




## Simultaneous Occurrence of Ectopic Pregnancy in Both Fallopian Tubes and Live Intrauterine Fetus Following the Use of Ovulation Induction Medications: A Case Report

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Article Type	ABSTRACT
Case Report	<p><b>Background and Objective:</b> The simultaneous occurrence of ectopic pregnancy in both fallopian tubes and a live intrauterine fetus is very rare. The increase in the use of reproductive technology methods has caused an increase in the prevalence of this type of pregnancy. The aim of this study is to report a case of simultaneous occurrence of ectopic pregnancy in both fallopian tubes and live intrauterine fetus following the use of ovulation induction medications.</p> <p><b>Case Report:</b> The patient was a 29-year-old pregnant woman in her 7th week of pregnancy with a one-year history of infertility and the use of ovulation induction medications, with a transvaginal ultrasound report a week ago, live intrauterine pregnancy (6th week) and normal fallopian tubes, and complaints of vaginal bleeding. In repeated ultrasound, a live fetus was seen in the uterus (7 weeks and three days) and a live fetus in the left adnexa (7 weeks and three days), and the right adnexa was normal. The patient underwent laparoscopy. An incidental finding during surgery was the presence of ectopic pregnancy in both tubes. Left salpingectomy and right salpingostomy were performed and progesterone suppositories were prescribed to maintain intrauterine pregnancy. One week after the surgery, the fetus was observed without a heartbeat in the control ultrasound.</p> <p><b>Conclusion:</b> Based on the results of this report, the correct use of assisted reproductive methods, control of infertile patients under the supervision of infertility centers, and accurate ultrasounds due to the possibility of heterotopic pregnancy in high-risk patients are necessary.</p> <p><b>Keywords:</b> <i>Heterotopic Pregnancy, Ectopic Pregnancy, Ultrasound, Laparoscopy, Salpingectomy.</i></p>

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## Introduction

Heterotopic pregnancy refers to simultaneous implantation in two different places, one of which is inside the uterus and the other is outside the uterus (1). This type of pregnancy is very rare and is estimated to occur in about one in 30,000 pregnancies (2). Due to the increase in the use of assisted reproductive methods (including in vitro fertilization (IVF), intrauterine insemination (IUI) and super ovulation), its incidence increases to 1 in every 3900 pregnancies (3). Among the causes of its increase, we can mention tubal injuries, high levels of estradiol and progesterone, an increase in the number of transferred embryos, or embryo transfer techniques (4).

Although the presence of simultaneous intrauterine and ectopic pregnancy in one tube is rare, the occurrence of heterotopic pregnancy in both tubes at the same time is much rarer (about 1 in 200 thousand pregnancies) (5). In the case report by Shi et al., a 36-year-old gravida 2 woman who underwent IVF due to infertility was presented with complaints of vaginal bleeding in the seventh week of pregnancy. Vaginal ultrasound revealed live intrauterine pregnancy (7 weeks and one day) and live ectopic pregnancy of the right tube (6 weeks and 5 days). The patient was subjected to laparoscopy, and during surgery, an ectopic pregnancy was observed in both tubes, so a bilateral salpingectomy was performed (6). Diagnosis of heterotopic pregnancy is usually delayed due to confirmation of intrauterine pregnancy in ultrasound, which can lead to complications such as fallopian tube rupture and loss of fertility (7). On the other hand, early diagnosis of this type of pregnancy can lead to minimally invasive treatment and preservation of simultaneous intrauterine pregnancy (8).

The aim of this study is to report a very rare case of heterotopic pregnancy that occurred in both tubes and live intrauterine embryo following induced ovulation, which shows the need for doctors and radiologists to pay more attention to the possibility of heterotopic pregnancy in patients with a history of taking ovulation induction medications.

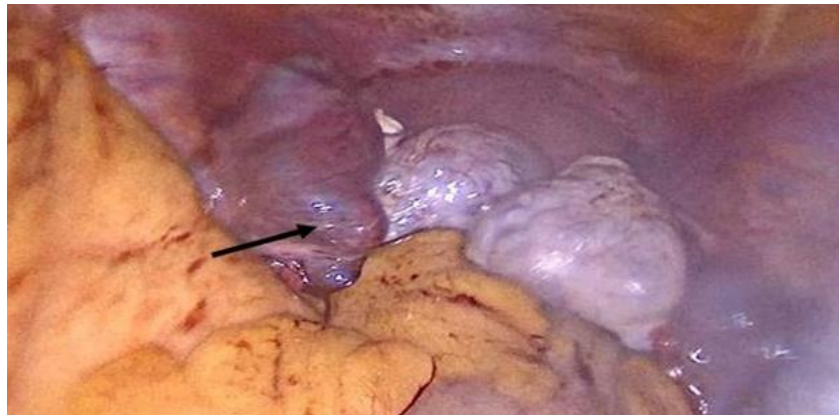
## Case Report

This case report was approved by the ethics committee of Qazvin University of Medical Sciences with the code IR.QUMS.REC.1401.070. A 29-year-old female patient in her first pregnancy, with one-year infertility and a history of taking the first course of letrozole and HCG under the supervision of a gynecologist in a private clinic, referred to the women's emergency room in the seventh week of pregnancy with complaints of vaginal bleeding. In the ultrasound that was performed a week before, a live fetus (6 weeks) with normal fallopian tubes was reported. In the initial physical examination, PR: 84/min, T: 37°C, BP: 120/80 mmHg, and RR: 16/min, the abdomen was soft and without tenderness. In the vaginal examination, the cervix was closed. In the laboratory examination, hemoglobin was 11.2 g/dl, Hb: 32.2%, Plt:  $275 \times 10^3 \text{ mm}^3$ , WBC:  $11.1 \times 10^3 \text{ mcl}$ . In transvaginal ultrasound, a live fetus (CRL: 12 mm, equivalent to a gestational age of 7 weeks and three days) was seen with a small hematoma behind the gestational sac inside the uterine cavity. In the vicinity of the left ovary, another gestational sac containing a live fetus with a gestational age of 7 weeks and three days was reported. The right adnexa had normal view. No free fluid was seen inside the pelvis (Figure 1). The patient was diagnosed with heterotopic pregnancy (live intrauterine pregnancy, live fetus in the left tube) and underwent laparoscopic surgery under general anesthesia. During surgery, the left tube contained a mass of about 5 cm that was bleeding from the fimbria region (Figure 2). In the ampulla part of the right tube, a mass of about 2 cm was evident without

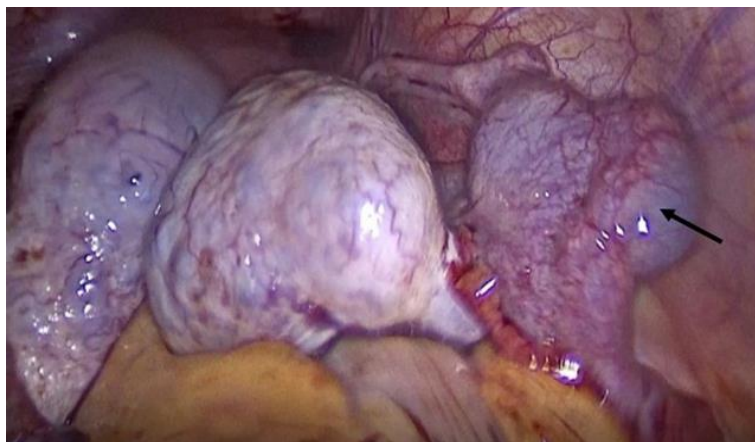
sign of rupture or bleeding (Figure 3). The ovaries on both sides were larger than normal and contained multiple cysts with the appearance of Ovarian Hyperstimulation Syndrome (OHSS). Mild free fluid was seen in the pelvis.



**Figure 1. Transvaginal ultrasound, live intrauterine (A) and ectopic pregnancy in the left adnexa (B)**



**Figure 2. Ectopic pregnancy in the left tube during laparoscopic surgery**



**Figure 3. Ectopic pregnancy in the right tube during laparoscopic surgery**

Due to the nulliparity of the patient and the simultaneous presence of a live fetus in the uterus, it was not possible to perform many treatments such as the administration of systemic methotrexate, salpingostomy and patient follow-up with serial beta-hCG test or definitive treatment (bilateral salpingectomy). Therefore, considering these conditions, it was decided to perform a left salpingectomy and preserve the right tube (salpingostomy). The pathology report confirmed the presence of placental villi in the sample of both fallopian tubes. In the ultrasound after the surgery, a live fetus was reported in the uterus (with a CRL of 16 mm, equivalent to a gestational age of 8 weeks). The patient was treated with vaginal progesterone suppository 400 mg daily and was discharged two days after the surgery in good general condition. One week after the surgery, in the control ultrasound, a fetus without a heartbeat (equivalent to 7 weeks and six days) was observed inside the uterine cavity. The patient was diagnosed with missed abortion and underwent uterine curettage surgery. Pathology confirmed the presence of placental villi. Then, to preserve the tube on one side and the possibility of stable ectopic pregnancy, the human chorionic gonadotropin was measured serially and continued until it became negative (three weeks after surgery).

## Discussion

In this reported case, the patient got pregnant without going to the infertility center and after taking ovulation induction medications, and the pregnancy occurred simultaneously inside the uterus and in both fallopian tubes, but the delay in diagnosis led to the loss of the fallopian tube and also the pregnancy was intrauterine, which is considered an irreparable damage due to the young age and nulliparity of the patient. The diagnosis of heterotopic pregnancy is still a challenging issue despite the progress in diagnostic techniques (9, 10). Since the serial beta-hCG test does not help in the diagnosis of this type of pregnancy, early diagnosis of this type of pregnancy is difficult, therefore, in patients with risk factors even if an intrauterine pregnancy sac is seen, it is recommended to perform a transvaginal ultrasound with a high resolution for accurate visualization of the adnexa (11, 12).

The treatment of heterotopic pregnancy depends on various factors such as the severity of the patient's symptoms, the number of previous pregnancies, the location of the ectopic pregnancy, the viability of the intrauterine fetus, the skill of the surgeon, the facilities of the treatment center, and the social and economic conditions of the patient (13). Treatment measures in patients with heterotopic pregnancy with a live intrauterine fetus should be performed with minimal invasiveness. Since systemic methotrexate treatment is contraindicated due to embryotoxicity, laparoscopy (salpingectomy or salpingostomy) is the treatment of choice in these patients (14). In the present case, the patient underwent laparoscopy with the initial diagnosis of heterotopic pregnancy (live intrauterine fetus and live fetus in the left tube), but during surgery, ectopic pregnancy was seen in both tubes simultaneously. This problem showed that due to the inconsistency of ultrasound findings and observations during surgery, it is necessary to consider the possibility of bilateral ectopic pregnancy in patients with significant risk factors. The selected treatment options in this patient could be bilateral salpingectomy, unilateral salpingectomy, and contralateral salpingostomy with follow-up of the patient with serial beta-hCG test, but what made decision-making difficult in this patient was the simultaneous presence of a live fetus in the uterus and it was not possible to follow up the patient with serial beta-hCG test - $\beta$ . On the other hand, due to the history of infertility, it was important to preserve the fallopian tube, and so far, no valid guidelines are available for the management of these patients. In the present case, the patient had a missed abortion one week after the surgery. In previous studies, it has been shown that one out of three heterotopic pregnancies lead to abortion, which is much higher than the rate of abortion in normal intrauterine pregnancy (4).

In the case reported by Katler et al., the patient underwent salpingectomy on one side and salpingostomy on the opposite side and single dose methotrexate was prescribed due to bilateral heterotopic pregnancy in the tubes, following the use of assisted reproductive methods. Since the intrauterine pregnancy in this patient lacked a fetal pole and a yolk sac, it was possible to prescribe methotrexate, but in the present study, due to the presence of a live fetus in the uterus, the administration of this drug was prohibited (9).

In the report presented by Shi et al., a patient with a history of having a live child with the diagnosis of heterotopic pregnancy underwent laparoscopy, during which a bilateral salpingectomy was performed due to the observation of ectopic pregnancy in both tubes (6). The difference between the type of surgery in this study and our case was that in Shi's report, the patient had a living child, so it was possible to perform a bilateral salpingectomy, but in our patient's case, due to nulliparity, it was valuable to preserve the fallopian tube. It was decided to perform salpingectomy on one side and salpingostomy on the opposite side. Due to the preservation of a fallopian tube, there will still be a chance of spontaneous pregnancy in the future for this patient.

The above case report shows the importance of referring infertile patients to infertility centers in order to benefit from appropriate methods of assisted reproduction and careful control in order to avoid unwanted complications (hyperstimulation syndrome, heterotopic pregnancy, etc.).

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