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Original Article

Feared complication in medical abortion via misoprostol: Uterine rupture - 10 years of a tertiary center experience

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Abstract

Aim: This study aimed to examine the incidence of uterine rupture and the clinical characteristics of the patients administered misoprostol for second-trimester miscarriage (STM) in our tertiary center.
Materials and Methods: The study was conducted at Etlik Zubeyde Hanim Women's Health Training and Research Hospital, between January 2011 and December 2021. Patients who received misoprostol with the diagnosis of STM were retrospectively reviewed. Age, obstetric history, uterine scar history, uterine rupture localization, treatment methods, preoperative and postoperative hemoglobin, and erythrocyte replacement amount of patients were recorded from hospital archives. Intravaginal or sublingual 400 mcg misoprostol was given to the patients every three hours in accordance with the International Federation of Gynecology and Obstetrics (FIGO) recommendations of the period according to the years of treatment. Descriptive statistical methods were used in the study.
Results: The number of pregnant women with intrauterine ex-fetus who underwent misoprostol induction in our hospital in the last ten years was 4950, and uterine rupture was detected in 8 of these patients (1.6/1000). The median age of patients was 33±3.7 years. There was one pregnant woman with a history of abortion. Seven of the patients had a history of cesarean section (CS). No patient had a history of surgery except for CS. In four (50%) patients, the rupture occurred in the old incision line. Complete rupture developed in one patient and partial rupture in the remainder. One patient had a total hysterectomy. No surgical complications or maternal death occurred.
Conclusion: In our study, almost all the patients had a history of CS. It was thought that the risk of rupture might have increased in patients with a history of CS. It was also noteworthy that half of the patients had cesarean scar rupture. There is a need for a detailed evaluation of the relationship between misoprostol and rupture with multicenter studies with large patient participation.

Keywords: Abortion, miscarriage, misoprostol, second-trimester pregnancy, uterine rupture

INTRODUCTION

Termination of pregnancy between 12-24 weeks is called second-trimester miscarriage (STM). Although it varies regionally, STM is seen in 0.5-5% of all pregnancies (1). In case of termination of pregnancy, the evacuation of the fetus is achieved by surgical, mechanical, or medical induction. Medical induction is often preferred since maternal complications (uterine rupture, infection, and adhesion) are observed more frequently with dilation and curettage (DC). Foley catheterization (mechanical) or misoprostol are frequently used to achieve cervical ripening. Mifepristone is not preferred because it is expensive and not superior to misoprostol (2).

Although misoprostol, a prostaglandin E1 analog, was produced for gastric ulcer treatment, it has been used for labor induction and termination of pregnancy since the 1990s. Misoprostol-associated hyperstimulation and uterine rupture can be seen, albeit rarely (3). Although an increased risk of rupture has been reported in patients with scarred uterine compared to unscarred, misoprostol-related uterine rupture is rare (4). Uterine rupture is a notable complication that can result in morbidity and mortality if not treated.

This study aimed to examine the incidence of uterine rupture and the clinical characteristics of the patients administered misoprostol for STM in our tertiary center.

MATERIALS AND METHODS

Patients who received misoprostol with the diagnosis of STM between January 2011 and December 2021 were retrospectively reviewed. In the hospital electronic records and International Classification of Disease codes, the keyword "uterine rupture" was scanned, and patients with ruptured uterine were identified. Age, obstetric history, uterine scar history, uterine rupture localization, treatment methods, preoperative and postoperative hemoglobin, and erythrocyte replacement amount of patients with uterine rupture were recorded from hospital electronic systems or hospital archives.

Diagnosis of uterine rupture, miscarriage in the second trimester, administration of misoprostol, and age ≥18 years were inclusion criteria for the study. Patients who underwent mechanical induction (Foley catheterization) before or after misoprostol and whose records could not be accessed were excluded from the study.

The study was approved by the local Ethical Committee of the Etlik Zubeyde Hanim Women's Health Training and Research Hospital (Date: 17 Jun 2022, number: 08/20).

Misoprostol Application

Intravaginal or sublingual 400 mcg misoprostol was given to the patients every three hours in accordance with the FIGO recommendations of the period according to the years of treatment (5).

Statistical Analysis

Descriptive statistical methods were used in the study. The normality of the data was evaluated with the Kolmogorov-Smirnov test. Parametric continuous data were defined as mean±standard deviation, and categorical data as frequency (percent). SPSS 25 was used for statistical analysis.

RESULTS

The number of pregnant women with intrauterine ex-fetus who underwent misoprostol induction in our hospital in the last ten years was 4950, and uterine rupture was detected in 8 of these patients (1.6/1000). The mean age of patients with uterine rupture was 33±3.7 years. The mean of gravida was 3.9±1.2, the mean of parity was 2.5±0.9, and there was one (12.5%) pregnant woman with a history of abortion. Seven (87.5%) of the pregnant women had a history of CS, and the mean number of CS was 1.7±1.0. There was no patient with a history of surgery except for CS. In four (50%) patients, the rupture occurred in the old incision line. Complete rupture developed in one patient and partial rupture in the remainder. One (12.5%) patient had a total hysterectomy, and the rest had a primary repair (Table 1). The mean preoperative hemoglobin was 9.9±2.3 g/dL. Erythrocyte replacement was performed in four (50%) patients during surgery and in two (25%) patients in the postoperative period. No surgical complications or maternal death occurred.

Table 1. Clinical, obstetric and rupture characteristics of the patients

Patient number	Age (year)	G (n)	P (n)	S (n)	A (n)	D&C (n)	NSD (n)	CD (n)	Rupture site	Rupture type	Surgery type	Preop Hg (g/dL)	Erythrocyte replacement time / number
Patient 1	34	4	3	3	0	0	0	3	Incision scar	P	Primary	12.4	
Patient 2	37	5	4	4	0	0	4	0	Fundus	P	Primary	6.5	Po/2
Patient 3	34	3	2	2	0	0	0	2	Right isthmus	P	Primary	10.3	S/2
Patient 4	28	3	2	2	0	0	0	2	Lower uterine segment	C	Primary	10.9	S/2 Po/1
Patient 5	32	6	3	3	0	2	0	3	Incision scar	P	Hysterectomy	9.9	S/5
Patient 6	32	4	2	2	1	0	0	2	Incision scar	P	Primary	10.8	
Patient 7	40	4	3	2	0	0	2	1	Incision scar	P	Primary	12.2	
Patient 8	31	2	1	1	0	0	0	1	Corpus anterior wall	P	Primary	6.2	S/6

n: number, G: Gravidity, P: Parity, S: Stillbirth, A: Abortion, D&C: Dilatation Curettage, NSD: Normal Spontaneous Vaginal Delivery, CD: Cesarean Delivery, C: Complete, P: Partial, S: During surgery, Po: Postoperative

DISCUSSION

In recent years, an increase in the incidence of uterine rupture is expected with frequent CS (6). In studies involving a small number of patients, no serious complications related to the use of misoprostol were reported in cases of second-trimester miscarriage (1,7). On the other hand, although misoprostol-associated uterine rupture is rare, it is important because it can cause mortality.

Uterine rupture rates in the second trimester have been reported as 0.2-4.3% (4,8). The exact incidence of misoprostol-associated uterine rupture is unknown, as medical and surgical modalities are used to evacuate the fetus in pregnancy loss. In a study of patients who used misoprostol for second-trimester miscarriage, the uterine rupture was found in 0.28% of women with a previous history of CS and 0.04% of other women (9). In the study conducted by Abbas et al., in which 100 patients administered misoprostol for STM were evaluated, uterine rupture was found in 2% of the cases (7). The relatively high rate might be related to the small number of patients included in the study, and all cases had scarred uteri. In our study, the incidence of uterine rupture was 1.6/1000 in patients administered misoprostol, similar to the literature.

It is suggested that uterine contractions associated with a non-effaced cervix and misoprostol may cause a uterine rupture in patients with a scarred uterus (10). The relatively higher rupture rates in scarred patients compared to those with unscarred uteri also support this hypothesis. In our study, the history of CS in seven of eight patients with rupture was consistent with these data. Surgical interventions such as dilation and curettage are also known to increase the risk of rupture (2). Patients who underwent surgical or mechanical induction for fetal evacuation were excluded from this study. Thus, only patients with pure misoprostol-related uterine rupture were evaluated.

While uterine rupture is usually detected in the fundus in the first trimester, it is more commonly observed in the lower uterine segment in the second and third trimesters (11). In our study, the observation of fundus rupture in only one patient was consistent with the literature.

In uterine rupture, especially in rare cases with massive hemorrhage, uterine artery ligation, and even hysterectomies to prevent mortality may be required (11,12). In these cases, the patient should be transported to tertiary centers as quickly as possible. Full-thickness wall ruptures, including the uterine serosa, are usually observed in symptomatic uterine scar rupture (12,13). Fewer complications are observed in cases of uterine scar dehiscence. Uterine hemorrhage is very rare in patients with uterine scar dehiscence. In our study, hemorrhage requiring blood transfusion was not detected in any of the four cases with incision scar rupture. The rupture sites of two patients who needed blood transfusion were the corpus anterior wall and fundus.

This study had several limitations. Some data could not be reached in this study due to its retrospective nature. Patients were screened by scanning the word "rupture" in surgery reports and the uterine rupture ICD code. With this screening method, some patients whose ICD code or surgery notes were written incorrectly were overlooked. A second limitation was the low number of patients included in the study due to the low incidence of misoprostol-related rupture. The small number of patients inhibited statistical comparisons. On the other hand, the fact that our hospital is a tertiary center and the screening of 4950 patients who were administered misoprostol with the diagnosis of miscarriage in the second trimester were the strengths of the study.

CONCLUSION

In our study, almost all the patients had a history of CS. It was thought that the risk of rupture might have increased in patients with a history of CS. It was also noteworthy that half of the patients had cesarean scar rupture. There is a need for a detailed evaluation of the relationship between misoprostol and rupture with multicenter studies with large patient participation.

Conflict of interests
The authors declare that there is no conflict of interest in the study.

Financial Disclosure
The authors declare that they have received no financial support for the study.

Ethical approval
The study was approved by the local Ethical Committee of the Etlik Zubeyde Hanim Women's Health Training and Research Hospital (Date: 17 Jun 2022, number: 08/20).

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