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Case Report

A rare case of uterine rupture in the first trimester of pregnancy: Case report and review of literature [☆]

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ABSTRACT

Uterine rupture is a serious and potentially life-threatening complication. It is commonly a complication that happens in the third trimester of pregnancy. Its occurrence in early pregnancy is very rare. We report a case of a patient who presented with uterine rupture on a scarred uterus during the termination of pregnancy with misoprostol at 10 weeks' amenorrhea. In this case, we discuss the clinical warning signs, risk factors, and diagnostic methodology, and compare our approach with the literature.

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Introduction

Uterine rupture is a life threatening peripartum complication that can occur in any trimester of pregnancy. It has a high risk of morbidity and mortality for the mother and the developing foetus [1]. It refers to uterine wall damage that can happen in either a gravid or nongravid uterus. It indicates a communication between the uterine and abdominal cavities, as a result of a noniatrogenic cause [2].

First trimester uterine rupture is uncommon, and it's uncertain how frequently it really occurs in the literature. The risk is increased with short pregnancy intervals, misoprostol use in termination of pregnancy, mullerian anomalies, and presence of uterine scars [3].

Depending on the extent and origin of the uterine wall injury, the clinical signs of uterine rupture can range widely

from mild to severe. Patients may report from mild stomach pain to hypotension caused by significant blood loss from larger defects [2]. In this article, we review the value of imaging in assessment of patients with suspected uterine rupture, and discuss the imaging appearance.

Case report

We report the case of a 28-year-old woman, gravida 2 para 1, with no medical history or genetic abnormalities, G1: first pregnancy was a cesarean delivery of a 3.8 kg male baby for cephalopelvic disproportion two years ago, G2: current pregnancy at 10 weeks of amenorrhea. The patient was admitted to the gynecologic emergency service for abdominal pain and metrorrhagia. In her obstetric history of the current preg-

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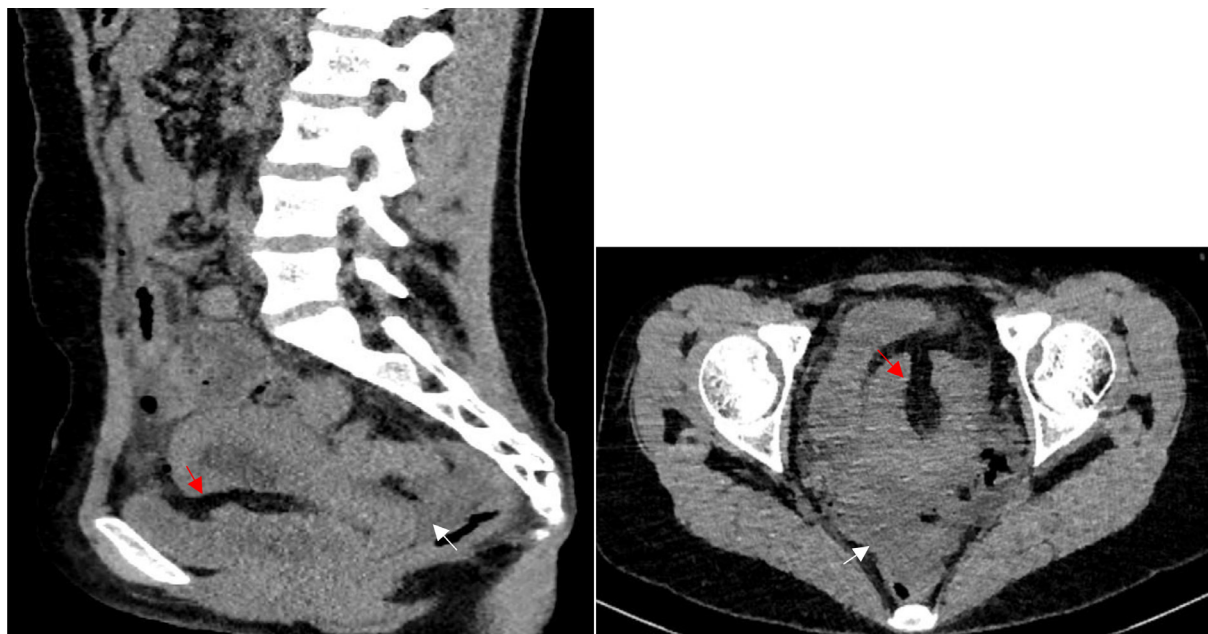


Fig. 1 – Axial and sagittal CT scan showing a large defect in the anterior uterine wall confirming the uterine rupture (red arrow), associated with free fluid collection in the rectouterine pouch (white arrow).

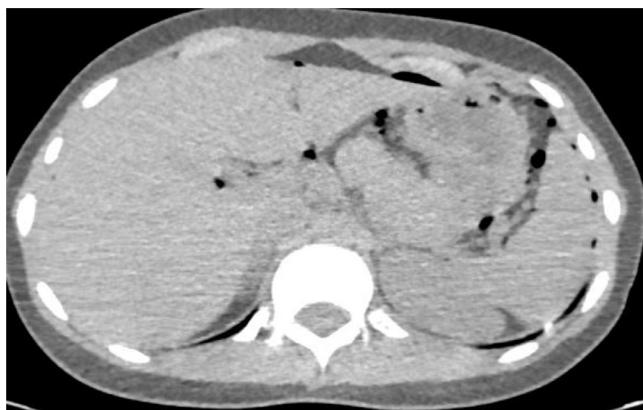


Fig. 2 – Axial CT scan showing the pneumoperitoneum secondary to the uterine rupture.

nancy, the patient reported taking oral misoprostol at a dose of 200 μg to abort the pregnancy. One hour before her admission, she presented severe abdominal and pelvic pain with metrorrhagia that had begun 1 hour after taking the pill and was intensifying quickly.

On general examination, the patient was pale, her pulse 120 beats/min, blood pressure 110/60 mmHg, and temperature 37°C. Her abdomen was slightly distended with rebound tenderness.

Transvaginal ultrasonography showed, an intrauterine single gestational sac corresponding to 9 weeks of amenorrhea. However, no cardiac activity was observed within the gestational sac. It also showed a free fluid collection in the rectouterine pouch.

A CT scan was performed, showing a defect in the anterior wall of the uterus confirming the uterine rupture, with peritoneal effusion (Fig. 1) and pneumoperitoneum (Fig. 2). No associated hematoma or intestinal damage was found.

Based on these clinical and CT findings, an emergency laparotomy was performed by a gynecologic surgeon. Through the previous cesarean scar, the surgeon opened the parietal peritoneum and discovered a moderate amount of hemoperitoneum. The gynecologist confirmed the defect in the anterior uterine wall, the gestational sac with the fetus inside was found in the posterior wall of the uterus and was successfully removed by aspiration. The defect was repaired with an absorbable suture till hemostasis achieved layer by layer. Intra-peritoneal drain was left and the abdomen was closed after layer by layer. One week after, patient was discharged in good condition.

Discussion

Uterine rupture is defined as the complete laceration of the uterine wall including its serosa, creating a communication between the endometrial and peritoneal cavities with gas and blood leakage and consequent hemoperitoneum [4,5].

Uterine rupture accounts for 14% of all hemorrhage-related maternal mortality. Most often, uterine rupture occurs in the third trimester of pregnancy, during labor, or mainly in a previously scarred uterus. Its occurrence in early pregnancy is very rare even in the presence of predisposing risk factors [6].

It is considered a rare occurrence in developed countries, occurring in 1/2000 births, whereas its incidence is much higher in developing countries, reaching 1/100 births [7]. The incidence of uterine rupture among women with at least

one prior cesarian section is 0.5% [4], and occurs at a frequency of approximately 1% of pregnancies with a previous scarred uterus during labor induction with misoprostol or oxytocin. However, it is unexpected that uterine rupture may occur when misoprostol is administered in early pregnancy [8].

Misoprostol is a synthetic analog of prostaglandin E1. Initially indicated for the treatment of peptic ulcer disease, its field of use rapidly expanded to include obstetrics use for medical abortion and labor induction, despite the absence of any marketing authorization for these indications and despite its many complications, such as uterine hyperkinesia, uterine rupture, or cardiac arrest [9].

Uterine rupture typically happens in scarred uterus, such as those that have undergone myomectomy, deep corneal resection, corneal pregnancy, trauma, and prior cesarean sections. Other, less frequent causes include placenta increta, sacculation of a retroverted uterus, uterine abnormality, and uterine musculature loss and weakness due to multiparity [10].

Misoprostol was incriminated in this case. Also, this patient had a previous cesarean delivery 2 years ago which probably predisposed the uterine to rupture during the uterotonic effects of misoprostol.

Clinical manifestations of uterine rupture typically involve violent pain in the pelvis that feels like it is tearing, metrorrhagia, and hemodynamic instability that progresses to shock [7]. In early pregnancy, especially without the presence of any predisposing risk factors, the diagnosis may occur with latency or may never be detected; leading to life-threatening complications [6]. Furthermore, signs and symptoms of uterine rupture in the early trimester are nonspecific [6].

The site of uterine rupture may be visible on ultrasound (US) as a hypoechoic or anechoic myometrial defect or track that extends to the uterus' serosa. The US can also show an extrauterine hematoma that is present concurrently with the injury. Due to the growth of an intra-myometrial hematoma, the site of perforation may exhibit reduced perfusion on color doppler imaging. It may also be possible to see air droplets, which appear as echogenic foci along the perforation tract. But the US is significantly less sensitive to showing free intraperitoneal gas, especially when it is tiny in volume or when the air is deep inside the pelvis [2].

In comparison to the US, computed tomography (CT) offers a larger field of view [11] which makes it much more sensitive to showing pneumoperitoneum. A hypoattenuating defect and loss of myometrial continuity may be seen at the site of uterine rupture, with or without associated extra- or intrauterine fluid collections and intestinal damage [2].

The use of magnetic resonance imaging (MRI) in the diagnosis of uterine wall injuries has not been extensively studied in the literature so far. This might be as a result of MRI's constraints, which include limited availability for urgent situations. It is often reserved for clinically stable individuals and should not postpone urgent medical treatment. MRI has the potential to improve the visibility of the site of uterine perforation due to its greater soft-tissue resolution. MRI can also be used to spot any related issues, such as the development of an abscess. Diffusion-weighted and precontrast T1-weighted

imaging can help to distinguish between simple fluid and hematoma [12].

Conclusion

Unexpected abdominal pain occurring after oral administration of misoprostol to pregnant women even in the first trimester of pregnancy should make one suspect a uterine rupture as a complication.

Imaging can confirm the diagnosis and identify the location, extent, and associated complications of uterine rupture.

Understanding and being aware of these imaging results by radiologists is crucial for ensuring as quickly as possible the diagnosis.

Patient consent

The patient gave us his consent to publish this case.

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