

CASE REPORT

Caesarean scar pregnancy in a 32-year-old woman: initial double-dose methotrexate followed by laparotomy and myometrial reconstruction

Caesarean scar pregnancy: methotrexate and surgical reconstruction

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ABSTRACT

Introduction. Caesarean scar pregnancy (CSP) is a rare but potentially life-threatening form of ectopic pregnancy associated with a high risk of uterine rupture and severe haemorrhage.

Case Presentation. A 32-year-old woman with one previous caesarean section presented at 7 weeks of amenorrhea with vaginal spotting and abdominal discomfort. Transvaginal ultrasound revealed a viable gestational sac implanted in the caesarean scar, with a residual myometrial thickness of 1 mm. Initial management with a double-dose systemic methotrexate protocol was unsuccessful. Due to persistence of trophoblastic activity and high risk of rupture, surgical treatment was performed. Laparotomy allowed complete excision of the gestational tissue and reconstruction of the uterine wall.

Conclusions. In selected high-risk CSP cases, particularly in the presence of extremely thin myometrium and failure of medical therapy, laparotomy with uterine reconstruction represents a safe and definitive treatment option that may preserve future fertility.

Key words

Caesarean scar pregnancy; myometrial thickness; methotrexate; laparotomy; surgical treatment.

INTRODUCTION

Caesarean scar pregnancy (CSP) is a rare but potentially life-threatening form of ectopic pregnancy characterized by implantation of the gestational sac within a previous caesarean section scar [1]. Its incidence has increased in parallel rising caesarean delivery rates [2, 3].

CSP carries a substantial risk of catastrophic maternal complications, including uterine rupture, massive haemorrhage, haemodynamic instability, and, in the most severe cases, maternal death or permanent loss of fertility [4]. Prompt diagnosis is therefore crucial, with transvaginal ultrasound representing the first-line diagnostic modality and MRI reserved for selected complex cases [5]. Management strategies are heterogeneous and include medical therapy with methotrexate, minimally invasive procedures, and surgical approaches such as hysteroscopy, laparoscopy, or laparotomy [6, 7]. Treatment should be individualized according to the patient's clinical condition and gestational age. However, in patients with suspected uterine rupture, uncontrolled bleeding, extensive myometrial involvement, or haemodynamic compromise, immediate laparotomy remains the definitive and potentially life-saving intervention. In these circumstances, rapid surgical access allows prompt haemorrhage control, uterine repair or hysterectomy when required, and prevention of further clinical deterioration, making laparotomy essential to safeguard the patient's life.

CASE PRESENTATION

A 32-year-old woman with a history of one previous caesarean section presented at 7 weeks of amenorrhoea with mild vaginal spotting and abdominal discomfort.

Transvaginal ultrasound revealed a gestational sac implanted in the anterior lower uterine segment at the caesarean scar site, consistent with CSP. A viable embryo with cardiac activity and a crown-rump length of 3.9 mm was observed. Residual myometrial thickness was approximately 1 mm.

Medical treatment with systemic methotrexate (double-dose protocol, 77 mg calculated by body surface area) was initiated. The patient was closely monitored with serial ultrasound evaluations.

Although the residual myometrial thickness was only 1 mm, the patient was haemodynamically stable, with no evidence of uterine rupture or severe active bleeding at presentation. Given her young age (32 years) and the importance of preserving future reproductive potential, an initial conservative approach was considered appropriate. A double-dose methotrexate regimen was therefore selected as a fertility-preserving strategy, with the aim of avoiding immediate surgery and its associated operative risks while attempting to achieve resolution of the pregnancy. Compared with the single-dose protocol, the double-dose regimen has been proposed to improve treatment efficacy in selected patients at higher risk of medical treatment failure, while maintaining a more favourable safety profile than multidose protocols. Although the extremely thin residual myometrium was recognized as a significant risk factor for complications, it was not considered, in isolation, an absolute indication for immediate surgical intervention in the absence of haemodynamic instability or ongoing haemorrhage. Consequently, a trial of medical management under close clinical, biochemical, and ultrasonographic surveillance was deemed a reasonable initial option, with the understanding that prompt surgical intervention would be undertaken without delay in the event of treatment failure or clinical deterioration.

On the day following the first systemic methotrexate administration, transvaginal ultrasound demonstrated a viable caesarean scar pregnancy with an embryo measuring 3.9 mm in crown-rump length (CRL) and persistent foetal cardiac activity (**Figure 1**). Colour Doppler examination showed persistent prominent peritrophoblastic vascularization, with no reduction compared with the pretreatment assessment (**Figure 2**). Furthermore, no evidence of choriodecidual separation or collapse of the gestational sac was observed, suggesting the absence of an early response to medical therapy.

A second systemic dose of methotrexate was administered on day 4 according to the double-dose protocol. Repeat transvaginal ultrasound performed the following day demonstrated findings that were essentially unchanged, with persistent embryonic viability, stable CRL, sustained peritrophoblastic blood flow on colour Doppler, and no evidence of choriodecidual separation or other sonographic changes indicative of treatment response.

In view of the persistent viability of the pregnancy, the absence of sonographic evidence of therapeutic efficacy, and the patient's progressively worsening clinical condition characterized by increasing pelvic pain and vaginal bleeding, medical management was considered unsuccessful. Consequently, the decision was made to proceed with surgical management by laparotomy.

Follow-up demonstrated persistence of viable trophoblastic tissue, indicating failure of medical therapy. Given the extremely thin myometrium and high risk of uterine rupture and haemorrhage, surgical intervention was required.

An exploratory laparotomy was performed. Complete excision of the gestational sac and trophoblastic tissue was achieved, followed by reconstruction of the uterine wall using meticulous myometrial suturing (**Figure 3**).

The procedure was uneventful, and postoperative recovery was normal, with restoration of uterine integrity.

Timeline of clinical course

- Week 7: presentation with spotting
- Week 7: diagnosis of CSP (RMT 1 mm)
- Week 7: methotrexate initiated
- Follow-up: persistent viable tissue
- Emergency: surgical indication
- Surgery: laparotomy and reconstruction
- Post-op: uneventful recovery

DISCUSSION

CSP management remains controversial, with no universally accepted gold standard. Treatment options include expectant management, medical therapy, uterine artery embolization, and surgical intervention, with the choice depending on the patient's clinical status, gestational characteristics, and reproductive wishes [6, 11].

In the present case, although the patient was initially haemodynamically stable, the combination of a viable embryo and an extremely thin residual myometrium (1 mm) represented a high-risk condition associated with an increased likelihood of uterine rupture and severe haemorrhage. Evidence suggests that a residual myometrial thickness of less than 2-3 mm is associated with a higher risk of failure of conservative management and a greater probability of requiring surgical intervention.

Although minimally invasive techniques are increasingly adopted in selected patients, they include hysteroscopic resection, laparoscopic surgery, and interventional radiological procedures such as uterine artery embolization. Hysteroscopic treatment may be considered in cases where the gestational sac protrudes toward the uterine cavity and the implantation site is accessible, allowing direct visualization and removal of trophoblastic tissue. Laparoscopic approaches can enable excision of the caesarean scar pregnancy, repair of the uterine defect, and preservation of uterine

integrity with reduced surgical invasiveness. Uterine artery embolization represents another conservative option aimed at reducing vascular supply to the gestational tissue and controlling haemorrhagic risk, either as a standalone treatment or as an adjunct to other procedures. These approaches may offer advantages such as reduced postoperative pain, shorter hospitalization, and faster recovery; however, their feasibility depends on several factors, including residual myometrial thickness, gestational sac characteristics, presence of foetal cardiac activity, β hCG levels, and the availability of appropriate expertise.

Despite these advances, surgical management remains essential in high-risk cases. In particular, laparotomy provides rapid and effective control of bleeding, allows complete removal of trophoblastic tissue, and enables direct repair of the uterine defect, thereby restoring uterine integrity and potentially reducing the risk of recurrence in future pregnancies. In our patient, the severity of the anatomical compromise, characterized by an extremely thin residual myometrial layer (1 mm), together with the presence of a viable embryo and the substantial risk of sudden uterine rupture and life-threatening haemorrhage, ultimately made laparotomy the safest and most definitive treatment. This approach allowed prompt management of the ectopic implantation site while preserving the uterus and maintaining future reproductive potential.

Postoperative follow-up included close clinical, biochemical, and ultrasonographic assessment during the early postoperative period, followed by longer-term outpatient evaluation. Serial serum β hCG measurements demonstrated a progressive decline, accompanied by gradual resolution of the ultrasonographic findings, with no evidence of persistent trophoblastic tissue or postoperative complications. These findings confirmed the effectiveness of the surgical treatment and an uneventful postoperative recovery.

CONCLUSIONS

This case highlights the importance of early diagnosis and individualized management in caesarean scar pregnancy. Treatment strategies should be tailored according to the patient's clinical condition, anatomical features, gestational characteristics, reproductive wishes, and the expertise of the multidisciplinary team at the referral centre. A personalized approach, integrating conservative, minimally invasive, and surgical options when appropriate, is essential to optimize maternal safety while preserving reproductive potential.

COMPLIANCE WITH ETHICAL STANDARDS

Authors' contributions

FR: conceptualization, writing – original draft. AMM: data collection. BZ: formal analysis. GS: supervision. ADS: supervision, writing – review & editing.

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Study registration

N/A.

Disclosure of interests

The authors declare that they have no conflict of interests.

Ethical approval

Not required for case report according to institutional policies.

Informed consent

Written informed consent was obtained from the patient.

Data availability

Data are available under reasonable request to the corresponding author.

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FIGURES

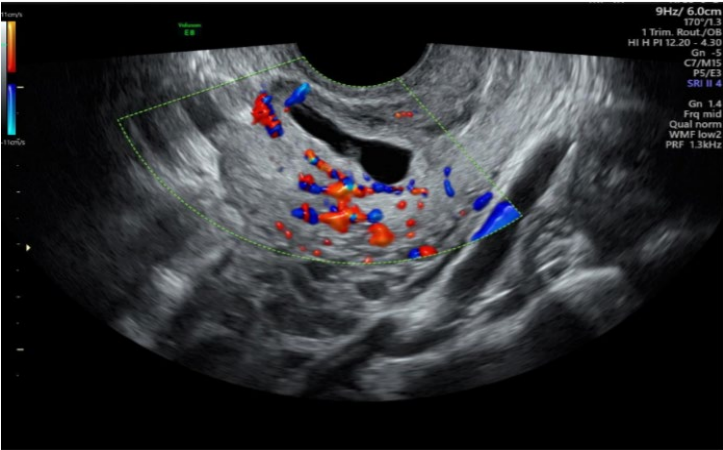


Figure 1. Cesarean Scar Pregnancy, Typical peritrophoblastic flow.



Figure 2. Cesarean Scar Pregnancy; Embryo with a crown-rump length (CRL) of 3.9 mm

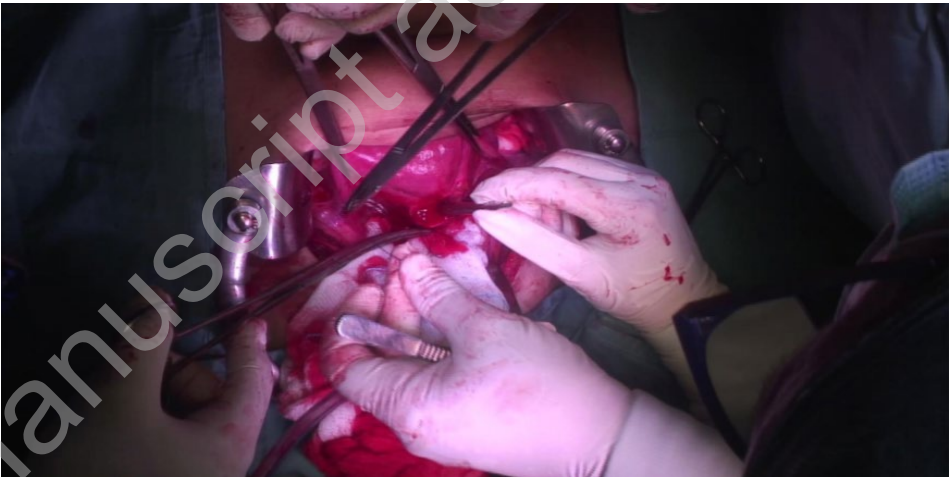


Figure 3. Laparotomy with complete excision of the gestational tissue and repair of the myometrial defect.