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# Uterine Perforation during Manual Vacuum Aspiration: Diagnosis and Management at the El Hadj Ibrahima Niass Regional Hospital Center of Kaolack

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## Abstract

Background: Manual intrauterine aspiration (MIUA) is widely used for uterine evacuation but may lead to severe complications, including uterine perforation. We report two cases illustrating diagnostic challenges and surgical management in a low-resource setting. Methods: Two patients presenting with intestinal complications following MIUA were evaluated clinically and surgically at the El Hadj Ibrahima Niass Regional Hospital Center. Results: Both cases involved delayed diagnosis of uterine perforation with small-bowel involvement. One patient underwent conservative uterine repair, while the second required hysterectomy and bowel resection. Both recovered favorably following timely surgical intervention. Conclusion: Uterine perforation after MIUA can be life-threatening. Early recognition, adequate provider training, and prompt surgical management are essential to improving outcomes, especially in resource-limited settings.

## Keywords

Manual Intrauterine Aspiration, Uterine Perforation, Intestinal Injury, Post-Abortion Care, Surgical Management

## 1. Introduction

Manual intrauterine aspiration (MIUA) is an instrumental procedure used to evacuate uterine contents through suction. It is an effective and cost-efficient technique for uterine evacuation. Its simplicity and portability make it a reproductive health tool of choice. More than 25 years of clinical research conducted in over

100 countries have demonstrated that MIUA is safer and as effective as curettage [1] [2]. Accordingly, this technique represents a first-line therapeutic option for the management of abortion conditions with misoprostol, in the presence of hemorrhage, and notably in cases of gestational trophoblastic disease. However, adequate mastery of the technique is required, as severe complications such as uterine perforation may occur. Based on these considerations, we report two cases of severe complications following MIUA in our institution.

## 2. Patients and Methods

### 2.1. First Observation

A 24-year-old woman, para 2 with three previous spontaneous abortions, presented twenty-four hours after manual intrauterine aspiration with clinical signs suggestive of intestinal obstruction. Clinical examination revealed severe dehydration and diffuse abdominal distention with tympany, without organomegaly. Hernial orifices were free, and rectal examination showed an empty ampulla. Speculum examination revealed an intestinal loop protruding through the cervix. Uterine size was normal.

Laboratory tests showed hemoglobin at 10.4 g/dL, marked leukocytosis at 26,700/mm$^3$, and C-reactive protein (CRP) at 96 mg/L. Plain abdominal radiography revealed peripheral air–fluid levels consistent with small-bowel obstruction (**Figure 1**). Abdominopelvic CT scan showed mechanical small-bowel obstruction with a short ileal segment incarcerated in the uterine cavity secondary to uterine perforation, along with low-volume free intraperitoneal fluid (**Figure 2**).

**Figure 1.** Plain abdominal radiograph showing multiple air-fluid levels.

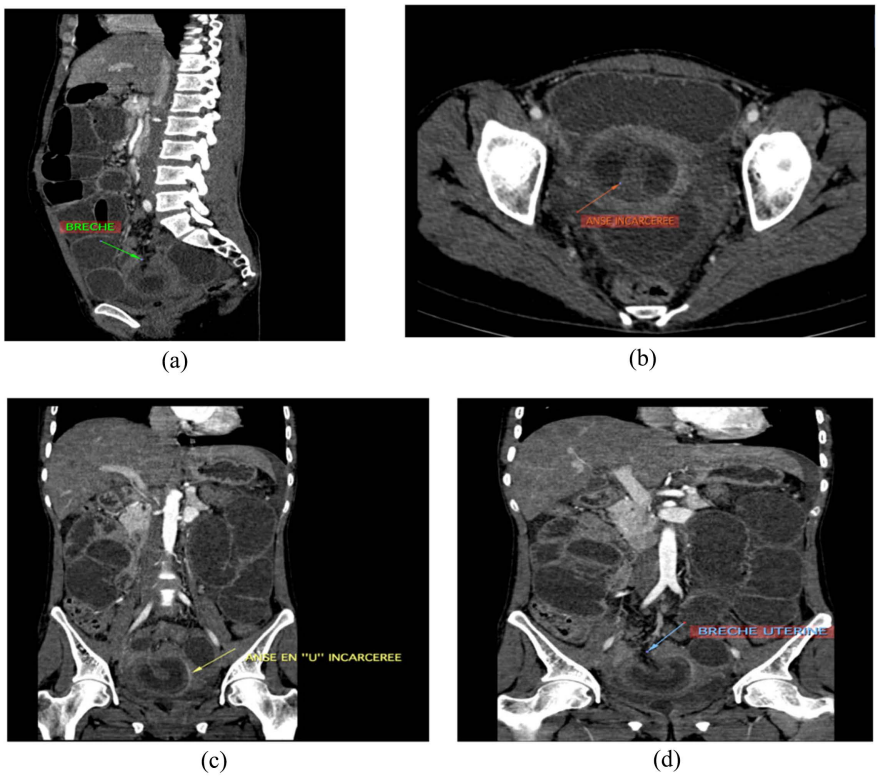


**Figure 2.** CT appearance of uterine perforation: (a): Intestinal loop within the myometrium. (b): Uterine wall discontinuity (perforation). (c) and (d): Uterine breach with incarcerated small-bowel loop.

Surgical exploration revealed dilated small bowel and an ileal loop incarcerated in a uterine defect, with minimal ascites (**Figure 3**). The incarcerated loop, approximately 8 cm long, was viable despite superficial suction-related erosions. The loop was released, the uterine defect was sutured, and abdominal drainage was performed (**Figure 4**). Broad-spectrum antibiotics were administered perioperatively.

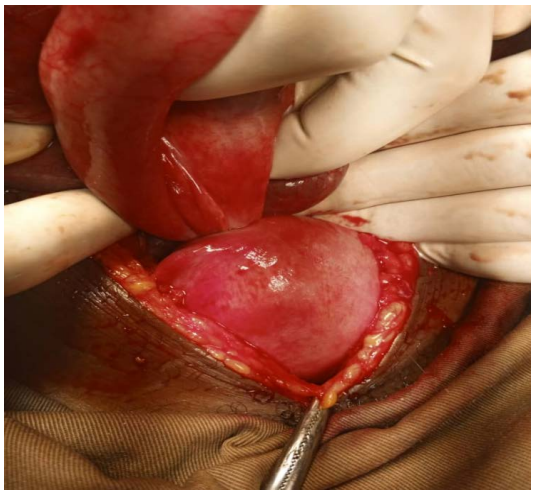

**Figure 3.** Operative view showing an intestinal loop incarcerated in a uterine breach.

**Figure 4.** Operative view after bowel release and uterine repair.

## 2.2. Second Observation

A 27-year-old para-2 patient was referred from the Nioro Health Center (246 km from Dakar) for suspected uterine inversion occurring three days after MIUA performed for incomplete abortion. General examination revealed dehydration and signs of malnutrition. The abdomen was flat and slightly sunken, with no surgical scars or organomegaly; hernial orifices were free.

At the vulva, approximately two meters of dilated, tender ileal loops with ischemic lesions were found protruding externally (**Figure 5**). In this clinical context with a recent MIUA, the diagnosis of uterine perforation with bowel exteriorization was immediately made, indicating emergency laparotomy.

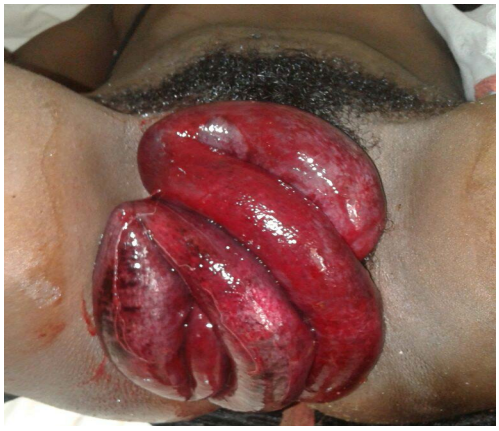

**Figure 5.** Exteriorization of dilated small-bowel loops through the vulva.

Laboratory investigations revealed hemoglobin at 9 g/dL, leukocytosis at 35,600/mm$^3$, and CRP at 59 mg/L.

Laparotomy revealed moderately dilated small bowel and an abdominal cavity almost completely emptied of its small-bowel loops, which were herniated through a uterine defect. The edges of the perforation were necrotic. A total interadnexal hysterectomy was performed, followed by resection of the necrotic intestinal segment and primary end-to-end anastomosis. Postoperative recovery was uneventful, and the patient was discharged after one week.

## 3. Discussion

These observations illustrate that although MIUA is a widely used and technically simple method of uterine evacuation, it may lead to life-threatening complications. Proper training, strict adherence to procedural technique, and early recognition of complications are essential for all practitioners involved in postabortion care.

Indeed, in our country where access to healthcare is difficult in remote areas, midwives are trained within the framework of delegated competence in order to handle certain situations such as abortion, the application of vacuum extraction, and certain obstetric maneuvers.

Uterine perforation remains one of the most frequent immediate complications, most commonly reported after clandestine induced abortion [1] [2]. In the present cases, digestive symptoms were the primary alerts leading to diagnosis, consistent with reports by Cissé *et al.* [3], who described gastrointestinal findings in all four of their cases complicated by peritonitis. Other studies have similarly reported uterine perforation discovered during laparotomy for acute abdominal emergencies [4] [5].

In our observations, the mean delay before diagnosis was approximately forty-eight hours, although published delays vary widely. Amarin and Badria [6] reported delays up to five days, while Cissé *et al.* [3] noted an average of seven days. Such delays may reflect the reluctance of patients who undergo clandestine abortion to seek timely medical care due to fear of legal consequences.

The indication for MIUA in our patients hemorrhagic abortion is consistent with published practice [7]. Clinical presentations included intestinal obstruction in the first case and a flat abdomen devoid of its bowel loops in the second, in line with descriptions from other authors [5]. Additional presentations, such as acute peritonitis, pelvic peritonitis, or acute gastroenteritis, have been documented [3]-[5].

Radiological evaluation, performed only for the first patient, was highly contributive. CT scan provided a clear diagnosis of bowel incarceration through uterine perforation, consistent with the observations of Grossman *et al.* [8] and Diop *et al.* [9]. Although pelvic ultrasound is frequently used in African settings, its diagnostic yield for incarcerated perforation requires meticulous interpretation [5].

In the second case, externalized bowel loops made imaging unnecessary, as similarly reported by Efuetnkeng Bechem *et al.* [4].

Laparoscopy is the diagnostic modality of choice for direct visualization and management planning [10], but remains limited in many low-resource settings.

Operator inexperience is consistently identified as the primary risk factor for perforation. Amarin and Badria [6], in a series of 8400 MIUA procedures, found that all 28 perforations were performed by trainees. In our study, both procedures were performed by midwives. Other risk factors include advanced age, nulliparity or multiparity, menopause, retroverted uterus, excessive force, cervical stenosis,

or use of GnRH agonists [6] [7].

Surgery is the cornerstone of management, supported by fluid resuscitation and broad-spectrum antibiotics [11]. Laparotomy remains the most widely used approach because laparoscopy is less accessible in resource-limited settings [12]. Surgical technique depends on the extent of injury, fertility desires, hemodynamic status, severity of bowel involvement, and delay in diagnosis [13]. Conservative surgery should be prioritized whenever feasible [14].

In our first case, conservative uterine repair was possible, whereas in the second case hysterectomy was mandatory due to necrosis. Prognosis is favorable with timely intervention; delays may lead to peritonitis, reoperation, or death. Mortality rates up to 21.8% have been reported in Madagascar, mainly due to septic shock [15].

## 4. Conclusion

Uterine perforation remains one of the most severe complications of manual intrauterine aspiration. Early recognition, timely referral**,** and appropriate surgical management are crucial to reducing morbidity and mortality. Strengthening provider training**,** improving access to emergency surgical care**,** and promoting safe abortion practices are essential in preventing such complications**,** particularly in low-resource settings.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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