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Case Report

Atypical Intrapartum Uterine Rupture in a Woman with Prior Caesarean Section: A Case report

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Abstract

Uterine rupture is a rare but catastrophic obstetric complication, carrying significant risks of maternal and Fetal morbidity and mortality, especially in women with a prior cesarean section. This case report details the clinical course of a 24-year-old woman with a history of previous cesarean delivery because of fetal hypoxia, gestational diabetes mellitus (GDM), and suspected intrauterine growth restriction (IUGR), who experienced a uterine rupture during a trial of labor after cesarean (TOLAC). The patient presented at 36+6 weeks gestation with suspected IUGR, was monitored, and underwent spontaneous rupture of membranes, followed by labor augmentation. Intraoperatively, a uterine rupture at the site of the prior cesarean scar was identified with the foetus completely delivered into the abdominal cavity. This case underscores the critical importance of meticulous antenatal assessment, vigilant intrapartum monitoring, and the need for prompt surgical intervention when complications arise during TOLAC in high-risk pregnancies. The case also highlights that despite close monitoring and relatively low risk TOLAC, adverse events can occur. This report emphasizes the need for clinicians to always be cognizant regardless of low risk factors and absence clinical presentations of uterine rupture to ensure timely and appropriate management.

Keywords: Uterine rupture; trial of labour after caesarean (TOLAC); intrauterine growth restriction (IUGR); gestational diabetes mellitus (GDM); caesarean section

Abbreviations: IUGR: Intrauterine Growth Restriction; CS: Caesarean Section; GDM: Gestational Diabetes Mellitus; OGTT: Oral Glucose Tolerance Test; GBS: Group B Streptococcus; AC: Abdominal Circumference; BPD: Biparietal Diameter; HC: Head Circumference; FL: Femur Length; AFI: Amniotic Fluid Index; AURI: (Likely a typo and should be AFI - Amniotic Fluid Index); ACMRI: (Likely a typo and should be AFI - Amniotic Fluid Index); CTG: Cardiotocography; FHR: Fetal heart rate; TOLAC: Trial of Labour after Caesarean; VBAC: Vaginal Birth after Caesarean

Introduction

Uterine rupture is a full-thickness disruption of the uterine wall, constitutes a critical obstetric emergency [1]. This is a life-threatening pregnancy complication for both the pregnant person and foetus, and most often occurs in gravid patients attempting vaginal birth after cesarean (VBAC) [1,2]. This event carries substantial risks of maternal and fetal morbidity and mortality, demanding rigorous clinical vigilance for prompt recognition and management [2]. Women with prior uterine rupture face a 10%

chance of experiencing this complication again in future pregnancies [3]. The incidence of uterine rupture following a prior cesarean section (CS) varies widely, ranging from 0.1% to 2.5%, influenced by factors such as geographic location and labor management [4,5]. A study examining births in Norway between 1999 and 2005, found that uterine rupture occurred in 5.0 per 1,000 mothers with a prior CS [6]. In a separate study, the prevalence of uterine rupture after trial of labor (TOL) was 1.6% [7]. However, this is higher than what is typically seen in wealthy countries, but comparable to rates reported in African research [7].

In a multi-country study, the overall prevalence of uterine ruptures was 3.3 per 10,000 deliveries, 22 per 10,000 in women with a previous CS, and 0.6 per 10,000 in women without a previous CS [4]. Attempting a vaginal birth after a previous cesarean delivery (TOLAC) is the strongest risk factor for uterine rupture [8]. The risk is elevated compared to an elective repeat cesarean section [4]. Women with a previous CS who labor spontaneously have an increased risk of uterine rupture compared to those undergoing elective repeat CS. The rate is approximately 0.52%. Induction of labor after a prior CS is associated with a higher risk of uterine rupture, with rates ranging from 1.4% to 4%. Induction with prostaglandins carries a greater risk compared to spontaneous labor. Augmentation of labor with oxytocin is also a risk factor. Labor lasting longer than 15 hours can also increase the risk of rupture. Fetal weight greater than 3.8 kg is associated with a higher risk of uterine rupture, and gestational age of 41 weeks or more increases the risk.

The most common risk factor cited by mothers is maternal age. Women aged 35 or older are at higher risk. Some studies show that women aged 40 and older are at even higher risk. A short interval between pregnancies, especially less than 16-18 months since the last birth, increases the risk [7,9]. The clinical manifestations of uterine rupture can vary, and initial symptoms may be non-specific, which makes prompt diagnosis challenging [10]. Sudden, severe, and persistent abdominal pain, often described as a tearing sensation, is a common symptom [10-13]. This pain may persist even between contractions [10,11,14]. The pain can be localized to the site of a previous uterine scar [14]. Uterine contractions may become less intense, slower, or even stop altogether [11,12,14]. There may be a change in the contraction pattern. Fetal bradycardia (slow heart rate) is a common and sensitive indicator of maternal end-organ perfusion and fetal health [1,11,15]. Other signs include variable decelerations or a non-reassuring fetal heart rate tracing. There may be loss of fetal station, where the foetus moves back up the birth canal. In severe cases, the absence of fetal heart sounds may be noted. Possible symptoms of uterine rupture are signs of hypovolemic shock due to blood loss and may include rapid heart rate (tachycardia), low blood pressure (hypotension), agitation, anxiety, and cold, clammy skin.

Case Presentation

A 24-year-old G2P1 woman (gravida 2, para 1) with a history of prior cesarean section (CS) in March 2023, gestational diabetes mellitus (GDM), and suspected intrauterine growth restriction (IUGR) at 36+6 weeks of gestation, was admitted for observation.

History

The patient's previous CS was performed because of fetal hypoxia. The prior pregnancy was complicated by GDM. She did not breastfeed following her previous delivery. Family history was notable for type 2 diabetes in her father. Her blood type was B positive.

Antenatal Course

Her estimated due date was February 2, 2025, based on her last menstrual period. An ultrasound at 7+1 weeks corresponded to 6+6 weeks gestation. OGTT was 5.4-5-6.4, with negative GBS. Ultrasound at 33+1 weeks showed AC 280mm (31+4 weeks), and ultrasound at 37 weeks showed fetal weight of 2500 g +/- 360 g (BPD 91.4/37+1, HC 322/36+2, AC 304.5/34+3, FL 66.7/34+2), with placenta fundal and anterior, AFI 102, AURI 0.58, ACMRI 0.71. Upon admission, CTG showed initial tachycardia followed by a reactive and undulatory FHR of 155 bpm, her blood pressure was 110/60 mmHg, and weight 86.9 kg. HbA1c was 5.1% (32 mmol/mol).

Hospital Course

She was monitored with three daily CTGs and AFI / CD ultrasound checks twice a week. On January 15th, the estimated fetal weight was 2380g with AFI 10, fetal biophysical profile (BPP) with the score of 9. On January 18, 2025 at 2:20 PM, spontaneous rupture of membranes occurred (clear amniotic fluid) without contractions, and she was transferred to the labor ward. Cervical examination revealed a short, 2 cm dilated cervix, with the fetal head engaged. Labor was augmented with a minimal dose of oxytocin at 4:40 PM, with pethidine analgesia at 4 cm dilation. At 9:15 PM, the cervix was 5-6 cm dilated with a prolonged deceleration on the CTG. IV tocolysis was administered, gradually improving the FHR to normal. At that time vaginal examination did not reveal any umbilical cord prolapse or vaginal bleeding, cervix was 6cm, head (-1). Taking everything into account (prior cesarean section, IUGR) the decision was made to perform an caesarean section.

Operative Findings

An iterative cesarean section was performed under spinal anaesthesia at 9:33 PM. During the procedure, it was noted that the foetus had already been delivered into the abdominal cavity with barely any bleeding and intact (nad still fully functioning placenta). A live male infant weighing 2390 g / 47 cm was delivered, with Apgar scores of 10 at 1 and 5 minutes, and umbilical cord pH of 7.23. Intraoperatively, a uterine rupture (dehiscence) at the site of the previous CS scar was confirmed.

Postoperative Course

Intraoperatively, she received intravenous cefazolin 2 g, cytokinin, later followed by clindamycin and gentamicin. Postoperative Clexane and analgesics were administered. She remained afebrile with a normal postpartum course. Urine culture on January 19 was sterile.

Discharge

The patient was discharged on January 23, 2025, in good general health, afebrile, and tolerating breastfeeding. The surgical wound was healing well and lochia was normal. She was advised to rest, attend suture removal on January 27th, follow up with her gynaecologist in 6 weeks, repeat OGTT in 12 weeks and avoid pregnancy for at least a year.

Discussion

This case illustrates the rare but potentially catastrophic complication of uterine rupture during TOLAC. Key risk factors present in this case include a prior cesarean section, labor augmentation with oxytocin. The sudden appearance of fetal decelerations on CTG without any other clinical symptoms and the eventual discovery of uterine rupture highlight the challenges in recognizing and managing this complication. This case emphasizes that despite careful monitoring, unexpected events such as uterine rupture can occur even in seemingly well-managed cases. Early recognition, prompt decision-making, and a multidisciplinary team approach to operative management contributed to a positive maternal and neonatal outcome. The patient's history of a prior CS is a significant risk factor for uterine rupture. A meta-analysis of pooled data from 25 studies indicated an overall incidence of pregnancy-related uterine rupture of 0.07%, with a lower rate of 0.012% for spontaneous rupture of unscarred uteri in developed countries. However, this risk increases substantially in women with a prior CS. A study in Ethiopia found a pooled prevalence of uterine rupture of 3.98%, with previous CS as a significant determinant, demonstrating the higher incidence in some regions. Another review reported that 52% of uterine rupture cases occurred in women with previous CS scars.

This contrasts with women with unscarred uteri, who face a much lower risk of rupture unless there are other contributing factors. The type of uterine incision from the previous CS plays a crucial role in the risk of uterine rupture. Classic cesarean deliveries, involving a vertical midline uterine incision, are associated with a higher risk of rupture compared to low transverse incisions [16]. While the specific type of uterine incision was not detailed in the case report, the type of incision is critical to understanding the patient's risk. A recent study in the Journal of Obstetrics and Gynaecology showed an increased risk of uterine rupture in women with prior low vertical uterine incisions compared to those with low transverse incisions [18]. This underscores the need for precise documentation of the prior incision type, which is often missing from medical records, which in turn, limits a more accurate risk assessment. The timing and method of labor also significantly influence uterine rupture rates [17-19]. Induction and augmentation of labor with oxytocin have been associated with an increased risk of rupture [8,16,19].

A recent meta-analysis found a significantly higher rate of complete uterine rupture (CUR) with TOLAC, with an odds ratio (OR) of 7.4 (p=0.017). This study identified TOLAC as the only independent risk factor associated with CUR. Further, the use of oxytocin increased the risk of CUR with an OR of 2.9. The study also showed that multiparity ≥ 3 was more frequent in CUR cases with a p-value of 0.020. These findings align with other studies that suggest that the use of uterotonic drugs in women with a previous CS increases the risk of uterine rupture and its subsequent complications. The presented case contrasts with studies that indicate that prior successful VBAC attempts appear to have a protective effect on uterine rupture rates. Previous successful vaginal delivery is thought to reduce risk. However, the patient in this case had no history of VBAC and was therefore at an increased risk, given other coexisting risk factors. Other factors identified in the literature also contribute to the risk of uterine rupture. These include high parities, lack of antenatal care, rural residency, malpresentation, congenital abnormalities, and obstructed labor [17,19,20]. Specifically, a study in Ethiopia found that women in rural areas were 85% more likely to have a rupture, and those with obstructed labor were more than 12 times as likely.

The patient in our case had access to antenatal care and was not in obstructed labor, but did have multiparity, which further complicates the assessment. The presented case underscores the importance of careful risk assessment and consideration of a patient's medical history, including the type of prior uterine incision, prior labor history, and specific characteristics of the pregnancy. While the meta-analysis did show that TOLAC and elective repeat cesarean delivery (ERCD) had comparable short-term maternal and fetal outcomes, other studies show that TOLAC is associated with a greater perinatal risk. A study also noted that high maternal BMI also increases the risk for uterine rupture. A study in the Obstetrics & Gynecology journal estimated a 10% incidence of recurrent uterine rupture for those that had experienced one previously [21]. Unfortunately, models to predict person-specific risk of rupture are not readily available. In conclusion, this case aligns with existing literature by highlighting the significant risk of uterine rupture in women with a prior CS. The augmentation of labor, combined with prior uterine scarring, resulted in a severe rupture that could have led to major morbidity. The patient's positive outcome was due to a rapid intervention, but this case serves as a reminder that individual risk assessments are crucial and that clinicians need to be vigilant during labor management for women with prior CS.

Future research is needed to enhance risk stratification tools and optimize the management of labor in women with previous uterine scars. Understanding the risk factors associated with uterine rupture after a prior CS is crucial for obstetric care. While TOLAC carries an elevated risk, several other factors, such as labor induction, short interpregnancy interval, and maternal characteristics, also play a significant role. Healthcare providers must carefully assess these factors to counsel women and make informed decisions regarding the mode of delivery. Early identification and management of uterine rupture are crucial to minimize both maternal and perinatal morbidity and mortality. This case serves as another stark reminder to all delivery room professionals, highlighting the utter unpredictability of childbirth and its outcomes, therefore again and again stressing the need for constant vigilance.

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Conflict of Interest

The authors have no conflict of interest to declare.

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