Case Report

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A case report of hemorrhagic shock from rare ruptured intertitial pregnancy

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Introduction and importance: Interstitial pregnancy is rare and exhibit a mortality rate notably higher than that observed in other types of ectopic pregnancies.
Case presentation: The authors report a 38-year-old female admitted for a hemorrhagic shock. She was 10 weeks pregnant. The suspicion of a ruptured ectopic pregnancy arose based on amenorrhea accompanied by abdominal pain and a pelvic ultrasound showing an empty uterus and abundant free fluid in the abdomen. Emergent exploratory laparotomy was indicated by hemodynamic instability, revealing a ruptured left interstitial ectopic pregnancy.
Discussion: The use of three-dimensional ultrasonographic imaging specially in the first trimester improves the rate for early detection. The medical or surgical management of an interstitial pregnancy depends on the patient's hemodynamic stability considering the rupture of the pregnancy.
Conclusion: Interstitial pregnancy is linked to elevated morbidity. Early diagnosis and adequate management both can avoid its catastrophic outcomes.

Keywords: case report, cornual resection, hemorrhagic shock, interstitial ectopic pregnancy

Introduction and importance

Around 1.5% of pregnancies reported are ectopic[1]. An interstitial pregnancy refers to an uncommon ectopic location situated within the myometrium next to the fallopian tube, often challenging to detect using conventional ultrasound imaging. Due to its location and its expansion within the uterine wall, interstitial pregnancies can progress for weeks before being diagnosed, often not recognized until complications arise, such as rupture of the ectopic pregnancy and hemorrhagic shock[2,3].

We report a rare case of a ruptured left interstitial ectopic pregnancy in a 10 weeks gestational patient, who presented in a state of hemorrhagic shock. We will also explore diagnostic complexities and the use of three-dimensional ultrasonographic imaging for early detection. Our case underscores the importance of early detection and treatment to mitigate the risk of maternal mortality.

HIGHLIGHTS

- Interstitial ectopic pregnancy is a rare localization of ectopic pregnancies.
- Interstitial ectopic pregnancy is difficult to diagnose with high maternal morbidity.
- Three-dimensional ultrasound specially in first trimester helps to characterize the localization of the interstitial pregnancy.
- Management relies on cornual surgical resection in ruptured interstitial ectopic pregnancy with unstable patients with hemorrhagic shock.

Case presentation

A 38-year-old gravida two, one para presented to the emergency department at 10 weeks of amenorrhea complaining of severe abdominal pain with minor vaginal bleeding. The patient mentioned a syncopal episode at home prompted her to seek medical consultation.

Her medical history was significant for one full-term vaginal delivery. Gynecological history was known for salpingitis, negative for prior ectopic pregnancies. Drug history includes

Table 1

Vital signs on initial inspection and physical examination in the ED.

Vital sign	Result
Glasgow Coma Scale (GCS)	**13/15**
Blood pressure (mmHg)	**74/47**
Pulse (beats per minute)	**140**
Pulse oximetry (%)	**99**
O2 delivery	Room air
Respiratory (breaths per minute)	**25**
Temperature (°C)	**37.1**

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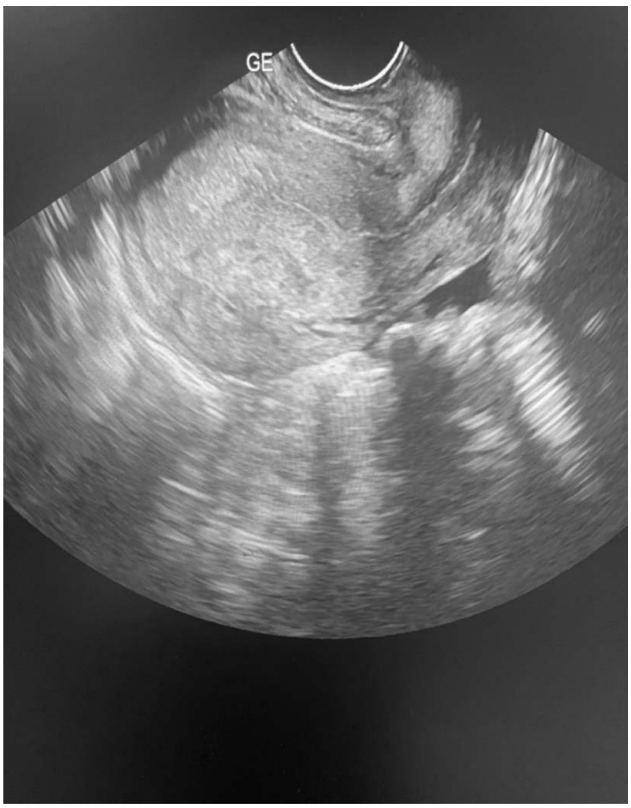

Image 1. Empty uterine cavity.

smoking tobacco. With no particular family history and negative for breast, ovarian, or bowel cancer.

Our initial inspection and clinical examination found GCS 13/15 with a blood pressure of 74/47 mmHg, including tachycardia at 140 bpm and distended abdomen with positive tenderness (Table 1).

Transabdominal and transvaginal ultrasonography were performed, showing an empty uterus (Image 1) with a 30 × 26 mm gestational sac lateralized to the left (Image 2), with extensive complex free pelvic and abdominal fluid suspecting a ruptured ectopic pregnancy (Image 3).

A quantitative BHCG and complete blood count were done, finding a BHCG value of 3100 IU/ml, hemoglobin value of 7 gm/dl, hematocrit at 25.3%, platelets 280 K/mm^3, and white blood cells at 21 K/mm^3.

An urgent exploratory mini-laparotomy was indicated for a massive intraperitoneal hemorrhage on a ruptured ectopic pregnancy under general anesthesia. We found an extensive hematoperitoneum ~2 l and half of intraperitoneal blood and diagnosed a mass on the left interstitial tube being ruptured and bleeding actively with a fetus estimated to be 10 weeks of age discovered in the abdomen (Image 4) (Image 5).

The left ovary, the right tube, and the right ovary all appeared normal.

A cornual resection and unilateral left salpingectomy were successfully performed. The patient was given two units of packed red blood cells in the OR then was discharged to the recovery room in a stable condition and was extubated.

The patient's postoperative remaining was uneventful. The patient was discharged home on the third postoperative day and a

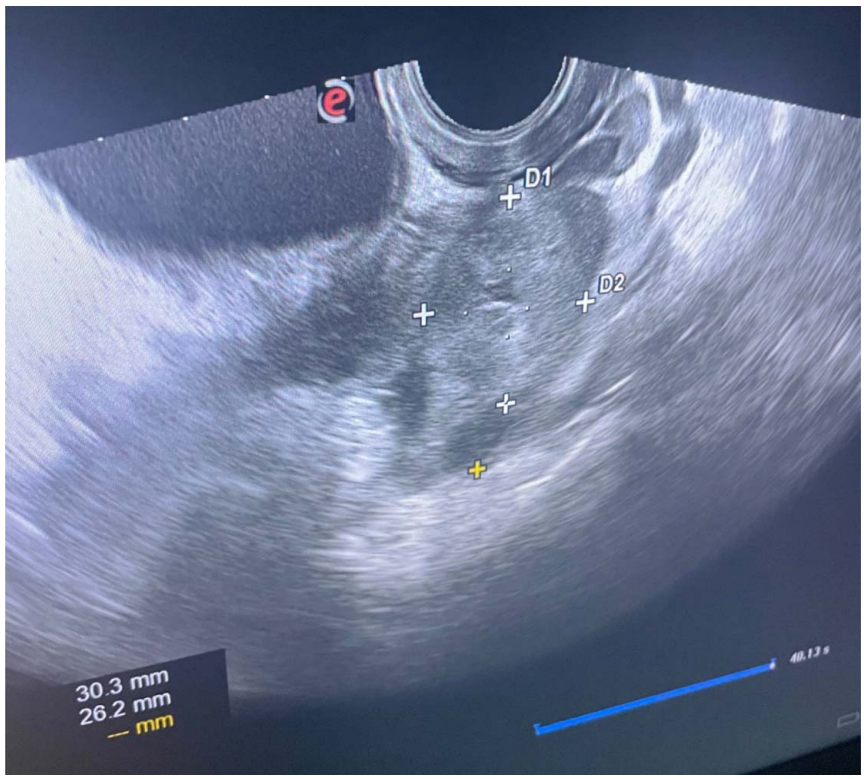

Image 2. Gestational sac lateralized to the left of the uterine cavity.

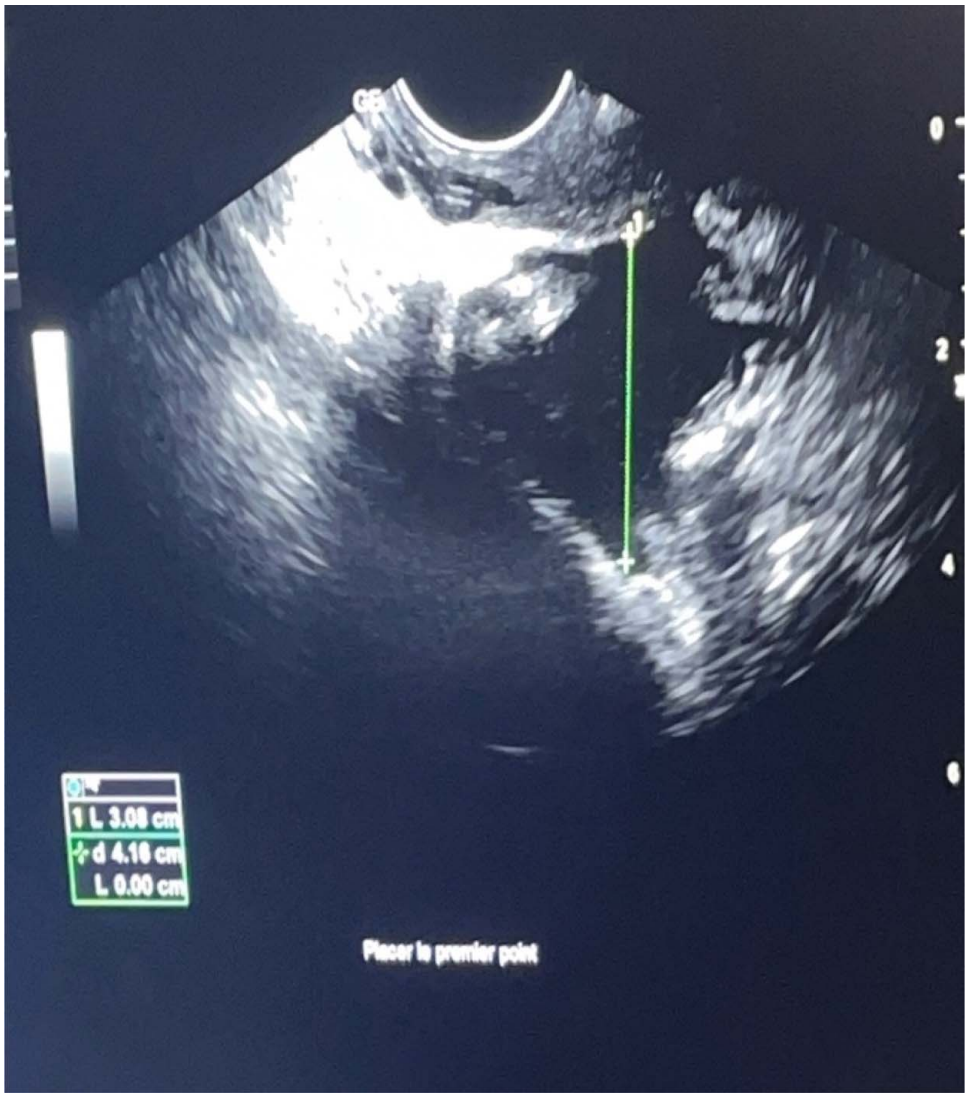

Image 3. Free fluid in the pouch of Douglas.

clinical follow-up appointment was scheduled with her operating surgeon in 2 weeks finding a stable patient with a normal physical examination and BHCG value of 2 IU/ml.

Clinical discussion

Interstitial ectopic pregnancies is known to be difficult to diagnose with high risks of rupture and massive hemorrhage increasing the maternal morbidity[4,5].

The interstitial pregnancies present clinically with abdominal pain as the primary symptom for consultation, while vaginal bleeding is less frequent[6].

The integration of early first-trimester ultrasounds improves the rates of unnoticed ectopic pregnancies and prevents life-threatening complications like a massive hemorrhage, as in our patient case[3,7]. Timor-Tristsch *et al*. proposed three US diagnostic criteria to help identifying interstitial pregnancy: an empty uterine cavity, a gestational sac separated from the uterine cavity, and a thin myometrial lining of less than 5 mm around the gestational sac[8,9].

The three-dimensional ultrasound is highly recommended by radiologists and obstetricians to improve the two dimensional confusion concerning the cornual location with an uncomplicated intrauterine pregnancy for its capacity to image the interstitial line sign and the coronal plane of the uterus[10–14].

In suspected cases of interstitial pregnancy, the initial management requires urgent obstetric consultation, prioritizing the stabilization of vital signs first, followed by confirmation of the pregnancy[15].

For stable patients with unruptured interstitial pregnancies, the medical treatment considering methotrexate through intramuscular is the method of choice[6,10,11]. Yet the risk of failure is not ruled out[6].

Unstable patients with hemorrhagic shock due to a ruptured interstitial ectopic pregnancy represent a quarter of patients. Consequently, the surgical treatment is recommended via either laparoscopy or laparotomy, involving cornual resection with salpingectomy[16]. The uterine rupture commonly occurs following a surgical treatment likely stemming from the fragility of

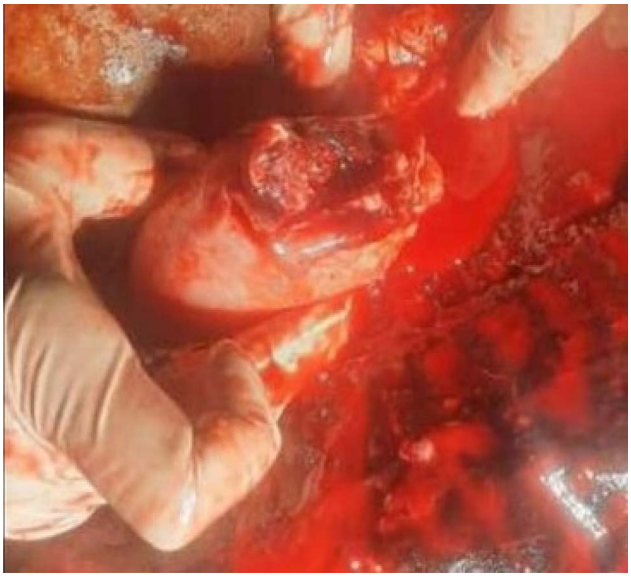

Image 4. Ruptured left interstitial pregnancy: intraoperative appearance.

the uterine wall[17]. We intend to closely and promptly monitor our patient during the next pregnancy.

Conclusion

Diagnosing and managing interstitial ectopic pregnancies remains a persistent challenge. Its incidence is rare, and its diagnosis, typically delayed, depends primarily on ultrasound. Due to the elevated risk of morbidity, early and suitable treatment is imperative to prevent complications and maintain fertility.

Our work has been reported in line with the Surgical CAse Report (SCARE) Guidelines 2023 criteria[18].

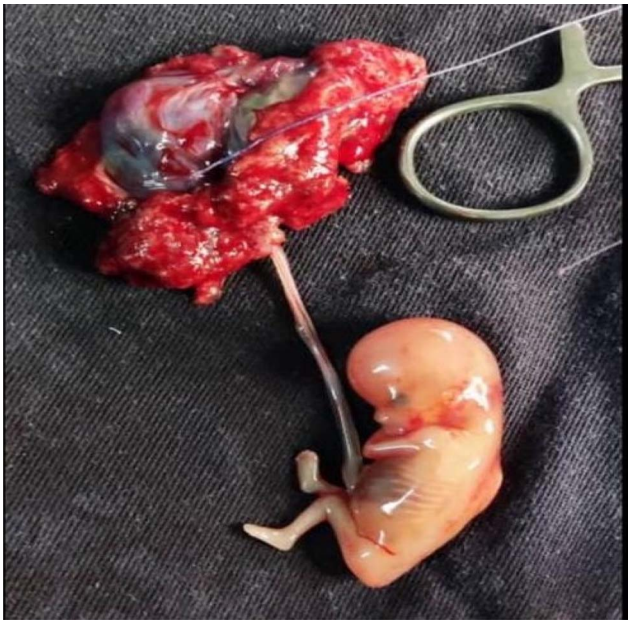

Image 5. Cornual resection with 10 weeks fetus.

Ethical approval

Ethical approval is not applicable. The case reports are not containing any personal information.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request. Please see consent section in instructions to authors for further information.

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Conflicts of interest disclosure

The authors declare that they have no competing interests relevant to the content of this article.

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