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Bucket-handle uterine rupture during second-trimester medication abortion, a rare form of rupture of the lower uterine segment and vaginal fornix: a case report

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ABSTRACT

A bucket-handle uterine rupture, a rare form of uterine rupture involving the posterior lower uterine segment and posterior vaginal fornix, occurred in a primigravid woman at 23 weeks of gestation during successful medication abortion.

1. Background

Uterine rupture is a rare but serious complication that can occur with medication abortion in the second trimester, with an estimated risk of 1.3% in women with and 0.05% in women without previous cesarean delivery [1,2]. Bucket-handle rupture refers to a rare type of uterine rupture involving the anterior or posterior lower uterine segment, resembling the handle of a bucket. Such injuries have been reported at term deliveries or with prostaglandin use [3–5]. To our knowledge, there are only two published case reports of bucket-handle uterine rupture with misoprostol use during second-trimester abortion [3]. This report describes a posterior vaginal fornix and bucket-handle injury during second-trimester medication abortion.

2. Case presentation

A 28-year-old primigravida woman at 23 gestational weeks presented for abortion. Surgical history was negative. She was counseled on different methods (medication vs. surgical); possible side effects and complications were discussed. The patient chose medication abortion using mifepristone and misoprostol. Eligibility was ascertained and informed written consent obtained as per national guidelines [6].

The patient underwent digoxin 1 mg intra-amniotic injection and received mifepristone 200 mg 48 h prior to planned admission. The patient received misoprostol 400 mcg sublingually with repeat dosing every 3 h and ibuprofen orally for pain management. After two misoprostol doses, the patient reported strong, frequent uterine contractions, and pelvic exam showed closed cervix. Subsequent misoprostol was held. She expelled a 600-g fetus with placenta 7 h after the second and last misoprostol dose.

The patient experienced heavy vaginal bleeding immediately after expulsion with a blood pressure of 100/60 mmHg and pulse of 104 beats per minute. The physician performed a bimanual examination and noted a well-contracted uterus, the cervix with 1–2-cm dilation and no effacement, and a 5-cm circumferential tear on the posterior vaginal fornix, extending beyond the internal cervical os into the posterior lower uterine segment. The defect directly communicated with the endometrial cavity. The apex of the upward extension was not appreciated. Speculum examination revealed a circular, uneffaced cervical os. A circumferential tear involving the posterior fornix was visible, with active bleeding (Fig. 1).

The physicians performed an emergency laparotomy for suspicion of posterior uterine rupture. The surgeons found a 16-week, contracted uterus with a 2–3-cm midline posterior uterine rupture covered by intact serosa, no hemoperitoneum and no other pelvic organ injury. The surgeons exposed the rupture site vaginally and repaired the defects on the posterior lower uterine segment and the posterior vaginal fornix in two layers under direct visualization from the laparotomy. The surgeons closed the abdomen after ensuring hemostasis. Postoperatively, the patient recovered without complication, received an etonogestrel contraceptive implant on postoperative day 2 and was discharged on

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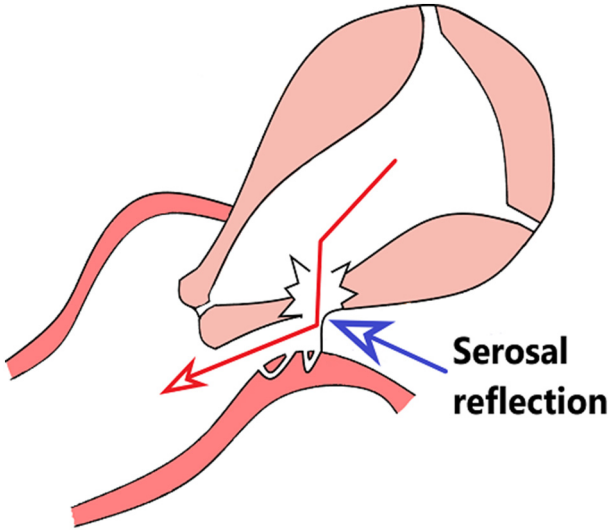

Fig. 1. Diagrammatic representation of bucket-handle uterine rupture in a woman who had combination mifepristone and misoprostol medication abortion at 23 weeks' gestation.

postoperative day 3. We disclosed the complication to the patient and advised cesarean for subsequent deliveries. The patient had no issues at follow-up visits 6 and 12 weeks postoperatively.

3. Discussion

Uterine rupture associated with medication abortion has been reported among women with scarred and unscarred uteri. The magnitude of the risk of this complication is unknown [7]. None of the clinical trials evaluating medication abortion had adequate power to identity a complication as rare as bucket-handle rupture. A recent systematic review of observational studies found an overall uterine rupture rate of 0.05% after misoprostol and 0.11% after surgical abortion among women with an unscarred uterus (RR = 0.49, 95% CI 0.08–2.93) [2].

Factors associated with rupture of an unscarred uterus using mifepristone/misoprostol for second-trimester medication abortion are not clearly described. Possible factors could relate to the dosing of misoprostol [8,9], parity [8,10,11] or concomitant use of oxytocin [10]. Yet, this case represents a nulliparous woman with no prior surgical history who received a World Health Organization-recommended dose of misoprostol [1].

One mechanism proposed for this type of rupture is the presence of both an unyielding cervix and hypertonic uterine contractions. This process implies the pregnancy was forced through the lower posterior uterine wall and posterior vaginal fornix instead of through a dilated cervix. Our patient did have an uneffaced cervix noted on examination immediately after the abortion.

In prior cases of bucket-handle uterine rupture, repair was done vaginally [3]. In our case, the inability to appreciate the apex of the extension and suspicion of posterior uterine rupture prompted laparotomy.

Clinicians managing second-trimester medication abortions should consider the rare possibility of uterine rupture even when using an evidence-based dosing regimen in women with an unscarred uterus. If uterine rupture occurs, appropriate resuscitative measures and timely surgical interventions are critical. We believe this case will help alert others to the rare possibility of bucket-handle uterine ruptures after an apparently uncomplicated vaginal expulsion of product of conception.

Declarations

Consent for publication

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

Declaration of interest

None.

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