



Gastric Perforation with Significant Peritoneal Fluid Following Dilation and Curettage

Ryan Joseph*

Department of Emergency Medicine, University of Texas Health Science Center at San Antonio, USA

Abstract

Background: A dilation and curettage has the possibility of various complications, with uterine perforation being one of the most serious. The reported incidence of uterine perforation is highly variable in developing countries, possibly due to underreporting. Furthermore, there have been various reports of bowel injury as a consequence of uterine perforation; however, none of the cases reported took place in a resource limited setting in which ultrasound was used to diagnose a complex peritoneal fluid collection.

Case Report: A 24-year-old female presented to the Emergency Room in Masaka, Uganda for abdominal pain and swelling. Two days prior to arrival she had an elective abortion performed via dilation and curettage. A bedside ultrasound was performed which revealed a heterogenous, complex fluid collection. After two more return visits, she was taken to the operating theatre for an exploratory laparotomy. It was then discovered that she had suffered a gastric perforation, and one liter of bilious fluid was extracted from her abdomen. To the best of our knowledge, this is the only reported case of a gastric perforation following a dilation and curettage.

Conclusion: This case provides insight to a gastric perforation following a dilation and curettage performed during the first trimester and highlights the risks inherent to a procedure such as this. It also highlights the importance of using ultrasound as an adjunct to clinical examinations and how it can help with monitoring the progression, or resolution, of a complication from a procedure.

Keywords: Ultrasound; Peritoneal fluid; Dilation and curettage; First trimester abortion; Gastric perforation; Uterine perforation; Uganda

Background

Uterine perforation is the most common immediate complication from a Dilation and Curettage (D&C) and the occurrence rate depends on the indication, with the highest in the setting of postpartum hemorrhage (5.1%) [1,2]. In general, perforation rates tend to increase with increasing uterine size [1]. There is also high variability in the reported incidence of uterine perforation as a result of a D&C performed during the first trimester. A meta-analysis of legal termination of pregnancy procedures reported a uterine perforation incidence that varied between 0.75 and 15 per 1,000 women [3]. Although the reported incidence is low, uterine perforation remains the most common immediate complication of a D&C performed during the first trimester and can often go unrecognized [4]. With that said, most of the reported incidence rates are in countries with well-developed healthcare systems. Less is known about the incidence rates in countries with underdeveloped healthcare systems likely due to underreporting. Furthermore, induced abortions are commonly performed by persons without any medical training in developing countries, which can lead to serious complications such as bowel perforation [5-8]. However, to our knowledge, there have been no documented cases in the literature of a gastric perforation because of a D&C or of documented bedside ultrasound findings revealing complex peritoneal fluid. The case reported here is of a 24-year-old female in which a first trimester abortion was performed that subsequently led to an exploratory laparotomy being performed. The final diagnosis was a gastric perforation.

Case Presentation

A 24-year-old Ugandan female presented to an Emergency Room (ER) in Uganda for abdominal pain and swelling. She denied any other associated symptoms and her vital signs were within normal limits. Two days prior to arrival she had an elective abortion performed *via* Dilation and Curettage (D&C). She was unsure exactly how many weeks pregnant she was prior to the D&C, however she estimated that it was around 7 to 9 weeks. The next day she began to develop

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*Correspondence:

Ryan Joseph, Department of Emergency Medicine, University of Texas Health Science Center at San Antonio, USA, Tel: 2817870053; E-mail: josephr1@uthscsa.edu

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Figure 1: Transabdominal transverse view of the uterus and “pus” in the rectouterine pouch (UT: Uterus).

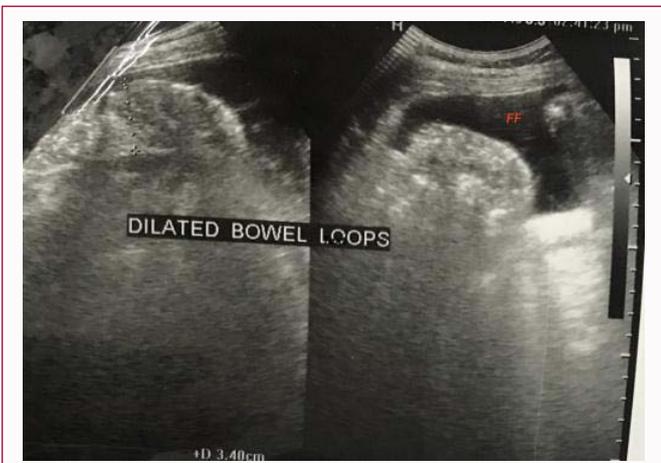


Figure 2: Transabdominal ultrasound showing dilated bowel loops and a small amount of free fluid (FF: Free Fluid).



Figure 3: Transabdominal ultrasound showing free fluid labeled as “ascites”.



Figure 4: Sagittal view of the pelvis showing free fluid present in the rectouterine pouch (UT: Uterus; FF: Free Fluid).

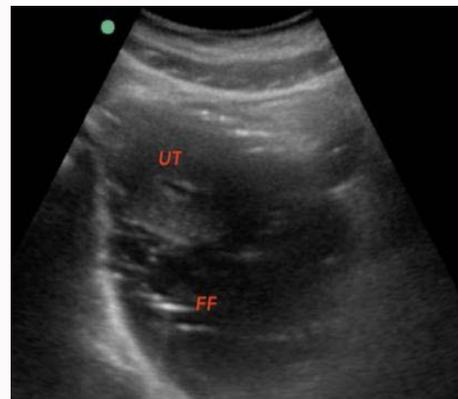


Figure 5: Transabdominal transverse view of the pelvis showing free fluid present in the rectouterine pouch (UT: Uterus; FF: Free Fluid).

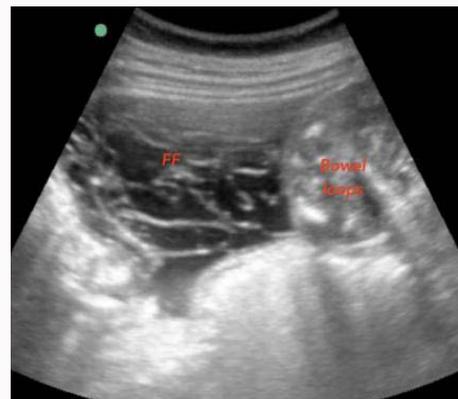


Figure 6: Transabdominal ultrasound of the right upper quadrant showing complex free fluid with lacelike internal echoes and bowel loops (FF: Free Fluid).

some abdominal discomfort and had an outpatient ultrasound scan performed. The scan revealed “pus” in the rectouterine pouch, dilated bowel loops, and “ascites” (Figures 1-3). Her abdominal discomfort continued, and she began to develop some mild abdominal swelling that prompted her to visit the ER for further evaluation. Shortly after arrival a bedside transabdominal ultrasound was performed, which revealed a heterogeneous fluid collection in the recto uterine pouch and throughout the rest of the peritoneal cavity (Figures 4-7). Figures 4, 5 are sagittal and transverse views, respectively, of the bladder and uterus showing the fluid collection in the rectouterine pouch,

commonly referred to as the Pouch of Douglas. Figures 6, 7 are views of the right and left upper quadrants, respectively, revealing loops of bowel floating in the peritoneal fluid. After she was seen by the senior physician, she was given a dose of Intravenous (IV) ceftriaxone, IV metronidazole, and one liter of IV normal saline and was sent to the ward for monitoring and evaluation by the gynecologist. The



Figure 7: Transabdominal ultrasound of the left lower quadrant showing complex free fluid with lacelike internal echoes and bowel loops (FF: Free Fluid).

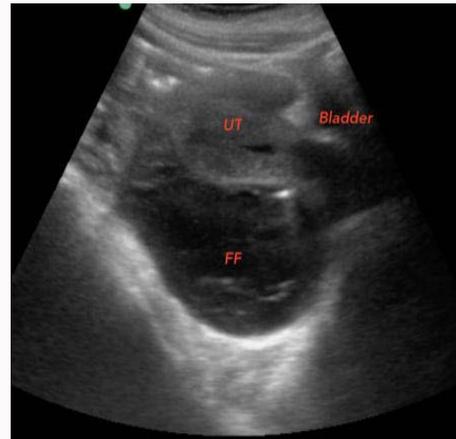


Figure 10: Transabdominal sagittal view of the pelvis showing the uterus and free fluid with lacelike internal echoes present in the rectouterine pouch (UT: Uterus; FF: Free Fluid).

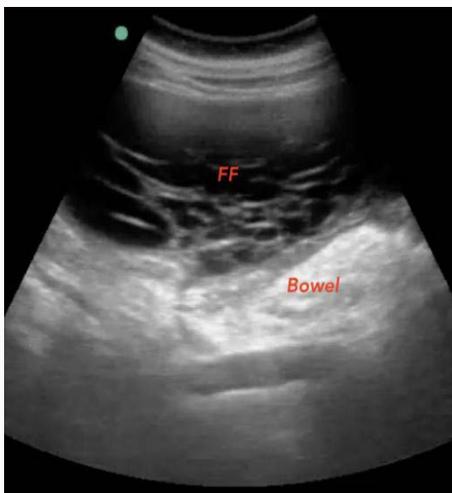


Figure 8: Transabdominal ultrasound of the left lower quadrant showing free fluid with lacelike internal echoes and bowel loops (FF: Free Fluid).

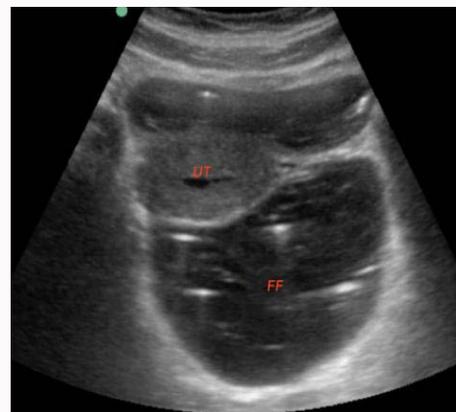


Figure 11: Transabdominal transverse view of the pelvis showing the uterus and free fluid with lacelike internal echoes present in the rectouterine pouch (UT: Uterus; FF: Free Fluid).

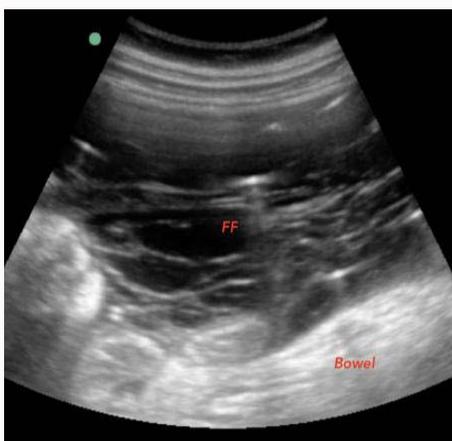


Figure 9: Transabdominal ultrasound of the right upper quadrant showing free fluid with lacelike internal echoes and bowel present in the bottom right of the image (FF: Free Fluid).



Figure 12: Transabdominal ultrasound of the left lower quadrant showing a kidney and adjacent loops of bowel with no free fluid present.

gynecologist decided to pursue conservative management and sent the patient home the next day. Six days later she returned to the ER for continued abdominal pain and nausea. Another bedside

ultrasound scan was performed, which again showed a heterogenous fluid collection throughout the peritoneal cavity, with slightly increased echogenicity compared to the one prior (Figures 8-11). Figures 8, 9 are images of the left lower quadrant and right upper quadrant revealing loops of bowel floating in the free fluid. Figures 10, 11 are sagittal and transverse views of the bladder and uterus with

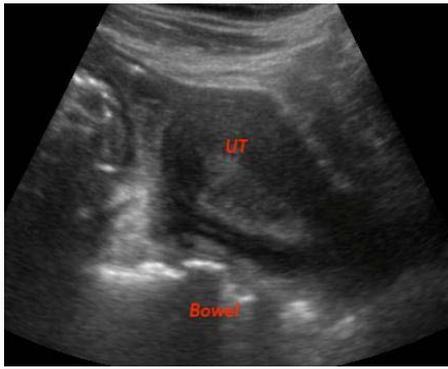


Figure 13: Transabdominal sagittal view of the pelvis showing the uterus and adjacent bowel (UT: Uterus).



Figure 14: Kidney.

a large rectouterine fluid collection again demonstrated. Five days later (13 days after the initial procedure), the patient returned once again with abdominal pain and now was completely PO intolerant. During this visit the senior surgeon of the hospital was consulted and decided to take the patient to the operating theatre for an exploratory laparotomy. During the operation, the surgeon encountered a gastric perforation and approximately one liter of serous fluid. The patient was then sent to the ward with a nasogastric tube and a percutaneous peritoneal drain in place. An ultrasound was performed a few hours after the operation and revealed that the peritoneal fluid collection was gone (Figure 12, 13). Figure 12 is a sagittal view of the uterus showing minimal free fluid present in the rectouterine pouch. Figure 13 is a view of the right upper quadrant and right kidney showing that the fluid collection that was present prior to surgery is no longer present. The patient was discharged a few days later in good condition.

Discussion

Inadvertent uterine perforation is a potentially serious complication of a D&C. Some may pass unrecognized; thus, the reported incidence is widely variable [4]. Data from reviews on procedures like first trimester abortions and diagnostic hysteroscopy's, suggest that rates of serious complications, such as perforation or hemorrhage, are remarkably low, however unsafe abortion continues to contribute significantly to this public health problem [4,9-15]. The exact rate of maternal death due to illegal vs. legal abortion in Uganda

is unknown, however in the 2017-2018; the Ugandan Annual Health Sector Performance report estimated that 5.3% of all maternal deaths result from abortion complications [16]. This can contribute to increased healthcare costs and place a large burden on the Ugandan healthcare system. Overall, it is estimated that 314,300 abortions took place in Uganda in 2013, which translates to a rate of 39 per 1,000 women aged 15 to 49 [17]. In comparison, the US had an abortion rate of 11.8 per 1,000 women aged 15 to 44 [18]. To complicate matters further, the legal status of abortion in Uganda is unclear. According to the Ugandan Constitution, "No person has the right to terminate the life of an unborn child except as may be authorized by law". Furthermore, the Penal code of 1950 states that, "any person, who, with intent to procure the miscarriage of a woman whether she is or is not with child, unlawfully administers to her or causes her to take any poison or other noxious thing, or uses any force of any kind, or uses any other means, commits a felony and is liable to imprisonment for fourteen years" [19]. With that said, there are other areas of the penal code that state, "a person is not criminally responsible for performing in good faith and with reasonable care and surgical skill, an abortion for the preservation of the mother's life" [19]. Whether legal or not, there are many inherent risks to performing an abortion or a D&C. Overall, there have been a few reported cases of intestinal perforation as a complication of a D&C, most of which all involved the small bowel and less commonly the sigmoid colon [6-9]. There have been no reported cases, to our knowledge, of gastric perforation following a D&C, although, it is very difficult to prove direct causation in the case reported here. Other plausible explanations for the gastric perforation are persistent post-operative vomiting, gastric dilatation, or a previously undiagnosed gastric ulcer that ruptured due to the lack of oral intake following the procedure. Some sources suggest that, unless intra-abdominal contents have been brought through the cervix, a conservative approach to managing perforations is sufficient [12]. Many cases may actually go undetected and if a conservative strategy is employed, observation may be appropriate [13]. However, other sources have suggested that all patients with concern for intestinal perforations should immediately undergo surgical exploration [12]. Perhaps most importantly, management can be guided by clinical exam and the need for immediate surgical intervention is based on clinical signs and symptoms of peritonitis and any imaging obtained [12,13]. In the case reported here, although one would assume that the patient would show some peritoneal signs due to the irritation that gastric contents cause to the peritoneum, she did not. However, she did have a significant amount of intraperitoneal fluid present on bedside ultrasound examination. Unfortunately, a major limitation of grey scale ultrasound is the inability to distinguish between various types of body fluids (pus-exudate, blood, ascites, mucous, etc). Interestingly, a recent study performed on a group of Nigerian women reported the most common cause of ascites was pelvic inflammatory disease, followed by hepatitis, tuberculosis, renal diseases, urinary bladder schistosomiasis, and polycystic ovarian syndrome [14]. However, given the clinical circumstances of the case presented here, uterine, as well as bowel/bladder, injury should be excluded. This case also illustrates the importance of developing practitioners that are proficient in performing bedside ultrasound specifically in resource limited settings in which higher level diagnostic imaging is much more difficult to obtain. The closest CT scanner to the hospital in the case discussed here was around 2 h away and many times, financial constraints limit patients' access to adequate transportation.

Conclusion

We reported a case of a gastric perforation following a D&C

carried out for a first trimester abortion. The patient had multiple visits where a bedside ultrasound examination was performed, which revealed complex peritoneal fluid, as evidenced by the internal echoes and gas within the fluid. To the best of our knowledge, this is the first reported case of gastric perforation following a D&C and is also the first case in which a bedside ultrasound revealed a complex peritoneal fluid collection in this setting.

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