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Caesarean Scar Dehiscence After Successful VBAC – A Rare Cause of Secondary Post-Partum Haemorrhage PPH

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Abstract

Background: The increasing rate of caesarean births has led to a parallel rise in caesarean scar defects (CSD) and their associated complications. Although usually asymptomatic, CSDs may rarely present as secondary postpartum haemorrhage (PPH).

Case Presentation: A 38-year-old multiparous woman presented on day four of the puerperium with sudden-onset moderate vaginal bleeding and passage of clots following an uncomplicated vaginal birth after caesarean (VBAC). Examination and ultrasound findings were inconclusive. Pelvic MRI demonstrated a full-thickness caesarean scar dehiscence measuring 31 mm × 2 mm with intact serosa and associated haematoma. Conservative management with broad-spectrum antibiotics and observation led to complete recovery.

Discussion: Occult scar dehiscence after VBAC is rare and may present with nonspecific symptoms, often mimicking retained products or infection. A high index of suspicion is essential in women presenting with secondary PPH after VBAC. MRI provides superior diagnostic detail when ultrasound findings are equivocal.

Conclusion: Caesarean scar dehiscence should be considered in cases of secondary PPH following VBAC. Prompt diagnosis using appropriate imaging and conservative management in stable patients can prevent unnecessary surgical intervention and preserve future fertility.

Keywords: Caesarean scar defect; Uterine dehiscence; VBAC; Secondary postpartum haemorrhage; MRI; Conservative management

Abbreviations: CSD: Caesarean scar defects; PPH: Postpartum haemorrhage; VBAC: Vaginal birth after caesarean; BMI: Body mass index; LSCS: lower-segment caesarean section; CRP: C-reactive protein; MRI: Magnetic resonance imaging; RMT: Residual myometrial thickness

Introduction

Caesarean scar dehiscence (CSD) is an uncommon but potentially serious complication, affecting fewer than 1% of pregnancies in women with a prior caesarean section [1]. CSD is distinct from uterine rupture, presenting instead as a localized separation of the myometrial layers at the previous incision site, with the serosa remaining intact. Because its symptoms are often vague and nonspecific, CSD may be overlooked during pregnancy, labour, or the postpartum period. Most cases of CSD are identified incidentally, in the absence of clinical symptoms either antenatally during imaging or intraoperatively during a repeat caesarean section. However, rare presentations occur in the puerperium, sometimes manifesting as secondary postpartum haemorrhage (PPH) after an apparently uncomplicated vaginal birth after caesarean (VBAC). These presentations pose diagnostic challenges, as symptoms such as abnormal bleeding, mild discomfort, or infection may be attributed to more common postpartum causes such as retained products of conception or endometritis. With rising caesarean rates worldwide, the prevalence of CSD and its sequelae is increasing proportionally. Understanding its risk factors, varied presentations, and management options has become increasingly important for obstetricians and gynaecologists. This case report describes an occult uterine scar dehiscence presenting with secondary PPH after a successful VBAC, highlighting the diagnostic process, imaging modalities, and the rationale for conservative management.

Case Report

A 38-year-old para 1 woman with a body mass index (BMI) of 30 presented in spontaneous labour at 40+2 weeks' gestation.

She had undergone an elective lower-segment caesarean section (LSCS) on maternal request three years earlier. In the index pregnancy, she was noted to be a smoker but had no other maternal comorbidities or antenatal risk factors. There was no history, at the time of the prior caesarean, of pre-labour rupture of membranes, fever, wound discharge, prolonged catheterisation, or prolonged hospital stay. She progressed to an uneventful spontaneous VBAC and delivered a healthy neonate weighing 3100 g. A succenturiate placenta was delivered intact with controlled cord traction. Estimated blood loss at delivery was 320 mL. Total duration of labour was 3 hours 11 minutes: the first stage lasted 2 hours 45 minutes, the second stage 18 minutes, and the third stage only 8 seconds. Several labial and vaginal tears were sutured, breastfeeding was commenced soon after birth, and she was discharged home on day 2 postpartum.

On day 4 of the puerperium, she re-presented to the maternity unit with excessive vaginal bleeding and passage of clots. The bleeding had started suddenly at night, was moderate in volume, bright red, mixed with clots, and was accompanied by shivering. She denied pelvic or abdominal pain, fever, or malodorous lochia/discharge. She was anxious about the possibility of retained placental tissue and specifically requested an ultrasound assessment. On examination, her pulse was 105 beats/minute and blood pressure 120/70 mmHg. Apart from mild tenderness on the right side, breast examination was normal. There was no clinical pallor. Abdominal examination showed a well-involuting uterus below the level of the umbilicus. Inspection of the vulva revealed healing labial tears without bleeding. Speculum examination showed dark clots within the vagina, but no fresh bleeding, and no cervical or vaginal trauma.

Initial investigations showed haemoglobin 135 g/L, total white cell count 14.8 (reported as %) with neutrophilia (10.9 × 10^9/L), and C-reactive protein (CRP) 43.4 mg/L. Pelvic ultrasound demonstrated an anteverted uterus measuring 157 × 82 × 102 mm (calculated volume 683 mL) and a prominent caesarean scar area measuring 41 × 47 × 32 mm, but no definite defect. The cervix measured 50 mm and was closed. Because of persisting suspicion, pelvic MRI was performed on day 6 of the puerperium and showed a caesarean scar dehiscence 31 mm in length and 2 mm in width, involving the full thickness of the myometrium, with intact overlying serosa, and a haematoma distending the lower endometrial cavity and filling the dehisced niche. A repeat blood count 48 hours later showed haemoglobin 112 g/L, total white cell count 15.1 × 10^6/L (as reported), neutrophils 9.6 × 10^6/L, and CRP 97.2 mg/L. Given her haemodynamic stability and the imaging-confirmed intact serosa, management was conservative. She received 48 hours of parenteral broad-spectrum antibiotics and was then discharged home on a one-week course of oral antibiotics, with clinical improvement and resolution of symptoms.

Discussion

Caesarean scar dehiscence (CSD) is defined as a myometrial defect of at least 2 mm at the previous caesarean incision site [2]. Its reported incidence may be underestimated, with imaging studies suggesting niche defects in up to 70% of women with prior caesarean delivery [2]. Wong and Fung (2018) identified incidental CSDs in 6.3% of women undergoing MRI years after caesarean delivery, underscoring the persistence of incomplete scar healing in many cases. The true test of scar integrity is its capacity to withstand labour. However, no single method reliably predicts scar behaviour, and the success of vaginal birth after caesarean (VBAC) depends on complex, multifactorial determinants of scar healing. Docu et al. (2025) classified these determinants as patient-related, labour-related, and surgery-related factors [3]. Patient-related factors include maternal age, BMI, smoking, gestational diabetes, interpregnancy interval, pre-eclampsia, and neonatal birth weight. Labour-related factors include the timing of the caesarean, the degree of cervical effacement, and the thickness of the lower uterine segment at delivery. Surgical factors encompass the level and technique of uterine incision, suture material, number of closure layers, inclusion of endometrium, and distance of the scar from the external cervical os. Diabetes, infection, and high BMI rank among the strongest predictors of CSD. In this case, maternal BMI, smoking, and foetal size may have contributed to suboptimal scar healing. The uterine wound-healing environment differs fundamentally from cutaneous repair. The smooth-muscle architecture and glandular stroma of the uterus generate a distinct collagen response that may reduce tensile strength. Histologically, healed caesarean scars show disorganised smooth muscle bundles, fibrotic stroma, and fewer endometrial glands [4]. The involutional changes of the puerperal uterus further modify local perfusion and mechanical stress, potentially compromising integrity during early postpartum contraction and regression.

Clinically, occult scar dehiscence often presents with nonspecific symptoms such as abnormal vaginal bleeding, mild abdominal pain, or low-grade infection [5]. Secondary postpartum haemorrhage (PPH) may occur any time within the first six weeks after delivery and may vary from mild to life-threatening, occasionally requiring emergency hysterectomy [6]. Bleeding is presumed to arise from vascular erosion at the incision angle or within the dehisced niche. The lower uterine segment bears maximal stretch during the second stage of labour; its central portion may thus be most vulnerable. However, tensile strength is not uniform across the scar, and occult central dehiscence may remain asymptomatic and heal spontaneously under conservative management.

Imaging plays a central role in diagnosis. Transvaginal ultrasound remains the first-line modality and often reveals marked thinning or absence of the myometrium with an anechoic

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pouch and intact serosa [7]. Typical sonographic appearance includes a triangular or dome-shaped anechoic defect at the anterior lower uterine wall between the bladder and uterine cavity. When ultrasonography is inconclusive, magnetic resonance imaging (MRI) offers superior anatomic resolution, with CSDs typically appearing as triangular (60%), linear (30%), or rectangular (10%) defects, sometimes with a fluid-filled tract at the scar niche. Unlike MRI, ultrasound sensitivity is strongly influenced by the operator's skill and experience. Wong and Fung reported the detection of a CSD in 6.3% of women undergoing MRI for other pathology even years after the index Caesarean section [8]. Using saline hysterosalpingography, most CSDs appear as anterior uterine diverticula—either focal outpouchings (65%) or linear clefts (35%). The procedure may also delineate the defect margins and measure residual myometrial thickness (RMT); an RMT <2.85 mm has been associated with high rupture or dehiscence risk, while >3.65 mm is generally considered safe for VBAC [9].

Routine manual exploration of the uterine scar after VBAC is no longer recommended. Perrotin et al. compared routine digital scar exploration versus exploration in symptomatic patients only, demonstrating a significant difference in terms of fever and antibiotic treatment between the two groups, which advocated exploration in symptomatic or at-risk women, like those with persistent suprapubic pain, placental retention, or excessive bleeding during delivery [10]. Conservative therapy with antibiotics and observation is suitable for partial or intact-serosa dehiscence once retained products are excluded. Persistent bleeding or infection may necessitate surgical intervention. Hysteroscopy and laparoscopy serve both diagnostic and therapeutic roles. Feng et al. (2020) found no significant difference in outcomes between hysteroscopic alone and combined laparoscopic-hysteroscopic repair. However, the combined approach allows safer bladder dissection and concurrent treatment of coexisting pelvic pathology [11-14]. A residual myometrial thickness (RMT) <2 mm correlates with increased rupture risk in future pregnancies, guiding repair choice and fertility counselling. VBAC after uterine dehiscence carries approximately a 0.5% rupture risk. Elective repeat caesarean delivery before labour onset is recommended in future pregnancies to minimise complications. Long-term sequalae extend to fertility. A persistent niche may trap mucus and blood, promoting inflammation, altered uterine contractility, and impaired implantation. Degradation of haemoglobin and iron accumulation can disrupt the local microbiome, contributing to subfertility [15,16].

Conclusion

Caesarean scar dehiscence (CSD) can have serious short- and long-term consequences for women's health, including risks of haemorrhage, infection, and future reproductive complications. Early recognition is crucial, beginning with a high index of suspicion in women who present with secondary postpartum haemorrhage following vaginal birth after caesarean (VBAC). Targeted transvaginal ultrasonography remains the first-line diagnostic tool, with magnetic resonance imaging (MRI) providing superior confirmation when ultrasound findings are equivocal. Most women who are haemodynamically stable and have intact serosa can be managed conservatively with antibiotics, close monitoring, and supportive care. Because of the potential for recurrence and uterine rupture in subsequent pregnancies, these patients require detailed counselling and close antenatal surveillance. Elective repeat caesarean section is recommended for future deliveries.

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