# Successful Laparoscopic Management of a Spontaneous Heterotopic Pregnancy

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**Heterotopic pregnancy is defined as the simultaneous occurrence of extra-uterine and intra-uterine pregnancy. It is an increasingly common complication of assisted reproductive technology. We present a case of spontaneous heterotopic pregnancy. Laparoscopic left salpingectomy was performed for the left tubal pregnancy while the intra-uterine pregnancy continued and ended up in a live birth by caesarean delivery at term.**

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## Introduction

It is commonly thought that the presence of an intra-uterine pregnancy excludes the diagnosis of ectopic pregnancy because heterotopic pregnancy is extremely rare. This may be reasonable with the estimated incidence of heterotopic pregnancy at 1 in 30 000 in the past. However recent studies have noted an increase in incidence to 1 in 4000 to 1 in 8000, with higher numbers in patients who have undergone fertility augmentation. In fact the incidence of heterotopic pregnancy can reach up to 1 in 100 in patients who have assisted reproduction[1]. Thus heterotopic pregnancy should always be considered in patients presenting with signs and symptoms of miscarriage.

## Case Report

A case of spontaneous heterotopic pregnancy presenting with abdominal pain at 8 weeks and 2 days of gestation is reported. The diagnosis was made by ultrasonography after admission. Emergency laparoscopic left salpingectomy was performed and the normal intra-uterine pregnancy continued till term. Emergency caesarean section was performed for non-reassuring cardiotocography. A normal healthy child was delivered.

The 32-year-old patient was in her second pregnancy. She had one silent miscarriage in 1998. She enjoyed good past health otherwise. There was no history of pelvic inflammatory or sexually transmitted diseases. She had been married for 1 year and this was a planned spontaneous pregnancy.

She had regular 28-day menstrual cycle with normal flow lasted for 7 days. Her last menstrual period was on 26 May 2005. The first positive pregnancy was confirmed on 1 July 2005 at 5 weeks' gestation. She had ultrasound scanning by a private doctor on the day of admission at 8 weeks and 2 days gestation. She complained of sudden onset of severe lower abdominal pain at 07:00 on the day of admission. Dull pain over the lower abdomen was noted without radiation. There was no vaginal bleeding. She had hypovolaemic shock with the blood pressure of 80/50 mm Hg while she was in the clinic. Pelvic ultrasound scanning showed twin pregnancy with the suspicion of cervical pregnancy. She was then referred to the hospital for further management.

She was admitted to the accident and emergency department at 19:13. Her general condition was good. Her blood pressure was 90/70 mm Hg with a pulse rate of 77 beats per minute. She was given intravenous fluid replacement and was transferred to the gynaecology ward 30 minutes later. The cardiovascular and respiratory systems were normal. There was mild tenderness over the lower abdomen with no rebound tenderness nor guarding. The cervix was normal and the uterus was 8 weeks' gravid size.

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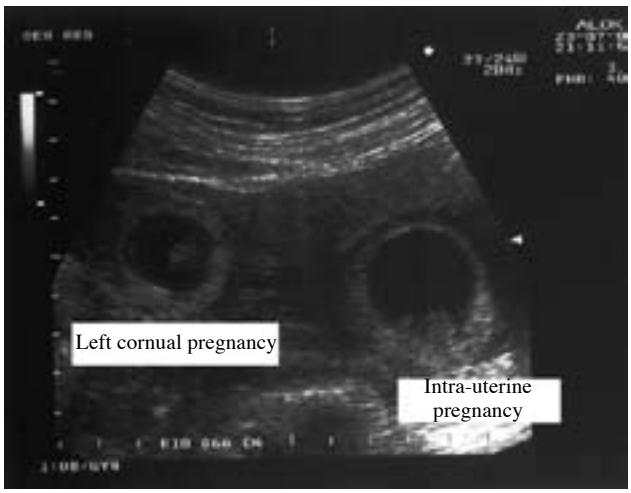


*Figure. Sagittal transabdominal scan demonstrating two viable heterotopic pregnancies at 8 weeks and 2 days gestation*

Pelvic ultrasound scanning showed two viable pregnancies both corresponding to her date. There was one foetus at the lower part of pelvis which was initially thought to be cervical pregnancy but actually belonged to the normal intra-uterine pregnancy. The other viable pregnancy lying above the lower one was a left tubal pregnancy. It was enclosed by blood clot mimicking an intra-uterine pregnancy (Figure). There was a small amount of free fluid in the pouch of Douglas. The diagnosis was heterotopic pregnancy with ruptured left tubal pregnancy. Other differential diagnoses including ovarian pregnancy, cornual pregnancy, or pregnancy in double uterus were also considered.

The patient was stabilised after fluid replacement and was advised for emergency laparoscopic surgery under general anaesthesia. Intra-operatively, the uterus was enlarged to 8 weeks' gravid size with 4x5 cm left tubal pregnancy at the ampullary region. Active bleeding occurred in the ruptured left tubal pregnancy and 800 ml of blood was drained from the peritoneal cavity. Laparoscopic left salpingectomy was performed with bipolar diathermy. The specimen was removed in endopouch. A tubal drain was inserted to the pouch of Douglas. The operation was smooth and the patient was discharge on postoperative day 4. Ultrasound scanning before discharge showed a small subchorionic haematoma in the intra-uterine pregnancy which resolved spontaneously. The pathology confirmed left tubal pregnancy with products of gestation in the pouch of Douglas.

The patient was referred to the antenatal clinic and had regular antenatal check-up as usual. Her antenatal course was uneventful. Serial ultrasound scans showed normal foetal growth. She was admitted at 40 weeks and 5 days of gestation complaining of decreased foetal movement. The cardiotocograph at admission showed foetal heart deceleration with spontaneous recovery. Cervical assessment showed the modified Bishop score of 1. Emergency lower segment caesarean section for non-reassuring cardiotocograph and unfavourable cervix was performed. A baby boy weighing 2.68 kg was born with good Apgar scores. The mother and baby were discharged on postpartum day 5. She was well at postnatal 8 weeks check-up. The baby was breast-fed. She planned to use condom for contraception. Possibility of future ectopic pregnancy was explained and she was advised to have early check-up in case of missed period.

## Discussion

Heterotopic pregnancy is the simultaneous occurrence of intra-uterine and extra-uterine pregnancy. Although the estimated theoretical incidence of heterotopic pregnancy is between 1/30 000 and 1/8000 pregnancies[2,3], the risk has increased dramatically with the widespread use of assisted reproduction techniques and ovulation induction therapies[4,5].

Early diagnosis and treatment of ectopic pregnancies have resulted in a dramatic decrease in maternal morbidity and mortality. It is the presence of the intra-uterine gestation that makes the diagnosis of a heterotopic pregnancy more difficult than other types of ectopic pregnancy. In other types of ectopic pregnancy, the serum beta–human chorionic gonadotropin (beta-hCG) tends to be lower than the normal intra-uterine pregnancy of the same menstrual age. Serial assays demonstrate a delayed doubling time. However, a heterotopic pregnancy demonstrates normal beta-hCG values due to the presence of the normal intra-uterine gestation. In other types of ectopic pregnancy, the index of suspicion is raised by the non-visualisation of an intra-uterine pregnancy when the beta-hCG exceeds a threshold level. Conversely, the presence of an intra-uterine gestational sac lowers the suspicion of an ectopic pregnancy. The visualisation of an intra-uterine gestation may result in less rigorous sonographic evaluation of the adnexae and a delayed or missed diagnosis of a heterotopic gestation[6]. Even with a high index of suspicion, most heterotopic

pregnancies were diagnosed after rupture of the ectopic pregnancy[1]. The positive predictive value of ultrasound in detecting an ectopic pregnancy has been reported to be between 50% and 95%[7]. The ultrasound findings of pelvic cystic or complex mass or fluid in the pouch of Douglas should arouse suspicion of a heterotopic pregnancy[8]. The definitive ultrasound diagnosis of a heterotopic pregnancy can only be made when both intra-uterine and extra-uterine foetal cardiac activity can be identified as seen in this patient[3].

Laparoscopic treatment is desirable in a stable patient as it is associated with less blood loss, lower analgesic requirements, shorter hospital stay, and quicker postoperative recovery. Unilateral salpingectomy is preferred to salpingotomy when the contralateral tube is healthy. Laparoscopic salpingotomy is associated with higher rate of persistent trophoblastic tissue and requires serial monitoring of serum beta-hCG levels which is not possible in the presence of intra-uterine pregnancy. Local injection of potassium chloride into the gestation sac either during laparoscopy or under ultrasound guidance is not an option because of the concurrent intra-uterine pregnancy. Methotrexate, both local and systemic, is not advisable for the same reason.

The patient should be advised that the incidence of recurrent ectopic pregnancy is similar to other forms of ectopic pregnancies—about 10%.

## Conclusion

Heterotopic pregnancy, once considered an extremely rare phenomenon, is becoming more common as the overall incidence of ectopic pregnancies continues to increase. The diagnosis of this potentially dangerous form of ectopic pregnancy is difficult and often delayed. Physicians should be aware of the possibility of heterotopic pregnancy especially in women of reproductive age presenting with acute abdominal pain. In patients at risk of ectopic pregnancy, rigorous ultrasonographic examination of the adnexae and pouch of Douglas should be performed even in the presence of an intra-uterine gestation. High-resolution transvaginal ultrasound transducers and meticulous technique should be used. Doppler ultrasonography may also be helpful. In patients with lower risk, the presence of an intra-uterine gestation reliably excludes the possibility of an ectopic pregnancy, but does not rule out heterotopic pregnancy as in this case. With early diagnosis and treatment of heterotopic pregnancy, 70% of intra-uterine pregnancies can reach viability[9].

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