

# Caesarian scar ectopic pregnancy. A case report

## Abstract

The caesarian scar pregnancy is a rare form of ectopic pregnancy. It is a medical challenge because of the difficulties in diagnosis and treatment. We present the case of a 32 years old woman with 8 weeks amenorrhea and a pregnancy positive test, who was admitted to hospital for lower abdominal pain. Her history is unremarkable, except for a previous pregnancy finalized by caesarian-section. The diagnosis was caesarian scar pregnancy. The first treatment option was systemic Methotrexate. After 3 doses, because there was no visible effect on the pregnancy, the patient was referred to other clinic for uterine artery embolization. One week after the embolization, a suction curettage was performed with elimination of the gestational sac from the scar tissue. The follow up so far showed no defect in the uterine wall.

**Keywords:** caesarean scar pregnancy, uterine artery embolization, suction curettage

## Introduction

Caesarean scar pregnancy (CSP) is one of the rarest forms of ectopic pregnancy. Its incidence is rising because of the increasing caesarian-section rate. The etiology of CSP is not clearly understood, but it is believed to appear because of the implantation of the trophoblast into a microscopic defect in the uterine wall. The diagnosis is suspected when by an empty uterine cavity with a gestational sac in the area of previous caesarian-section scar is found at ultrasound. Until present, there is no standard treatment of CSP. The management includes medical and surgical techniques<sup>(1)</sup>.

## Case Report

The patient, P.M., 32 years old was admitted to hospital for lower abdominal pain. The amenorrhea was approximate 8 weeks and the pregnancy test was positive. She denies other pathologic affections and her obstetric history consists in a birth finalized by caesarian-section 3 years before.

The clinical examination was in normal range and the patient was hemodynamically stable. At pelvic examination, the cervix was closed, enlarged because of the isthmic area, about 6 cm diameter, and the uterus was slightly enlarged, without any anexial masses.

The ultrasound shows a virtual uterine cavity of 16 mm, at the level of uterine scar, a gestational sac with an embryo with crown-rump length (CRL) of 17mm (8w1d) with cardiac activity 156 bpm, with trophoblast tissue situated on the posterior isthmic wall. The ovaries were normal with a corpus luteum on the right ovary (Figure 1).

The diagnosis was caesarian scar ectopic pregnancy. The laboratory findings showed normal range except for beta human chorionic gonadotropin (b-HCG) which was 116790 mIU/ml.

In this case, the treatment of choice was Methotrexate (MTX). The patient receives 3 doses of 40 mg i.m. (i.e. the total dose was 120 mg). The ultrasound after one week from the admission showed a gestational sac localized in the isthmic area of the uterus, partially bulging through the scar and in direct contact with bladder wall. The CRL was 22 mm with cardiac activity.

Thus, the patient was selected for uterine artery embolization and she was transferred to another hospital for the procedure. The abdominal angiography with selective catheterize of the uterine arteries was made followed by the embolization with embosphere particles and collagen fragments until complete devascularisation and stasis of the contrast agent. The treatment after procedure is with nonsteroidal anti-inflammatory drugs for 10 days and painkillers. One week after the procedure the ultrasound showed a gestational sac at the isthmic area, which herniates through the uterine scar and reaches the



Figure 1. The gestational sac in the area of the previous caesarian-section scar. The uterine wall thickness was 1 mm

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Received:  
December 17, 2016  
Revised:  
January 04, 2017  
Accepted:  
January 27, 2017

bladder-uterine fascia, with an embryo of 24 mm, without cardiac activity. A dilatation and curettage was made with the suction of the gestational sac, without any spectacular events during the procedure (Figure 2).

The post procedure evolution was normal and the patient was discharged in good condition after 2 days, without uterine bleeding. The ultrasound one week after the suction curettage shows an empty uterine cavity with the uterine scar in normal range, without any hypoechoic images at this level (Figure 3). The b-HCG reaches the normal range within 4 weeks.

## Discussion

Caesarean ectopic pregnancy is a rare form of ectopic pregnancy and it becomes more and more frequent due to the increased incidence in deliveries by caesarian-section. It is estimated that the frequency rate of CSP is 0.15% in women with a previous caesarian-section and the overall incidence is 6.1% of all ectopic pregnancies<sup>(1,2)</sup>. It is a life threatening condition which can lead to uterine rupture and massive hemorrhage, with a high maternal morbidity. It was first described in English literature in 1978<sup>(3)</sup>.

The etiology of the CSP is not clearly understood, but it is considered to occur when the blastocyst is abnormally implanted into the fibrous scar tissue at the site of the previous caesarian-section. The pathophysiology shows that the trophoblast cells penetrate the uterine myometrium through a microscopic dehiscence tract<sup>(2)</sup>. These defects may appear after previous uterine surgery (i.e. caesarean section, myomectomy, uterine curettage, or manual removal of the placenta)<sup>(2,4,5)</sup>. The techniques of closing the uterine wall (double layer vs. one single noninverting running suture) may play a role in the pathophysiology but the lack of data in literature cannot sustain either of the situation<sup>(2)</sup>. Therefore, there are some studies that suggest that CSP may appear after *in vitro* fertilization techniques and embryo transfer without previous uterine surgery<sup>(6,7)</sup>.

The natural history of CSP is not very well known because of the scarce data and most of these pregnancies do not pass the first trimester. Most likely, if the pregnancy progress, there is an increased risk of uterine rupture with massive bleeding and with a high risk of subsequent hysterectomy leading to important maternal morbidity and losing the potential of future fertility<sup>(2,7)</sup>. There is also an increased risk of invasion of the placenta into the nearby organs (i.e. most often the bladder). Most of these pregnancies have abnormal placental adherence potential, the risk for placenta accreta being increased by 3-5 folds<sup>(2)</sup>.

There is a difference between the placenta accreta in a intrauterine pregnancy and the CSP. In the first situation, the pregnancy is within the interior of the uterine cavity and the abnormal implantation is because of the absence of the decidua basalis and thus there are different degrees of invasion of the trophoblast into the myometrium<sup>(2)</sup>. In CSP the trophoblast is surrounded by fibrous tissue and myometrium from the very beginning of the pregnancy and it is placed at some distance from the uterine cavity<sup>(2)</sup>.

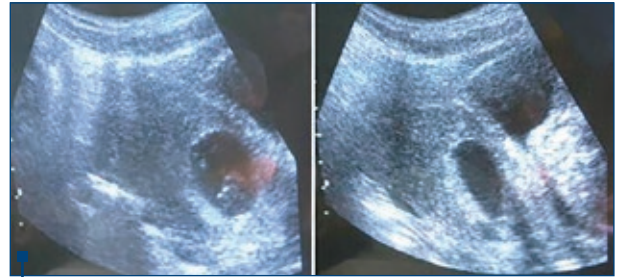


Figure 2. The ultrasound aspects after uterine artery embolization, during the suction curettage: the gestational sac with the embryo without cardiac activity (left) and the gestational sac in the uterine caesarian-section scar area (right)

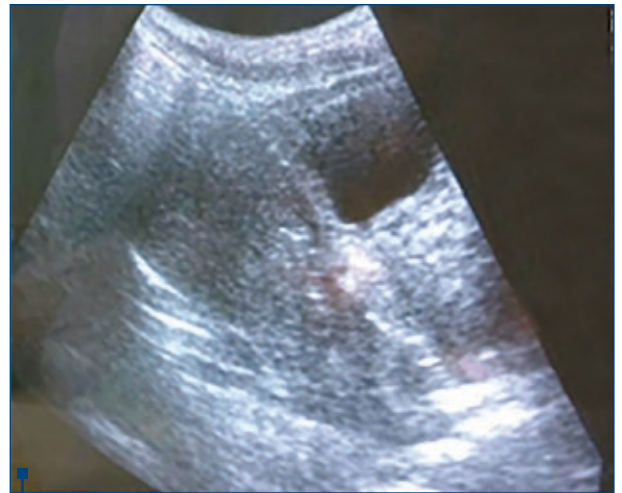


Figure 3. The aspect of the uterus after the uterine curettage. In the scar area, there was no fluid or hypoechoic images

There are 2 types of CSP. The first one represents the progression towards the uterine cavity or cervico-isthmic area which may progress to a viable birth. In this case, there is an increased risk of important hemorrhage from the implantation site. In the second case, the trophoblast progresses deep into the scar tissue and towards the serosal surface and abdominal organs. Uterine rupture in the first trimester with important bleeding is the most frequent scenario in this case<sup>(4,7)</sup>.

Usually, the common symptoms are vaginal bleeding and abdominal pain, but there are cases when the patients are asymptomatic and they see the physician for a routine antenatal meeting because of amenorrhea with positive pregnancy test. Sometimes the diagnosis is made after the important bleeding in a suction curettage.

The first line diagnosis tool is ultrasound. The sonographic features of CSP are: 1) an empty uterine cavity and endocervical canal, 2) a gestational sac in the caesarian-section scar between the bladder and the anterior isthmic wall, 3) a thin (<3mm) or absent myometrial layer between the gestational sac and the bladder 4) an embryo with or without cardiac activity, or a yolk sac in the gestational sac, 5) the cervical canal is closed, and 6) a rich vascular pattern in the area of caesarian-section scar, without

visible gestational sac and positive pregnancy test<sup>(2,4,5,8)</sup>. Unless the CSP has ruptured, there should be no fluid in the peritoneal cavity or any adnexal mass<sup>(2)</sup>. In the lower anterior wall of the uterus, there could be a discontinuity and the gestational sac may herniate through the gap<sup>(2)</sup>. The magnetic resonance imaging should be used when there is doubt about the diagnosis. The differential diagnosis usually is made with cervical ectopic pregnancy and spontaneous miscarriage<sup>(2)</sup>.

There are no specific guidelines for CSP because of the rarity of the disease. The patient must be informed about all the complications of the pregnancy and of the treatment itself. It should be explained all the possibilities available for dealing with the disease.

The treatment of CSP is medical or surgical. In the first trimester, the termination of pregnancy is strongly advised. The aim of the treatment should be preventing from severe bleeding, removing the gestational sac and conserving the uterus for future fertility. The management depends on gestational age, the viability of the embryo, hemodynamic stability and desire for future fertility<sup>(4)</sup>.

The medical treatment consists of systemic or local administration of MTX, local embryocides or a combination of both<sup>(2)</sup>. The dose for systemic treatment is 50 mg/m<sup>2</sup>. The half-life of MTX is 10 hours so there is necessary to repeat doses. The full blood count and the liver and renal test should be performed before starting the therapy. The recommendations for systemic MTX are gestational age <8 weeks, levels of b-HCG <5000mUI/ml, uterine thickness wall <2mm, hemodynamically stability of the patient and the absence of pain<sup>(2,4)</sup>. Because of the poor vascularization of the fibrous tissue in the scar, the absorption of MTX may be reduced and the local administration of MTX seems to be more effective. Besides MTX, other agents such as potassium chloride, hyperosmolar glucose, etoposide and crystallize trichosanthin, were used for local administration<sup>(2,4,9)</sup>. The procedure is made under ultrasound guidance (i.e. transabdominal or transvaginal). Care should be taken not to penetrate the bladder wall. Some authors describe the use of a 16-gauge double lumen needle for local treatment<sup>(1,2)</sup>. The aspiration of the trophoblast tissue is made via one lumen and the injection of MTX through the other<sup>(1,2)</sup>. Medical therapy alone or in combination with needle aspiration may avoid laparotomy and may preserve the fertility. Medical treatment interrupts the pregnancy, but there are cases when the bleeding continues and further invasive procedures may be necessary. The bleeding can be imputed because of the dehiscence scar already present at the time of treatment<sup>(2)</sup>. B-HCG returns to normal limits within 4-16 weeks thus close follow-up is important<sup>(2)</sup>. The follow up should be done by ultrasound evaluation and weekly dosing of b-HCG (i.e. until the level drops to <5mUI/ml). It is difficult to predict when the CSP tissue completely disappears. Sometimes it may take several months until a year<sup>(2)</sup>.

The surgical treatment is represented by hysteroscopy, laparoscopy, laparotomy and uterine embolization.

Surgery should be offered to unstable patients, to those in whom medical treatment has failed or at the patient's choice.

Uterine curettage as first line treatment should be avoided because of the high risk of bleeding<sup>(9)</sup>. The CSP is not in the uterine cavity, but in the fibrous scar tissue and it is difficult for the curette to reach the gestational sac. There is an increased risk of uterine perforation with subsequent hemorrhage. Some hemostatic procedure has been proposed to control the bleeding: intrauterine balloon tamponade by Foley catheter, vasopressin local administration, uterine bilateral ligation and uterine embolization<sup>(2,4)</sup>. Uterine curettage may be indicated under direct ultrasound evaluation in cases of CSP developed towards the uterine cavity<sup>(6)</sup>.

Hysteroscopy offers the possibility of direct visualization of the CSP with coagulation of the blood vessels. With a skilled practitioner, there is a short operative time, the blood loss is minimal, the b-HCG levels fall to normal range sooner (i.e. <4 weeks) and the fertility is preserved<sup>(2,4)</sup>. The hysteroscopic approach is preferred when the CSP grows to the uterine cavity<sup>(2,4)</sup>.

Laparoscopy should be made after confirmation of the diagnosis. It is preferred when CSP develops towards the abdominal cavity. The principles of laparoscopic therapy consist in the incision of the gestational sac and its removal in endobag, vasopressin local administration for preventing severe bleeding, hemostasis with bipolar diathermy and suture of the defect<sup>(2,4)</sup>. Some authors recommend excision of the scar with a new closure of the uterine wall<sup>(5)</sup>. Laparoscopy is preferred when the patient is stable and when the surgeon is trained. If uncontrollable bleeding occurs or hemostasis cannot be obtained, then it must be converted to laparotomy<sup>(2)</sup>.

Laparotomy with hysterotomy should be preferred when medical and conservative surgical techniques failed, the uterine rupture is confirmed or suspected or when there is no access to endoscopic utilities<sup>(2)</sup>. The advantages consist in complete removal of the trophoblast tissue with a simultaneous scar repair<sup>(2,4)</sup>. The b-HCG levels fall to normal range in almost 2 weeks. Hysterectomy can be performed as primary treatment, in most cases due to patients' choice, or when all other therapies failed<sup>(2)</sup>.

Uterine artery embolization (UAE) was first used in 1999 for bleeding control and thus trying to preserve the uterus<sup>(9)</sup>. After the UAE, because the gestational tissue is not removed, irregular menstrual bleeding occurs and there is a slowly decrease of b-HCG. Therefore, after UAE, suction curettage is recommended<sup>(9)</sup>. Because subsequent vascular recanalization occurs after 1-3 weeks, the uterine curettage should be achieved as soon as possible<sup>(9)</sup>. The combination of MTX with UAE followed by uterine curettage seems to be effective in many cases<sup>(9)</sup>.

Expectant management may be taken into consideration if the woman wishes to continue the pregnancy. She must be informed about the minimum chances for an uneventful pregnancy and about all the risks, including a life-threatening hemorrhage. Elective caesarian-section should be made around 30 weeks, with prior administra-

tion of corticosteroids<sup>(2)</sup>. During surgery, there is a risk of massive bleeding leading to hysterectomy. Because of abnormal adherence, other intraabdominal organs (e.g. most likely the bladder) may be affected during intervention. In all cases suggestive for uterine rupture, an emergency caesarean section must be performed. There are few data about expectant management in CSP, but until now, all information suggests that expectant attitude either fails or has an increased risk of rupture with subsequent hysterectomy<sup>(2)</sup>.

After the conservative management, the integrity of the uterine wall should be evaluated. Any presence of hypoechoic images in the uterine scar or anterior uterine wall gap may suggest a defect with potential risk for further pregnancies. The pregnancy after CSP can be uneventful. There is no consensus about the period of time between the CSP and the future pregnancy, but in all women with

history of CSP or other forms of ectopic pregnancy, the initial ultrasound evaluation of the pregnancy should include the assessment of the scar integrity.

## Conclusions

CSP is a rare form of ectopic pregnancy, but the overall incidence is rising because of increasing the caesarean rate worldwide. Ultrasound is usually used for the diagnosis. Because of the few cases, there is no standard treatment for CSP until present. The implications of CSP can be very severe. There is an increased risk of life-threatening massive hemorrhage due to uterine rupture or uncontrollable bleeding during treatment procedures, with consequences in the life quality. The active treatment in the first trimester with termination and elimination of pregnancy before rupture, with suturing the defect can preserve future fertility. ■

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