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Case Report

SPONTANEOUS UTERINE RUPTURE IN UTERINE DIDELPHYS: A CASE REPORT WITH LITERATURE REVIEW

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ABSTRACT

Uterine rupture (UR) rarely occurs in the second trimester, particularly in an unscarred uterus didelphys (UD), a rare Müllerian anomaly. A 28-year-old primigravida at 21 weeks of gestation presented with 3 hours of lower abdominal pain and nausea. Ultrasonography (US) showed free intraperitoneal fluid and a right adnexal hematoma. Emergency laparotomy revealed severe hemoperitoneum and fundal rupture of the right uterine horn in UD. The rupture was repaired; the mother survived, but the fetus died. A review of seven cases showed a mean age of 24.6 years, with 85.71% occurring in unscarred uteri and 85.71% during the second trimester. Abdominal pain was reported in all cases, and all mothers survived while all fetuses died. Spontaneous UR should be considered in unscarred UD, and prompt laparotomy may allow successful uterine repair.

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Introduction

Uterine rupture (UR) is a catastrophic obstetric complication that typically occurs in the third trimester or during labor, mainly in women with a previous uterine scar.[1] Repeated cesarean delivery, previous rupture, classical uterine incision, prior myomectomy, short interpregnancy interval, placenta previa, morbidly adherent placenta, and congenital uterine anomalies predispose to pre-labor rupture, the last accounting for approximately 16.3% of ruptures in the second and early third trimesters.[2] Congenital uterine anomalies arise from errors of embryogenesis and affect about 4% of the general population.[3] Uterine didelphys (UD) is a rare Müllerian anomaly caused by complete failure of the paired ducts to fuse, producing two separate uterine cavities and cervices.[4] It affects 0.1% to 0.5% of women and accounts for roughly 11% of Müllerian anomalies.[1] Only complete Müllerian agenesis occurs even less frequently.[2] Rupture of an unscarred uterus in the second trimester, particularly within a didelphic horn, remains exceptionally rare.[1] This report presents spontaneous UR of an unscarred didelphic uterus in the second trimester. It was prepared in accordance with the CaReL guidelines.[5] All sources were critically appraised for publishing reliability.[6]

Case Report

Patient information and clinical findings

A 28-year-old primigravida at 21 weeks of gestation presented with lower abdominal pain and nausea for 3 hours. Her medical and surgical histories were unremarkable. She was conscious, alert, and oriented. Abdominal examination revealed lower abdominal tenderness, predominantly on the right side, with diminished bowel sounds. Vaginal examination showed an undilated cervix.

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Diagnostic assessment

Laboratory investigations were unremarkable apart from mild leukocytosis, with raised D-dimer and C-reactive protein concentrations (Table 1). Abdominal ultrasonography (US) demonstrated mild to moderate ascites with free fluid around the uterus, a well-defined heterogeneous echogenic right adnexal lesion consistent with a hematoma, and a bicornuate uterus containing a single viable fetus on the right side.

Therapeutic intervention and follow-up

Emergency laparotomy was undertaken. Severe hemoperitoneum was evacuated, and exploration disclosed two separate uterine cavities consistent with UD (Figure 1). A live fetus lay free within the abdominal cavity and died immediately. A fundal rupture of the right uterine horn was identified and repaired with good hemostasis. The postoperative course was uneventful. The patient received contraceptive counseling before discharge. At the most recent visit, she remained well on a natural family planning method.

Discussion

Rupture in UD likely reflects structural myometrial weakness, altered vascular supply, asymmetric uterine growth, and raised intrauterine pressure.[2] Reported presentations have ranged from abdominal pain and vomiting to overt hemodynamic compromise, including pallor, lethargy, blurred vision, and vertigo.[1,4,7] The present patient presented at 21 weeks with abdominal pain and nausea, and remained conscious and oriented with localized tenderness on examination.

A review of the English-language literature conducted through PubMed/MEDLINE and Google Scholar identified seven cases of spontaneous UR in UD for which complete case-level data could be extracted. Mean age was 24.6 years (range 18 to 35), five women (71.43%) were primigravid, and six uteri (85.71%) were unscarred. Rupture occurred at a mean gestational age of 19.6 weeks (range 17 to 29) and fell within the second trimester in six patients (85.71%). Abdominal pain was universal (100%), followed by features of hypovolemia in six (85.71%). Peritoneal signs were found in four (57.14%), while vomiting and vaginal discharge were found in three (42.86%) each. US was the initial imaging modality in all cases (100%), demonstrating free intraperitoneal fluid in five (71.43%). The right hemi-uterus was the site of rupture in three patients (42.86%), while the left hemi-uterus was involved in two (28.57%). Mean blood loss, reported in six cases, was 2333 mL (range, 1500-3000 mL). Laparotomy was performed in every patient (100%), comprising hemi-hysterectomy in five (71.43%), and repair in two (28.57%). All mothers survived (100%) and all fetuses died (100%) (Table 2).[1,2,4,7-10]

Localized tenderness with diminished bowel sounds in the present patient suggested a surgical rather than an obstetric cause. Shi *et al.* reported a 25-year-old at 17 weeks under an initial diagnosis of acute appendicitis and identified the ruptured UD intraoperatively.[8] Kebede *et al.* attributed a tender, rigid abdomen to placental abruption until free intraperitoneal fluid on US raised suspicion of rupture.[2] Free peritoneal fluid in a gravid woman without a uterine scar might therefore justify early exploration even when the working diagnosis is not obstetric.

Preoperative recognition is difficult because two-dimensional US identifies only 60% of uterine anomalies, whereas magnetic resonance imaging approaches complete diagnostic accuracy.[7] US in the present case demonstrated free intraperitoneal fluid but characterized the uterus as bicornuate, and UD was recognized only at laparotomy. Kebede *et al.* reported a US examination showing no uterine anomaly.[2] Tuştaş Haberal *et al.* and Gebreslase *et al.* described a solid mass adjacent to the gravid uterus that proved intraoperatively to be the contralateral horn.[1,9] Two-dimensional US might therefore be insufficient to delineate this anatomy before surgery.

Survival after rupture depends largely on the interval between the event and intervention.[8] Management demands hemodynamic resuscitation followed by laparotomy with either uterine repair or hysterectomy.[4] Reproductive outcomes after fertility-preserving management are generally favorable, with high conception and live-birth rates reported.[1] Uterine repair was achieved in the present patient. Shi *et al.* and Ali *et al.* likewise repaired the defect.[4,8] By contrast, Kebede *et al.* proceeded to right hemi-hysterectomy for a rupture measuring 10 to 15 cm, and Gupta *et al.* performed hemi-hysterectomy of the ruptured uterus.[2,10] The extent of the tear and the feasibility of hemostasis might therefore govern whether a horn can be salvaged.

Our report is limited by the absence of long-term fertility and recurrence follow-up and by the unavailability of the US images.

Table 1. Results of laboratory tests performed for the patient.

Test	Results	Normal range
WBC	10.3×10^9/L	$3.4\text{-}9.6\times10^9$/L
Granulocytes	72.2%	40%-75%
HGB	12.5 g/dL	12.3-15.3 g/dL
HCT	36.7%	35.5%-44.9%
RBC	4.32×10^{12}/L	$3.92\text{-}5.13\times10^{12}$/L
Platelets	280×10^9/L	$157\text{-}371\times10^9$/L
Glucose	129 mg/dL	70-140 mg/dL
CRP	14.13 mg/L	<3.0 mg/L
D-dimer	682.47 ng/mL	≤500 ng/mL

WBC, white blood cell; HGB, hemoglobin; HCT, hematocrit; RBC, red blood cell; CRP, C-reactive protein.

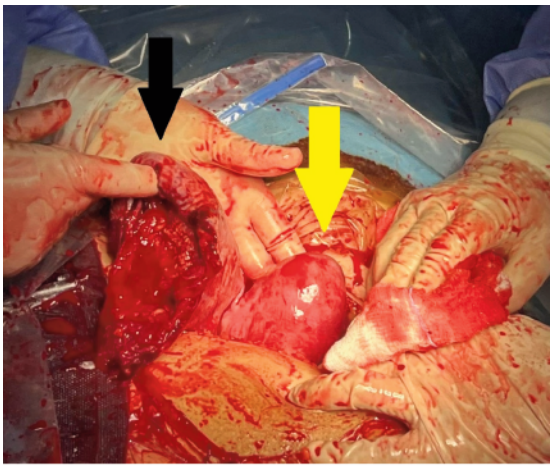


Figure 1. Intraoperative image during laparotomy showing the ruptured uterus (black arrow) and the intact uterus (yellow arrow).

Table 2. Characteristics of reported cases of UR during pregnancy in women with UD.

Author, year, country	Age (years)	Gravidity and parity	GA (weeks)	Prior uterine scar	Initial presentation	Imaging performed and findings	Rupture site	Blood loss (mL)	Management outcome	Maternal	Fetal outcome
Gupta *et al.*, 2013, India[10]	30	G2 P1	19	No	Abdominal pain, distended abdomen with rebound tenderness, vaginal bleeding and discharge, hypotension, tachycardia	US showing empty uterus with dead fetus in the abdominal cavity	Not reported	3000	Laparotomy with hemi-hysterectomy and removal of part of omentum	Survived	Died
Lovelace, 2016, United States[7]	19	G1 P0	19	No	Abdominal pain, vomiting	US showing bilateral pleural effusions, large upper abdominal free fluid, and a live breech fetus	Left uterine horn	Not reported	Laparotomy with left hemi-hysterectomy	Survived	Died
Tuştaş Haberal *et al.*, 2016, Turkey[9]	35	G2 P1	18	Yes	Abdominal pain, hypotension, tachycardia	US showing a live fetus, hemoperitoneum and a solid mass adjacent to the uterus	Anterior wall of the gravid hemi-uterus	2000	Laparotomy with supracervical hemi-hysterectomy	Survived. Discharged on POD 3	Died
Shi *et al.*, 2017, China[8]	25	G1 P0	17	No	Abdominal pain, fever, nausea, vomiting, abdominal muscle tension, right sided tenderness, hypotension	US showing a heterogeneous hypoechoic area of 8 by 2.7 cm in the right lower abdomen, with FHR 138	Right hemi-uterus	2500	Laparotomy with evacuation and uterine repair	Survived. Discharged on POD 9	Died
Kebede *et al.*, 2025, Ethiopia[2]	19	G1 P0	29	No	Abdominal pain, vaginal bleeding, tender rigid abdomen, hypotension, tachycardia, hypoxia	US showing free peritoneal fluid, absent fetal cardiac activity	Right hemi-uterus, posterior wall	3000	Laparotomy with right hemi-hysterectomy	Survived. Discharged on POD 5	Died
Ali *et al.*, 2026, Pakistan[4]	18	G1 P0	18	No	Abdominal pain, vomiting, pallor, lethargy, distended and diffusely tender abdomen, hypotension, tachycardia, hypoxia	US showing massive hemoperitoneum, IUFD and the fetus displaced into the upper abdomen	Right hemi-uterus, fundal region	2000	Laparotomy with uterine repair, evacuation and drain placement	Survived. DIC, metabolic acidosis	Died
Gebreslase *et al.*, 2026, Ethiopia[1]	26	G1 P0	17	No	Abdominal pain, vaginal bleeding, blurred vision, lightheadedness, vertigo, hypotension, tachycardia	US showing a live fetus, free fluid in the pelvic cul de sac and paracolic gutters, and a solid right adnexal massN	Left hemi-uterus, fundal region	1500	Laparotomy with supracervical hemi-hysterectomy	Survived. Discharged on POD 3	Died

UR, uterine rupture; UD, uterine didelphys; GA, gestational age; G, gravidity; P, parity; US, ultrasonography; POD, postoperative day; FHR, fetal heart rate; IUFD, intrauterine fetal demise; DIC, disseminated intravascular coagulation.

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Conclusions

Spontaneous UR may complicate an unscarred UD in the second trimester. Free intraperitoneal fluid on US could warrant laparotomy, and repair may be feasible when the defect is limited.

Contributions: Nahida H. Ahmed: conceptualization, supervision; Shano A. Muhammed: conceptualization; Huda M. Muhammad, Zhiyan M. Mohammed: investigation; Darya J. Hassan: supervision; Snur Othman: project administration; Aland T. Ahmed, Farida K. Hamasalih, Berun A. Abdalla: writing – review & editing; Rahand A. Yousif: writing – original draft. All authors approved the final version of the manuscript.

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Consent for publication: written informed consent was obtained from the patient for the publication of this manuscript and any accompanying images.

Availability of data and materials: the data generated by this study are fully included in the figures and/or tables of this article.

Declaration of generative artificial intelligence and artificial intelligence-assisted technologies in the writing process: during the preparation of this manuscript, Claude Opus 5 was used as an artificial intelligence-assisted tool to support language editing, grammar correction, and improvement of clarity and readability. The authors reviewed and edited all AI-assisted outputs and take full responsibility for the content, accuracy, and integrity of the manuscript.

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