EDITORIAL

Oman Medical Journal [2023], Vol. 38, No. 6: e564

Cesarean Scar Pregnancy: Time to Initiate Universal Screening

Abdul Rahman Al Farsi*

Obstetrics and Gynecology Department, Royal Hospital, Muscat, Oman

ARTICLE INFO

Article history:
Received: 23 October 2023
Accepted: 3 January 2024

Online:
DOI 10.5001/omj.2023.131

Cesarean scar pregnancy (CSP) denotes a pregnancy implanted on or within a scar from a prior cesarean birth. If left unrecognized or inadequately managed, CSP can result in several life-threatening complications, along with severe fetal and maternal morbidity, such as uterine rupture, hemorrhage, and the need for a hysterectomy.[1,2] Recent evidence indicates that placenta accreta spectrum (PAS) and CSP are two stages of the same illness, with CSP being a diagnosis in the first (and early second) trimester and PAS being diagnosed later in pregnancy (second trimester and beyond). In essence, CSP and PAS represent the same disease at different points in time. The incidence of this serious health issue has surged dramatically in the last two decades, affecting up to one in 531 women with a history of cesarean section.[3] This increase is closely tied to the continuous rise in the rate of cesarean section deliveries. The escalating cesarean section rate has also contributed to a significant increase in PAS, which is, in fact, a CSP that was underdiagnosed or possibly misdiagnosed as a normal pregnancy or a threatened miscarriage. Jurkovic et al,[4] have suggested additional factors that may have played a role in the rise in CSP incidence, including improvements in diagnostic ultrasound, routine transvaginal ultrasound, and increased clinician awareness of the condition.[4]

To date, there has been no consensus on a specific treatment plan. Given the potential complications associated with these life-threatening conditions, pregnancy termination is the prevailing option in our facility and numerous other institutions globally that encounter such cases.

Despite the high burden of maternal morbidity associated with CSP, misdiagnosis is commonplace.[5] Accurate first-trimester diagnosis of CSP is crucial, as it can be misdiagnosed as a miscarriage or a normal intrauterine pregnancy. Such misdiagnoses may lead to sharp curettage for a presumed failed pregnancy, resulting in profuse bleeding and emergency surgical interventions.[3] Misdiagnosis also allows the pregnancy to progress, potentially leading to catastrophic consequences. If this pregnancy was allowed to continue, there could be three significant sequelae. First, it might get diagnosed slightly late (i.e., in the second trimester), which will make the management even more difficult and the intervention, at this stage, carries a very high risk to the mother. The second anticipated consequence is uterine rupture, which can result in severe bleeding, a hysterectomy, or possibly the mother's death. The third sequela is that the pregnancy continues to near-term and the PAS develops. This also carries high morbidity and mortality risks to the mother and fetus. Thus, early diagnosis of such cases is essential to predict the outcome and decide about options for management to avoid complications.

To achieve early determination of the gestational sac's exact location and the type of CSP (endogenous or exogenous), it is essential to estimate the patient's risk and decide whether to terminate or continue the pregnancy. Prenatal diagnosis of CSP relies on the presence of a gestational sac at the previous uterine incision site, with an empty uterine cavity and cervix, along with a thin myometrium adjacent to the bladder.[6] Many studies advocate ultrasound as the imaging technique of choice for CSP diagnosis, with magnetic resonance imaging employed in certain situations.[7] In our institution, magnetic resonance imaging is utilized when the diagnosis is inconclusive or doubtful. Ultrasound is recommended as early as 6–7 weeks of gestation. Early diagnosis at this stage allows for timely intervention and reduced complications.

*Corresponding author: ✉dr_farsi@hotmail.com

As the pregnancy progresses, evaluating CSP becomes more difficult due to the growth of the gestational sac and placenta and increased vascularization. After seven weeks, if the patient continues the pregnancy, the sac slowly moves towards the uterine cavity, gradually changes shape, and assumes an intracavitary position that may lead to its misdiagnosis as an intrauterine pregnancy.[8]

A substantial body of evidence underscores the role of early first-trimester assessment in predicting severe iatrogenic complications of CSP. The continuous rise in cesarean section rates, paralleled by the increase in CSP and PAS rates, underscores the need for routine screening programs.

Currently, early CSP diagnosis is mainly made if the pregnant woman experiences abdominal pain or vaginal spotting in the early stages of pregnancy, leading to an ultrasound. Asymptomatic women or those who do not present to their doctors may see their CSP progress, resulting in early complications or progression to PAS or its complications. In many countries, routine nuchal translucency ultrasound around 11–13 weeks of gestation is not performed, potentially delaying case identification until the usual anomaly scan time (between 18 and 22 weeks of gestation), which is a relatively late stage for effective intervention. With time and increasing experience, the diagnostic accuracy of ultrasound for CSP will improve and will be detected early in pregnancy. Some studies have shown that delayed diagnosis of CSP is quite common.[9,10]

A proper screening policy that aims to diagnose these defects early in pregnancy should be implemented to avoid complications and enhance the prognosis of pregnant women with CSP. Using transvaginal ultrasound should be implemented to diagnose CSP in at-risk individuals, such as those with a history of cesarean delivery or myomectomy. CSP should be evaluated early in the first trimester, ideally between six and seven weeks of gestation. This requires very early communication with women at risk that could be done, for instance, after cesarean section or myomectomy surgery.

Early detection of CSP improves maternal outcomes, enabling treatment in facilities with high surgical management experience and early planning for management and intervention, if necessary.[11–14] CSP diagnosed in the early stages of the first trimester (≤ 9 weeks) is associated with a lower incidence of adverse maternal outcomes, such as massive hemorrhage, need for blood transfusion, uterine rupture, and emergency hysterectomy, compared to those diagnoses (> 9 weeks of gestation). This was seen in a meta-analysis of 36 studies (724 patients) with CSP.[7] Although there is currently insufficient information to determine whether early pregnancy transvaginal ultrasonography screening for all expectant mothers at risk of developing CSP is cost-effective, it is still justifiable to prevent maternal and fetal morbidity and mortality.

While there is limited evidence on the costs and cost-effectiveness of such screening programs, the potential to prevent severe maternal and fetal morbidity and mortality justifies the initiation of screening. CSP-related morbidity places a substantial burden on healthcare systems, involving prolonged hospitalization, intensive care unit admissions, massive blood transfusions, surgeries, and associated complications. The primary aim of CSP screening with transvaginal ultrasound was to detect CSP early and prevent subsequent complications. Although no studies directly address morbidity and mortality reduction from this screening, ample evidence suggests it will reduce complications and improve outcomes.

REFERENCES

1. Timor-Tritsch IE, Monteagudo A, Santos R, Tsymbal T, Pineda G, Arslan AA. The diagnosis, treatment, and follow-up of cesarean scar pregnancy. Am J Obstet Gynecol 2012 Jul;207(1):44.e1-44.e13.
2. Timor-Tritsch IE, Monteagudo A. Unforeseen consequences of the increasing rate of cesarean deliveries: early placenta accreta and cesarean scar pregnancy. A review. Am J Obstet Gynecol 2012 Jul;207(1):14-29.
3. Bodur S, Özdamar Ö, Kılıç S, Gün I. The efficacy of the systemic methotrexate treatment in caesarean scar ectopic pregnancy: a quantitative review of English literature. J Obstet Gynaecol 2015 Apr;35(3):290-296.
4. 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 Obstet Gynecol 2003 Mar;21(3):220-227.
5. Cheng LY, Wang CB, Chu LC, Tseng CW, Kung FT. Outcomes of primary surgical evacuation during the first trimester in different types of implantation in women with cesarean scar pregnancy. Fertil Steril 2014 Oct;102(4):1085-1090.e2.
6. D'Antonio F, Palacios-Jaraquemada J, Lim PS, Forlani F, Lanzone A, Timor-Tritsch I, et al. Counseling in fetal medicine: evidence-based answers to clinical questions on morbidly adherent placenta. Ultrasound Obstet Gynecol 2016 Mar;47(3):290-301.
7. Timor-Tritsch IE, Monteagudo A, Cali G, El Refaey H, Kaelin Agten A, Arslan AA. Easy sonographic differential diagnosis between intrauterine pregnancy and cesarean delivery scar pregnancy in the early first trimester. Am J Obstet Gynecol 2016 Aug;215(2):225.e1-225.e7.

8. Timor-Tritsch I, Buca D, Di Mascio D, Cali G, D'Amico A, Monteagudo A, et al. Outcome of cesarean scar pregnancy according to gestational age at diagnosis: a systematic review and meta-analysis. Eur J Obstet Gynecol Reprod Biol 2021 Mar;258:53-59.
9. Ko JK, Li RH, Cheung VY. Caesarean scar pregnancy: a 10-year experience. Aust N Z J Obstet Gynaecol 2015 Feb;55(1):64-69.
10. Collins K, Kothari A. Catastrophic consequences of a caesarean scar pregnancy missed on ultrasound. Australas J Ultrasound Med 2015 Nov;18(4):150-156.
11. Calì G, Timor-Tritsch IE, Palacios-Jaraquemada J, Monteaugudo A, Buca D, Forlani F, et al. Outcome of cesarean scar pregnancy managed expectantly: systematic review and meta-analysis. Ultrasound Obstet Gynecol 2018 Feb;51(2):169-175.
12. Miller R, Timor-Tritsch IE, Gyamfi-Bannerman C; Society for Maternal-Fetal Medicine (SMFM). Electronic address: pubs@smfm.org. Society for maternal-fetal medicine (SMFM) consult series #49: cesarean scar pregnancy. Am J Obstet Gynecol 2020 May;222(5):B2-B14.
13. Wu Y, Zhou L, Chen L, Zhou Q, Zeng T. Efficacy of contrast-enhanced ultrasound for diagnosis of cesarean scar pregnancy type. Medicine (Baltimore) 2019 Nov;98(44):e17741.
14. Liu D, Yang M, Wu Q. Application of ultrasonography in the diagnosis and treatment of cesarean scar pregnancy. Clin Chim Acta 2018 Nov;486:291-297.