

# Should Cesarean Scar Defects be Corrected in Asymptomatic Women? Case Report of Uterine Rupture During Pregnancy

González-Comadran M<sup>1</sup>, Ponce L<sup>1</sup>, Castellà J<sup>1</sup> Rubio R<sup>1,2,3</sup> and Agüero MA<sup>1\*</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Hospital del Mar Barcelona, Spain

<sup>2</sup>Head of Obstetrics Section, Department of Obstetrics and Gynecology, Hospital del Mar Barcelona, Spain

<sup>3</sup>Associate Medical professors of Gynecology, Universitat Autònoma de Barcelona, Spain

## \*Corresponding author:

Mauricio A. Agüero,  
Department of Obstetrics and Gynecology, Hospital  
del Mar Barcelona, Passeig marítim, 25-29, 08003  
Barcelona, Spain

Received: 26 May 2024

Accepted: 01 July 2024

Published: 06 July 2024

J Short Name: AJSCCR

## Copyright:

©2024 Agüero MA, This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and build upon your work non-commercially.

## Citation:

Agüero MA. Should Cesarean Scar Defects be Corrected in Asymptomatic Women? Case Report of Uterine Rupture During Pregnancy. *Ame J Surg Clin Case Rep.* 2024; 7(15): 1-5

## Keywords:

Isthmocele; Cesarean Scar defect; Uterine Scar Dehiscence; Uterine Rupture

## 1. Abstract

Isthmocele, also known as cesarean scar defect [CSD] is a late complication of cesarean deliveries with increasing incidence, as the number cesarean sections [CS] rises. Women with CSD that become pregnant are at risk to develop abnormal placentation but also uterine scar dehiscence and uterine rupture. We report a case of a pregnant woman with history of two prior CS who started obstetric evaluation at 28.4 weeks pregnant. In the ultrasonography a uterine dehiscence was detected and patient was referred to the emergency department for close monitoring. Soon after, the patient became symptomatic and a CS was performed, identifying a uterine rupture measuring 2-3cm. When a uterine scar dehiscence is detected during second and third trimester pregnancy, close monitoring and early delivery are necessary to minimize the risk of uterine rupture. However, early diagnosis of CSD is crucial to provide prenatal counselling and treatment to minimize morbidity. Further studies are needed to evaluate the benefits of correcting asymptomatic CSD to prevent complications among women who desire pregnancy, and also identify what patients are at risk to develop uterine scar dehiscence and uterine rupture.

## 2. Introduction

Cesarean section [CS] is a common obstetric procedure with increasing frequency worldwide. Regardless of the World Health Organization recommendation that the CS rate should remain around 10%, globally, the current rate of CS is 21.7% [1]. According to existing systematic reviews, the growing incidence of CS over the past decades has led to an increase in the prevalence of obstetric

complications including placental anomalies, such as placenta previa and placenta accrete spectrum disorders [1-4], but also uterine scar dehiscence or uterine rupture [5,6]. Similarly, a raise in gynecological conditions derived from CS has also been detected increasing the incidence of isthmocele, also known as caesarean scar defects [CSD] or uterine niche [7]. Epidemiological studies based the reported prevalence according to the diagnostic method, describing between 24 and 70% of women with prior CS screened by transvaginal ultrasonography [TVUS] and 56 to 84% by sonohysterography [8]. However, after a third CS the risk of CSD is nearly 100% [9,10]. Most CSD are asymptomatic, although they can be associated with pain, abnormal uterine bleeding and secondary infertility [8,11]. There is no gold standard method to diagnose it [12]. However, when suspected, the preferred diagnostic method is the TVUS, with or without the intrauterine injection of contrast agents, although hysterosalpingography, hysteroscopy, and magnetic resonance imaging have also proven to be useful [12]. Unfortunately, the prenatal detection of women with these defects can be challenging, and the defect can become evident during the course of a pregnancy, with the progressive distension of the myometrial fibers. In this matter, the main concern rests on the development of a uterine scar dehiscence and the subsequent risk of uterine rupture. Uterine scar dehiscence refers to the separation of the endometrium and myometrium at a scar site with an intact serosa layer, while the uterine rupture occurs with the separation of the three layers, including the serosa [13]. Uterine rupture entails a high risk of severe complications which include hemorrhage, peripartum hysterectomy and neonatal complications including

asphyxia and perinatal death [14]. In this report, we present the clinical case of a pregnant woman with a uterine dehiscence on the scar of a prior CS, that was admitted in our department after performing a third trimester routine ultrasonography.

### 3. Case Report

A 41-year-old pregnant woman at 28.4 weeks gestation [P 2022] was diagnosed of uterine dehiscence during a routine obstetric examination. The patient had prior history of two cesarean sections in another country in 2017 and 2019 due to suspected pelvic-fetal disproportion, and had recently moved to our country. During the first ultrasonography at our center, at 28.4 weeks gestation a uterine dehiscence of the prior hysterorrhaphy suture was detected, measuring 12mm (Figure 1), with protrusion of the amniotic sac of up to 30mm (Figure 2), apparently contained by the peritoneum and bladder fold. The patient was admitted for further evaluation in our emergency room, showing initially no signs of uterine contractions, vaginal bleeding, or amniotic fluid leakage. Lung maturation with intramuscular betamethasone and was initiated and patient

was kept under observation. A few hours later, the patient reported hypogastric pain and sensation of regular uterine contractions without vaginal bleeding or amniotic fluid leakage, and regular uterine contractions were registered. In a subsequent ultrasonography, the CSD increased, measuring 32.7mm (Figure 3), and the protrusion of the amniotic sac appeared larger, still contained by the peritoneum and the bladder fold. Tocolysis with atosiban was initiated along with magnesium sulfate for neuroprotection. Given the progression of the uterine dehiscence and the increasing symptoms referred by the patient, the risk of uterine rupture was imminent an urgent cesarean section 12 hours after admission was performed. A female fetus was delivered, with APGAR score at 1st, 5th and 10th minute of 8/9/9, respectively, and umbilical cord arterial and venous pHs were 7.31 and 7.34, respectively. During the surgery, a uterine rupture measuring 2 to 3 cm was observed, and after fetal extraction hysterorrhaphy was sutured without complications. The patient was discharged after 48 hours without post-operative complications.



Figure 1

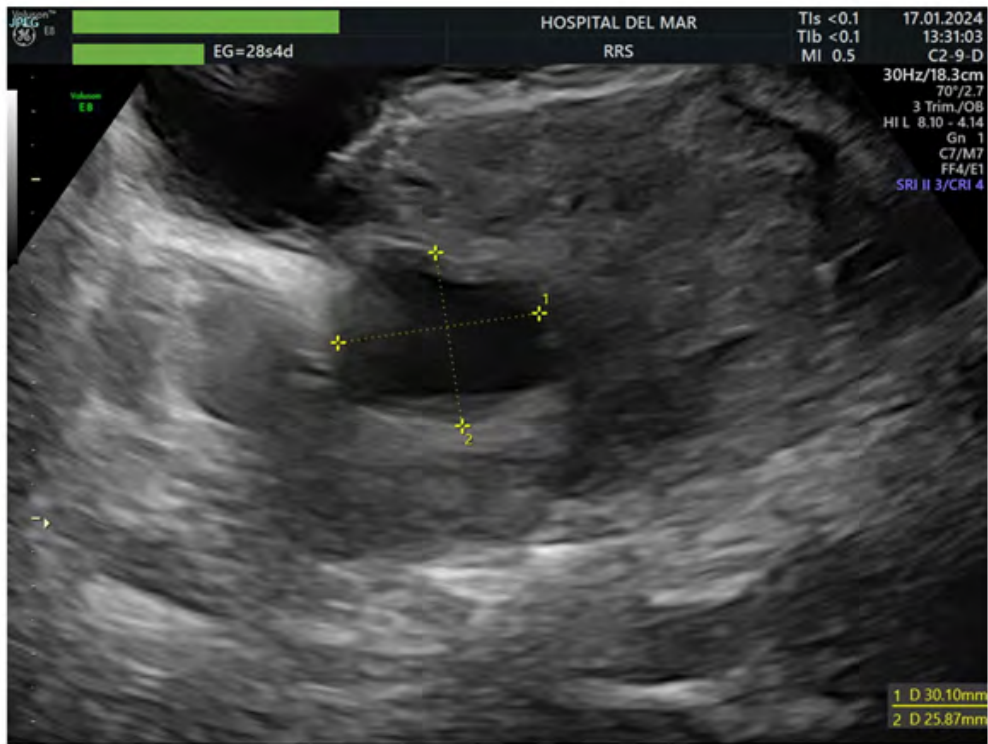


Figure 2



Figure 3

#### 4. Discussion

Caesarean scar defects are defined as the presence of an anechoic defect within the myometrium of the lower uterine segment of at least 2mm in depth [15], although other authors have used a cut-off point at 1mm in depth[16]. Traditionally, when symptomatic, CSD are often treated by hysteroscopy in order to correct the pouch-like defect, although this technique does not improve the myometrial thickness, and thereby the risk of obstetric complications in terms of uterine dehiscence or rupture remain [17]. Instead, the laparoscopic repair, often assisted by hysteroscopy, is preferred when

the residual myometrial thickness is less than 3mm [18], although the vaginal approach can be considered in scars defects at the lower level. According to a systematic review, all surgical techniques appear to be as effective, although the treatment of choice should depend on the CSD characteristics and the expertise of the surgeon [19].

In a systematic review, the group of Bij de Vaate [20], and later Vervoort [21] identified as possible risk factors to develop a CSD inadequate closure technique, the development of the lower uterine segment or location of the incision, surgical interventions that in-

creased adhesion formation, and patient-related factors that impair vascular health and wound healing, such as diabetes, hypertensive disorders or even anemia. Unfortunately, some of these risk factors are unavoidable and some women will continue to develop CSD, particularly when multiple CS are performed.

Nonetheless, the main concern rests on the development of a uterine scar dehiscence during the course of a pregnancy and the risk of uterine rupture. Uterine scar dehiscence refers to the separation of the myometrium at a scar site with an intact serosa layer, while the uterine rupture occurs with the separation of the three layers, including the serosa [13]. In this regard, several treatment options can be considered, including pregnancy termination, expectant management, or even an attempted repair of the defect with the pregnancy in utero. However, this latter approach entails a significant risk of uterine rupture and should only be considered in symptomatic patients [13]. Close monitoring of the pregnancy is crucial among women with a CSD complicated with a dehiscence, and early delivery is necessary because of the risk of uterine rupture during labor. The prevalence of uterine rupture is significantly higher among women with a previous CS. According to a multi-population-based study, the overall prevalence of uterine rupture is 22 per 10,000 in women with and 0.6 per 10,000 in women without CS. This complication was followed by peripartum hysterectomy in 10% of the cases, perinatal death in 13.3% of infants whose mother suffered uterine rupture, and 28% of neonatal asphyxia of those infants who survived [14]. The case we presented herein had a prior history of two CS performed in a different country, with no access to information regarding other risk factors involved in the previous deliveries. Upon her arrival, in the first ultrasonography a large defect was detected, with a high risk of uterine rupture as the patient became symptomatic and the defect enlarged within hours. During the CS, uterine rupture was identified and surgically corrected, and no major complications occurred.

Early diagnosis of CSD is crucial to provide with adequate prenatal counselling and offer treatment options that minimize morbidity, especially in future pregnancies. In this regard, there is a consensus regarding the surgical need to repair a CSD when patients become symptomatic. However, there is no available evidence regarding the benefits of correcting CSD in asymptomatic women who desire future pregnancies, or even the optimal surgical approach. Further trials are needed to evaluate the benefits of correcting asymptomatic CSD to reduce morbidity in women who desire pregnancy, but also to identify patients at risk to develop uterine scar dehiscence or even uterine rupture during pregnancy or labor.

## References

1. Fan D, Lin D, Rao J, Li P, Chen G, Zhou Z, et al. Factors and outcomes for placental anomalies: An umbrella review of systematic reviews and meta-analyses. *J Glob Health*. 2024; (14): 04013.
2. Jauniaux E, Bunce C, Grønbeck L, Langhoff-Roos J. Prevalence and main outcomes of placenta accreta spectrum: a systematic review and meta-analysis. *Am J Obstet Gynecol*. 2019; 221(3): 208–18.
3. Fan D, Li S, Wu S, Wang W, Ye S, Xia Q, et al. Prevalence of abnormally invasive placenta among deliveries in mainland China. *Medicine*. 2017; 96(16): e6636.
4. Fan D, Wu S, Wang W, Xin L, Tian G, Liu L, et al. Prevalence of placenta previa among deliveries in Mainland China. *Medicine*. 2016; 95(40): e5107.
5. Matorras R, Berreteaga L, Láinz L, Exposito A, Martínez L. Influence of Caesarean section–pregnancy interval on uterine rupture risk and IVF pregnancy rates: systematic review and mathematical modelling. *Reprod Biomed Online*. 2019; 39(5): 809–18.
6. Kulshrestha V, Agarwal N, Kachhawa G. Post-caesarean Niche (Isthmocele) in Uterine Scar: An Update. *J Obstet Gynaecol India*. 2020; 70(6): 440–6.
7. Murji A, Sanders AP, Monteiro I, Haiderbhai S, Matelski J, Walsh C, et al. Cesarean scar defects and abnormal uterine bleeding: a systematic review and meta-analysis. *Fertil Steril*. 2022; 118(4): 758–66.
8. Vitagliano A, Cicinelli E, Viganò P, Sorgente G, Nicoli P, Busnelli A, et al. Isthmocele, not cesarean section per se, reduces in vitro fertilization success: a systematic review and meta-analysis of over 10,000 embryo transfer cycles. *Fertil Steril*. 2024; 121(2): 299–13.
9. Setubal A, Alves J, Osório F, Guerra A, Fernandes R, Albornoz J, et al. Treatment for Uterine Isthmocele, A Pouchlike Defect at the Site of a Cesarean Section Scar. *J Minim Invasive Gynecol*. 2018; 25(1): 38–46.
10. Nezhat C, Zaghi B, Baek K, Nezhat A, Nezhat F, Lindheim S, et al. Outcomes of Laparoscopic Cesarean Scar Defect Repair: Retrospective and Observational Study. *J Clin Med*. 2023; 12(11): 3720.
11. Vervoort A, Vissers J, Hehenkamp W, Brölmann H, Huirne J. The effect of laparoscopic resection of large niches in the uterine caesarean scar on symptoms, ultrasound findings and quality of life: a prospective cohort study. *BJOG*. 2018; 125(3): 317–25.
12. Naji O, Wynants L, Smith A, Abdallah Y, Saso S, Stalder C, et al. Does the presence of a Cesarean section scar affect implantation site and early pregnancy outcome in women attending an early pregnancy assessment unit? *Hum Reprod*. 2013; 28(6): 1489–96.
13. Hatstat LM. Sonographic Assessment of Uterine Dehiscence During Pregnancy in Women With a History of Cesarean Section. *Journal of Diagnostic Medical Sonography*. 2016; 32(5): 283–6.
14. Vandenberghe G, Bloemenkamp K, Berlage S, Colmorn L, De-neux-Tharoux C, Gissler M, et al. The International Network of Obstetric Survey Systems study of uterine rupture: a descriptive multi-country population-based study. *BJOG*. 2019; 126(3): 370–81.
15. Bij de Vaate AJM, Brölmann HAM, van der Voet LF, van der Slikke JW, Veersema S, Huirne JAF, et al. Ultrasound evaluation of the Cesarean scar: relation between a niche and postmenstrual spotting. *Ultrasound Obstet Gynecol*. 2011; 37(1): 93–9.

16. Jordans IPM, Verberkt C, De Leeuw RA, Bilardo CM, Van Den Bosch T, Bourne T, et al. Definition and sonographic reporting system for Cesarean scar pregnancy in early gestation: modified Delphi method. *Ultrasound Obstet Gynecol.* 2022; 59(4): 437–49.
17. Schepker N, Garcia-Rocha GJ, von Versen-Höynck F, Hillemanns P, Schippert C. Clinical diagnosis and therapy of uterine scar defects after caesarean section in non-pregnant women. *Arch Gynecol Obstet.* 2015; 291(6): 1417–23
18. Mashlach R, Burke YZ. Optimal Isthmocele Management: Hysteroscopic, Laparoscopic, or Combination. *J Minim Invasive Gynecol.* 2021; 28(3): 565–74.
19. Setubal A, Alves J, Osório F, Guerra A, Fernandes R, Albornoz J, et al. Treatment for Uterine Isthmocele, A Pouchlike Defect at the Site of a Cesarean Section Scar. *J Minim Invasive Gynecol.* 2018; 25(1): 38–46.
20. Vaate AJM BIJ DE, Voet LF van der, Naji O, Witmer M, Veersema S, Brölmann HAM, et al. Prevalence, potential risk factors for development and symptoms related to the presence of uterine niches following Cesarean section: systematic review. *Ultrasound Obstet Gynecol.* 2014; 43(4): 372–82.
21. Vervoort AJMW, Uittenbogaard LB, Hehenkamp WJK, Brölmann HAM, Mol BWJ, Huirne JAF, et al. Why do niches develop in Caesarean uterine scars? Hypotheses on the aetiology of niche development. *Hum Reprod.* 2015; 30(12): 2695–702.