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# Conservative Management of Live Caesarean Scar Ectopic Pregnancy by Ultrasound Guided Intrasacular Injection of KCL and Methotrexate

[1]Dr Tehseen Naaz, Third Year Resident, Department of Obstetrics and Gynaecology, Seth G S Medical College and KEM Hospital, Mumbai, Maharashtra

[2]Dr Mrudula Kulkarni, Third Year Resident, Department of Obstetrics and Gynaecology, Seth G S Medical College and KEM Hospital, Mumbai, Maharashtra

[3]Dr. Padmaja Y Samant, Professor and Head, Department of Obstetrics and Gynaecology, Seth G S Medical College and KEM Hospital, Mumbai, Maharashtra

[4]Dr. Harshada S Thakur, Associate Professor and HOU, Department of Obstetrics and Gynaecology, Seth G S Medical College and KEM Hospital, Mumbai, Maharashtra

[5]Dr. Himangini Thakkar, Professor and Head, Department of Radiology, Seth G S Medical College and KEM Hospital, Mumbai, Maharashtra

[6]Dr. Rani Daruwale, Assistant Professor, Department of Obstetrics and Gynaecology, Seth G S Medical College and KEM Hospital, Mumbai, Maharashtra

**Corresponding Author:** Dr Tehseen Naaz, Third Year Resident, Department of Obstetrics and Gynaecology, Seth G S Medical College and KEM Hospital, Mumbai, Maharashtra

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**Abstract**

Caesarean scar pregnancy is a potentially dangerous consequence of a previous caesarean delivery[1].it is complex pathological condition and occasionally can be life threatening due to complications. It's a rarest form of ectopic pregnancy with high morbidity and mortality[2].

Aim and objective: To describe our experience of successful management of live caesarean scar ectopic pregnancy with transvaginal ultrasound guided intrasaccular injection of KCL followed by methotrexate[4].

A 33 yr old G6P2L2MTP1A2 presented at 5weeks 3 days of gestational age with beta HCG if 16676 IU/ml with live caesarean scar ectopic pregnancy on transvaginal ultrasonography, patient was vitally stable. Decision on choice of treatment was mainly by period of gestation, clinical symptoms and initial serum bets HCG levels. Treatment options were given to patient among conservative management using medical methods, minimal invasive approach and surgical approach, however, patient opted for Minimally invasive management by Transvaginal ultrasound guided KCL

was injected into fetal heart to achieve cardiac asystole, followed by injection of methotrexate in amniotic sac. Patient was monitored clinically, and on USG for loss of trophoblastic flow on Doppler examination and serial beta HCG level with initial rise and later steady decrease in serum beta HCG levels.

Resolution of ectopic pregnancy was achieved over a period of 3 month and high-risk surgical intervention were avoided.

Successful management of live caesarean scar ectopic pregnancy with transvaginal ultrasound guided intrasaccular injection of KCL followed by methotrexate.

**Keywords**: Scar, Ectopic, Caesarean Scar Pregnancy (CSP), Injection Potassium Chloride (KCL), Methotrexate (MTX), Intrathecal, Transvaginal Ultrasonography (TVS), Peak Systolic Velocity(PSV).

**Introduction**

Caesarean scar ectopic pregnancy describes implantation within the myometrium of a prior caesarean delivery scar. Its incidence approximates 1 in 2000 normal pregnancies and has increased along with the caesarean delivery rate[3,5]. CSP is a potentially dangerous consequence of a previous caesarean delivery. Women with symptomatic caesarean scar pregnancy usually present early, and pain and bleeding are common. Up to 40% of women are asymptomatic, and the diagnosis is made during routine sonographic examination[5] as seen in this case. Early detection of CSP has a paramount clinical importance. If pregnancy progresses risk of rupture and PAS (placenta accreta spectrum) is high, therefore patients prefer to avoid rupture and PAS risk and seek pregnancy termination [5].

There are various modalities of management

- Medical –1) systemic methotrexate therapy either oral or intramuscular injection.
  2)Minimally invasive procedure- intra-gestational sac injection of KCL/MTX.
- Surgical – Hysteroscopic D and C, UAE followed by D and C, Laparoscopic uterine isthmic excision, transvaginal isthmic resection.

Sonographic diagnostic criteria of CSP [Figure 1][1]. Empty uterine cavity and empty endocervical canal,[2] gestational sac at the level of hysterotomy scar niche,[3] thin myometrial mantle between the gestational sac and bladder,[4] Prominent vascular pattern at the scar.

Use of methotrexate to treat ectopic pregnancy was first cited in 1982. Several studies followed this one and demonstrated successful treatment of ectopic pregnancy using alternating doses of methotrexate and leucovorin.

The use of high-resolution transvaginal sonographic probes enables earlier and more reliable diagnosis of ectopic pregnancy. Transvaginal ultrasound-guided local injection of ectopic pregnancies has been described as an alternative therapy that may allow the practitioner to minimize the use of systemic chemotherapy[3].

In addition, local application may be more effective than is systemic therapy with MTX in cases of more advanced ectopic gestations, especially if a live ectopic pregnancy is present.

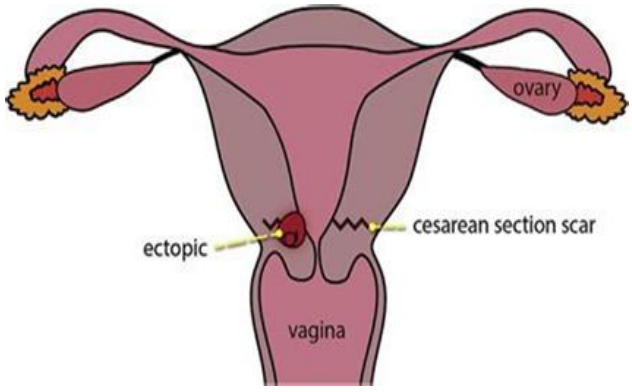


Figure 1: figure representing scar ectopic, empty uterine cavity and endocervical canal, G-sac within lower uterine segment near previous scar LSCS site.



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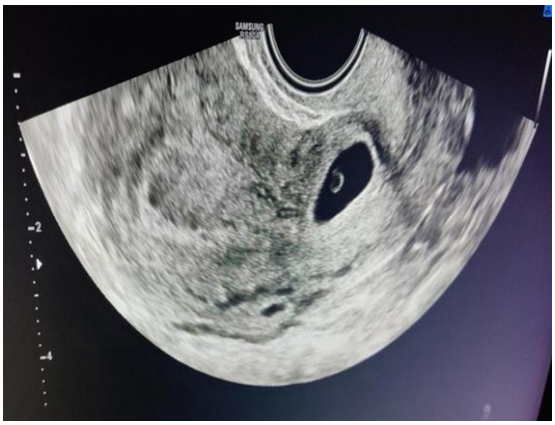

**Case Presentation**

G6P2L2A2MTP1 presented with USG suggestive of previous Caesarean scar ectopic pregnancy. The patient had a history of lower segment Caesarean section done twice. She was referred from private clinic with USG suggestive of previous Caesarean scar site ectopic pregnancy at 5 weeks 3 days. Patient was vitally stable, General physical examination was normal, per speculum normal, on bimanual examination- uterus was 8 weeks size, anteverted and bilateral fornices were free with no tenderness and altered discharge present.

- Baseline laboratory investigation was found to be normal with Hb – 12.5gm%, WBC – 11000, PLATELETS O- 2.4lakhcmm
- Baseline B-HCG level was sent and found to be 27477.0mIU/mL.
- **Ultrasonography** showed scar ectopic pregnancy in the region of previous caesarean scar [Figure 1] g sac diameter 10.7mm = 6weeks. And myometrial thickness of 3.2 mm and mild to moderate free fluid in pouch of Douglass.
- **MRI Pelvis** reveals T2 hyperintense G sac like structure measuring 16*17*18mm seen along the endometrial cavity at the lower uterine segment caesarean section site suggestive of scar ectopic. Patient was planned for Conservative management by USG guided Injection methotrexate and injection KCL.

**Patient was properly counselled regarding condition, high risk behavior of CSP, treatment options and its complications.**

Procedure: After written valid and informed consent taken from patient and relatives, under all aseptic precautions' parts scrubbed painted and draped, USG guided intragestational sac Injection of 1ml of 2mEq/ml KCL was done and cardiac asystole noted [Figure 2] followed by 50mg of injection Methotrexate done in scar ectopic pregnancy[4] [Figure 5].

Patient sequentially followed up with beta HCG trend of initial rise later decreases in beta HCG levels were noted i,e day 2 28895 crumpled g sac, day 5 30865, day 10 16815,1month 592,2 month 28.8. and sequential follow up with TVS to look for G-SAC and PSV around G-SAC [Figure 4 and 6], lastly patient was followed after 6weeks when scan was repeated and no g sac in lower uterine segment. [figure 7].

Table 1:

| Day | Beta -HCG | PSV | G-sac |
|---|---|---|---|
| Baseline | 27477 | 34cm/sec | 10.7mm corresponding to 6eeks size |
| Day 3 | 28895 | 30 | Crumpled g - sac |
| Day 5 | 30865 | 30 | |
| Day 10 | 16815 | 27 | |



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| | | | |
|---|---|---|---|
| 1month | 592 | 24 | |
| 2month | 28 | - | No g-sac in lower uterine segment |
| By the end of 3month | Patient regained her menses, followed by regular cycles. | | |

**Discussion**

Caesarean scar pregnancy is the rarest kind of ectopic pregnancy, but because of the increasing number of cesarean deliveries its incidence has been rising to be about 1/2000 normal pregnancy.

For good USG diagnosis, TVS with good resolution equipment is necessary. Accurate diagnosis is necessary of successful preservation of the uterus.

In patients with previous C- section blastocyst gets implanted into areas of incomplete healing of the C-Section scar.

There are two types of CSP

1] Endogenic – that implant on the scar and expands towards uterine cavity.

2] Exogenic – implant deeply within the scar niche and grows towards bladder or abdominal cavity. Endogenous CSP has variable obstetric outcomes whereas all exogenic CSPs underwent hysterectomy with placenta accreta spectrum [PAS] at delivery.

Clinical presentation of SCP is variable with vaginal bleeding and pain in abdomen being the most common symptoms while 1/3$^{rd}$ of the patients are asymptomatic.[6]

Treatment needs to be individualized based on symptomatology, hemodynamic status, serum beta hCG levels, imaging features, and surgeons expertise.

Management options include

1] Expectant management – reserved for the pregnancy which is likely to fail or <5weeks size, reserved for women refusing termination, having endophytic type of CSP.

2] Medical management

- Systemic methotrexate therapy: advantage is noninvasive, but patients' needs thorough counselling regarding risk of hemorrhage, long term follow up with serial beta HCG levels, and possibility of surgical intervention including hysterectomy. Most researches suggest single dose MTX regimen with 50mg/m$^2$ based on response of beta HCG levels dose of MTX repeated[6]. Systemic MTX is more effective when beta HCG levels are <5000IU, gestational age <8weeks with absent fetal cardiac activity, and mass less than 3cm size on USG[6].
- Minimally invasive procedures – Local methotrexate using transvaginal ultrasound guided intra gestational sac injection of KCL/MTX. Local MTX Injection into gestational sac alone provide success rate of 60%, and systemic plus local MTX raised the rate nearly to 80%[5].

3] Surgical treatment – Hysteroscopic D and C, UAE followed by D and C, Laparoscopic uterine isthmic excision, transvaginal isthmic resection, hysterectomy.

Surgical management facilitates complete removal of conceptus, faster recovery, shorter follow up due to rapid normalization of beta HCG levels.

Intragestational sac KCL plus MTX may be a highly effective approach for the management of viable CSP despite high initial HCG values. There seems to be no need for any further intervention. It can be considered as the first line minimally invasive treatment option in patients desirous of future fertility.

Various case reports of patients with Caesarean scar ectopic pregnancy even in the absence of bleeding,



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supports management as the surgical option. This includes elective laparotomy and excision of the gestational mass. The benefit of surgery is less recurrence because of the resection of the old scar, with a new uterine closure. The availability of Uterine Artery Embolization (UAE) in cases of Caesarean ectopic pregnancies treated has contributed to successful management without any hemorrhage.

**Conclusion**

With the raising trend of caesarean deliveries, an increase in CSP is anticipated. The ability to diagnose and treat this condition is vital. Medical and surgical approach depends on condition of patient and surgeon's expertise. Medical management has advantage of being non-invasive and is first line of therapy for eligible patients. Patient was followed up with serial beta HCG levels and found to have steady decrease in beta HCG concentration, complete resolution of ectopic pregnancy was achieved over a period of 3months, and surgical interventions as prevented and also risk associated with it resulting in increased morbidity and mortality. Successful conservative management of live caesarean scar ectopic pregnancy was achieved.

Figure 2: Initial scan suggestive of live caesarean scar ectopic – fetal cardiac activity present

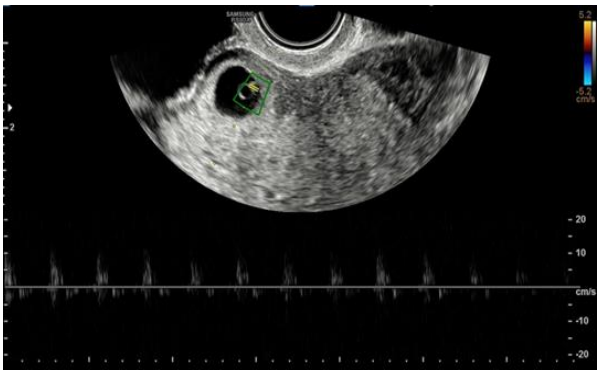

Figure 3: after intrathecal injection of KCL- note absent fetal cardiac activity

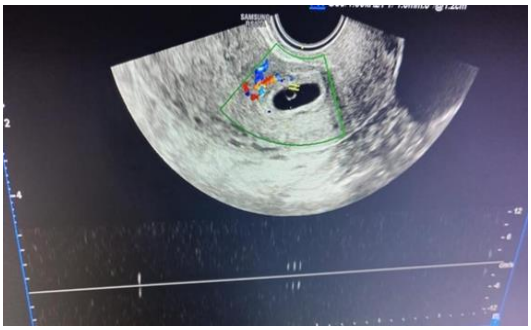

Figure 4: initial scan measuring PSV around G- Sac

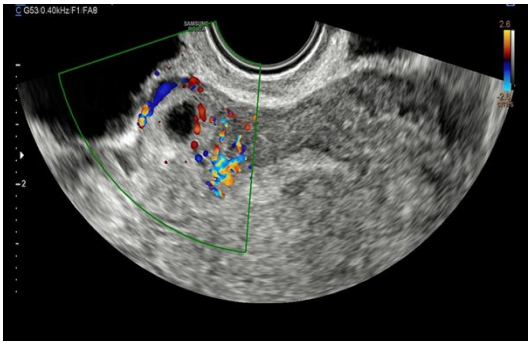

Figure 5: After injection of KCL and intrasacular methotrexate injection

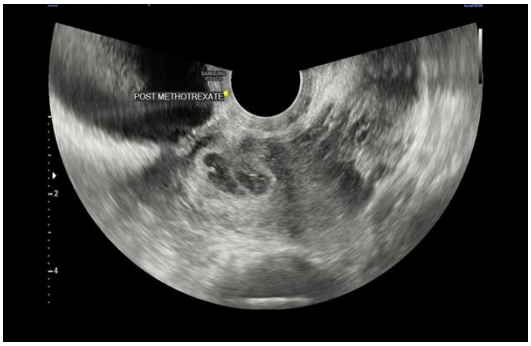


Figure 6: serial follow up showed decreased PSV around G – SAC

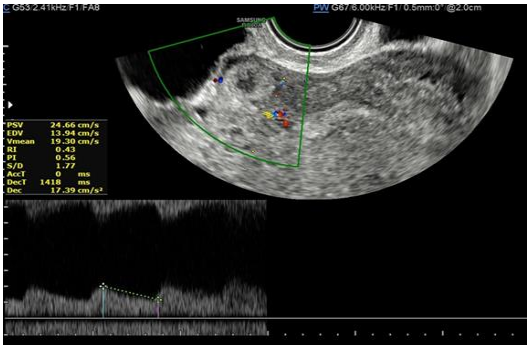




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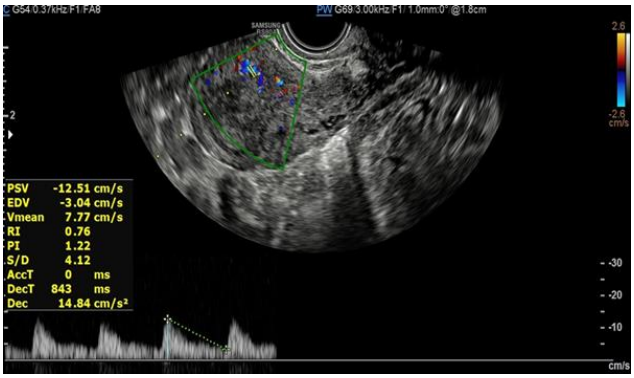
Figure 7: last scan which showed decreased PSV and no G SAC in uterine cavity.

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