Case Report

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Anesthetic Management of a 4 Days Old Sub-Acute Puerperal Uterine Inversion with General Anesthesia

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Abstract

Uterus inversion is one of the rare and potentially life-threatening uncommon complications of the puerperium and subacute type is even rarer. A case is hereby reported of a 24-year-old primipara who was referred to our institute from a peripheral hospital with 4 days old uterine inversion. Inversion of the uterus was corrected under general anesthesia with halothane and maintained in anatomical position with the help of uterotonic drugs.

Keywords: Subacute Uterine Inversion, Puerperal, General Anesthesia, Halothane.

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Introduction

Uterine inversion is an infrequent and life-threatening obstetric emergency that requires prompt diagnosis and definitive management. The classical manifestation is uncontrolled hemorrhage and shock which can progress to serious complications and death if treatment is not started promptly. The occurrence of uterine inversion is higher in India (1 in 8537) as compared to developed countries such as the US (1 in 23127) and Britain (1in 27902). [1] Most of the reported cases are of acute uterine inversion. Anesthetic concerns and management of subacute and chronic uterine inversion is not adequately discussed in the literature.

Case History

A 24-year-old primipara presented on the fourth puerperal day with bleeding per vaginum, pain in the lower abdomen and a red fleshy mass bulging from the vagina. Full-term normal vaginal delivery was conducted by an untrained birth attendant. She first reported to a nearby district hospital where after initial resuscitation she was referred for further management.

On examination, the patient was a thinly built woman having pain in the abdomen, febrile (101-degree f) and extremely pale. Her heart rate was 114 per minute and her blood pressure was 120/70 mm Hg. Per abdomen, the puerperal uterus was not felt. On per speculum examination a red fleshy mass was seen in the vagina and the cervix was not visible. Per vaginum examination revealed a firm, broad and irregular mass. To confirm the diagnosis of sub-acute puerperal uterine inversion sonography was done which showed no uterus in the pelvis. Hemoglobin 5.8 gm% and total leukocyte count 25,000 per cc were other positive investigations.

The patient was fasting for 6 hours and with a freely patent 18G intravenous line in place. Appropriate antibiotics were given. The patient was swiftly shifted to the operation table and basic monitoring was instituted. After premedication with 2mg Ondansetron and 0.2mg Glycopyrrolate intravenously, anesthesia was induced with intravenous 50 mg Ketamine and 150 mg Thiopentone over 2 minutes slowly. The trachea was intubated with 7.5 mm ID cuffed endotracheal tube after relaxing with 100 mg Succinylcholine. Anesthesia was maintained with 0.4 % halothane, 33% oxygen, 66% nitrogen and 20 mg intravenous intermittent Succinylcholine. During surgical bimanual reduction of the uterus, extreme difficulty was encountered in pushing the uterus back inside. Halothane was increased in increments of 0.5% and maintained at 3% for 5 minutes. That facilitated the successful repositioning

of the uterus. Post correction uterus was again inverting when manual pressure was being released. Then after again repositioning the uterus its tone was quickly increased by stopping halothane and giving uterine tonic agents. Intravenous oxytocin was incrementally increased to 8 mill units per minute, 0.2 mg methylergonovine was repeated twice and prostaglandin F2 alpha 250 micrograms was given intramuscularly. A close watch on hemodynamic parameters was kept but no significant change was observed. Hemodynamic parameters were maintained within normal limits by two blood transfusions and intravenous fluids. The vagina and uterus were tightly packed and the pack was left in place for the next six hours. Above mentioned uterotonics were continued for the next 24 hours. The postoperative period was uneventful. Follow up for 2 wks by serial sonographic scans showed the uterus at its normal position. The patient and her family members were made aware of her condition and were educated to consult tertiary care healthcare institute for further deliveries if required.

Discussion

Uterine inversion is the condition when the fundus of the uterus collapses or turns inside out into the endometrial cavity. It is an uncommon complication of the puerperium and it is even rarer in the non-puerperal period. According to the timings of presentation puerperal uterine inversion may be described as acute (occurring within 24 hours of delivery), sub-acute (between 24 hours and 4 weeks of delivery) and chronic (beyond 4 weeks after delivery).[2] The acute uterine inversion has the highest relative prevalence of 83.4% as compared to 2.6% of subacute and 13.9% of chronic uterine inversion.[3] Further it is classified as complete when the inverted fundus passes completely through the cervix to the vagina or outside the vaginal wall and incomplete when it remains above the cervix. Although there is no exact cause of uterine inversion, various factors could be linked to this are:

- A short umbilical cord.
- Forceful pulling on the umbilical cord. Increased intra-abdominal pressure.
- Implantation of the placenta on the fundus. Placenta accreta or retained placenta.
- Labor lasting more than 24 hours. Previous history of uterine inversion.
- Drugs such as magnesium sulfate or muscle relaxants. Weak or abnormal uterus.

Acute uterine inversion usually presents with pain and shock however sub-acute and chronic variants may manifest only with minor leucorrhoea or irregular hemorrhage. If diagnosed early, immediate manual vaginal replacement by Johsn,s technique along with hemodynamic resuscitation is attempted. In the case presented here initial hemodynamic resuscitation had been done at the referring health center. In case manual reduction fails to achieve uterine repositioning, then hydrostatic replacement technique can be tried. One such technique is O,Sullivan,s a technique where warm saline is pushed through a tube placed in the posterior fornix until pressure gradient repositions the uterus. Another such technique is Oguch and Ayidi s technique which attaches the tubing to the silicon vacuum cup to provide a better seal. These procedures require analgesia, sedation and tocolysis. If these methods prove unsuccessful then an invasive surgical approach is required. In Huntington or Haultain procedure a laparotomy is done to locate the cup of the uterus and then it is reversed by gentle traction. In case of failure of all conservative methods the last option is hysterectomy. Various drugs have been used for tocolysis including magnesium sulfate,[4,5] nitroglycerine and 2 adrenergic agonists such as terbutaline or ritodrine.[6–8] If these fail then a general anesthetic is usually required.[7] As subacute uterine inversion is uncommon, no comparison of these drugs is available. Although some literature is available for management of acute variant but it's vanishingly rare for sub-acute and chronic ones.

Dayan SS and Schwalbe SS summarized that a small dose of intravenous nitroglycerine (50-100μg) with epidural analgesia can achieve a relaxed uterus quickly and safely without cardiovascular compromise to reposition the inverted uterus. They proposed this method as an alternative to general anesthesia.[6] Abouleish et al concluded that terbutaline 0.25 mg can be used to relax the uterus by obstetrician till the anesthesia team arrives.[7] But in our case, we were dealing with a severely edematous uterus that had inverted 4 days back, so the intent was to provide maximum uterine relaxation with a close watch on hemodynamic variables. This approach enabled us to avoid laparotomy on the patient and its other consequences. In a case reported by Sunita M et al, they were unable to reposit a 5 days old puerperal uterine inversion manually under general anesthesia with halothane and laparotomy was done for further management.[9] However details of the anesthetic management like concentration and duration of halothane were not mentioned.

Halothane produces relaxation of smooth muscles in the uterus in a dose dependent manner by inhibiting the release of Ca++ from sarcoplasmic reticulum and influx of Ca++ from voltage-gated Ca channel.[10] The similar effect of volatile anesthetics on the human uterus could be related to inhibitory action on transmembrane Calcium flux. During most obstetric emergencies this leads to increased bleeding. However in cases such as version maneuvers and correction of uterine inversion this effect helps in their successful management. Other drugs may not provide such profound relaxation in their usual doses in a sub-acute inversion of the uterus. The increased dose may result in side effects such as hypotension, tachycardia, sedation

and hypokalemia. The effect of halothane on the uterus is quickly reversed as compared to the effects of ritodrine, magnesium sulfate and terbutaline where recurrence can occur due to their prolonged effect.[4,11]

Conclusion

Sub-acute inversion of the uterus in the puerperal phase is a rare and challenging obstetric complication. It is different from the acute variant in that greater uterine relaxation is required for its correction due to progressive edema and the initial phase of severe hemodynamic derangement has been managed. Management with general anesthesia with halothane as a uterine relaxant is effective and safe that will avoid a certain laparotomy in these patients.

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