International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Arora N et al. Int J Reprod Contracept Obstet Gynecol. 2026 Apr;15(4):1428-1432
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20260915

Case Report

Chronic uterine inversion in a nulligravida female: an extremely rare case

Navidha Arora, B. S. Jodha*

Department of Obstetrics and Gynaecology, Dr. S. N. Medical College and Attached Group of Hospitals, Jodhpur, Rajasthan, India

Received: 06 February 2026
Accepted: 05 March 2026

***Correspondence:**
Dr. B. S. Jodha,
E-mail: principal.drsnmc.jod@rajasthan.gov.in

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ABSTRACT

Chronic non-puerperal uterine inversion is an extremely rare gynecological condition in which the uterine fundus turns inside out through the cervix. It usually occurs secondary to benign uterine pathology and is exceptionally uncommon in nulligravid women. The condition often presents with a chronic course and vague symptoms, leading to delayed diagnosis and treatment. A 22-year-old nulligravid woman presented with a seven-year history of a gradually enlarging vaginal mass, pelvic heaviness, and irregular spotting. She had no history of prior pregnancies, surgeries, or systemic illness. Examination revealed a patulous cervical os with the uterine fundus seen protruding through it. Laboratory evaluation showed severe anemia (hemoglobin 4.2 g/dl) with otherwise normal parameters. Pelvic ultrasonography demonstrated the uterine fundus prolapsed into the cervical canal, and magnetic resonance imaging (MRI) confirmed chronic uterine inversion with a characteristic "cup-shaped" appearance. After correction of anemia with four units of whole blood and supportive therapy, laparotomy with an anterior cervical constricting incision (Haultain-type) was performed. The uterus was successfully reinverted and anatomically restored. Postoperative recovery was uneventful, and the patient was discharged on the fifth postoperative day with complete resolution of symptoms. Chronic non-puerperal uterine inversion should be considered in women presenting with a long-standing vaginal mass and bleeding. MRI plays a crucial role in diagnosis. Timely surgical correction after preoperative optimization provides excellent anatomical restoration and preserves future reproductive potential.

Keywords: Chronic uterine inversion, Non-puerperal, Nulligravida, Haultain procedure, Uterine-sparing surgery, MRI pelvis

INTRODUCTION

Chronic uterine inversion is a very rare condition encountered in gynecology in which the uterine fundus collapses into or through the endometrial cavity and cervix. It is primarily seen in the puerperal period but sometimes even non-puerperal inversion occurs, very often associated with uterine pathologies such as fibroids, polyps, adenomyosis, or rarely cancer.[1]

Non-puerperal as well as chronic uterine inversions are extremely rare, particularly in nulligravida females, which gives rise to more difficulties in their diagnosis and management.[2,3]

In contrast to acute inversion, chronic cases mostly have slow development and persist for a long time. Their symptoms are usually mistaken for something else or ignored for years. These symptoms include pelvic heaviness, vaginal mass, and abnormal uterine bleeding. This delay ususally causes significant anemia and/or reproductive implications, as was the case in most of the reported cases.[3,4] Imaging, particularly ultrasound and magnetic resonance imaging (MRI), is a key factor in the diagnosis. Radiological findings that are typical include an "upside-down" or fallen fundus on longitudinal sections and a "target" or "bull's-eye" sign on transverse imaging, which help distinguish uterine inversion from other pelvic conditions such as prolapse or submucosal fibroids.[1,5]

The surgical correction of chronic inversion is the general approach to the management and this can be done using an abdominal (Haultain or Huntington), vaginal, or combined method depending on the length of chronicity and the degree of anatomic distortion.[5] Young nulligravida females are given uterine-sparing procedures so as to maintain their fertility. Preoperative correction of anemia and optimizing the patient's clinical status are essential steps in reducing perioperative risk and improving outcomes.[2-4] This case highlights the diagnostic challenges, surgical management, and clinical outcome of a 22-year-old nulligravida female presenting with long-standing uterine inversion.

CASE REPORT

A 22-year-old married woman from Jaisalmer, Rajasthan, attended the gynecology outpatient department on 17 September 2025, reporting a vaginal mass that had been progressively noticeable for the past seven years. She also experienced a sensation of pelvic heaviness and pressure that did not improve with medication, along with occasional episodes of vaginal spotting. Her obstetric history revealed that she had never conceived (G0T0P0A0L0). She had no known history of chronic illnesses such as diabetes, hypertension, asthma, or tuberculosis, and had not undergone any previous surgeries. Menstrual history indicated menarche at the age of 14 years, with cycles occurring every 60 to 90 days and lasting 3 to 4 days. She had been experiencing irregular spotting over the past month. A urine pregnancy test was negative. She had been married for four months, and there was no family history of infertility or metabolic disorders.

Clinical findings

On general examination, the patient appeared of average build and was afebrile, with a blood pressure of 118/66 mmHg and a pulse rate of 90 beats per minute. There were no signs of pallor, cyanosis, icterus, clubbing, or lymphadenopathy. Systemic examination revealed normal findings: cardiovascular system with audible S1 and S2 sounds and no abnormalities detected, central nervous system showing normal orientation, respiratory system with clear vesicular breath sounds, and a soft, non-tender abdomen. Per vaginal examination showed a patulous cervical os with the uterine fundus seen protruding up to the os, consistent with uterine inversion, accompanied by mild vaginal bleeding. Laboratory investigations revealed severe anemia with a hemoglobin level of 4.2 g/dl, a total leukocyte count of 9.0×10^3/µl, and a platelet count of 3.6 lakh/µl. The coagulation profile was within normal limits, and screening for infections such as HIV, HBsAg, HCV, and VDRL returned negative results. Biochemical investigations showed normal liver and kidney function, with electrolyte levels also within the normal range.

Timeline

The timeline is illustrated in Table 1.

Table 1: Timeline.

Date	Event/findings
17 September 2025	OPD presentation; clinical evaluation and USG done
17–24 September 2025	Blood transfusion (4 units), IV antibiotics, tranexamic acid, norethisterone started
24 September 2025	MRI pelvis confirming uterine inversion
27 September 2025	Laparotomy with correction of chronic uterine inversion via anterior cervical constricting incision
2 October 2025	Postoperative recovery uneventful; patient discharged with advice

Diagnostic focus and assessment

Diagnostic methods

Diagnostic evaluation included a pelvic ultrasound, which showed a uterus of normal size and echotexture with the uterine fundus noted to be prolapsed into the cervical canal. Magnetic resonance imaging (MRI) of the pelvis revealed the characteristic “fallen fundus” sign, confirming the diagnosis of uterine inversion, while the uterine walls and layers appeared structurally normal. Hematological and biochemical investigations demonstrated severe anemia, but all other parameters were within normal limits.

Diagnostic challenges

The diagnosis in this case was particularly challenging due to several factors. The patient waited a long time, nearly seven years, before getting medical help for her symptoms. Moreover, chronic uterine inversion is a very rare condition, particularly in someone who has never been pregnant, which made it surprising to find. Additionally, the lack of awareness and experience with this unusual condition often leads to delays in diagnosis, as it can be confused with more common gynecological issues.

Differential diagnoses considered

After evaluating the clinical presentation and examination results, several potential diagnoses were initially explored. Uterine prolapse was considered early on because of the reported sensation of a mass protruding from the vagina. A large endometrial polyp was also a possibility, as it can lead to similar symptoms such as vaginal bleeding and a noticeable mass.

Another option was a submucosal fibroid, which can cause changes in the shape of the uterus and mimic symptoms of prolapse. However, imaging studies ultimately confirmed the diagnosis of chronic uterine inversion, setting it apart from these other potential conditions.

Prognostic characteristics

Imaging and clinical assessments revealed no evidence suggestive of malignancy, indicating a benign condition. The reproductive organs were found to be structurally intact and well-preserved, offering a favorable prognosis for future reproductive potential.

Therapeutic focus and assessment

Interventions

The patient's severe anemia was managed with the transfusion of four units of whole blood prior to surgery. To control ongoing bleeding, intravenous tranexamic acid and oral norethisterone 10 mg three times daily were administered. A laparotomy with an anterior cervical constricting incision was performed on 27 September 2025 to correct the uterine inversion. The patient received standard antibiotic prophylaxis both before and after the surgical procedure to prevent postoperative infection.

Surgical technique

Under strict aseptic precautions, the patient was prepared and draped for surgery. A low transverse abdominal incision was made, and the abdomen was opened layer by layer up to the parietal peritoneum. On exploration, the uterus was found to be inverted, with the fundus pulled downward through the endocervical canal, forming a cup-like structure (Figure 1). Both adnexa were visualized and appeared normal. The bladder was carefully dissected and reflected downward from the lower uterine segment and cavity to expose the anterior surface of the uterus. A longitudinal incision was then made on the anterior uterine wall, just above the area of inversion, allowing direct visualization of the inverted fundus (Figure 2). Gentle upward pressure was applied transvaginally to assist in repositioning the fundus through the cervical rim. Once the uterus was successfully reinverted and restored to its normal anatomical position, the anterior uterine incision was closed in two layers using Vicryl sutures as shown in Figure 3. Hemostasis was ensured, and the abdomen was closed in layers in the standard manner (Figure 4).

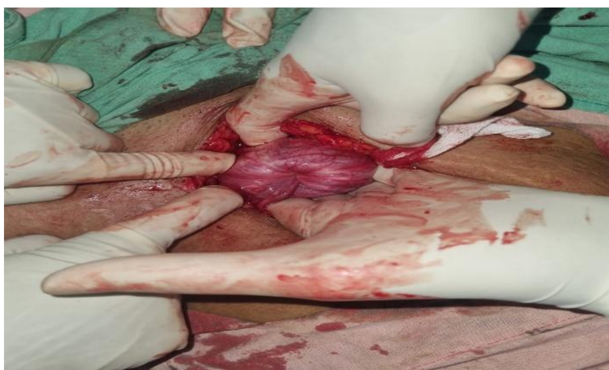

Figure 1: Cup-shaped fundal depression seen intraoperatively in complete uterine inversion.

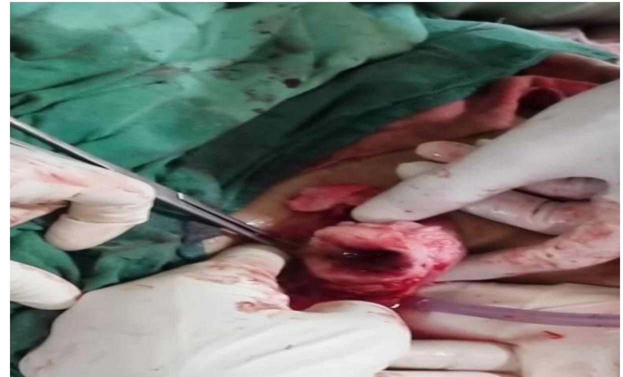

Figure 2: Intraoperative view showing incision made on the anterior uterine wall during correction of uterine inversion.

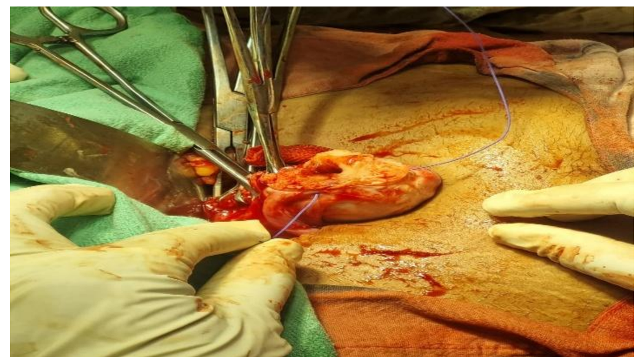

Figure 3: Reinverted uterus with anterior wall being sutured following successful repositioning.

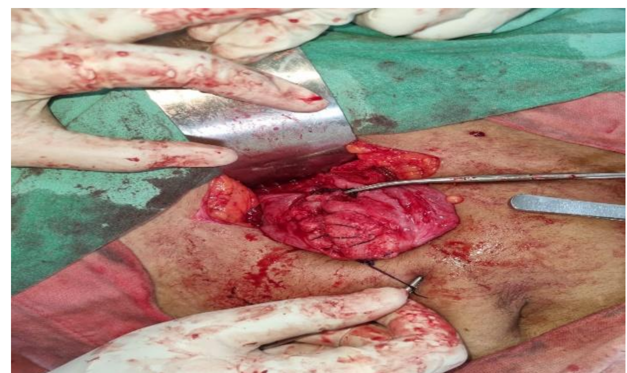

Figure 4: Intraoperative image showing completely reinverted and anatomically repositioned uterus.

Follow-up and outcomes

The patient's postoperative course was smooth and without complications. She recovered well and was discharged on 02 October 2025 with instructions to avoid conception for one year. There were no intraoperative or postoperative complications observed. Following surgery, the patient reported significant relief from pelvic heaviness and pressure, along with complete resolution of abnormal vaginal bleeding. On clinical evaluation, her vital signs were stable, postoperative hemoglobin levels had

normalized, and the uterus was anatomically restored to its correct position. No adverse events were noted during the recovery period.

DISCUSSION

Non-puerperal uterine inversion is a chronic condition that is exceptionally rare and has been characterized as a significant challenge when it comes to diagnosis and treatment, especially among young women who have never been pregnant. In the case mentioned, the inversion was undiagnosed for seven years, which demonstrates the usually slow and the often very long time it takes to find the right diagnosis.

Delayed presentation is a well-established feature of chronic non-puerperal inversion. Herath et al reviewed a number of cases and noted that the slow start and unfocused characteristics of clinical manifestations often result in misdiagnoses such as uterine prolapse or fibroid prolapse, with the correct diagnosis being finally made after advanced imaging or intraoperative findings.[6] In their series, the majority of non-puerperal inversion cases were chronic at the time of presentation. Moreover, the rarity of this condition in nulligravid or younger patients frequently results in a lower index of clinical suspicion. As documented by Herath et al, only a minority of reported cases occurred in nulliparous or younger women.[6]

Teimoori et al described a case of chronic inversion in a 32-year-old nulliparous woman, in which the Haultain procedure was successfully employed following excision of a causative leiomyoma.[7] Similarly, Sofat et al reported a case of chronic non-puerperal incomplete inversion in a young patient, diagnosed through imaging and managed with myomectomy combined with Haultain correction.[8]

Submucous leiomyoma or fundally located fibroids are recognized as the most frequent etiological factors, as they exert downward traction on the uterine fundus, leading to thinning of the uterine wall and gradual distortion of its normal architecture. In a large systematic review, leiomyomas accounted for 57.2% of reported non-puerperal inversion cases, whereas malignant pathologies such as sarcomas comprised a smaller proportion.[9]

Imaging plays a crucial role in differentiating uterine inversion from other pelvic pathologies. While ultrasonography may demonstrate indirect signs such as the “cupping” or “target” appearance, MRI remains the most definitive diagnostic modality. MRI clearly demonstrates the inverted fundus and its relationship to adjacent pelvic structures, often showing the characteristic “V-shaped” or “U-shaped” configuration.[8] Gehlot et al in a case series, also emphasized the utility of MRI in preoperative planning to ensure accurate surgical correction.[10]

Surgical management aims to restore normal uterine anatomy while preserving fertility when appropriate. Among abdominal approaches, the Haultain procedure—entailing anterior or posterior incision of the constriction ring followed by reinversion of the uterus—is the most commonly described technique for chronic presentations. Herath et al. reported that Haultain’s method was among the most effective techniques, accounting for 18.0% of successful reposition attempts in their review.[6] Teimoori et al employed a posterior Haultain incision following myomectomy to achieve successful repositioning, while Sofat et al utilized a vertical cervical incision, conceptually similar to the Haultain technique, to release the constriction and enable reinversion.[7,8]

In contrast, the Huntington procedure, which involves traction on the round ligaments, is generally preferred in acute inversion but is often less effective in chronic cases due to fibrosis, rigidity, and narrowing of the cervical constriction ring.[8,9] Preoperative optimization, including correction of anemia and hemodynamic stabilization, is an essential component of perioperative management. Several case reports have documented preoperative blood transfusion in patients presenting with chronic anemia secondary to prolonged bleeding prior to surgical intervention.

The favorable postoperative outcome in this case—including successful anatomical correction, complete symptom relief, and an uneventful recovery—is consistent with previously reported cases where timely diagnosis and surgical intervention were achieved. In the review by Herath et al, the majority of patients undergoing surgical correction experienced favorable outcomes with minimal complications.[6]

CONCLUSION

This case demonstrates a rare presentation of chronic non-puerperal uterine inversion in a young nulligravid woman, managed successfully through surgical correction following adequate preoperative optimization. Early recognition through imaging, particularly MRI, is essential for distinguishing inversion from other pelvic pathologies. Prompt surgical intervention using a fertility-preserving approach can yield excellent outcomes, both anatomically and symptomatically. Greater clinical awareness of this rare condition can help prevent prolonged morbidity, unnecessary interventions, and delayed diagnosis in similar cases.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Arora N, Jodha BS. Chronic uterine inversion in a nulligravida female: an extremely rare case. Int J Reprod Contracept Obstet Gynecol 2026;15:1428-32.