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Case Report

Heterotopic pregnancy: diagnostic challenges and management of ruptured ectopic pregnancies in the presence of a viable intrauterine pregnancy

Asma Arabi, Ghizlane Graiti*, Ibtissam Bellejdel, Zainab Chatbi, Hafsa Taheri, Hanane Saadi, Ahmed Mimouni

Department of Gynecology and Obstetrics of the University Hospital Center Mohhamed VI, University Mohamed first of Medicine and Pharmacy of Oujda, Morocco

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***Correspondence:**
Dr. Ghizlane Graiti,
E-mail: graitighizlane@gmail.com

ABSTRACT

Heterotopic pregnancy (HP), the simultaneous occurrence of intrauterine and ectopic pregnancies, is a rare but potentially life-threatening condition. It poses diagnostic and management challenges, especially in natural conception cycles. We report two cases of heterotopic pregnancies, highlighting the clinical presentation, diagnostic approach, and therapeutic management. These cases underscore the importance of maintaining a high index of suspicion for HP in patients presenting with pelvic pain or abnormal bleeding, even with confirmed intrauterine pregnancy.

Keywords: Heterotopic pregnancy, Intrauterine and ectopic pregnancies, Life-threatening condition

INTRODUCTION

Heterotopic pregnancy is a rare condition with an incidence of approximately 1 in 30,000 in spontaneous pregnancies.[1] However, the use of assisted reproductive techniques (ART) has significantly increased its occurrence, with an estimated incidence of 1 in 100 among IVF recipients.[1] Early recognition and diagnosis are essential to minimize maternal morbidity and mortality while preserving the viability of the intrauterine pregnancy. This report details two cases of heterotopic pregnancies that were successfully diagnosed and managed at our institution.

CASE REPORTS

Case 1

A 38-year-old patient, G3P2 (two living children delivered vaginally), with no significant medical history, presented at 6 weeks and 2 days of gestation (based on a precise last menstrual period) with a spontaneous conception. She was admitted to the emergency department in haemorrhagic shock, complaining of acute abdominal pain and minimal dark brown vaginal bleeding. On general examination, the patient was conscious and hemodynamically unstable, with a blood pressure of 90/60 mmHg and tachycardia at 130 bpm. Clinical findings included generalized pallor and abdominal guarding. On vaginal examination, Douglas' pouch tenderness was elicited, and the cervix was long, closed, and posterior.

Pelvic ultrasound findings

The ultrasound revealed an intrauterine pregnancy with a trophoblastic sac measuring 30 mm, consistent with 6 weeks of gestation, and a moderate hemoperitoneum.

Laboratory findings

Plasma β-hCG: 10,220 mIU/ml, hemoglobin: 10.5 g/dl, platelets: 200,000/mm³.

Surgical management

The patient was transferred to the operating room, after informed consent, for an exploratory laparotomy. Intraoperatively, approximately 500 ml of moderate hemoperitoneum was evacuated. The uterus was slightly enlarged, and the right adnexa revealed a ruptured tubal ectopic pregnancy. The left adnexa appeared normal. A right salpingectomy was performed, with preservation of the intrauterine pregnancy.

Postoperative course

The immediate postoperative course was uneventful, with clinical monitoring over 48 hours showing no complications. The patient resumed normal activities within 72 hours. A follow-up ultrasound at postoperative day 7 confirmed a viable intrauterine pregnancy with fetal cardiac activity.

Pregnancy follow-up

Trimester-by-trimester monitoring of the intrauterine pregnancy following salpingectomy confirmed normal progression. First-trimester ultrasound at 12 weeks of gestation showed normal fetal morphology and no nuchal abnormalities. Routine prenatal care, including folic acid supplementation, was maintained. At 22 weeks, second-trimester ultrasound revealed harmonious fetal growth, a normally inserted placenta, and normal amniotic fluid levels, anemia prevention was ensured. Third-trimester growth ultrasounds at 32 and 36 weeks confirmed normal biometry with no signs of intrauterine growth restriction (IUGR) or preeclampsia. The patient was counseled and prepared for vaginal delivery.

Outcome

At 39 weeks, the patient spontaneously went into labor. She had an uncomplicated vaginal delivery of a live newborn weighing 3350 g, with Apgar scores of 10/10. There were no maternal or neonatal complications.

Postpartum care

The postpartum period was uneventful, with rapid recovery and exclusive breastfeeding. At 6 weeks postpartum, follow-up confirmed proper uterine involution and well-healed surgical scars. The patient was counseled on contraception and future pregnancy planning.

Case 2

A 30-year-old patient, G2P1 (one living child delivered vaginally), presented to the emergency department at 7 weeks of gestation with severe abdominal pain, minimal dark brown vaginal bleeding, and dizziness. The pregnancy was spontaneous and without assisted reproductive technology.

On arrival, the patient was conscious but hemodynamically unstable, with a blood pressure of 80/50 mmHg, tachycardia at 140 bpm, and cold, clammy extremities. She exhibited generalized pallor and diffuse abdominal tenderness with guarding. On vaginal examination, the Douglas pouch was markedly tender, and the cervix was closed and posterior.

Investigations

A quick Pelvic ultrasound was performed confirming a viable intrauterine pregnancy (crown-rump length of 9 mm, corresponding to 7 weeks of gestation) with normal fetal cardiac activity.

A complex right adnexal mass measuring 45 mm was noted, highly suspicious for an ovarian ectopic pregnancy, along with a significant amount of free fluid in the abdomen, consistent with hemoperitoneum.

Laboratory findings

β-hCG was 18,000 mIU/ml. Hemoglobin was critically low at 7.2 g/dl, and platelets were 190,000/mm³.

Management

The patient was immediately resuscitated with intravenous fluids and two units of packed red blood cells before being taken to the operating room for an urgent laparotomy, after informed consent.

Intraoperative findings

Approximately 1000 ml of hemoperitoneum was evacuated. A ruptured ovarian ectopic pregnancy was identified involving the right ovary, with no viable ovarian tissue remaining. The uterus was slightly enlarged, containing an intact intrauterine pregnancy. The left adnexa appeared normal. A right oophorectomy was performed to control the bleeding while preserving the IUP.

Postoperative course

The patient remained under close observation in the intensive care unit for 24 hours, during which she received an additional blood transfusion. She stabilized hemodynamically and showed no postoperative complications. On postoperative day 7, a transabdominal ultrasound confirmed a viable intrauterine pregnancy with normal fetal cardiac activity.

Pregnancy follow-up

First trimester: At 12 weeks, ultrasound demonstrated normal fetal growth and nuchal translucency. Routine prenatal care, including iron and folic acid supplementation, was initiated.

Second trimester

At 22 weeks, a detailed morphology scan revealed normal fetal growth with a norm inserted placenta and normal amniotic fluid levels. Fetal movements were reported, and anemia was managed with continued supplementation.

Third trimester

Growth ultrasounds at 32 and 36 weeks confirmed normal biometry, with no signs of intrauterine growth restriction (IUGR) or preeclampsia. The patient was counseled on the mode of delivery and prepared for labor.

Outcome

At 39 weeks, the patient spontaneously went into labor and had an uncomplicated vaginal delivery of a healthy newborn weighing 3450 g, with Apgar scores of 10/10. Both mother and baby had an uneventful postpartum course.

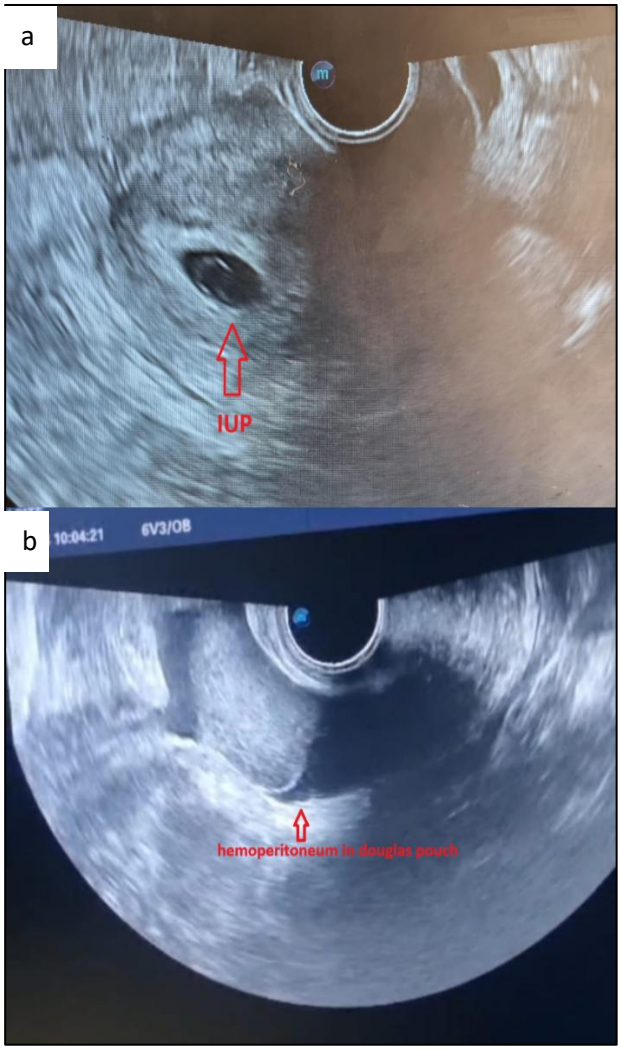

Figure 1 (a and b): Intrauterine pregnancy with moderate hemoperitoneum: ultrasound findings at 6 weeks of gestation.

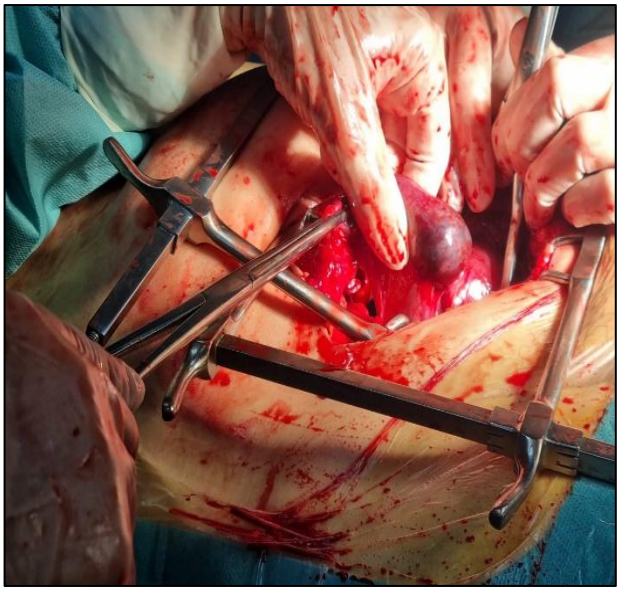

Figure 2: Tubal implantation in a case of heterotopic pregnancy.

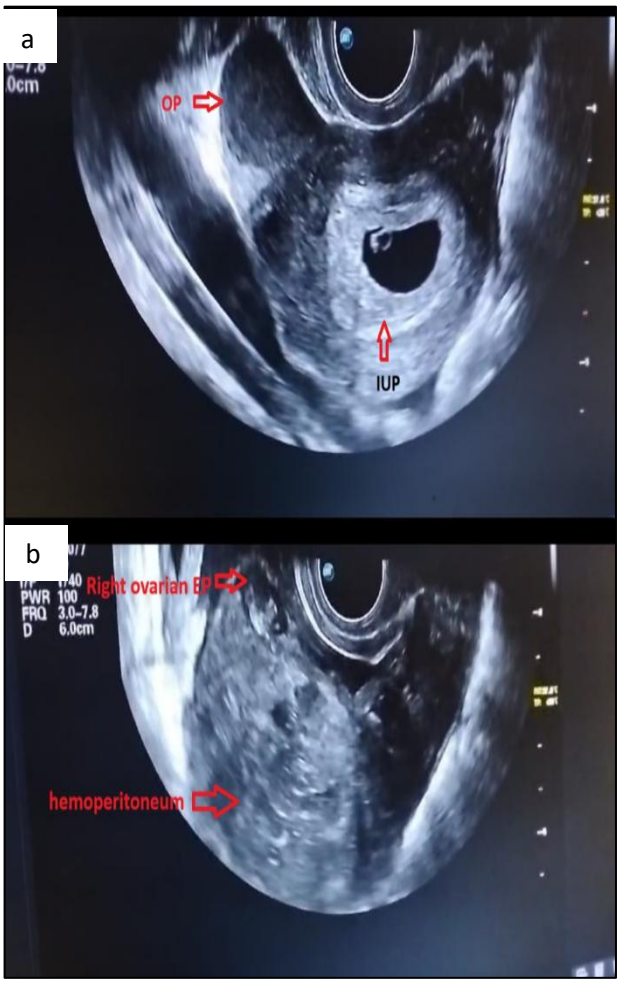

Figure 3 (a and b): Ultrasound highlighting the presence of both intrauterine (IUP) and ovarian pregnancies (OP) along with the hemoperitoneum.

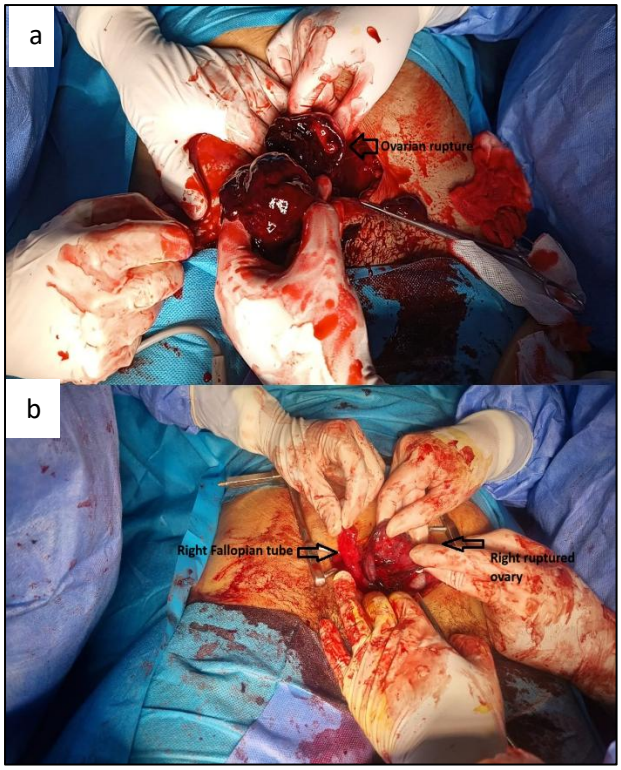

Figure 4 (a and b): Ovarian rupture in heterotopic pregnancy with intact right fallopian tube.

DISCUSSION

Heterotopic pregnancy, defined as the simultaneous presence of both an intrauterine pregnancy (IUP) and an ectopic pregnancy, is a rare but potentially life-threatening condition. It is often challenging to diagnose, particularly when a viable IUP is present, as the condition may be masked or misdiagnosed.[2] The clinical presentation of heterotopic pregnancy can be variable, with many cases remaining asymptomatic or exhibiting nonspecific symptoms. Common clinical manifestations include abdominal pain, adnexal mass, vaginal bleeding, and peritoneal irritation. Hypovolemic shock, usually secondary to rupture of the ectopic pregnancy, may also present.[3] In our cases, patients presented with severe abdominal pain and shock, suggestive of a ruptured ectopic pregnancy.

Diagnosing heterotopic pregnancy is particularly complex when a concurrent IUP is present. Standard diagnostic tools, such as serum β-hCG levels and transvaginal ultrasound (TVS), are useful for detecting ectopic pregnancies.[4] However, the presence of an IUP can distract from the diagnosis of the ectopic pregnancy, leading to a delay in recognition.

Furthermore, the ectopic pregnancy may be difficult to detect on ultrasound due to the IUP's interference, and the adnexal mass may be misinterpreted as a haemorrhagic corpus luteum or an ovarian cyst, especially in cases of ovarian hyperstimulation syndrome.[1,5,6] This diagnostic difficulty is further compounded by the fact that, in many cases of heterotopic pregnancy, the ectopic pregnancy does not present with the typical signs of rupture or haemorrhage in the early stages. Advanced imaging techniques, such as magnetic resonance imaging (MRI), can assist in evaluating adnexal masses or fluid accumulation when the clinical picture remains unclear.[6]

In the cases we present, both patients were diagnosed with ruptured ectopic pregnancies at different stages. One patient presented with hypovolemic shock secondary to an ovarian ectopic pregnancy, a rare and highly vascular form of ectopic pregnancy. The increased vascularity of the ovary makes it susceptible to rapid haemorrhage, which can result in a life-threatening clinical situation upon rupture.[7]

In this case, timely intervention through emergency laparotomy and oophorectomy was necessary to control the haemorrhage, and the IUP was preserved, resulting in a successful outcome with the delivery of a healthy newborn. The second case, involving a ruptured tubal ectopic pregnancy, also underscored the diagnostic challenges, as the IUP initially diverted attention away from the possibility of an ectopic pregnancy. However, with ultrasound findings and clinical suspicion, the rupture was identified, and the patient underwent successful surgical intervention to manage the bleeding and preserve the IUP.

These cases emphasize the importance of maintaining a high level of suspicion for heterotopic pregnancy, particularly in patients who have undergone assisted reproductive techniques (ART), as well as in spontaneous pregnancies that present with acute abdominal pain and shock.[1]

Surgical intervention remains the primary treatment for heterotopic pregnancies, particularly in cases of rupture. While laparoscopy is typically the preferred approach for stable patients, laparotomy may be required in cases of significant haemorrhage or shock, as seen in our patients.[8]

Notably, surgical intervention did not result in the loss of the IUP in our two cases however, other reports indicate that up to 40% of viable fetuses may be lost in such cases.[9] Methotrexate, commonly used to manage unruptured ectopic pregnancies, is not recommended for heterotopic pregnancies due to its potential to compromise the viability of the IUP.[10] Local injection of methotrexate or potassium chloride may be considered in certain cases, but the efficacy of these treatments remains controversial and they are not widely adopted in clinical practice.[11]

CONCLUSION

These cases underscore the critical need for early recognition, prompt intervention, and careful monitoring in the management of heterotopic pregnancies. Although the condition remains rare, its increasing prevalence in

ART pregnancies necessitates that clinicians remain vigilant in diagnosing and managing this complex condition. With appropriate treatment, favorable outcomes are possible, even in cases with severe clinical presentations. Furthermore, these cases emphasize the importance of considering heterotopic pregnancy in the differential diagnosis of any patient with acute abdominal pain and known IUP, particularly in those with risk factors such as ART.

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