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Cesarean Scar Ectopic Pregnancy: A Case Series

Dr Shriya Ladiwala (Resident) Dr Yesha Thakker (Senior Resident)
MGM Institute Of Health Sciences, Kamothe Navi Mumbai

Abstract
Background:
Cesarean scar ectopic pregnancies (CSEP), a type of ectopic gestation that occurs when an embryo implants into a woman's uterus inside her old scar from a previous cesarean delivery, is both very rare and has serious implications to a woman's health if left untreated. As more women undergo a cesarean section each year, the number of CSEPs will increase which could create potential risks associated with blood loss, a ruptured uterus or problems related to infertility.
Cases:
The authors discuss three cases of CSEP which were treated at a university hospital. Each case represented different clinical presentation and treatment options. The common factor among these three cases was their previous history of a cesarean section and they all experienced early term symptoms including; abdominal cramping and/or spotting. In all cases, ultrasound was utilized to confirm the presence of an ectopic pregnancy. Magnetic Resonance Imaging was also used to further evaluate one of the cases. Treatment for the three cases varied depending upon the location of the ectopic pregnancy. One patient received dilation & curettage (D&C), another patient underwent surgical removal of the ectopic pregnancy through laparotomy because she had a large gestational age and high beta hcg levels, and the last patient received multiple doses of Methotrexate. After treatment, there were no significant complications and all three patients had significantly decreased beta hcg levels.
Conclusion:
Individualizing the treatment for CSEP and diagnosing it promptly can help minimize the risk of serious morbidity and maximize reproductive success. Medical and surgical treatments may provide successful results depending on the clinical parameters of each patient.
Keywords: *Cesarean scar pregnancy; Ectopic pregnancy; Methotrexate; Laparotomy; Dilatation and evacuation; Fertility preservation*

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I. Introduction

Cesarean Scar Ectopic Pregnancy (CSEP), represents a small but dangerous type of ectopic pregnancy, where a fertilized egg has implanted into the area of a previous Caesarian Section incision, as opposed to inside the uterus. The overall percentage of CSEPs found among all ectopic pregnancies is 6.1% , and the recurrence rate is about 5%. Larsen and Solomon are credited with the first description of this condition in 1978. CSEP may occur from any damage to the uterine muscle layer, whether it results from Caesarian delivery or other types of trauma. In addition to being associated with significant risks of uterine rupture and excessive bleeding, CSEP also places women at risk of losing their ability to have future children if they do not receive prompt diagnosis and management. Treatment options include both medical and surgical alternatives depending on how far along the woman is in her pregnancy, her current blood pressure, and what she hopes to achieve regarding reproduction.

II. Case Reports

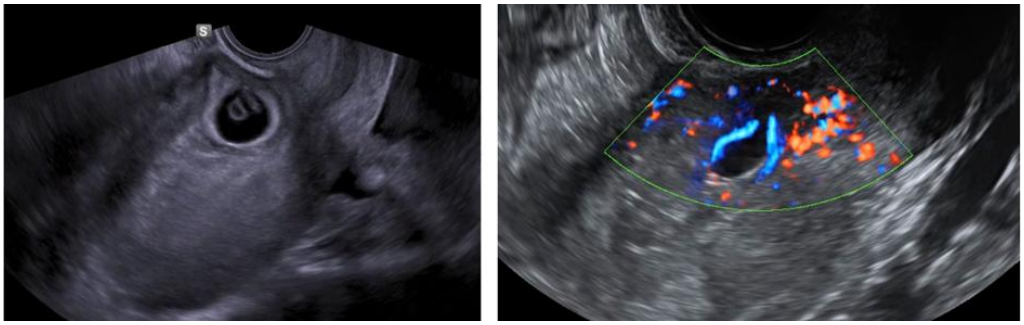
Case 1

A 29-year-old female, gravida 2, para 1, living 1, with a history of one previous full-term cesarean section, presented with complaints of mild lower abdominal pain and a positive urine pregnancy test. The gestational age was 5 weeks and 4 days by last menstrual period. An ultrasound performed at a private clinic revealed a gravid uterus with an irregularly shaped gestational sac measuring 15 mm at the previous cesarean scar site. The β-hCG value was 21,005 mIU/mL.

The patient was hemodynamically stable with no active bleeding. Repeat ultrasonography revealed a single intrauterine pregnancy of 5 weeks 6 days with an irregular gestational sac in the lower uterine segment, a mean sac diameter of 14 mm, absent fetal heart sounds, and no fetal pole, suggestive of scar ectopic pregnancy likely representing a missed abortion.

A decision was taken to perform dilatation and evacuation to remove the products of conception at the scar site. The procedure was uneventful. On postoperative day 8, β-hCG was 16,323 mIU/mL. Ultrasonography

showed a normal-sized uterus with an endometrial thickness of 6.8 mm and normal bilateral ovaries. By postoperative day 15, β-hCG declined to 756 mIU/mL and subsequently returned to normal levels on follow-up.



Case 2

A 23-year-old, gravida 5 para 1 living 1 abortion 3, with a history of previous lower segment cesarean section done 2 years prior, presented with spotting per vaginum and intermittent lower abdominal pain for 15 days. She was referred from a primary health center with ultrasonography showing gestational sac in implantation in anterior myometrium at former cesarean section scar.

On admission, the patient was hemodynamically stable. Clinically, she had mild tender lower abdomen and her uterus has size corresponding to 8–10 weeks of gestation. Serum β-hCG levels were 119116 mIU/mL. Repeat ultrasonography revealed a teardrop shape gestational sac lying in the lower uterine segment, with anterior myometrium thinned out and only minimal myometrial tissue seen between sac and urinary bladder. MRI of pelvis revealed implantation in cesarean scar, with trophoblastic tissue seen bulging through the scar and no bladder involvement.

To manage persistent bleeding associated with increasing pain, gestational age and β-hCG levels, surgical management was planned. Exploratory laparotomy was done. A 5cm × 5cm × 1.2 cm ectopic mass was observed at the site of previous cesarean section. Excision of products of conception was done and uterus repaired with double layer closure. Histopathological examination confirmed decidua and chorionic tissue. Follow up showed β-hCG levels to be showing declining trend. Postoperative period was uneventful.

Case 3

A 27 year old woman who is pregnant for the third time after having delivered two term infants via C-section presents with 24 hour history of spotting and mild lower abdominal pain. She was haemodinamically stable. Her urine pregnancy test was faintly positive which would correspond to approximately 6 weeks gestation. Her serum beta hcg was 1095 m IU / mL.

The ultrasound showed that her endometrium measured 6mm and there was a gestational sac with an irregular shape measuring 13 x 15mm located in the area of the prior c-section scar in the lower uterine segment. This indicated that she had a cesarean scar ectopic pregnancy.

Due to the very early stage of gestation and therefore low levels of beta hcg, her parity, and fact that she was haemodinamicly stable we decided to proceed with medically managing this ectopic pregnancy by giving her multiple doses of Methotrexate. The patient received 1mg / kg IM Methotrexate on days 1,3,5 and 7 and Leucovorin every other day. Her serial Beta HCG's were trending downward (Day 3 = 1100m IU / mL; Day 5 = 800m IU / mL; Day 7 = 520m IU / mL) and she was clinically stable and discharged. Follow up Beta HCG at day 14 was 78.61 m IU / mL and then returned to normal.

III. Results

Three women experienced (ectopic pregnancies) in the area where their previous C-sections occurred; each woman presented differently to her healthcare provider (in terms of symptoms, lab results and treatment options). Each of these women came into her doctor's office and was found to be hemodynamically stable. However, each woman reported experiencing either some degree of mild abdominal discomfort and/or some type of spotting during early stages of pregnancy.

Each woman's ultrasound revealed that there was an implanted gestational sac located within the lower portion of the uterus at the location of the previous C-section(s), and in two of the three women the gestational sac appeared to have irregular morphology, and thinning of the myometrial layer above it. MRI was also used for one of the three women, and MRI provided additional information about the extent of trophoblastic invasion by the ectopic pregnancy.

Treatment for each woman was tailored to meet her specific needs. Dilatation and curettage (D&C) followed by sequential decline in beta-human chorionic gonadotropin (β-HCG) levels were used for one woman

who had moderately elevated β-HCG levels, but was in an early stage of pregnancy. Laparoscopic surgery, including excision of the ectopic mass and repair of the uterus, with histologic evidence confirming an ectopic pregnancy was performed on another woman who had very high β-HCG levels and whose pregnancy was well advanced. Medical management using multiple doses of methotrexate resulted in a steady decline in β-HCG levels for the third woman, who was identified with low β-HCG levels and whose pregnancy was still in its early stages.

None of the three women experienced immediate serious complications from their treatment, including uterine rupture or significant bleeding. Monitoring β-HCG levels serially allowed assessment of both treatment efficacy and resolution of the ectopic pregnancy.

IV. Discussion

Cesarean Scar Ectopic Pregnancy (CSEP) is an unusual yet increasing number of clinical entities that are primarily caused by the higher rate of cesareans and increased use of better diagnostic tools. A CSEP develops when a developing embryo implants itself into the myometrium at the site of a previously made uterine incision; this can result in severe consequences if it is not identified early.

Each of the patients included in this study had undergone previous cesarean deliveries. This supports that myometrial disruption secondary to previous scarring of the uterus contributes to the development of CSEP. The presentations among these patients varied and were non-specific, and therefore emphasize the need for providers to have a high degree of suspicion for CSEP during early pregnancy, especially those who have experienced prior uterine surgery.

In most instances, transvaginal ultrasound will represent the initial imaging technique used in diagnosing CSEP. However, there are certain characteristics of the appearance of the ultrasound which are indicative of CSEP. These include an absence or reduction in size of the contents of the endometrial cavity (the uterine cavity), and presence of a gestational sac located in the anterior lower portion of the uterine segment where the previous uterine incision has been placed. Magnetic Resonance Imaging (MRI) may also be beneficial in select situations for evaluating the amount of invasion of the uterine wall by the pregnancy and assist providers with determining management strategies.

There does not appear to be consensus on how best to manage patients with CSEP, and each case should be managed individually. Each patient described in this report was successfully treated using one of three different methods. A surgical approach was utilized in a patient whose gestation was further along than the other two patients and whose beta hCG levels were significantly elevated, thus providing both definitive treatment and reconstructing her uterus. Methotrexate was medically administered to an earlier stage patient whose beta hCG levels were low. Therefore, methotrexate provided a minimal invasion method for preserving her fertility.

The positive outcomes from all three patients demonstrate the importance of prompt identification, proper selection of patients, and the necessity for close follow-up with serial measurement of beta hCG levels.

V. Conclusion

Cesarean scar ectopic pregnancy is unusual and may only be diagnosed early in pregnant women with a previous cesarean delivery with a very high degree of suspicion. Diagnosis at an early stage is helpful in mapping out the management with ultrasound guidance, and perhaps using MRI to assist when needed. Resolved cases with preservation of uterus and without serious complications emphasize the importance of close monitoring and follow up.

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