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## Case Report

# Heterotopic pregnancy: a case report

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## ABSTRACT

Heterotopic pregnancy is a potentially life-threatening condition if left undiagnosed. Early pregnancy ultrasound is a key diagnostic tool in all symptomatic cases or where there are risk factors and clinical suspicion. Multi-professional discussion is essential in decision making. As this patient miscarried the intrauterine pregnancy, and the ectopic pregnancy appeared to be resolving spontaneously, no further laparoscopic intervention was required. Only monitoring  $\beta$ -hCG levels till it reached the non-pregnant levels helped to confirm complete resolution.

**Keywords:** Heterotopic pregnancy, Intrauterine pregnancy, Ectopic pregnancy, Ultrasound scan,  $\beta$ -hCG

## INTRODUCTION

Heterotopic pregnancy is a rare and potentially life-threatening condition when there is an intra-uterine and extra-uterine (i.e., ectopic) pregnancy occurring simultaneously and early pregnancy Ultrasound scan needs to be offered to all women presenting after assisted reproductive technologies, in women with an intrauterine pregnancy complaining of persistent pelvic pain, and in those women with a persistently raised  $\beta$ -hCG level following miscarriage or termination of pregnancy. A higher-than-expected level of serum  $\beta$ -hCG in relation to gestational age may increase the suspicion of heterotopic gestations.<sup>1</sup> The management approach adopted for heterotopic pregnancy should incorporate the prognosis of the intrauterine pregnancy and the wishes of the woman regarding its final outcome.<sup>1</sup> The estimated incidence in the general population is estimated at 1:30,000 (for a naturally conceived pregnancy).<sup>2</sup> The incidence among patients with assisted reproduction is higher and is thought to be around 1-3:100. Due to this, the overall incidence has increased over the years.<sup>2</sup>

A high index of suspicion is needed in women with risk factors for an ectopic pregnancy ART (Artificial Reproductive Technique), especially IVF (*in vitro* fertilization) in fresh, non-donor cycles or multiple embryo transfer. Also, a history of extrauterine pregnancy, previous surgery (including salpingectomy, salpingostomy, or reconstructive tubal surgery), and a history of pelvic inflammatory disease predispose to heterotopic pregnancy, and in low-risk women with an IU (intrauterine) gestation who have free fluid with or without an adnexal mass or in those presenting acute abdominal pain and shock.<sup>3,4,7,8</sup> The majority of cases are diagnosed in the first trimester.<sup>7,8</sup>

As heterotopic pregnancy is a potentially life-threatening condition, the effective management of ectopic pregnancy with an intention to continue with intrauterine pregnancy (if the woman's wishes to), must be discussed in detail and managed accordingly. In this case report we are presenting how we managed a heterotopic pregnancy taking in view factors like patient's clinical presentation, her views of continuing intrauterine pregnancy. Also, how we managed

her miscarriage and ectopic pregnancy has been discussed in detail.

## CASE REPORT

The case details and images are from the clinical workstation (CWS) of our hospital.



**Figure 1: Ultrasound images showing an intrauterine sac containing no yolk sac; described as a possible pseudo-sac. The right ovary was demonstrably normal. The left ovary contained a 2.5×1.7 cm double ring structure. Within the structure there appeared to be a yolk sac and foetal pole with a Crown-Rump length (CRL) of 7.3 mm (6 weeks gestation). Adjacent was a trace of free fluid.**



**Figure 2: Transvaginal scan (TVS) showing an intrauterine sac containing no yolk sac; described as a possible pseudo-sac. The left ovary contained a 2.5×1.7 cm double ring structure. Within the structure there appeared to be a yolk sac and foetal pole.**

We present a very interesting case of a 35-year-old woman in her second pregnancy, with a history of one first trimester miscarriage and endometriosis. She was referred to the Early Pregnancy Assessment Unit (EPAU) following spontaneous conception, at six weeks gestation by menstrual cycle, with left lower abdominal pain.

An ultrasound scan showed findings consistent with an ectopic pregnancy (Figure 1 and 2). Blood tests

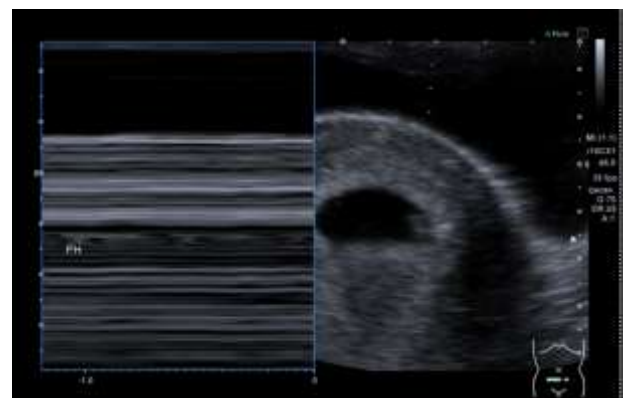
demonstrated a Hb (haemoglobin)-121 g/dl,  $\beta$ -hCG (beta-human chorionic gonadotropin)-26117 IU/l and serum progesterone-96 nmol/l.



**Figure 3: Ultrasound images showing an intrauterine sac. The right ovary appears normal. The left ovary appears to contain a cystic structure, containing a foetal pole.**



**Figure 4: A single intrauterine pregnancy with a CRL of 8 mm (6 weeks and five days gestation).**



**Figure 5: Foetal cardiac activity present.**

The patient was admitted, and an emergency diagnostic laparoscopy performed, during which the uterus was not instrumented as per RCOG GTG 21.<sup>1</sup> Laparoscopic findings demonstrated no ectopic pregnancy; a full inspection of all the pelvic organs found a mobile uterus, clear and adhesion-free ovarian fossa, mobile fallopian

tubes with a normal appearance, a normal left ovary and a slightly bulky but otherwise normal right ovary. A small endometriotic spot was found on the right pelvic wall. The patient was discharged home the next day followed up two weeks later in the EPAU. This was in contrast to most of the cases where laparoscopy could find an ectopic pregnancy.<sup>4</sup>

The patient attended EPAU two weeks later for ultrasound (Figure 3-6).



**Figure 6: The left ovary appeared to contain a cystic structure, containing a foetal pole. CRL=6.6 mm=6 weeks 3 days. No FH (foetal heart).**



**Figure 7: Ultrasound image showing a live single intrauterine pregnancy with a CRL of 19.1 mm (8 weeks and 4 days) with no foetal cardiac activity, consistent with a missed miscarriage. Small areas of haemorrhage were seen adjacent to the intrauterine sac.**

Three consultants reviewed the ultrasound images. Their opinion was that the images either showed a left ovarian cyst, or an ectopic pregnancy unchanged in size from the previous ultrasound scan. Management options were considered including surgical removal of the left ovarian mass. However, there was concern that if the mass were a corpus luteum cyst it could negatively affect the live intrauterine pregnancy. The decision was made to recommend conservative management, with strict worsening advice and close surveillance. The patient was

discharged home with advice to present urgently in the event of any new symptoms including vaginal bleeding, increased abdominal pain, diarrhoea. Follow up scan was booked for two weeks later in the EPAU.



**Figure 8: Ultrasound image showing the left sided ovarian mass has decreased in size and contained a foetal pole with a CRL of 3.5 mm (5 weeks and 3 days). No free fluid was identified.**



**Figure 9: Ultrasound image showing retained products of conception within the uterine cavity (22x12x19 mm). The right ovary is normal. No free fluid.**



**Figure 10: The left-sided ectopic pregnancy gestational sac has reduced in size (20 mm) with no foetal pole visible.**

Two weeks later the ultrasound scan demonstrated persistence of the left sided ovarian mass and a missed miscarriage of the intrauterine pregnancy (Figure 7 and 8).

Surgical evacuation of the uterus was recommended for the management of the miscarried pregnancy. The procedure was uncomplicated with minimal blood loss. A further ultrasound scan was booked for two weeks for monitoring of the left-sided ectopic pregnancy. The Consultants recommended conservative management to be appropriate, given the reduction in size of the mass. Blood tests demonstrated Hb 120 g/dl and  $\beta$ -hCG 134361 IU/l.

The patient experienced continuous moderate vaginal bleeding following surgical evacuation of the uterus but remained clinically stable. A further ultrasound scan was performed two weeks later (Figure 9 and 10). The patients were Hb-118 g/dl and  $\beta$ -hCG 924 IU/l.

Ongoing management was through serial  $\beta$ -hCG measurements. Repeat bloods tests at 48 hours demonstrated a significant drop in  $\beta$ -hCG to 464 IU/l. The blood test was repeated seven days later and the  $\beta$ -hCG was 124 IU/l, seven days further it was 46 IU/l, and 19 IU/l seven days after that. She was discharged at that point with the recommendation of an early ultrasound scan in any future pregnancy. The patient's symptoms of vaginal bleeding and pain steadily resolved throughout this time.

## DISCUSSION

Heterotopic pregnancy should be considered in all women presenting after assisted reproductive technologies, in women with an intrauterine pregnancy complaining of persistent pelvic pain, and in those women with a persistently raised  $\beta$ -hCG level following miscarriage or termination of pregnancy. A higher-than-expected level of serum  $\beta$ -hCG in relation to gestational age may increase the suspicion of heterotopic gestations.<sup>1</sup>

Heterotopic pregnancy is often missed because of the detection of intrauterine sacs; therefore, comprehensive, and systematic USG is needed, especially when there is ectopic pregnancy suspicion or when there is free fluid in the pelvis.<sup>8</sup>

The impact of management decisions for the ectopic pregnancy upon the intrauterine pregnancy must always be considered.<sup>5</sup> Factors such as the prognosis for the intrauterine pregnancy, and the patient's pregnancy intentions may affect ongoing management.<sup>1</sup> The ectopic component is usually treated surgically, and the intrauterine pregnancy is expected to continue normally, that make the second challenge after diagnosis.<sup>4,5</sup>

Expectant management of the ectopic pregnancy is an option in heterotopic pregnancies where the ultrasound findings are of an ectopic pregnancy with no foetal cardiac activity, no evidence of intra-abdominal bleeding and haemodynamic instability.<sup>1</sup>

Methotrexate should only be considered if the intrauterine pregnancy is nonviable, or if the woman does not wish to continue with the pregnancy. Local injection of potassium chloride or hyperosmolar glucose with aspiration of the sac contents is an option for clinically stable women. This could minimise the risks posed to the coexisting intrauterine pregnancy by surgical approaches.<sup>1</sup>

Surgical removal of the ectopic pregnancy is the method of choice for haemodynamically unstable women and is also an option for haemodynamically stable women. Care should be taken at the time of laparoscopy to avoid cannulation or manipulation of the uterus.<sup>1</sup>

An ultrasound scan at around six weeks gestation is recommended for future pregnancies, because of the increased risk of recurrence of ectopic pregnancy.

## CONCLUSION

Heterotopic pregnancy is a potentially life-threatening condition if left undiagnosed. Early pregnancy ultrasound is recommended in all symptomatic cases or in cases with clinical suspicion where there are risk factors and in all invitro fertilisation and embryonic transfer, is essential. Multi-professional discussion may help in the challenging decision making often involved in such cases; in this case weighing the benefits and risks of a repeat laparoscopy against conservative management and close surveillance. As this patient miscarried the intrauterine pregnancy, and the ectopic pregnancy appeared to be resolving spontaneously, no further laparoscopic intervention was required. Monitoring  $\beta$ -hCG levels till at non-pregnant levels helped to confirm complete resolution.

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