Case Report/Series

A case of third degree hemorrhagic shock due to total subacute uterine inversion after delivery

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ABSTRACT

Uterine inversion is a rare, but life-threatening obstetric emergency. We describe a case of total subacute uterine inversion in settings with limited resources. A multiparous (P4) 29-year-old woman with history of delivery assisted by a traditional birth attendant who used the fundal pressure technique 4 days before admission was referred due to postpartum hemorrhage. She had low blood pressure, tachycardia, and lethargic. A protruding mass from the vaginal introitus with active bleeding was visible. She diagnosed with third degree hemorrhagic shock due to total subacute uterine inversion. Resuscitation was initiated immediately and manual uterine repositioning was performed under general anesthesia. After two failed attempts, a laparotomy was performed to apply traction to the round ligaments and an incision on the cervical ring by using Allis clamps. The inversion was resolved. Next, subtotal hysterectomy was done to stop bleeding and infection.

KEYWORDS postpartum hemorrhage, risk factor, uterine inversion

Uterine inversion is a rare but serious obstetric emergency. Its incidence varies considerably, ranging from 1 in 2,000 to 1 in 50,000 births.[1] This wide range of incidences may be related to differences in the definition of inversion, patient populations, postpartum assessment of the uterus, and routine obstetric procedures.[2,3] The occurrence of uterine inversion mainly depends on management of the third stage of labor management.[4] When it do not promptly diagnosed and managed, the massive and often underestimated blood loss can be fatal in 15% of cases.[4]

The two most common risk factors for uterine inversion are excessive umbilical cord traction with a fundal placental position and fundal pressure in the setting of a relaxed uterus. Other risk factors include a rapid labor, invasive placentation, manual removal of the placenta, short umbilical cord, use of uterine-relaxing agents, overdistended uterus, fetal macrosomia, nulliparity, placenta previa, connective tissue disorders, and history of uterine inversion in a previous pregnancy. In most cases, no risk factors are identified, thus making this condition unpredictable.[1] This report describes a case of total subacute uterine inversion after spontaneous delivery assisted by a traditional birth attendant (TBA) and its management strategies.

CASE REPORT

A 29-year-old multiparous (P4) woman was referred to the hospital with hemorrhagic shock. She had experienced a bleeding from a protruding vaginal mass 4 hours before admission. The mass emerged when the woman was straining to pass stool. It was painful and bled massively. The mass was covered with a local herbal preparation from the TBA.

Four days before admission, she had a spontaneous vaginal delivery assisted by the TBA. The male neonate weighed 3,800 g and appeared healthy and normal. However, the delivery was complicated by a retained placenta. The placenta was not delivered for more than an hour, prompting the TBA to push the patient's lower abdomen downward. Vaginal bleeding and lower abdominal pain persisted for 3 days until the TBA called a midwife who referred her to the hospital.

On admission, the patient appeared lethargic and somnolent. The Glasgow coma scale score was 12 (E3M5V4). She was very pale and her extremities were cold. Examination of vital signs revealed hypotension (blood pressure 80/60 mmHg), tachycardia (140 bpm, weak pulse), tachypnea (respiratory rate 32x/min), and fever (body temperature 37.8°C). The uterus was not palpable on abdominal examination. Upon inspection of the genital area, a dark-red globular mass measuring 13 × 10 × 5 cm was seen to protrude from the vaginal introitus (Figure 1). It was covered by a local herbal preparation and felt tender on palpation. It was identified as the uterine cavity, and a diagnosis of total subacute uterine inversion with class III hemorrhagic shock was made.

Figure 1. Total uterine inversion, a mass protruding from the vaginal introitus

Resuscitation was initiated immediately. Two large-bore intravenous lines were simultaneously inserted to perform fluid resuscitation with 3,000 ml of crystalloid solution and 1,000 ml of colloid solution. A blood sample was obtained for initial laboratory studies, including blood type to prepare for a blood transfusion. A broad-spectrum antibiotic (ceftriaxone) was administered. An urinary catheter was inserted to monitor urine output. Her initial laboratory results were hemoglobin 5.1 g/dl and hematocrit 16%. She was prepared for uterine repositioning under general anesthesia with the possibility of uterine removal to stop the bleeding. Informed consent was obtained before intervention.

The team started maneuvers to manually reposition the uterus. The first attempt failed. The second attempt, using an obstetric ventouse, also failed. Following these unsuccessful attempts, a laparotomy was performed. Bilateral incisions of the cervical constriction were made to resolve the inversion. However, the uterus was

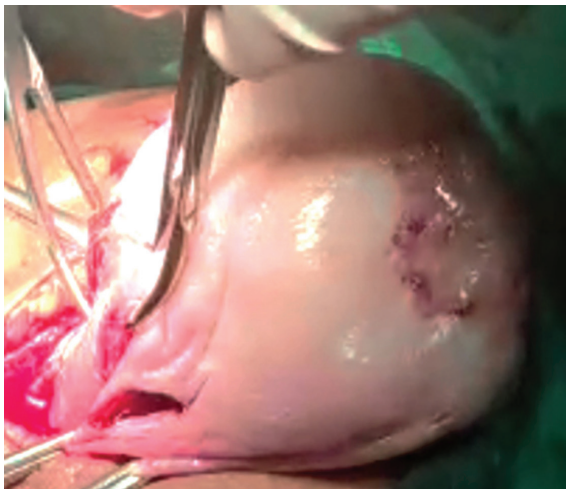

Figure 2. Uterine atony after Haultain procedure

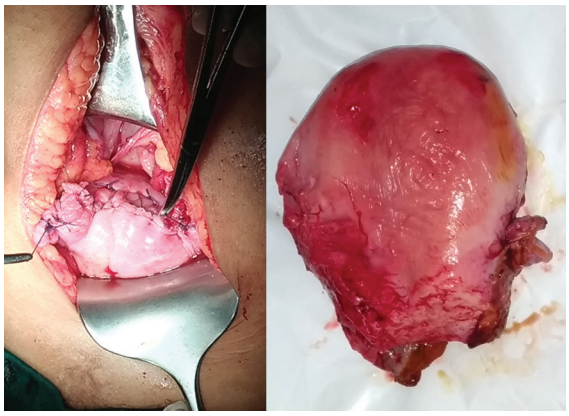

Figure 3. Cervical stump (left) and uterus specimen (right) after subtotal hysterectomy

atonic and appeared pale and flabby (Figure 2). To stop the bleeding, a subtotal hysterectomy was performed (Figure 3). During surgery, the estimated blood loss was 100 ml and her circulation was maintained with a combination of crystalloid and colloid solutions, as well as two bags of whole blood.

The patient was monitored in the intensive care unit for 1 day and was extubated 1 day later with normal vital signs. On the second day after surgery, she was transferred to the inpatient ward. Ceftriaxone injection was continued during hospitalization. She required several sedimented-whole-blood transfusions before being discharged on the fourth day after surgery. During a follow-up visit 6 weeks after surgery, she had no complaints and was in good condition.

DISCUSSION

Uterine inversion is defined as the passage of the uterine fundus through the uterine cavity and cervix.[1] It can be classified by the degree of inversion, which may be complete or incomplete.[5] Based on timing, uterine inversion can be classified as acute (within 24 hours after delivery), subacute (more than 24 hours but less than 4 weeks after delivery), or chronic (more than 4 weeks after delivery).[6] In this patient, it was classified as subacute uterine inversion since it happened 4 days after delivery. In this case, subacute uterine inversion was due to fundal pressure applied by the TBA during the third stage of labor, which caused vaginal bleeding.

Uterine inversion should be diagnosed clinically. In this case, the diagnosis was made based on the absence of uterine fundus in abdominal palpation, the presence of postpartum hemorrhage that evolved into hypovolemic shock, and the appearance of a protruding vaginal mass. The differential diagnosis includes prolapse of a uterine tumor and cervical polyp. Shock occurs in about half of complete inversions.[7] In an incomplete inversion, the mass may not be seen. In the present case, she might have incomplete inversion earlier, but the inversion became complete due to straining during defecation. It has been suggested that increased intra-abdominal pressure, including increased pressure due to straining, may be involved in the development of uterine inversion.[8]

In this patient, early management included an immediate uterine repositioning to stop the bleeding, as well as vigorous fluid resuscitation and blood transfusion to reverse the hemorrhagic shock.[7] Two large-bore intravenous lines were simultaneously inserted. One line was used to administer 3,000 ml of crystalloid solution, and the other line was used to administer 1,000 ml of colloid solution.

The initial resuscitation performed was based on the guidelines of the American College of Surgeons.[9] The volume of resuscitation fluids was based on the patient's response, measured by urinary output, level of consciousness, and peripheral perfusion. Chang and Holcomb[10] recommend a transfusion ratio of plasma to packed red cells of 1:2 for initial resuscitation in hemorrhagic shock. However, in our settings, the use of whole blood for transfusions was considered, due to the unavailability of a blood bank and limited facilities to process donated blood into packed red cells.

In total uterine inversion, the fundus passes through the cervix and a constriction ring develops. The prolapsed mass obstructs venous and arterial flow, contributing to the edema of the uterus, and uterine repositioning becomes more difficult when the inversion persists longer.[11] In this patient, total uterine inversion occurred 4 hours before admission, and the constriction ring had developed. Therefore, the Haultain procedure was performed to allow repositioning of the uterus. This procedure was then followed by subtotal hysterectomy to stop the bleeding.

Reduction of the uterus can be accomplished by several methods, both manual (nonsurgical) and surgical. Manual repositioning of the inverted uterus was first described by Johnson, and O'Sullivan proposed uterine repositioning using hydrostatic pressure.[12] Initially, we tried to perform manual repositioning under general anesthesia, but it was failed. Antonelli et al[13] described a technique by Ogueh and Ayida using a ventouse cup inserted into the vagina to reposition the inverted uterus. This attempt was also failed. Huntington described a surgical approach, i.e. laparotomy using Allis clamps to apply traction to the round ligaments to reverse the inversion, in conjunction with the Haultain procedure. In this patient, the inversion was resolved with a combination of these techniques.[13] However, following successful repositioning, the uterus was atonic, pale, and flabby (Figure 2). To stop the bleeding, we decided to perform a subtotal hysterectomy (Figure 3).

Antonelli et al[13] suggested the management of subacute uterine inversion using an obstetric

ventouse combined with uterotonic and antibiotic therapy without performing a hysterectomy. In some cases of infected subacute uterine inversion, broad-spectrum antibiotics, such as third-generation cephalosporins, are needed. Antibiotic treatment has been suggested[14] followed by hysterectomy to prevent further uterine infection.[13] In this patient, sepsis due to uterine infection was suspected, which prompted us to perform a subtotal hysterectomy to avoid additional risks if the uterus was left in situ. According to the author's experiences, subtotal hysterectomy requires a shorter duration of surgery and involves less blood loss than total hysterectomy. Therefore, subtotal hysterectomy was considered to be more effective in the setting of hemorrhagic shock. The decision to perform a subtotal hysterectomy in our patient was supported by a 12-year retrospective study by Zhang et al,[15] which showed that subtotal hysterectomy was the preferred procedure for life-threatening postpartum hemorrhage rather than total hysterectomy. To date, there are not sufficient data from reports of subtotal hysterectomy in Indonesia. There may be underreported cases of uterine inversion due to unsafe delivery practices by TBAs in rural areas of Indonesia. Thus, efforts should be encouraged to prevent further occurrences of uterine inversion.

In conclusion, total subacute uterine inversion after spontaneous delivery is rare but life-threatening. A better prognosis can be achieved with early diagnosis and immediate treatment. Treatment can be delivered by either a vaginal or a surgical approach, and the choice is tailored to each patient's condition. Due to its unpredictable occurrence, it is important to know the risk factors for uterine inversion and the diagnosis itself in all cases of postpartum hemorrhage. This is especially important in rural areas, where unsafe delivery practices are still widely prevalent.

Conflict of Interest

The authors affirm no conflict of interest in this study.

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