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Unusual Presentation of Uterine Rupture – A Case Series

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HIGHLIGHTS

- Atypical rupture presentations
- Second-trimester rupture cases
- Primigravida rupture occurrence
- High perinatal mortality
- Early diagnosis essential

Key Words:
Suprapatellar nailing
Proximal Tibial fracture
Tibial shaft fracture
Intramedullary nail
Lysholm score
LEFS

ABSTRACT

Introduction: Uterine rupture is a catastrophic obstetric emergency defined by complete disruption of the uterine wall, including the serosa, leading to significant maternal and perinatal morbidity and mortality. While commonly associated with scarred uteri in the third trimester, atypical and unusual presentations are increasingly recognized, particularly in low-resource settings. These atypical manifestations often delay diagnosis and intervention, thereby worsening outcomes. **Aim & Objectives:** This study aims to highlight the spectrum of unusual presentations, associated risk factors, and clinical outcomes of uterine rupture cases managed at a tertiary care center. **Material and Methods:** A retrospective case series analysis was conducted in a tertiary care hospital in North Karnataka. Seven cases of uterine rupture were reviewed. Data were collected regarding demographic characteristics, obstetric history, clinical presentation, intraoperative findings, management strategies, and maternal and fetal outcomes. Cases included both scarred and unscarred uteri across different gestational ages. **Results:** Seven women aged 24–35 years were analyzed, including two primigravida and five multigravida with prior cesarean sections. Five ruptures occurred in the third trimester, while two occurred in the second trimester. All patients presented with acute abdominal pain; other symptoms included giddiness, vaginal bleeding, and signs of shock. Hemoperitoneum was observed in all cases. Mean hemoglobin was 6.1 g/dL. Six cases had absent fetal heart rate at presentation. Surgical management included four hysterectomies and three uterine repairs. Maternal survival was 100%, while perinatal mortality was 85.7%. **Conclusion:** This study underscores that uterine rupture may present atypically, including early gestation and in primigravida women. Delayed diagnosis significantly contributes to adverse fetal outcomes despite favorable maternal survival. Strengthening antenatal care, discouraging unskilled obstetric interventions, and improving early referral systems are essential to prevent such complications.

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INTRODUCTION

Uterine rupture is a rare, yet life-threatening obstetric complication characterized by complete disruption of all layers of the uterine wall, often resulting in catastrophic consequences for both mother and fetus. It remains a major contributor to maternal and perinatal morbidity and mortality, particularly in developing countries where access to timely obstetric care is limited. The incidence of uterine rupture varies widely depending on the population studied, with rates ranging from 0.3% to 1.5% in women with a previous cesarean scar and as low as 0.006% to 0.012% in unscarred uteri. Despite its rarity, the severity of its outcomes necessitates heightened clinical vigilance [1,2].

Traditionally, uterine rupture is associated with scarred uteri, particularly in women undergoing trial of labor after cesarean section. However, increasing evidence highlights that rupture can also occur in unscarred uteri due to various etiologies such as obstructed labor, injudicious use of uterotonic agents, trauma, uterine anomalies, and high parity. Furthermore, unusual presentations of uterine rupture-such as those occurring in early gestation, in primigravida women, or without classical signs-pose significant diagnostic challenges. These atypical manifestations often lead to delays in diagnosis and intervention, thereby exacerbating maternal and fetal outcomes [3,4].

The classical clinical features of uterine rupture include sudden onset of abdominal pain, cessation of uterine contractions, vaginal bleeding, fetal distress, and signs of hypovolemic shock. However, these features may not always be evident, particularly in cases with gradual dehiscence or posterior wall rupture. In such scenarios, nonspecific symptoms such as giddiness, shoulder tip pain, or subtle hemodynamic instability may be the only indicators, leading to misdiagnosis or delayed referral.

Ultrasonography may aid in diagnosis by detecting hemoperitoneum or fetal demise, but clinical suspicion remains paramount [5,6]. The burden of uterine rupture is disproportionately higher in low-resource settings, where factors such as limited antenatal care, unskilled birth attendants, delayed referrals, and inadequate emergency obstetric services contribute significantly to adverse outcomes. Practices such as unsupervised labor induction, fundal pressure, and unsafe abortion further increase the risk. Early gestational ruptures, although rare, are increasingly being reported in association with uterine instrumentation and trauma, highlighting the need for stricter regulation and awareness [7,8].

Management of uterine rupture requires immediate surgical intervention, often necessitating laparotomy with either uterine repair or hysterectomy, depending on the extent of damage and the patient's condition. Aggressive resuscitation with blood transfusion is critical due to the massive hemorrhage typically associated with this condition. While maternal survival has improved with advancements in surgical and critical care, perinatal outcomes remain poor, particularly in cases with delayed presentation [9,10]. Schematic overview of atypical and classical presentations of uterine rupture, highlighting risk factors, diagnostic challenges, emergency management pathways, intraoperative complications, and maternal–perinatal outcomes (**Figure 1**).

This study presents a series of seven cases of uterine rupture with unusual clinical presentations managed at a tertiary care center. The cases encompass a wide spectrum, including early gestation rupture, primigravida involvement, and complex intraoperative findings such as placenta accreta and bladder injury. By analyzing these cases, the study aims to enhance understanding of atypical presentations, identify contributing factors, and

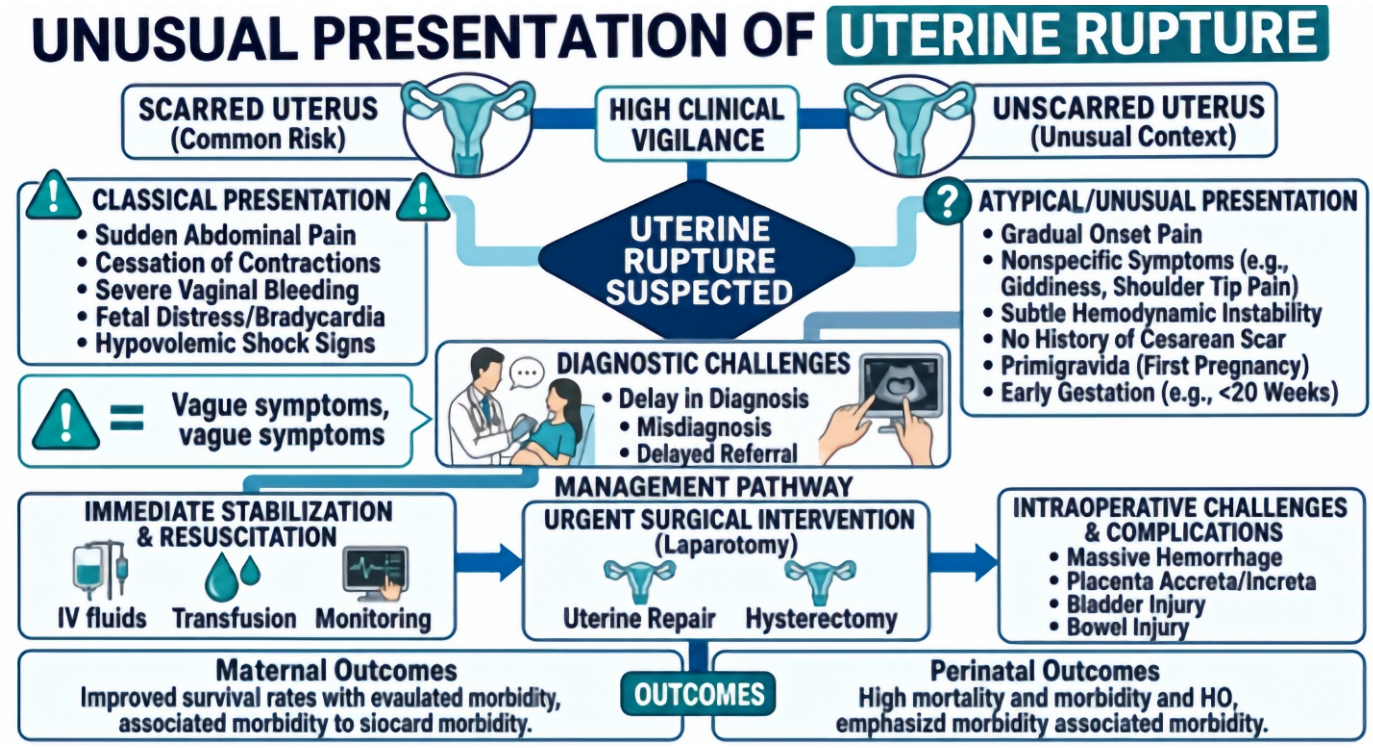

Figure 1: Clinical spectrum, diagnostic challenges, management, and outcomes of unusual presentations of uterine rupture.

emphasize the importance of early recognition and prompt management. Additionally, it seeks to highlight preventive strategies that can reduce the incidence and improve outcomes of this devastating obstetric emergency.

MATERIALS & METHODS

This prospective observational study was conducted at a tertiary care hospital in North Karnataka. Ethical approval has been obtained from the Ethical Approval Committee of tertiary care hospital in North Karnataka.

Study Population

The study population comprised seven pregnant women aged between 24 and 35 years managed for uterine rupture at a tertiary care center in North Karnataka. Among them, two were primigravida and five were multigravida with a history of previous cesarean section. Cases included both scarred and unscarred uteri, with rupture occurring across the second and third trimesters, representing a diverse spectrum of clinical presentations.

Data Analysis

Data were retrospectively analyzed using descriptive methods focusing on clinical presentation, intraoperative findings, and outcomes. Variables included gestational age, parity, symptoms, hemoglobin levels, imaging findings, surgical management, and maternal and fetal outcomes. Frequencies and percentages were used to summarize categorical data, while mean values were calculated for continuous variables such as hemoglobin and blood loss to assess severity and clinical trends.

RESULTS

The demographic & obstetric profile included a total of seven cases, with patients aged between 24 and 35 years. Among them, two were primigravida while five were multigravida. A history of previous lower-segment cesarean section was present in five cases. In terms of gestational age at presentation, two cases occurred during the second trimester, & five cases were observed in the third trimester, highlighting the varied timing & background characteristics associated with unusual presentations of uterine rupture **(Table 1)**.

The clinical presentation of unusual uterine rupture in this series showed that sudden abdominal pain was present in all cases (100%), while giddiness was reported in 57% of patients. Vaginal bleeding, shoulder tip pain, and loss of uterine contour were also observed as important clinical features. The majority of patients presented in shock, with a shock index of ≥1.4, indicating significant hemodynamic compromise. Additi-onally, the mean hemoglobin level was 6.1 g/dL, reflecting severe anemia and substantial blood loss associated with these presentations **(Table 2)**. The intraoperative findings in cases of unusual uterine rupture revealed hemoperitoneum in all patients (100%). Fetal heart rate was absent in six cases at the time of surgery. The site of rupture varied, with anterior wall rupture seen in four cases, posterior wall rupture in two cases, and fundal rupture in one case. Additional complications included the presence of placenta accreta and associated bladder injury, highlighting the severity and complexity of these surgical presentations **(Table 3)**. The management and outcomes of unusual uterine rupture cases showed that hysterectomy was performed in four patients, while uterine repair was possible in three cases. Bladder repair was required in one patient. Maternal survival was achieved in all cases, although all patients required ICU admission for intensive monitoring and care. Regarding fetal outcomes, there was only one live birth, while six cases resulted in intrauterine fetal demise. The mean estimated blood loss was approximately 3200 mL, indicating the severity of hemorrhage associated with these cases **(Table 4)**.

The case-wise summary of unusual uterine rupture included seven patients with varied presentations. One primigravida in the second trimester had a fundal rupture due to trauma and underwent repair but resulted in IUFD. Among multigravida patients in the third trimester, anterior scar rupture due to previous LSCS and posterior rupture with placenta accreta were managed by hysterectomy, both resulting in IUFD. Another primigravida had anterior rupture due to induction injury managed by repair with IUFD. A second trimester posterior rupture due to unsafe abortion was repaired with IUFD. One case with bladder injury had hysterectomy with repair and a live birth, while another anterior scar dehiscence required hysterectomy and resulted in IUFD **(Table 5)**.

Table 1: Demographic and Obstetric Profile of unusual presentation of uterine rupture

Parameter	Findings
Total cases	7
Age range	24–35 years
Primigravida	2
Multigravida	5
Previous LSCS	5
Gestation (2nd trimester)	2
Gestation (3rd trimester)	5

Table 2: Clinical Presentation of unusual presentation of uterine rupture

Clinical Feature	Frequency
Sudden abdominal pain	100%
Giddiness	57%
Vaginal bleeding	Present
Shoulder tip pain	Present
Loss of uterine contour	Present
Shock (SI ≥1.4)	Majority
Mean Hemoglobin	6.1 g/dL

Table 3: Intraoperative Findings of unusual presentation of uterine rupture

Parameter	Findings
Hemoperitoneum	100%
Absent FHR	6 cases
Anterior rupture	4
Posterior rupture	2
Fundal rupture	1
Placenta accreta	Present
Bladder injury	Present

Table 4: Management and Outcomes of unusual presentation of uterine rupture

Parameter	Findings
Hysterectomy	4
Uterine repair	3
Bladder repair	1
Maternal survival	100%
ICU admission	All cases
Live births	1
IUFD	6
Mean blood loss	~3200 mL

Table 5: Case-wise Summary of unusual presentation of uterine rupture

Case	Gravida	Gestation	Type of Rupture	Special Findings	Management	Outcome
1	Primi	2nd trimester	Fundal	Trauma	Repair	IUFD
2	Multi	3rd trimester	Anterior scar	LSCS scar	Hysterectomy	IUFD
3	Multi	3rd trimester	Posterior	Accreta	Hysterectomy	IUFD
4	Primi	3rd trimester	Anterior	Induction injury	Repair	IUFD
5	Multi	2nd trimester	Posterior	Unsafe abortion	Repair	IUFD
6	Multi	3rd trimester	Anterior	Bladder injury	Hysterectomy + repair	Live
7	Multi	3rd trimester	Anterior	Scar dehiscence	Hysterectomy	IUFD

DISCUSSION

The present case series highlights the diverse and atypical presentations of uterine rupture, emphasizing its continued significance as a life-threatening obstetric emergency. While uterine rupture is traditionally associated with scarred uteri in the third trimester, this study demonstrates that it can occur across a wide clinical spectrum, including early gestation and in primigravida women. Such unusual presentations pose diagnostic challenges and often contribute to delays in management, thereby adversely affecting fetal outcomes [11,12]. In this series, two cases occurred in the second trimester, which is relatively uncommon. These early gestational ruptures were associated with unsafe abortion practices & trauma, underscoring the critical role of unregulated procedures in increasing maternal risk. **Robinson N et al. (2015)** reported in low-resource settings where access to safe abortion services remains limited. These cases highlighted the need for improved reproductive health services and stricter regulation of invasive procedures [13,14]. Notably, two cases involved primigravida women, which contradicts the conventional understanding that uterine rupture predominantly occurs in multiparous women. In these instances, rupture was linked to inappropriate labor induction & excessive fundal pressure, reflecting poor obstetric practices. **Walsh CA & Baxi LV.** In **2007,** the report reinforced the importance of skilled birth attendance and adherence to standardized labor management protocols to prevent such complications [15]. The majority of cases (five out of seven) occurred in women with previous cesarean sections, reaffirming the role of uterine scarring as a major risk factor. However, the absence of warning signs in several cases highlights the unpredictable nature of uterine rupture.

Clinical presentation was dominated by sudden abdominal pain, but other symptoms such as giddiness and shoulder tip pain were also observed, indicating internal hemorrhage. The presence of shock in most patients, along with a mean hemoglobin of 6.1 g/dL, reflects the severity of blood loss at presentation [16].

Intraoperative findings revealed a predominance of anterior wall ruptures, particularly at previous scar sites, consistent with existing literature. However, posterior and fundal ruptures were also observed, indicating that rupture is not confined to scarred areas. The occurrence of placenta accreta and bladder injury in some cases further illustrates the complexity and severity of these presentations. These findings necessitate a high index of suspicion and prompt surgical intervention [17,18].

Management in all cases involved emergency laparotomy, with four patients requiring hysterectomy and three undergoing uterine repair. The decision for hysterectomy was based on the extent of uterine damage and the patient's hemodynamic status. Despite the severity of presentation, maternal survival was 100%, which can be attributed to timely surgical intervention and the availability of blood transfusion and intensive care facilities. However, all patients required ICU admission, reflecting the critical nature of their condition [19].

In contrast, perinatal outcomes were poor, with six out of seven cases resulting in fetal demise. This high perinatal mortality rate (85.7%) is consistent with previous studies and is primarily due to delayed diagnosis and referral. The only live birth occurred in a case where prompt intervention was possible, highlighting the importance of early recognition [20].

Bhutta ZA et al. (2009) underscored the need for preventive strategies, including promoting institutional deliveries, discouraging unskilled obstetric interventions, and strengthening antenatal surveillance. Education of healthcare providers and community awareness are crucial to ensure early detection and timely referral. Additionally, counseling regarding birth spacing and appropriate management of previous cesarean deliveries is essential [21,22].

Uterine rupture can present in unexpected ways, and clinicians must maintain a high index of suspicion, especially in resource-limited settings. Early diagnosis and prompt management are key to improving maternal and fetal outcomes [23].

CONCLUSION

This case series underscores the clinical spectrum and severity of unusual uterine rupture presentations, extending beyond classical third-trimester scar dehiscence. Cases ranged from early second trimester ruptures due to unsafe abortions and trauma to term ruptures in both scarred and unscarred uteri, precipitated by unskilled interventions & delayed referrals. These cases emphasize that uterine rupture can occur even in primigravida or early gestation, & without warning signs in scarred or unscarred uterus.

Prevention requires promoting institutional deliveries, discouraging untrained procedures, ensuring spacing between pregnancies, strengthening antenatal surveillance, and educating health workers.

LIMITATIONS & FUTURE PERSPECTIVES

The study's limitations include a single-centre setting, a relatively small sample size, and a short study duration, which may limit the broader applicability of the results. Future studies should incorporate multicentre designs with larger populations to enhance validity, assess long-term outcomes, and investigate advanced diagnostic & management approaches. Such efforts will improve overall patient care and help minimize complications.

CLINICAL SIGNIFICANCE

The clinical significance of this study lies in its potential to bridge the gap between research findings and practical healthcare applications. It emphasizes the importance of trans-lating scientific observations into meaningful improve-ments in patient care, diagnosis, and treatment outcomes. By highlighting real-world relevance, the study contributes to evidence-based medical practice and supports informed clinical decision-making. Ultimately, the findings aim to enhance patient quality of life, optimize therapeutic strategies, and promote better disease management in clinical settings.

ABBREVIATIONS

ICU: Intensive Care Unit
UR: Uterine Rupture
CS: Cesarean Section
FHR: Fetal Heart Rate

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AUTHOR CONTRIBUTIONS

All authors significantly contributed to the study conception and design, data acquisition, or data analysis and interpretation. They participated in drafting the manuscript or critically revising it for important intellectual content, consented to its submission to the current journal, provided final approval for the version to be published, and accepted responsibility for all aspects of the work. Additionally, all authors meet the authorship criteria outlined by the International Committee of Medical Journal Editors (ICMJE) guidelines.

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CONFLICT OF INTEREST

Authors declared that there is no conflict of interest.

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All necessary consent & approval was obtained by authors.

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All data generated and analyzed are included within this research article. The datasets utilized and/or analyzed in this study can be obtained from the corresponding author upon a reasonable request.

USE OF ARTIFICIAL INTELLIGENCE (AI) & LARGE LANGUAGE MODEL (LLM)
The authors confirm that no AI & LLM tools were used in thewriting or editing of the manuscript, and no images were altered or manipulated using AI & LLM.

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