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Puerperal Subacute Uterine Inversion with Urinary Retention: A Case Report

[1]Dr Mandeep Bayan, Assistant Professor, Department of Obstetrics and Gynaecology, Gauhati Medical College & Hospital, Guwahati, Assam

Corresponding Author: Dr Mandeep Bayan, Assistant Professor, Department of Obstetrics and Gynaecology, Gauhati Medical College & Hospital, Guwahati, Assam.

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Abstract

Puerperal subacute uterine inversion is a very rare but serious obstetric complication which happens when the woman survives the first 24 hours of uterine inversion following vaginal delivery.This case report describes a 24-year-old primiparous woman who presented to our hospital with subacute uterine inversion with urinary retention following a normal vaginal delivery. The patient's clinical presentation, diagnosis, management, and outcomes are discussed to highlight the importance of anticipation, prevention, early recognition and prompt intervention in managing this obstetric emergency.

Keywords: Uterine inversion, Puerperium, Postpartum, Urinary retention, Haultain's method.

Introduction

Uterine Inversion is a very uncommon puerperal complication, with a reported incidence ranging from 1 in 20,312 to 1 in 1,739 deliveries[1-3]. A recent 10-year study conducted in the United States from 2004 to 2013 reported 2,427 cases of inversion out of a total of 8,294,279 deliveries, equating to roughly 1 in every 3,448 deliveries[2].

In the 1940s, the mortality rate from uterine inversion ranged from 14 to 41%[(4)]. In contrast, recent studies from the developed countries are showing no maternal mortality, likely due to early detection and proper management[(2)]. However, low income countries are still having maternal deaths from uterine inversion.[5]

Nonetheless, significant morbidity remains a serious concern for patients experiencing uterine inversion after delivery. These patients are more likely to suffer from neurogenic shock, or PPH and maternal hypovolemic shock, often necessitating a blood transfusion and sepsis in case of late presentation. Additionally, they face a higher risk of needing surgical management or a hysterectomy, especially if the diagnosis delayed[2].

Patient Presentation

A 24-year-old para 1 woman was referred to our hospital from a peripheral civil hospital with a diagnosis of suspected subacute uterine inversion, urinary retention,

severe anaemia, and abdominal pain on 5th day postpartum. Her antenatal period was uneventful. She delivered a healthy male baby weighing 2.8 kg through a normal vaginal delivery. Following the delivery, she experienced abdominal pain and was unable to pass urine. Initially, she was referred to a civil hospital where she received one unit of blood transfusion for anaemia (Hb 7 g/dL) over a four-day stay. Subsequently, she was referred to our hospital due to something protruding through her vagina with retention of urine.

Examination and Initial Management

Upon examination at our facility, the patient appeared toxic and anaemic with a pulse rate of 110 beats per minute, a blood pressure of 100/50 mmHg and temperature of 101 degree F. Abdominal examination revealed a tender uterus of approximately 14-week size. Per speculum examination showed a round, reddish-white mass protruding into the vagina (Fig 3). Bimanual examination identified a soft, very tender mass with a constricting cervical ring above, and the uterus was cupped at the top, consistent with second-degree subacute uterine inversion. A 16F Foley's catheter was inserted to manage urinary retention.

Laboratory and Imaging Findings

Blood tests on the day 2 of puerperium showed a haemoglobin level of 7.6 g/dL and a total leukocyte count (TC) of 31,480/mL. By day 5 postpatum, her haemoglobin had dropped to 5 g/dL with a TC of 25,150/mL. Ultrasound imaging confirmed uterine inversion with a depth of 7.5 cm of fundal cupping (Fig 1 and Fig 2).

Treatment and Surgical Intervention

The patient was started on broad-spectrum antibiotics. Preoperatively, she received two units of blood transfusion. Under general anaesthesia, initial manual repositioning (John's manoeuvre)[6] attempts by cupping the uterine fundus with palm of hand and stretching the cervix with fingers were unsuccessful. A little amount of placental tissue was also found to be attached to the lateral part of the protruding mass which got separated during the manoeuvre with a little amount of bleeding. Subsequently, O'Sullivan's hydrostatic technique was employed using 3 litres of warm saline in the posterior fornix to generate hydrostatic pressure[7,8], which also failed due to the contracted cervical ring.

A decision was made to proceed with laparotomy. Pfannensteil's incision was given to open the abdomen (Fig 4). During surgery, Huntington's method[9], involving the traction of both round ligaments after stretching the cervical ring, was attempted but it was also unsuccessful. Finally, a Haultain's incision was made on the posterior wall of the constriction ring, allowing effective repositioning of the uterus. The uterine incision was closed in two layers with Vicryl 1.0 suture (Fig 5). Uterine contraction was achieved with 10 units of oxytocin in an IV drip and 250 mcg of Carboprost injected intramyometrially. To prevent reinversion, both round ligaments were plicated. Haemostasis was ensured, and a thorough peritoneal lavage with normal saline was performed. Interceed was applied to cover the posterior uterine incision as an adhesion barrier.

Postoperative Course

The patient recovered well postoperatively. Her haemoglobin and total leukocyte counts became normal. She accepted Implanon for contraception and was advised to maintain a gap of at least three years before her next pregnancy. She was also counselled on the importance of proper antenatal care and the necessity for

elective caesarean section in her future pregnancy due to the high risk of uterine rupture.

Discussion

Uterine inversion refers to the condition where the uterus is turned inside out[10]. It can be puerperal or nonpuerperal. Depending on the timing of its occurrence in relation to delivery, it is called as acute (<24 hours), subacute (between 24 hours and 1 month), and chronic (>1 month)[(3)]. The severity of uterine inversion typically depends on the extent of fundal protrusion, which can be divided into four degrees as follows[2-4]:

- First-degree inversion: The uterine fundus extends to the cervix but does not protrude beyond the cervical ring.
- Second-degree inversion: The fundus passes through the cervical ring but does not reach the perineum.
- Third-degree inversion: The fundus extends up to the perineum.
- Fourth-degree inversion: Both the uterus and the vagina invert past the perineum

Additionally, the terms "complete" and "incomplete" are sometimes used to describe the extent to which the uterus has passed through the external cervical os.

Two conditions that are necessary for uterine inversion to occur are cervical dilation and relaxation of the fundal portion of the uterus[(10)]. Schaefer and Veprovski categorize the causes of uterine inversion as follows[10]:

Predisposing Causes

1. Pathological conditions affecting the uterus and its contents.
2. Functional conditions of the uterus.

Exciting Causes

1. Manual removal of the placenta.
2. Increased intra-abdominal pressure.
3. Poor management during the third stage of labor.

The exact cause of uterine inversion remains unclear, with no identifiable precipitating factor in up to 50% of cases[11]. Some potential risk factors include a short umbilical cord, fundal placenta insertion, excessive or premature cord traction, inappropriate fundal pressure, uterine atony, sudden uterine emptying, placenta accreta, manual removal of the placenta, a sudden increase in abdominal pressure due to coughing, sneezing, or pushing, prolonged labour, primipara and congenital weakness of the uterine wall.[2-4,12,13]

Uterine inversion is primarily diagnosed through clinical assessment. The symptoms of acute inversion can vary significantly based on the degree and duration of the inversion. The most common symptoms associated with this condition include postpartum hemorrhage, hypovolemic shock, neurogenic shock and abdominopelvic pain. If the patient is conscious, which is rare, they may experience a sensation of fullness in the vagina or a feeling of something tearing or giving way inside the abdomen. With complete inversion there is often retention of urine or dysuria and bladder tenesmus.[10,12]

USG is the first line of investigation for uterine inversion. Ultrasound can be performed either transabdominally or transvaginally. In transabdominal imaging, the transverse plane reveals a characteristic "target sign," where a hyperechoic fundus is surrounded by a hypoechoic rim formed by the space between the endometrium and the vaginal walls (Fig 2). In the sagittal plane, a first-degree inversion may show a Y-shaped endometrium as the fundus collapses toward the cervix. In second-degree inversions, the uterus appears as a mirrored image of itself, with the two serosal edges creating a pseudo endometrial stripe as the entire uterus inverts into the vagina through the cervix (Fig 1). When

performed transvaginally, the transducer in contact with the fundus similarly reveals a mirrored appearance of the uterus.[14]

Conclusion

This case highlights the complexity and challenges in managing subacute uterine inversion and underscores the importance of timely intervention and care in achieving favourable outcomes. There was delay in diagnosis of uterine inversion at a peripheral hospital on the fourth day of the puerperium. There was also a reported history of fundal pressure applied by the birth attendant during delivery. Although uterine inversion is rare, it can have serious consequences for the mother. Therefore, anticipating this condition and implementing active management of the third stage of labour (AMTSL) can help decrease its incidence. Furthermore, routine cervical inspections or immediate puerperal vaginal examinations can facilitate the timely recognition of this condition.(10) Uterine inversion can often be repositioned vaginally if detected early (15). Laparotomy is usually needed in less than 10% of cases.(2) However, in this case, cervical contraction was already set in due to late diagnosis of uterine inversion, making the way of vaginal correction very difficult. This required a laparotomy and uterine incision (Haultain's) to restore the uterus to its normal position. There was also a rising trend of total leucocyte count until the uterine reposition was done on the 5th day postpartum, signifying onset of sepsis. Thus, the sooner the condition is detected, the easier it is to manage, thereby preventing maternal morbidity and mortality[11,16]. Furthermore, proper training and awareness of the healthcare providers regarding unsafe practices like premature umbilical cord traction and fundal pressure and safe practices like AMTSL will go a long way to prevent this rare but completely avoidable obstetric emergency[17].

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Legend Figures:

Fig 1: TAS Sagittal plane

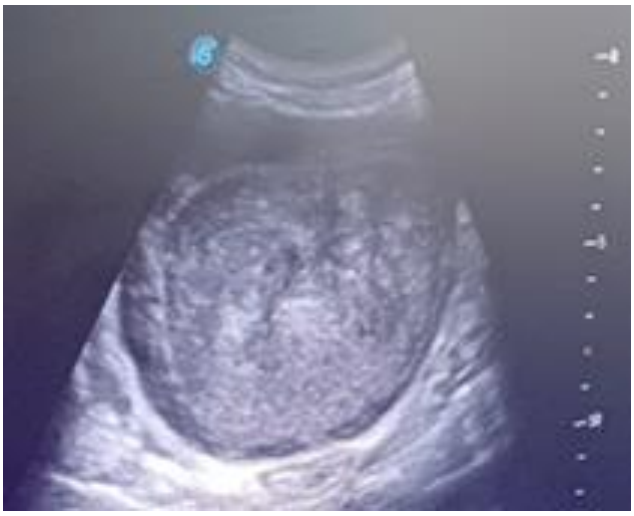

Fig 2: TAS Transverse plane: Target sign

Fig 3: Vaginal view

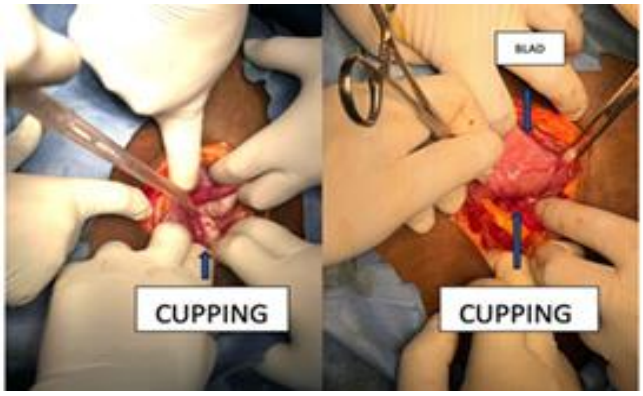

Fig 4: Laparotomy view

Fig 5: Repaired uterus