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Non-Traumatic Posterior Uterine Wall Rupture in an Unscarred Uterus

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ABSTRACT

Spontaneous rupture of an unscarred uterus is an exceptionally rare but life-threatening obstetric complication, particularly in women without identifiable risk factors. We report the case of a 27-year-old multigravida woman with two prior vaginal deliveries who presented in spontaneous labor at term. During active labor, she developed acute abdominal pain with fetal bradycardia, leading to an emergency laparotomy that revealed a complete rupture in the posterior uterine wall. The fetus was delivered stillborn, and the uterus was successfully repaired. No identifiable risk factor was present, and the patient had received oxytocin infusion during labor. This case underscores the importance of high clinical suspicion for uterine rupture, even in unscarred uteri, especially in the presence of abnormal fetal heart rate patterns and sudden maternal symptoms. Early diagnosis and prompt surgical intervention are critical to improve maternal outcomes in such unexpected and severe complications.

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Introduction

Uterine rupture is a critical obstetric emergency that typically occurs in women with a history of uterine surgery, particularly cesarean delivery. In such cases, the uterine scar represents a known site of weakness, and clinical vigilance is heightened [1]. However, spontaneous rupture of an unscarred uterus remains an exceptional event, with a low incidence and often unpredictable clinical course [2]. When it does occur, it can be devastating due to the lack of prior warning signs and the possibility of atypical presentations, especially when the rupture involves the posterior uterine wall, a location less accessible to clinical examination and more likely to go unnoticed until complications arise [1].

This case is notable for several reasons: it involved a young multiparous woman with no uterine scar, no known malformations, and an uneventful pregnancy, who developed a posterior uterine rupture only revealed after vaginal delivery during the repair of an episiotomy. The subtle and delayed presentation underscores the diagnostic difficulty in such scenarios, where the absence of risk factors may lead to false reassurance. By reporting this case, we aim to raise awareness about this rare clinical entity and to encourage heightened attention to unexplained postpartum hemorrhage as a potential warning sign of uterine rupture, even in low-risk patients.

Observation

We report the case of a 27-year-old woman, gravida 3, para 3, with a history of two previous full-term vaginal deliveries. She is the mother of two living children, one male and one female. The patient had no significant medical or surgical history, and her current pregnancy was followed regularly without complications.

The patient was admitted to our department in spontaneous labor at 39 weeks of gestation. Labor progressed regularly with oxytocin infusion at 4 drops per minute until full cervical dilation was achieved. Vaginal delivery resulted in the birth of a male neonate weighing 3000 grams with an Apgar score of 9/10. During episiotomy repair, a moderate amount of dark vaginal bleeding was noted despite a well-contracted uterus. Uterine revision was performed, which revealed a posterior uterine wall defect. The patient was then immediately transferred to the operating room for emergency laparotomy. Surgical exploration confirmed a moderate hemoperitoneum and a posterior uterine rupture lateralized to the left side. Conservative uterine repair was undertaken. In the postoperative period, uterine atony developed with persistent bleeding unresponsive to maximal medical treatment, necessitating a hemostatic hysterectomy. Two units of packed red blood cells were transfused due to hypotension and tachycardia. The patient's condition stabilized thereafter.

On admission, the patient was hemodynamically stable, with blood pressure at 110/70 mmHg, heart rate 85 bpm, and normal temperature. Conjunctivae were well-colored. Gynecological examination showed regular uterine contractions, cervical dilation

at 6 cm, intact membranes, and a mobile cephalic presentation. No fetal distress signs were observed. Following vaginal delivery, during episiotomy repair, abnormal vaginal bleeding prompted uterine revision that unexpectedly revealed a large posterior uterine wall rupture with myometrial discontinuity (Figure 1), which was not suspected prior to revision.

Ultrasound performed prior to delivery showed a singleton pregnancy with an anterior placenta, normal amniotic fluid index, and fetal weight estimated at 3100 grams. Fetal heart rate was normal with adequate variability. Laboratory tests were unremarkable. Post-delivery, hemoglobin dropped due to hemorrhage. The diagnosis of posterior uterine rupture was made intraoperatively after the uterine revision raised suspicion and was confirmed by laparotomy findings of hemoperitoneum and a rupture localized to the posterior uterine wall.

The final diagnosis was spontaneous rupture of the posterior uterine wall in an unscarred uterus, revealed postpartum during uterine revision and confirmed surgically.

Labor was augmented with oxytocin infusion. Following delivery and identification of the rupture, an emergency laparotomy was performed. Conservative repair of the uterine defect was done to preserve fertility (Figure 2). However, refractory uterine atony and bleeding postoperatively led to a hemostatic hysterectomy. Blood transfusion with two units of packed red blood cells and supportive care were provided.

Figure 1: Posterior Uterine Rupture during Laparotomy
Intraoperative image revealing a wide rupture in the posterior wall of an unscarred uterus (green arrow), associated with massive hemoperitoneum and irregular myometrial edges.

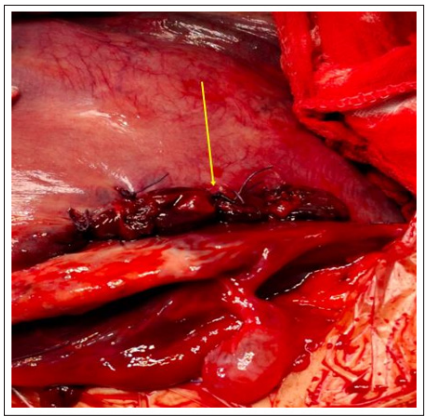

Figure 2: Surgical Repair of the Posterior Uterine Rupture
Image showing the repair of the posterior wall rupture (yellow arrow) using interrupted sutures after achieving hemostasis.

The patient's postoperative course was favorable, with hemodynamic stabilization. She was monitored in intensive care initially and then transferred to the maternity ward. She was discharged in good condition with follow-up counseling regarding future pregnancies and the implications of hysterectomy.

The patient was initially shocked by the diagnosis but expressed gratitude for the prompt medical intervention that saved her life. She was counseled extensively about her surgical treatment and its effects on future fertility and received psychological support.

Informed Consent
Written informed consent was obtained from the patient for publication of this case report and the use of anonymized clinical images.

Discussion
Uterine rupture (UR) is defined as a discontinuity of the uterine wall occurring during pregnancy or labor, with approximately 75% of cases reported during labor [2]. Uterine rupture is classically categorized into two types: complete uterine rupture, which involves a full-thickness tear of the uterine wall (endometrium, myometrium, and serosa), resulting in a direct communication between the uterine cavity and the peritoneal cavity; and incomplete or partial uterine rupture, also referred to as uterine dehiscence, which involves a disruption of the endometrium and myometrium while preserving the integrity of the uterine serosa (visceral peritoneum) [3].

Uterine rupture in an unscarred uterus is a very rare complication in developed countries but is relatively more frequent in developing nations. This disparity reflects differences in socioeconomic conditions, widespread poverty, and limited access to adequate prenatal care. In unscarred uteri, the incidence of uterine rupture is estimated to range from 1 in 17,000 to 1 in 20,000 deliveries [4].

Uterine rupture (UR) is generally classified into two main types: traumatic and spontaneous. Traumatic uterine rupture may result from external physical forces, such as direct abdominal trauma or iatrogenic causes, including intrauterine manipulations (e.g., internal version, forceful manual removal of the placenta) or excessive fundal pressure during labor. In contrast, spontaneous uterine rupture occurs in the absence of trauma and often presents suddenly, making it a particularly serious and unpredictable obstetric emergency [1].

Spontaneous rupture of an unscarred gravid uterus is exceptionally rare but potentially catastrophic. Several risk factors have been identified in the literature. These include uterine anomalies (such as bicornuate or septate uterus), grand multiparity, overdistention of the uterus (due to macrosomia or multiple gestation), abnormal placentation (placenta percreta or accreta), a history of uterine curettage, obstructed labor, instrumental delivery, and the use of uterotonic agents—particularly oxytocin (Syntocinon). Oxytocin, commonly used for labor induction or augmentation, can lead to uterine hyperstimulation when not properly titrated, significantly increasing the risk of uterine rupture, even in unscarred uteri [3].

In our patient, grand multiparity was the main background risk factor. Additionally, she received Syntocinon during labor, which may have contributed to uterine hyperstimulation and increased myometrial stress. The combination of high parity and oxytocin exposure likely played a key role in the occurrence of this unexpected uterine rupture. This case underscores the importance of cautious use of uterotonic agents and close monitoring during

labor, especially in multiparous women, even in the absence of a uterine scar [5].

Several authors have reported cases where no obvious cause was found. Schrinsky described spontaneous ruptures absent any known predisposing factors, and Lwamulungi similarly reported cases without defined causes [6,7]. More recent literature suggests that subtle uterine abnormalities, such as uterine diverticula, arteriovenous malformations, or endometriosis, may contribute to these unexplained ruptures [8]. Furthermore, microscopic changes in the myometrium induced by prolonged labor and excessive pressure from the presenting fetal part have been implicated. Liu et al. demonstrated irreversible cellular damage in the lower uterine segment's muscle fibers during labor in unscarred uteri, which may weaken uterine integrity and predispose to rupture [9].

Uterine rupture most frequently occurs in the lower uterine segment, particularly during labor, as this area undergoes significant thinning and mechanical stress from the descending fetal presenting part. In contrast, when rupture occurs outside of labor, it more commonly involves the uterine body (corpus) [6]. Posterior uterine ruptures are rare and often associated with specific risk factors such as previous uterine surgery, abnormal placentation, or uterine anomalies [10]. In our case, the rupture was located in the posterior segment of the uterus, an unusual presentation in the absence of typical predisposing factors. This atypical location raises the possibility of subtle underlying myometrial weakness or mechanical stress that is not always detectable clinically or radiologically [4].

Uterine rupture typically presents with acute symptoms such as severe pelvic pain, vaginal bleeding, and hemodynamic instability. However, posterior uterine ruptures may be clinically silent, leading to delayed diagnosis [9]. In our case, the patient exhibited no symptoms during labor and was only diagnosed with a posterior uterine rupture during postpartum uterine revision, prompted by hemorrhage and tachycardia. Management of uterine rupture requires emergency surgery. While conservative repair is preferred in young women with limited rupture and future fertility desires, uncontrollable bleeding or uterine atony may necessitate hysterectomy [7]. In our patient, a hemostatic hysterectomy was performed due to persistent atony despite initial conservative intent.

Conclusion

Spontaneous rupture of the posterior wall of an unscarred uterus is an exceptionally rare and potentially life-threatening obstetric emergency. Its atypical clinical presentation, especially in the absence of classic risk factors or signs during labor, can delay diagnosis. This case highlights the importance of maintaining a high index of suspicion for uterine rupture even in low-risk patients, particularly when unexplained postpartum hemorrhage or hemodynamic instability occurs. Prompt surgical exploration remains the cornerstone of diagnosis and management. Although conservative surgical repair is preferred in women desiring future fertility, hysterectomy may be necessary in cases of extensive tissue damage or refractory uterine atony [11-14].

Competing Interests

The authors declare no competing interest.

Authors' Contributions

Specify the contribution to the work and write-up of the manuscript for each person listed as author.

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