

Management of vaginal wall perforation during a second trimester dilation and evacuation

Heather R Williams, MD,¹ Abbey J Hardy-Fairbanks, MD,² Colleen K Stockdale, MD, MS,² Stephanie Radke, MD²

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Abstract

Background: We report an unusual case involving vaginal perforation associated with second trimester dilation and evacuation. Review of the literature fails to identify additional reports.

Case: A 22 year G3P1011 female at 16 weeks gestation referred for evaluation following incomplete dilation and evacuation was found to have vaginal perforation, and communication with the peritoneal cavity on pelvic examination. Examination under anesthesia and laparoscopy confirmed multiple vaginal perforations with intraperitoneal defects and hematomas but no viscus involvement. Cervical dilation was accomplished with osmotic dilators placed under ultrasound guidance during exam under anesthesia, with evacuation completed approximately 16 hours later without further complication.

Conclusion: This is the first case of vaginal perforation at time of dilation and evacuation reported in the literature. Laparoscopy should be performed to evaluate for intraabdominal injury to bowel, bladder and/or blood vessels. Use of osmotic dilators during the second trimester could potentially decrease the risk of vaginal perforation during the dilation portion of the

procedure.

¹*University of Iowa Carver College of Medicine, Iowa City, Iowa*

²*University of Iowa Hospitals and Clinics, Department of Obstetrics and Gynecology, Iowa City, Iowa*

Introduction

In the United States, approximately 45% of all pregnancies are unintended and up to 18% of all pregnancies are terminated.^{1,2} The majority of abortions performed in the United States are performed prior to 13 weeks (91.6%).³ Of the remaining abortions performed, 7.1% were performed between 14 and 20 weeks' gestation with only 1.3% performed at greater than 21 weeks' gestation.³ Approximately 95% of second trimester abortions are performed by dilation and evacuation (D&E) and their safety is comparable to procedures in the first trimester.⁴ When complications arise, they have been

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Corresponding author: Heather R Williams, MD, Department of Obstetrics and Gynecology, 200 Hawkins Dr. Iowa City, IA 52242. Email: hewilliams1@augusta.edu

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reported to be secondary to hemorrhage (0.1-0.6%), cervical laceration (up to 3.3%), retained products of conception (<1%), infection (0.1-4%) and uterine perforation (0.2-0.5%).⁵

A review of the literature did not reveal any reports of dilation and evacuation complicated by vaginal perforation. The purpose of this case report is to alert physicians of this complication and its management.

Case Report

A 22-year-old G3P1011 patient presented to a local provider for termination of pregnancy at 16 weeks 3 days gestation by the patient's last menstrual period (LMP). The patient had a history of depression, one previous term pregnancy delivered by cesarean section, and an uncomplicated first trimester medical abortion. The patient denied prior abnormal cervical cytology or sexually transmitted infection. Her body mass index (BMI) was 35.8 with a weight of 91.6kg.

The local provider performed ultrasound to confirm gestational age, which was consistent with the patient's LMP. The patient was given 600mcg of buccal misoprostol for cervical ripening approximately four hours prior to the evacuation procedure. The patient was then given 200 mg of oral Doxycycline for antibiotic prophylaxis and 800 mg of oral Ibuprofen for postoperative pain control. A paracervical block with 10 ml of 1% Lidocaine was placed for local anesthesia and the patient received 150 mcg of Fentanyl and 2 mg of Midazolam for IV anesthesia. Following betadine site preparation and placement of a

speculum, the cervix was grasped with a single tooth tenaculum and was then dilated using sequential Pratt dilators to 49 French. Amniotomy was performed with a 16 mm suction cannula under ultrasound guidance with a return of clear fluid noted. The suction cannula was then reinserted but no products of conception returned. An attempt was made at inserting the Finks forceps under ultrasound guidance, but again no tissue was returned. The procedure was stopped due to concern that cervical dilation was not adequate. The patient was given an additional dose of 600 mcg of buccal misoprostol as well as 10 units of oxytocin diluted in 500 ml of normal saline. After approximately four hours without delivery of products, dilation under ultrasound was reattempted but there was concern for creation of a false passage as well as increased patient discomfort. They were unable to determine when or if a perforation would have occurred given the amniotomy had been successful. Of note, the local provider was an experienced family planning physician with more than 20 years of experience.

Upon arrival to our tertiary care facility, the patient was noted to be hemodynamically stable with normal vital signs (pulse 80, blood pressure 137/69, respiratory rate 17, temperature 36.8 degrees Celsius). Laboratory testing confirmed the patient was Rh positive, with hemoglobin of 10.0 g/dL and WBC of 14.9 cells/mm³. An ultrasound performed confirmed a 16 to 18 week sized intrauterine gestation with no fetal cardiac activity and minimal fluid around the fetus. Upon palpation of the vagina, a 1 to 2 cm defect that tracked cephalad was noted in the

posterior vaginal wall inferior to the cervix. The cervix was abraded and the anterior lip was avulsed from the cervical stromal tissue. In addition, there was a defect in the vaginal wall anterior to the cervix. The uterus palpated 16 to 18 week size. Rectovaginal examination was not performed secondary to patient discomfort with the examination.

The patient was taken to the operating room for an exam under anesthesia, diagnostic laparoscopy, and possible dilation and evacuation versus osmotic dilator placement with interval uterine

evacuation. In the operating room a 2 cm defect in the posterior vaginal wall that tracked cephalic and entered the posterior cul de sac was confirmed (Image 1) as well as a 1 to 2 cm anterior vaginal wall defect that tracked laterally to the right with intraperitoneal communication at the right broad ligament (Image 2). The cervix was long (approximately 4 cm), 1 cm dilated and firm. General surgery was consulted to evaluate potential bowel injury. A rigid flexible sigmoid proctoscopy and a thorough examination of the bowel revealed no injury or rectal perforation.

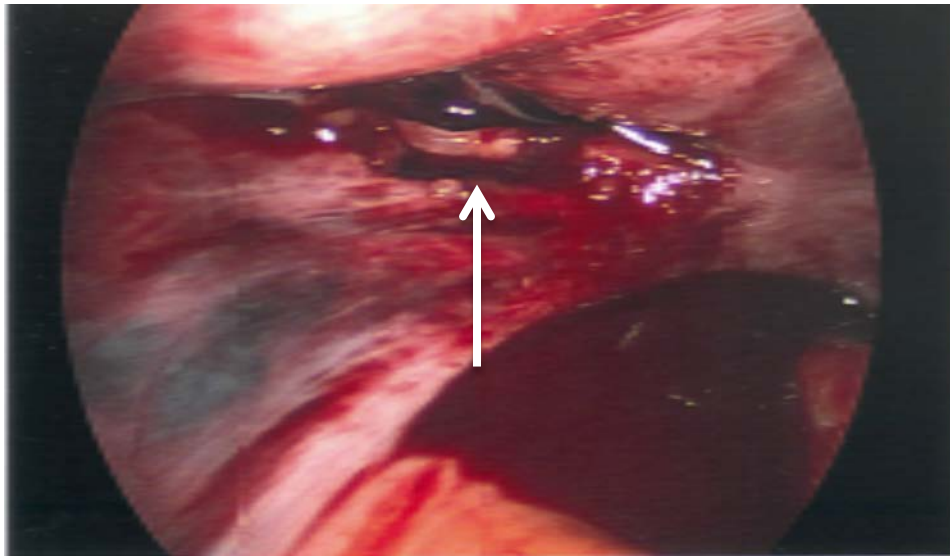


Image 1: Laparoscopic photograph with arrow depicting posterior vaginal wall perforation exit into the posterior cul de sac.

A 4 cm hematoma was noted in the right pelvic side wall that was stable throughout the laparoscopic portion of the case. No attempt to repair the vaginal defects was made. Given the presence of significant cervical length with poor cervical dilation, the decision

was made to place osmotic dilators under ultrasound guidance and complete the uterine evacuation the following day. A total of five #4 Dilapan and one #3 Laminaria were inserted.

Sixteen hours after osmotic dilator

placement, an uncomplicated ultrasound guided uterine evacuation and placement of an etonogestrel implant was completed. Vaginal defects appeared stable and did not require repair. The patient remained hospitalized and received antibiotics for 24 hours before being discharged home

with a seven day course of doxycycline 100 mg twice daily and metronidazole 500 mg twice daily. The patient returned to the clinic three weeks later and the vaginal wall was noted to be intact upon pelvic exam and healing well. Pelvic rest for a total of six weeks was recommended.

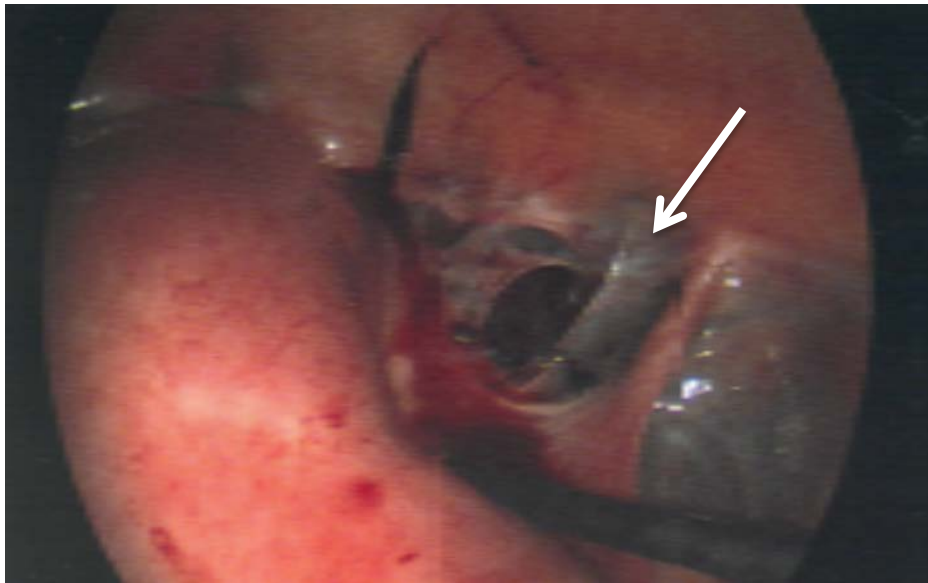


Image 2: Laparoscopic photograph with arrow depicting anterior vaginal wall perforation exit through the posterior leaf of the right broad ligament and resulting pelvic sidewall hematoma.

Discussion

Vaginal wall perforation during dilation and evacuation has not been previously reported in the literature. In this case, the cervical length, firm consistency and lack of dilation with osmotic dilators may have contributed to the complication. While the referring provider was unsure of when or how the perforation occurred, a review of the literature recommends against use of rigid dilators alone in the second trimester and thus pre-

procedure preparation is essential.⁶

Cervical preparation prior to dilation and evacuation can be done pharmacologically, namely with mifepristone and/or misoprostol, or mechanically with osmotic dilators. Insufficient cervical dilation is an independent risk factor for complications.⁷ A prospective cohort of more than 11,000 second trimester D&E procedures showed a protective effect with pre-procedure osmotic dilators with

a decreased cervical laceration rate.⁸ Misoprostol alone, as used in this case, achieves less cervical dilation than osmotic dilators and may increase the likelihood of inadequate cervical preparation causing a challenging or failed procedure. In one study of over 2200 second trimester D&E's between 12-18 weeks, 18% of subjects had inadequate dilation with misoprostol alone as compared to 2% with osmotic dilators ($p<0.004$).⁹

Given the infrequency of complications with D&E, existing studies have been underpowered to detect differences in complication rates between misoprostol alone versus osmotic dilators. However, Nucatola et al., showed a uterine perforation rate of 0.45% with 400 mcg of misoprostol alone given 90 minutes prior to D&E procedures between 12-16 weeks gestation and no cervical lacerations occurred.¹⁰ This rate is similar to those suggested in other studies of D&E procedures. Shortening the pre-procedure preparation to allow women same day procedures with misoprostol alone versus overnight dilators has shown improved patient satisfaction, but providers note less satisfaction with cervical preparation and more women required mechanical dilation.¹¹ A randomized control trial comparing overnight osmotic dilators and dilators plus 400 mcg buccal misoprostol 3 hours prior to procedure found no difference in operative time between cohorts and a trend suggestive of no increase in complication rates.⁸ While the study was underpowered, it did demonstrate initial dilation was greater with dilators plus misoprostol compared to dilators alone (2.4 cm compared with 2.0 cm, $p=0.007$) in the

16-18 week gestation group.⁸ Same day procedures are possible with the use of osmotic dilators, especially with the use of Dilapan-S, which dilate quicker (4-6 hours versus 12-24 hour with laminaria) and increase more per volume (4 versus 3 times dehydrated dilator).^{12,13} Thus, it is unclear if the use of osmotic dilators decreases the risk of major complications, but several studies have shown improved cervical dilation and provider satisfaction as compared to misoprostol alone.

Maternal obesity has been suggested as a risk factor for complications with abortion and this patient's BMI was notable at 35.8. Dark et al. reported a trend for increased procedure difficulty, procedure time and blood loss with increasing body mass index but their study was underpowered.¹⁴ In contrast, Lederle et al. found no increase in the rate of complications associated with increased BMI.¹⁵ Although maternal obesity can make abortion procedures more technically difficult, an association with increased complications has not been definitively shown.

Regarding management of vaginal perforation, we utilized diagnostic laparoscopy to evaluate for intraabdominal injury which is the same management recommended following uterine perforation.⁹ Given the potential for injury to the rectum, sigmoid colon or small bowel, intraoperative evaluation by general surgery or another surgical sub-specialist trained to perform bowel resections should be considered.¹⁶ Although previous literature concluded laparoscopy to be inadequate for bowel evaluation after uterine perforation, improved technology and gynecologist

training has allowed the use of this minimally invasive approach rather than laparotomy.¹⁷ Laparoscopy also allows for evaluation and control of bleeding if injury is sustained to the pelvic vasculature. While laparoscopic guided uterine evacuation has been described, we chose to optimize cervical dilation by placing osmotic dilators with ultrasound guidance prior to completion of uterine evacuation given the presence of a firm and long cervix.^{9,18} Finally, we opted to forgo repair of the vaginal perforations thus allowing healing by secondary intention, as well as prophylactic antibiotics given the risk for subsequent abscess formation.

Conclusions

In conclusion, abortion related morbidity and mortality events remain clinically and statistically rare.¹⁹ Abortion is a much safer procedure than delivery in the US.²⁰ Prompt recognition and appropriate intervention are essential to ensure optimal outcomes. The use of osmotic dilators during the second trimester could potentially decrease the risk of vaginal perforation during the dilation portion of the procedure by increasing pre-procedure cervical ripening.

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