

# Interstitial Ectopic Pregnancy Rupture at 15 Weeks of Gestation in a Sudanese Patient: A Case Report and Literature Review

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## Abstract

Interstitial ectopic pregnancy is rare and results in the embryo being implanted in the uterine tube's intramural region which is the most proximal part of the Fallopian tube inside the myometrium. 1-2% of pregnancies result in ectopic pregnancy and only 3-4% of ectopic pregnancies are interstitial. It has a significant risk of catastrophic hemorrhage from uterine rupture. The mortality rate for interstitial ectopic pregnancies is high, ranging between 2-2.5% with a rupture rate of about 15%. Therefore, it contributes significantly to maternal morbidity and mortality. 7-12 weeks is the typical gestational age at presentation and majority of interstitial ectopic pregnancies rupture before 12 weeks of gestation; however, our case report presented at 15 weeks of gestation. Here, we present a 32-year-old, gravida 11 para 5 plus 5 female. The gestational age was 15 weeks. She had a history of 5 previous spontaneous vaginal deliveries and 5 spontaneous first trimester miscarriages. She complained of pain in the epigastrium and lower abdomen, fainting and vomiting. There was no vaginal bleeding. Her examination revealed severe pallor, impaired consciousness, tenderness all over the abdomen with voluntary guarding, tachycardia at 130/min and blood pressure of 90/60. Serum beta-hCG test was positive. An ultrasound scan demonstrated an empty uterus with a non-viable fetus in the left adnexal region. She had significant free fluid throughout the abdomen with severe peritoneal effusion in the pouch of Douglas extending around the uterus and through the Morison's pouch. An emergency laparotomy was performed under general anesthesia. Intraoperatively a ruptured left interstitial ectopic pregnancy of 15 weeks gestation on the left aspect of the uterus was detected. A cornuostomy with left salpingectomy were performed. Haemoperitoneum was encountered and approximately 1500 ml of blood was evacuated from the abdomen. The patient was transfused with 6 units of blood. Post operation recovery was uneventful and she was discharged home on day 4 postoperatively. She was scheduled to have hysterosalpingography after the surgery to exclude uterine anomalies.

**Keywords:** Ectopic pregnancy • Case report • Gestation

## Introduction

The term "ectopic pregnancy" describes the implantation and development of the embryo outside the uterine cavity. Interstitial localisation of ectopic pregnancy is rare and results in the embryo being implanted in the uterine tube's intramural region [1]. The closest portion of the Fallopian tube inside the myometrium is the interstitial part of the Fallopian tube [2-4].

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The interstitial region of the Fallopian tube has a substantially greater ability to expand due to its thickness and the abundant vascular anastomoses between the uterine and ovarian arteries, which if ruptured, can result in enormous life-threatening hemorrhage [5]. 2-5% of ruptured interstitial ectopic pregnancies result in death [5].

1-2% of pregnancies result in ectopic pregnancy [6]. Just 3-4% of ectopic pregnancies are interstitial. This demonstrates the rarity of interstitial ectopic pregnancy [6].

A history of ectopic pregnancy, pelvic inflammatory illness, pelvic surgery and assisted reproductive technologies are among the ectopic pregnancy risk factors and they are also the risk factors for interstitial ectopic pregnancy [7].

At 12 weeks of gestation is when interstitial ectopic pregnancy ruptures most frequently occur [8]. In this regard, reducing the high maternal morbidity and death requires early detection and treatment [8].

This clinical condition presents a special diagnostic problem because, when the myometrium enlarges noticeably, it is frequently mistaken for an intrauterine pregnancy. Treatment delays ultimately result from this [5]. Therefore, it has a high rate of complications and presents diagnostic difficulties

and in the absence of early identification and treatment, there is a danger of catastrophic hemorrhage from uterine rupture [9].

Interstitial EP can be medically treated with intramuscular or *in-situ* methotrexate when it has an early diagnosis. The diagnosis is typically delayed and the patient is then treated surgically with a cornuostomy or cornual resection and salpingectomy [10].

Here, we describe a case of an interstitial EP rupture that was surgically managed.

## Case Presentation

A previously healthy 32-year-old female, gravida 11 para 5 plus 5, from Atbra city, Nile River State in the north of Sudan. The gestational age was 15 weeks according to her last menstrual period. She did not have antenatal care and no ultrasound scan was performed before that day. She had a history of 5 previous spontaneous vaginal deliveries and 5 spontaneous first trimester miscarriages. She complained of pain in the epigastrium and lower abdomen, fainting and vomiting. There was no vaginal bleeding. Her examination revealed severe pallor, impaired consciousness and tenderness all over the abdomen with voluntary guarding. She was hemodynamically unstable and her vital signs showed tachycardia at 130/min with blood pressure at 90 mmHg systolic and 60 mmHg diastolic. There was no history of previous surgery or allergies.

### Serum beta-hCG test was positive.

An ultrasound scan demonstrated an empty uterus with a non-viable fetus in the left adnexal region. The head circumference was at 15 weeks. She had significant free fluid throughout the abdomen. There was also severe peritoneal effusion in the pouch of Douglas extending around the uterus and through the Morison's pouch.

Diagnosis of a ruptured ectopic pregnancy was highly suspected. An emergency laparotomy was indicated for suspicion of ruptured ectopic pregnancy under general anesthesia.

Intraoperatively a ruptured left interstitial ectopic pregnancy of 15 weeks gestation on the left aspect of the uterus was detected (Figures 1 and 2). A cornuostomy with left salpingectomy were performed. Haemoperitoneum was encountered and approximately 1500 ml of blood was evacuated from the abdomen. The uterus, ovaries and contralateral right tube had a usual appearance. The abdominal cavity was cleaned by saline washing and the abdomen was closed. The patient was transfused with 6 units of blood. Post operation recovery was uneventful and she was discharged home on day 4 postoperatively. She was scheduled to have a hysterosalpingography after the surgery to exclude uterine anomalies.

## Discussion

Interstitial ectopic pregnancy is a rare and unusual type of ectopic pregnancy that has a higher risk of rupture and haemorrhage than other varieties [11]. 7–12 weeks is the typical gestational age at presentation [8]; however, our case report presented at 15 weeks of pregnancy. The majority of interstitial ectopic pregnancies rupture before 12 weeks of gestation, with a rupture rate of about 15% [8]. Moreover, the mortality rate for interstitial ectopic pregnancies is still relatively high, ranging between 2–2.5% [8], as a result of this, the detection of these pregnancies and the time it takes to start therapy represent a challenge. So, it contributes significantly to maternal morbidity and mortality [12].

Due to the left ruptured interstitial pregnancy, this patient had a significant hemoperitoneum when she first arrived. Due to the lack of antenatal care, this ectopic pregnancy went undetected for up to 15 weeks of gestation. It was discovered intraoperatively, emphasizing the diagnostic difficulty associated with this clinical entity.

When compared to other tubal pregnancies, interstitial ectopic pregnancy has the potential to expand to greater proportions because it occurs in the interstitial region of the fallopian tube [6].



Figure 1. Showing the size of the fetus at 15 weeks of gestation.



Figure 2. Showing the site of rupture of the fallopian tube.

Within the tube's intramural region, interstitial EP forms. This part is approximately of 0.7 mm wide and 1–2 cm long and it is more extensible than the wall of the rest of the Fallopian tube, allowing the pregnancy to occasionally develop rather slowly, possibly up to 16 weeks of amenorrhea [13] as in our case report. An extensive vascular anastomosis between the uterine and ovarian vessels supplies this area of the uterus with blood [5]. The interstitial EP rupture is everly hemorrhagic. As a result, the prevalence of hysterectomy in cases of interstitial EP rupture is predicted to be 40% and the probability of uterine rupture increases to 20% if the pregnancy lasts longer than 12 weeks [9].

The greatest risk is a history of salpingectomy, which occurs in 25 to 40% of cases [14]. The risk factors are identical to those for tubal EP which include prior intrauterine instrumentation, pelvic inflammatory disease, previous tubal surgery, previous ectopic pregnancy, assisted reproductive technologies and congenital uterine defects [12].

Uterine myometrial rupture, which typically occurs by the second trimester and severe hemorrhage can complicate interstitial ectopic pregnancy [6].

All ectopic pregnancies carry a risk of hemorrhage, but interstitial pregnancies carry the greatest risk of heavy, uncontrollable bleeding [15].

This means that high suspicion and early identification of interstitial ectopic can forestall problems like severe hemorrhage and uterine rupture [6].

A ruptured ectopic pregnancy can manifest with a wide range of symptoms that can be mistaken for other illnesses. In addition to dizziness, fainting and syncope, patients may also have pelvic or abdominal discomfort, vaginal bleeding, shoulder pain, gastrointestinal symptoms, urine symptoms, rectal pressure, or pain when defecating [16]. In our case report, the patient did not have vaginal bleeding.

The patient could display peritonism during a physical examination, such as rebound abdomen discomfort and cervical motion tenderness [2]. Pallor, abdominal distension, an enlarged uterus that is occasionally larger than the estimated gestational age and shock-related symptoms such tachycardia and hypotension are further examination findings [2].

The clinical findings, plasma BHCG positivity and pelvic ultrasound all contribute to the diagnosis. The clinical presentation is predicated on the EP triad, which includes amenorrhea with positive BHCG and pelvic discomfort and/or metrorrhagia [9]. In order to make a more accurate diagnosis, several writers advise the inclusion of 3D ultrasound [17]. Pelvic MRI is still a very helpful supplementary test in the event of challenging ultrasonography, diagnostic uncertainty and if the clinical situation permits [18].

Methotrexate, either systemic or local, or KCL injection could be used to treat interstitial ectopic pregnancy when it has an early diagnosis. Surgical treatment includes uterine artery embolization, a cornuectomy, a hysterectomy, or conservative laparoscopic surgery [15]. Cornuectomy and hysterectomy are usually done in case of rupture or failure of other methods [6].

Recommendations [18] for the management of ectopic interstitial pregnancies have recently been released by the Society of Obstetricians and Gynecologists of Canada. They assert [18] that practitioners should initially provide local or several doses of methotrexate to carefully chosen individuals. Alternatively, if surgery is necessary owing to hemodynamic criteria and a suspected rupture, as in the case of our patient, doctors can do a laparoscopic cornuostomy or a coronal resection, both of which have similar results [18].

Recurrence and uterine rupture in subsequent pregnancies are the two primary consequences of treated interstitial pregnancies [2]. Recurrence of ectopic pregnancy, uterine rupture, morbidly adherent placenta, or preterm birth could complicate future pregnancies [19,20]. Despite the fact that some more recent studies are more reassuring on this issue and do not recommend routine prophylactic c-sections [21], the majority of research have demonstrated that a caesarean section at 36–37 weeks of gestation is the most ideal mode of birth following a ruptured interstitial pregnancy treated by cornual excision and repair [22].

## Conclusion

Interstitial ectopic pregnancy is rare and potentially fatal disorder. Early ultrasound detection is crucial to enabling methotrexate injections as a form of conservative treatment. Delayed diagnosis necessitates uterine excision with all the associated consequences. There is a considerable risk of uterine rupture and life-threatening hemorrhage in interstitial ectopic pregnancies. The mainstay of diagnosis is transvaginal ultrasonography with periodic serum BhCG readings. The need of keeping a high index of suspicion is highlighted by this case.

## Patient Consent

The patient's written informed consent was obtained before this case report and the associated pictures could be published.

## Conflict of Interest

The authors declare that they have no conflict of interests.

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