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## Silent threat in early pregnancy: A case of spontaneous heterotopic pregnancy with tubal rupture

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### Abstract

**Background:** Heterotopic pregnancy (HP) is a rare but potentially life-threatening condition characterized by the coexistence of intrauterine and extrauterine pregnancies. While its incidence in natural conception is estimated at 1 in 30,000 cases, the risk increases considerably with the use of assisted reproductive technologies. Because its symptoms often mimic those of ectopic pregnancy, HP remains a diagnostic challenge, particularly in patients without recognized risk factors.

**Purpose:** To highlight the silent yet serious threat of spontaneous heterotopic pregnancy in early gestation, illustrated by a case of tubal rupture in a natural conception.

**Method:** A descriptive case report of a 43-year-old multigravida woman who presented at 7 weeks of gestation with sudden lower abdominal pain and clinical features of intra-abdominal hemorrhage. Diagnostic evaluation included ultrasonography and laboratory investigations, followed by an emergency laparotomy.

**Results:** Ultrasound imaging revealed two intrauterine gestational sacs along with free fluid in the pouch of Douglas. Laboratory tests indicated anemia (hemoglobin 8.1 g/dL) and marked leukocytosis. Emergency laparotomy confirmed a ruptured right fallopian tube with massive intraperitoneal bleeding. The patient underwent right salpingectomy, left tubectomy, and intrauterine curettage at her request. Her postoperative recovery was uneventful, and she was discharged in good condition after two days.

**Conclusion:** This case underscores the diagnostic difficulty of heterotopic pregnancy in spontaneous conceptions. The presence of an intrauterine pregnancy may create false reassurance, masking a concurrent ectopic gestation. Clinicians should consider HP in the differential diagnosis of any reproductive-aged woman with abdominal pain, regardless of conception method, to prevent life-threatening maternal complications.

**Keywords:** Emergency Laparotomy; Heterotopic Pregnancy; Spontaneous Conception; Tubal Rupture.

### INTRODUCTION

Heterotopic pregnancy (HP) is an uncommon obstetric condition characterized by the concurrent development of pregnancies at different implantation sites, typically with one located within the uterus. Its incidence is approximately 1 in 30,000 during natural conception cycles, increasing to 1 in 100 with assisted reproductive techniques. HP often mimics the clinical presentation of ectopic pregnancy, including abdominal pain, vaginal bleeding, and a positive pregnancy test, which complicates accurate

diagnosis. Despite advances in ultrasonographic imaging, the presence of acute abdominal symptoms often remains a key diagnostic clue. If undiagnosed during the first trimester, HP can present as a non-traumatic acute abdomen. Here, we report a rare case of heterotopic pregnancy diagnosed at 26 weeks of gestation, complicated by hemoperitoneum following tubal rupture (Eisner, Ebert, & David, 2020).

## RESEARCH METHOD

This study employs a case report methodology to investigate and document the clinical presentation, diagnosis, management, and outcomes of a spontaneous heterotopic pregnancy complicated by tubal rupture during early gestation. The research involves the detailed examination of a single patient case, providing an in-depth analysis of clinical signs, diagnostic imaging, surgical intervention, and postoperative follow-up. Data collection was performed through comprehensive review of the patient's medical records, including history taking, physical examination findings, laboratory results (such as serum  $\beta$ -hCG levels), and imaging studies like transvaginal ultrasonography. Particular attention was given to identifying the coexistence of intrauterine and extrauterine pregnancies to confirm the diagnosis of heterotopic pregnancy (Okda, Hamed, Aziz, & Khalifa, 2021).

The surgical procedure was documented with specifics on intraoperative findings, management of tubal rupture, and preservation of the intrauterine pregnancy if applicable. Postoperative care and patient monitoring outcomes were recorded to assess recovery and complications. Ethical considerations included obtaining informed consent from the patient for publication of clinical details. The case report methodology is appropriate for this rare and complex condition, allowing healthcare professionals to gain insights into diagnosis challenges and treatment strategies for spontaneous heterotopic pregnancy with tubal rupture (El Hajjar, Aouad, Hamouche, Chamsy, & Atallah, 2024).

## RESEARCH RESULTS

A 43-year-old multiparous woman presented to Bengkalis Hospital at 7 weeks of gestation with a one-day history of lower abdominal pain. A positive planar abdominal test was noted upon admission. She denied any history of vaginal bleeding or trauma. This presentation marked her first prenatal

ultrasonography. At the emergency department, transabdominal ultrasound revealed two intrauterine gestational sacs, each corresponding to approximately 7 weeks of gestation, along with the presence of free fluid in the pouch of Douglas. Laboratory findings showed anemia with a hemoglobin level of 8.1 g/dL and leukocytosis (white blood cell count: 18,000/mm<sup>3</sup>). Physical examination revealed right lower quadrant tenderness, normal bowel sounds, and pallor of the conjunctiva.

In light of these findings, an emergency laparotomy was indicated, and three units of packed red cells (PRC) were prepared preoperatively. Given the patient's age and her history of three living children, both she and her husband consented to a concurrent tubectomy.

During the surgical procedure, a significant amount of blood clots was discovered within the abdominal cavity, which were carefully evacuated to allow for clearer visualization. Upon further exploration, the surgical team identified a ruptured gestational sac located in the right fallopian tube, confirming the diagnosis of a ruptured ectopic pregnancy. Hemostasis was initially attempted using long surgical clamps to control the active bleeding. Once bleeding was stabilized, a right salpingectomy was performed to remove the damaged fallopian tube, and a tubectomy was also conducted on the left side as part of the planned surgical intervention. In accordance with the patient's informed decision, uterine curettage was subsequently carried out to remove the intrauterine pregnancy. During the operation, the patient received transfusion of two units of packed red blood cells along with one unit of intravenous fluids to manage blood loss and maintain hemodynamic stability. Postoperative laboratory tests indicated an improvement in hemoglobin levels, rising to 10.2 g/dL. The patient tolerated the procedure well, experienced no complications during recovery, and was discharged in stable condition after two days of postoperative observation.

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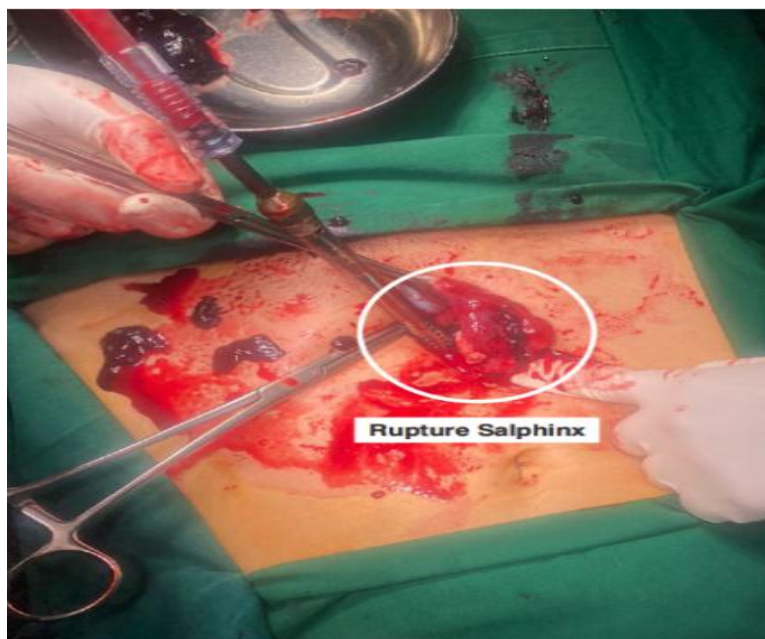


Figure 1. The left ovarian tube appeared to be ruptured

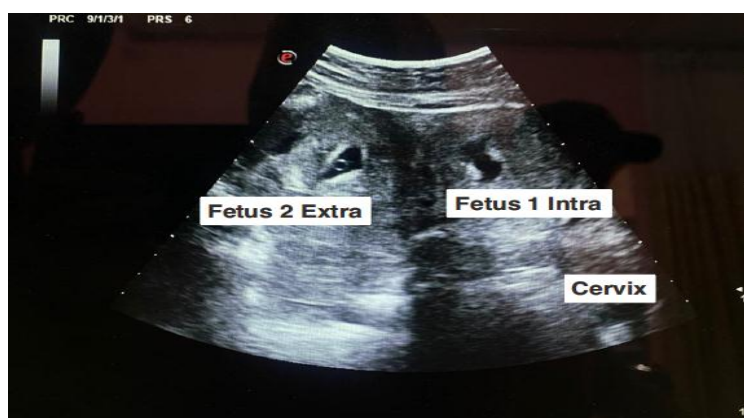


Figure 2. Ultrasound finding 2 gestasional sac

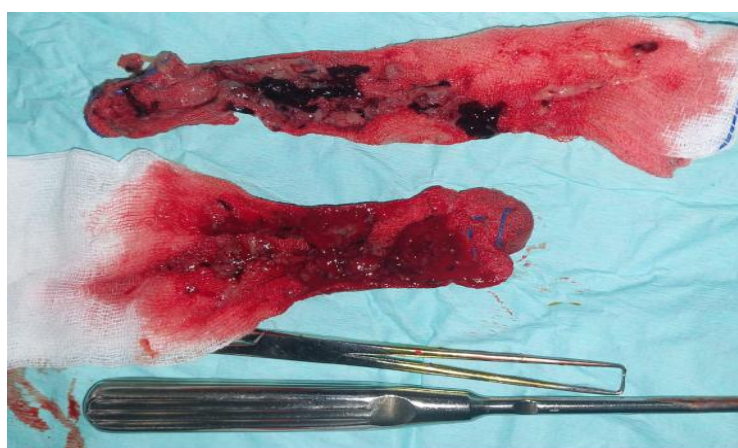


Figure 3. Post curettage procedure

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## DISCUSSION

Diagnosing heterotopic pregnancy remains a significant clinical challenge and often requires surgical intervention, such as laparotomy, particularly in cases involving tubal rupture. The uterus may simultaneously appear congested, softened, and enlarged findings that are typically detectable on ultrasound, which may reveal intrauterine gestational structures (Fessehaye, Gashawbeza, Daba, Arusi, & Terefe, 2021; Giacometti, Bellan, Ambrosi, Dei Tos, Cassaro, & Ludwig, 2021). Although historically estimated to occur in approximately 1 in 30,000 pregnancies, recent data indicate a higher incidence. This increase is largely attributed to assisted reproductive technologies (ART), with current rates estimated at 1 in 7,000 for spontaneous pregnancies and as frequent as 1 in 900 in pregnancies following ovulation induction. The surge in multiple gestations resulting from ovulation induction and in vitro fertilization has contributed to an elevated risk of both ectopic and heterotopic pregnancies (Brincat, Bryant-Smith, & Holland, 2019; Adewole, Asaolu, & Akintobi, 2022).

While previous tubal surgery is considered a risk factor for heterotopic pregnancy, our patient had no such history (Kumar & Malhotra, 2017; Hamam, Zimmo, Alqeeq, Hijazi, Hamam, & Al-Hajjar, 2024). Clinical presentations of heterotopic pregnancy vary widely. In pregnancies achieved via ART, there may be an increased incidence of miscarriage or persistently elevated  $\beta$ -hCG levels following uterine evacuation (Geffen, Slywotzky, & Bennett, 2017). Symptoms like hematometra and lower abdominal pain are possible in early gestation, although they were not observed in this case. Most heterotopic pregnancies involve the fallopian tube, but rare instances involving the cervix or ovary have been documented. Although rare, the most common form remains a singleton intrauterine pregnancy accompanied by an ectopic one, with triplet or quadruplet heterotopic gestations being exceedingly uncommon (Huang, Song, Wang, Gao, Meng, & Zhu, 2014; Byamukama, Bibangambah, Rwebazibwa, Acan, & Sebikali, 2023).

High-resolution transvaginal ultrasonography, particularly when combined with color Doppler imaging, plays a crucial role in diagnosis. Increased vascular flow in the adnexal region corresponding to trophoblastic tissue with a low resistance index can

serve as an important diagnostic marker (Mj & Rajan, 2008; OuYang, Wei, Wu, Wan, Zhang, & Zhong, 2021).

Upon admission, transabdominal ultrasound examination revealed two intrauterine gestational sacs consistent with 7 weeks of gestation, along with free fluid accumulation in the pouch of Douglas, suggestive of intra-abdominal bleeding. A plano test returned positive, while hematological tests indicated anemia with a hemoglobin level of 8.1 g/dL and leukocytosis with a white blood cell count of 18,000/mm<sup>3</sup>. Physical assessment showed tenderness in the right lower abdomen, pale conjunctivae indicating anemia, and normal bowel sounds. The patient did not report any vaginal bleeding. Given these clinical and imaging findings, alongside evidence of hemoperitoneum, heterotopic pregnancy complicated by tubal rupture was strongly suspected, and emergency surgical management was arranged (Chukus, Tirada, Restrepo, & Reddy, 2015).

The differential diagnosis in this case encompassed several gynecological conditions with overlapping clinical features. An isolated ectopic pregnancy was initially considered, as it typically manifests with abdominal pain, vaginal bleeding, and the presence of an adnexal mass. However, the identification of two intrauterine gestational sacs effectively excluded this possibility (Payne, Duge, & Bradbury, 1971).

Another condition taken into account was ovarian cyst rupture, which may present with acute abdominal pain and hemoperitoneum, mimicking heterotopic pregnancy. Yet, the absence of ovarian cysts on imaging and the concurrent presence of gestational sacs rendered this diagnosis unlikely (Pekar-Zlotin, Rabinovich, Goldrat, Vaknin, Gidoni, Zur-Naaman, Maymon, & Smorgick, 2021). Threatened abortion was also evaluated, as it is commonly associated with intrauterine pregnancy and vaginal bleeding. Nevertheless, this condition rarely results in hemoperitoneum or adnexal masses unless accompanied by additional complications, thereby making it a less probable explanation in this case (Tegene, Nesha, Gizaw, & Befikadu, 2022). Ultimately, the diagnosis of heterotopic pregnancy was strongly supported by ultrasonographic findings of two intrauterine gestational sacs along with free

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intra-abdominal fluid, in conjunction with clinical signs of hemoperitoneum. These findings collectively established heterotopic pregnancy as the most plausible diagnosis (Eisner, Ebert, & David, 2020).

An emergency laparotomy was performed due to clinical signs of hemoperitoneum and suspicion of ruptured ectopic pregnancy. During surgery, multiple blood clots were evacuated, and a ruptured right fallopian tube containing gestational tissue was identified. A right salpingectomy was carried out to control hemorrhage. In accordance with the patient's wishes and her parity, a left tubectomy was also performed. After removal of the ectopic pregnancy, uterine curettage was conducted to evacuate the intrauterine gestation. The patient received two units of packed red blood cells and one unit of crystalloid fluids intraoperatively. Postoperative hemoglobin increased to 10.2 g/dL (Chaves, Maia, Borges Peixoto, Araujo, & Elito, 2024).

Following surgery, the patient's condition stabilized without any additional bleeding or infection. She remained hospitalized for two days, during which her vital signs stayed stable and her recovery proceeded without complications. She was discharged in good health and advised to return for wound assessment and counseling regarding her reproductive choices, particularly in light of her bilateral tubal ligation (Wenjing & Haibo, 2022).

## CONCLUSION

In conclusion, spontaneous heterotopic pregnancy with tubal rupture represents a rare but serious obstetric emergency that can occur even in natural conceptions. This case highlights the importance of considering heterotopic pregnancy in the differential diagnosis of abdominal pain and bleeding during early pregnancy, regardless of the presence of a confirmed intrauterine pregnancy. Early recognition through careful clinical evaluation and appropriate imaging, followed by prompt surgical management, is crucial to prevent life-threatening complications and to preserve maternal health.

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