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Uterine rupture with induction using misoprostol for intrauterine foetal death in the second trimester: A case report

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ABSTRACT

Uterine rupture is a well-known, life-threatening complication of misoprostol use; the incidence is remarkably low. Herein, we report what seems to be the first documented case of uterine rupture following induction of labour for intrauterine foetal death in the second trimester without a uterine scar. A 40-year-old woman with no history of caesarean section or uterine surgery presented with mild lower abdominal pain and mild genital bleeding. Transabdominal ultrasonography revealed intrauterine foetal death, at presumed gestational age of 20 weeks. Two hours after three doses of 400 μg 3-hourly of misoprostol, the patient complained of abdominal pain; however, the foetus was not expelled. Repeat sonography revealed the foetus in the abdominal cavity and fluid collection in the pelvis. Based on the probable diagnosis of uterine rupture, a laparotomy was performed. The intra-abdominal haemorrhage volume was approximately 250–300 ml. There was a linear rupture approximately 10 cm long on the posterior wall of the uterus, and as a consequence, a macerated and foetid foetus and part of the placenta were found in the abdominal cavity. A total hysterectomy was performed, and the patient was discharged three days after the intervention without any postoperative complications. In conclusion, while misoprostol is generally safe for second-trimester pregnancy termination, its use should be approached with caution and close monitoring in cases of uterine inflammation.

1. Introduction

Misoprostol, a prostaglandin E1 analogue initially developed to prevent gastric ulcers [1], is known to have significant uterotonic and cervical-softening effects. Therefore, it is used worldwide for induction of labour and termination of pregnancy. Uterine rupture is a well-known, life-threatening complication of misoprostol use. Several studies have investigated uterine rupture in women with scarred uteri receiving misoprostol for labour induction [2–5]. Consequently, the current ACOG guidelines recommend that misoprostol is not used in the third trimester in patients with a uterine scar [6,7]. Regarding the second trimester, several studies have shown that the probability of uterine rupture is very rare with or without a uterine incision and have concluded that this method is safe and acceptable [8–10]. Case reports concerning misoprostol-related uterine rupture in the second trimester without prior caesarean are few [11,12], with all cases published involving induced abortion. We present what appears to be the first case of uterine rupture during induction for intrauterine foetal death (IUFD).

2. Case Presentation

A 40-year-old Haitian woman, gravida 4, para 2, with complete abortion 1 and no history of caesarean section or any other surgical intervention in the uterus, presented with mild lower abdominal pain and slight genital bleeding. The pregnancy test result was positive; however, the last time since the menstrual period was unknown. Transabdominal sonography revealed a foetus in the uterus, estimated gestational age 20 weeks and 1 day, based on biparietal diameter, without cardiac activity. The cervix was dilated 1 cm and not effaced, and no uterine contractions were observed. Based on the diagnosis of IUFD at 20 weeks, three doses of 400 μg of misoprostol were administered every 3 h sublingually. Approximately two hours after the administration of the final dose of misoprostol, the patient reported persistent abdominal pain. Furthermore, she still exhibited a small amount of vaginal bleeding, and the foetus was not expelled.

Follow-up sonography revealed the foetus in the abdominal cavity instead of the uterus and fluid collection in the pelvis. The patient was haemodynamically stable. Laboratory investigations showed

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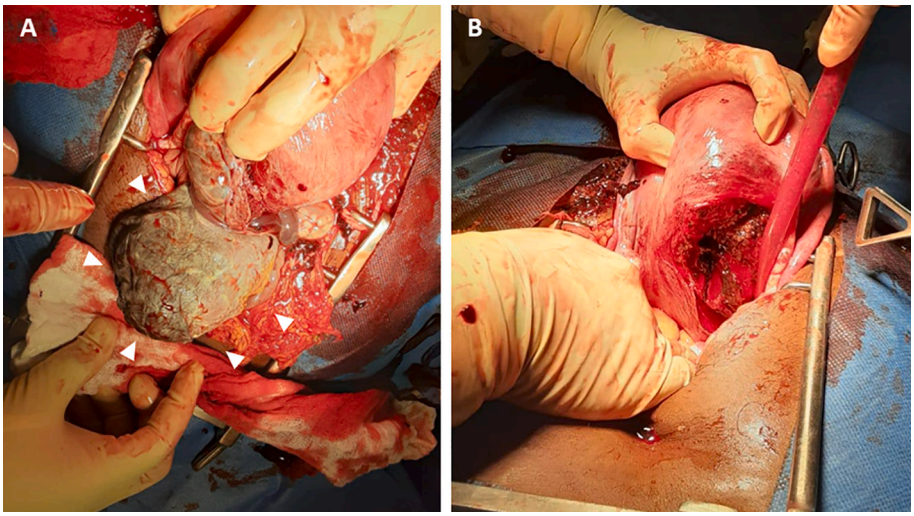

Fig. 1. A: A macerated foetid foetus (white arrowhead) and part of the placenta in the abdominal cavity.
B: A linear rupture approximately 10 cm long on the posterior wall of the uterus.

haemoglobin levels of 11.7 g/dl and a white blood cell count of $16.9*10^3$/μL at this stage. A laparotomy was performed. The intra-abdominal haemorrhage volume was approximately 250–300 ml. A linear rupture estimated at 10 cm on the posterior wall of the uterus was present and a macerated and foetid foetus and part of the placenta were found in the abdominal cavity (Fig. 1). A total hysterectomy was performed. The postoperative course was uneventful, and the patient was discharged three days after the intervention.

3. Discussion

We present to our knowledge the first published case of uterine rupture after IUFD induction of labour without prior uterine surgery in the second trimester.

Uterine rupture is a rare, but life-threatening, maternal complication. The risk increases with a short interpregnancy interval, classical uterine scar and misoprostol administration [6]. A systematic review showed that among women without uterine scar who had an induced abortion with misoprostol, the risk of uterine rupture in the second trimester was 0.04 % (only one of 2834 patients) [8]. Moreover, a large retrospective study on induction with misoprostol, including foetal demise in second trimester, showed no cases of uterine rupture [10].

For the induction of labour for IUFD in the second trimester, a combination of mifepristone and misoprostol is recommended as a first-line regimen, and a misoprostol-only regimen is considered when mifepristone is unavailable [13,14]. Mifepristone, an antiprogesterone, facilitates cervical ripening, which shortens the time to expulsion and reduces the required dose of misoprostol [15,16]. In the patient's setting, due to limited accessibility to mifepristone, a misoprostol-only regimen was used. A total of three doses of 400 μg of misoprostol was administered sublingually every 3 h following the FIGO dosing chart (2023) [14]. Lower doses of misoprostol are not recommended due to an increased risk of induction failure and prolonged time to foetal expulsion [17]. Therefore, the reported regimen aligns with current guidelines and does not constitute an overdose.

According to a systematic review, the dose, route, and interval of misoprostol administration vary, depending on the study design [8], and no studies have documented a correlation between the method (vaginal, sublingual or oral) and dosage of misoprostol administration and uterine rupture. In the case reported here, this was the patient's first visit to a medical facility during this pregnancy, and the time since her last menstrual period was unknown; it was therefore unclear at which point the foetal cardiac activity was arrested. However, given that the foetus was macerated and foetid, and the maternal white blood cell count was high, it is presumed that inflammation had already started in the uterus. We believe that uterine inflammation may have contributed to the uterine rupture.

In conclusion, misoprostol is generally safe in the second trimester for termination of pregnancy; however, a rare complication such as uterine rupture can never be wholly prevented and the drug should be used with caution and close observation.

Contributors

Akiko Yamamoto contributed to patient care and drafting the manuscript.

Patrick Jn-Charles contributed to patient care and revising the article critically for important intellectual content.

Both authors approved the final submitted manuscript.

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Patient consent

Written informed consent was obtained from the patient for the publication of this case report and the use of accompanying images.

Provenance and peer review

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Conflict of interest statement

The authors declare that they have no conflict of interest regarding the publication of this case report.

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