

Cesarean scar pregnancies and their management: case series

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Abstract

Objective: To manage early trimester ectopic scar pregnancies, treatment, follow up and protecting fertility.

Case: Cesarean scar pregnancy diagnosis was done by ultrasound in five cases by previously described sonographic criteria. Missed period, vaginal bleeding and, pelvic pain are major admittance symptoms. We performed local therapies for all cases including aspiration by OPU needle, intrasac methotrexate and intracardiac potassium chloride and systemic methotrexate (50 mg/kg). We did not need extra surgery and blood transfusion.

Conclusion: Every woman who had a cesarean section history must be checked carefully due to cesarean section pregnancy following delayed menstruation and positive pregnancy test. Various cesarean section pregnancy treatment modalities have been reported; however, the best approach for this is still under debate. Local treatment of cesarean scar pregnancy could be achieved by combination of local techniques in carefully selected cases.

Keywords: Cesarean scar pregnancy, ectopic pregnancy, fertility, methotrexate.

Özet: Sezaryen skar gebelikleri ve yönetimleri: Olgu serisi

Amaç: Erken trimester ektopik skar gebeliklerini, tedavisini, takibini ve koruyucu fertilesini yönetmek.

Olgu: Beş olguya daha önce tanımlanmış sonografi kriterlerine göre ultrason ile sezaryen skar gebeliği tanısı konuldu. Gecikmiş adet, vajinal kanama ve pelvik ağrı, başvuru anındaki majör semptomlardı. Tüm olgularda, OPU iğne ile aspirasyon, intrasak metotreksat ile intrakardiyak potasyum klorür ve sistemik metotreksat (50 mg/kg) dahil yerel tedaviler uyguladık. Ekstra cerrahi müdahaleye ve kan transfüzyonuna ihtiyaç duymadık.

Sonuç: Sezaryen doğum geçmişi olan tüm kadınlar, gecikmiş adet ve pozitif gebelik testini takiben sezaryen gebelik nedeniyle dikkatli bir şekilde kontrol edilmelidir. Birçok sezaryen gebelik tedavisi yöntemi bildirilmiştir, ancak bu konuda en uygun yaklaşım halen tartışmalıdır. Sezaryen skar gebeliğinin lokal tedavisi, dikkatli bir şekilde seçilmiş olgularda yerel tekniklerin kombinasyonu ile başarılı şekilde gerçekleştirilebilir.

Anahtar sözcükler: Sezaryen skar gebeliği, ektopik gebelik, fertilité, metotreksat.

Introduction

Cesarean scar ectopic pregnancy (CSP) is one of the rare types of ectopic pregnancies. CSP incidence has been reported as 1/1800–1/2200 pregnancies. But, it is increasing progressively due to the increased cesarean section rates and assisted reproductive techniques. Early diagnosis is crucial to avoid severe complications such as uterine rupture and severe hemorrhage. Maternal mor-

bidity such as uterine rupture, hemorrhage and hysterectomy is possible in case of undiagnosed cases.^[1] The diagnosis is usually made by ultrasound, showing the following with these criteria such as an empty uterine cavity and cervical canal, a gestational sac located anteriorly at the isthmus, and evidence of a functional trophoblastic/placental circulation on color Doppler at the late pregnancy weeks.^[2,3] Invasion of the bladder is possi-

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ble complication. Morbidly adherent placenta is another end of abnormal placentation spectrum. Also, there is a focal thinning in myometrium at cesarean area. Pregnancy may protrude through the scar and if pregnancy is viable it can implant on abdominal organs. Magnetic resonance imaging can be used to assess depth of placental invasion.^[4]

There is only one patient which was reported who reached 35 weeks of gestation. She was complicated with massive hemorrhage and disseminated intravascular coagulopathy at cesarean operation and she underwent hysterectomy for life saving purposes.^[5]

There are no guidelines for the optimal treatment of CSP in patients who are hemodynamically stable. There are many conservative treatment modalities described in the literature including systematic methotrexate, local methotrexate, combined intra cardiac potassium chloride injection and systemic methotrexate, bilateral uterine artery embolization (UAE), and combined UAE and local methotrexate. Uterine artery embolization could be indicated for the intractable bleeding.^[6-9] Potassium chloride injections by vaginal route can be performed by ultrasound-guided needle, if fetal cardiac activity is positive.^[10-13] We reported five cases of cesarean scar pregnancies which treated by various local therapies.

Case Report

Clinical features, treatments and outcomes of cases summarized in **Table 1**.

Case 1

Thirty-three-year-old woman who had gravida 4 para 2 admitted to our outpatient clinic with symptoms of amenorrhea. She has a history of two deliveries by cesarean section 8 and 6 years ago and the history of cesarean scar pregnancy 2 years ago. She presented at 5 weeks pregnancy at her first visit. Beta HCG levels are raised as 417, 2357, 3512 mIU/ml. In the first visit, ultrasound revealed gestational sac with yolk sac (**Fig. 1a**) which located between the isthmus cervix borders (**Fig. 1b**) in the previous cesarean section scar. Longest diameter of gestational sac was 6 mm with yolk sac. Endometrium was 5.6 mm. Systemic methotrexate was performed intramuscularly (50 mg/m²). HCG level was 7267 mIU/ml at methotrexate administration day. Dislocated gestational sac was detected by ultrasound at the control exam. Ultrasound-guided evacuation of gestational sac was performed. HCG levels dropped down sharply following evacuation.

Case 2

Thirty-two-year-old gravida 3 para 1 woman admitted to emergency service with bleeding and amenorrhea. She has a history of delivery by cesarean section at 35 weeks of gestation. Also, she reported pressure in the midline just over bladder. HCG level was 22,976 mIU/ml. Ultrasound revealed both embryo and yolk sac which located in the lower uterine segment and gestational sac has been extended to the former cesarean section scar (**Fig. 2a**). Crown-rump length (CRL) was 4.76

Table 1. Clinical features of cesarean scar pregnancy cases.

Case	Age	Number of previous C-section	HCG at diagnosis	Sac diameter	Treatment	Prognosis
1	33	2	3512	6 mm with yolk sac	Systemic Mtx+ US guided evacuation	Successful term delivery in the next pregnancy
2	32	1	22,976	CRL: 4.76 mm, cardiac activity (+)	Systemic and local Mtx by OPU needle	Successful term delivery in the next pregnancy
3	40	1	9000	8 mm	Local Mtx by OPU needle + US guided evacuation	Successful, no further therapy
4	48	1	33,734	40 mm	US guided evacuation and haemostatic balloon	Successful, no further therapy
5	24	2	62,316	CRL: 8 mm, cardiac activity (+)	Systemic Mtx+ US Guided Intracardiac KCl	Successful, no further therapy

Mtx: methotrexate; KCl: potassium chloride; OPU: oocyte pick-up; US: ultrasound.

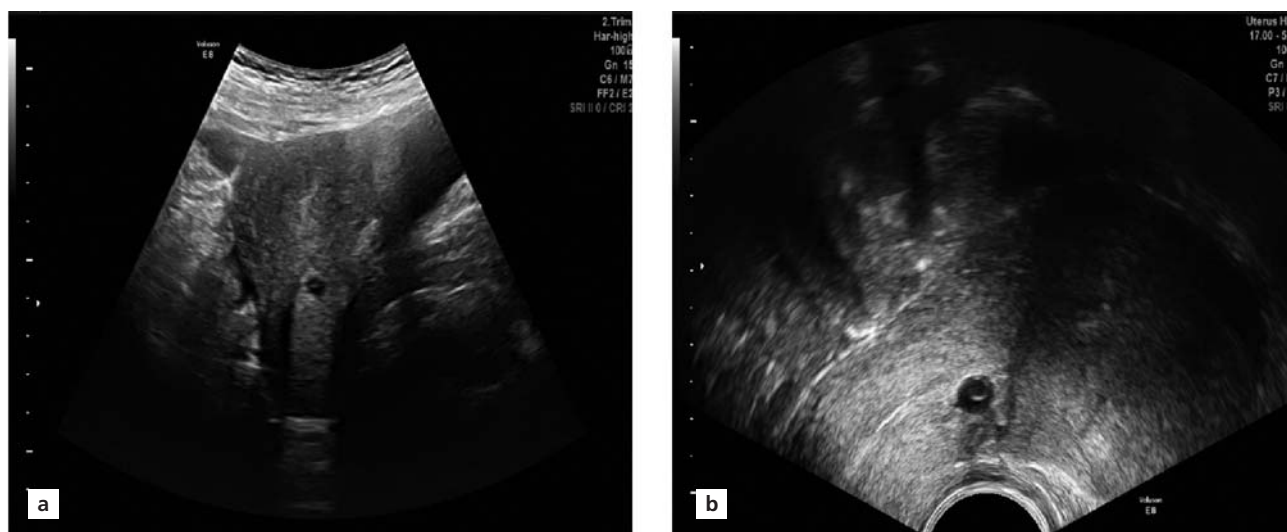


Fig. 1. The gestational sac with yolk sac (a) located between the isthmus cervix borders (b) in the previous cesarean section scar.

mm and cardiac activity was seen (**Fig. 2b**). In the power Doppler, low resistance-high velocity peripheral blood flow was seen around gestational sac in the previous cesarean section incision site (**Fig. 2b**). Gestational sac even bulged to the bladder not invaded (**Fig. 3**) CRL increased to 8 mm progressively one week later. Sequential systemic methotrexate (1 mg/kg) performed four times intramuscularly with folinic acid rescue. Intracavitary methotrexate (1 mg/kg) was performed by

transvaginal oocyte pick-up (OPU) needle. One week later fetal cardiac activity was negative and bleeding was started. Evacuation of cavity was not performed. HCG level decreased progressively. One month later after intracavitary methotrexate administration, disrupted gestational sac was seen as 27×24 mm (**Fig. 4a**) diameter. However, obvious peripheral blood flow was seen (**Fig. 4b**). Two months later following methotrexate, HCG level was 13 mIU/ml. Gestational sac disappeared

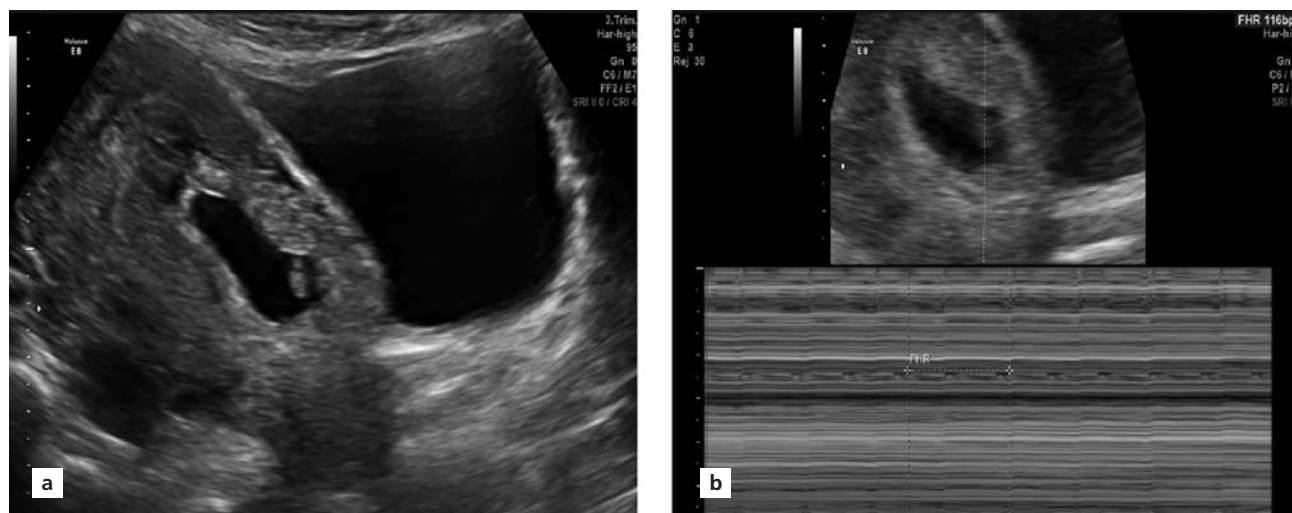


Fig. 2. Both embryo and yolk sac located in the lower uterine segment and gestational sac extended to the former cesarean section scar (a) and cardiac activity (b). In the power Doppler, low resistance-high velocity peripheral blood flow was seen around gestational sac in the previous cesarean section incision site (b-bottom).



Fig. 3. Gestational sac even bulged to the bladder not invaded. CRL increased to 8 mm progressively one week later.

and replaced with hematoma. Its diameter was 3×4 cm (**Fig. 4c**). 4 months later following local treatment, uterus was normal and hematoma resolved (**Fig. 4d**). One year later, patient became pregnant again spontaneously. Gestational sac located at fundus.

Case 3

Forty-year-old gravida 2 para 1 woman admitted with secondary amenorrhea. We performed transvaginal ultrasound to reveal 8 mm gestational sac, which possibly placed within the former cesarean section scar and protrude to the bladder. Her abdomen was soft and not distended. There was no vaginal bleeding and the cervix was closed on speculum examination. Intracavitary methotrexate (1 mg/kg) was introduced by OPU needle (16 Gauge) by transvaginal ultrasound guide. Then it

was aspirated by same needle. After methotrexate, gestational sac dislocated through to cervical canal and vaginal bleeding begun. In the follow-up, ultrasound-guided aspiration of gestational sac was performed by Pipelle cannula because of gestational sac did not abort.

Case 4

Thirty-eight-year-old gravida 2 para 1 women admitted with bleeding and pain. She has a history of one lower segment cesarean section delivery. Bright blood from external cervical os was seen during speculum exam. Cervix was tender by digital exam. Serum HCG titer was 33,734 mIU/ml. Ultrasound revealed gestational sac just located over former cesarean section site and extend to the isthmic region of uterus. It has 4 cm largest diameter. Hemoglobin level was 12.8 g/dl at the

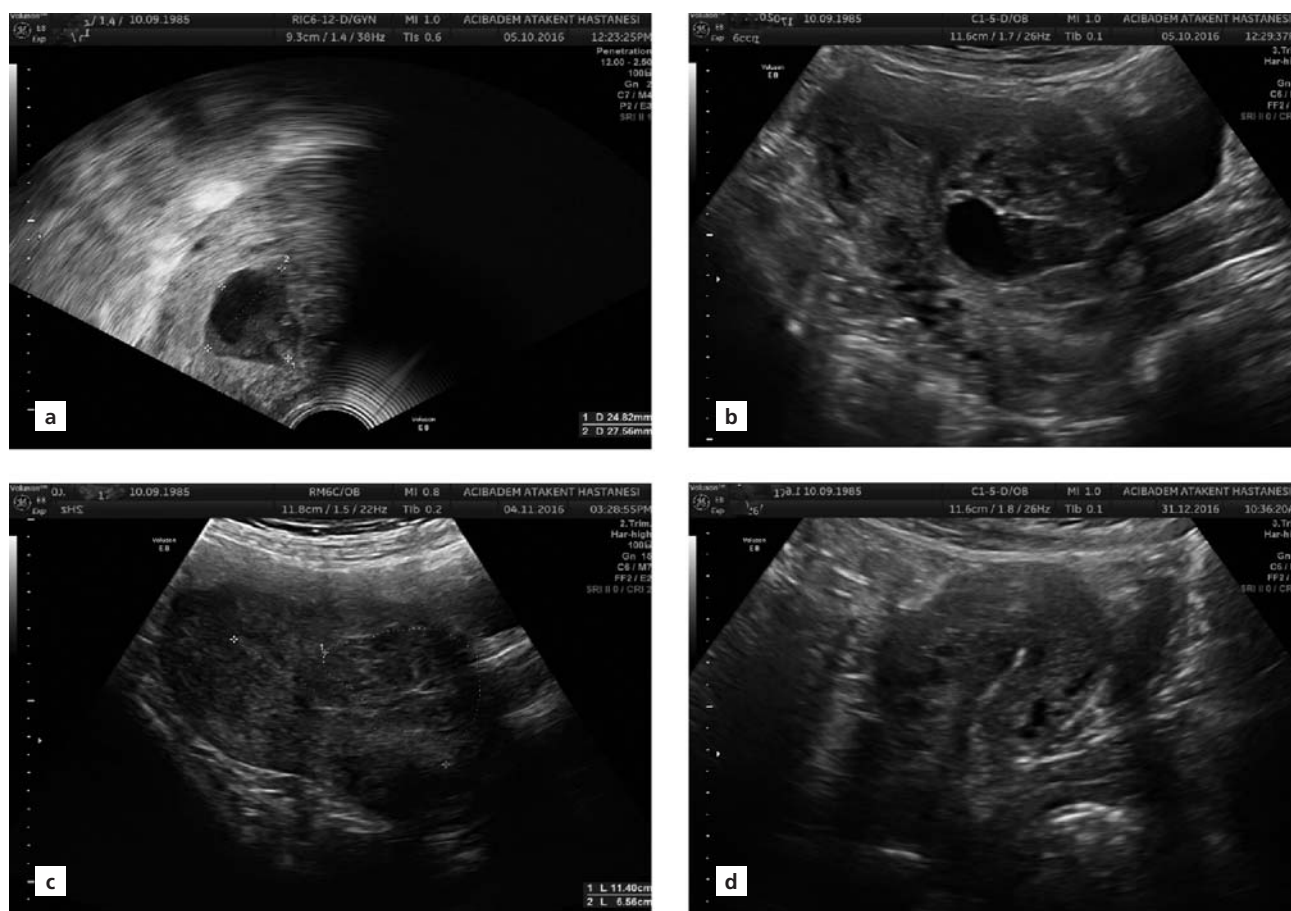


Fig. 4. Disrupted gestational sac was seen as 27×24 mm (a). The obvious peripheral blood flow was seen (b). Two months later following metotrexate, gestational sac disappeared and replaced with hematoma. (c). 4 months later following local treatment, uterus was normal and hemotoma resolved (d).

first admittance. After the 6 hours follow-up it was drop down to the 11.4 g/dl. Suction curettage was performed by number 4 Karman cannula with negative pressure under ultrasound guidance. Transcervical 16 F Foley catheter was inserted and balloon was inflated 30 cc sterile saline and traction was performed to achieve haemostasis. It was remained 12 hours and deflated carefully and removed. Patient was discharged 24 hours following the suction curettage. Serum HCG titer was 2460 mIU/ml postoperative 7th day and 161 mIU/ml postoperative 17th day.

Case 5

Twenty-four-year-old gravida 3 para 2 woman referred by possible diagnosis of cervical pregnancy. She has two previous cesarean section operation, last one 10 months

before. Basal serum HCG level was 62,316 mIU/ml. Transvaginal ultrasound revealed a bulging cystic mass located in the isthmic region. It was 42×33 mm and consisted of cardiac activity visible embryo (CRL: 8 mm). Both cervical canal and uterine cavity were empty. Continuity of anterior uterine wall was disappeared and myometrium was thin and irregular in the gestational sac region. By the diagnosis of cesarean section pregnancy, as a first step intracardiac 2 ml 10% potassium chloride applied by 20 G spinal needle under the real-time ultrasound guidance transabdominally. In the second step, systemic methotrexate was performed intramuscularly (1 mg/kg) in Day 1-3-5-7 with folinic acid rescue (0.1 mg/kg). HCG level was 70,074 mIU/ml in the day 3. Scar pregnancy started to shrinkage and disappeared 3–4 weeks later following the last dose of methotrexate.

Discussion

We reported clinical outcomes of five cases of cesarean scar pregnancy following local treatment by methotrexate. Cesarean scar pregnancy is a rare type of ectopic pregnancy. In recent years, ectopic scar pregnancies have progressively increased due to the assisted reproductive techniques and previous abdominal delivery. Furthermore, loss of fertility, life threatening bleeding, morbidly adherent placenta and maternal death are among the maternal morbidities related with cesarean scar pregnancy.^[8-13] Delayed diagnosis and treatment may increase uterine rupture risk and causes severe hemorrhage. To diagnose the ectopic pregnancy, physical examination is the first step and transvaginal ultrasound is easy and cheap route to determine the location of gestational sac. Magnetic resonance imaging for differential diagnosis is rarely indicated.^[14]

Generally single agent pharmacologic therapy is the first choice, rarely surgery indicated. Treatment by methotrexate is the best for early-diagnosed cases. If the fetal cardiac activity present, we need intra-cardiac potassium chloride to sustain treatment success. Sometimes medical treatment may be failed because of very high HCG levels and in the presence of cardiac activity. Dilatation and suction curettage or laparoscopic resection in first trimester may be treatment choices if the initial treatment fails. If gestational sac bigger than 2.5 cm and HCG level is bigger than 10,000 IU/ml furthermore there is fetal cardiac activity positive at ectopic focus we absolutely need KCl injection.^[14]

Uterine closure at cesarean section may be a factor for uterine rupture and future cesarean scar pregnancy. Uterine double-layer closure may be safe for avoiding from complications like scar pregnancies.^[15] Multiple pregnancies, absence of the first stage of labor, and cephalopelvic disproportion might be the risk factors for the occurrence of CSP.^[16] In some cases, surgical resection for removing ectopic pregnancy and repair former cesarean section defect are logical options. Although we did not need hysterectomy in our patients, hysterectomy is a treatment choice for the severe hemorrhage following initial treatment. Also, patients must be counseled about abnormal placentation for next pregnancies.

In our small case series, we achieved elimination of cesarean scar pregnancy by local treatment with methotrexate due to early diagnosis. Local treatment is better than systemic treatment because of fewer side

effects. Totally in twenty days HCG levels decreased progressively, but we needed systemic methotrexate and folinic acid in two cases (Cases 1 and 5). Ultrasound-guided evacuation performed 3 cases (Cases 1, 3 and 4). Ultrasound-guided or blind curettage or evacuation is not successful alone. Following the local methotrexate administration, greater than 35% reduction in HCG after uterine artery embolization and local methotrexate injection can be used as an indicator to perform dilation and curettage as complementary treatment.^[17,18] There was no severe hemorrhage in our patients in this respect, for this reason blood transfusion was not required. In the Case 4 from our small series, we performed balloon compression by Foley catheter and it was removed 12 hours later to achieve hemostasis (**Table 1**). Wu et al^[19] utilized from the Cook Cervical Ripening Balloon to prevent hemorrhage during or following the ultrasound-guided evacuation in 15 cases with scar pregnancy. They successfully stopped hemorrhage in all cases following the evacuation without any surgery and blood transfusion.

Every woman who had a cesarean section history must be checked carefully due to cesarean section pregnancy following delayed menstruation and positive pregnancy test. Various cesarean section pregnancy treatment modalities have been reported, however the best approach for this is still under debate. Management and follow-up should be individualized for each patient.

Conclusion

In conclusion, local treatment of cesarean scar pregnancy could be achieved by combination of local techniques in carefully selected cases.

Conflicts of Interest: No conflicts declared.

References

1. Fylstra DL. Ectopic pregnancy within a cesarean scar: a review. *Obstet Gynecol Surv* 2002;57:537-43.
2. Jurkovic D, Hillaby K, Woelfer B, Lawrence A, Salim R, Elson CJ. First-trimester diagnosis and management of pregnancies implanted into the lower uterine segment Caesarean section scar. *Ultrasound Obstet Gynecol* 2003;21:220-7.
3. Marcus S, Cheng E, Goff B. Extrauterine pregnancy resulting from early uterine rupture. *Obstet Gynecol* 1999;94:804-5.
4. Fylstra DL, Pound-Chang T, Miller MG, Cooper A, Miller KM. Ectopic pregnancy within a cesarean delivery scar: a case report. *Am J Obstet Gynecol* 2002;187:302-4.

5. Herman A, Weinraub Z, Avrech O, Maymon R, Ron-El R, Bukovsky Y. Follow up and outcome of isthmic pregnancy located in a previous caesarean section scar. *Br J Obstet Gynaecol* 1995;102:839–41.
6. Rotas MA, Haberman S, Levгур M. Cesarean scar ectopic pregnancies: etiology, diagnosis, and management. *Obstet Gynecol* 2006;107:1373–81.
7. Li N, Zhu F, Fu S, Shi X. Transvaginal ultrasound-guided embryo aspiration plus local administration of low-dose methotrexate for cesarean scar pregnancy. *Ultrasound Med Biol* 2012;38:209–13.
8. Einnenkel J, Stumpp P, Kosling S, Horn LC, Hockel M. A misdiagnosed case of cesarean scar pregnancy. *Arch Gynecol Obstet* 2005;271:178–81.
9. Vial Y, Petignat P, Hohlfeld P. Pregnancy in a cesarean scar. *Ultrasound Obstet Gynecol* 2000;16:592–3.
10. Doubilet PM, Benson CB, Frates MC, Ginsburg E. Sonographically guided minimally invasive treatment of unusual ectopic pregnancies. *J Ultrasound Med* 2004;23:359–70.
11. Stovall TG, Ling FW. Single-dose methotrexate: an expanded clinical trial. *Am J Obstet Gynecol* 1993;68:1759–62.
12. Barnhart K, Hummel AC, Sammel MD, Menon S, Jain J, Chakhtoura N. Use of “2-dose” regimen of methotrexate to treat ectopic pregnancy. *Fertil Steril* 2007;87:250–6.
13. Rodi IA, Sauer MV, Gorrill MJ, Bustillo M, Gunning JE, Marshall JR, et al. The medical treatment of unruptured ectopic pregnancy with methotrexate and citrovorum rescue: preliminary experience. *Fertil Steril* 1986;46:811–3.
14. Rotas M, Haberman S, Levгур M. Cesarean scar ectopic pregnancies etiology, diagnosis and management. *Obstet Gynecol* 2006;107:1373–8.
15. Vachon-Marceauc C, Demers S, Bujold E, Roberge S, Gauthier RJ, Pasquier JC, et al. Single versus double-layer uterine closure at cesarean: impact on lower uterine segment thickness at next pregnancy. *Am J Obstet Gynecol* 2017;217: 65. e1–65. e5.
16. Shi M, Zhang H, Qi SS, Liu WH, Liu M, Zhao XB, et al. Identifying risk factors for cesarean scar pregnancy: a retrospective study of 79 cases. *Ginek Pol* 2018;89:195–9.
17. Liu G, Wu J, Cao J, Xue Y, Dai C, Xu J, et al. Comparison of three treatment strategies for cesarean scar pregnancy. *Arch Gynecol Obstet* 2017;296:383–9.
18. Arslan M, Pata O, Dilek TUK, Aban M, Dilek S. Treatment of viable cesarean scar ectopic pregnancy with suction curettage. *Int J Gynecol Obstet* 2005;89:163–6.
19. Wu C, Li Y, Ye W, Ma W, Zhao D. Cook Cervical Ripening Balloon successfully prevents excessive hemorrhage combined with ultrasound-guided suction curettage in the treatment of cesarean scar pregnancy. *J Obstet Gynaecol Res* 2017;43:1043–7.