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Case Reports

Caesarean Scar Ectopic Pregnancy Treated with local Methotrexate: A Case Report

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Abstract:

Ectopic pregnancy in a caesarean scar is the rarest form of ectopic pregnancy and probably the most dangerous one because of the risk of uterine rupture and massive hemorrhage. Since the advent of endovaginal ultrasonography, ectopic pregnancy in a caesarean scar can be diagnosed and distinguished from cervical pregnancy early in pregnancy. Here we describe a case of ectopic pregnancy in a caesarean scar in which the diagnosis was done at 6 weeks of pregnancy by transvaginal sonography and confirmed by MRI. The case was successfully managed by ultrasonography guided local injection of methotrexate into the gestational sac through trans abdominal route.

Keywords: *Caesarean scar pregnancy, ectopic pregnancy*

Introduction:

In caesarean scar pregnancy, the gestational sac is implanted in the myometrium at the site of a previous caesarean section. Implantation of an ectopic pregnancy within a previous caesarean section scar is a rare condition. However, its incidence is increasing over the years due to the rise in caesarean section rates worldwide but also may be directly related to improved diagnostic accuracy and high index of suspicion.[1, 2] Larsen and Solomon[3] reported the first case of cesarean scar pregnancy in 1978. A recent case series estimates an incidence of 1: 2226 of all pregnancies, with a rate of 0.15% in women with a previous caesarean section and a rate of 6.1% of all ectopic pregnancies in women who had at least one caesarean delivery.[4] Caesarean scar pregnancy is potentially life-threatening if not diagnosed and treated early. It may lead to catastrophic complications, such as uncontrolled haemorrhage and uterine rupture as the pregnancy progresses, which may require hysterectomy and result in subsequent loss of fertility. The outcome is dependent on early diagnosis and timely intervention. With more liberal use of transvaginal sonography, more cases of caesarean scar pregnancy are being diagnosed in early pregnancy thus allowing preservation of uterus and fertility.[5] Hence, it is important that antenatal care providers are aware of this rare form of ectopic pregnancy. It is important to be able to diagnose the condition as early as possible in order to initiate conservative treatment. A variety of conservative and surgical approaches have been proposed for the treatment of caesarean scar pregnancy; however, the optimal mode of management is yet to be established due to its rare occurrence.[6] We describe a case of cesarean scar pregnancy successfully treated by local methotrexate (MTX).

Case report:

Mrs. Sonia Zaman, 30 years, para: 2+3 (2 MR+1 abortion) with two previous caesarean section

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presenting on 16.08.14 with the complaints of amenorrhoea for 6 weeks with slight pervaginal bleeding. Her serum â hCG was 7726 IU/L and TVS revealed a tiny gestational sac like structure about 4 weeks pregnancy size. Sac was low down in position near the internal os. Patient wanted to terminate the pregnancy. She was prescribed Tab Mifepriston 200mg orally then after 36 hours Tab Misoprostol 800µgm pervaginally. Following this the patient developed pain in abdomen and slight pervaginal bleeding. After 7 days on 24.08.15, her serum â hCG and TVS were repeated. Her serum â hCG was 45,950 I.U/L and TVS revealed a 6 weeks pregnancy, the sac was located at the level of the body just above the internal os, adjacent to endometrium but projecting into the myometrium (Figure-1). Then caesarean scar pregnancy was suspected and which was confirmed by MRI. The MRI revealed early pregnancy at anterior

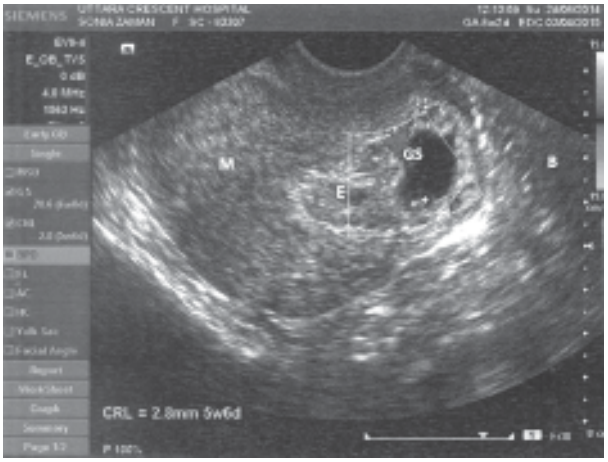

Fig.-1: *Transvaginal ultrasonography (Transverse scan) demonstrating a caesarean scar pregnancy with thinning of uterine myometrium at the anterior lower segment (white arrow), here E-Endometrium, GS-Gestational sac, M- Myometrium & B- Bladder*

aspect of the lower part of the body of the uterus, just underneath the caesarean section scar and above the internal os, adherent to the myometrium where myometrium was very thin about 3.6-4.8 mm thick (Figure-2). Then the patient was admitted into a private hospital on 24.08.14. Treatment was started on the same day by inj. Methotrexate 50 mg I/M on day 1, 3, 5 with folinic acid rescue on day 2, 4, 6. But on day 7(30.08.14), TVS revealed 7 weeks viable pregnancy. Then decision was taken for local injection of methotrexate into the sac on that day. After proper counseling with the patient, under USG guided, perabdominally aspiration of sac fluid was done first, then 50 mg methotrexate was instilled into the sac

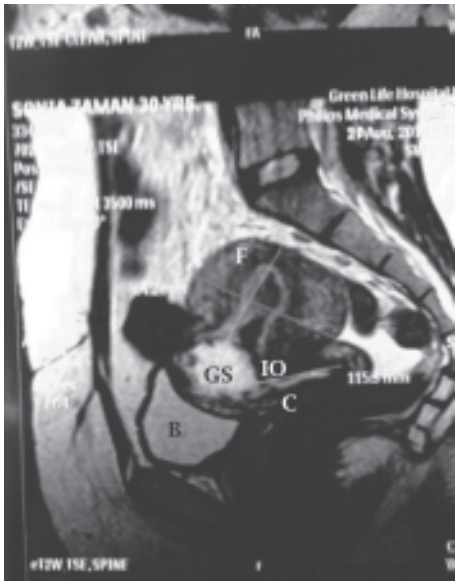

Fig.-2: *MRI shows a caesarean scar pregnancy just above the internal os with severe thinning of uterine wall at the anterior lower segment.(C-Cervix, GS-Gestational sac, IO- Internal os ,F- Fundus & B-Bladder)*

(Figure-3). At that time an operative set up was kept ready to manage any emergency. After 2 hours again TVS done, which revealed haemorrhage within the sac and no cardiac pulsation. On that day her serum â hCG was 78,000 I.U/L. After injection she had no complain but only slight P/V bleeding was there. Next day she was discharged from the hospital with the

Fig.-3: *Ultrasonography guided local injection of Methotrexate into the sac.*

advice of doing serum â hCG at 2 weeks interval and TVS at monthly interval until the reports were normal. It took 4 months for serum â hCG and 6 months for TVS report to become normal. She had off and on P/V bleeding for one month after the injection and she regained her normal menstrual cycle after two and half months.

Discussion:

Pregnancy in the scar from a cesarean delivery is located outside the uterine cavity and is completely surrounded by myometrium and fibrous tissue of the scar in the prior lower uterine segment.[6] The recognized long-term risks of cesarean delivery are subsequent ectopic pregnancies, uterine rupture, and placental disorders in future pregnancies such as abruptio placentae, placenta praevia, and placenta accreta, which is the most serious condition.[5,7] However, endometrial and myometrial disruption and scarring subsequent to caesarean delivery also may predispose to implantation in the uterine scar, which is even more dangerous than placenta accreta.[6] Invasion of the myometrium early in the first trimester may lead to uterine rupture and profuse bleeding as the pregnancy advances.[8] There is minimal awareness of the possibility of gestation in a previous caesarean scar, which is often misdiagnosed as a cervical or aborting pregnancy. Because of low suspicion, diagnosis of an early pregnancy in a prior caesarean scar may be delayed, and potentially catastrophic complications may ensue.[6] Different studies have shown no association between number of previous caesarean deliveries and subsequent caesarean scar pregnancies.[9] The time interval from last caesarean section to the diagnosis of caesarean scar pregnancy has ranged from 6 months to 12 years.[10] The mean gestational age at presentation was 7.5± 2.5 weeks.[6] Caesarean scar pregnancy has been reported after IVF and embryo transfer as well as spontaneous pregnancy.[11]

In caesarean scar pregnancy, invasion of the conceptus into the myometrium is believed to occur through a microscopic dehiscence or a defect in the scar secondary to poor vascularization of the lower uterine segment with fibrosis and incomplete healing.[2]There is a poorly developed lower uterine segment that may lead to faulty healing and, consequently, implantation within the scar. Another factor contributing to the recently increased incidence of these abnormal implantations may be the change in surgical technique for repairing the uterine incision. A single no inverting running suture, as commonly used today, may lead to impaired postoperative healing and creation of defects within the scar.[12]

A very thin myometrium may be visualized between the bladder and the gestational sac. In 10 of 15 patients reported in one case series, the myometrial thickness at the implantation site ranged between 2 and 5 mm.[10] Vial et al[13] proposed the following sonographic criteria for the diagnosis of this condition, which were accepted later by Fylstra[14] and Godin et al[15]: 1) The trophoblast is located between the bladder and the anterior uterine wall; 2) fetal parts are not present in the uterine cavity; 3) on a sagittal uterine view that runs through the amniotic sac, no myometrium is seen between the gestational sac and the urinary bladder, as illustrated by the lack of continuity of the anterior uterine wall.

To avoid confusion with the expulsion of the conceptus in abortion or a cervicoisthmic implantation, the addition of Color Doppler imaging and 3-dimensional power Doppler ultrasonography may enhance the diagnostic capability of endovaginal ultrasonography by evaluating the flow, resistance, and pulsatility indices in the peritrophoblastic vasculature.[16,17] High velocity and low impedance surrounding an ectopic gestational sac are consistent with viable early pregnancy.[2,18]Magnetic resonance imaging also can be used if endovaginal ultrasound examination fails to identify the typical findings of a caesarean scar pregnancy.[13]

Because cesarean scar pregnancy is rare, experience is based mainly on case series, and thus no therapeutic protocols have been established universally.[6] In most cases, modality of treatment selection was based on severity of symptoms, serum â hCG levels, and surgical experience.

Management:

Expectant treatment: It is not justified in cervical ectopic like other ectopic as there is increased risk of uterine rupture, severe haemorrhage and disseminated intravascular coagulation that mandate hysterectomy [6,19,20]

Medical treatment: If cases are diagnosed at early weeks of gestational age and when serum â hCG level lies within 5,000 mIU/mL complete and uncomplicated resolution is possible by medical treatment within a few months.[2,18,21,22] Other studies shows successful

medical treatment of both tubal and cervical ectopic pregnancies in-spite of high â hCG[23,24]. Injection methotrexate and KCL is usually used for medical treatment.

1. Methotrexate- Can be treated either by systemic injection or local injection.MTX belongs to a class of drugs know as folic acid antagonists that blocks DNA and some extent RNA synthesis and cell division. As a result, tissues that have a rapid of cell turn over such as trophoblasts are sensitive to treatment with this medication.

Systemic Methotrexate: Depending upon response single or multiple doses can be used. The advantage of a systemic methotrexate (MTX) treatment is: 1. Provides a non invasive treatment option for patients seeking fertility preservation. 2. Treatment may be use in outpatient practices with lower costs. 3. Simplicity of therapy, independence of the skills of the operator and much more. Though successfully can be treated by single or multiple intramascular injections in many of the cases in other situations additional interventions were needed in the form of direct intragestational injections, dilatation and curettage, uterine artery embolization and foley ballon tamponade [2,18,21,22,]

Local Methotrexate: Direct intragestational injection of methotrexate appeared to be effective because of high concentration in the sac[16]. Though 53.3% pregnancies resolvedwith an initial serum â hCG level ranging between 14,086 and 93,000 mIU/mL, but the process took several months [2,25]. For others gestational sac persisted and or there was massive bleeding[2]for which additional systemic methotrexate[25] or multiple intragestational injections[26]were needed.

Combined Systemic and Local Methotrexate: Study shows effective resolution of sacs when MTX used simultaneously in systemic and local intragestational route in spite of high â hCG level (12,000 to 46,000 mIU/mL) [18,21,23,24]

2. KCL: Injection of embryonic intracardiac KCL is equally effective (95.2%) as combined systemic and local MTX injection (93.3%).[23,24]

Surgical treatment:

Laparotomy or Laparoscopyfollowed by wedge excision of gestational mass is safe therapy, particularly in advanced pregnancy.[6]The follow-up period usually shorter than with medical treatment, and the risk of uterine rupture or recurrence at the site of repair is less likely.[13,21]

Hysteroscopy- Hysteroscopy enabled the identification of the embryonic sac and the distribution of vessels at the implantation site. The sac is separated from the uterine wall with the operative hysteroscopy and the vessels are electrocoagulated to assure hemostasis[27].

Dilation and Curettage-This procedure is not very rewarding as it creates risks because the trophoblastic tissue is located outside the uterine cavity and thus unreachable and there may be uncontrolled haemorrhage, which requires different procedures like hysterectomy, systemic methotrexate, laparotomy and excision of the mass, tamponade with an intracavitary Foley catheter or cervical cerclage.[6]

Selective Uterine Artery Embolization is another option of treatment but it's results are not satisfactory yet.[6]

Sac Aspiration- Fine-needle aspiration under sonographic guidance was attempted for small-sized cesarean scar pregnancies. Of the 5 reported cases, 2 resolved and 3 required additional therapy with systemic methotrexate.[20, 28]

Follow-up of Therapy and Future Fertility - Most uterine scar pregnancies managed medically resolved within 3–9 months.[14,18,21] All authors agreed on the protocol for post therapy follow-up, which includes weekly serum â hCG measurements until undetected and monthly ultrasound evaluations until no products of conception are visualized.[2] Seow et al[18] suggested serial color Doppler endovaginal ultrasound examinations to identify persistence of high velocity, low impedance, and turbulent flow that heralds risk of uterine rupture, even if serum â hCG levels decline. Patient with history of caesarean scar ectopic pregnancy should be counseled about the subsequent increased risk of caesarean scar ectopic pregnancy (20%), placenta accrete and ruptured uterus.[6] Maymon et al[12] recommended preconceptional sonohysterography in women with prior cesarean scar gestation to detectany defect in the scar. The next pregnancy should be delivered by cesarean section before the onset of labor because elasticity of the scar cannot adapt to rapid uterine enlargement in late third trimester.[5]

Considering the rarity of cesarean scar ectopic pregnancy, this case report may give some input to establish a clear guideline for treating caesarean scar pregnancy.

References

1. Leitch CR, Walker JJ. The rise in cesarean section rate: the same indications but a lower threshold. Obstet Gynecol Surv 1999;54:19-20.
2. Jurkovic D, Hillaby K, Woelfer B, Lawrence A, Salim R, Elson CJ. First trimester diagnosis and management of pregnancies implanted into the lower uterine segment cesarean section scar. Ultrasound Obstet Gynecol 2003;21:220–7.
3. Larsen JV, Solomon MH. Pregnancy in a uterine scar sacculus: an unusual cause of postabortal haemorrhage. A case report. S Afr Med J 1978;53:142–3.
4. Ash A, Smith A, Maxwell D. Caesarean scar pregnancy. BJOG 2007;114(3):253-263
5. Chazotte C, Cohen WR. Catastrophic complications of previous cesarean section. Am J Obstet Gynecol 1990;163:738–42.
6. Rotas MA, Haberman S & Levgur M. Caesarean Scar Ectopic Pregnancies. Etiology, D Diagnosis & Management. Obstet Gynecol 2006; 107: 1373-81.
7. Hemminki E, Merilainen J. Long-term effects of cesarean sections: ectopic pregnancies and placental problems. Am J Obstet Gynecol 1996;174:1569–74.
8. Fylstra DL. Ectopic pregnancy within a cesarean scar: a review. Obstet Gynaecol Surv 2002;57:537–43.
9. Sadeghi H, Rutherford T, Rackow BW, Campbell KH, Duzyj CM, Guess MK, et al. Cesarean scar ectopic pregnancy: case series and review of the literature. Am J Perinatol. 2010; 27(2): 111-120.
10. Weimin W, Wenqing L. Effect of early pregnancy on a previous lower segment cesarean section scar. Int J Gynaecol Obstet 2002;77:201–7.
11. Armstrong V, Hansen WF, Van Voorhis BJ, Syrop CH. Detection of cesarean scars by transvaginal ultrasound. Obstet Gynecol 2003;101:61–5.
12. Maymon R, Halperin R, Mendlovic S, Schneider D, Herman A. Ectopic pregnancies in a caesarean scar: review of the medical approach to an iatrogenic complication. Hum Reprod Update 2004;10:515–23.
13. Vial Y, Petignat P, Hohlfeld P. Pregnancy in a caesarean scar. Ultrasound Obstet Gynecol 2000;16:592–3.
14. Fylstra DL. Ectopic pregnancy within a caesarean scar: a review. Obstet Gynecol Surv 2002;57:537–43.
15. Godin PA, Bassil S, Donnez J. An ectopic pregnancy developing in a previous caesarian section scar (published erratum appears in Fertil Steril 1997;68:187). Fertil Steril 1997;67:398–400.
16. Shih JC. Cesarean scar pregnancy: diagnosis with three-dimensional (3D) ultrasound and 3D power Doppler. Ultrasound Obstet Gynecol 2004;23:306–7.
17. Imbar T, Bloom A, Ushakov F, Yagel S. Uterine artery embolization to control hemorrhage after termination of pregnancy implanted in a cesarean delivery scar. J Ultrasound Med 2003;22:1111–5.
18. Seow KM, Huang LW, Lin YH, Lin MY, Tsai YL, Hwang JL. Caesarean scar pregnancy: issues in management. Ultrasound Obstet Gynecol 2004;23:247–53.
19. Einenkel J, Stumpp P, Kosling S, Horn LC, Hockel M. A misdiagnosed case of caesarean scar pregnancy. Arch Gynecol Obstet 2005;271:178–81.
20. Herman A, Weinraub Z, Avrech O, Maymon R, Ron-El R, Bukovsky Y. Follow up and outcome of isthmic pregnancy located in a previous caesarean section scar. Br J Obstet Gynaecol 1995;102:839–41.
21. Maymon R, Halperin R, Mendlovic S, Schneider D, Vankinz, Herman A, Pansky M. Ectopic pregnancies in caesarean section scars: the 8-year experience of one medical centre. Hum Reprod 2004;19:278–84.
22. Ravhon A, Ben-Chetrit A, Rabinowitz R, Neuman M, Beller U. Successful methotrexate treatment of a viable pregnancy within a thin uterine scar. Br J Obstet Gynaecol 1997;104: 628–9.
23. Wang M, Chen B, Wang J, Ma X, Wang Y. Nonsurgical management of live tubal ectopic pregnancy by ultrasound-guided local injection and systemic methotrexate. J Minim Invasive Gynecol. 2014;21(4):642-9

24. Monteagudo A, Minior VK, Stephenson C, Monda S, Timor-Tritsch IE. Non-surgical management of live ectopic pregnancy with ultrasound-guided local injection: a case series. Ultrasound Obstet Gynecol. 2005;25(3):282-8.

25. Valley MT, Pierce JG, Daniel TB, Kaunitz AM. Cesarean scar pregnancy: imaging and treatment with conservative surgery. Obstet Gynecol 1998;91:838–40.

26. Hasewaga J, Ichizuka K, Matsuoka R, Otsuki K, Sekizawa A, Okai T. Limitations of conservative treatment for repeatcesarean scar pregnancy. Ultrasound Obstet Gynecol 2005;25: 310–15.

27. Wang CJ, Yuen LT, Chao AS, Lee CL, Yen CH, Soong YK. Caesarean scar pregnancy successfully treated by operative hysteroscopy and suction curettage. BJOG 2005;112:839–40.

28. Roberts H, Kohlenber C, Lanzarone V, Murray H. Ectopic pregnancy in lower segment uterine scar. Aust N Z J Obstet Gynaecol 1998;38:114–6.