

Successful Treatment of Cesarean Scar Pregnancy With Suction Curettage: Our Experiences in Early Pregnancy

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Background: Cesarean scar pregnancy is an ectopic pregnancy embedded in the myometrium of a cesarean scar. Several types of conservative treatment have been used to treat cesarean scar pregnancy, but no management protocol has been established for this rare, life-threatening condition. The purpose of this study was to evaluate the feasibility of suction curettage as a first-line treatment in early cesarean scar pregnancy.

Methods: During a 4-year period, 19 cases of cesarean scar pregnancy were diagnosed at Süleymaniye Maternity Hospital in Istanbul, Turkey. Suction curettage and Foley balloon tamponade were performed as a first-line treatment in 13 patients. Medical records and treatment results of the patients were evaluated.

Results: The mean maternal age was 32.5 years (range, 24–39 years). The mean gestational sac diameter was 13.65 mm (range, 7.6–27 mm), and mean endometrial thickness was 10.7 mm (range, 6.7–14.6 mm). A measurable fetal pole for crown-rump length was available for 6 (46.1%) patients. None of the fetuses had cardiac activity. Suction curettage under ultrasound guidance and Foley balloon tamponade were successful as the primary treatment in 13 of 13 patients. No major complications occurred during or after the procedure.

Conclusion: Our data suggest that surgical evacuation under ultrasound guidance with Foley balloon tamponade is a safe and successful treatment modality in carefully selected patients with early cesarean scar pregnancy.

Keywords: Cesarean section, pregnancy–ectopic, vacuum curettage

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INTRODUCTION

Cesarean scar pregnancy is an ectopic pregnancy embedded in the myometrium of a cesarean scar.¹ Ultrasound permits early and accurate diagnosis of cesarean scar pregnancy, allowing successful preservation of the uterus without causing maternal complications.^{2–4} The women at risk for cesarean scar pregnancy appear to be those with a history of placental pathology, ectopic pregnancy, multiple cesarean sections, and cesarean breech delivery. The incidence of cesarean scar pregnancy is estimated to be 1 in 800–2,500 women who have had a cesarean delivery.⁵

Because no management protocol has been accepted for this rare, life-threatening condition, each patient should be evaluated individually.⁶ Several types of conservative treatment have been used to treat cesarean scar pregnancy: dilation and curettage (D&C), excision of trophoblastic tissues, local or systemic administration of methotrexate, bilateral hypogastric artery ligation, and selective uterine artery embolization with curettage and/or methotrexate administration.^{4,7–10} We present our experience with 13 patients with early diag-

nosed cesarean scar pregnancy who were treated by suction curettage and Foley balloon tamponade.

METHODS

After receiving ethical approval, we evaluated the patients who had been diagnosed with early (<8 weeks) cesarean scar pregnancy between January 2009 and January 2013. The diagnosis of cesarean scar pregnancy was based on the following sonographic criteria: (1) empty uterus (Figure 1); (2) empty cervical canal; (3) anteriorly located gestational sac with a diminished myometrium layer between the bladder and the sac (Figure 1); and (4) discontinuity in the anterior uterine wall of the uterus on a sagittal view of the uterus after gestational sac (Figure 2).

Patients who were treated by suction curettage and Foley balloon tamponade primarily were included in the evaluation. Patients who received other local or systemic treatment modalities were excluded from the study.

Informed consent was obtained from all patients before treatment. Transabdominal ultrasound-guided evacuations



Figure 1. Sonographic view of a cesarean scar pregnancy shows an inferiorly located gestational sac behind the cesarean scar and an empty uterus.

with a standard suction cannula (6-8 mm) were performed under general anesthesia. At the end of the curettage, the bladder was filled by 0.9% sodium chloride, a 16-22 Fr Foley balloon catheter was inserted into the cavity at the level of the implantation site, and the balloon was inflated with 50 mL of saline to decrease the chance of hematoma formation. The Foley catheter remained in the uterus for at least 24 hours. Successful treatment was defined as complete primary evacuation of the cesarean scar pregnancy.

Reproductive outcomes, menstrual periods, and recurrence of cesarean scar pregnancy were evaluated.

RESULTS

A total of 19 patients with cesarean scar pregnancy were conservatively treated between January 2009 and January 2013. The 13 patients who were treated by suction curettage and Foley balloon tamponade primarily were included in the

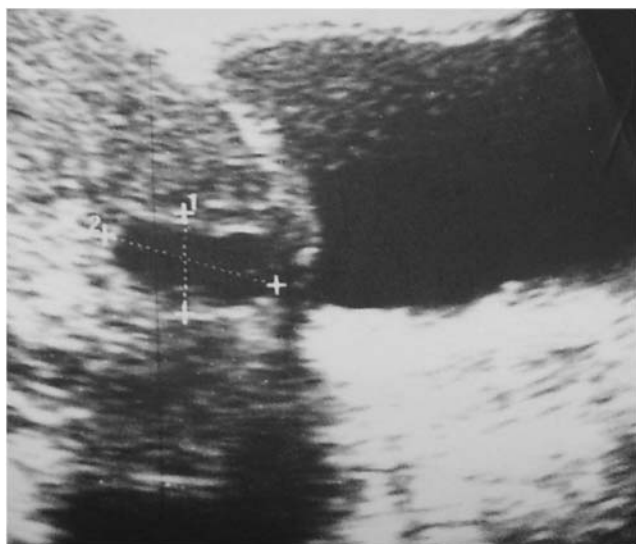


Figure 2. Sonographic view of a cesarean scar pregnancy shows discontinuity in the anterior wall of the uterus.

study. Six patients who were treated with methotrexate therapy were excluded.

The mean maternal age was 32.5 years (range, 24-39 years). Four patients (30.8%) had undergone one cesarean section, 7 patients (53.8%) had undergone 2 cesarean sections, and 2 patients (15.4%) had undergone 3 or more cesarean sections. The gestational age according to the patients' last menstrual period at diagnosis was 4 weeks and 5 days to 7 weeks and 6 days. The mean gestational sac diameter was 13.65 mm (range, 7.6-27 mm). The mean endometrial thickness was 10.7 mm (range, 6.7-14.6 mm). A measurable fetal pole for crown-rump length measurement was available in 6 (46.1%) patients. None of the fetuses had cardiac activity.

Clinical presentations were vaginal bleeding in 6 patients (46.1%), pain in 1 patient (7.7%), and asymptomatic with delay in menstrual bleeding in 6 patients (46.1%). Asymptomatic patients were diagnosed during the routine first trimester sonographic screening. Patient characteristics are provided in the Table.

Suction curettage under ultrasound guidance and Foley balloon tamponade were successful as the primary treatment in 13 of 13 patients. No major complications occurred during or after the curettage.

Ten of 13 patients were followed for 2 years after suction curettage. The remaining 3 patients were not available for follow-up. None of the 10 patients had any complaints or menstrual irregularity after suction curettage. Five of 10 (50%) patients became pregnant again. Two patients had term pregnancies, 1 patient had a 28-week preterm delivery, and 2 patients had abortions during the first trimester. None of the patients had a recurrent cesarean scar pregnancy during the follow-up period.

DISCUSSION

Larsen and Solomon reported the first patient with cesarean scar pregnancy in 1978.¹¹ The number of patients with cesarean scar pregnancy reported in the literature has since increased from 18 in 2002 to 161 in 2007.^{12,13} Possible reasons for the increase are the rising rate of cesarean delivery and early diagnosis of cesarean scar pregnancy. Although the exact cause of cesarean scar pregnancy is still unknown, its occurrence may be linked to an existing scar defect or microscopic dehiscence tract generated between the cesarean scar and the endometrial canal.⁷

Sonography is the first-line diagnostic tool for cesarean scar pregnancy. Doppler imaging may serve as an additional technique to augment the diagnostic capabilities of transvaginal ultrasound. Doppler examination may reveal high-velocity, prominent, low-impedance blood flow surrounding an ectopic gestational sac, consistent with normal early pregnancy.^{14,15} In our study, all patients were diagnosed by the combination of transvaginal ultrasound and Doppler sonography.

As stated earlier, because of the rarity of cesarean scar pregnancy, no optimal therapy has been established. Published reports consist of a few cases with no agreement on a preferred treatment modality.¹⁶ A systematic review published in 2016 reported that D&C was a successful treatment for cesarean scar pregnancy in 62% of cases, but 7% of the patients who had a D&C required a hysterectomy.¹⁷ Therefore, the authors recommend avoiding D&C as a

Table. Baseline Characteristics and Pregnancy Outcomes for Patients with Cesarean Scar Pregnancy Who Underwent Successful Suction Curettage

Patient No.	Age	Gravidity and Parity	Gestational Age	Crown-Rump Length	Gestational Sac Diameter	Number of Prior Cesarean Deliveries	Future Pregnancy
1	27	G4P2	6W4D	17.0 mm	15.0 mm	2	Abortus
2	31	G4P1	6W5D	2.2 mm	8.3 mm	1	Term pregnancy
3	26	G2P1	7W6D	8.0 mm	7.8 mm	1	Term pregnancy
4	38	G4P2	5W4D	Absent	14.0 mm	2	Abortus
5	24	G3P1	7W2D	11.5 mm	13.0 mm	1	No pregnancy
6	34	G2P1	7W2D	3.3 mm	11.7 mm	1	28-week preterm delivery
7	34	G5P3	6W6D	NA	16.9 mm	3	No pregnancy
8	39	G6P2	7W4D	NA	13.0 mm	2	Lost to follow-up
9	32	G3P2	6W3D	6.0 mm	27.0 mm	2	Lost to follow-up
10	35	G3P2	6W3D	NA	10.2 mm	2	Lost to follow-up
11	33	G5P3	7W1D	NA	7.6 mm	3	No pregnancy
12	38	G5P2	7W6D	NA	21.0 mm	2	No pregnancy
13	31	G3P2	4W5D	NA	12.0 mm	2	No pregnancy

D, days; G, gravida; NA, not available; P, para; W, weeks.

first-line approach to treating cesarean scar pregnancy because D&C can be associated with bleeding and treatment procedures requiring general anesthesia, blood transfusion, and laparotomy. In addition, the authors noted that D&C as a first-line approach is associated with infertility and poor obstetric outcome, regardless of whether it is successful or not.¹⁷

Jurkovic et al performed D&C in 8 patients with cesarean scar pregnancy, but 3 patients had significant intraoperative hemorrhage.¹³ Of these 3 patients, one was initially misdiagnosed as an incomplete miscarriage, and a blind D&C was performed. Seow et al reported a similar experience in 1 of 2 patients treated with D&C for cesarean scar pregnancy.¹⁸ In some reports, massive bleeding with suction curettage in accurately diagnosed cases was associated with a bulging sac at the ultrasound examination.^{19,20} Sac bulging is the protrusion of the gestational sac that changes the outer uterine contour. Sac bulging may be a sign of deep sac implantation and may be a contraindication for suction curettage.

Successful results with suction curettage have been reported.²¹⁻²³ In our study, 13 patients were primarily treated by suction curettage under ultrasound guidance and Foley balloon tamponade without any serious complications. The high success rate in our cases may be attributed to the careful selection of the patients and operative technique. Our patients were all at less than 8 weeks of gestation and had a 13.65-mm mean gestational sac diameter. None of the patients had bulging sac or cardiac activity. Recommending suction curettage as a first-line treatment in selected patients after careful ultrasound examination seems logical.

A metaanalysis published in 2018 reported that expectant management may be a reasonable option for cesarean scar pregnancy without cardiac activity, although in almost 30% of these cases, prompt treatment was required.²⁴ We con-

clude that expectant management with a 70% success rate is not safe enough to make a recommendation.

CONCLUSION

Our data suggest that surgical evacuation under ultrasound guidance with Foley balloon tamponade is a safe and successful treatment modality in carefully selected patients with early cesarean scar pregnancy. Patients with cesarean scar pregnancy less than 8 weeks of gestation and without cardiac activity or a bulging sac may be good candidates for suction curettage. Noninvasive approaches are likely more appropriate for patients with cesarean scar pregnancies that are more than 8 weeks of gestation and have cardiac activity and a bulging sac. Prospective trials are needed to determine the optimal treatment of cesarean scar pregnancy.

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