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Case Report

Laparoscopic Excision of Cesarean Scar Pregnancy Using Temporary Foley Tourniquet Occlusion and Scar Repair: A Case Report

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ABSTRACT

Introduction: Cesarean scar pregnancy is a rare ectopic implantation within a prior cesarean scar and carries substantial risk of severe hemorrhage, uterine rupture, and progression toward placenta accreta spectrum if not recognized early. Early diagnosis and individualized management are essential, particularly when uterine preservation is desired.

Case Presentation: A 30-year-old woman, gravida 3 para 2, with two previous cesarean deliveries, was referred after transvaginal ultrasonography demonstrated a gestational sac implanted in the anterior lower uterine segment at the cesarean scar niche, with an empty uterine cavity. Gestational age was approximately 8 to 10 weeks by last menstrual period, whereas sac size corresponded to 7 weeks 1 day on ultrasound. Residual myometrial thickness was 12.7 mm. She was hemodynamically stable and reported no vaginal bleeding or pelvic pain. Given the gestational age window, the scar implantation characteristics, and fertility-preserving intent, operative management was selected. Laparoscopy confirmed scar implantation. Temporary uterine vessel occlusion was achieved using a size 14 Foley catheter applied as a tourniquet to reduce uterine inflow. The gestational tissue was excised, followed by layered reconstruction of the lower uterine segment. Estimated blood loss was 150 mL, and transfusion was not required. Postoperative recovery was uncomplicated, and histopathology confirmed products of conception consistent with ectopic implantation.

Conclusion: In carefully selected patients with cesarean scar pregnancy at 8 to 10 weeks of gestation, laparoscopic excision with scar repair supported by temporary Foley tourniquet occlusion may provide effective hemorrhage control and uterine preservation.

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INTRODUCTION

Cesarean scar pregnancy (CSP) is an ectopic implantation in which the gestational sac embeds within the fibrous niche of a prior cesarean hysterotomy. Although uncommon, CSP is clinically high-stakes because trophoblastic invasion into poorly contractile scar tissue predisposes to sudden, massive hemorrhage and early uterine rupture. Increasingly, CSP is also viewed as the earliest manifestation of a placenta accreta spectrum (PAS) pathway when a scar-implanted pregnancy continues, abnormal placentation and catastrophic bleeding risks rise substantially, reframing CSP as a first-trimester warning sign for PAS rather than an isolated entity [1,2].

Management remains heterogeneous and must be individualized. Reported strategies span medical therapy (most commonly intragestational

methotrexate with or without adjuncts), ultrasound-guided uterine aspiration, hysteroscopic or transvaginal techniques, uterine artery embolization, and definitive surgical resection by laparoscopy or laparotomy. Choice is typically driven by gestational age, depth of implantation, residual myometrial thickness, vascularity/bleeding, local expertise, and the patient's fertility goals; comparative evidence suggests meaningful variation in complication profiles across modalities, underscoring the need for tailored decision-making rather than a single universal algorithm [2,3].

Our case is distinctive for an 8–10-week CSP managed via laparoscopic excision with lower uterine segment reconstruction, facilitated by temporary uterine vessel occlusion using a Foley catheter as a tourniquet to optimize hemostasis while preserving the uterus [4]. Although several hemostatic adjuncts have been described during CSP surgery, including uterine artery embolization and laparoscopic bulldog clamps, these methods may be limited by cost, equipment availability, interventional support, or procedure-specific expertise. By contrast, a Foley catheter used as a temporary tourniquet represents a low-cost, widely available, and rapidly deployable alternative that may be particularly relevant in resource-constrained settings, while still aligning with the principle of planned vascular control during excision and repair [5,6]. We report this case to illustrate a practical, fertility-sparing surgical approach to hemorrhage control and scar repair in advanced early-gestation CSP.

CASE PRESENTATION

Patient information

A 30-year-old woman, gravida 3 para 2 abortion 0, was referred for evaluation of suspected cesarean scar pregnancy in the first trimester. She had a history of two prior cesarean deliveries performed in 2015 and 2021. Both previous pregnancies were delivered at term by cesarean section for breech presentation, with the first neonate weighing 3200 g and the second 3000 g. She reported no prior miscarriage and had not been using contraception at the time of conception.

Her last menstrual period was dated 20 August 2025, corresponding to an estimated gestational age of approximately 8 to 10 weeks at the time of definitive evaluation. She presented without vaginal bleeding and denied lower abdominal pain. She had no urinary or bowel complaints. There was no history of chronic hypertension, diabetes mellitus, asthma, or cardiac disease. No routine medications were reported, and no drug allergies were documented. Family history was negative for gynecologic malignancy.

The clinical course began at a local hospital, where transvaginal ultrasonography suggested implantation at the prior cesarean scar. She was then referred to a tertiary teaching hospital for further assessment and management planning.

Clinical findings

On arrival, the patient was hemodynamically stable. Vital signs showed blood pressure 121/77 mmHg, pulse 87 beats per minute, respiratory rate 20 breaths per minute, and peripheral oxygen saturation 98 percent on room air. She appeared moderately ill but was fully alert with a Glasgow Coma Scale score of 15. Cardiopulmonary examination was unremarkable with regular heart sounds, no murmurs, and clear breath sounds. Abdominal examination revealed a prior Pfannenstiel scar and a soft, non-distended abdomen without peritoneal signs.

A pelvic examination was not emphasized in the diagnostic pathway because the diagnosis was established by transvaginal ultrasonography, and the patient had no active bleeding or symptoms suggesting an imminent cervical process. The management plan focused on imaging-confirmed localization and operative preparedness.

Diagnostic assessment

Transvaginal ultrasonography performed at the tertiary center on 16 October 2025 demonstrated an anteflexed uterus with an empty uterine cavity and a gestational sac implanted at the niche of the prior cesarean scar in the anterior lower uterine segment. The gestational sac measured 2.45 cm, corresponding to approximately 7 weeks and 1 day by sac size, while the clinical gestational age based on the last menstrual period was approximately 8 to 10 weeks. Residual myometrial thickness at the

lower uterine segment was measured at 1.27 cm. Endometrial thickness was 1.52 cm. These findings were interpreted as consistent with cesarean scar pregnancy.

Fetal cardiac activity and Doppler vascularity indices were not documented in the available ultrasound report. Serum beta human chorionic gonadotropin was not measured as part of the initial diagnostic work-up. Baseline postoperative laboratory data recorded on 30 October 2025 included hemoglobin 10.10 g/dL, white blood cell count 8360 per microliter, hematocrit 29.7 percent, and platelet count 244,000 per microliter.

The working diagnosis was cesarean scar pregnancy at approximately 8 to 10 weeks in a patient with two prior cesarean deliveries. Differential considerations such as cervical pregnancy and abortion in progress were clinically less likely because the uterine cavity was empty and the gestational sac was clearly localized to the prior scar niche on transvaginal imaging, without a clinical syndrome of bleeding or passage of tissue.

Based on its growth direction toward the uterine cavity and the measured residual myometrial thickness of 12.7 mm, this case was most consistent with an endogenic Type 1 cesarean scar pregnancy. The discrepancy between gestational age by last menstrual period and ultrasound sac size was interpreted cautiously, as abnormal implantation within a cesarean scar niche may distort early gestational sac configuration and reduce the accuracy of size-based estimates alone. Preoperative serum beta-human chorionic gonadotropin levels and Doppler vascularity indices were not available in the documented workup.

Therapeutic intervention

The patient received comprehensive counseling regarding the diagnosis, the risk of hemorrhage and uterine rupture, and available management options. Non-surgical approaches were discussed, including medical therapy and ultrasound-guided evacuation strategies. Still, operative management was selected due to the gestational age, the scar implantation characteristics on transvaginal imaging, the intent to preserve the uterus, and the availability of laparoscopic expertise in the tertiary center. A multidisciplinary plan was endorsed following an institutional ethics forum on 27 October 2025, after which operative laparoscopy was scheduled with blood products prepared. Intraoperative laparoscopy confirmed a pregnancy mass implanted at the previous cesarean scar in the anterior lower uterine segment (Figure 1).

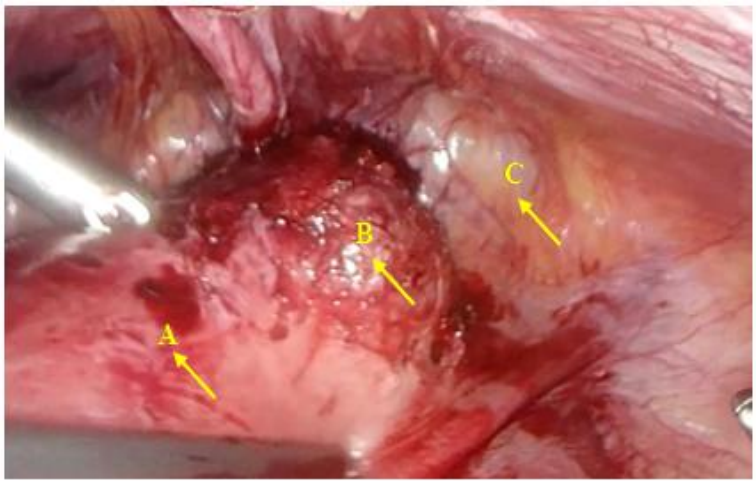


Figure 1. Intraoperative laparoscopic view of cesarean scar pregnancy and temporary balloon catheter placement Intraoperative laparoscopic findings demonstrating a pregnancy mass implanted at the previous cesarean scar in the anterior lower uterine segment. The lesion is seen protruding toward the uterine cavity and is separated from the bladder wall. (**A)** Indicates the upper uterine segment, (**B)** Indicates the cesarean scar pregnancy implantation site, and (**C)** indicates the balloon catheter used as part of the temporary uterine vessel occlusion strategy.

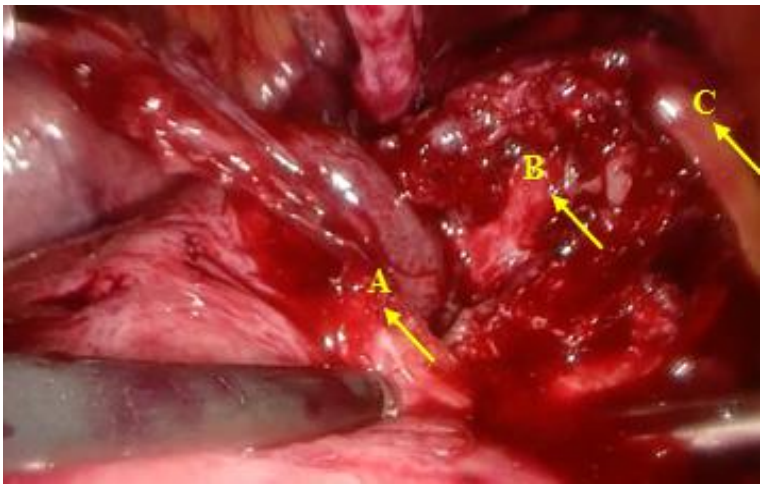


Figure 2. Laparoscopic view of cesarean scar pregnancy protruding toward the endometrial cavity with uterine manipulation and Foley catheter assistance.
Intraoperative laparoscopic image showing a cesarean scar pregnancy lesion protruding toward the endometrial cavity. (**A**) Indicates the gestational tissue at the scar implantation site, (**B**) Indicates the uterine manipulator used for uterine positioning during dissection, and (**C**) Indicates the Foley catheter used as part of the temporary uterine vessel occlusion strategy to support hemostasis.

Operative management was performed under general anesthesia with endotracheal intubation on 29 October 2025. The patient was positioned supine. After antiseptic preparation and sterile draping, a urinary catheter and uterine manipulator were placed. Pneumoperitoneum was established using a Veress needle technique, followed by placement of a primary trocar and three accessory ports.

Intraoperative evaluation showed a uterus enlarged to a size consistent with early gestation. A pregnancy mass was identified at the site of the prior cesarean scar. Both adnexa were normal bilaterally with no pathological masses. Hemorrhage control was achieved using temporary uterine vessel occlusion by applying a size 14 Foley catheter as a mechanical ligature for the uterine vessels. After temporary occlusion was secured, the gestational sac and associated trophoblastic tissue were resected from the prior scar site. The lower uterine segment defect was reconstructed with hysterorrhaphy using 2-0 monofilament suture in a two-layer closure. The myometrial and serosal layers were sutured using a simple continuous intracorporeal technique. Hemostasis was confirmed, and the temporary Foley occlusion was released after completion of repair. No active bleeding was noted at final inspection.

A peritoneal drain was placed using a rectal tube size 22 connected to a urine collection bag. Estimated blood loss was 150 mL. No intraoperative complications occurred, and blood transfusion was not required. Laparoscopy demonstrated gestational tissue protruding toward the endometrial cavity at the cesarean scar implantation site, with uterine manipulation facilitating exposure (Figure 2).

Postoperative care included uterotonic infusion with oxytocin, antifibrinolytic therapy with tranexamic acid, antibiotic coverage with oral clindamycin, and analgesia with oral mefenamic acid. Early mobilization and a high-protein diet were encouraged. The urinary catheter was maintained for the first postoperative day and then discontinued as clinically appropriate.

Follow-up and outcomes

The postoperative course was uncomplicated. On postoperative day 1, the patient remained stable with blood pressure 135/80 mmHg, pulse 85 beats per minute, and oxygen saturation 98 percent on room air. Urine output was approximately 75 mL per hour. Drain output was 80 mL over 15 hours with serohemorrhagic character. Abdominal examination showed an appropriately tender postoperative abdomen with a covered incision and functioning drain, and there was no vaginal bleeding.

On postoperative day 2, the patient continued to improve clinically. Vital signs were stable, with a blood pressure of 105/72 mmHg and a pulse of 83 beats per minute. Drain output was 100 mL over 24 hours and remained serohemorrhagic. No genital bleeding was observed. On postoperative day 3, the drain output decreased to 40 mL over 24 hours. The drain was removed, and discharge was planned, given stable clinical status, adequate pain control, and mobilization. The patient was discharged without complications.

Histopathology reported on 5 November 2025 was consistent with residual products of conception, compatible with an ectopic implantation. At outpatient follow-up on 11 November 2025, the patient reported no complaints. Vital signs remained stable, the surgical wound was healing well, and there was no vaginal bleeding. Contraceptive counseling was provided, and an intrauterine device was discussed; the patient and her partner planned further discussion before selecting a method.

DISCUSSION

This case underscores three practical points in the care of cesarean scar pregnancy. First, timely recognition on transvaginal ultrasonography is central because morbidity is driven less by symptoms at presentation and more by the biological behavior of trophoblastic invasion within poorly contractile scar tissue. Second, in a hemodynamically stable patient at an advanced early gestation who desires uterine preservation, laparoscopic excision with lower uterine segment reconstruction can provide definitive treatment while addressing the underlying niche. Third, hemorrhage prevention should be planned as an integral part of the surgical strategy rather than a contingency, and temporary uterine vessel occlusion using a readily available Foley catheter can serve as a pragmatic hemostatic adjunct when performed by an experienced laparoscopic team [4,7].

The diagnostic anchor in this patient was transvaginal ultrasonography, demonstrating a gestational sac implanted in the anterior lower uterine segment at the site of a prior cesarean scar niche, with an empty uterine cavity. Contemporary sonographic criteria for CSP emphasize the combination of an empty endometrial cavity and a clearly localized sac in the lower anterior uterine segment at the level of the scar, often with a thin or absent myometrial layer between the sac and the bladder and variable peritrophoblastic vascularity on Doppler [8–10].

The principal differentials in early pregnancy are miscarriage in progress and cervical pregnancy. Miscarriage in progress typically shows a gestational sac migrating toward or within the cervical canal, frequently accompanied by cervical opening and, on dynamic scanning, a sliding sign, in which the sac moves with gentle pressure from the transvaginal probe. In contrast, a true CSP remains fixed within the scar niche and does not demonstrate the same mobility, and Doppler may show prominent peritrophoblastic flow rather than the relative avascularity commonly seen in a non-viable sac passing through the cervix. Cervical pregnancy, while also low-lying, is centered within the endocervical canal and classically presents with a barrel-shaped cervix and a sac embedded within cervical tissue rather than within the anterior isthmic scar niche [8,9].

In this case, the ultrasound localization at the scar niche with an empty cavity and the clinical context of two prior cesarean deliveries supported CSP as the most coherent diagnosis. The measured residual myometrial thickness was not extremely thin, but thickness alone does not exclude CSP, and decisions should integrate sac location, relationship to the scar and bladder, gestational age, and vascularity when available [8,9,11].

CSP management is heterogeneous because the clinical phenotype varies widely, from very early, minimally invasive implantation to deeply embedded, highly vascular lesions with high hemorrhage potential. Commonly reported approaches include systemic or local methotrexate, ultrasound-guided uterine aspiration with or without adjuncts, hysteroscopic resection, uterine artery embolization as a primary or adjunctive measure, and surgical excision by laparoscopy or laparotomy with scar reconstruction. No single approach is universally superior across all presentations, and recent evidence syntheses highlight that success rates, need for additional procedures, transfusion risk,

and complication profiles vary meaningfully by technique, patient selection, and gestational age [2,3,12].

Medical therapy with methotrexate is often considered in selected early cases, particularly when gestational age is low and vascularity is limited, but it may require prolonged follow-up, carries a risk of delayed hemorrhage, and has higher failure or additional intervention rates in more advanced or vascular cases. Ultrasound-guided dilation and curettage or aspiration can be effective in carefully selected early CSP, but the risk of severe bleeding increases when the pregnancy is deeply implanted or markedly vascular, and many protocols rely on adjunctive measures such as balloon tamponade or UAE to mitigate hemorrhage. Hysteroscopy may be advantageous in very early endogenic CSP, where the lesion is accessible from the uterine cavity, yet it may be less suitable when the pregnancy extends outward toward the serosa, where hysteroscopy alone cannot directly reconstruct the scar. UAE can reduce perfusion and bleeding risk, but adds procedural complexity, potential effects on ovarian reserve, and resource dependence, and it is not universally available. Expectant management is generally discouraged because of the risk of catastrophic hemorrhage and progression toward placenta accreta spectrum if the pregnancy continues [2,3].

For this patient, operative management was selected because she was stable, the gestational age was approximately 8 to 10 weeks, the implantation was localized to the scar niche, and the surgical team could offer definitive excision with immediate reconstruction and planned hemorrhage control. This strategy aimed to avoid prolonged resolution and the possibility of delayed bleeding associated with conservative options, while preserving the uterus and potentially improving the integrity of the lower uterine segment scar [2,4,7].

Laparoscopy provides direct visualization of the lower uterine segment, bladder reflection, and vascular structures, enabling precise dissection, controlled resection of the implanted tissue, and layered reconstruction under magnified view. This is clinically relevant because CSP is not only an ectopic pregnancy, but also a manifestation of a scar defect, and the ability to excise the niche and reconstruct the myometrium is a major conceptual advantage of laparoscopy. Recent surgical literature describes systematic laparoscopic approaches that treat CSP while concurrently addressing the isthmocele and restoring lower uterine segment anatomy, which is aligned with fertility preservation goals and may be particularly useful when the lesion is not optimally managed from the endometrial cavity alone [4,7].

Appropriate selection remains critical. Laparoscopy is best suited for hemodynamically stable patients in centers with advanced minimally invasive expertise and immediate readiness to escalate hemorrhage control, including conversion to laparotomy if needed. In this case, stability at presentation and planned operative preparedness, including blood availability, supported a laparoscopic route [3,4].

Hemorrhage is the dominant intraoperative risk during CSP excision because scar implantation is frequently associated with abnormal neovascularization and limited myometrial contractility at the lower uterine segment. Temporary vascular control, therefore, serves not merely as an adjunct but as a planned operative principle that creates a safer field for excision and layered reconstruction. Various strategies have been reported, including uterine artery embolization, vasopressin injection, temporary uterine artery ligation, and laparoscopic bulldog clamps. However, some of these approaches require additional equipment, interventional radiology support, or specialized laparoscopic instruments that may not be uniformly available across settings [3,6,13].

In the present case, a size 14 Foley catheter was used as a temporary tourniquet to reduce uterine inflow during resection and repair. Conceptually, this approach is intended to provide transient mechanical reduction of perfusion to the operative field, thereby improving visualization and reducing blood loss during dissection and suturing. Its main strengths are simplicity, low cost, rapid deployment, and broad availability. These features make the technique especially attractive in centers where more resource-intensive vascular adjuncts are not readily accessible. Comparable hemostatic logic has also been described in other gynecologic and obstetric procedures using Foley-based tourniquet methods [5,14].

At the same time, this strategy should be applied with caution. Precise placement requires familiarity with lower uterine segment anatomy and surrounding vascular structures, and prolonged occlusion may theoretically increase the risk of ischemic tissue injury. For that reason, temporary occlusion should be integrated into a structured operative plan with awareness of timing, continuous reassessment of tissue perfusion, and readiness to escalate to definitive hemorrhage control when needed. In this patient, the low estimated blood loss of 150 mL, absence of transfusion requirement, and uncomplicated postoperative recovery support the feasibility of this approach as a practical hemostatic adjunct in selected CSP cases [5,14].

This report has several strengths. The diagnosis was established by targeted transvaginal ultrasonography with scar-localized implantation. The operative intervention was clearly defined, included both excision and uterine reconstruction, and incorporated a proactive hemostasis strategy. Clinical recovery was favorable, and histopathology confirmed products of conception compatible with ectopic implantation, supporting diagnostic validity [4,8].

Limitations are inherent to a single case report. Follow-up duration was limited and focused on clinical recovery and wound healing. Serial beta-human chorionic gonadotropin monitoring to negativity and follow-up imaging were not available in the documented dataset, limiting the ability to describe biochemical resolution kinetics and longer-term uterine healing. An additional limitation is the absence of preoperative serum beta human chorionic gonadotropin measurement and Doppler vascularity assessment, both of which would have strengthened phenotypic characterization and alignment with contemporary CSP diagnostic protocols. Doppler vascularity and fetal cardiac activity were not documented in the ultrasound report, limiting phenotypic granularity for comparison with published classification frameworks [8,9].

Cesarean scar pregnancy should be considered early in any first-trimester pregnancy with prior cesarean delivery, because prompt diagnosis can prevent severe hemorrhage and may avert progression along the placenta accreta spectrum pathway [15]. In stable patients at advanced early gestation who desire uterine preservation, laparoscopic excision with scar reconstruction is a definitive option when expertise and resources are available [3,7]. Temporary occlusion of uterine vessels with a Foley catheter can be an efficient hemostatic adjunct. Still, it should be used with careful attention to technique, occlusion time, and readiness to escalate hemorrhage control [13,14].

Cesarean scar pregnancy requires early recognition because delayed diagnosis increases the risks of major hemorrhage, uterine rupture, and progression toward placenta accreta spectrum. In carefully selected hemodynamically stable patients, laparoscopic excision with scar repair supported by temporary Foley tourniquet occlusion may offer effective hemorrhage control while preserving the uterus. Future case series should focus not only on patient selection and reproductive outcomes, but also on defining standardized protocols for safe Foley tourniquet application time to minimize the risk of ischemic injury [13,14].

CONCLUSION

Cesarean scar pregnancy is a high-risk form of ectopic implantation that requires early diagnosis to prevent severe hemorrhage, uterine rupture, and progression toward placenta accreta spectrum. In carefully selected hemodynamically stable patients who desire uterine preservation, laparoscopic excision with lower uterine segment reconstruction can provide definitive management while addressing the underlying scar defect.

Temporary uterine vessel occlusion using a Foley catheter may serve as a practical adjunct to reduce intraoperative bleeding and facilitate safe repair when performed by an experienced team. Further case series and comparative studies are needed to clarify patient selection, procedural standardization, and longer-term reproductive outcomes for this approach.

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CONFLICT OF INTEREST

The authors declare that they have no financial or personal relationships that could inappropriately influence the work reported in this paper.

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