

# EXCLUSIVE INTRASAC METHOTREXATE AND INTRACARDIAC POTASSIUM CHLORIDE ADMINISTRATION FOR TREATMENT OF VIABLE SCAR PREGNANCY - A CASE SERIES

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## ABSTRACT

**BACKGROUND:** Cesarean scar pregnancy is a rare type of ectopic pregnancy, which is potentially life-threatening; if not diagnosed and treated timely resulting in catastrophic complications. Early diagnosis is critical for treatment. Interventional radiology has changed the fate of ectopic pregnancy. With transvaginal sonography; early diagnosis and treatment is made possible, consequently allowing preservation of uterus and fertility. Intrauterine administration of methotrexate (MTX) is a conservative and non-surgical method for ectopic pregnancy cessation. **METHOD AND MATERIAL:** We're describing two cases of live ectopic pregnancy with transvaginal ultrasound-guided local injection of methotrexate (MTX) complemented with potassium chloride (KCl). A 36 years old woman with 4 previous Caesarean scars, live and unruptured uterine ectopic scar pregnancy was referred to interventional radiology unit for evaluation and management. She underwent risk-benefit counseling. Under transvaginal sonographical guidance, puncture and injection of the ectopic pregnancy was performed using a 22G Chiba device. Intrasacular MTX was injected, which was complemented with fetal intracardiac administration of KCl, producing immediate cessation of fetal cardiac activity. Patient was followed up after a week revealing reduction in size of remaining gestational sac with decrease in beta hcg. Reporting another case of 34 years old woman with ectopic pregnancy at site of incision of lower segment uterine scar pregnancy of approximately 5 weeks and 5 days. Transducer guided fashioned from the sterile covering of 22 G Chiba needle advanced through the guide into gestational sac, approximately 1 ml of KCl was injected slowly. Afterwards 25 mg (1 ml) MTX was injected into the gestational sac. **RESULT:** Immediate cessation of fetal cardiac activity was noted. Weekly follow-up ultrasound remained uneventful with progressive resolution of gestational sac remnant. **CONCLUSION:** We conclude that unruptured live ectopic pregnancy can be successfully managed without surgical intervention through local injection of KCl and MTX. This approach may be considered as first line minimally invasive management option in patients desirous of further fertility. Nevertheless, accumulation of further cases is required to validate this modality.

## Introduction

Cesarean scar pregnancy is a rare type of ectopic pregnancy, which is potentially life-threatening; if not diagnosed and treated timely resulting in catastrophic complications. Early diagnosis is critical for treatment. Interventional radiology has changed the fate of ectopic pregnancy. With transvaginal sonography;

early diagnosis and treatment is made possible, consequently allowing preservation of uterus and fertility. Intrauterine administration of methotrexate (MTX) is a conservative and non-surgical method for ectopic pregnancy cessation.

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## Case 1

We're describing two cases of live ectopic pregnancy with transvaginal ultrasound-guided local injection of methotrexate (MTX) complemented with potassium chloride (KCl).

A 36 years old woman with 4 previous Caesarean scars, live and unruptured uterine ectopic scar pregnancy was referred to interventional radiology unit for evaluation and management. She underwent risk - benefit counseling. Under transvaginal sonographical guidance, puncture and injection of the ectopic pregnancy was performed using a 22G Chiba device (Fig.1). Intrasacular MTX was injected, which was



Figure 1: Transvaginal ultrasound probe with manually designed guide for a 22G Chiba device.



Figure 2: (Case 1) Transvaginal ultrasound transverse view showing gestational sac at the site of prior scar.

complemented with fetal intracardiac administration of KCl, producing immediate cessation of fetal cardiac activity. Patient was followed up after a week revealing reduction in size of remaining gestational sac with decrease in beta HCG. (Fig.2)

## Case 2

Reporting another case of 34 years old woman with ectopic pregnancy at site of incision of lower segment uterine scar pregnancy of approximately 5 weeks and 5 days. Transducer guided fashioned from the sterile covering of 22 G Chiba needle advanced through the guide into gestational sac, approximately 1 ml of KCl was injected slowly. (Fig.3) Afterwards 25 mg (1 ml) MTX was injected into the gestational sac. Immediate cessation of fetal cardiac activity was noted. During weekly follow-up ultrasound remained uneventful with progressive resolution of gestational sac remnant through a series of ultrasounds and decline in repeated b-HCG reaches a negative value.

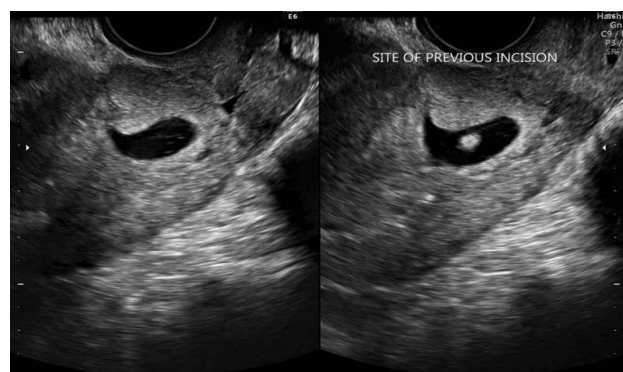


Figure 2: (Case 2) Transvaginal ultrasound transverse view showing gestational sac at the site of prior scar

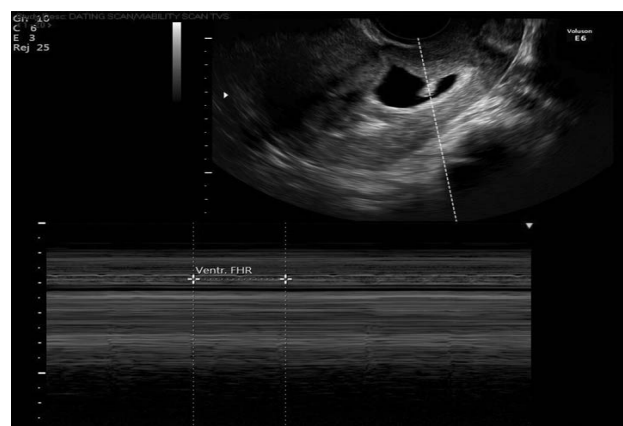


Figure 3: (Case 2) Post injection TVS image showing no intracardiac activity in gestational sac.

## Discussion

Cesarean scar pregnancy is a rare form of ectopic pregnancy with incidence 1:1800 to 1:2200 pregnancies.<sup>1</sup> Increased incidence is attributed to multiple factors including increasing number of Cesarean sections, improved awareness and widespread use of ultrasound scanning.<sup>1,2</sup> This calls for a substantial increase in better understanding of this disease.<sup>3</sup> Early diagnosis and treatment is crucial on grounds of catastrophic complications including uterine rupture, hemorrhage or hysterectomy in case of uncontrolled bleeding. Conservative treatment for termination of pregnancy in women of reproductive age, who chose to preserve their uterus is a challenge for treating physician.<sup>2</sup> Transvaginal ultrasonography is a useful aid in early diagnosis of cesarean scar ectopic pregnancy and fundamental for suitable conservative management.

Currently, many conservative strategies have been established, including systemic and/or local methotrexate, dilatation and curettage, hysteroscopy, laparoscopy, transvaginal resection, uterine artery embolization, high-intensity focused ultrasound and combined treatment.<sup>4,5,6</sup> Repeated attempts through curette where trophoblastic tissue is unreachable to curette can cause uterine perforation leading to severe bleeding. Such cases end in either laparoscopy or laparotomy.<sup>3</sup> Rotas et al. reviewed 112 cases in 2011 reporting 6 patients that resulted in uterine rupture and three of them required hysterectomy. Severe maternal morbidity are reported with dilatation and curettage. In similar study eleven patients out of 12 went through wedge resection with repair of implantation site through laparotomy or laparoscopy.<sup>7,5</sup> Pregnancy can be interrupted through medical means but bleeding can continue for longer time.<sup>8</sup> Among the conservative management systemic and local methotrexate are most commonly used.<sup>9</sup> Different regimes that helps unnecessary laparotomy includes medical treatment combined with surgical aspiration. This includes systemic methotrexate with transvaginal (TVS) guided sac aspiration or transvaginal/trans-abdominal guided sac aspiration with either local or systemic methotrexate, local potassium chloride with

TVS-guided sac aspiration with local or systemic methotrexate. Serum  $\beta$ -Hcg takes approximately 4-16 weeks to reach to non-pregnant stage.<sup>8,11</sup> Local administration of methotrexate (MTX) via ultrasound with multiple doses of systemic MTX has been documented to be effective.<sup>10</sup>

One of the study similar to ours was performed where women were treated by ultrasound-guided intracardiac instillation of 0.1 - 0.5 ml 15% solution of potassium chloride.<sup>2</sup> Similarly, an Australian article reported about 13 cases of cesarean scar ectopic pregnancy with local drug treatment in combination with systemic doses resulting in reduction of  $\beta$ -hCG negative. This study proves that local methotrexate to be more effective than systemic treatment alone. Systemic medication access is limited because of the presence of fibrotic tissue in the site if scar.<sup>11</sup>

Our case series has some weakness including smaller number of cesarean scar ectopic pregnancy and lack of comparison with other treatment modalities. Another limiting factor is lack of follow-up therefore other potential complications and its effect on fertility are not known. In current era where Cesarean scar pregnancy is becoming a challenge worldwide, further work is needed to determine about the safest and efficient clinical approach. Out of five available approaches, literature supports an interventional rather than medical approach.<sup>6</sup>

However, in absence of follow-up studies, longterm complications and fertility the final treatment remains non-conclusive. The best treatment for CSP still remains undecided as of yet.<sup>4</sup>

## Conclusion

We conclude that unruptured live ectopic pregnancy can be successfully managed without surgical intervention through local injection of KCl and MTX. This approach maybe considered as first line minimally invasive management option in patients desirous of further fertility. Nevertheless, accumulation of further cases is required to validate this modality.

**Conflict of Interest:** Declared none by authors

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