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Reproductive outcomes following cesarean scar pregnancy – a case series and review of the literature

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ABSTRACT

Objective: To assess the reproductive outcomes following cesarean scar pregnancy (CSP) in our center and review of published literature on CSP and subsequent reproductive issues.
Methods: Over a 3-year period, 28 cases of CSPs were diagnosed in our hospital. Follow up data of 22 cases were available which included the gestational age at diagnosis of CSP, treatments employed and outcomes of previous cesarean scar pregnancy. We also had details on subsequent fertility outcomes in these women, which included intervals between the previous CSP and subsequent pregnancy, maternal and neonatal outcomes of these subsequent pregnancies and mode of delivery.
Results: Eight women desired to conceive and amongst them, seven women manage to conceive spontaneously. There were five pregnancies delivered at term, two miscarriages and one recurrent CSP. One patient had placenta accreta diagnosed at cesarean section at term and had massive hemorrhage. The remaining 4 term pregnancies were delivered uneventfully by elective cesarean sections. The mean interval between the cesarean scar pregnancy and subsequent pregnancy was 24.6 months (range 9–48 months). One patient experienced secondary infertility and despite thorough investigations, no abnormalities were detected. One of the women who did not desire future fertility conceived spontaneously at 9 and 18 months respectively after one CSP and had induced abortions twice. There were 3 women who had uterine scar defect repaired, only 1 resulted in a live birth but had placenta accreta with a lower uterine segment defect and suffered from massive hemorrhage, one woman had a subsequent miscarriage with a diverticulum in the lower uterine segment, and one woman had unexplained secondary infertility.
Conclusion: Most women were able to conceive following CSPs. Reproductive outcomes included normal intrauterine term pregnancy, miscarriage, recurrent CSP, and infertility. Placenta accreta, which could be misdiagnosed antenatally, was a serious complication in subsequent pregnancies. Diverticulum or defect in the lower uterine segment could happen after CSP. Repair of the uterine defect, following a CSP neither guaranteed the healing of the scar, nor the ability to ensure a safe pregnancy outcome. Appropriate counseling to women desiring fertility with a history of CSP is essential and once they conceive early referral to tertiary centers for follow up is pertinent.

Introduction

Cesarean scar pregnancy (CSP) occurs at the site of a previous uterine scar and is associated with serious complications, such as uterine rupture, life-threatening hemorrhage and risk of hysterectomy [1–3]. A pregnancy implanted in a cesarean scar is an iatrogenic complication following cesarean section. The prognosis for an expectant therapy is very poor based on our experience [4] and others [5,6]. Therefore, the termination of such a pregnancy is recommended.

Uneventful term intrauterine pregnancies had been reported following all modalities of management for a CSP [2,5,7–11,27]. Complications in a subsequent pregnancy after a CSP include recurrent CSP, missed abortions, placenta previa or accreta, life-threatening hemorrhage and hysterectomy, which are not uncommon [9,12–18]. There was a report of one maternal death from uterine rupture in a subsequent pregnancy at 38 weeks 3 days resulting in a still birth [9].

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Given the relatively low incidence of CSP, there is still paucity of data about the short and long-term outcomes and complications in subsequent pregnancies of women who had been previously diagnosed with a CSP. A better understanding of future reproductive outcomes is particularly helpful to assist in the management of women who desire to conceive after CSP. Thus, we embark on a review on the available literature and based on our existing data in women who had CSP treated at our center to assess the fertility outcomes of women who had CSP previously.

Patients and methods

From April 2009 to June 2012, 28 Chinese women were diagnosed with cesarean scar pregnancies (CSP) at the First Affiliated Hospital of Jinan University in Guangzhou. The CSP cases were searched through the institutional gynecological databases by the terms "cesarean scar" and "pregnancy." Medical records were analyzed for the gestational age, number of previous cesarean sections, clinical management, and outcome of cesarean scar pregnancies. For those who desired to conceive, data on fertility and obstetric outcomes of subsequent pregnancies, time interval between the scar pregnancy and the subsequent pregnancy were collected from both hospital medical records and telephone interviews with the patients. This prospective observational study was approved by the Institutional Review Board of the First Affiliated Hospital of Jinan University. Our protocol for diagnosis had been previously published [4] and management of cesarean scar ectopic pregnancies was either via the utility of uterine arterial embolization (UAE) and dilatation and curettage (D&C) or systemic methotrexate and D&C as described previously [4]. A flow chart of all subsequent reproductive outcomes following CSP was represented in Fig. 1.

Ultrasonography was used for diagnostic purposes of subsequent pregnancies and the antenatal assessment of the thickness of the uterine lower segment underlying the cesarean scar. Pregnancy outcomes were evaluated for each patient such as miscarriages, recurrent CSP, uterine rupture, as well as placenta previa or accreta. Cesarean section was the only mode of delivery for all patients. Gestational age at delivery, fetal birth weight, postpartum course and outcome of the mothers and infants were assessed.

We also attempted to perform a comprehensive review of the available literature on reports of CSP and possible reproductive outcomes in English on PubMed Central database without any restriction in timeline due to the rarity of the condition. We used the following key terms of "cesarean scar pregnancy", "scar ectopic pregnancy", "reproduction" and "outcomes". We manage to obtain a handful of articles published in the English language addressing similar concerns as we do. However, given the paucity of large scale studies due to the rarity of the condition, many studies

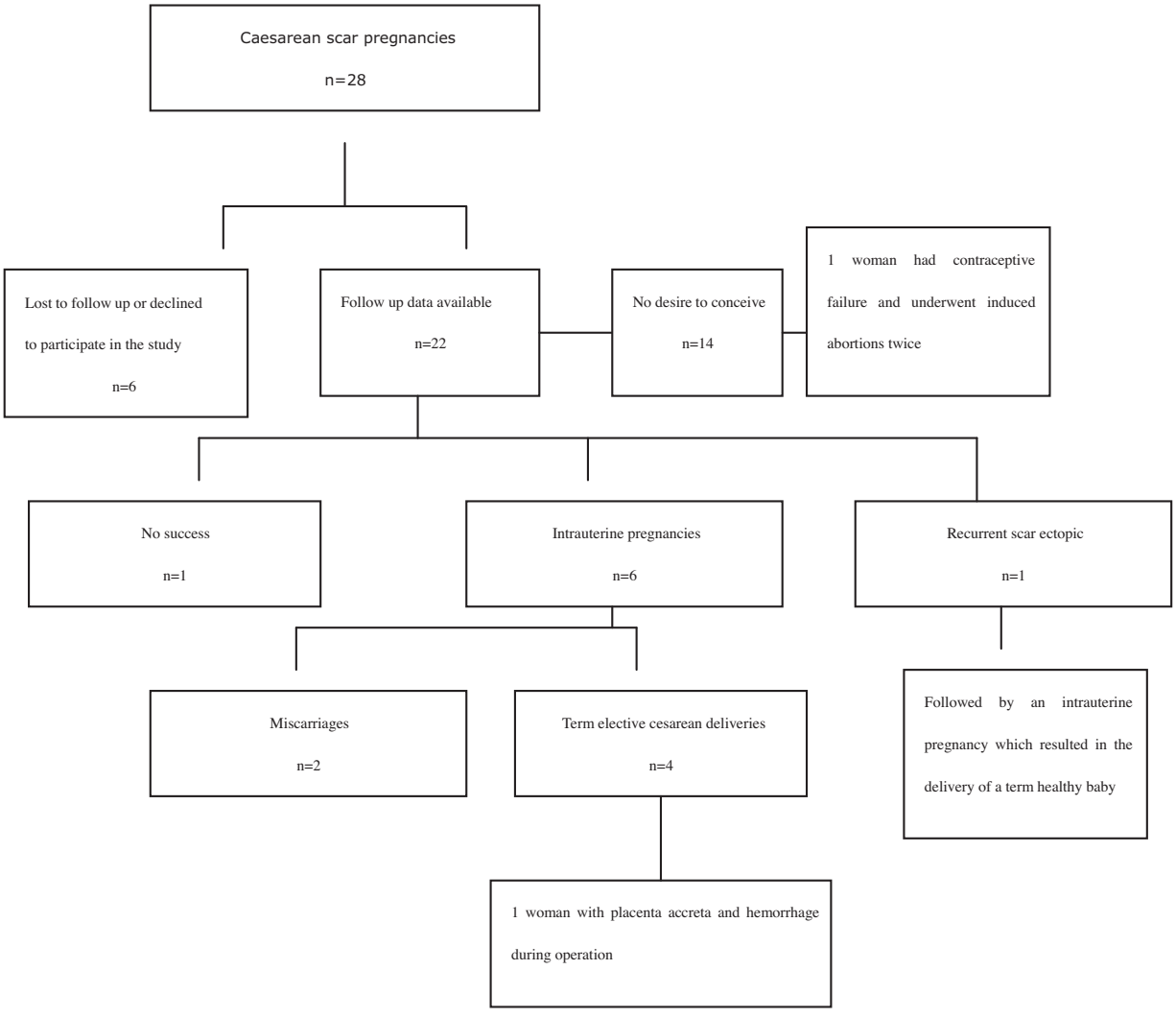

Fig. 1. Flowchart of follow-up data for 28 women with cesarean scar pregnancies.