Case Report

Detection and Treatment of Caesarean Scar Pregnancy

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Abstract

Caesarean scar pregnancy is implantation of the gestational sac in the hysterotomy scar. Due to the increased incidence of caesarean sections we see an increased incidence of complications such as malplacements or caesarean scar pregnancies. Evidence suggest that surgical treatment or combined systemic and intragestational methotrexate are preferable management options for caesarean scar pregnancies. We present a patient with caesarean scar pregnancy diagnosed by transvaginal ultrasound in the 7th week of gestation. The level of β-HCG on admission was 30384 IU/L and she was treated with a combination of local and systemic application of methotrexate. Follow-up was performed ever 7 days with β-HCG measurements and transvaginal ultrasound examination. 109 days after methotrexate application the β-HCG was 1.7 IU/L and after one year she achieved intrauterine pregnancy and elective caesarean section was performed in the 39th week of gestation.

ABBREVIATIONS

CSP: Caesarean Scar Pregnancy; MTX: Methotrexate

INTRODUCTION

Ectopic pregnancy is an implantation of blastocyst anywhere else other than the endometrial lining of the uterine cavity. More than 95% of ectopic pregnancies are located in fallopian tubes and the remaining 5% can be found in the ovary, peritoneal cavity, cervix or in the place of caesarean scar. Risk factors are prior tubal damage, previous ectopic pregnancy, sexually transmitted diseases, endometriosis, adhesions after salpingitis, postabortal or peripuerperal infections and previous caesarean section. General rate of ectopic pregnancy is around 2% but the incidence is rising due to increasing incidence of pelvic inflammatory disease, development of assisted reproductive technology, tubal surgery and also earlier identification of ectopic pregnancies that would probably resolve spontaneously [1,2].

The incidence of caesarean sections is increasing over the last years. The rate of caesarean delivery rate in the United States increased from 4.5 % of all deliveries in 1970 to 31.8 % in 2007 [3]. The increasing incidence of caesarian sections results in increased risk of complications such as placenta accreta and caesarean scar pregnancy. Caesarean scar pregnancy (CSP) is the implantation of the gestational sac in the hysterotomy scar. It results as a complication of pregnancy after a caesarean delivery and it constitutes 6.1% of all ectopic pregnancies [4]. The incidence of caesarean scar pregnancies over the last decade has increased from 1:1,800 to 1:2,216 pregnancies. The most frequent symptom is painless vaginal bleeding. Transvaginal ultrasonography is the preferred diagnostic method with a sensitivity of 84.6% [5].

Following multiple caesarean sections fibrosis may result in poor vascularity of the lower uterine segment with impaired postoperative healing. This may result in a deficient caesarean section scar increasing the risk of CSP [6].

Diagnosing CSP can be challenging. A high index of suspicion is needed to make a timely definitive diagnosis. The differential diagnosis includes spontaneous abortion and cervico-isthmic pregnancy [7].

Caesarean scar pregnancy with embryonic cardiac activity can progress and result in a live neonate, but with high risk of hysterectomy due to placenta percreta or accreta [8]. Michaels et al (2015) showed that chance to deliver a live-born neonate with CSP and embryonic cardiac activity is 62.5%, with 37.5% chance of hysterectomy [9].

Surgical treatment or combined systemic and intragestational methotrexate (MTX) brought best results in the management of caesarean scar pregnancy [4,8,10-14]. Expectant management and dilatation and curettage have proved to be suboptimal management [5].

CASE PRESENTATION

A 35-year old woman was admitted to Sveti Duh Clinical
Hospital with slight vaginal bleeding in the 7th week of her 3rd pregnancy. Last menstrual period was 48 days ago (menstrual cycle 28-30/5). She had no abdominal pain, nausea or vomiting. Her first delivery was by caesarean section 7 years ago because of dystocia and a healthy baby was born weighing 3650 g. Two years later, a second caesarean section was performed, this time electively because of previous caesarean section and large for gestational age fetus. She then delivered a healthy baby weighing 4100 g. When she attended to Sveti Duh Clinical hospital she was hemodynamically stable, with blood pressure 105/70 mmHg and pulse 75/min. Speculum and clinical examination were normal. Transvaginal ultrasound showed a hyperechogenic endometrium measuring 12 mm with no gestational sac. In the caesarean scar region a gestational sac was found with embryonic echo of 5 mm with positive heart beat. Adnexal and retrouterine regions were unsuspecting (Figure 1.). Laboratory findings were normal: leukocytes 8.69x10⁹ /L, erythrocytes 4.65 x10¹² /L; hemoglobin 135 g/L, hematocrit 0.395; CRP was 5.1. She received immunoprophylaxis (anti-D im) because she was Rh negative.

We informed the patient regarding possible outcomes of this unusual pregnancy location. Following consultation with her husband she decided to terminate the pregnancy. She was admitted to the gynecology department three days after the first examination in order to terminate the pregnancy. The level of β-HCG on admission was 30384 IU/L. We decided to treat her with a combination of local and systemic application of MTX. Under transvaginal ultrasound control a fertility specialist performed the puncture of the gestational sac in the caesarean scar and 50 mg MTX was injected in the gestational sac. Immediately after the procedure the fetal heart beat was no longer present. The same day she received 75 mg MTX intravenously in slow infusion. She remained an in-patient for observation. Three days after treatment ultrasound examination identified a collapsed gestational sac with prominent blood flow detected with color Doppler (Figures 2. and 3.).

During hospitalization she was without symptoms until the 10th day post MTX administration when vaginal bleeding commenced accompanied by pain similar to her menstrual cramps. The patient was discharged on the 12th day post MTX treatment as β-HCG decreased to 15037 IU/L. She was feeling well with minor vaginal bleeding and no abdominal pain. Follow-up was performed once weekly with β-HCG measurements and transvaginal ultrasound examinations:

Day 19 post MTX the β-HCG had decreased to 2296 IU/L and ultrasound revealed an endometrial thickness 9 mm with hyperechoic structure measuring 34 x 27 mm with peripheral blood flow (RI=0.27) in the caesarean scar. As the β-HCG was low we did not recommend another dose of MTX (Figures 4.; 5. and 6.).

Day 25 post MTX the β-HCG was 551 IU/L and ultrasound revealed a non homogenic structure measuring 28 x 26 mm with peripheral blood flow (RI=0.51) in the caesarean scar.

Day 31 post MTX the β-HCG was 253 IU/L and ultrasound was similar to findings 6 days previously (Figure 7.).

![Figure 1 Caesarean scar pregnancy. Cervix is on the right and the uterine fundus on the left. Gestational sac is clearly seen in the caesarean scar (isthmic).](image1)

![Figure 2 Caesarean scar pregnancy image 3 days post MTX treatment.](image2)

![Figure 3 Color Doppler of caesarean scar pregnancy 3 days post MTX treatment.](image3)
Day 45 post MTX the β-HCG had decreased to 68 IU/L and ultrasound identified a non-homogenic structure measuring 26 mm in diameter with peripheral blood flow in the caesarean scar.

Day 60 post MTX the β-HCG was 20 IU/L and ultrasound revealed hyperechoic (fibrotic) structure measuring 26 mm in diameter. A week before she had her menstrual bleeding with more cramps than usual.

Day 81 post MTX the β-HCG was 5.4 IU/L and ultrasound revealed the structure measuring 21 x 17 mm with peripheral blood blow (RI=0.51) in the caesarean scar.

Day 109 post MTX the β-HCG was 1.7 IU/L and ultrasound found a organized structure of 20 mm in the isthmic part of the uterus with detected blood flow on the periphery of the structure (RI=0.51) (Figure 8.). She was advised to take oral contraceptive pills. A year later she stopped the oral contraceptive pills and soon became pregnant. The pregnancy was uneventful and elective caesarean section was performed in 39th week of gestation. She delivered a healthy baby weighing 3770 g.

**DISCUSSION**

CSP is a rare type of ectopic pregnancy and it is one of many possible complications following caesarean section. Due to the rising caesarean section rate the incidence of complications such as CSP is increased. Jurković et al (2003) have estimated the prevalence of CSP in local population is 1:1800 (6). Therapeutic options for CSP have been taken from protocols used for treating other locations of ectopic pregnancies and they include systemic and local administration of MTX, dilatation and curettage, uterine artery embolization, operative hysteroscopy, laparoscopy and laparotomy. Timor-Tritsch et al (2012, 2015) stated that combined intramuscular and intragestational MTX injection treatment is most successful in treating CSP [4,8]. Success rate after single MTX injection was 73.9% and after additional local or systemic dose success rate was 88.5% [10]. Cok et al (2015) found similar results: 61.1% patients with CSP were successfully treated with only one local MTX dose and 22.2% needed additional systemic MTX dose [11]. Chen et al (2011)
advocated the use of hysteroscopy combined with uterine artery embolization as a safe and effective method of treating CSP [12]. Uterine artery embolization may be combined with MTX and curettage with good results in treatment of CSP [13]. Huanxiao et al (2015) suggested transvaginal hysterotomy for removal of ectopic pregnancy tissue and repair of the caesarean section scar defect [14]. Ben Nagi et al (2007) in their study showed good reproductive outcomes after CSP with low chance of repeating another CSP. Women who conceived after CSP in 95% had an intrauterine pregnancy and 35% resulted in spontaneous abortions. They suggested that all pregnancies following a previous CSP should be delivered by elective caesarean section [15].

In our case we used the similar method as Timor-Tritsch et al (2012, 2015) with minor alterations in MTX dose and route of administration [4,8]. We treated our patient with an injection of 50mg MTX intragestationally and 75mg MTX intravenously that proved successful outcome in the management of CSP. Serial measurements of β-HCG and evaluation with transvaginal ultrasound with the use of color Doppler are required in the patient follow-up. CSP is as a diagnostic and therapeutic challenge in the field of obstetrics and gynecology. More researches about its diagnostic criteria, management and follow-up programme are needed.

REFERENCES