ECTOPIC PREGNANCY WITHIN A CESAREAN SECTION SCAR: REPORT OF TWO CASES

Fang-Yi Chen, Pao-Ling Torng, Su-Cheng Huang, Song-Nan Chow*
Department of Obstetrics and Gynecology, National Taiwan University Hospital and College of Medicine, Taipei, Taiwan.

SUMMARY
Objective: Ectopic pregnancy embedded in a previous cesarean section scar is rare. We report two cases of cesarean section scar pregnancy managed with conservative treatment.
Case Reports: The first patient was a 39-year-old woman who presented with vaginal spotting and delayed menstruation. She had undergone two previous cesarean sections and was found to be at 5 weeks’ gestation. The second patient was a 38-year-old woman with one previous cesarean section. She presented with vaginal bleeding and abdominal fullness and was found to be at 7 weeks’ gestation. In both cases, cesarean section scar pregnancies were diagnosed by transvaginal sonography. Intra gestational sac injection of methotrexate (MTX) 50 mg was administered under transabdominal sonographic guidance, followed by multiple doses of intramuscular MTX. Serum β-human chorionic gonadotropin levels declined gradually and reabsorption of the gestational sacs was confirmed by sonography.
Conclusions: Early detection of cesarean section scar pregnancy allowed the choice of several conservative treatment options. Intra gestational sac injection of MTX followed by systemic MTX was effective in terminating the ectopic pregnancy, even after a fetal heartbeat was detected. [Taiwanese J Obstet Gynecol 2004;43(1):38-41]

Key Words: methotrexate, scar pregnancy, transvaginal sonography

Introduction
Ectopic pregnancy rates are steadily increasing, with an estimated incidence of 16 per 1,000 reported pregnancies [1]. Extremely rare locations of ectopic pregnancies, such as within a scar, have been reported.
A pregnancy occurring within a cesarean section scar is associated with the risk of rupture and hemorrhage. However, early diagnosis and conservative treatment can preserve fertility. We report two cases of cesarean section scar pregnancy that were successfully treated with a combination of direct local injection and systemic multidoses of methotrexate.

Case Reports
Case 1
A 39-year-old woman, gravida 4, para 2, with a history of two previous cesarean sections (mal-presentation was the reason for the first cesarean section), visited our clinic on July 11, 2002 due to vaginal spotting and delayed menstruation. Transvaginal sonography revealed an empty uterine cavity and a gestational sac corresponding to five weeks’ gestation located in the anterior lower segment of the uterus (Figure 1). The patient was admitted on July 15, 2002, with a serum β-human chorionic gonadotropin (β-hCG) level of 27,153 mIU/mL. Under general anesthesia and trans-abdominal sonographic guidance, methotrexate (MTX) 50 mg was injected through the cervix into the gestational sac. Multiple doses of 50 mg MTX were injected intramuscularly on days 3, 5, and 7, with 15 mg oral calcium folinate administered on the days after systemic MTX. During the treatment period, the patient experienced lower abdominal discomfort and an episode of vaginal
bleeding. Her serum β-hCG levels decreased dramatically to 8,603 mIU/mL (less than 68.3% of the initial β-hCG level) 1 week after beginning systemic MTX treatment (Figure 2). The β-hCG level was undetectable 60 days after treatment and, by 68 days after the initial diagnosis, the gestational sac was not detected on sonography.

Case 2
A 38-year-old woman, gravida 5, para 1, with a previous history of cesarean section, visited our clinic on June 10, 2002 because of vaginal bleeding and abdominal fullness. Urine pregnancy test was positive; transvaginal ultrasound revealed a gestational sac with an irregular contour within the anterior uterine isthmus, corresponding to 7 weeks’ gestation. It contained an embryo 8.1 mm in crown–rump length, and having persistent cardiac activity (Figure 3). The patient’s serum β-hCG level was 65,585 mIU/mL. She was admitted the next day under the diagnosis of cesarean section scar pregnancy. To terminate the pregnancy, MTX 50 mg was injected into the gestational sac under transabdominal sonographic guidance, followed by multiple doses of intramuscular MTX 50 mg on days 3, 5, and 7, with 15 mg oral calcium folinate administered on the days after systemic MTX. After her first course of treatment, she was discharged without incident. However, her serum β-hCG level remained high at 33,082 mIU/mL 7 days later. She received another course of intramuscular MTX with calcium folinate on days 1, 3, 5, and 7, beginning on July 24, 2002. She experienced intermittent lower abdominal pain during treatment. Her β-hCG level fell to 7,548 mIU/mL by the end of this second round of therapy (Figure 4). A third course of MTX treatment was prescribed on August 7, 2002. Weekly sonography screening showed fetal cardiac arrest on the 16th day after starting treatment, followed...
by a gradual decrease in the size of the gestational sac. Her β-hCG level decreased continuously and was undetectable by the 63rd day after her initial diagnosis.

Discussion

Gestational implant in a previous cesarean section scar is a rare form of ectopic pregnancy. The natural history of the condition is unknown, and the most reasonable hypothesis is entrance of conceptus into the myometrium through a microscopic dehiscent tract of the cesarean section scar. Like intramural implantation, such a tract is believed to develop from the trauma of previous uterine surgery, such as curettage, cesarean section, myomectomy, metroplasty, hysteroscopy, and even the manual removal of the placenta [2].

The risk of uterine rupture and uncontrolled bleeding is high in cesarean section scar pregnancy, even in the first trimester of pregnancy. Early diagnosis is critical for offering multiple treatment options so that young women who desire to preserve fertility can be managed conservatively. Diagnosis of ectopic pregnancy by sonography was reported more than three decades ago [3]. However, the use of ultrasound in detecting a cesarean section scar pregnancy was not reported until 1990 [4]. Strict criteria in ultrasound imaging must be used to differentiate cesarean section scar pregnancy from spontaneous abortion in progress, cervico-isthmic pregnancy, and tubal pregnancy. These criteria include an empty uterine cavity, an empty cervical canal, gestational sac located in the anterior part of the uterine isthmus, and an absence of healthy myometrium between the bladder and the sac [2]. Some authors suggest an additional criterion of prominent peri-trophoblastic flow in the diagnosis of cesarean section scar pregnancy [5]. However, misdiagnoses still occur. Lai et al reported difficulty in making a differential diagnosis between an ectopic pregnancy implanted in the oviduct or in the myometrium of a previous cesarean section scar, even as early as the 7th week of gestation [6]. They suggested operative laparoscopy as a diagnostic tool. On the other hand, Godin et al reported the use of magnetic resonance imaging to confirm a diagnosis of cesarean section scar pregnancy [7].

Because of the rarity of cesarean section scar pregnancy, treatment guidelines are not available. A variety of surgical and non-surgical options have been proposed to terminate this particular type of ectopic pregnancy. Surgical approaches include hysterectomy, hystero-tomy, and curettage. However, curettage in cesarean section scar pregnancy is generally contraindicated and may cause uterine perforation and intractable bleeding. A review of the literature since the first case of cesarean section scar pregnancy was reported in 1978 [8] revealed that hysterectomy was necessary in two cases [3,9]. Other cases were successfully treated with hysterotomy, either through laparotomy or laparoscopic surgery [10].

Medical treatment such as MTX injection has been used in tubal pregnancy, but experience is limited in cesarean section scar pregnancy. A single dose of systemic MTX has been used to treat cesarean section scar pregnancy [11,12]. However, others have claimed that systemic multidoses of MTX are necessary for successful management [13,14]. Alternatively, Godin et al reported success using local injection of KCl and MTX into a 9-week gestational sac [7], resulting in undetectable β-hCG levels by 82 days, and the disappearance of the residual sac from ultrasound by 96 days. Roberts et al used direct local injection of hyperosmolar glucose followed by oral methotrexate three times daily for 5 days in a 7-week cesarean section scar pregnancy [15]; the β-hCG level became undetectable after 6 weeks, with no evidence of a residual sac by ultrasound.

Our two cases responded well to direct injection of MTX into the gestational sac, followed by systemic MTX injections. Using serum β-hCG level as an indicator for the need for further treatment, we found a 68.3% decline of β-hCG level in case 1, but only a decline of 49.6% in case 2, 1 week after treatment. Levels of β-hCG were high (33,082 mIU/mL) after treatment in case 2, prompting two additional courses of systemic MTX. In contrast, the patient in case 1 received only one course of systemic MTX therapy. These results suggest that the number of treatment courses required might be related to gestational age at diagnosis and to the presence of a fetal heartbeat. Unlike the experience with single-dose MTX treatment in tubal pregnancies that indicate a higher failure rate for patients with an initial β-hCG level greater than 10,000 mIU/mL [16], treatment guidelines that can predict outcome in cesarean section scar pregnancies have not yet been established. However, after comparing the criteria for tubal pregnancy with MTX treatment to our experience, direct MTX injection into the gestational sac of a cesarean section scar pregnancy was successful in terminating the growth of an embryo with cardiac activity and in patients with higher β-hCG levels. Patients who choose medical treatment that allows preservation of fertility may benefit from avoiding the risk of surgery, but face an uncertain treatment period and the possibility of treatment failure.

Our medical treatment of the cesarean section scar pregnancies of our two patients was successful. However, the evaluation of treatment results was based on the outcome of only two cases. We do not know the overall
success rate or the outcome of subsequent pregnancies after treatment for cesarean section scar pregnancy. Several authors have reported uneventful subsequent pregnancy course after surgical repair [6,17], but the integrity of the uterus after medical treatment is still unclear. The risk of uterine rupture and the rate of recurrent implantation in cesarean section scars after medical treatment are unknown.

The large number of cesarean sections performed around the world has caused concern, not only because of the financial costs but also because of the immediate maternal morbidity. Cesarean section is a modest risk factor for ectopic pregnancy and an important risk factor for placental problems [18]. In view of the increasing rate of cesarean delivery, health care providers should be aware of the possibility of this ectopic pregnancy type in subsequent pregnancies.

References