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CASE SERIES

Cesarean scar ectopic pregnancy - a case series

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ABSTRACT

Cesarean scar ectopic pregnancy, though rare, is a life threatening condition. The incidence is increasing with increasing number of cesarean sections. It develops, if blastocyst implants in the micro defect in the scar which is formed in the process of healing. Transvaginal sonography is the primary investigating test in its diagnosis. No definite treatment protocol is yet available because of limited number of case reporting. Surgical as well as medical with or without surgical is the treatment adopted depending on various factors. We present here a case series of five cases of scar ectopic pregnancy with gestational age between 6-19 weeks over a period of 7 months, which were managed surgically. One patient died of cardiac arrest on 8th postoperative day. Reporting of cases to develop awareness, high index of suspicion in high-risk women, diagnosis and treatment at the earliest is the key to better prognosis.

Keywords: Scar ectopic pregnancy, implantation, ultrasound, hysterotomy, recurrence.

Implantation of the blastocyst in the micro defect in cesarean scar leads to development of cesarean scar ectopic pregnancy (CSEP). It can also occur in hysterotomy scar and following certain procedures like manual removal of placenta, dilation and curetting, invitro fertilization [1]. Though rare in occurrence it is a life threatening condition. Incidence is about 0.04 – 0.05% of all pregnancies [2, 3]. The cases are increasing because of increase in rate of section as etiology and availability of ultrasound for diagnosis [3]. There are two recognized types of uterine scar ectopic pregnancy. In type 1 the implant grows into uterine cavity and type 2 it grows towards the uterine serosa [1]. Patient may be asymptomatic, may report with clinical features of abortion or ruptured ectopic pregnancy. Diagnosis is done by transabdominal sonography (TAS), transvaginal sonography (TVS) and doppler flow study. Only doubtful cases need magnetic resonance imaging for confirmation of diagnosis. There are different management methods like surgical, medical or combined method; which depends on clinical scenario. High index of suspicion, early diagnosis and proper management reduces maternal mortality and morbidity. Here we present a series of 5 cases managed in our hospital over a period of 7 months.

Case series

Case 1 -

22years old lady with 2 previous lower segment cesarean section (LSCS) reported to the emergency unit of this hospital in view of amenorrhea, irregular bleeding per vagina and scar ectopic pregnancy on ultrasound sonography (USG) of abdomen and pelvis. She had 8^{+4} weeks of amenorrhea and had taken abortion kit. On arrival; her vitals were stable, systemic and per abdominal examination findings were normal. Internal examination showed mild bleeding from os, bulky non-tender mobile uterus and free fornices. Her hemoglobin (Hb) was 8.6 gm%, other hematological and biochemical parameters were normal. Review USG in our hospital reported gestational sac with nonviable embryo of 6^{+3} weeks embedded in the uterine scar, negative sliding organs test and empty cervical canal (figure 1). Patient was planned for emergency surgery. On laparotomy there was no

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haemoperitoneum. Uterus was 6-8 weeks size. On dissecting the adherent bladder down; product of conception (POC) was seen through the thinned out cesarean scar (figure 2). Evacuation of retained product of conception (RPOC) was done through hysterotomy, followed by excision of scar, uterine wound closure and bilateral tubal ligation. Haemostasis was ensured and abdomen was closed. 2 units of grouped and cross matched blood was transfused. Postoperative period was uneventful. Patient was discharged on 13th post operative day. On follow up visit the patient was asymptomatic.

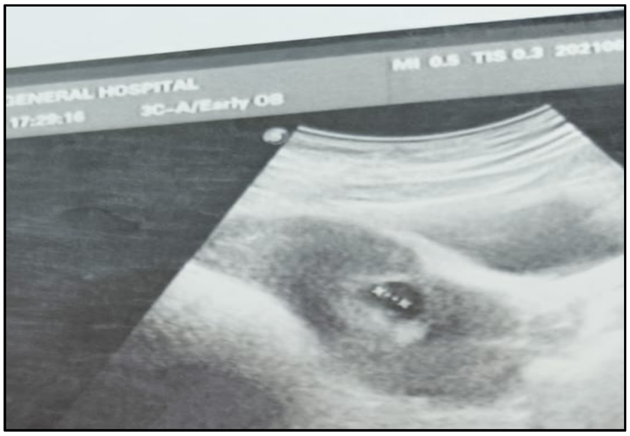

Figure 1: USG showing cesarean scar pregnancy

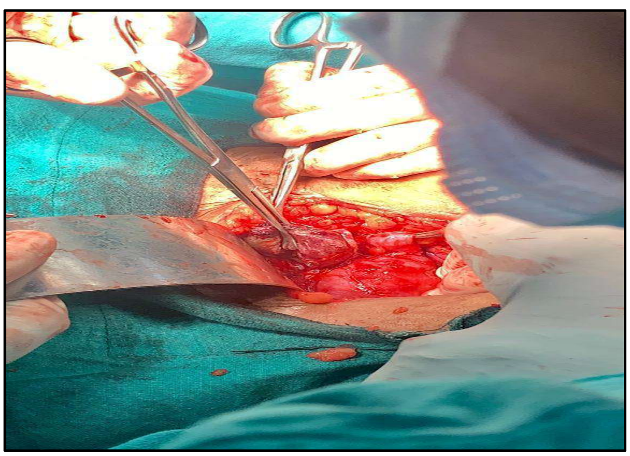

Figure 2: Cesarean scar pregnancy embedded in the scar

Case 2 -

27 years old lady with history of 2 previous LSCS reported to emergency unit of this hospital for bleeding per vagina for 6 hours following spontaneous abortion of fetus and after birth in home at 19^{+3} weeks of pregnancy. Implantation of gestational sac (GS) on cesarean scar was diagnosed by USG at 5-6 weeks of pregnancy and she was advised for termination by her gynecologist which she refused. She had history of fever 1 week back, from which she recovered after treatment. On arrival she was pale; pulse was 136/ min; temperature was normal; blood pressure was 90/60 mm of Hg and SPO_2 was 87%. On abdominal examination, uterus was of 12–14 week size and well contracted. Internal examination excluded trauma to cervix and vagina and uterine bleeding was minimal. Patient was resuscitated. Bladder was catheterized and urine was clear. Hb was 4.1gm%. Platelet count was 35,000/cmm, coagulation profile and other hematological and biochemical parameters were normal. USG reported retained product of conception at the level of uterine scar. Sliding organs test was negative. As the bleeding continued, she was taken for surgery. On laparotomy there was no haemoperitoneum. Uterus was 14 week size. On dissecting the adherent bladder down a scar dehiscence was noted on left side of the uterine scar. RPOC was adherent to the scar at the site of dehiscence. Hysterotomy and evacuation of RPOC was done. As bleeding continued in spite of all measures; subtotal hysterectomy was done. Haemostasis was ensured and abdomen was closed. Patient needed total 4 units of blood, 3 units of random donor platelet, 1 unit of single donor platelet and 2 units of fresh frozen plasma (FFP). Postoperatively she developed peripartum cardiomyopathy, but responded well to treatment with multidisciplinary approach and was discharged on 18th postoperative day. On follow up visit the patient was asymptomatic.

Case 3 -

27 years old lady reported with a post LSCS pregnancy of 7^{+2} weeks and bleeding per vagina after taking abortion kit. LSCS was done 10 years back. She had a spontaneous second trimester abortion 6 years back for which she did not undergo check curettage. Her vitals were stable on admission. There was mild tenderness over lower abdomen. Internal examination showed minimal bleeding; uterus was 6-8 weeks, non tender; os was open and fornices were free. USG diagnosed live CSEP of 7^{+2} weeks and thin anterior myometrium (<3mm) at the scar. Hb was 9.4 gm% and all other hematological and biochemical reports were normal. One unit of whole blood was transfused. On laparotomy, uterine scar was thinned out but intact. There was no haemoperitoneum. Hysterotomy and evacuation of POC was done. Uterus was closed after excision of scar. Tubectomy was not done as the patient did not give consent for it. Haemostasis was ensured and abdomen was closed. Post operative period was uneventful and the patient was

discharged on 4th Post operative day. On follow up visit the patient was asymptomatic.

Case 4 -

24 years old lady with 11^{+3} weeks of post LSCS pregnancy reported to this hospital as a referred case. She had bleeding per vagina and pain abdomen for 3 days which got exacerbated following tablet misoprostol in the previous health care center. As CSEP was diagnosed there on USG; she was referred to higher center for further management. On admission her vitals were stable. She had mild suprapubic tenderness. Internal examination revealed bleeding from uterus which was 6-8 weeks in size. Her hematological and biochemical investigations were normal. Review USG in our hospital showed GS of 7^{+4} weeks without cardiac activity which was implanted on the thinned out scar. On laparotomy; there was no haemoperitoneum and on dissecting down the adherent bladder, POC was seen through the dehiscent scar. POC was evacuated through hysterotomy and the uterus was closed after excising scar. Haemostasis was ensured and abdomen was closed. She required 2 units of blood transfusion. Postoperative period was uneventful and she was discharged on 4th post operative day. The patient was asymptomatic on follow up visit.

Case 5 -

24 year old lady with history of 2 previous LSCS, was referred to this hospital with bleeding per vagina following 06 weeks of amenorrhea. She had positive urine pregnancy test and RPOC was found on USG. She was in shock on admission. There was no other history relevant to her present condition. On examination; she was severely pale and afebrile. Her pulse was100/ min; BP was 90/60 mm Hg and SpO_2 was 99%. Cardiovascular and respiratory systems were clinically normal. There was no distention, tenderness or mass per abdomen. Internal examination showed no active bleeding from uterus. She was resuscitated with IV fluid and blood. Later she developed heavy bleeding affecting vital parameters again. Review USG showed RPOC on LSCS scar site, impeding scar rupture and minimal collection in pouch of Douglas. With diagnosis of ruptured scar ectopic, surgery was planned. On laparotomy; there was haemoperitoneum with scar rupture. The RPOC at the site was evacuated. Bleeding from the uterus could not be controlled with all measures, for which total abdominal hysterectomy (TAH) was done. She was transfused with 4 units of whole blood, one unit of FFP and was put on ventilator and inotropic support. On 2nd postoperative day, she developed left ventricular global hypokinesia. Echocardiography showed ejection fraction (EF) of 32% with diastolic dysfunction. She developed fever and was found to be positive for dengue IgM. She was managed by a multidisciplinary team, but succumbed to death on 8th postoperative day due to cardiac arrest. The comparative clinical characteristics with outcome of all the 5 cases have been depicted in table1.

Table 1: Clinical characteristics and outcome

Case No.	Age (Years)	G/A (Weeks)	H/O MSP	Vitals stability	No. of BT	Surgery	ICU Stay (Days)	Hospital stay (Days)	Outcome
1	22	08	Yes	Yes	2	HT	0	13	Good
2	27	19	No	No	6	STH	0	18	Good
3	27	07	Yes	Yes	0	HT	0	04	Good
4	24	11	Yes	Yes	2	HT	0	04	good
5	24	06	No	No	5	TAH	08	09	Death (CA)

G/A - gestational age, MSP - Misoprostol, BT - Blood transfusion, HT - Hysterotomy, STH - Subtotal hysterectomy, TAH - Total abdominal hysterectomy, CA – Cardiac arrest.

Discussion

Larsen and Solomon reported the first patient with cesarean scar pregnancy in 1978 [4]. Implantation of POC in the tubular micro defect in uterine scar due to improper healing following trauma/surgery is considered as the etiopathogenesis of the CSEP [5]. This is different than morbid adhesion of placenta. That is why excision of previous scar is important during surgical management so that the defect can be repaired in patients who desire future pregnancy. Patient may or may not be symptomatic on reporting. Yu XL et al reported in a series of 100 cases with scar ectopic pregnancies; 45 % patients were asymptomatic; 55 % reported with vaginal bleeding; and 7% with pain in lower abdomen [6]. Only one out of our 5 cases was asymptomatic when she was diagnosed at first trimester USG as implantation on uterine scar and advised for termination. Later at 19 weeks she reported to us with complication. Abortion, cervical pregnancy and ruptured ectopic of other type may be considered as differential diagnosis. CSEP is usually diagnosed by TVS, which was also followed in all our cases. Criteria for the diagnosis of CSEP using TVS are as follows [7, 8].

1. Pregnancy is embedded in the section scar.
2. Absent or < 3 mm myometrial layer between the POC and the urinary bladder.

3. Presence of POC at the site of scar.

4. Rich vascularity in the area of a scar with positive pregnancy test in very early pregnancy

5. Negative sliding organs sign which excludes just presence of detached POC which was not implanted in scar.

6. Empty uterine and cervical canal except in multiple gestation.

Sensitivity of TVS is 84.6 - 85% in diagnosing CSEP [5,9,10]. With color doppler flow, history of high risk and condition of the patient; the sensitivity still increases. No consensus on the best treatment protocol is achieved so far for CSEP because of limited number of case reporting. Different modalities of treatment have been adopted. The treatment approach depends on various factors like duration of pregnancy, hemodynamic stability of the patient, requirement of her future fertility, availability of endoscope and expertise and feasibility of serial follow-up by serology and imaging [1]. Opinion of patient is also important in deciding the treatment modality following proper counseling. Surgical treatment is successful in ≥96% of cases; there is less blood loss , gives an opportunity for correction of the defect in the scar, reduce morbidity and improve future fertility [5,10]. There is no doubt the risk of anesthesia and surgery and postoperative complications are there which can be minimized with expertise and better service facilities. The best standard of management of SCEP is still for debate. However, recent research supports the treatment modality that removes the pregnancy and the defect in the scar to reduce morbidity and also facilitate future fertility. It should reduces the duration of treatment, avoids prolonged follow as in medical method of treatment. The medical method with all its limitations; finally need some surgery in majority of cases. In addition to laparotomy, surgical treatment with laparoscopy and transvaginal method are also options for CSEP, though finding an optimal approach needs further research [11]. Hysteroscopy and laparoscopic hysterotomy followed by repair of defect in scar are also considered as safe and effective procedures for treatment of CSEP [12]. Dilatation and curettage has been reported by some authors. By definition the complete POC is not approachable for curetting and there is thinning of uterine wall. So curetting may lead to torrential bleeding and perforation and increases maternal morbidity [9]. Following High intensity focused USG (HIFU) or methotrexate management; the residual POC is curetted out under USG guidance. It can also be done in type 2 CSEP in early gestation and under USG guidance. Medical management may be considered as the first line of treatment in patient with haemodynamic stability, early pregnancy and who does not want further pregnancy or ready for surgical repair of defect in uterine scar before next conception. It takes a long duration of treatment and follow up with frequent serum β - hCG estimation and ultrasound imaging in medically treated patients. In a study of 22 cases with methotrexate they found; complete resolution took an average of 88.6 days [8]. Laparotomy or embolization is better reserved for the acutely bleeding and unstable patient [13]. Adequate counseling and follow up is required for patients who opt for future fertility to exclude or detect recurrence of CSEP in next conception.

We had 5 cases of CSEP with gestational age between 6-19 weeks. All of them were symptomatic when reported to us. The second case who was diagnosed in first trimester USG to have implantation on scar; but revealed it to us only after her treatment. None of them had undergone dilation and evacuation before reporting to us. 3 of them had multiple doses of tab misoprostol outside this hospital. All of our patients underwent surgery, out of which 3 had hysterotomy with excision of scar and uterine wound repair; 1 patient had subtotal hysterectomy and 1 had TAH as bleeding could not be controlled. Out of 3 hysterotomy cases one had opted for tubectomy, whereas other two refused for the same. They were counseled about the chances of recurrence of scar ectopic in future pregnancy. The rate of recurrence of CSEP is about 3.2-05% [10]. However, 34.6% cases of recurrence have been reported by Timor-Tritsch IE et al [14]. Hence, both of our patients were repeatedly advised for tubectomy in order to avoid future scar ectopic pregnancy though scar excision was done before closure of uterus in them. They were advised for early antenatal care and USG to rule out CSEP in next conception. None of the two cases has yet reported with pregnancy. In our series of 5 cases, first 4 had good prognosis being diagnosed and treated early. The last case though was at earliest gestational age, reported late; she had to undergo total abdominal hysterectomy as bleeding could not be controlled; needed multiple units of blood and blood products; had fever in postoperative period and was positive for dengue; developed cardio myopathy and in spite of all our effort she died of cardiac arrest. This indicates the importance of awareness in the existence of this uncommon entity and reporting of site of implantation in 1st trimester routine scan; specifically in a woman with scared uterus or history of other risk factors for CSEP.

Conclusion

CSEP is an unavoidable iatrogenic life-threatening complication of LSCS and certain procedures involving uterus. It is diagnosed with transvaginal sonography which is widely available now a day. It contributes to maternal morbidity and mortality, which can be reduced by decreasing the rate of LSCS. Reporting of cases brings awareness of the existence of this entity and help in forming treatment protocol. High index of suspicion with early diagnosis and expert management is the key to successful outcome.

Conflict of interest: None. **Disclaimer:** Nil.

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