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Case Series

A case series on uterine inversion: diagnostic and surgical considerations

Harsha M. Agrawal[1]*, Sayalee Chafale[2]

[1]Department of Obstetrics and Gynaecology, Shree Bhausaheb Hire Govt Medical College, Dhule, India
[2]Departement Of Obstetrics and Gynaecology, Government Medical College, Nagpur, India

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***Correspondence:**
Dr. Harsha M. Agrawal,
E-mail: dr.harsha.obsgyn@gmail.com

ABSTRACT

Uterine inversion defined as descent of fundus of uterus to or through the cervix, so uterus is turned inside out. It may be puerperal and non-puerperal/gynecological, the latter being extremely rare. This rarity, delayed presentation and atypical presentation contribute to the clinical challenges. We present a case series four cases of uterine inversion including three cases of gynecological inversion and one case of puerperal inversion, managed at a tertiary care hospital in India. Clinical presentation, diagnostic methods, surgical techniques, and outcomes were documented. Non-puerperal cases were associated with submucosal fibroids and presented with mass protrusion, bleeding, and urinary complaints. Diagnosis was confirmed using clinical examination and magnetic resonance imaging (MRI). Surgical management included Huntington's and Haultain's techniques followed by hysterectomy. The puerperal case presented with acute hemorrhage postpartum and was managed successfully with Johnson's maneuver and uterine balloon tamponade. It could be concluded from series that non-puerperal uterine inversion requires individualized surgical management based on underlying pathology. Acute puerperal inversion demands rapid resuscitation and repositioning to reduce maternal morbidity. MRI plays a pivotal role in diagnosis and planning. This series delineates the challenges involved in the diagnosis and operative management of the condition.

Keywords: Uterine inversion, Acute uterine inversion, Non-puerperal uterine inversion, Uterine prolapse, Submucosal fibroid

INTRODUCTION

Uterine inversion is a rare medical condition that involves passage of the uterine fundus through the endometrial cavity and cervix, so that the uterus is turned inside out. It is broadly classified by Jones into two types as it appears in two main categories as: puerperal and non-puerperal.

Puerperal (obstetric) most often occurs during the third stage of labor; and typically, acute. Non-puerperal (gynecological) is unrelated to pregnancy, usually chronic, and most often caused by submucosal fibroids or other intrauterine pathology.[1,5]

Staging ranges from incomplete inversion (fundus within uterine cavity) to complete extrusion of the uterus outside the vulva as: in stage 1 the fundus remains within the uterine cavity. In stage 2, there complete inversion of fundus through cervix but within the vagina. In stage 3, there's total inversion of fundus through vagina. In stage 4, the vagina gets involved and fundus lies outside the vulva.[1]

Acute uterine inversion (up to 48 hours postpartum) is one of the rare obstetrics complications occurs due to mismanaged third stage of labour. It should be strongly suspected when the triad of hemorrhage, shock and severe

abdominal pain with bearing down sensation is present after delivery of placenta. High index of suspicion is needed to prevent maternal mortality in such cases.[3,4]

Non puerperal chronic uterine inversion is usually associated with other uterine pathology such as submucosal leiomyoma, endometrial polyps, uterine neoplasm, etc. Submucosal fibroids are the commonest cause of non-puerperal uterine inversion. Increased intra-abdominal pressure and post-menopausal hormonal replacement can be contributing factors.[2,3,5] Due to rarity of condition, early diagnosis can be challenging. However, management needs to be individualized depending on their varied clinical presentation.[1]

Three contributing factors proposed for uterine inversion are: sudden emptying of the uterus, which was previously distended by a tumor, thinning of the uterine walls due to an intrauterine tumor, and dilatation of the cervix.[7]

We report here a series of four cases of uterine inversion including acute and chronic condition with their management at government medical college, Nagpur, India. Our case series aims to present the varied presentations of uterine inversion along with the surgical challenges faced during the management. Due to rarity of this condition, we hope this series adds up to valuable insight into diagnostic and surgical challenges encountered and the multidisciplinary approach required in managing uterine inversion.

CASE SERIES

Case 1

A healthy 45-year-old, P2L2, with both home deliveries, female patient (referred for menorrhagia with suspected malignant mass) presented with history of menorrhagia with dragging sensation in lower abdomen and something coming out of vagina since 2-3 months which retracted spontaneously initially. This was associated with difficulty in defecation and micturition with increased frequency and hesitancy since 2-3 months. It was associated with foul-smelling white discharge per vagina since 2 months. Patient had history of menorrhagia with bleeding for 3-4 days in duration of 15-20 days with soakage of 2-3 pads with passage of clots.

On examination she was cachexic built, pale with vitals within normal limits. The abdomen was soft non tender. On pelvic Examination a large reddish mass of 10×8×5 cm coming out of intraoitus with bosselated surface seen obstructing the urethra. On bimanual examination, cervical os fully effaced, surrounded by the mass, which was firm to hard in consistency. The mass was occupying the whole of vagina with no space to palpate the fornices. Uterine fundus cannot be felt. Ovaries felt in the dome of mass. On transabdominal ultrasound uterine fundus not visualized, lesion of size 2.9×2 cm lesion felt in right adnexa, s/o right paraovarian cyst.

Intraoperatively, uterine reposition was challenging due to significant large mass, thus abdomino-pelvic surgery was planned. Vaginally, the mass was separated out through the plane of separation and sent for histopathology. After excision of the mass, fundus of uterus could be felt vaginally thus confirming the diagnosis of uterine inversion. Abdominal part of operation entailed accessing the abdominal cavity through a pffanensteil incision which revealed normal appearing bilateral ovaries visible distal parts of fallopian tubes and an absent uterine corpus along with the medial ends of fallopian tubes showing a classic flowerpot appearance. Uterine reposition was done through abdominal and vaginal maneuvers (Huntington's method). Uterine reposition was further proceeded by abdominal hysterectomy. Histopathology reports s/o whorled like appearance consistent with leiomyoma.

Figure 1: Intraop pic of uterine inversion showing flower pot appearance.

Figure 2: External appearance of inverted uterus with fibroid on admission.

Case 2

A 70-year-old female P4L4, 20 years postmenopausal, with underlying chronic hypertension and type 2 diabetes mellitus, presented through casualty with something coming out of vagina since 6 months. This mass initially could be reposited with fingers but was completely out of vagina since 3-4 days. She also complained of recurrent postmenopausal bleeding episodes since 6 months. She experienced retention of urine since 3-4 days with dribbling of urine. Her vitals were normal, and her abdominal examination was unremarkable. Pelvic examination revealed an irreducible vaginal mass, with

external os not visualized. Getting above the swelling was not possible. The mass did not bleed on touch. Bilateral fornices were shallow and surrounding vaginal mucosa appeared edematous. Ultrasonography revealed uterus low-lying with 5.7×5.2×8.1 cm collection intrauterine. Patient was cautiously catheterized to MRI revealed protrusion of a well-defined pedunctulated lesion of 4.5×3.3×5.1 cm lesion arising from uterine fundus along with uterine fundus and body into the cervix and vagina.

Elective exploratory procedure was planned after making patient fit for surgery by controlling of her blood sugar levels and blood pressure medically. Exploratory laprotomy was proceeded with lower transverse abdominal incision. On further deep dissection, cup-like depression was identified within the pelvic cavity; confirming the diagnosis. Manual reposition was attempted; but could not be successful due to thick constricting ring. Hence, constricting ring was incised posteriorly with a longitudinal incision (Haultain's technique); further reposting the fundus to its normal position by gentle upward traction of babcocks forceps applied at the dimple of inverted uterus. An extra facial hysterectomy with bilateral salphingo-opherectomy was performed successfully. Postoperatively, the patient was stable and discharged after 1 week. Histopathology report showed benign uterus, ovaries, fallopian tubes and submucosal leiomyoma.

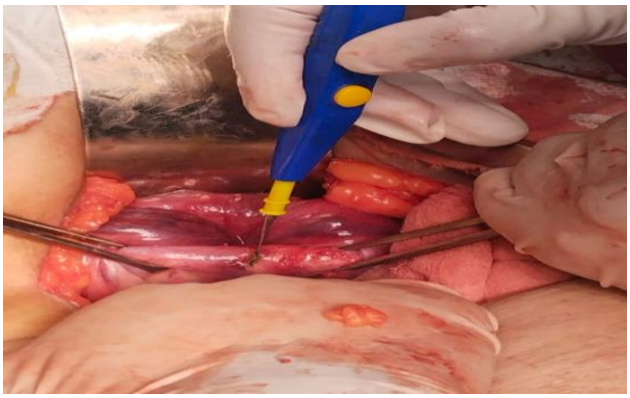

Figure 3: Intra-operative image showing Haultain's procedure.

Figure 4: Hysterectomy specimen.

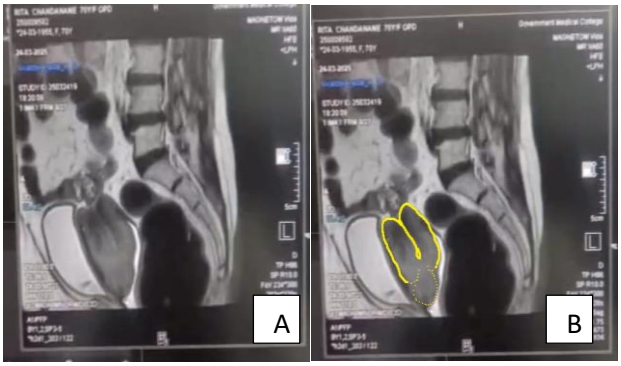

Figure 5 (A and B): MRI image of inverted uterus.

Case 3

A 40-year-old-female P1L1, previous normal vaginal delivery 11 years back, presented to hospital with heavy menstrual bleeding and pain in abdomen since morning. She reported to have multiple similar episodes since 4-5 months. She also complained of incomplete micturition with increased frequency since 1 month. Her vitals were normal and her abdominal examination was unremarkable. On per vaginal examination 6×6 cm, hard mass felt surrounded by cervix like a ring. Stalk of the mass felt whose origination could not be differentiated. Differential diagnosis of cervical polyp and pedunculated fibroid was given.

Ultrasonography was suggestive of bulky uterus with heterogenous area of 6×2.5×3 cm noted in uterus suggestive of endometrial polyp. MRI done was suggestive of well-defined altered signal intensity lesion of 6.5×4.4×6.7 cm seen protruding with fundus into vaginal canal suggestive of grade 2 uterine inversion secondary to intramural fundal degenerative fibroid.

Exploratory laprotomy was planned in emergency after patient stabilization and shifted to theatre with 1 pint of blood. On abdominal dissection, there was dimpling at fundus, hence confirming the diagnosis. Vaginal removal of the fibroidal mass was attempted but was unsuccessful. On performing huntington's maneuver, bilateral round ligaments were clamped cut and transfixed. Vertical incision was given on posterior uterine wall and uterine cavity was reached followed by which fibroid was dissected from myometrial tissue along with stalk. Further, bilateral tubo-ovarian ligament was clamped cut and transfixed. Further on traction and getting access upto bilateral uterosacral ligament, they were clamped, cut and transfixed and further repositioned uterine fundus. This was followed by type 1 hysterectomy in the usual manner and specimen was sent for histopathological examination. Patient recovered well and was discharged. Histopathological examination revealed benign uterus and fibroidal mass revealed leiomyoma with calcific degeneration.

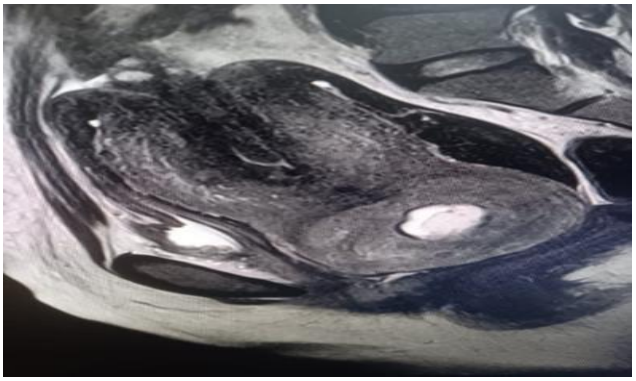

Figure 6: MRI image of inverted uterus with fundal fibroid showing calcific degeneration.

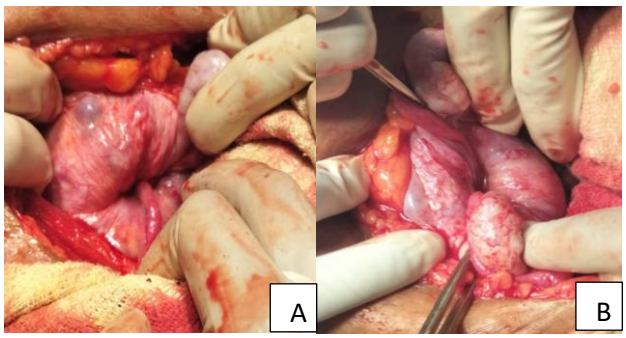

Figure 7 (A and B): Flower opts appearance with dimpling seen at fundus.

Case 4

A 27-year-old P1L1 was referred to our hospital with history of day 1 of full-term normal vaginal home delivery with complaints of pain in abdomen, continuous bleeding per vaginal since delivery and something coming out of vagina since last 6 hours. Patient had history of 39 weeks of amenorrhea with normal vaginal home delivery 7 hours back.

Her general conditions were not satisfactory with hypotension. Her systolic blood pressure was 80 mmHg, pulse 130/min, pallor grade 3 and maintaining saturation of 98% on room air. Patient was conscious but irritable. On examination, abdomen was soft, tenderness on deep palpation on supra-pubic region and fundus was not palpable. On per vaginal examination, large globular tender reddish mass with irregular surface was found to be protruding through the intra-oitus.

Patient was immediately shifted in the theatre for emergency procedure with 2-pint PRC. 1st BT was started along with crystalloids. Reposition was done with palm of hand place against the inverted fundus as if holding a tennis ball with finger tips exerting upward pressure circumferentially at uterocervical junction (Johnson's maneuver). Successful uterine reposition was done under spinal anesthesia followed by bimanual compression for 15-20 minutes under uterotonics cover. This was followed by prophylactic uterine balloon tamponade insertion. Patient's vitals started improving. Patient was given total of 2-pint PRC on hemoglobin of 6 gm/dl.

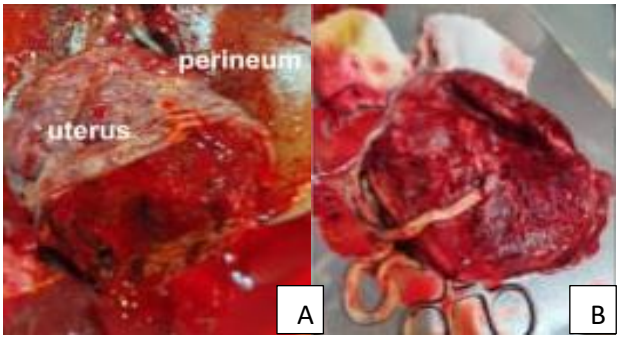

Figure 8 (A and B): On admission external appearance of inverted uterus.

DISCUSSION

Uterine inversion is defined as the passage of the uterine fundus into uterine cavity and cervix, turning the uterus inside out.[1] Ninety-seven percent of persistent non-puerperal chronic uterine inversion are with uterine pathology; most frequent being leiomyoma with submucosal fundal attachment. Other causes are leiomyosarcoma, endometrial polyp, endometrial carcinoma, cervical tumor, pelvic masses.[1,2] Hence, broad age range should be considered for chronic uterine inversion. Acute forms i.e. those diagnosed within 24 hours of postpartum; are usually due to mismanagement of third stage of labour. While many cases occur without any clear predisposing factors, it may result from precipitate labour, manual removal of placenta, traction of short cord or increased intra-abdominal pressure when uterus is relaxed.[4]

Acute forms are mostly symptomatic while chronic can be asymptomatic. Clinical presentation of most women is with persistent mass protrusion and foul-smelling vaginal discharge or irregular vaginal bleeding that might be associated with urinary complaints pain in abdomen, abdominal tenderness, mass in vagina, pelvic discomfort, pain in vagina or pressure in vagina. Hypovolemic shock or neurogenic shock has been reported in acute uterine inversion.[5]

Differential diagnoses for such cases are as uterine prolapse, cerival malignancy, and other pelvic tumor.[6] Diagnosis is made by clinical evaluation of the patient and aided by imaging. On vaginal examination, palpation of cervix and vaginal fornices is of utmost importance to differentiate between uterine prolapsed and uterine inversion.[6] However, cervix may be difficult to palpate in complete uterine inversion, along with non-palpable fundus; as seen in most of our cases. Imaging modalities such as transabdominal or transvaginal ultrasound, MRI and computed tomography (CT) scans are various modalities that help in visualizing the inverted uterus and

confirming the diagnosis. MRI being the gold standard investigation, not only helps to confirm the diagnosis but also aid in analyzing the underlying cause. Presence of 'U' shaped cavity, dimpling at the fundus if noted on MRI.

An individualized approach to management is essential as it is determined by various factors such as underlying cause, degree of inversion, patient's general condition and symptoms. Conservative management is typically considered for hemodynamically stable patients, especially when the mass can be manually reposited.[1] Manual reposition can be attempted with varying degree of success rate.[7] When conservative management fails or patient is hemodyamically unstable, surgical intervention becomes obligatory. Hysterectomy is typically preferred for non-puerperal uterine inversion except in women who desire to preserve fertility. In our cases, initial approach was to attempt reposition of uterine inversion back to its anatomical position followed by hysterectomy.[1,6] When manual reposition was not successful due to constricting ring, surgically ring is incised vaginally using Spinelli's or Kustner's method; or abdominally by Robinson's operation or Haultain's technique.[1,8,9] This was followed by surgical reposition by Huntington's method i.e. allis forceps are placed at dimple of the inverted fundus and gentle upward traction is applied.[10] The selection of a vaginal versus abdominal approach is influenced by several considerations, including the surgeon's expertise, patient's anatomical factors, pelvic pathology and the clinical presentation of the uterine inversion.[1] Vaginal procedures are technically challenging. Intraoperatively, potential complications should be taken care of like bleeding or injury to bladder, ureter, and bowel. Post-operative care is equally important for optimum outcome.

CONCLUSION

Non puerperal uterine inversion is a very rare clinical entity. Due to non-specific symptoms and varied clinical presentation it can usually be misdiagnosed on initial assessment. Its management depends underlying cause and patients' overall health. Surgical managements are promising only after proper patient stabilization and technological imagining in guiding the surgeon for complexities for non-puerperal uterine inversion.

Whereas puerperal uterine inversion requires prompt diagnosis and urgent management as it poses a high risk for maternal mortality. Premature placental separation and fundus pressure post-delivery should be avoided. Early fluid resuscitation, manual reposition and balloon tamponade is essential in order to obtain the best prognosis.

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