

Cesarean Scar Pregnancy: Case Series

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Abstract

Introduction: Cesarean scar pregnancy (CSP) is a serious ectopic pregnancy where the embryo is embedded in scar tissue from a previous cesarean section. This study aims to report four cases of CSP and discuss their management.

Case Report: The reported cases involved three women in the 1st and 2nd trimesters of pregnancy who experienced vaginal bleeding and abdominal pain. CSP was diagnosed via transvaginal ultrasonography. Treatment involves exploratory laparotomy, segmental hysterotomy, and resection of abnormal tissue.

Conclusion: All patients were diagnosed with cesarean scar pregnancy (CSP) based on ultrasound findings showing abnormal tissue and hypervascularization in the cesarean scar. A surgical procedure was performed to treat the condition, and the patients' condition stabilized post-surgery. CSP is becoming increasingly prevalent with the rising number of cesarean deliveries. Early diagnosis via transvaginal ultrasound is essential to prevent serious complications, such as placenta accreta. Treatment varies from medical therapy to surgical procedures, depending on the patient's condition. Education regarding the risks of CSP in subsequent pregnancies is highly recommended.

Keywords: Cesarean, Pregnancy, Scar.

Kehamilan Pada Operasi Bekas Caesarea

Abstrak

Pendahuluan: Kehamilan bekas luka sesar (CSP) merupakan kehamilan ektopik yang serius, dengan embrio tertanam pada jaringan parut dari operasi caesar sebelumnya. Penelitian ini bertujuan untuk melaporkan empat kasus CSP dan membahas penanganannya.

Laporan Kasus: Kasus yang dilaporkan melibatkan tiga Wanita hamil trimester pertama dan kedua yang mengalami perdarahan pervaginam dan nyeri abdomen. Diagnosis CSP dilakukan melalui ultrasonografi transvaginal. Penanganan melibatkan laparotomi eksplorasi, hysterotomi segmental, dan reseksi jaringan abnormal.

Kesimpulan: CSP merupakan kondisi yang semakin sering terjadi seiring dengan meningkatnya jumlah persalinan sesar. Diagnosis awal melalui USG transvaginal sangat penting untuk mencegah komplikasi yang serius, seperti plasenta akreta. Penanganan bervariasi dari terapi medikamentosa hingga prosedur bedah, tergantung pada kondisi pasien. Edukasi mengenai risiko CSP pada kehamilan berikutnya sangat dianjurkan. Semua pasien didiagnosis dengan CSP berdasarkan temuan USG yang menunjukkan jaringan abnormal dan hipervaskularisasi pada bekas luka sesar. Prosedur bedah dilakukan untuk mengatasi kondisi ini, dan setelah operasi, kondisi pasien stabil.

Kata kunci: Caesarean, Pregnancy, Scar

Introduction

Pregnancy in a cesarean scar (CSP) is an ectopic pregnancy in the myometrium of a cesarean section scar.^{1,2,3} The incidence of CSP is rising parallel to the increasing global rate of cesarean deliveries, with an average annual increase of 4.4%. CSP is reported to occur in approximately 1 in 1800 to 1 in 2216 pregnancies, with one in 531 women who have had a cesarean experiencing CSP.^{2,3} In Indonesia, the rate of CS (sectio caesarea/caesarean section) deliveries increased from 15.3% in 2013 to 23.2% in 2018, however, data on CSP remains limited.^{4,5}

The pathogenesis of CSP is similar to that of placenta accreta and is associated with a high risk of severe bleeding. Early symptoms include abdominal pain and bleeding, although up to 40% of women may be asymptomatic. Diagnosis is generally made via transvaginal ultrasound.^{1,6} Given its potential to cause maternal morbidity and mortality, definitive surgical or medical management is recommended. However, there is currently no consensus on the optimal management approach. This report discusses CSP in detail, including its classification, risk factors, pathophysiology, diagnosis, and management, as well as considerations for pregnancy following CSP.

Case Report

Case I

A 41-year-old woman, G4P2A1, presented to RSUDZA with vaginal bleeding, blood clots, and abdominal pain persisting for 3 days. She had experienced vaginal bleeding for the previous 2 weeks, and an ultrasound showed anembryonic pregnancy. Misoprostol was administered to induce abortion, but the bleeding was heavy. Gestational age was estimated at 11 to 12 weeks. Her obstetric history included a cesarean section for

placenta previa, an incomplete abortion, and a previous cesarean section.

A transvaginal ultrasound examination showed an empty gestational sac embedded in the former cesarean section scar. A laparotomy was performed, involving the excision of the products of conception (4x3 cm) and Pomeroy tubectomy, in accordance with the patient's consent. The patient remained stable following the surgery.



Figure 1 Transvaginal ultrasound showed a gestational sac with a diameter of 30 mm, absent fetal pole and no yolk sac

Case II

A 29-year-old woman, G3P2A0, was presented to RSUDZA with vaginal bleeding and abdominal pain for 3 days after previously experiencing bleeding for 1 month and treatment at Aceh Tenggara Hospital. The patient was estimated 13 to 14 weeks pregnant, and had been given misoprostol, but the conception did not occur, and bleeding persisted. Her obstetric history includes two cesarean sections.

Transvaginal ultrasound showed an intrauterine gestational sac with irregular walls, no fetal pole, and lacunae and hypervascularization.



Figure 2 Transvaginal ultrasound showed an intrauterine gestational sac with irregular walls measuring 2.96 cm, an absent fetal pole and gestational sac, visible lacunae, and hypervascularization.

Case III

A 27-year-old woman, G2P1, was presented to RSUDZA for curettage after experiencing vaginal bleeding and abdominal pain for 1 day. Two weeks prior, an ultrasound had shown an anembryonic pregnancy, and medication to induce abortion had been unsuccessful. The patient was estimated 13 to 14 weeks pregnant and had a history of a caesarean section with her first delivery.

Transvaginal ultrasound showed irregular tissue, hypervascularization, and a myometrial thickness of 0.22 cm. Curettage was performed the following day but was halted due to active bleeding. The patient was stabilized with blood transfusions, and consultation with the Fetomaternal Department revealed a pregnancy in the cesarean scar. Consequently, an exploratory laparotomy, hysterotomy, and excision of the abnormal tissue was performed. The patient was stable after the surgery, and the tissue was sent for anatomical pathology examination.



Figure 3 Transvaginal ultrasound showed irregular tissue in the anterior corpus area; hypervascularization increased markedly; a niche in the endometrium; a myometrium thickness –VU: 0.22 cm; Cervical Length of 1.64 cm; No visible free fluid

Discussion

CSP is categorized into two subtypes: type 1

(endogenic/on-the-scar) with the gestational sac growing towards the uterine cavity, and type 2 (exogenic/in-the-niche) where growth extends towards the urinary bladder. Type 2 CSP has a higher risk of rupture. In the cases analyzed, case 1 was identified as type 2 CSP, while cases 2 and 3 were type 1 CSP. A study by Shen et al. (2016-2020) reported a higher prevalence of type 2 CSP (62%) than type 1 (38%).⁷ To predict the evolution of CSP, Cali et al. used the sonographic Crossover Sign (COS), categorizing the gestational sac as COS-1 (with two-thirds of the S-I diameter above the endometrial line) and COS-2 (with less than two-thirds of the S-I diameter above the endometrial line). Case 1 includes COS +1, and cases 2 and 3 include COS +2.

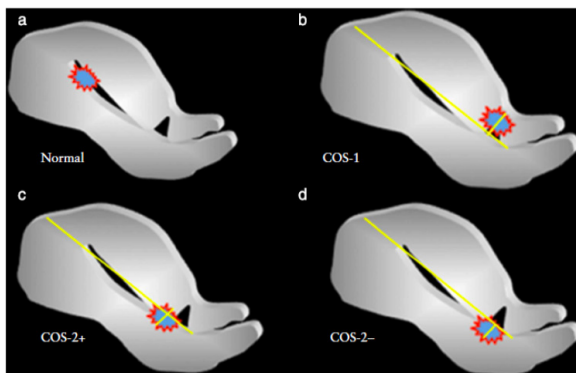


Figure 4 Diagram of the relationship between the ectopic gestational sac, cesarean scar, and anterior uterine wall, defined as the crossover sign (COS), in a sticky placenta

Significant risk factors for CSP include maternal age over 35 years, more than 3 pregnancies (especially more than 5), more than two abortions, a gap of less than 5 years between pregnancies and last cesarean section (CS), as well as a history of cesarean sections at a regional hospital and previous abortions.^{7,8} Additionally, a history of cesarean section due to breech presentation is also risky, as an underdeveloped lower uterine segment in a mispositioned pregnancy can lead to poor wound healing.^{2,9,10}

Niche formation may result from factors such as the location of the incision involving cervical tissue, incomplete uterine closure, or a retroflexed uterine position that compromises vascular perfusion. Factors such as diabetes, body mass index, smoking, and maternal age are also associated with increased niche incidence.¹¹

Although the pathogenesis of CSP is not completely understood, it is thought to be related to blastocyst implantation in microscopic dehiscence of cesarean section scars.^{12,13,14} The fibrous tissue of a cesarean scar is susceptible to dehiscence, placenta accreta, and bleeding as the CSP grows. There are three possible pathogenesis of CSP: first, blastocyst implantation on the surface of a healed cesarean scar, where the gestational sac tends to grow into the uterine cavity; second, implantation in an incompletely healed cesarean scar (niche), with the gestational sac growing into the uterine cavity but not protruding beyond the serous layer; and third, implantation in a microscopic dehiscence canal, where the gestational sac grows through the serosa, similar to an intramural pregnancy.^{10,13,15}

Ultrasound is the primary diagnosis tool for CSP, with transvaginal ultrasound providing the highest resolution images. CSP is suspected and further examination is necessary if a low and anterior position of the gestational sac is found. Delayed diagnosis can result in complications such as dehiscence, bleeding, loss of fertility, and even maternal death.^{8,16,17}

Ultrasound criteria for diagnosing CSP include: (1) an empty uterine cavity and endocervix; (2) the placenta, gestational sac, or both being embedded in the hysterotomy scar; (3) a triangular (≤ 8 weeks) or round/oval (> 8 weeks) gestational sac filling the “niche” area of the scar; (4) a thin myometrium layer (1–3 mm) or no myometrium between the gestational sac and urinary bladder; (5) a prominent or rich blood vessel pattern in the

cesarean scar area; and (6) the presence of a fetal pole or embryo and/or yolk sac, with or without a heartbeat. All of these criteria may not be visible on ultrasound, especially in early diagnoses before fetal cardiac activity is detectable, making confirmation of pregnancy (e.g., a positive pregnancy test result) necessary.^{2,18}

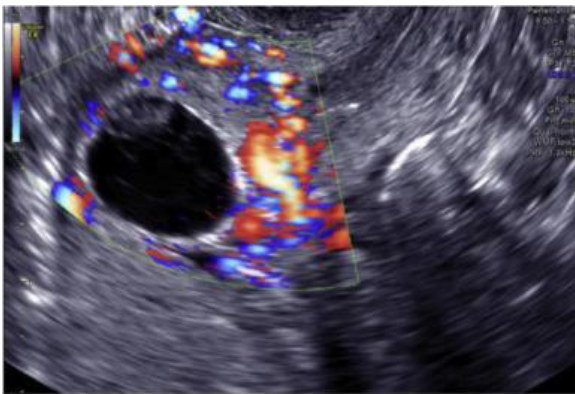


Figure 5 CSP Doppler ultrasound shows a prominent vascular pattern in the area of the hysterotomy scar²

There is no consensus on the optimal management for CSP due to most data coming from case reports and the lack of randomized controlled trials. Treatment choices are influenced by patient factors, the specifics of the CSP pregnancy, and the available facilities.¹⁹ Management options include medical therapy with methotrexate, surgical approaches such as dilation and curettage (D&C), hysteroscopic resection, laparoscopy, transvaginal, or open surgery, and adjuvant therapy, such as UAE (uterine artery embolization).^{18,19} Methotrexate is the drug of choice for termination of CSP in patients with stable hemodynamics.¹³ Methotrexate can be given via systemic injection, intramuscular injection into the wall or local injection directly into the gestational sac.²⁰

Conclusion

Cesarean scar pregnancy (CSP) is an ectopic pregnancy occurring in the myometrium of a previous cesarean scar, with its incidence rising due to the increasing rate of cesarean deliveries. Diagnosis of CSP is often delayed, which can result in dehiscence, bleeding, and significant risks to both the mother and fetus. The primary symptoms of CSP include vaginal bleeding and lower abdominal pain. Transvaginal ultrasound is the preferred method for diagnosing CSP, and timely use of this imaging technique can help avoid serious complications. Management options for CSP include medical therapy, surgical interventions, minimally invasive procedures, or a combination of these approaches. Patients planning subsequent pregnancies after CSP should be aware of the risks of recurrence and high morbidity, such as abortion and placenta accreta spectrum. They should undergo early ultrasound evaluations in future pregnancies to monitor and manage potential complications.

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