DÜZCE TIP FAKÜLTESİ DERGİSİ
DUZCE MEDICAL JOURNAL

ORIGINAL ARTICLE / ORİJİNAL MAKALE

[1] Abdulkadir Turgut

[1] Ali Özler

[1] Neval Yaman Goruk

[1] Senem Yaman Tunç

[1] Serdar Başaranoğlu

[1] Ahmet Yalınkaya

CESAREAN SCAR PREGNANCY: A TERTIARY CENTER CASE SERIES AND LITERATURE REVIEW

Sezaryen Skar Gebeliği: Bir Tersiyer Merkez Olgu Serisi ve Literatür İncelemesi

[1] Dicle Üniversitesi, Tıp Fakültesi, Kadın Hastalıkları ve Doğum Anabilim Dalı, Diyarbakır.

ABSTRACT

Aim: To examine the characteristics, management and outcomes of cesarean scar pregnancies at a single tertiary obstetric centre over a three-year period.

Method: A retrospective study was performed on 8 cases of cesarean scar pregnancy identified between January 2009 and June 2012 from the medical files.

Results: The mean gestational age was 58.2 days (35-120). The average time for β-hCG levels to return to normal values after treatment for cesarean scar pregnancy was 3.4 weeks (2-6). The mean number of previous cesarean sections was 1.9 (1-4) and the mean interval time after the last cesarean section was 20 months (10-48). Laparotomy with excision of the sac and primary repair (n=5) and methotrexate (n=3) were the modalities of management.

Conclusion: Cesarean scar pregnancy is a potentially life-threatening complication of pregnancy that constitutes a diagnostic and therapeutic challenge. Decision on treatment modality should be determined on individualized basis depending on factors such as gestational age, β-hCG levels, fetal cardiac activity, desire of future fertility and the experience and facilities available.

Key words: Cesarean scar; complication; cesarean scar pregnancy; ectopic pregnancy.

ÖZET

Amaç: Tersiyer bir obstetrik merkezde üç yıllık bir süre içinde tespit edilen sezaryen skar gebeliklerin özellikleri, yönetimi ve sonuçları incelenmiştir.

Yöntem: Bu retrospektif çalışma Ocak 2009 ve Haziran 2012 yılları arasında hasta dosyalarından belirlenmiş 8 sezaryen skar gebeliği olgu verileriyle yapılmıştır.

Bulgular: Ortalama gebelik yaşı 58.2 (35-120) gündü. Sezaryen skar gebeliği tedavisi sonrası β-hCG seviyelerinin normal değerlerine dönmesi için geçen ortalama süre 3.4 (2-6) haftaydı. Geçirilmiş sezaryen sayısı ortalama 1.9 (1-4) ve son sezaryen sonrası geçen ortalama süre 20 (10-48) aydı. Kesenin çıkarılması ve primer onarımın yapıldığı laparotomi (n=5) ve metotreksat (n=3) yönetim şekilleriydi.

Sonuç: Sezaryen skar gebeliği, tanı ve tedavi zorlukları olan, potansiyel olarak yaşamı tehdit eden bir gebelik komplikasyondur. Tedavi yöntemi seçimi gestasyonel yaş, β-hCG düzeyleri, fetal kalp aktivitesi, gelecekteki fertilite isteği, deneyim ve mevcut olanaklar gibi faktörlere bağlı olarak bireysel bazda belirlenmelidir.

Anahtar kelimeler: Sezaryen skar; komplikasyon; sezaryen skar gebeliği; ektopik gebelik.

Submitted/Başvuru tarihi:
14.07.2014
Accepted/Kabul tarihi:
04.08.2014
Registration/Kayıt no:
14.07.382

Corresponding Address / Yazışma Adresi:

Abdulkadir Turgut

Dicle Üniversitesi, Tıp Fakültesi, Kadın Hastalıkları ve Doğum Anabilim Dalı, Diyarbakır.

Tel: 0505 4834380
E-posta:
abdulkadirturgut@gmail.com

e-ISSN 1307- 671X
www.tipdergi.duzce.edu.tr
duzcetipdergisi@duzce.edu.tr

INTRODUCTION

Cesarean scar pregnancy (CSP) is described as an ectopic pregnancy implanted in the myometrium at the site of a previous cesarean section (CS) scar. Even though it is the rarest kind of ectopic pregnancy, it may lead to severe complications such as uterine rupture and severe hemorrhage (1). This type of gestation can be a life-threatening condition due to the occurrence of an abnormally adherent placenta with subsequent heavy bleeding and the risk of uterine rupture with maternal and fetal morbidity and mortality (1–3). Therefore, early and accurate diagnosis is of crucial importance for not only avoidance of complications, but also preservation of fertility.

Many theories have been proposed to explain the etiopathogenesis. The most considered one is the embryo implantation into the uterine wall through a small internal dehiscence of the scar or through a tract from the endometrial canal up to the scar tissue. The predisposing factors for this type of pregnancy are multiple cesarean sections increasing scar surface and breech presentation when incision is performed on a nondeveloped lower uterine segment (1,4).

The most common symptom is painless vaginal bleeding which can be massive in some cases (5). Since there is no specific clinical sign of the CSP, endovaginal ultrasonography and color flow Doppler are essential for diagnosis. The possible incidence of this type of ectopic pregnancy

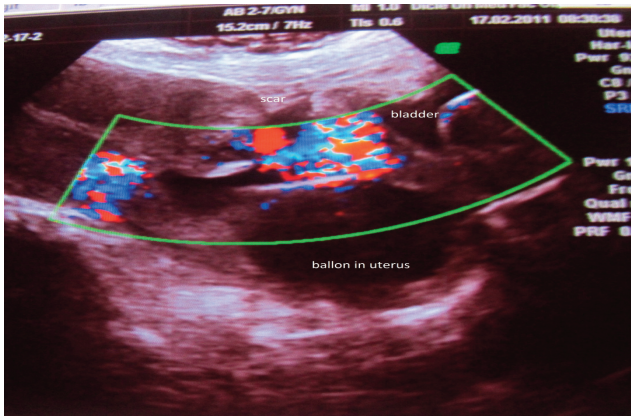

Figure 1. Ultrasonographic view of the CSP in Case 1. A Foley catheter has been placed in the uterine cavity to manage the profuse vaginal bleeding.

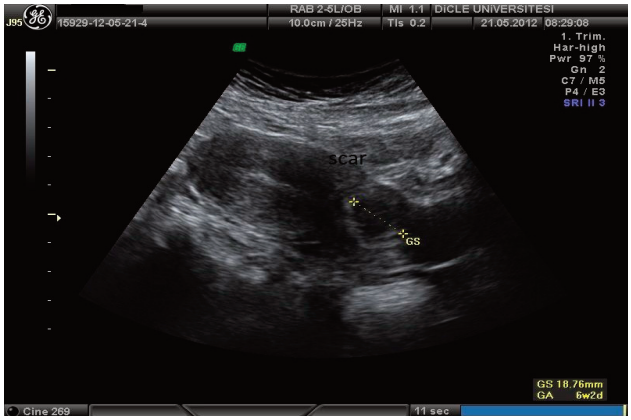

Figure 2. Ultrasonographic view of the gestational sac of CSP in Case 7 is marked.

ranges from 1/1800 to 1/2200 pregnancies (5,6).

In this paper, we share our experience with eight cases of CSP along with a review of current literature.

MATERIALS AND METHODS

This study was approved by the local Institutional Review Board. We performed a retrospective analysis of eight patients of CSP detected between January 2009 and June 2012 from the medical records of the department of obstetrics and gynecology of a tertiary care center. Data were abstracted from the original hospital charts, operation notes, anesthesia notes, discharge summaries, nursing notes and outpatient medical records. The diagnosis of CSP was based on a thorough history, including obstetric, reproductive, and surgical history, physical examination, increased levels of serum b-hCG and ultrasonography findings. The diagnostic standard at ultrasonography was the presence of (1) an empty uterine cavity, without contact with the sac; (2) a clearly visible empty cervical canal, without contact with the sac; (3) presence of the gestation sac with or without a fetal pole with or without fetal cardiac activity (depending on the gestational age) in the anterior part of the uterine isthmus; (4) absence of or a defect in the myometrial tissue between the bladder and the sac (4). Three ultrasonographic views of different CSP can be seen on Figures 1-3.

The major criteria for patient inclusion in this analysis were a diagnosis of CSP based on the aforementioned findings and absence of obvious cardiac, renal, hepatic and blood system diseases.

RESULTS

The average values for age, gravida and para were 32.4 (range 25 to 39), 4.4 (range 3 to 10) and 2.5 (range 1 to 8) respectively. The mean number of prior uterine curretage was 1.25 (range 0 to 2). The mean gestational age was 58.2 (range 35 to 120) days and average initial level of β-hCG was 11768.4 (range 1000 to 31625) mIU/ml. The average time for β-hCG levels to return normal values after treatment for CSP was 3.4 (range 2 to 6) weeks. The mean number of previous CSs was 1.9 (range 1 to 4) and the mean interval time after the last CS was 20 (range 10 to 48) months. Except one case, the diagnosis of CSPs made from the beginning. The preoperative prediagnosis of this case was myoma uteri with severe bleeding and CSP diagnosed intraoperatively. Demographic and clinical features of the series are demonstrated on Table 1.

Three alternative management strategies consisted of uterine curettage, methotrexate (MTX) and laparotomy. Three cases were treated medically with MTX (2 cases received intramuscular MTX, 1 case received transabdominal MTX). Dilatation and curettage was initially attempted in one patient, but we had to switch to laparotomy due to profuse bleeding. In total, five cases underwent laparotomy where excision of gestational sac and primary repair.

Table 1. Clinical features of our CSP series.

Case	Age	Gravida	Para	Gestational age (days)	Main symptom	Initial β-hCG	Fetal cardiac activity	Time for β-hCG to reach normal levels after treatment	No. of previous CS	Time interval after last CS (months)	Treatment modality
1	29	4	2	46	Vaginal bleeding	<1000	Empty sac	2 weeks	2	10	D/C, L/T
2	25	3	1	55	Vaginal bleeding	19654	+	4	1	18	L/T
3	38	4	1	35	Vaginal bleeding	9317	-	4	1	12	MTX (i.m)
4	39	4	2	51	Vaginal bleeding	31625	+	6	1	24	L/T
5	32	3	2	120	Vaginal bleeding	1334	Empty sac	3	2	12	L/T
6	26	4	3	56	Vaginal bleeding	?	?	3	2	24	L/T
7	32	3	1	44	Inguinal pain	10701	+	2	2	12	MTX (t.a)
8	38	10	8	59	Inguinal pain	8748	+	3	4	48	MTX (i.m)

(Abbreviations: CS: cesarean section; MTX: methotrexate; D/C: dilatation & curettage; L/T: laparotomy; i.m: intramuscular; t.a: transabdominal)

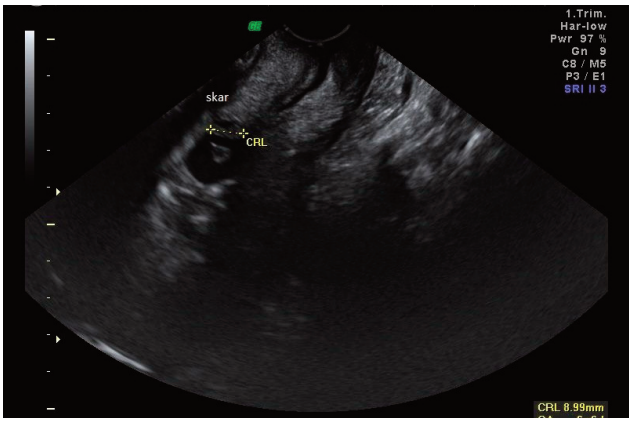

Figure 3. Crown-rump length (CRL) of the CSP in Case 8 is marked on ultrasonographic view.

MTX was administered intramuscularly at a dose of 50 mg/m2 in two cases and was injected transabdominally into the gestational sac via a 20-gauge needle at a dose of 10 mg in one case.

DISCUSSION

Cesarean scar pregnancies are rare obstetric complications, but there has been a surge of reports in the medical literature recently. This may be attributed to the increase in cesarean deliveries (2,3,7). The fundamental pathophysiology is supposed to be the blastocystic invasion of the myometrium through a microtubular tract between the CS scar and the endometrial canal (7). The blastocyst is surrounded by myometrium and fibrous tissue of the scar and completely separated from the endometrial cavity. As CSPs are bound within the myometrium, they tend to behave more aggressively, being prone to first or second trimester rupture or bleeding. Postulated risk factors for CSP include number of prior cesarean sections, short interval between cesarean section and subsequent pregnancy, indication for cesarean section and layers of uterine closure, the trauma of other uterine surgery, e.g. curettage, myomectomy, metroplasty, hysteroscopy and manual removal of placenta (1-3). In this series, previous endometrial disruption seemed to be associated with CSP (as seven of eight women had at least one prior uterine curettage before CSP).

The clinical presentation is usually non-specific and the most common symptom is vaginal bleeding. Three of our patients had only vaginal bleeding, three patients had pelvic pain and vaginal bleeding and two patients had no symptom in the time of admission. The lack of specific clinical symptoms or signs can lead to a delay or failure in the diagnosis. Since there is no specific clinical sign of the CSP, ultrasonography and Doppler examination are valuable diagnostic tools. Abortion and cervicoisthmical pregnancies can cause confusion in the diagnosis of CSP. Discrimination between CSP and cervicoisthmical pregnancy relies on the absence of healthy uterine tissue between the gestational sac and the urinary bladder (2,8). In our case series, the diagnoses of seven cases of CSP were made by ultrasonography and Doppler examination that shows the importance of these methods.

Even with the use of ultrasound, misdiagnosis due to misinterpretation of the images is possible. We strongly suggest clinicians raise the possibility of a CSP with the imaging technician by providing the history of a prior cesarean delivery on the referral letter. Diagnosis is usually made by early pregnancy ultrasound but needs to be distinguished from low implantation, inevitable pregnancy loss or cervical pregnancy. The ultrasonographic clues for the diagnosis of CSP are an empty uterine cavity and cervical canal without contact with the sac, presence of the gestational sac in the anterior part of the uterine isthmus, absence of or defect in the myometrial tissue between the bladder and the sac and peritrophoblastic perfusion surrounding the gestation sac. Diagnostic delay or error has the potential to compromise patient care. It is generally agreed that CSPs should be interrupted in the first trimester due to the potential for severe maternal morbidity. Expectant management resulting in live births, may result in occurence of major maternal complications (6-8).

Since CSP is a rare condition, there are no optimal guidelines for therapy. Treatment goals should include performance of intervention prior to rupture, preservation of fertility and removal of the gestational sac precisely (2,3,5,6). Treatment modalities are either medical, surgical or sometimes combined. The surgical approach includes radical and conservative procedures. The radical procedure consists in hysterectomy when the uterus is ruptured or if bleeding is uncontrollable. The conservative procedures include evacuation of the pregnancy and repair of the uterine defect by laparotomy or laparoscopy, dilatation and curettage and excision of trophoblastic tissues and bilateral hypogastric artery ligation (3,9,10). The medical treatment consists of MTX administration (locally or systemically). MTX has been used extensively in cases of tubal and cervical pregnancy if gestational age < 9 weeks, fetal pole size < 10 mm, embryonic cardiac activity is absent and serum β-hCG levels are < 10.000 IU/L. This technique was initially employed for the management of CSP as an adjunct to other procedures. A prolonged follow-up is essential since return of β-hCG levels to normal values may take up to several weeks (8). Failure of pregnancy resorption and persistance of a relatively large gestational sac after MTX administration may imply an additional procedure as dilatation and curettage and repair of the uterine defect by laparotomy or laparoscopy. Intrasac MTX has been proposed to be more effective than systemic MTX because of the fibrous tissue completely surrounding the CSP potentially limiting systemic access. However, lack of systemic effect if local injection is used alone may delay complete absorption of the pregnancy (2,6).

The immediate complications of CSP are uterine rupture, severe hemorrhage, need for hysterectomy, and maternal morbidity (2-4). Long-term outcomes such as fertility and recurrence must be considered after definitive treatment. We did not come across any complications after treatment of CSP.

Medical or surgical methods may be accompanied by devascularisation or haemostatic procedures. Sequential methods may be required in resistant cases. Advantages of surgical intervention include obtaining tissue for definitive diagnosis, quicker resolution of β-hCG levels and avoidance of unpredictable response to medical management or timing of complications like bleeding and rupture. Excision of the scar may potentially decrease the risk of recurrence and other complications like placenta praevia, accreta or uterine rupture in subsequent pregnancies. Disadvantages of surgical treatment include increased morbidity due to the increased vascularity and difficult surgical access due to location. Dilatation and suction curettage is not recommended as single first-line therapy because of the potential for haemorrhage and low success rates (2-4,10-12). In our study, in patients with active bleeding, a gestational age of ≥ 9 weeks, the presence of embryonic cardiac activity and the serum β-hCG levels of ≥ 10.000 IU/L, the first choice of the treatment was laparotomy and local excision of gestational sac with primary repair because of higher failure rate of MTX treatment and the potential for hemorrhage and low success rates of dilatation and suction curettage. MTX treatment was considered primarily in other patients. Since patients insisted for maintenance of their fertility, we have performed laparotomy and local excision of

gestational sac with primary repair –rather than hysterectomy- in our series. Although MTX was considered as the first line treatment in one patient due to low levels of serum β-hCG and absence of a fetal pole, dilatation and suction curettage was performed initially, as the patient was in low risk group and a long period with vaginal bleeding would constitute a risk for the patient. However, due to hemorrhage occurred during the process, we had to switch to laparotomy and local excision of gestational sac with primary repair. Laparotomy and local excision of gestational sac with primary repair was recommended to two patients who had embryonic cardiac activity. Since both patients had previous multiple abdominal surgeries and reject to give consent for another operation even though we inform them about the higher failure rate of medical treatment, MTX treatment was tried and success was achieved in both.

Limitation of our study include the retrospective design and relatively small number of our series. In addition, some details of history and factors that may influence the outcome may not be completely documented. We suggest that CSP must be included in the differential diagnosis in early pregnancy of all women who have undergone a cesarean delivery.

In conclusion, cesarean section scar pregnancy is a potentially life-threatening complication that constitutes a diagnostic and therapeutic challenge. Decision on treatment modality should be determined on individualized basis depending on factors such as gestational age, β-hcG levels, fetal cardiac activity, desire of future fertility as well as the experience and facilities available.

KAYNAKLAR

1. Wu X, Zhang X, Zhu J, Di W: Caesarean scar pregnancy: comparative efficacy and safety of treatment by uterine artery chemoembolization and systemic methotrexate injection. Eur J Obstet Gynecol Reprod Biol 2012;161;75-9.
2. Litwicka K, Greco E: Caesarean scar pregnancy: a review of management options. Curr Opin Obstet Gynecol 2011;23;415-21.
3. Ash A, Smith A, Maxwell D: Caesarean scar pregnancy. BJOG 2007;114;253-63.
4. Kang SY, Park BJ, Kim YW, Ro DY: Surgical management of cesarean scar ectopic pregnancy: hysterotomy by transvaginal approach. Fertil Steril 2011;96;25-8.
5. Chuang J, Seow KM, Cheng WC, Tsai YL, Hwang JL: Conservative treatment of ectopic pregnancy in a caesarean section scar. BJOG 2003;110;869-70.
6. Seow KM, Huang LW, Lin YH, Lin MY, Tsai YL, Hwang JL: Cesarean scar pregnancy: issues in management. Ultrasound Obstet Gynecol 2004;23;247-53.
7. Michener C, Dickinson JE: Caesarean scar ectopic pregnancy: a single centre case series. Aust N Z J Obstet Gynaecol 2009;49;451-5.
8. Fadhlaoui A, Khrouf M, Khémiri K, Nouira K, Chaker A, Zhioua F: Successful conservative treatment of a cesarean scar pregnancy with systemically administered methotrexate and subsequent dilatation and curettage: a case report. Case Rep Obstet Gynecol 2012;248564.
9. Frishman GN, Melzer KE, Bhagavath B: Ectopic pregnancy in a cesarean-section scar: The patient >6 weeks into an ectopic pregnancy, underwent local treatment. Am J Obstet Gynecol 2012;207;238-42.
10. Hoshino T, Kita M, Imai Y: Macroscopic appearance of a uterus with a cesarean scar pregnancy. Int J Gynaecol Obstet 2011;115;65-6.
11. Mac Kintosh M, Elkattan E, Mahendran M, Basama F: An asymptomatic ectopic pregnancy in a caesarean section scar. J Obstet Gynaecol 2010;30;868-9.
12. Hois EL, Hibbeln JF, Alonzo MJ, Chen ME, Freimanis MG: Ectopic pregnancy in a cesarean section scar treated with intramuscular methotrexate and bilateral uterine artery embolization. J Clin Ultrasound 2008;36;123-7.