

# Acute Urinary Retention Due to Non-Peuperal Uterine Inversion - A Case Report

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## Abstract

Non-puerperal uterine inversion (NPU) is an extremely rare cause of acute urinary retention in women of reproductive age. The delay in diagnosing this rare clinical entity presenting with acute urinary retention further complicates the management. The condition's rarity makes it difficult to carry out a study on its prevalence. Hence, most of the evidence comes from case reports or case series. We present a rare case of uterine inversion complicated by acute urinary retention and severe anemia in a 32-year-old lady who was successfully treated. At first, a vaginal myomectomy was followed by an Ocejo procedure to reposition the uterus, and then a total abdominal hysterectomy was done. This procedure for correction of uterine inversion is rarely done because of fear of inadvertent cystotomy. She did well and was discharged home on the 5<sup>th</sup> day of operation. Histology confirmed benign uterine fibroid and uterus with endometritis.

**Keywords:** Acute urinary retention, Non-puerperal uterine inversion, Radiological investigations, Rare gynecological emergency

## Introduction

Non-puerperal uterine inversion is a rare gynecological emergency, such that existing literature reports less than 200 cases. It is believed that most gynecologist may never encounter this condition during their careers. Non-puerperal uterine inversion usually results from a fundal-located uterine tumor extruding from the vagina. The commonest tumor implicated to date has been fundally cited as submucosal fibroid. Acute urinary retention is a rare complication of this clinical entity and is usually due to extrinsic urethra compression. The most common presenting symptoms include vaginal protrusions with or without bleeding or discharge and lower abdominal pains. Diagnosis is mainly clinical for prolapsed and total uterine inversion, while incomplete

uterine inversion requires a high index of suspicion supported by radiological investigations. The treatment depends on the patient characteristics, type, and degree of uterine inversion and associated pathology.

## Case Report

A 32-year-old P2 lady with two living children, whose last childbirth was 5 years ago, presented with complaints of Menorrhagia for 2 years duration, vaginal protrusion for about 3 days duration, lower abdominal swelling, discomfort, and inability to pass urine for about 12 hours duration.

Her problems started two years ago when she noticed her period was unusually heavy with the associated passage of

blood clots and dizziness, for which she had repeated blood transfusions. She presented to the Gynaecology surgery clinic of our local hospital, where the clinical and radiological examinations were performed, and the result showed a large intracavitary pedunculated fibroid. She was counseled for Myomectomy, but she declined for financial reasons.

She subsequently presented two years later with the above complaints.

On examination, she was in painful distress, pale and anxious. Her respiratory rate was 22 cpm, her blood pressure was 120/70 mmhg, pulse rate- 68 bpm, heart sounds -1&2.

There was lower abdominal fullness extending to the level of the umbilicus due to acute urinary retention.

On vaginal examination, a large necrotic mass attached to a globular mass with an irregular necrotic greenish surface that bleeds on contact was seen (**Figure 1**).

The external cervical Os could not be identified, and rectal examination was not remarkable. The bladder was urgently emptied with a Foley catheter (**Figure 1**), and abdominal palpation was repeated. However, the uterus could not be felt, and there was no palpable organomegaly.

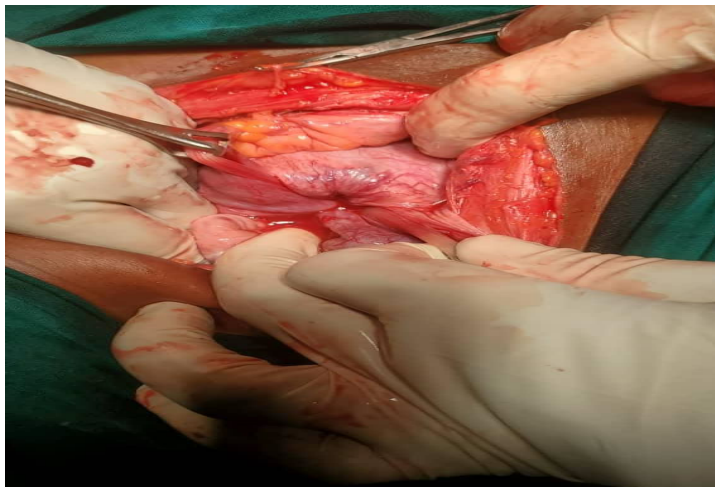
Her hematocrit was 16%, which necessitated the transfusion of 6 units of compatible blood. She was also placed on intravenous antibiotics. A pelvic scan was requested, which showed pelvic cavity indentation at the lower part of the bladder without a visible uterus.

Her post-transfusion hematocrit was 32%. She was counseled on the options of management and consented to an abdominal hysterectomy. We planned a vaginal myomectomy with an abdominal Haultain procedure before a total abdominal hysterectomy.

The patient was given combined-spinal epidural anesthesia and positioned in lithotomy. Routine vulva and vaginal cleaning and draping was done. A myomectomy was performed using a vaginal approach. An attempt to correct the uterine inversion from the vagina after Myomectomy proved abortive because of the tight cervical constriction ring. The patient was then repositioned to a supine position, the anterior abdominal wall was cleaned and draped to expose the lower anterior abdominal wall. A Pfannenstiel skin incision was made on the anterior abdominal wall and deepened into the peritoneal cavity. A cup-like depression was identified within the pelvic cavity, thereby confirming the inverted uterus (**Figure 2**).



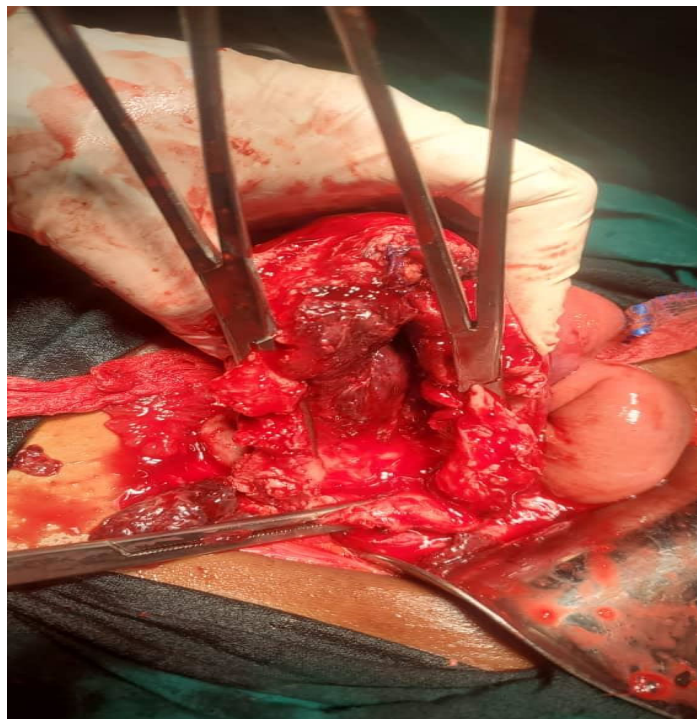
**Figure 1.** Inverted uterus with infected prolapsed fundalic located fibroid.



**Figure 2.** Exploratory laparotomy showing the round ligaments and fallopian tubes within the cup-like depression of the uterus (flowerpot appearance).

An attempt was made to perform the Huntington procedure (**Figure 1**) by grasping and applying gentle traction on the round ligaments with the Babcock clamp, but it failed because

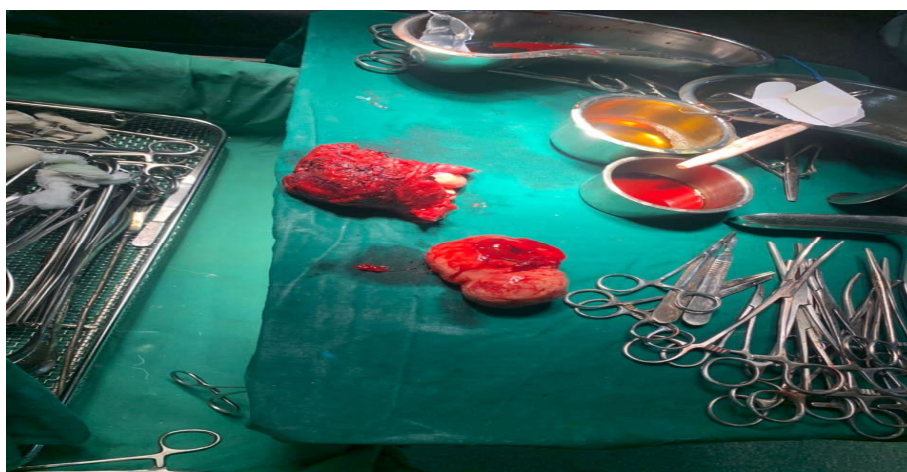
of the tight constriction ring. The Haultain procedure could not be performed because of the sigmoid colon and small intestine (**Figure 3**).



**Figure 3.** Exploratory laparotomy showing the corrected uterine inversion using Ocejo's technique.



**Figure 4.** Appearance of the perineum after surgery.



**Figure 5.** Postoperative specimen.

The uterovaginal fold was identified, and the bladder was dissected away from the inverted uterus. Ocejo's technique was used by incising the anterior aspect of the constriction ring with diathermy, and the uterus was manually reverted to its normal anatomical position. The edges of the vertical incision on the uterus were held with hemostatic forceps before performing a subtotal hysterectomy.

The estimated blood loss was about 500 mL. The patient recovered well and was discharged 5<sup>th</sup>-day post-op with a urinary catheter. A trial without a catheter was scheduled after 7 days, and the patient could tolerate it. The two, four, and six-week post-operative reviews were unremarkable. Her vital signs were stable, and her hematocrit ranged between 30-34%. Histopathological examination findings showed a benign fibroid with endometritis.

## Discussion

Uterine inversion is a rare but potentially catastrophic condition where the uterus turns partially or wholly inside out. As a rule, most cases published to date reported puerperal uterine inversion as more frequent and common than the non-puerperal type [1,2]. It has been described as a rare clinical problem with diagnostic and surgical challenges. Because of its rarity, most of the published literature on Non-Pueperal Uterine Inversion are case reports [3].

### Classification of uterine inversion

Uterine inversion can be classified as:

1. In relation to pregnancy into puerperal/obstetrics and

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Non-Puerperal inversion/ gynecological inversion [4]

2. Based on the degree of inversion, into;

A. Incomplete/ stage one inversion, where the uterine fundus lies within the endometrial cavity.

B. Complete /stage 2 inversion where the fundus extends beyond the external cervical Os.

C. Prolapsed /stage 3 inversion where the fundus extends beyond the introitus.

D. Total/stage 4 inversion involving both the uterus and vaginal wall prolapse.

3. It can also be classified based on the timing of onset and evolution of the uterine inversion into;

A. Acute uterine inversion, where the event occurs before contraction of the cervical ring or within 24 hours of delivery.

B. Subacute uterine inversion, which occurs after contraction of the cervical ring or after 24 hours but within 4 weeks of the event, and lastly

C. Chronic uterine inversion, which occurs after 4 weeks of delivery. Non-puerperal inversions present mostly as chronic uterine inversion, although an acute case of a non-puerperal inversion has been reported [5].

The etiology of uterine inversion is not clear. However, strong contraction of the uterine cavity by a fundal implanted fibroid mass has been implicated [1-5,8-16]. Some cases have been reported with no associated uterine pathology [6]. Precocious puberty with endometrial polyp was implicated as a cause in an 11-year-old child in one case report [7].

Lupowitz *et al.* described several factors associated with the pathophysiology of a non-puerperal inversion [8]. These factors include a rapidly growing fundally located uterine mass, a gradual attenuation of the uterine wall by tumor, tumor size, sessile nature of the mass, dilatation of the cervix due to uterine cavity distension, and sudden expulsion of the tumor resulting in uterovaginal inversion.

Most non-puerperal uterine inversion is caused by non-malignant tumors of the uterus, such as uterine fibroids and polyps. In contrast, other causes are due to cancer of the endometrium and uterine muscles [1-5]. It has been observed that between 92% and 97% of non-puerperal UI were due to benign tumors, while less than 20% had a malignant cause [9,10].

In this case report, the plausible explanation for the mechanism of uterine inversion was likely due to the rapidly growing submucosal fibroid's continuous irritation and weakness of the uterine wall. Also, the contact of the

descending uterine fibroid with the cervix could have caused the release of prostaglandins, leading to cervical ripening, dilatation of the cervical canal, and expulsive uterine contractions, aiding the extrusion of the fibroid.

The most common symptoms of a non-puerperal uterine inversion were heavy menstrual and intermenstrual bleeding, uterovaginal protrusion, chronic pelvic pains, lower abdominal pains, vaginal discharge, and rarely, urinary retention, as seen in this patient [1-11].

Acute urinary retention with difficult urethral catheterization requiring suprapubic cystostomy has been described following Non-Puerperal Uterine Inversion [11], but this was not the case here as it was easy to relieve the urinary retention with urethral catheterization.

### Diagnosis

The diagnosis of prolapsed and total inversion is less challenging, unlike that of incomplete and some complete uterine inversion, which requires imaging modality [12]. It has been misdiagnosed as advanced cervical cancer in literature [17]. The diagnosis is mainly clinical, with a high index of suspicion, and is complemented with imaging, biopsy, and laparoscopy when in doubt.

Abdominopelvic ultrasonography and contrast-enhanced magnetic resonance imaging are the main radiological tools for diagnosis. Furthermore, transvaginal ultrasonography has been used for some degree of uterine inversion. However, the diagnostic value is limited, especially in cases where vaginal access is hindered by a large fibroid mass occupying the vagina [1-4]. Therefore, MRI is the preferred diagnostic modality for accurate pre-operative diagnosis [4,5]. Due to the lack of an MRI at the Edo State Specialist Hospital, an abdominopelvic ultrasound was performed for this patient to exclude other pathologies in the pelvis. Where MRI is available, a cup-like uterine cavity, thickened and inverted uterine fundus on a sagittal image, and a 'bull's-eye' configuration on an axial image indicates uterine inversion. Abdominopelvic ultrasonography shows a hyperechoic mass in the vagina with a central hypoechoic H-shaped cavity on transverse images. In contrast, the longitudinal ultrasound images will reveal a U-shaped depressed longitudinal groove from the fundus to the center of the inverted groove. CT scan and laparoscopy can also be done where MRI is not available [14].

### Management

#### Goals:

1. Replace the uterine fundus to its correct position
2. Manage postpartum hemorrhage and shock, if present
3. Prevent recurrent inversion

**Initial interventions:** Interventions for the management of acute uterine inversion should begin promptly and simultaneously. A delay in diagnosis or prompt initiation of treatment increases the risk of maternal morbidity and mortality.

Initial evaluation and stabilization are the priority as some patients may present with acute urinary retention, sepsis, anemia, and hypovolemic shock and may require urgent catheterization, analgesics, antibiotics, and blood transfusion [1-10]. Our patient presented with features of acute urinary retention, pelvic pains, and anemia, for which urgent urethral catheterization, analgesia, blood transfusion, and intravenous antibiotics were administered.

Once stabilized, an attempt is usually made to confirm the diagnosis and to identify the possible pathology. The management mode depends on the patient's reproductive desires, age, stage, and cause of inversion.

Repositioning of the uterus is essential for both conservative management and hysterectomy procedures, as it is difficult to perform hysterectomy in an anatomically distorted uterus, as seen in uterine inversion [3]. It should be noted that most gynecologists are not familiar with hysterectomy on an anatomically distorted uterus [3].

Physical repositioning procedures like the Johnson maneuver and the hydrostatic method are more likely to be successful in acute puerperal and incomplete non-puerperal inversion but may be difficult in non-puerperal uterine inversion, making surgical interventions inevitable.

It is pivotal to rule out malignancy and excise the causative tumor before attempting to reposition the uterus. While incomplete inversion will often offer easy repositioning of the fundus, Complete, prolapsed, and total inversions are likely to be more demanding.

The route of surgical procedure for non-puerperal uterine inversion could be the transvaginal or transabdominal route. The transvaginal approach includes the Spinelli and Kustner technique of uterine repositioning. The Kustner posterior approach is easier than the spinelli anterior vaginal approach as it involves an incision on the posterior uterine wall, unlike the spinelli, which requires dissection of the bladder and incision on the anterior uterine wall. Some surgeons have also performed vaginal hysterectomy without correction of the uterine inversion [10,13]. This, however, depends on the skill of the surgeon.

Most surgeons use the abdominal route to correct uterine inversion with or without abdominal hysterectomy. The abdominal approach includes the Huntingtons, Haultain [16], and Ocejó techniques. The Haultain procedure seems to be the most successful method in the literature [15].

Huntington's procedure involves performing a laparotomy, locating the constriction ring formed by the inversion, dilating the ring digitally, and gentle upward pulling on the round ligaments and the fundus of the uterus with Babcock or Allis forceps to reposition the uterus.

In the Haultains procedure, the tight constriction ring is incised posteriorly with upward traction on the fundus to facilitate repositioning of the uterus. The sigmoid colon and small intestine can sometimes make this technique cumbersome. The Ocejó technique involves an incision on the anterior aspect of the cervical constriction ring after reflecting the uterovesical fold of the peritoneum. This is an easy approach but could be complicated by bladder injury. This was performed in this case report, but neither bladder injury nor difficulties were encountered.

Our patient opted for a total abdominal hysterectomy as she has completed her family size. Her desire for permanent sterility, coupled with the necrotic endometrium, which may be associated with septic morbidity if preserved, led to the decision to carry out a total abdominal hysterectomy after correction. Moreover, no cases of successful pregnancies have been reported following correction of Non-puerperal uterine inversion [4,6,9,15]. Although, there are reports of successful pregnancies following the surgical correction of puerperal uterine inversion [15].

## Conclusion

Acute urinary retention is a rare complication of Non-puerperal uterine inversion. The entity NPUI is even a rarer and challenging gynecological diagnosis requiring a high index of suspicion. Diagnosis is usually clinical in most cases but is strongly complemented by imaging and laparoscopy. The management depends on the etiology, parity of the patient, future reproductive desire, degree of inversion, clinical presentation, and surgeon's skills. The Haultains procedure seems to be the universally accepted method of repositioning the uterus in literature because of fear of bladder injury. In this case report, the Ocejó procedure seems easier than the Haultains technique. However, surgeons should select the surgical approach with which they are familiar.

## Data Availability

Access to data is permitted with the author's permission.

## Consent

The patient has given her permission to publish this report and the accompanying images.

## Conflict of Interest

The authors declare no conflict of interest.

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## Consent Form

See Consent statement disclosure (Will provide Consent form on request)

## Authors' Contribution

All authors played several overlapping contributory roles such as: Conceptualization, design, cross-referencing, and fact-checking; Formal Analysis and interpretation of data; project administration, curation, visualization, writing – original draft, writing – review & editing; supervision, oversight, and leadership, correspondence, data curation, quality control, internal review, communications, data collection and archiving, software, literature search, validation, and approval.

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