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Silent Uterine Rupture Following Suspected Illegal Abortion and Misoprostol Use: A Case Report

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Abstract

Uterine rupture is an uncommon, serious, and potentially life-threatening complication characterized as a disruption of the whole uterine muscle and the visceral peritoneum. Herein, we report a case of silent uterine rupture following illegal abortion via misoprostol administration. A 28-year-old female Gravida 2 Parity 1 living 1 at 18 weeks of gestation with a history of previous cesarean section presented to the hospital. She took 1000 µg of misoprostol tablet 1 day before her admission and due to unsuccessful abortion, presented to the hospital. The evidence of uterine perforation was not identified in the ultrasonography investigation. Following several attempts for abortion using misoprostol, oxytocin, trans-cervical Foley catheter, and dilation and evacuation (D & E) procedures, patients underwent exploratory laparotomy. Uterine rupture was diagnosed during surgery. The uterus was torn, and the fetus and placenta were found in the abdominal cavity with omentum sealing the rupture of the uterus. The fetus and placenta were removed and after proper toileting and controlling of bleeding, the uterus was closed. This case highlights the need for high-quality obstetric care and skilled paramedical and medical staff. It warns that medications such as prostaglandins and oxytocin should be administered only by experts and, lastly, that health facilities should not manage deliveries if they are not equipped well for the complications of delivery and labor. Our case also highlighted the possibility of silent uterine rupture in which the diagnosis is even harder. As a result, in cases where abortion approaches are unsuccessful, health practitioners should think about the possibility of uterine rupture.

Keywords*:* Uterine rupture; Misoprostol; Case report.

Introduction

Obstetrics and Gynecology (OB-GYN) is a vital specialty focusing on the health of the female reproductive system, pregnancy, and related complications. Key areas include induced abortions, embryo viability evaluation, and the impact of reproductive cancers like ovarian and uterine cancers on fertility. The analysis of induced abortions, particularly in terms of safety and outcomes, is crucial for improving maternal health and reducing risks associated with unsafe practices. Understanding these issues, along with the early detection of cancers affecting pregnancy, is essential for advancing maternal health, developing preventive strategies, and enhancing reproductive healthcare policies, ultimately improving women's health and well-being.

The World Health Organization estimated that annually, around 73 million induced abortions happen of which 97% occur in developing countries and 45% are unsafe. More than half of the abortions that are performed unsafely occur in Asia, especially in the regions of South and Central Asia. According to available evidence, unsafe abortions accounted for about 7.9% of maternal mortality. Furthermore, it can lead to complications such as traumatic injury to the genital tract, uterine rupture, and incomplete abortion. [1-5]

Uterine rupture is an uncommon, serious, and potentially life-threatening complication characterized as a disruption of the whole uterine muscle and the visceral peritoneum [6]. It usually occurs at the term of pregnancy and only a few cases happen in the first or second trimester of pregnancy. The incidence rate is about 3.8-4.3 % in the scarred uterus and 0.2% in the intact uterus. Its classical signs and symptoms include vaginal bleeding and pain. Hence, timely intervention is needed to prevent mortality. Herein, we report a case of silent uterine rupture following illegal abortion via misoprostol administration

Case Presentation

A 28-year-old female Gravida 2 Parity 1 living 1 at 18 weeks of gestation with a history of previous cesarean section presenting to Gynecology Emergency of Goldis Hospital, affiliated with Isfahan University of Medical Sciences, Isfahan, Iran. She took 1000 µg of misoprostol tablet 1 day prior to her admission and due to unsuccessful abortion, presented to the hospital.
On physical examination, her vital signs were a pulse rate of 80 beats per minute, blood pressure of 110/70 mmHg, respiratory rate of 18 cycles per minute, and temperature was 36.8ºC. Her gestational age was estimated according to the last normal menstrual period. On abdominal examination, bowel sounds were heard, and a mild tenderness was present. On vaginal examination, we found vaginal odor and cervical motion tenderness were negative. Other systemic examinations were normal. On admission laboratory examination, we found leukocytosis with mild proteinuria. Ultrasonography of the abdomen and pelvic cavity presented a macerated fetus in the inferior intrauterine cavity without cardiac activity. However, the evidence of uterine perforation was not identified in the ultrasonography investigation. Therefore, 200 µg misoprostol tablet was administered as a loading dose sublingually and thereafter 200 µg every three hours. However, after the first maintenance dose, patients reported the symptoms of vertigo and dizziness. After neurology consultation, we continued misoprostol at 200 µg every three hours. Due to unsuccessful abortion, patients underwent ultrasonography to assess the possibility of accreta placenta which was negative. Moreover, no evidence of uterine rupture was detected in the ultrasonography investigation. Then, 400 µg misoprostol every three hours was administered sublingually, and after 4 doses it was discontinued due to unfavorable outcomes. Next, misoprostol was discontinued, and oxytocin was administered to induce an abortion. In this method, 50 IU of oxytocin was infused with 500 mL of saline for three hours. After 1-2 hours of rest, the next 500 mL of saline was infused with 100 IU of oxytocin for three hours. However, even after an infusion of 200 IU oxytocin with 500 mL of saline, the fetus was not aborted. Meanwhile, we also inserted a trans-cervical Foley catheter to improve the efficacy of oxytocin; however, it was disposed of. The next day, we administered 800 µg misoprostol rectally in two separate doses and after 2-3 hours of resting, we started to infuse oxytocin from 50 IU up to 150 IU. However, due to an unsuccessful abortion, the patient was transferred to the operating room.

Finally, she was sent to the operating room for the dilation and evacuation (D & E) procedure. We failed to reach out to the fetus through the D & E procedure and therefore underwent exploratory laparotomy. The uterus was torn, and the fetus and placenta were found in the abdominal cavity with omentum sealing the rupture of the uterus. The fetus and placenta were removed and after proper toileting and controlling of bleeding, the uterus was closed. The Hb during the surgery dropped to 9.1 g/dL owing to massive bleeding. Therefore, two units of blood were infused and Hb was raised to 10.12 g/dL. After surgery, the patient was good without any complications, and she was discharged 3 days later. The patient's health was good, and she was doing fine after a month of follow-up.

Table 1. Laboratory investigation of the patient

Investigations	Admission day (Day 0)	Day 3	Day 4	Day 5	Day 6
BUN (mg/dL)	9	-	-	-	5
Creatinine (mg/dL)	0.7	-	-	-	0.9
LDH (U/L)	617	-	-	-	574
RBC ($\times 10^{12}$ cell/L)	3.842	3.432	2.96	3.192	2.96
Hemoglobin (g/dL)	12.5	11.12	9.1	10.12	9
Hematocrit (%)	34.42	31.12	27.1	28.52	26.8
MCH (pg)	32.53	32.40	30.74	31.70	30.40
MCV (fL)	89.58	90.67	91.55	89.34	90.54
MCHC (g/dL)	36.31	35.73	33.57	35.48	33.58
RDW-CV (%)	13.2	13.4	12.7	13.7	14
Platelets ($10^3 \times \mu L$)	233	212	232	238	343
WBC (10^9/L)	14.6	14.7	11.2	13.1	12.8
PTT (Second)	32	-	31	-	-
PT (Second)	13.1	-	13	-	-
INR	1.1	-	1.1	-	-
Fibrinogen (mg/dL)	420	-	405	-	-
Na (mmol/L)	-	135	-	-	-
K (mmol/L)	-	3.7	-	-	-
CRP (mg/dL)	-	-	77	-	-
ESR 1st hr (mm/hr)	-	-	65	-	-
Uric acid (mg/dL)	-	-	-	-	1.6
SGOT (U/L)	-	-	-	-	21
SGPT (U/L)	-	-	-	-	12
ALP (U/L)	-	-	-	-	164
Total Bilirubin (mg/dL)	-	-	-	-	0.78
Direct Bilirubin (mg/dL)	-	-	-	-	0.2
Urine analysis					
Color	Yellow	-	-	-	-
Appearance	Semi-clear	-	-	-	-
Specific gravity	1.015	-	-	-	-
Protein	Positive (+)	-	-	-	-
Glucose	Negative	-	-	-	-
Ketone	Negative	-	-	-	-
Blood	Trace	-	-	-	-
Bilirubin	Negative	-	-	-	-
Urobilinogen	Negative	-	-	-	-
Nitrite	Negative	-	-	-	-
pH	6.0	-	-	-	-

The data that support the findings of this study are available from the Goldis Hospital database. Still, restrictions apply to the availability of these data, which were used under license for the current study and so are not publicly available. The data are, however, available from the authors upon reasonable request and with the permission of the Goldis Hospital database.
Informed consent to publish was obtained from the participant/s involved in the current study.

Discussion

Uterine rupture is an uncommon peripartum complication accompanied by catastrophic outcomes [7]. The prevalence of uterine rupture is higher among developing nations compared to developed ones [8]. The main symptoms of uterine rupture include vaginal bleeding, acute onset abdominal pain, a change in the contraction pattern on tocodynamometry, and a non-reassuring fetal heart rate tracing [9,10]. However, these symptoms are not present in all cases, as our patient confirmed this statement [10]. A recent study shed light on several risk factors for uterine rupture including previous cesarean delivery, antepartum fetal death, sequential labor induction with oxytocin and prostaglandins, and previous first-trimester miscarriages [11].
Misoprostol is a synthetic prostaglandin E1 analog that is used off-label for a wide range of obstetrics and gynecology practices, including treatment of postpartum hemorrhage, cervical ripening before surgical procedures, induction of labor, medical management of miscarriage, and medication abortion [12]. With the advent of misoprostol, the incidence of uterine rupture increased dramatically. It was reported that 71% of cases with uterine rupture have used misoprostol [13]. Since uterine rupture in our case was silent, therefore, it is not clear whether the first attempt for abortion with 1000 μg of misoprostol was the reason or further administration of misoprostol and/or oxytocin.
The effectiveness of Foley's catheter balloon in the termination of mid-trimester pregnancy has been suggested by several studies [14-16]. This approach can increase the release of oxytocin and/or prostaglandin and improve cervical ripening. In a study by Bujold et al. among 2479 women, it was revealed that using a transcervical Foley catheter for labor induction was not linked with an increased risk of uterine rupture [17]. However, other complications were reported among a cohort of 1083 individuals as follows: altered presentation from vertex to breech (1.3%), unbearable pain (1.7%), vaginal bleeding (1.8%), non-reassuring fetal heart rate tracing (2%), and acute transient febrile reaction (3%) [18]. In our case, the insertion of Foley's catheter was unsuccessful, and it seems that uterine rupture happened before its insertion.
Inter-pregnancy interval is another related factor to the uterine rupture. This effect can be explained biologically by how long it takes for the wound in the uterus to fully recover [19]. The recovery process can also be influenced by dietary factors and the nutritional status of individuals [20]. It was reported that an inter-delivery interval of less than 18 months was significantly associated with a 3-fold increase in the risk of uterine rupture [21]. However, this interval was 7 years in our case and therefore it cannot be a risk factor in this patient.
This case highlights the need for high-quality obstetric care and skilled paramedical and medical staff. It warns that medications such as prostaglandins and oxytocin should be administered only by experts and, lastly, that health facilities should not manage deliveries if they are not equipped well for the complications of delivery and labor. Uterine rupture is a preventable complication if optimal obstetric care is provided. The patient's survival after uterine rupture relies on how quickly the intervention is done and the supply of blood products for transfusion. Our case also highlighted the possibility of silent uterine rupture in which the diagnosis is even harder. As a result, in cases

where abortion approaches are unsuccessful, health practitioners should think about the possibility of uterine rupture.

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