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Prelabor uterine rupture and extrusion of fetus with intact amniotic membranes: a case report

Abstract

Introduction: The increasing rate of cesarean sections is an important issue globally, especially in developed countries. During the last decade, despite decreasing rates of vaginal delivery attempts after a previous cesarean section, the risk of uterine rupture has remained. Uterine rupture is a significant and catastrophic obstetric complication associated with maternal and fetal morbidity and mortality. We report here a very rare case of prelabor uterine rupture with intact membranes.

Case report: A 28-year-old, gravida 3, para 2 Turkish woman was referred to our emergency unit at 34 weeks' gestation because of the absence of fetal movements and abdominal pain. She had had a vaginal birth in 2007 and a cesarean section in 2009. In the delivery room, the fetal extremities were palpated at the abdominal wall, and an ultrasonography revealed ruptured uterus and fetal death. A midline laparotomy was carried out to open the peritoneal cavity. An intact amniotic sac with fetus was observed in the abdominal cavity, and the uterus was also observed to be ruptured. The male fetus, weighing 2500 g, was dead. The rupture was extending from the left lateral side of cervix to the fundus. The tear was repaired by primarily suturing the uterus in two layers after ligation of the left uterine artery to control hemorrhage. The total estimated blood loss was about 1300 mL. The patient received two units of blood transfusion during the operation. In the 4th postoperative day, the patient was discharged.

Conclusion: Complete uterine rupture is a rare but catastrophic event, and if diagnosed late, can result in mortality. Uterine rupture is rare during a trial of vaginal labor in a patient with a history of cesarean section; it is much rarer to occur before any trial of vaginal labor in such a patient. If a patient with a history of cesarean section, especially with an unknown type of incision, presents with complaints of abdominal tenderness or vaginal bleeding in the 3rd trimester, the possibility of complete uterine rupture must be considered.

Keywords: Intact membranes; prelabor; uterine rupture.

Introduction

The increasing rate of cesarean sections is an important issue globally, especially in developed countries [6]. During the last decade, despite decreasing attempts of vaginal delivery after a previous cesarean section, the risk of uterine rupture has remained [6]. Uterine rupture is a significant and catastrophic obstetric complication associated with maternal and fetal morbidity and mortality. Rupture usually occurs in a scarred uterus and is associated with a prior cesarean section [2]. The type of uterine scar is important in determining the risk of rupture. A previous classic cesarean section scar is associated with a higher risk of adverse maternal and fetal outcomes [10]. The rupture of a previous classic scar may occur unexpectedly in early pregnancy, before the onset of labor. The risk of uterine rupture is approximately 4–9% after a classic cesarean section and 0.2–1.5% after a previous lower-segment cesarean section [8].

Uterine rupture may be complete or incomplete; in an incomplete rupture, the visceral peritoneum remains intact. In a complete rupture, there is full-thickness separation of the uterine wall with the expulsion of the fetus and/or placenta into the abdominal cavity [1]. Complete rupture usually has a more dramatic presentation and is potentially life threatening for both the mother and the baby [10].

Here, we report the case of a complete uterine rupture with expulsion of the fetus to the abdominal cavity with intact membranes and placenta at the 34th gestational week.
Case presentation

A 28-year-old, gravida 3, para 2 Turkish woman was referred to our emergency unit at 34 weeks’ gestation because of the absence of fetal movements and peracute abdominal pain without any prior contractions. She had one vaginal birth in 2007 and a cesarean section in 2009 in her obstetrical history. Ultrasonography was performed in the emergency unit, which revealed the absence of fetal cardiac activity. The patient was hemodynamically stable on admission and had abdominal tenderness without peritoneal signs. A prediagnosis of placenta previa and fetal death was made by the emergency doctor.

In the delivery room, no effacement or dilatation was detected on vaginal examination, which revealed a closed cervix and minimal bleeding. Her temperature was 36.6°C, pulse rate was 82 beats/min, and blood pressure was 110/70 mm Hg. Her hemoglobin value was 13.6 g/dL and hematocrit value was 41.2% on admission, and there was no evidence of coagulopathy. The fetal extremities were palpated at the abdominal wall, and ultrasonography revealed fetal death with normal volume of amniotic fluid and the uterus being displaced to the left, below the fetus. It was quickly decided to do an emergency surgery.

A midline laparotomy was carried out with the diagnosis of in utero fetal death and uterine rupture. Upon opening the peritoneal cavity, an intact amniotic sac with fetus was observed in the abdominal cavity, and the uterus was also observed as being ruptured and displaced to the left below the fetus (Figures 1 and 2). The fetus with its intact amniotic sac was extracted. The male fetus, weighing 2500 g, had no cardiac activity (Figure 3). The rupture of the uterus extended from the left lateral side of cervix to the fundus crossing the previous incision line. The previous cesarean section scar was also completely ruptured. The vertical tear was approximately 11 cm long, beginning from the left side of the previous incision line going up to the left side of the uterine fundus; the same tear also continued 5 cm downward to the left side of the cervix beginning from the previous incision line. The tear was repaired by primarily suturing the uterus in two layers, after ligation of the left uterine artery to control the hemorrhage. The total estimated blood loss was about 1300 mL, approximately 800 mL of which was attributable to the hema-peritoneum in the abdominal cavity and 500 mL to the blood lost during the operation. The patient received two units of blood transfusion as a result of hypotension (90/60 mm Hg) and tachycardia (118 beats/min) during the operation. The postoperative 6th hour hemoglobin value was 10.7 g/dL and the hematocrit value was 32.8%. On the 4th postoperative day, the patient was discharged.

The patient was readmitted with unexpected pain and tenderness that began around the wound area at the 6th postoperative day. The area surrounding the wound was painful to touch. The wound culture was positive...
for methicillin-resistant *Staphylococcus aureus*, and the patient was treated with vancomycin for 2 weeks without any more complications.

**Discussion**

Uterine rupture may develop as a result of a pre-existing injury or anomaly, it may be associated with trauma, or it may complicate labor in a previously unscarred uterus [1]. Surgeries leading to risk of rupture include cesarean delivery or hysterotomy, previously repaired uterine rupture, and myomectomy incision involving the endometrium; however, the most common risk factor is scarred uterus from a prior cesarean delivery [1]. In a review of uterine rupture cases in Nova Scotia between 1988 and 1997, Kieser and Baskett [2] reported that in 92% of cases, uterine rupture was associated with a previous cesarean delivery.

The type of prior uterine incision is important because it is related to the risk of rupture, the clinical presentation, and the complication rate [10]. The estimated rate of risk of rupture with a classic and T-shaped prior incision is 4–9%; with low vertical incision, 1–7%; with low transverse incision, 0.2–1.5%; with previous uterine rupture with a lower segment incision, 6%; and with previous upper uterine rupture, 32% [1]. Inverted T incision should be considered a classic-type incision because of the weakness in the junction point between the vertical to transverse incision [9]. In our case, the type of the previous cesarean incision was not documented.

Uterine rupture may occur in the antepartum, intrapartum, or postpartum period, and accordingly clinical signs and symptoms vary [10]. The most evident symptom at the antepartum period is abdominal pain. In most cases, the patient presents with vaginal bleeding; however, sometimes no bleeding is observed because hemorrhage may be only intra-abdominal. Patients with a previous scar in the upper uterine segment may present early in pregnancy and may not experience uterine contractions before rupture [10]. An absence of signs of peritonism is possibly because the fetus has been extruded through the uterine rupture with the amniotic sac being intact, and there is little or no bleeding into the abdominal cavity or vaginally [7].

In a series of seven uterine rupture cases, the authors mentioned the difficulty of distinguishing rupture with advanced extrauterine pregnancy because of both the clinical and sonographic features of this condition in this kind of stable patients [7]. Our patient was admitted with the absence of fetal movements, minimal abdominal pain, and vaginal bleeding. At the emergency unit, she was not clinically distressed and was hemodynamically stable. Her condition was prediagnosed as placenta previa by the emergency doctor. Later in the delivery room, fetal parts were palpated and in-depth ultrasound re-examination revealed uterine rupture. In the emergency unit, the absence of the uterine wall was not noticed and the displaced uterus was misdiagnosed as placenta previa as an indirect effect of the high patient density at the hospital.

To our knowledge, this is the second case report of uterine rupture with extrusion of fetus with intact membranes into the abdominal cavity. In a similar case report by Segal et al. [9], the patient was a grand multipara, but our patient was a gravida 3. The clinical presentations of both cases were similar, with both patients being hemodynamically stable and without abdominal tenderness or peritoneal signs. In contrast, our case was prediagnosed as placenta previa at the emergency unit. In both of the cases, no fetal heart rate was detected, the types of uterine scars were unknown, and the uterus of both patients was primarily repaired.

In rupture cases, the critical point of patient management is to determine whether the rupture can be successfully repaired or whether hysterectomy is necessary. In the reports by McMahon and Miller and their colleagues, 10–20% of women with complete uterine rupture required hysterectomy for hemostasis [3–5]. However, repair is associated with lower morbidity and helps preserve fertility. In this case, the tear was extending to the left upper side of the uterus and down to the bladder from the previous incision line, but the uterus was contracted and margin of the tear was regular. We decided to control the hemorrhage by ligation of uterine artery first and then repairing the uterus primarily. The patient received two units of blood transfusion during the operation because the total estimated blood loss was about 1300 mL and she had been clinically symptomatic.

**Conclusion**

Complete uterine rupture is a rare but catastrophic event, and if diagnosed late, can result in mortality. Uterine rupture is rare during a trial of vaginal labor in a patient with a cesarean history, and it is much rarer before any trial of vaginal labor in such a patient. If a...
patient having an unknown type of a previous cesarean scar presents with complaints of abdominal tenderness or vaginal bleeding in the 3rd trimester, the possibility of complete uterine rupture must be considered.

Authors’ contributions

BK made the diagnosis, performed the operation, and followed up and managed the patient. YY provided important medical suggestions regarding medical content and analyzed the data. BB and AA were the major contributors in the writing of the manuscript. All authors read and approved the final manuscript.

Consent

Written informed consent was obtained from the patient for the publication of this report and the accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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