



## **Vaginal Hysterotomy as a Novel Less Invasive Approach to Treat Caesarean Scar Ectopic with Niche Repair**

Jihan Khalid Mohammed Musleh<sup>1</sup>, Hina Shams Solangi<sup>2</sup>, Fatima Gilani<sup>3</sup>.

1. Consultant OBGYN, MBBS, OBGYN Saudi Board, MRCOG, Dr. Sulaiman Al Habib Assweidi Hospital, Riyadh 12944, Kingdom of Saudi Arabia

2. Consultant OBGYN, MBBS, FCPS. Dr. Sulaiman Al Habib Assweidi Hospital, Riyadh 12944, Kingdom of Saudi Arabia

3. Woman Medical Officer, MBBS, Government Shahbaz Sharif Hospital, Multan, Pakistan

**Corresponding Author: Hina Shams Solangi.** Consultant OBGYN, MBBS, FCPS. Dr. Sulaiman Al Habib Assweidi Hospital, Riyadh 12944, Kingdom of Saudi Arabia

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### **Abstract:**

*Caesarean scar ectopic pregnancy (CSEP) is a rare subtype of ectopic pregnancy which can cause fatal haemorrhage resulting in an increased risk of maternal mortality, particularly in the first trimester. We report the case of a 29-year-old patient, with a history of three previous caesarean sections. Trans-vaginal ultrasound confirmed scar ectopic at 9+2 weeks of gestational amenorrhea. Conservative medical management was first employed but failed as confirmed by serial b-HCG and trans-vaginal scans.*

*Afterwards, surgery with vaginal approach was employed to remove the ectopic mass. The surgical management was successful with uneventful post operative recovery.*

**Keywords:** Scar ectopic, pregnancy, trans-vaginal, methotrexate, maternal

## Introduction

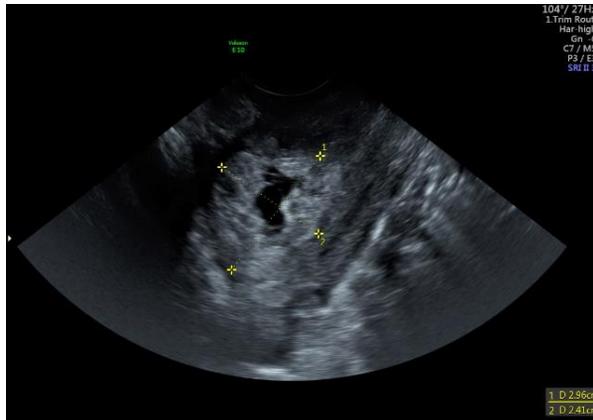
A caesarean scar ectopic pregnancy (CSEP) is a relatively infrequent where the embryo is implanted into the myometrium and at the precise scar-site of the former caesarean section[1]. It may be a consequence of prior hysterotomy for any reason, manipulation of uterus, and/or in-vitro fertilization. The incidence is growing because of the increasing numbers of caesarean sections globally. Early diagnosis and timely management are crucial because if left unattended, it can lead to serious outcomes such as haemorrhage, rupture of uterus, hypovolemia leading to shock, and even maternal mortality. Trans-vaginal ultrasound (TVUS) [2] is gold standard for the diagnosis of CSEP which confirms the precise location and exact dimensions of ectopic pregnancy. The management options range from expectant management with methotrexate to surgical excision or, even, a combination of both modalities [3]. We present a case of CSEP that was confirmed by TVUS, expectant management was employed but eventually, surgical management was done for complete evacuation of retained products of conception.

## Case

A 29-year-old woman, gravida 7, para 5+1 presented to our obstetric clinic with a gestational amenorrhea of 11 weeks by dates. The pregnancy was a result of spontaneous conception. Past medical history was insignificant with no known allergies or medical conditions. She had a history of 1 spontaneous abortion with 4 live issues. Surgical history included a history of 3 previous caesarean sections over the span of with uneventful recovery. On physical examination, the patient was vitally stable with normal systemic examination. Abdomen was uniformly distended, non-tender with cutaneous signs of gestation i.e., stria gravidarum. Trans-vaginal ultrasound was done on 12/07/21 for confirmation of pregnancy. It showed normal retroverted uterus with homogenous myometrium and endometrial thickness of 12.4mm. No evidence of gestational sac was seen in uterine cavity near fundus. A small well-defined cystic structure with an echogenic rim measuring 0.5 x 0.4cm was visualized at the scar site. Yolk sac could not be visualized. Cervix, ovaries and Pouch of Douglas were normal. Sonographic report confirmed of caesarean scar ectopic.



The diagnosis and outcome were discussed with the patient and expectant management with a single dose of methotrexate was commenced, the following day. She was closely monitored and followed up with serial b-HCG to confirm termination of pregnancy.[4] Initially, b-HCG levels showed an upward trend starting at 3221 IU/L on 12/07/21 and increasing 10020 IU/L on 16/07/21. Later, the levels started to decrease reaching 2487 IU/L on 29/07/21. The levels became almost static after this, not reaching the baseline, that is, 2409 IU/L three days later. TVUS repeated on 5/08/21, showed singleton pregnancy with chorionic ring with yolk sac. The ectopic mass at previous caesarean scar site measuring 29x24 mm, containing collapsed yolk sac and non-viable fetal pole with a crown-rump length of 3 mm.



The scan result was discussed with the patient and the failure of termination was explained to her. The options of further management, namely, second trial of methotrexate or surgical management were given. She opted for surgical management via vaginal approach. She remained, otherwise, hemodynamically and vitally stable during this time-span except complete blood count showing a dip on haemoglobin levels from 11.7 g/dL at the beginning to 9.6 g/dL on 5/08/21.

Our patient opted for surgery following failed methotrexate, and she was counselled about the transvaginal approach. She was operated under general anaesthesia with universal protocols of sterilization,

the patient placed a dorsal lithotomy position, and the bladder was emptied. the cervix was grasped and manipulated with a toothed tenaculum. Adrenaline solution (10–20 mL) was injected at the cervico-vaginal junction for hydro-dissection and haemostasis before an incision was made at the anterior cervico-vaginal junction. The bladder was dissected away until the anterior peritoneal reflection was identified. The anterior retractor was inserted into the vaginal incision to lift up the bladder. The vesico-uterine peritoneal reflection was tented up & dissected. the anterior vaginal retractor was adjusted & the area close to the uterine isthmus where CSE lies beneath was identified. A transverse incision was made. Ectopic pregnancy tissue was removed with sponge forceps through the incision, followed by thorough curettage through the incision. The edges of the incision were trimmed with scissors to remove all the scar tissue & to repair the uterine niche (Niche repair)[5] followed by intrauterine contraceptive device insertion & closure of the uterine with an interrupted sutures & vaginal incision with a continuous sutures using # 2-0 vicarly. No significant intra-operative blood loss as well as less post-operative pain were noticed.



The procedure was well-tolerated and she was discharged after making complete recovery, after the operation. The patient is doing well and was followed up in later appointment.

Intra-operative pictures could not be published as patient not consented for it.

## Discussion

Cesarean scar ectopic pregnancy (CSEP) is defined as a gestational sac that implants into the defect in the myometrium at the hysterotomy site from a previous cesarean delivery [6]

As the patient presentation is variable, the diagnosis is challenging. One third of cases are asymptomatic at the time of diagnosis [6]. Cesarean scar ectopic pregnancies (CSEPs) are rare, occurring in approximately 1 in every 1800 to 2216 pregnancies and accounting for 0.15% of all pregnancies [7].

Several treatment options have been utilized to treat CSEP. These can be categorized as expectant, medical, arterial embolization, surgical, or a combination of two.

Expectant management is an option when a patient desires to let nature take its course with respect to the outcome of the pregnancy or when she desires to continue the pregnancy, although, it carries a high failure rate & morbidity. Medical management can be undertaken with local (intra-gestational) or systemic (intramuscular) medications. The use of medical treatment as the first-line approach for CSEP is often associated with a high failure rate (44%–91%), requiring additional interventions such as surgery [8]. Uterine artery embolization is also suggested as an option.

Surgical methods include D&C; direct excision of CSEP via abdominal, laparoscopic, hysteroscopic, or vaginal approach; a combination approach; and definitive management with hysterectomy. skill of the surgeon, patient presentation, and desire for future fertility are important factors to consider in choosing the appropriate method. [8,9]

Arteriovenous malformation is a risk that may occur after D&C, or even from the CSEP itself. A transvaginal approach to CSEP utilizes similar technical aspects as a vaginal hysterectomy, where an anterior colpotomy incision is made to access the CSEP with subsequent removal and repair of the previous scar [8]. This method is less invasive with minimal morbidity and a high success rate of more than 90% [8,11]. This approach utilizes similar technical aspects as a vaginal hysterectomy, where an anterior colpotomy incision is made to access the CSEP with subsequent removal and repair of the previous scar [8].

In comparison with laparoscopic surgery, hysterotomy has the advantage of avoiding trocar insertion, which is still the most dangerous technical aspect of laparoscopy [12]. In addition, during hysterotomy, not using a trocar has led to reduction in the postoperative pain, and no additional cost was associated with the use of equipment for laparoscopic surgery. A transvaginal approach for CSEP has similar surgical risks to other approaches, including infection, bleeding, and damage to surrounding structures

In patients with prior cesarean section, hysterotomy by trans-vaginal approach through the vesico-uterine fold has met conceptual hurdles, mainly because of concerns for adhesions of prior cesarean section scar and for injury of the bladder during surgery. In our patient who had a prior three cesarean sections with failed methotrexate treatment, we were able to successfully perform hysterotomy of the CSEP by trans-vaginal approach without complications during the operation. IUD was inserted at the end of the procedure to provide a long-acting contraception.

Marked decline in b-HCG titre was observed along with an uneventful post-operative course. Complete resolution of CSP was confirmed by TVS.

One-week post-op, we concluded that transvaginal hysterotomy may decrease cost associated with the use of equipment, requires only conventional equipment and the general skills of vaginal surgery. It is

more convenient and feasible to be conducted in most hospitals at a lower cost than other surgical approaches. This approach allows for removal of ectopic pregnancy tissue and repair of uterine defect. It is safe and effective, associated with a shorter hospital stay, low postoperative pain, blood loss, and cost.

## Conclusion

Caesarean scar pregnancy diagnosis and treatment is a challenging job for obstetricians and sonologists, medical management can be helpful for some cases, but surgical treatment is proven to be definitive, in most of cases. Removal of scar ectopic vaginally can be the best option amongst other surgical approaches in regards to enhancing recovery and minimizing operative complications.

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