

Treatment of Scar Pregnancy by a Combined Medical and Non-Invasive Surgical Approach: A Case Report and Literature Review

Tibaldi V¹, Musella A^{*2}, Bracchi C³, Santangelo G⁴, D'Aniello D⁴, Palaia I⁴, Di Donato V⁴, Giannini A⁴, Pastore G², Colagiovanni V⁵, Benedetti PP⁴, Monti M⁴

¹Casa di Cura Santa Famiglia, Obstetrics Clinic, 00192-Rome, Italy

²Department of Obstetrics and Gynecology, San Camillo de Lellis Hospital, 02100-Rieti, Italy

³Department of Obstetrics and Gynecology, San Pietro Fatebenefratelli Hospital, 00189-Rome, Italy

⁴Department of Obstetrical-Gynecological Sciences and Urological Sciences, Policlinico Umberto I, Sapienza University of Rome, 00161-Rome, Italy

⁵Department of Obstetrics and Gynecology, Coniugi Bernardini Hospital, 00036 – Palestrina (Rome), Italy

Case Report

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*For Correspondence

Angela Musella, Department of Obstetrics and Gynecology, San Camillo de Lellis Hospital, Viale J.F. Kennedy 02100 – Rieti, Italy.

E-mail: angela.musella@gmail.com

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ABSTRACT

Cesarean scar pregnancy" (CSP) is one of the rarest types of ectopic pregnancy with an estimated prevalence of 1 in 1500/2000 women with previous caesarean sections. Risk of developing CSP depends mostly from number of previous cesarean section. Until now two kinds of CSP have been described depending on the progressive expansion of the lesion towards the uterine wall: development towards the uterine cavity or cervico-isthmic region (Type I) or exogenous invasion towards the bladder and the abdominal cavity (Type II).

Symptoms of CSP are not specific and diagnosis is usually made by pelvic-transvaginal ultrasound in the first gestational weeks. Early diagnosis of CSP is very important to be able to choose the best therapeutic approach in order to minimize risk of patient complications. However, currently there is no standard management as few cases have been reported in literature.

Available treatment options include medical or surgical approaches or a combination of both and should be tailored on patients' and lesions' characteristics. Here we report our experience with the case of an African young woman affected by Type I scar pregnancy diagnosed at 9 weeks of gestation and successfully treated with intra-lesional methotrexate infusion followed by non-invasive approach.

INTRODUCTION

In the last decades we have assisted to an exponential increase in caesarean sections (CS) that has led to a rise in the occurrence of short and long term related complications such as post-partum hemorrhage, uterine rupture, abnormally invasive placenta (AIP), emergency hysterectomy, and ectopic pregnancy, in particular a peculiar situation characterized by gestational sac implantation in the hysterotomic scar, known as "cesarean scar pregnancy" (CSP) ^[1].

CSP is one of the rarest type of ectopic pregnancy with an estimated prevalence of 1 in 1500/2000 women with previous CS and with increasing occurrence in patients receiving multiple cesarean sections (ranging from 4.1% to 13,3% in one or □ 2 previous CS, respectively) ^[2]. It was first described in 1978 ^[3]. There are several risk factors predisposing to persistent uterine scar defects after cesarean section including single-layer closure ^[4], residual myometrial thickness on the scar ^[5], gestational diabetes, previous cesarean section, high body mass index, perioperative fever and infections ^[6].

Two different types of CSP have been described, depending on the endogenous progressive development towards the uterine cavity or cervico-isthmic region (Type I) or exogenous invasion towards the bladder and the abdominal cavity (Type II) ^[7].

Symptoms of CSP are usually not specific and the most common clinical finding is vaginal bleeding. Diagnosis is usually performed by pelvic-transvaginal ultrasound on average 7 weeks of gestation ^[8], thus it is recommended to undergo an early transvaginal ultrasound evaluation (TVS) in the first trimester of pregnancy for women with a previous cesarean section. Differential diagnosis includes cervical pregnancy and termination of intrauterine pregnancy. Ultrasound criteria for CSP diagnosis are as follows: Absence of intrauterine gestational chamber and empty cervical canal with clearly visible endometrium, a gestational sac located in the anterior isthmus surrounded by the scar tissue and separated from the uterine cavity and presence or absence of a thin myometrial layer between the bladder and the gestation sac, a gestational sac embedded in a scar defect surrounded by high-

speed, low-impedance vascular flow ^[9].

In case of scar pregnancy, termination of pregnancy is indicated because of high risk of progression towards hemorrhage and uterine rupture ^[10]. There is no standard optimal management as few cases have been reported in the literature until now; the possible treatments include medical, and/or surgical approaches ^[8].

Here we reported our experience with a case of type I scar pregnancy successfully treated by medical and non-invasive surgical approach at 9 weeks of gestation.

CASE AND METHODS

A 25-year-old African pregnant woman, with history of previous cesarean section three years before, presented to our Department at a gestational age of 8 weeks plus 2 days for 1st trimester pregnancy check. She didn't complain pelvic pain or vaginal bleeding and obstetrical visit was normal. Pelvic transvaginal ultrasound revealed retroverso-flexed uterine cavity with visualization of a gestational sac implanted anteriorly at the level of isthmus with an alive embryo whose crown rump length (CRL) was 45 mm, with increased placental vascularity, negative sliding organ sign and an empty closed endocervical canal. Distance between the gestational sac and bladder wall was 4 mm. Regular adnexa without evidence of endopelvic free fluid were found.

The patient was in good general health condition, with a hemoglobin value of 11.9 g/dl, β -hCG dosage was 19.562 mIU/ml. Her blood group was A positive. Because of the diagnosis of type I CSP, an adequate counseling to the patient was done, by explaining accurately the risks related to her condition and the treatment options available. In consideration of patient stable haemodynamic condition and of the lesion features, after a multidisciplinary discussion of the case, we opted for a combined medical and non-invasive surgical approach. The patient agreed with our treatment proposal and signed an informed consent.

Thus, at 9 weeks of gestation, under stable conditions, she underwent hysteroscopic-guided intralesional injection of methotrexate (MTX) 50 mg/m². At time of MTX infusion the β -hCG level was 29.665 mIU/ml, while on the fourth day after procedure the value was 27.808 mIU/ml.

Seven days after the chemotherapeutic infusion the patient was submitted to blood chemistry exams (Hgb value: 11.4 g/dl; β -hCG: 22.680 mIU/ml) and to suction and curettage under ultrasound vision in operating room in general anesthesia, with an easy removal of the lesion. No intra or postoperative complications occurred. Blood loss was acceptable (about 200 cc). The collected material was sent for histological examination with report of: hemorrhagic deciduous pregnancy flaps and partially necrotic chorionic villi with morphology as in the first trimester of gestation. The patient was discharged on second postoperative day in good general conditions with normal vital signs and scarce vaginal bleeding.

A very close laboratoristic, clinical and ultrasound follow up was started with progressive reduction of β -hCG levels (return to normal values in two months) and vaginal bleeding disappear. Five months later the patient underwent diagnostic hysteroscopy that revealed a normal uterine cavity, regular endometrium, preserved isthmus area with macroscopically normal hysterotomic scar.

DISCUSSION

Caesarean scar pregnancy is a rare condition that may have a silent clinical course or present with no specific clinical symptoms such as abnormal vaginal bleeding and/or abdominal pain. Early diagnosis of CSP is a mainstay for an accurate approach by minimizing patient's risk of complications. Treatment options for cesarean scar pregnancy include operative hysteroscopy, dilatation and curettage, systemic or local methotrexate (MTX) administration, transvaginal embryo aspiration with or without uterine artery embolization (UAE), potassium chloride injection, laparoscopy or laparotomy ^[11].

Few cases have been described in literature until now employing different approaches or combination of them as reported in randomized trials ^[12-16]. Treatment should be individualized according to many factors including clinical presentation, β -hCG levels, imaging features, and surgeon's skill. When the CSP turns out to be type II it is possible to perform laparoscopic removal of the lesion up to 11 weeks of pregnancy ^[17]. The patient must be hemodynamically stable and the bladder is removed from the lower uterine segment first and the myometrium that covers and surrounds the gestational chamber with vasopressin is infiltrated to minimize bleeding ^[18]. The gestational chamber is then removed by removing the uterine wall with wedge resection and the incision is repaired. The main advantage of the laparoscopic approach is the complete removal of the products of conception at the time of the intervention, reducing the follow-up time. If the patient is hemodynamically unstable, an emergency laparotomy must be performed ^[19]. Systemic MTX can be used in a single repeatable dose (50 mg administered i.m.) after one week if necessary, with a success rate of 85% being more effective in patients with β -hCG dosage <12.000 mIU/ml, absent embryonic cardiac activity and gestational age less than 8 weeks ^[20]. This option is to be considered only in hemodynamically stable patients, without pain, with a myometrium thickness <2 mm between the pregnancy and the bladder, serum β -hCG <5.000 IU/L, lesion diameter <2.5 cm ^[21]. The exposure of the trophoblast to systemic MTX is limited by the presence of fibrous tissue surrounding the gestational sac and there is a slow reduction of β -hCG. In a review about this approach by Li et al, a failure rate of 25% was reported with need for additional treatment due to persistent fetal cardiac activity and/or increasing β -HCG levels, 13% of patients had complications as massive vaginal bleeding, hypoleukocytosis and elevated transaminase levels ^[22]. For this reason local MTX treatment, with local injection (50 mg/mq) trans-abdominally or transvaginally, is preferable and is considered as first-line medical treatment associated with a success rate ranging from 69% to 96% ^[12,21,23,24]. Suction curettage combined with MTX is recommended when the myometrial thickness surrounding the gestational sac is 3.5 mm from the bladder ^[25]. In our case, the stability of the patient's general conditions, the characteristics of the injury and the patient's desire of offspring, the distance between lesion and bladder of 4 mm allowed us to perform an intralesional injection of MTX followed by suction and

curettage safely.

Hysteroscopy with electrosurgical removal of the lesion can be performed as alternative treatment for type I CSP allowing a high success rate if performed by surgeon with a great expertise, and with fast recovery and rapid decline of β -hCG^[26].

Uterine artery embolization (UAE) is an adjuvant treatment of CSP used to minimize bleeding especially in cases where trophoblasts are deeply embedded in the myometrium; it is associated with a success rate ranging from 61% to 100% when employed in combination with non-invasive surgical approach^[25]. However, even if concomitant use of UAE increases the success rate of primary CSP treatment it may be associated with reduced ovarian reserve, limitation of intrauterine growth, premature birth and detachment of placenta or placenta accreta in subsequent pregnancies^[27].

CONCLUSION

In this scenario of different treatment options without standardized guidelines, treatment of scar pregnancy should be tailored on single patient in order to exploit the success rate of the procedure but in the same time minimizing the risk of complications. Our experience is in line with previously reported case of local MTX injection followed by suction and curettage in terms of efficacy with absence of short and long-term complications. Thus, according our opinion, this conservative method could be used as first line approach in patient affected by type I CSP, eligible for the procedure, wishing to preserve fertility. Surely, further studies maybe randomized including a large population and with a longer follow-up are needed to delineate definitive conclusions that can support good clinical practice.

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