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Case Report
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# Heterotopic Pregnancy: Successful Treatment with Twin Delivery

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## Abstract

Heterotopic pregnancy is a rare complication of *In Vitro* Fertilization (IVF) treatment cycles. The diagnosis may be delayed until complications occur. The aim of treatment is to extract the ectopic gestational sac while preserving the intrauterine pregnancy. We present the case of a 42-year old primipara with heterotopic pregnancy: Intrauterine twin gestation and an ectopic pregnancy, following IVF treatment. She had exploratory laparotomy with left partial salpingectomy. She subsequently had an emergency cesarean section at 32 weeks gestation following preterm labor with spontaneous rupture of membranes. The outcome was a successful twin delivery. Diligent ultrasonographic assessment to rule out ectopic gestation is advised in all cases of IVF conceptions, even if an intrauterine gestation is confirmed.

**Keywords: IVF; Heterotopic; Ectopic; Twins**

## Introduction

Ectopic pregnancy is a recognized complication of IVF treatment. The first documented pregnancy following IVF was a tubal ectopic pregnancy [1]. High resolution transvaginal imaging coupled with serum human Chorionic Gonadotropin (hCG) measurements have led to improved and early detection of ectopic pregnancy [2,3]. Heterotopic pregnancy is the condition in which an intrauterine pregnancy coexists with an ectopic pregnancy. It is one of the most life-threatening types of ectopic pregnancies [4]. With an incidence of about 1 in 3,600 pregnancies following assisted conception [5].

The aim of treatment is to extract the ectopic gestational sac while preserving the intrauterine pregnancy. We present a case of a heterotopic pregnancy that was successfully managed with the delivery of a set of twins.

## Case Presentation

Mrs. CU was a 42-year old para 1+2 lady who first presented on the 6th of February 2018, following her inability to achieve conception after 10 years of marriage. Her only living child was conceived before marriage in 2008. She equally had two previous premarital terminations of pregnancies at 6 weeks gestation with no sequela. Mrs. CU menstruated for 5 days in regular cycles of 28 days, no menorrhagia or dysmenorrhea. She was 1.7 meters tall and weighed 93 kg. Ultrasound scan revealed multiple intramural and subserous fibroids, largest 2.9 cm × 2.2 cm, 2.1 × 1.8 cm, and 1.2 cm × 1.1 cm. Other investigations including seminal fluid analysis and hysterosalpingography were normal.

On account of her age, she was counseled to have IVF treatment. The couple had their first IVF treatment cycle in April of 2018. Following the long protocol of Pituitary desensitization and controlled ovarian stimulation, seven oocytes were retrieved. A day 3 transfer of 3 embryos did not result in conception. A repeat IVF cycle in March 2019 was also unsuccessful. A donor oocyte cycle was performed in October 2019. Three embryos were transferred without difficulty on day 3. A subsequent pregnancy test after 2 weeks was positive. Transvaginal ultrasound scan done 2 weeks later revealed a gravid uterus with two gestational sacs, each containing a viable fetus, Crown Rump Length (CRL) approximately 6 weeks and 3 days, expected date of delivery was 6th of July 2020. There were associated multiple intramural and Subserous uterine fibroids, the largest measuring 5.1 cm × 5.2 cm, 3.6 cm × 4.5 cm, 4.3 cm × 4.1 cm, and 2.3 cm × 1.3 cm. Mrs. CU presented 4 weeks later with complaints of left sided lower abdominal pains of 8 days duration. The pain was described

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**Figure 1**:

as piercing and intermittent, no associated dysuria, no vomiting or dizziness. On physical examination, she appeared markedly pale with a pulse rate of 108 beats per minute, regular with good volume. Her blood pressure measured 118/78 mmHg. Transvaginal ultrasound scan revealed a gravid uterus with multiple fibroids; there were two gestational sacs each with a viable fetus, CRL approximately 10 weeks and 2 days. A viable extrauterine pregnancy was seen in the left adnexium, CRL 9 weeks and 6 days (Figure 1). A diagnosis of heterotopic pregnancy was made.

Mrs. CU was immediately admitted and resuscitated with normal saline. She was counseled on treatment modalities and consent for exploratory laparotomy was subsequently obtained. Urgent hemoglobin concentration was 7.6 g/dl. Blood was collected for grouping and cross matching of 2 units of whole blood. The anesthetist was summoned and an emergency laparotomy was performed under general anesthesia. Intravenous ceftriaxone was administered prophylactically. Access into the abdominal cavity was *via* a Pfannenstiel incision. Findings at surgery included a hemoperitoneum of 1.5 liters, left ruptured ampullary ectopic pregnancy, uterus 16 weeks size with multiple fibroids. With minimal handling of the uterus, a left partial salpingectomy was performed. She was transfused with 2 units of blood and the abdominal wall closed in layers. The suppository progesterone was replaced with intramuscular injection of progesterone 50 mg daily for 7 days. She had a stable postoperative period. Her hemoglobin concentration on the 3rd postoperative day was 10.3 g/dl. She recommenced suppository progesterone on the 7th postoperative day for 2 weeks and was discharged on the 10th postoperative day, following ultrasound scan demonstration of a viable intrauterine twin gestation. Mrs. CU registered for Antenatal Care (ANC) at 16 weeks gestation. She had an uneventful ANC until 32 weeks gestation when she presented with spontaneous drainage of liquor and associated contractions. Speculum examination confirmed liquor drainage and ruled out cord prolapse. Abdominal ultrasound scan revealed viable twin gestation with significant reduction in liquor volume of the leading twin; estimated fetal weights were 1.95 and 2.0 kg for twin 1 and 2 respectively. Intramuscular dexamethasone 12 mg 12 hourly was commenced but the contractions increased in intensity and duration, and a decision was taken to perform an emergency Cesarean section. Mrs. CU was delivered of a set of twins. Twin 1 was female and weighed 2.0 kg while twin 2 was male and weighed 2.15 kg, both had good APGAR scores. Both twins were managed in the intensive care baby unit before being discharged home with their mother after 6 days. They were last seen on the 20th of June 2020. Mother and babies were doing well, twin 1 weighed 2.8 kg and twin 2 weighed 3.6 kg.

## Discussion

Heterotopic pregnancy is a rare occurrence following natural conception. It is frequently associated with IVF treatment cycles where more than one embryo is transferred [6]. Mrs. CU had IVF treatment following a 10-year history of infertility, with the transfer of three embryos. The diagnosis was delayed as there were no initial symptoms, coupled with the finding of viable twin gestation at the initial transvaginal scan assessment. The onset of left sided lower abdominal pains and associated anemia and tachycardia, led to the suspicion of a heterotopic pregnancy. This was confirmed by a transvaginal ultrasound scan. Ectopic pregnancy is rarely considered in the presence of an intrauterine gestation, leading to delay in diagnosis until complications occur [7]. Mrs. CU already had a complication, as the gestational sac had ruptured, before the diagnosis was made. It is possible that the diagnosis in this case might have been made earlier if an ectopic gestational sac had been diligently searched for at the initial ultrasound scan assessment, despite the absence of symptoms. Since the gestational sac had already ruptured, it was no longer possible to offer any non-surgical treatment modality. These would have involved injecting potassium chloride directly into the fetal heart of the ectopic gestation [8]. Another option would have been the local injection of hyperosmolar glucose. There is however a potential risk of persistent trophoblastic tissue with any of the above options [7]. Methotrexate is not an option in cases of heterotopic pregnancy on account of its toxicity to the surviving fetus [9]. Mrs. CU had an emergency laparotomy and salpingectomy performed. Case series and review articles suggest that laparoscopic salpingectomy is a viable treatment option [10]. Controversies still exist regarding which surgical method is better [7]. Laparoscopy has the advantage of less intra-operative blood loss, lower analgesic requirement, including shorter hospital stay with early return to work. Vilos reported intrauterine growth restriction in the surviving fetus following laparoscopic treatment of the ectopic pregnancy [11]. Other reports indicate that the long operative time coupled with the altered carbon dioxide environment may lead to adverse effects in the baby and mother [12]. Mrs. CU had a laparotomy performed as it was faster to mobilize the necessary instruments for laparotomy at that time of the day at our facility. During surgery, care was taken not to

irritate the uterus. The right adnexium was carefully inspected before performing a left salpingectomy. Progesterone was continued post-operatively in order to induce uterine relaxation and inhibit uterine contractions.

## Conclusion

Heterotopic pregnancy is a recognized complication of IVF treatment cycles. Diligent ultrasonographic assessment to rule out ectopic gestation is advised in all cases of IVF conceptions, even if an intrauterine gestation is confirmed.

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