

*Editorial*

# The Role of Hysteroscopic Treatment in Cesarean Scar Pregnancy Management: An Advancement in Care

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Cesarean scar pregnancy (CSP) is an uncommon yet clinically important obstetric condition in which an embryo implants into the myometrial defect left by a previous cesarean section [1]. Although its exact prevalence is challenging to ascertain, estimates suggest that it is a rare condition. However, the global increase in abdominal surgical procedures has led to a higher incidence of ectopic pregnancies, underscoring the importance of awareness and early diagnosis within the medical community [2]. The implications of CSP are severe, as delayed or misdiagnosis can precipitate life-threatening complications such as uterine rupture and severe hemorrhage. These adverse outcomes may necessitate emergency interventions, including hysterectomy, which can have profound impacts on a woman's reproductive future and overall health [3]. Diagnosis of CSP is primarily made through transvaginal ultrasonography, with the hallmark finding being a gestational sac embedded in the anterior uterine wall at the site of the cesarean scar. Doppler ultrasonography can further assist in the diagnosis by showing peritrophoblastic vascular flow, which is characteristic of CSP. Magnetic resonance imaging may be used as an adjunct in difficult cases or when differentiation from other types of ectopic pregnancies is necessary [3]. The literature describes a wide array of treatments for addressing CSP, encompassing medical, radiological, and surgical methods that vary from minimally invasive approaches to more extensive interventions [4,5]. These diverse options underscore the complexity of CSP and the need for individualized treatment plans that consider the specific circumstances and preferences of each patient. In recent years, hysteroscopy has undergone remarkable advancements, finding its utility expanded across a wide array of gynecologic conditions [6,7]. Once a procedure limited by the size of the equipment and the scope of its applications, modern hysteroscopy now offers a less invasive, highly precise method for diagnosing and treating intrauterine conditions, including CSP. Innovations in hysteroscopic technology, such as the development of smaller, more flexible scopes and the introduction of better visualization and operative techniques, have broadened its applicability [8]. The evolution of hysteroscopic management

for CSP marks a significant advancement, offering a minimally invasive and fertility-preserving alternative, particularly for cases diagnosed early or when the pregnancy is not viable [9]. Indications for hysteroscopic treatment include the desire to preserve fertility and early gestational age at diagnosis. This approach is also considered when the patient wishes to avoid major surgery or when medical management is contraindicated or has failed [10]. The development of smaller scopes, as well as the use of distention media such as 5% glucose, has meant that even scar pregnancies situated deep in the uterine wall are accessible to hysteroscopic resection. This means that it is possible to completely resect the gestational tissue with minimal risk of uterine rupture. Moreover, this procedure can preserve the myometrium, which is essential for future fertility, and thus has an advantage over conservative medical and surgical management that can compromise myometrial integrity. It allows resection of the scar defect itself, thus lessening the risk of recurrence in subsequent pregnancies. Additionally, the adjunctive use of pre-operative vasopressin injections into the cervix could potentially control bleeding, thereby enhancing the safety and efficacy of hysteroscopic procedures. This approach warrants study to ascertain its viability and optimize outcomes in these complex cases [11]. Despite these developments, these techniques are currently limited to cases with low vascularity and minimal myometrial involvement [12]. There are no large case series available to clarify the actual safety, efficacy, and best methods for the treatment of this condition. While hysteroscopic treatment is generally safe, potential complications include uterine perforation, hemorrhage, and infection [13]. Patients typically recover quickly from the hysteroscopic procedure, with most being discharged from the hospital on the same day. Follow-up care includes serial beta-human chorionic gonadotropin ( $\beta$ -hCG) measurements to ensure complete removal of trophoblastic tissue and monitoring for any signs of infection or complications. Future fertility planning should include a discussion on the timing of subsequent pregnancies and the potential need for cesarean delivery to prevent the recurrence of CSP [14]. In conclusion, hysteroscopic management of CSP can be con-



sidered a reliable and fertility-preserving option for women affected by this rare but serious condition. Early diagnosis and a multidisciplinary approach are crucial for optimal outcomes, allowing women to preserve their reproductive potential while minimizing the risks associated with invasive treatments. However, despite the substantial progress in hysteroscopic techniques and their application in treating CSP, there remains a notable gap in the literature regarding large-scale studies and comprehensive evaluations. This underscores the need for further research to conduct studies that can provide a more robust evidence base, encompassing larger patient populations and diverse clinical scenarios. Such studies are essential to validate the efficacy, safety, and long-term outcomes of hysteroscopic management of CSP, ultimately guiding best practices and optimizing patient outcome.

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FAG: manuscript writing and supervision. SC: data collection. GGI: manuscript writing/editing. All authors read and approved the final manuscript.

### Ethics Approval and Consent to Participate

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