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CASE REPORT

Acute uterine inversion following an induced abortion

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Abstract

Acute uterine inversion is a rare and potentially life-threatening obstetric emergency. Its occurrence as a result of a mid-trimester abortion is an even rarer consequence. We report a case of a 32-year-old woman who presented with complete acute uterine inversion and hemorrhagic shock following an incomplete medical abortion at 14 weeks of gestation. Our attempts at non-operative reversal of the inversion failed. Therefore, we resorted to the manual replacement of the uterus via laparotomy without using surgical instruments or an incision in the cervical ring. The laparotomic manual replacement served as a successful alternative with minimal immediate or long-term morbidity that may have resulted from trauma and scarring of the uterus.

KEYWORDS
postpartum hemorrhage, pregnancy loss

INTRODUCTION

Uterine inversion is defined as "the turning inside out of the fundus into the uterine cavity." Acute inversion is a rare and yet life-threatening obstetric emergency. Early recognition with expedient management of shock and manual repositioning of the uterus reduces morbidity and mortality.[1]

Uterine inversion can be classified as puerperal (obstetric) and nonpuerperal (gynecological) uterine inversion, with the former accounting for 95% of reported cases.[2] Spontaneous inversion of the nonpuerperal uterus accounts for approximately 5% of all uterine inversions, and is almost always associated with a polypoid uterine tumor such as leiomyoma, teratoma, or sarcoma.

The incidence of puerperal uterine inversion ranges from 1 in 3500 to 20 000 deliveries.[3] The precise pathophysiology of uterine inversion remains unknown. Excessive cord traction and fundal pressure during the third stage of labor, particularly in the situation of uterine atony with fundal placental implantation, have been linked to it.[4] However, there is a paucity of information concerning causes or risk factors in the early mid-gestation.

We report a case of a 32-year-old woman who presented with complete uterine inversion and hemorrhagic shock following an early second-trimester medical abortion.

CASE PRESENTATION

A 32-year-old (gravida 3, para 2) at 14 weeks gestation was transferred to the gynecology emergency unit of the Korle Bu Teaching Hospital (KBTH) in hypovolemic shock. The patient had ingested an abortifacient drug bought in a pharmacy to terminate an unplanned pregnancy. She could not state the name or brand of the drug. However, from her description of the drug and mode of use, we strongly suspect it was misoprostol, a commonly abused abortifacient in our environment. She succeeded in expelling the fetus at home but later reported to a peripheral polyclinic with heavy bleeding per vagina associated with severe lower abdominal pain and a vaginal mass. She denied any attempts at removal of a retained placenta following the abortion. Upon examination, the patient was pale (Hb = 7.3 g/dl) and in a state of shock (radial pulse at 140 beats/min and blood pressure of 68/36 mmHg). The abdomen was soft on palpation with marked suprapubic tenderness. The uterus was, however, not palpable. Vaginal examination showed a beefy purple mass with an irregular surface and placenta attached at the base (Figure 1). It was not malodorous, and there was no necrotic tissue. A bedside ultrasound scan also demonstrated a "Y-shaped" uterus with a crater-like depression (Figure 2). A diagnosis of acute uterine inversion post-abortion with hemorrhagic shock was made.

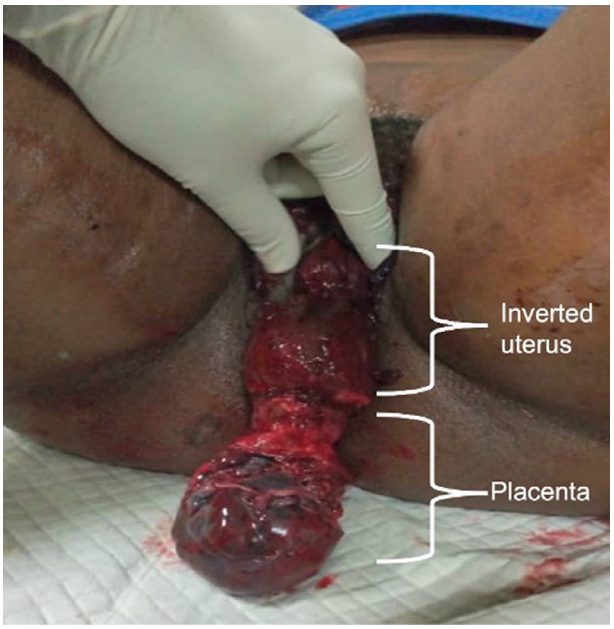

FIGURE 1 Inverted uterus with placenta attached

She received crystalloids, whole blood, and intravenous antibiotics as part of the initial resuscitation. Following this, she was counseled for a manual reduction in theater. Under general anesthesia, Johnsons' manual replacement technique was attempted but subsequently abandoned on the second attempt when the placenta detached spontaneously followed by brisk bleeding. The inverted uterus continued to bleed, and an exploratory laparotomy was done to reduce the uterus. Upon entry via a Pfannenstiel incision, the characteristic flower vase appearance was seen as the cupping of the uterus, along with tubes, ovaries, round, and ovarian ligaments (Figure 3). Huntington's procedure was aborted because of the very tight constriction ring and the high risk of tissue injury. We successfully reduced the uterus using the noninstrumental step-wise reduction technique described by C.B-Lynch et al.[5] which involved placing both hands in front and at the back of the lower segment of the uterus with the fingertips below the level of the inverted fundus. Using progressive pressure by the fingertips of both hands below the fundus, the flip-up maneuver spontaneously caused the internal depression to be replaced progressively, evidenced by the rising uterine fundus (Video S1).

Her uterus and adnexa had a normal macroscopic appearance after the uterine reversion. Her postoperative vital signs were normal, and she was monitored for 8 h at the recovery ward before being sent to the ward. She was transfused a total of 4 units of blood and received uterotonics to prevent postpartum hemorrhage. She recovered fully and was discharged on day 3. She was also counseled on the risk of possible recurrence and advocated for future hospital delivery or comprehensive abortion care services.

DISCUSSION

We present a case of a 32-year-old with acute uterine inversion following an early second-trimester medical abortion, which was corrected using a noninstrumental step-wise reduction technique at laparotomy.

Depending on time-lapse from delivery, uterine inversion can be classified into three types: acute (within 24 h of delivery), subacute (beyond 24 h of delivery but within 4 weeks) and chronic (beyond 4 weeks of delivery).[1,6,7] Four categories are recognized based on the severity of inversion. The first degree (incomplete) occurs when the fundus is within the endometrial cavity. The second degree (complete) occurs when the fundus protrudes through the cervical os. Third-degree (prolapsed) occurs when the fundus protrudes to or beyond the introitus. The fourth degree (total) occurs when both the uterus and vagina are inverted.[1,4,8,9] The diagnosis for our case was a third-degree acute inversion associated with shock.

The reported incidence of puerperal uterine inversions varies widely but is higher in remote rural areas where access to emergency obstetric care is inadequate.[8,10,11] Post-abortal uterine inversions are infrequent events, with only a handful of cases reported so far in our literature search, all from low-middle income nations.[6,7]

The exact cause of puerperal uterine inversions remains undefined, with about 50% of cases reported in low-risk women with no precipitating factor identified. Risk factors may be maternal, placental, fetal, labor-related, or iatrogenic.[1] Maternal factors include nulliparity, congenital weakness of the uterine wall or cervix, uterine tumors, uterine anomalies, and weakening of the uterine wall at the placental implantation site.[1,6,7] Morbidly adhered placenta, short umbilical cord, fundal placentation, and retained placenta; are recognized placental factors.[1,6,9] Labor-related factors include prolonged labor, precipitous labor, and augmentation of labor.[6,9] Iatrogenic factors include procedures like Crede maneuver, manual removal of placenta without signs of placental separation, excessive cord traction, use of magnesium sulfate or uterine relaxants, overly aggressive management of the third stage of labor, and inexperience of the operator.[1,6,12] Our client was in her early second trimester of pregnancy and had no previous uterine surgery that could have predisposed her to a morbidly adherent placenta. The other factors (maternal, placental, fetal, and iatrogenic) are more likely at advanced gestations. Ziki et al. had reported that attempts to deliver the placenta by cord traction might cause an inversion at this early gestation, but our client denied this action.[10]

Diagnosis is usually clinical, and most patients (94%) present with significant hemorrhage, with or without shock. During the physical examination, uterine inversion should be suspected on abdominal examination when the fundus is not palpated in the correct anatomical position.[1] Thin patients may have a cuplike depression on palpation, indicating a collapsed fundus.

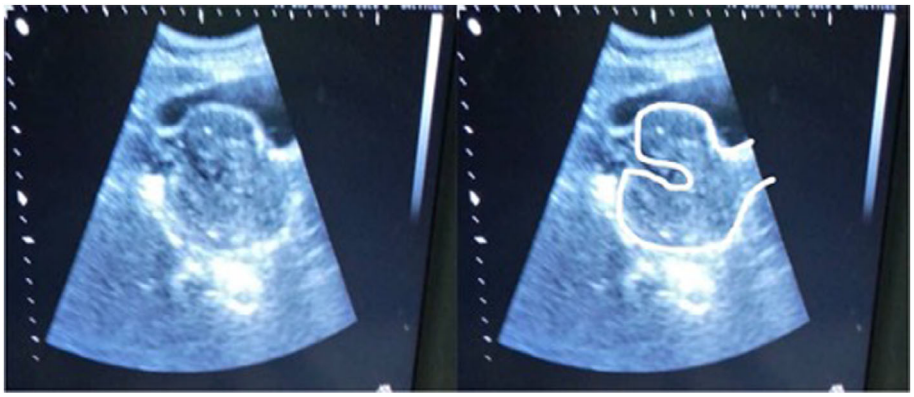

FIGURE 2 "Y-shaped" uterus with a crater-like depression seen on ultrasound

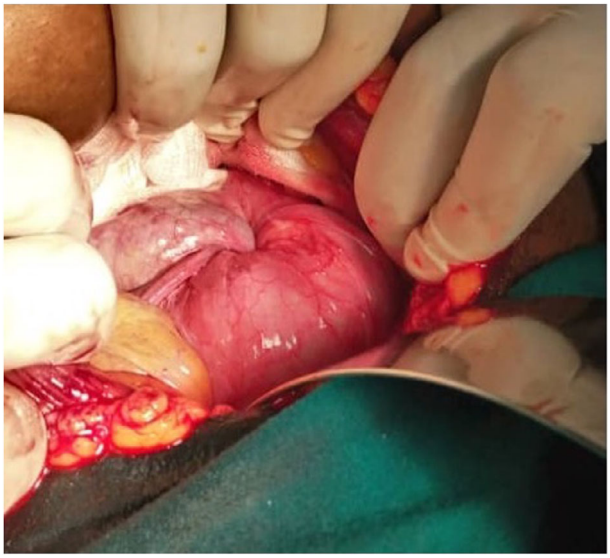

FIGURE 3 Typical flower vase appearance

A vaginal examination may identify a soft, congested bleeding mass with or without placental attachment. On bimanual examination, the fundus may not be palpated abdominally.[12]

Radiologic diagnosis can be made in cases where the clinical diagnosis is equivocal, which may occur in subacute, chronic or first degree inversions. Ultrasonography is the first line, showing a "target sign" in the transverse plane. The sagittal plane can demonstrate a Y-shaped endometrium for first degree and a pseudo endometrial stripe for second-degree inversions.[1] Magnetic resonance imaging can be offered for adjunctive imaging.

Management goals involve immediate resuscitation with crystalloids and blood products to restore hemodynamic stability, followed by anatomical reduction of the inversion and prevention of reinversion.[8,10]

Nonoperative maneuvers are first attempted to reverse uterine inversions. They include a manual reduction (Johnson's maneuver) or hydrostatic reduction (O'Sullivan method). First described in 1945, Johnson's maneuver is the most popular method, with success rates reported between 43% and 88%.[4,10] This method was attempted in the index case but failed. Success is, however, improved the earlier the maneuver is attempted.

The hydrostatic reduction is conducted in an operating room with the client in the lithotomy position; normal saline is quickly infused into the vagina, followed by a tight closure at the introitus using hands, or preferably, a silastic ventouse cup. As the fluid fills and distends the vagina, the fundus is pushed back into its natural position. Infections, operation failure, and saline embolism are all possible side effects of this approach. Because of the brisk bleeding that followed the detachment of the placenta, this procedure was not attempted in our case.

Surgical methods involve a laparotomy (Huntington, Haultain, Ocejo) or a colpo-hysterectomy (Spinelli or Kustner). These methods are used when the nonoperative methods fail, as in our case. The abdominal approach is preferable over the vaginal route because it provides better hemorrhage control and a smaller uterine incision that can be readily sutured. The Huntington approach is less traumatic and less invasive than the Haultain method because it is entirely mechanical and does not require any incision on the uterus. Due to the tight constriction ring created by the cervix, our endeavor to use the Huntington method was ineffective. However, because of the relatively small-sized gravid uterus, a noninstrumental stepwise reduction technique described by C.B-Lynch, which is an atraumatic and conservative technique, was successful.[5] This technique involves placing the fingers of the surgeon both anteriorly and posteriorly at the lower uterine segment and progressively applying pressure below the inverted fundus until the inversion is reversed. It is an easy procedure to perform, with rapid cessation of bleeding, without the need for instrumentation or uterine incisions. This approach avoided a vertical uterine incision that could extend to the uterine body and impact significantly on subsequent pregnancies since it carries a high risk of uterine rupture. Other complications from a scarred uterus that can be avoided include the risk of placenta previa, placenta accreta spectrum, antepartum/postpartum hemorrhage, the need for blood transfusion

with its associated complications, risk of hysterectomy and death.

CONCLUSION

Acute uterine inversion is rare and even more uncommon in early gestations following a medical abortion. Noninvasive methods of management carry less morbidity and complications, and the noninstrumental stepwise reduction technique proved to be a valuable alternative in a complex case that allowed us to avoid the current and future complications of having a scarred uterus.

ACKNOWLEDGMENTS

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CONFLICT OF INTEREST

The data used to support the findings of this study are included within the article. The patient provided informed consent for receiving treatment and the publication of this report. All authors consented to the publication of the manuscript. The authors declare that there is no conflict of interest regarding the publication of this article.

DATA AVAILABILITY STATEMENT

The data used to support the findings of this study are included within the article.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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