends on gestational age, fetal viability, serum β-hCG levels, myometrial thickness, hemodynamic stability, and the patient's desire for future fertility [6].

This case highlights the importance of meticulous assessment of the lower uterine segment during first-trimester ultrasound examinations in women with a history of cesarean delivery. Prompt recognition of the characteristic imaging features can facilitate timely intervention and prevent potentially catastrophic maternal complications.

Conclusion

Cesarean scar ectopic pregnancy is a rare but serious complication of previous cesarean delivery. Early first-trimester ultrasonography plays a critical role in establishing the diagnosis and distinguishing it from cervical pregnancy and ongoing process of abortion is important, before the development of life-threatening complications. Recognition of the characteristic imaging findings, particularly implantation within the lower uterine segment scar and marked thinning of the overlying myometrium, allows timely intervention and improved maternal outcomes.

Conflicts of Interest

There are no conflicts of interest regarding the publication of this article.

Ethical Approval

Ethical approval was obtained from the Institutional Ethics Committee, where applicable. Written informed consent was obtained from the patient for publication of this case report and accompanying clinical information. Patient identity has been protected and anonymized.

References

1. Timor-Tritsch IE, Monteagudo A. Unforeseen consequences of the increasing rate of cesarean deliveries: early placenta accreta and cesarean scar pregnancy. American Journal of Obstetrics and Gynecology,2002:207(1):14-29.
2. Rotas MA, Haberman S, Levgur M. Cesarean scar ectopic pregnancies: etiology, diagnosis, and management. Obstetrics and Gynecology,2006:107(6):1373-81.
3. Jurkovic D, Hillaby K, Woelfer B, Lawrence A, Salim R, Elson CJ. First-trimester diagnosis and management of pregnancies implanted into the lower uterine segment cesarean section scar. Ultrasound in Obstetrics and Gynecology,2003:21(3):220-7.
4. Birch Petersen K, Hoffmann E, Rifbjerg Larsen C, Nielsen HS. Cesarean scar pregnancy: a systematic review of treatment studies. Fertility and Sterility,2016:105(4):958-67.
5. Miller R, Timor-Tritsch IE, Gyamfi-Bannerman C. Society for Maternal-Fetal Medicine Consult Series #63: Cesarean scar ectopic pregnancy. American Journal of Obstetrics and Gynecology,2022:227(6):B9-B20.
6. Timor-Tritsch IE, Monteagudo A, Santos R, Tsymbal T, Pineda G, Arslan AA. The diagnosis, treatment, and follow-up of cesarean scar pregnancy. American Journal of Obstetrics and Gynecology,2012:207(1):44.e1-44.e13.
7. Ushakov FB, Elchalal U, Aceman PJ, Schenker JG. Cervical pregnancy: past and future. Obstetrics and Gynecology Survey,1997:52(1):45-59.
8. Jurkovic D, Hacket E, Campbell S. Diagnosis and treatment of early cervical pregnancy: a review and report of two cases treated conservatively. Ultrasound in Obstetrics and Gynecology,1996:8(6):373-80.
9. Cali G, Timor-Tritsch IE, Palacios-Jaraquemada J, Buca D, Forlani F, Minneci G, *et al*. Outcome of cesarean scar pregnancy managed expectantly. Ultrasound in Obstetrics and Gynecology,2018:51(2):169-75.