Successful Conservative Treatment of a Caesarean Scar Ectopic Pregnancy with Misoprostol

A Case Report

Ekhlass H Sabri Al-Rawi* CABOG, FICGO

ABSTRACT

Caesarean section ectopic pregnancy is a rare type of ectopic pregnancy associated with severe complication such as uterine rupture uncontrollable bleeding which may end with hysterectomy and definitive infertility. Medical treatment by using methotrexate is one of treatment options. Through this paper, I demonstrate the use of misoprostol as another medical option. However, further studies are needed to assess the safety of misoprostol in such cases.

Keywords: Ectopic pregnancy, Caesarean section pregnancy, Methotrexate, Misoprostol, Cytotec, Contraception.

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Caesarean section pregnancy (CSP) is an ectopic pregnancy implanted in the myometrium at the site of a previous lower segment caesarean section scar[1]. It is the rarest kind of ectopic pregnancy and the incidence of these pregnancies tends to increase due to increasing rates of Caesarean delivery and to better diagnostic modalities[2]. Estimated incidence, according to some authors, is between 1:1800 and 1:2200[1] pregnancies.

The pathophysiology of CSP remains to be established but it is possible that the conceptus penetrates the myometrium through a microscopic dehiscent tract of caesarean scar[3] or the gestational sac implantation occurs in a poor healed caesarean section scar.

CSP may cause dramatic complications like uterine rupture leading to severe and life-threatening hemorrhage, which can culminate in hysterectomy, thus affecting fertility.

In spite of the increasing number of cases, there are still no treatment guidelines and actual knowledge is based on case reports and small series[4,5].

*Department of Obstetrics and Gynecology, Al-Yarmouk Teaching Hospital, Baghdad, Iraq.

Treatment modalities are either medical or surgical and sometimes combined. The surgical treatment includes; hysterectomy when the uterus is ruptured or if bleeding is uncontrollable, evacuation the pregnancy and repair of the uterine defect by laparotomy or laparoscopy[6], dilatation and curettage and excision of trophoplastic tissues using laparotomy or laparoscopy[7] and bilateral hypogastric artery ligation associated with dilatation and curettage under laparoscopic guidance[8]. The medical treatment consists of methotrexate administration locally or systemically[1,9,10].

Another treatment possibility is the uterine artery embolization[6]. In this paper, I report a case with CSP that was treated conservatively and successfully by misoprostol tablets which may be used in the future as another modality of medical treatment.

——————————Case Report

A 37 year-old patient, gravida 6 para 2 abortion 3 with history of two caesarean sections and two dilatation and curettages were done for first and third abortions, while the second one was complete abortion. She has unremarkable medical history and has regular menses of 28 days cycles, so she was on natural methods of contraception. Her last menstrual period

was in December, 28th 2015 and she did β hCG in January, 29th 2016 which was positive, then she did pelvic U/S, (Figure 1), in February 13th 2016 that was revealed a single gestational sac (GS) of 5^{+4} weeks that implanted in abnormally low position. As the pregnancy was confirmed, the patient tried to abort it depending on internet information and pharmacist that were guided her to use misoprostol (cytotec) tablets. So she started with a dose of two cytotec tablets (400 µg), one orally and the second vaginally repeated six hours that repeated after two days, but without any symptoms (neither bleeding nor pain), so she increased the cytotec dose to 800µg with two tablets orally and two tablets vaginally six hours apart, then she repeated the doses with four hours apart and she started to develop attacks of moderate severity lower abdominal pain lasting about one to two hours and usually started after the second dose of cytotec per a day, but there was no vaginal bleeding. After that she repeated U/S, (Figure 2), in March 21st 2016 that was revealed single GS in abnormal lower segment position containing ill-defined hardly seen fetal pole of about 7^{+0} weeks gestational age (GA). In April, 3rd 2016 the patient admitted to our hospital (Al-Yarmouk Teaching Hospital) as a case of CSP for surgical intervention. Physical examination demonstrated stable vital signs and bimanual examination revealed enlarged uterus with slight tenderness and no adnexal masses. U/S (Figure 3) revealed a single GS containing 9 mm CRL fetal pole equivalent to 6^{+6} weeks gestation with negative cardiac activity, the sac is embedded anteriorly within the previous caesarean scar with 2 mm thickness between the bladder wall and the sac, there was no free fluid in cul-de-sac.

These findings were compatible with a CSP. So, β hCG titration and Doppler study were done for the patient. The β hCG level was 63.8mu/ml and the color Doppler revealed no abnormal vascularity extending from the GS to the uterine wall. As U/S revealed GA smaller than expected date with negative fetal heart, no abnormal vascularity by color Doppler study, β hCG was lower than expected value and the patient was hemodynamically stable, so the patient counseled regarding conservative option of treatment instead of surgical one. After patient's agreement, outpatient follow up was decided. Second β hCG titer was done in April, 10th 2016 and the result was 37.6mu/ml, then the third one in April, 20th 2016 which was negative. U/S scanning examinations were done as follow:

- First one (Figure 4) was repeated in April, 28th2016 which revealed single irregular GS sitting in previous caesarean scar of 7^{+4}weeks containing non viable, 13mm CRL fetus.

- Two weeks later, transvaginal U/S (Figure 5) was done in May, 12th 2016 which revealed single irregular outline GS of 7^{+1} weeks within the previous caesarean scar containing non viable fetus and the distance between GS and the bladder was 3.5mm.

- In May, 23rd 2016 pelvic U/S (Figure 6) revealed an irregular GS of 31.8x16.9mm within the previous caesarean scar and no fetal pole was seen within the sac.

- Last U/S was done in July, 14th 2016 (Figure 7) which revealed a complex mass of 12x10.5mm and wall thickness 4.4mm located at the site of previous caesarean scar, avascular in Doppler study and the distance between the mass and the bladder was 8mm.

The patient resumed her menstrual cycle in May, 5th 2016 that is about two weeks after negative β hCG result and returned to normal pattern so the next one was in June, 6th and so on. She was asymptomatic during period of follow up and counseled to use more potent contraception.

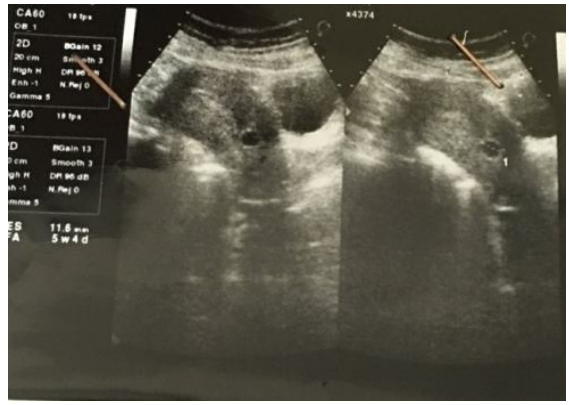

Figure 1: Early pregnancy, GS of 5^{+4} weeks in abnormally low position.

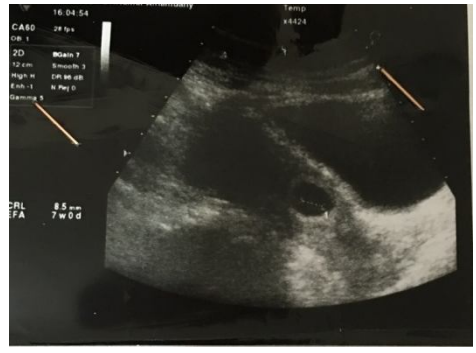

Figure 2: Abnormal lower segment implantation of CRL 7^{+0} weeks.

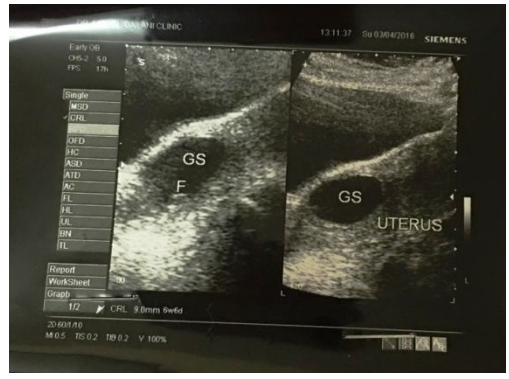

Figure 3: Caesarean scar ectopic pregnancy contains non-viable fetus of 6^{+6} weeks.

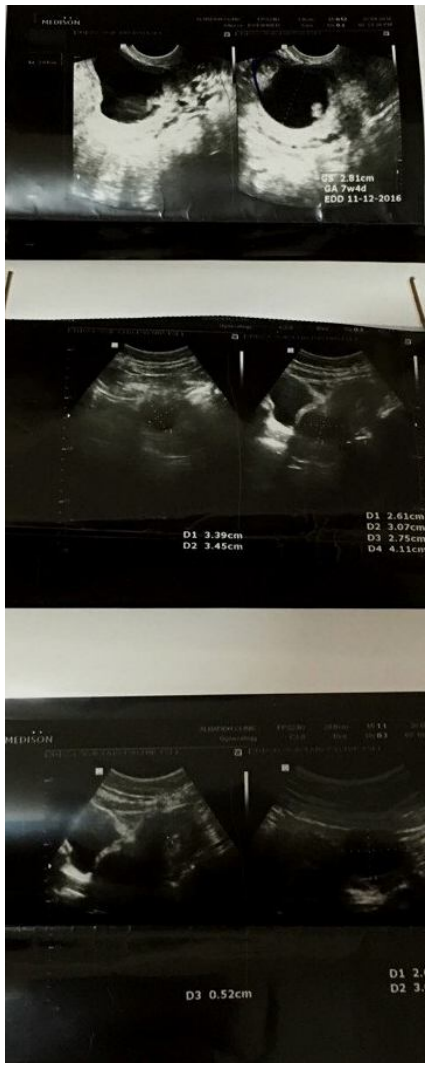

Figure 4: Irregular GS sitting in CS scar containing non-viable fetus of 7^{+4} weeks.

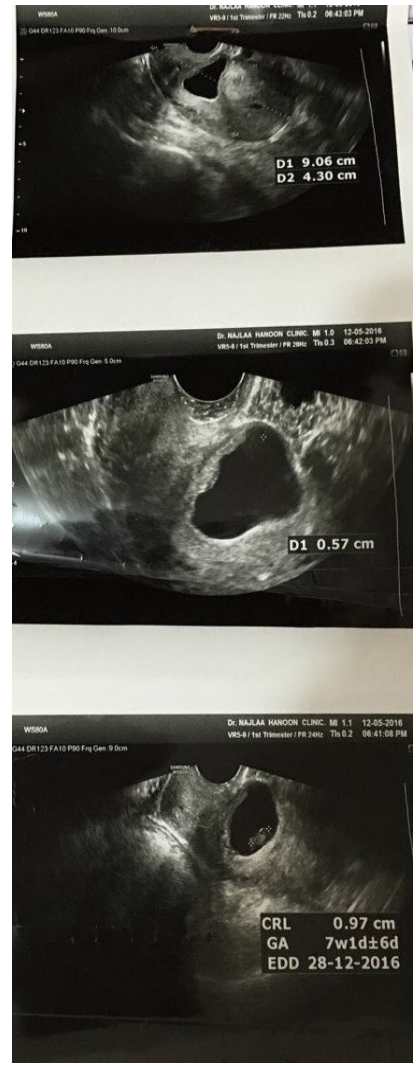

Figure 5: Two weeks later, irregular GS containing non-viable fetus of 7^{+4} weeks.

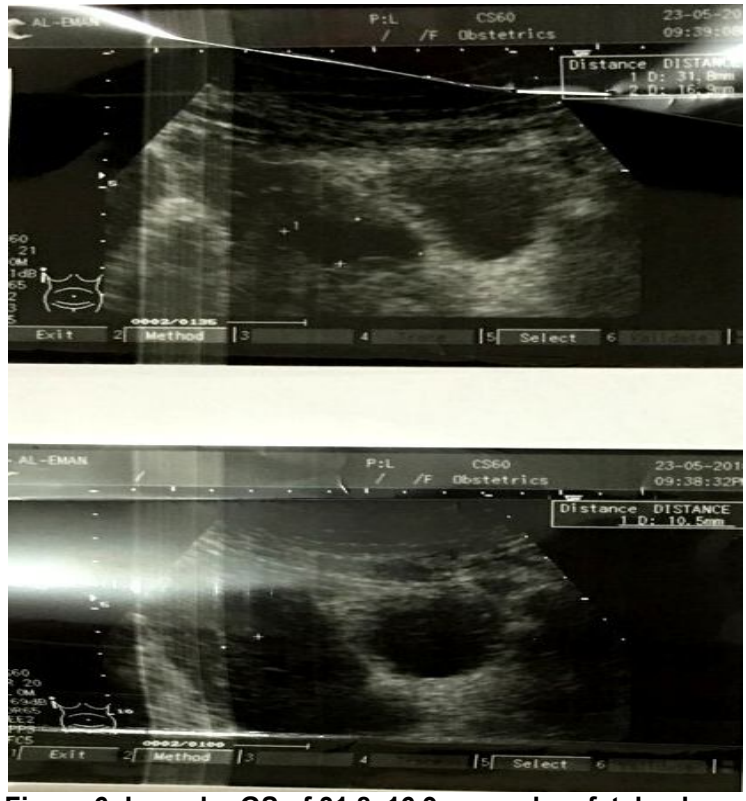

Figure 6: Irregular GS of 31.8x16.9mm and no fetal pole.

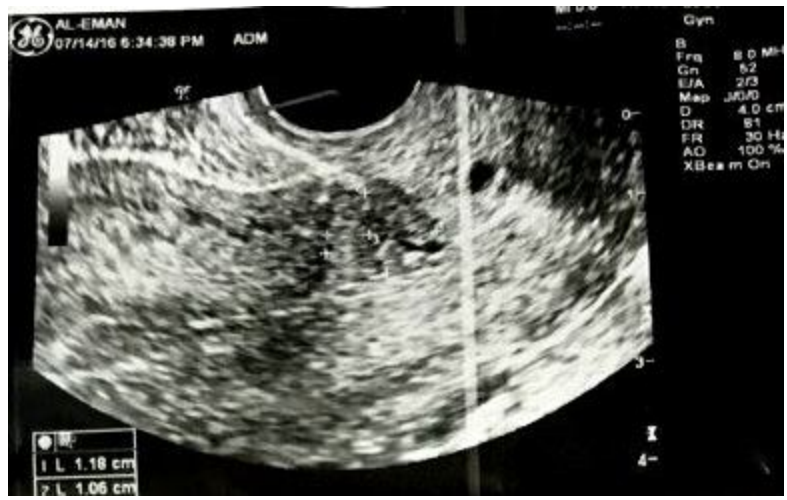

Figure 7: Complex mass of 12x10.5mm within previous CS scar avascular by Doppler.

Discussion

CSP tends to be increasingly common in accordance with the rise in the number of caesarean sections performed allover the world[11]. What used to be treated by hysterectomy is nowadays managed conservatively as early diagnosis is possible and conservative treatments are available[11]. Sonography interpretation is crucial for early diagnosis[12]. Sonographic criteria for detection of CSP(9) are: Empty uterus and empty cervical canal; Development of the sac in the anterior wall of the isthmic portion; A discontinuity on the anterior wall of the uterus demonstrated on a sagittal plane of the uterus running through the amniotic sac; Absent or diminished healthy myometrium between the bladder and the sac; High velocity with low impedance peritrophoplastic vascular flow clearly surrounding the sac is proposed in Doppler examination.

Medical treatment is appropriate for woman who are hemodynamically stable, with unruptured CSP less than 8 weeks gestation and myometrial thickness less than 2mm between CSP and the bladder[13]. The medical treatment that is usually used consists of methotrexate administration locally or systemically[9,10], however, in our case, misoprostol (cytotec) tablets are used.

Misoprostol is a synthetic prostaglandin E_1 analogue that is used off- label for a variety of indications in the practice of obstetrics and gynecology, including medical management of miscarriage, induction of labor, cervical ripening before surgical procedures, and the treatment of postpartum hemorrhage[14]. Pharmacokinetics studies comparing oral and vaginal administration of misoprostol have shown that vaginal route is associated with slower absorption, lower peak plasma levels, and slower clearance, similar to an extended-release preparation[15]. Vaginal misoprostol is also associated with a greater effects on the cervix and uterus[14].

Misoprostol is a known potent vasodilator in most vascular beds[16]. However, misopropstol- induced vasoconstriction have been reported in the limbs[16] as well as kidneys[17] of humans. In the laboratory, it also has been shown that PGE_2 , $PGF_{2\alpha}$, PGD_2 , and PGI_2 constrict isolated human uterine arteries and that vasoconstriction is mediated through prostanoid receptors that are present in the blood vessels[18]. The vasoconstrictive effect of misoprostol on uterine arteries of pregnant woman could occur as soon as one hour after the administration of the 200µg oral misoprostol in early pregnancy[19]. All Doppler indices (resistance index, pulsatility index, and systolic/diastolic ratio) increased significantly after administration of 400µg misoprostol (200µg vaginally and 200µg orally) suggesting an increase in flow resistance in uterine arteries of pregnant women with first trimester embryonic demise[20]. In our case, the patient may be started with an adequate dose of misoprostol in a proper time that resulted in early fetal demise and subsequent declining in β hCG that required no further intervention. This observation demonstrated that misoprostol may be used as an alternative medical treatment instead of the cytotoxic drug, the methotrexate. However, although misoprostol was used successfully, its role in CSP treatment should be studied and more reports are needed to rationalize this treatment modality.

There are several disadvantages to the medical treatment of CSP include; immediate complication which are uterine rupture, severe hemorrhage, need for hysterectomy, and maternal morbidity. Long term outcomes to be considered are future fertility and the recurrence of CSP. These risks must be explained and accepted by the patient.

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