

## A CASE SERIES ON CESAREAN ECTOPIC PREGNANCY – MEDICALLY MANAGED

M. Kirthiga<sup>1</sup>, P. Umarani<sup>2</sup>, K. Shanmugapriya<sup>1</sup>, R. Sivapriya<sup>1</sup>

<sup>1</sup>Assistant Professor, Govt. Dharmapuri Medical College Hospital, Dharmapuri, Dharmapuri, Tamilnadu, India

<sup>2</sup>Associate Professor, Govt. Dharmapuri Medical College Hospital, Dharmapuri, Dharmapuri, Tamilnadu, India

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Corresponding Author:  
**Dr. M.Kirthiga,**  
Email: eversmile.win@gmail.com

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### Abstract

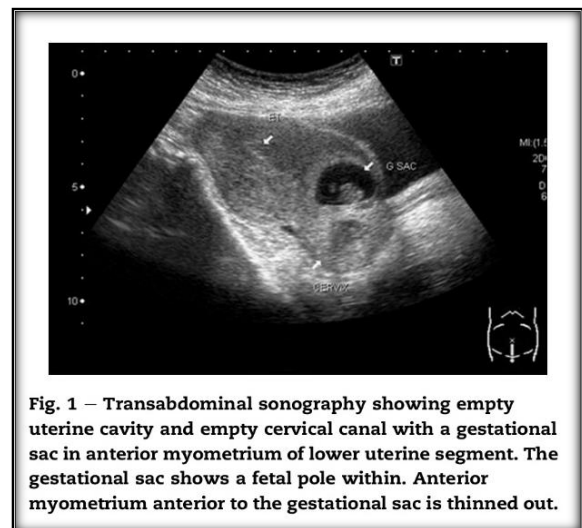
**Background:** Cesarean scar pregnancy (CSP) is a rare form of ectopic pregnancy where the gestational sac, villi, and placenta a wholly or partially implanted in the myometrium of a previous scar. In this retrospective case series, we are discussing about the cesarean ectopic pregnancies that are medically managed in our institute over a period of 6 months. Medical management of cesarean ectopic is a conundrum as there is limited number of case reports or studies available on the topic. **Materials and Methods:** This is a retrospective case series of the medically managed cesarean ectopic pregnancies in our institute over a period of 6 months (July 2022-January 2023). Medical management was planned for these patients after initial serum  $\beta$ -HCG and ultrasound findings. After medical management with either injection methotrexate or injection KCl, they were followed up with serial serum  $\beta$ -HCG values till it becomes undetectable and ultrasonography. **Result:** Three cases of cesarean ectopic pregnancy with one previous LSCS patients of gestational age 7w to 14w were retrospectively studied. One case was managed with intragastric KCl instillation and two cases were managed with injection methotrexate. They were followed up with beta HCG values and they were found to be in a decreasing trend. Also the ultrasound scans showed regression of the gestational sac that indicates successful medical management of the cases. **Conclusion:** Cesarean scan ectopic pregnancy is a life threatening condition that warrants individualized management for every case. From this case series it is evident that medical management for the cesarean ectopic pregnancy is to be tailored for every single case according to the presentation.

## INTRODUCTION

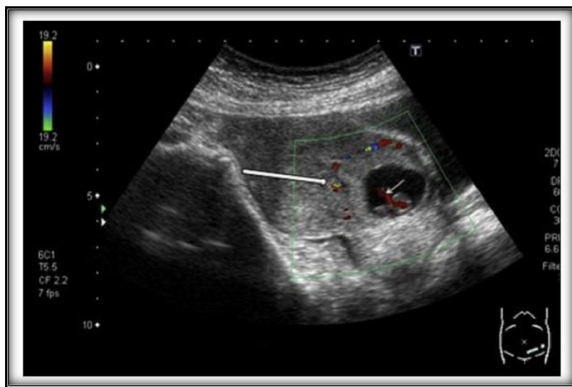
Cesarean scar pregnancy (CSP) is a rare form of ectopic pregnancy where the gestational sac, villi, and placenta a wholly or partially implanted in the myometrium of a previous scar.<sup>[1]</sup> The incidence of CSP has been reported approximately 1:2,000 of all pregnancies.<sup>[2,3]</sup> With increasing number of cesarean sections (CS) being regardless of the indication, the morbidity associated with CSP has shown a clear increasing global trend.<sup>[4,5]</sup> Globally, the incidence of primary cesarean Section averages 18.6% of all births.<sup>[6]</sup> A hysterotomy Scar ectopic pregnancy has also been reported following Myomectomy, uterine evacuation, previous abnormally Adherent placentation, manual removal of placenta, Metroplasty, hysteroscopy, and in vitro fertilization.<sup>[7]</sup>

There are many theories which explain the occurrence of Intramural ectopic pregnancy. The most accepted theory seems to be that the blastocyst invades into the myometrium. Through a microscopic dehiscence tract, which may be the Result of trauma of

a previous caesarean section or any other Uterine surgery or even after manual removal of the Placenta. Another mechanism for intramural implantation May be in vitro fertilization and embryo transfer, even in the Absence of any previous uterine surgery.<sup>[8]</sup>



**Fig. 1 – Transabdominal sonography showing empty uterine cavity and empty cervical canal with a gestational sac in anterior myometrium of lower uterine segment. The gestational sac shows a fetal pole within. Anterior myometrium anterior to the gestational sac is thinned out.**



**Figure 2: color Doppler examination showing that hyperechoic rim of choriodecidual reaction (thick white arrow) and umbilical cord (thin white arrow) show vascularity**

### Aim and Objective

In this retrospective case series, we are discussing about the cesarean ectopic pregnancies that are medically managed in our institute over a period of 6 months. Medical management of cesarean ectopic is a conundrum as there is limited number of case reports or studies available on the topic.

## REVIEW OF LITERATURE

The risk of recurrent scar ectopic pregnancy is low, 3.2–5.0%.<sup>[9,10]</sup> Women who intend to continue childbearing should be informed of the low risk of recurrence. But the potential serious sequelae of a recurrence. Even With an intrauterine pregnancy, the woman is still at risk of complications of multiple hysterotomies, such as abnormally adherent placenta, uterine rupture, massive Hemorrhage, and hysterectomy. Future pregnancies require meticulous specialist follow-up.

In 2012, Tritsch et al. A retrospective case series of 26 patients between 6-14 postmenstrual weeks suspected to have CSP who were referred for diagnosis and treatment. The diagnosis was confirmed with transvaginal ultrasound. In 19 of the 26 patients the gestational sac was injected with 50 mg of methotrexate: 25 mg into the area of the embryo/fetus and 25 mg into the placental area; and an additional 25 mg was administered intramuscularly. Serial serum human chorionic gonadotropin determinations were obtained. Gestational sac volumes and vascularization were assessed by 3-dimensional ultrasound and used to monitor resolution of the injected site and outcome. The 19 treated pregnancies were followed for 24-177 days. No complications were observed. After the treatment, typically, there was an initial increase in the human chorionic gonadotropin serum concentrations as well as in the volume of the gestational sac and their vascularization. After a variable time period mentioned elsewhere the values decreased, as expected. This series concluded that combined intramuscular and intragestational

methotrexate injection treatment was successful in treating these CSP.<sup>[11]</sup>

Gerday et al 2020. This retrospective, uni-centric study examined nine patients age between 33 and 42 years with Cesarean scar ectopic pregnancy (CSEP) between 2010 and 2018. CSEP was diagnosed by transvaginal ultrasound at a mean gestational age of 8weeks + 0/6. CSEP was treated under general anesthetic by ultrasound-guided methotrexate injection directly into the gestational sac. HCG levels and subsequent childbearing were monitored post-treatment. Half of the patients were asymptomatic at the time of diagnosis. All patients tolerated treatment well and all ectopic pregnancies were successfully removed. HCG levels returned to negative within 3 months without additional medical or surgical intervention. The post-treatment pregnancy rate was 50%. The findings indicate that local ultrasound-guided injection of methotrexate into the gestational sac is a safe and effective therapeutic approach when performed by a trained team on a hemodynamically stable patient in the early stages of CSEP.<sup>[12]</sup>

In 2021, PGIMER, 11 cases of cesarean ectopic pregnancy were prospectively enrolled to highlight the clinical features, diagnosis and different treatment modalities. In each case, diagnostic ultrasonography and baseline beta HCG was done. Treatment was based on hemodynamic status of the patient and desire for future fertility. Seven out of 11 cases underwent medical management with either methotrexate or KCl alone. The success of the medical management was monitored by beta HCG values. 3 patients underwent emergency uterine artery embolization due to uncontrolled bleeding and one patient required laparotomy. The study concluded that well defined diagnostic criteria coupled with structured management and follow-up protocols along with consideration of hemodynamic status and desire for future fertility can help in treating the cases of cesarean ectopic pregnancy.<sup>[13]</sup>

In 2022, huo et al, a retrospective study was performed among patients diagnosed with CSP at Shandong Provincial Hospital between January 2009 and December 2019. This study reviewed clinical characteristics, treatment methods, and subsequent outcomes; and analyzed these endpoints using the statistical software package SPSS 22.0. this study concluded that for type I CSPs, D&C was quick, easy, and safe; for type II, Hysteroscopic Curettage was more suitable. For type III and some type II patients who wished to undergo simultaneous repair of the cesarean defect, Laparoscopy combined with Hysteroscopic Curettage was the optimal method. UAE can be used as a complementary option instead of a prophylactic measure, and when difficulties with endoscopic surgeries were encountered, conversion to laparotomy was the ultimate treatment.<sup>[14]</sup>

## MATERIALS AND METHODS

This is a retrospective case series of the medically managed cesarean ectopic pregnancies in our institute over a period of 6 months (July 2022-January

2023). Medical management was planned for these patients after initial serum  $\beta$ -HCG and ultrasound findings. After medical management with either injection methotrexate or injection KCl, they were followed up with serial serum  $\beta$ -HCG values till it becomes undetectable and ultrasonography.

## RESULTS

**Table 1: Types of Cesarean ectopic pregnancy**

Type	Gestational Sac	Myometrial Thickness Between Bladder And Sac	
Type 1 - Endogenous	Progresses into the cervico-isthmic space or uterine cavity	>3mm	Type Ia – G-sac<3cm Type Ib – G-sac>3cm
Type 2 - Endogenous	Progresses into the cervico-isthmic space or uterine cavity	<3mm	Type IIa – G-sac<3cm Type IIb – G-sac>3cm
Type 3 - Exogenous	Deep invasion of the scar defect with a progression towards the bladder and abdominal cavity	<3mm	Type IIIa – G-sac<3cm Type IIIb – G-sac>3cm

**Table 2: Features of the three cases described**

	CASE I	CASE II	CASE III
AGE	33 years	29 years	32 years
DIAGNOSIS	G2P1L1/Prev LSCS/ LCB 2 years	G2P1L1/ Prev LSCS/ LCB 4 years	G3P1L1A1/Prev LSCS/LCB 3½ years
GESTATIONAL AGE	14weeks 2days	9weeks 3days	7weeks 5days
USG FINDINGS	TVS- G-sac of 2x2cm with fetal pole and FHR+ in anterior part of uterine isthmus, uterine cavity empty	USG- an irregular G-sac with CRL 0.3cm corresponding to 8weeks 6days attached to LSCS scar site, no FHR seen.	USG- G-sac of 2x2cm with fetal pole and FHR+, found attached to LSCS scar site, uterine cavity empty.
B-HCG (AT DIAGNOSIS)	13518mIU/ml	3452mIU/ml	5,104mIU/ml
INVESTIGATIONS	Hb 9, Platelet 2.7lakhs SGOT/SGPT – 23/10 Bilirubin 0.7	Hb 11, platelets 3.16lakhs, SGOT/SGPT 25/22 Bilirubin 0.5	Hb12.5, platelets 2.06lakhs, SGOT/SGPT 22/19 Bilirubin 0.6
MANAGEMENT	One dose of injection methotrexate Intragestational instillation of KCl solution	4 doses of injection methotrexate on day 1,3,5,7 with injection folinic acid on day 2,4,6,8	One dose injection methotrexate
FOLLOWUP	With beta HCG and transvaginal USG	With beta HCG and USG	With beta HCG and USG
OUTCOME	Live and healthy, discharged	Live and healthy, discharged	Live and healthy, discharged

## DISCUSSION

Ultrasound is considered the first line of diagnostic modality to diagnose CSP. There are four diagnostic Features seen in the transvaginal ultrasound vis-à-vis

1. An empty uterus,
2. An empty cervical canal,
3. Discontinuity in the anterior uterine wall, and
4. The gestational sac located in the anterior part of the Isthmic portion of the uterus with a diminished myometrial layer between the bladder and the sac.<sup>[15]</sup>

The Sensitivity of transvaginal ultrasonography in diagnosing CSP is 86.4%. The diagnosis is based on the presence of a gestational sac at the site of the previous cesarean scar in the presence of an empty uterine cavity and cervix. A thin myometrial layer may be seen adjacent to the bladder wall in the antenatal Ultrasound.

Primary medical treatment consists of using methotrexate, which may be administered by local injection into the gestational sac under ultrasound

guidance or systemically by intramuscular injection. Local injection seems to be a more effective means of terminating the pregnancy.

The disadvantage of using medical treatment is that the trophoblast remains in situ; there is a risk of haemorrhage as the retained, often very vascular, placental tissue degenerates, so some authors have advocated using suction evacuation in addition to methotrexate to hasten resolution and reduce the risk of unpredictable haemorrhage in the follow-up period.

Surgical treatment consists of either evacuation of the pregnancy (using suction or hysteroscopic resection) or excision of the pregnancy as an open, laparoscopic or transvaginal procedure. Suction evacuation is probably the most frequently described procedure and has been combined with cervical cerclage, Foley catheter insertion or UAE as additional haemostatic measures. Excisional techniques have the advantage of incorporating a repair of the scar, but these procedures are technically more difficult and invasive, and it is not known whether scar repair

reduces the risk of recurrent caesarean scar pregnancy or scar rupture in future pregnancies. Expectant management may be suitable for women with small, nonviable scar pregnancies and may be considered if the pregnancy is partially implanted into the scar and grows into the uterine cavity, provided that the woman is counselled regarding the associated potential risks, haemorrhage and morbidly adherent placentation, and she declines termination of the pregnancy.

## CONCLUSION

Cesarean scan ectopic pregnancy is a life threatening condition that warrants individualized management for every case. From this case series it is evident that medical management for the cesarean ectopic pregnancy is to be tailored for every single case according to the presentation.

In our preliminary study, we highlighted how the treatment with methotrexate injected in the gestational sac, in association with methotrexate i.m. gave encouraging results in the first 10 weeks of caesarean scar pregnancy.

However, caution is needed in patients with advanced gestational age (> 10 weeks), or when the ultrasound shows a gestational sac with large diameter (> 30 mm), higher CRL (> 12 mm) and presence of embryonic cardiac activity. In these cases, additional therapy may be necessary. A primary obstetric objective must therefore be a diagnosis as early as possible to avoid subsequent complications.

Transvaginal US imaging is helpful in detection of asymptomatic ectopic pregnancy implanted in the cesarean section scar. Early identification of this form of pregnancy warrants effective treatment with no negative effects on fertility. Particularly useful is Doppler imaging and, in the most difficult cases, MRI. Ultrasound imaging, mainly transvaginal and rarely transabdominal, is a significant diagnostic means utilized not only to diagnose but also to treat CSP as part of a combined approach. Dilatation and curettage with subsequent intrauterine Foley catheter insertion may be recommended, but only due to its availability, simplicity and relatively high efficacy. However, bearing in mind significant risk of hemorrhage and high risk of secondary hysterectomy and fertility loss, this form of treatment should only be used in selected cases of early diagnosed CSP. Systemic methotrexate treatment should not be applied on the routine basis due to relatively low efficacy, high risk of hysterectomy and fertility loss, and the risk of various adverse effects. On the other hand, local methotrexate therapy (under ultrasound or hysteroscopy guidance) should be considered a perfect management method as it offers fertility preservation in asymptomatic pregnant patients without concomitant hemodynamic disorders. The most effective CSP treatment is simultaneous application of 2–3 techniques. The combination of local MTX with simultaneous gestational sac

aspiration under ultrasound or hysteroscopy guidance seems optimal and minimally invasive. In the second stage, the remaining gestational tissues can be removed hysteroscopically in combination with vascular coagulation of the implantation site.

In more advanced cases (CSP exceeding 3 cm), local methotrexate administration should be considered, followed by laparoscopic or laparotomy CSP wedge resection with subsequent surgical correction of the cesarean section scar.

Promising results in CSP treatment have been obtained with an innovative HIFU technique that utilizes high-intensity focused ultrasound.

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