Case Report

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# Heterotopic Interstitial Pregnancy: A Case Report

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## ABSTRACT

A heterotopic pregnancy involves multiple embryos implanted in different locations, usually one in the uterus and another ectopically. This rare condition can pose significant risks to both the mother and the developing embryos. Heterotopic pregnancy is very rare. An interstitial heterotopic pregnancy is even rarer, representing 2%–4% of all ectopic pregnancies, but it has a much higher mortality rate overall because of the complexities involved in diagnosis and management. This case involves a rare instance of interstitial heterotopic pregnancy, likely resulting from assisted reproductive technology. Ultrasound revealed a live intrauterine pregnancy and an interstitial ectopic pregnancy sac. A 40-year-old woman, G5P1Ab1Ep2, was referred to the hospital triage in her 7th week of pregnancy due to abnormal ultrasound findings. Considering the clinical conditions and the possibility of uterine rupture with increasing gestational age, a decision was made to reduce the ectopic pregnancy by injecting KCl. Ultimately, a multidisciplinary approach involving obstetricians, gynecologists, and, when necessary, maternal–fetal medicine specialists is vital to optimize outcomes for both the mother and the developing fetus.

## Introduction

A heterotopic pregnancy involves multiple embryos implanted in different locations, usually one in the uterus and another ectopically [1]. This rare condition can pose significant risks to both the mother and the developing embryos. Heterotopic pregnancies typically arise after assisted reproductive techniques, such as in vitro fertilization (IVF), but can also occur spontaneously [2]. Diagnosis of a heterotopic pregnancy is often challenging, as the symptoms can mimic those of a normal early pregnancy or a typical ectopic pregnancy. Management options depend on various factors, including the location of the ectopic pregnancy, the size of the ectopic mass, and the overall health of the patient [3]. In some cases, surgical intervention may be necessary to remove the ectopic tissue, while in other situations, medical treatment may be employed to resolve the ectopic component, allowing the intrauterine pregnancy to continue [4]. Heterotopic pregnancy is very rare. An interstitial heterotopic pregnancy is even rarer, representing 2%–4% of all ectopic pregnancies, but it has a much higher mortality rate overall because of the complexities involved in diagnosis and management [5]. Interstitial heterotopic pregnancies occur when one embryo implants in the uterine cavity

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while another implants in the interstitial part of the fallopian tube. Due to their unusual location, these pregnancies can present with atypical symptoms, often leading to delayed identification [6].

## Case Presentation

The patient underwent in vitro fertilization (IVF) with the transfer of two frozen embryos. She also had a history of laparoscopic surgery for endometriosis at the age of 28. A 40-year-old woman, G5P1Ab1Ep2, was referred to the hospital triage in her 7th week of pregnancy due to abnormal ultrasound findings. The ultrasound revealed two distinct gestational sacs: a live intrauterine pregnancy with a crown–rump length of 9.5 mm, corresponding to 7 weeks of gestation and a fetal heart rate of 148 bpm; and an interstitial ectopic pregnancy sac with a fetal pole, yolk sac, and detectable fetal cardiac activity, also corresponding to 7 weeks of gestation (Figure 1). An ectopic pregnancy sac was observed in the interstitial area, with no surrounding myometrium visible. Color Doppler ultrasound indicated increased vascular flow around it, while no free fluid was detected, and the adnexa appeared normal. The ultrasound report was confirmed by two experienced radiologists. The presence of fetal cardiac activity in the interstitial pregnancy was the main reason for proceeding with selective reduction using potassium chloride (KCl), in order to prevent the risk of rupture and severe maternal complications. Before IVF, the patient was taking enoxaparin 40 mg daily, aspirin 80 mg daily, estradiol every 12 hours, and progesterone daily. Considering the clinical conditions and the possibility of uterine rupture with increasing gestational age, a decision was made to reduce the ectopic pregnancy by injecting KCl (Figure 2). For the injection, after preparation and draping in the lithotomy position, under ultrasound guidance, 1.5 cc of 15% potassium chloride was injected into the fetal heart. The presence of cardiac activity in the interstitial pregnancy was the primary reason for proceeding with selective fetal reduction using potassium chloride (KCl), to avoid the high risk of uterine rupture and maternal morbidity.

At the end of the procedure, the intrauterine fetal heart was checked and found to be normal. The patient was discharged from the hospital two days later in good general condition.

The intrauterine pregnancy progressed uneventfully up to 36 weeks and 3 days of gestation. The patient presented to the emergency department with mild vaginal spotting and was admitted for close observation. Over the next 48–72 hours, conservative management was pursued. Due to a non-reassuring fetal heart tracing, an emergency cesarean section was performed. A healthy female infant was delivered, with Apgar scores of 7 and 9 at 1 and 5 minutes, respectively.

Placental location was anterior; no evidence of abnormal placentation (e.g., placenta accreta, increta, or percreta) was noted intraoperatively. Both the mother and newborn were discharged in stable condition.

## Discussion

Heterotopic intrauterine and extrauterine pregnancies are suspected when an ultrasound reveals an intrauterine pregnancy alongside a complex adnexal mass or other extrauterine finding [3]. The presence of a yolk sac or embryo/fetal pole in the mass can confirm the diagnosis. As observed in this patient, the occurrence of ectopic pregnancy along with intrauterine pregnancy can be asymptomatic.

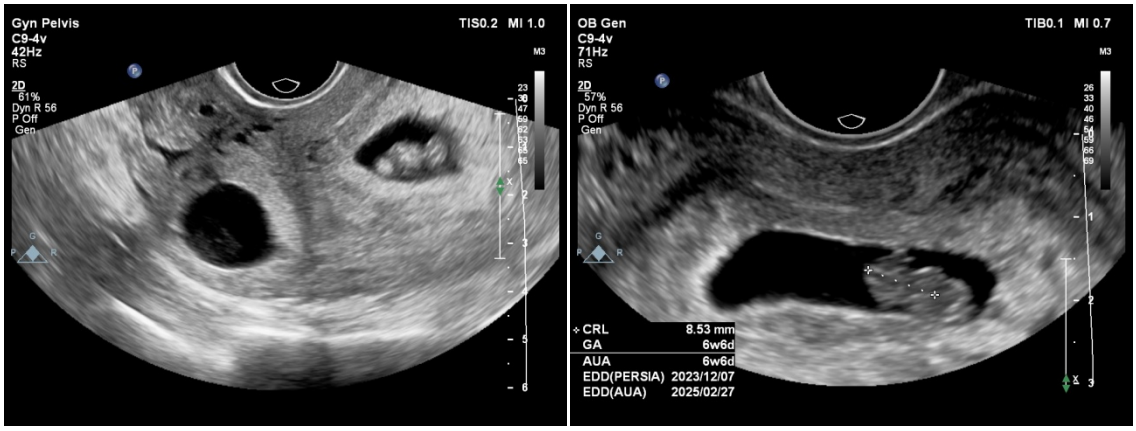


**Fig. 1.** Ultrasound revealed a live intrauterine pregnancy and an interstitial ectopic pregnancy sac located interstitially, which also contained a fetal pole and cardiac activity (not captured in this image).

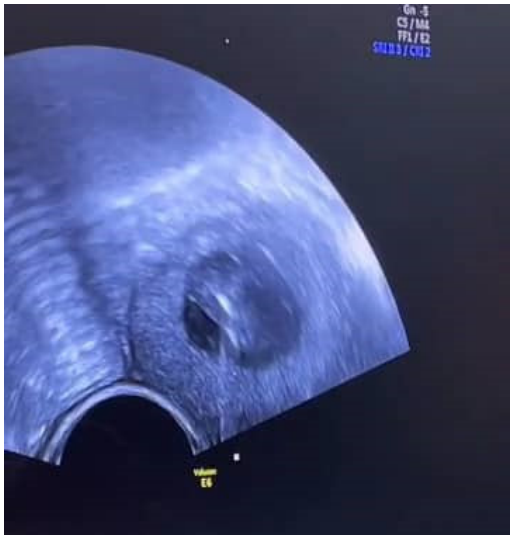

**Fig. 2.** Injection of KCL into the fetal heart

It is very important for radiologists to pay attention to other parts of the uterus and fallopian tubes after seeing an intrauterine pregnancy. Furthermore, the management of heterotopic pregnancies requires a tailored approach, as the presence of both intrauterine and extrauterine gestations poses unique challenges. Close monitoring through follow-up ultrasounds is essential to assess the stability of the intrauterine gestation and to evaluate the ectopic mass.

The importance of early detection cannot be overstated, as undiagnosed heterotopic pregnancies can lead to serious complications, including severe abdominal pain or internal bleeding [6]. Clinicians should maintain a high index of suspicion, particularly in patients with risk factors such as a history of infertility treatments, prior pelvic surgery, or tubal disease. Patient education regarding potential symptoms of an ectopic pregnancy such as unilateral pelvic pain or unusual bleeding should also be emphasized during counseling.

Ultimately, the collaborative efforts of obstetricians, radiologists, and patient care teams are crucial in navigating the complexities of heterotopic pregnancies. With appropriate intervention and management, the outcomes for both the intrauterine and ectopic pregnancies can be optimized, ensuring the best possible care for the patient.

The rarity of this condition often contributes to delayed diagnosis and subsequent complications. The first manifestation of an ectopic pregnancy may be heavy bleeding or even death.

The type of management is very important in heterotopic pregnancies. Surgery can be associated with a high risk of intrauterine fetal loss. Therefore, less invasive medical treatments are a more appropriate choice. In addition, early recognition of the symptoms is crucial, as delayed intervention can lead to severe complications. Patients may present with abdominal pain, irregular bleeding, or signs of shock, which necessitate immediate medical evaluation. Diagnostic imaging, particularly transvaginal ultrasound, plays a pivotal role in identifying the presence of both intrauterine and ectopic pregnancies.

Once diagnosed, the management approach should be tailored to the patient's specific circumstances, including the size and location of the ectopic tissue, as well as the stability of the patient. KCl, a medical treatment option, can be effective in resolving the ectopic component while preserving the intrauterine pregnancy when used appropriately [5].

In cases where there is a significant risk of rupture or if the patient is hemodynamically unstable, surgical intervention may be necessary, albeit with careful consideration of the potential impact on the intrauterine fetus. A key limitation of this report is the unavailability of archived sonographic images, including those illustrating the interstitial line sign, myometrial thickness, and the fetal cardiac activity within the interstitial sac. However, the diagnosis was supported by real-time ultrasound evaluation, during which fetal heartbeat in the interstitial gestation was clearly confirmed by two experienced radiologists.

## Conclusion

Ultimately, a multidisciplinary approach involving

obstetricians, gynecologists, and, when necessary, maternal–fetal medicine specialists is vital to optimize outcomes for both the mother and the developing fetus. Education and awareness regarding the signs and risks associated with heterotopic pregnancies can enhance early diagnosis and improve management strategies, ultimately reducing morbidity and mortality associated with this rare condition.

## Declarations

Informed consent was obtained from the patient involved in the study. The authors declare no conflicts of interest related to this study. The authors received no financial support for the research, authorship, and/or publication of this article.

## Availability of data and materials

The data that support the findings of this study are available but restrictions apply to the availability of these data, which were used under license for the current study and are therefore not publicly available. Data are, however, available from the authors upon reasonable request and with the permission of [Shirin Souri].

## Ethical Considerations

### Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

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### Conflict of Interests

The authors have no conflict of interest to declare.

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