

Case Report

Twin Ectopic Pregnancies; Two Case Studies of This Rare Phenomenon and Literature Review

Doaa Ahmed*, Sophie Kay, Tom Holland, Judith Hamilton, Josephine Sandwell

Guy's and St Thomas' NHS Foundation trust

Corresponding author: Doaa Ahmed, Guy's and St Thomas' NHS Foundation trust. Email doaa.ahmed@gstt.nhs.uk; Phone Number +447300447704

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Abstract

Background: Twin ectopic pregnancy, defined as the implantation of two embryos outside the endometrial cavity, is an exceptionally rare phenomenon, with an incidence of 1 in 20,000 to 250,000 pregnancies. Bilateral twin ectopic pregnancies are even rarer, with unilateral cases being more common. This report presents two cases of twin ectopic pregnancies.

Case Presentation: The first case involved a patient presenting to the Early Pregnancy Assessment and Gynaecology Unit (EPAGU) with suspected right-sided ectopic pregnancy on ultrasound. The patient, 16 days post-transfer of two day-5 blastocysts, had a serum β -human chorionic gonadotropin (β -hCG) of 1969 IU/L and progesterone level of 91 nmol/L. She had mild abdominal pain but was otherwise well. Ultrasound confirmed the right-sided ectopic pregnancy, and a left adnexal mass was also observed. Follow-up scanning identified an additional left tubal ectopic pregnancy with classic "ring of fire" Doppler appearance. After thorough counselling, the patient opted for bilateral salpingectomy. Histopathological analysis confirmed trophoblastic tissue in both tubes.

The second case involved a patient presenting with mild abdominal pain and spotting. Ultrasound revealed a right-sided ectopic mass with internal yolk sac and embryonic pole. Detailed examination identified a second gestational sac within the right tube, confirming a unilateral twin ectopic pregnancy. The patient chose surgical management, and intraoperative findings confirmed a complex right adnexal mass, including the interstitial area, which was excised. Histology confirmed chorionic villi in the specimen.

Discussion: Twin ectopic pregnancies are rare but present significant diagnostic and therapeutic challenges due to their atypical presentation. Accurate and timely diagnosis is crucial, as undetected cases can lead to life-threatening complications.

Conclusion: Twin ectopic pregnancy poses a significant diagnostic challenge. Effective management relies on early presentation, high clinical suspicion, detailed ultrasonography, comprehensive intraoperative examination of the contralateral tube, histological confirmation, and thorough patient counselling.

Keywords: twin ectopic pregnancy, bilateral, unilateral, salpingectomy.

Introduction

Ectopic pregnancies, occurring in approximately 1-2% of all pregnancies, most often involve the implantation of a blastocyst outside the uterine cavity, typically within the fallopian tube [1]. The commonest site for ectopic pregnancy is the fallopian tube (approximately 95%), with 3% being ovarian in location and the rest (<1%) abdominal or cervical. Twin ectopic pregnancies, however, are much rarer, occurring at an estimated rate of 1 in 20,000–250,000 pregnancies, accounting for around 0.5% of all ectopic pregnancies [2]. Unilateral cases are more common than bilateral, with bilateral twin pregnancies being the rarest form. The incidence of ectopic pregnancy has increased since the introduction of assisted reproductive techniques (ART) and tuboplasty [3]. If mismanaged, this is a potentially life-threatening problem [2].

Here, we present two cases of twin ectopic pregnancy diagnosed within a single month in our unit, discussing the clinical features, diagnostic approach, and management strategies.

Case 1: Bilateral Ectopic Pregnancy

35 years old patient presented to our Early Pregnancy Assessment and Gynaecology Unit (EPAGU) after being referred from her IVF unit due to concerns about a right ectopic pregnancy seen on ultrasound. She reported mild lower abdominal pain but had stable vital signs. She was on day 16 post-transfer of two day-5 blastocysts with serum HCG at 1969 IU/L and progesterone at 91 ng/ml. The patient had a history of left tubal ectopic pregnancy, managed conservatively before.

Initial imaging confirmed a right ectopic pregnancy (Figure 1) with a second mass in the left adnexa. A follow-up consultant scan revealed an echogenic ring with a gestational sac in the left

tube (Figure 2), showing the characteristic "ring of fire" on Doppler ultrasound, indicating a bilateral tubal ectopic pregnancy.

After comprehensive counselling, the patient chose Laparoscopic bilateral salpingectomy, considering her concerns about recurrent ectopic risk and her reliance on IVF. Intraoperative findings confirmed the bilateral ectopic pregnancies (Figure 3), and histology showed trophoblastic tissue in both tubes.

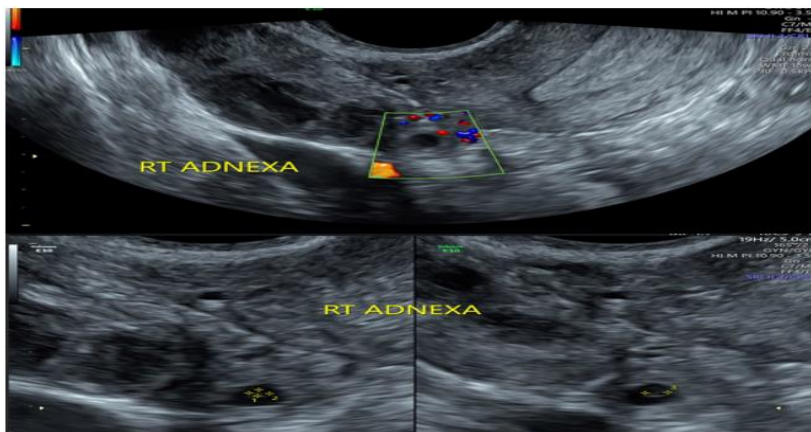


Figure 1: Ultrasound imaging of the right adnexal mass.

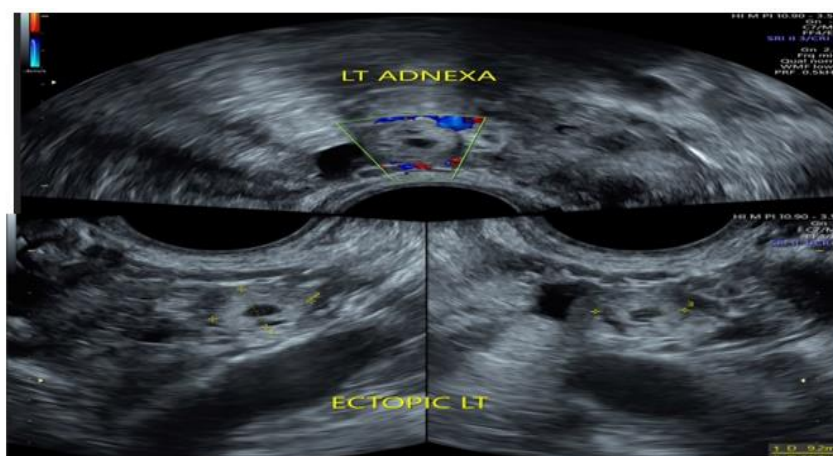


Figure 2: Ultrasound imaging of the left adnexal mass.

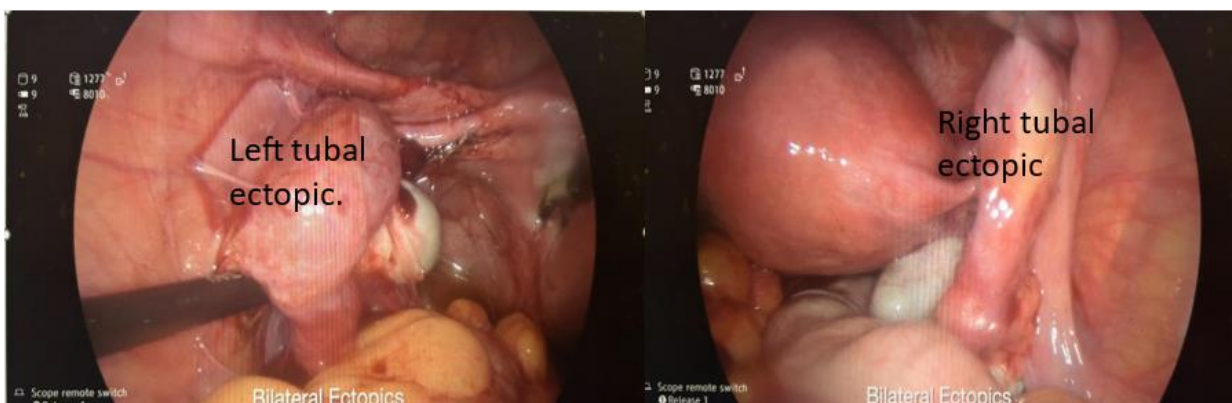


Figure 3: Intraoperative finding of the left and right adnexal masses (bilateral ectopic).

Case 2: Unilateral Twin Ectopic Pregnancy

The second patient, 31 years old Para 0 spontaneous pregnancy with no prior medical or surgical history, attended as a walk-in patient to our Early Pregnancy Assessment and Gynaecology Unit (EPAGU) with mild abdominal pain and spotting, having tested positive for pregnancy. Vital signs were stable. HCG

7,781 IU/L and progesterone 125 nmol/L. Ultrasound showed a right tubal ectopic pregnancy with two structures, one with a yolk sac and an embryonic pole, and a second gestational sac suggestive of a twin pregnancy (Figure 4).

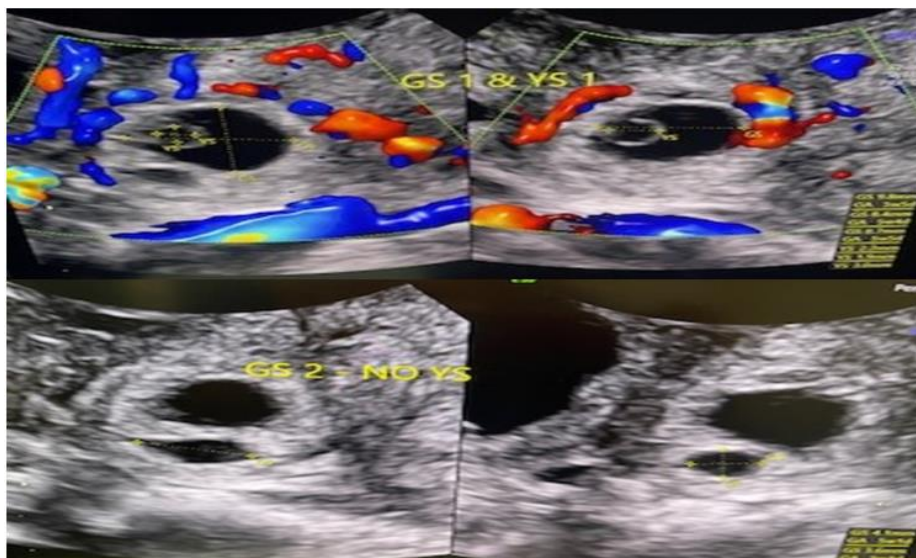


Figure 4: Ultrasound imaging of the Unilateral twin ectopic pregnancy in the right adnexa.

The patient consented to surgical management. Intraoperative ultrasound confirmed a right interstitial ectopic pregnancy, which was subsequently excised laparoscopically (Figure 5).

Histology validated the presence of chorionic villi in the specimen.

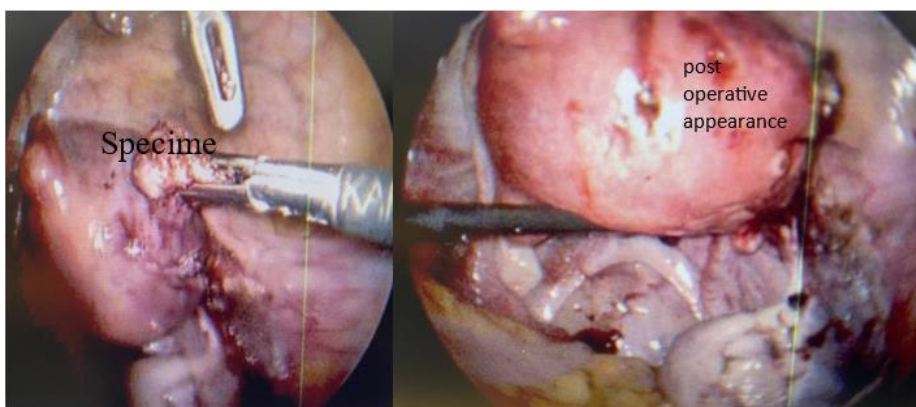


Figure 5: Intraoperative finding after excision of the unilateral twin interstitial ectopic pregnancy with the specimen on the left and post operative appearance on the right,

Discussion

Ectopic pregnancies, which comprise around 1% of all pregnancies, pose significant health risks for women of reproductive age and can lead to life-threatening complications if not treated properly [3,4]. The typical symptom triad includes abdominal pain, missed menstrual period, and abnormal vaginal bleeding. Since the 1970s, the incidence of ectopic pregnancies has been on the rise, with numerous associated risk factors [5]. These include pelvic inflammatory disease, a prior ectopic pregnancy, history of tubal surgery or conception following tubal ligation, and the use of fertility treatments or assisted reproductive technologies. Additional factors include intrauterine device usage, advanced maternal age, smoking, and congenital abnormalities of the uterus [4,6].

The most common type of twin ectopic pregnancy is the heterotopic (1/7000 pregnancies) in which both ectopic and intrauterine pregnancy occur simultaneously [7]. Based on case reports from the literature, monozygotic and monoamniotic are the most frequent

(95%) among unilateral twin tubal pregnancies, nonetheless a DNA analysis theorized that many of these might be dizygotic [8]. a bilateral tubal pregnancy is the rarest form of double-ovum twin pregnancy [4]. Some studies suggest that there is a delay in ovum transport and consequently implantation; conversely it has been also supposed.

that the larger size of the twin cell mass itself causes the transport retard [9]. which increases the risk of occurrence of monozygotic twin pregnancies. Monochorionic, monoamniotic twin pregnancies will be unilateral. However, if it is dichorionic, diamniotic it may be unilateral but may rarely present as a bilateral ectopic [10]. Some authors explain the twin ectopic pregnancy as a mere result of a bilateral ovulation. Just like in singleton ectopic pregnancy, fallopian tube is the most common site. Compared to a same sized singleton pregnancy, the chance of rupture for a twin ectopic one is lower as trophoblastic invasion may be less due to lower gestational age at presentation in the latter case. Being somehow similar and somehow different, the management of twin ectopic pregnancy can't just mirror the singleton one [11].

Literature suggests that Serum β -hCG can be much higher than the discriminatory zone of 1500-2000 mIU/ml valid for singleton ectopic pregnancy, due to the larger trophoblastic tissue [12]. Interestingly, the value can thus resemble to the ones of normal intrauterine pregnancies: in the absence of an intrauterine gestational sac and normally rising β -hCG the chance of a twin ectopic implant has to be considered, even if rare. However, our first case had HCG within the expected range, indicating this criterion may not be definitive.

The advent of transvaginal ultrasound (TVUS) has greatly enhanced early detection by allowing detailed visualization of the adnexa, distinguishing ectopic masses, and utilizing Doppler to identify specific vascular patterns. Colour and Pulse Doppler can also help to differentiate a non-specific adnexal mass. The colour flow pattern associated with an ectopic is variable, with a sensitivity of 73–69% and a specificity of 87–100% [13,14]. The colour flow pattern appears as randomly dispersed multiple small vessels showing high velocity and low impedance flow signals (resistive index (RI) of 0.38–0.45), the classical ring of fire sign. Colour Doppler imaging is most helpful when an ectopic pregnancy is not seen but is highly suspected. In such cases, colour Doppler imaging can be used to help find a mass surrounded by bowel loops [13]. Despite this, bilateral ectopic is often diagnosed intraoperatively due to a lower index of suspicion for contralateral tube involvement. More recently, it has been reported that 3D ultrasound may aid in the management of ectopic pregnancy, and it has proven useful in both initial diagnosis and in the follow-up of ectopic pregnancies [13,15,16].

The management of twin tubal ectopic pregnancies may be conservative, medical or surgical intervention and depends mostly on its clinical presentation, size, β -hCG levels and the state of the fallopian tubes at presentation, the main challenge being to identify and treat as early as possible those cases of ectopic pregnancy with the potential to cause serious morbidity and death, and at the same time minimize interventions in those destined to be resolved without causing any harm [17]. Ectopic pregnancies can resolve spontaneously through regression or tubal abortion. Based on literature review, methotrexate management in twin ectopic pregnancies can be challenging to monitor due to unpredictable drops in β -hCG levels, inconsistent ultrasound findings, and the risk of rupture in one of the ectopic. Many cases initially managed with methotrexate ultimately required surgical intervention. Surgical management, particularly laparoscopy, remains the gold standard and can be offered as a preferred option to all patients if they wish, rather than being restricted to those with contraindications to medical management or those who are hemodynamically unstable. [6,20]. Salpingectomy is the recommended treatment; however, salpingostomy can be considered for women with one tube who are wishing to preserve their fertility [6].

Recurrent ectopic pregnancies occur in 6-16% of women with previous history of ectopic [17] and it has been observed that many of women, for unknown reasons, fail to conceive even after successful reconstructive tubal surgery [18,19]. Therefore, counselling is very important. As in our case 1 patient chose Laparoscopic bilateral salpingectomy, considering her concerns about recurrent ectopic risk and her reliance on IVF. There is also need for good case selection to avoid offering conservative

surgery to patients less likely to seek proper medical care in future pregnancies [18].

Conclusion

Ruptured ectopic pregnancies remain a leading cause of maternal mortality in the first trimester. Proper management requires early detection, a high degree of clinical suspicion, detailed ultrasonography, careful intraoperative examination, histological confirmation, and effective patient counselling. Our cases underscore the value of these approaches in managing twin ectopic.

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