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CASE REPORT

Acute Uterine Inversion Complicating Mid-Trimester Unsafe Abortion in a Teenage Nigerian Girl

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Summary

Uterine inversion is a rare but life-threatening obstetric emergency, complicating 1 in 2,000 to 1 in 50,000 deliveries. Very rarely, this condition also complicates unsafe abortion. A case of acute complete (fourth-degree) uterine inversion, with gangrene of the uterus in an 18-year-old nulliparous girl who presented to the Gynaecologic Emergency Unit of the University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria, in hypovolemic shock from massive haemorrhage following unsafe mid-trimester termination of unwanted pregnancy is reported. She was adequately resuscitated, and a vaginal hysterectomy was performed. The patient was discharged following an uneventful postoperative period. This case highlights the consequences of the high unmet need for family planning and the restrictive abortion laws in Nigeria, limiting access to effective contraception and safe abortion services, thereby increasing the risk of maternal mortality and morbidity from complications of unsafe abortion.

Keywords: *Acute uterine inversion, Gangrene, Pregnancy termination, Unsafe abortion, Vaginal hysterectomy, Teenager.*

Introduction

Uterine inversion is a rare but life-threatening obstetric emergency. The fundus of the uterus invaginates through the cervix to lie within the vagina or, less often, outside the introitus. [1-5] In contrast to uterovaginal prolapse, the external cervical os is not the leading point of the inverted uterus. The reported incidence of uterine inversion is about 1 in 2,000 to 1 in 50,000 deliveries. [1] It can occur in the puerperal or non-

puerperal period. In the puerperium, it often complicates the third stage of labour and may lead to intractable haemorrhage and shock if adequate and prompt measures are not instituted.

Uterine inversion may be incomplete or complete. In an incomplete inversion, the inverted uterine fundus lies within the uterine cavity (first degree) or cervix (second degree). In contrast, incomplete inversion, the uterine

fundus lies within the vagina (third-degree) or outside the introitus (fourth-degree). [2,3]

Depending on the onset of inversion and the time interval of occurrence from delivery, uterine inversion can be classified as acute, sub-acute or chronic. Acute uterine inversion occurs before the contraction of the cervical ring, within 24 hours of delivery. It is subacute when it occurs after the cervical ring has contracted, after 24 hours and within four weeks of delivery. In the chronic form, it occurs more than four weeks postpartum. [4]

Rarely, uterine inversion complicates abortion, especially if unsafe. [4] A National study in 2012 indicated that 56% of unintended pregnancies in Nigeria were aborted, putting the estimated number of induced abortions at 1.25 million. Out of this number, 212,000 women were treated for various complications of unsafe abortion (constituting 60% of all women treated for any abortion-related complication), while an additional 285,000 women suffered untreated complications. [6] Overall, complications of unsafe abortion account for 30%-40% of maternal mortality in Nigeria. [7] The high unmet need for family planning (FP) in Nigeria (19%) contributes to the high incidence of unwanted pregnancy and unsafe abortion. [6,8]

This case report describes an 18-year-old Nigerian teenager who presented in hypovolaemic shock from massive haemorrhage complicating acute complete (fourth-degree) uterine inversion following unlawful termination of mid-trimester unwanted pregnancy. This case is being reported to highlight that uterine inversion, though rare, is a possibly life-threatening complication of unsafe abortion. This entity should be considered a differential diagnosis in cases of massive haemorrhage and shock following mid-trimester pregnancy termination.

Case Description

The patient, an 18-year old para 0⁺¹, was referred to the Gynaecologic Emergency Unit of the University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria, on 18 July 2021, from an unorthodox faith-based delivery unit, on account of massive vaginal bleeding and a fleshy mass protruding outside the vagina. She had had an induced abortion of unwanted pregnancy at 17 weeks gestation 24 hours before presentation. The abortion was performed by a Traditional Birth Attendant (TBA), using a metallic instrument inserted into the patient's vagina. Pregnancy had been confirmed with a positive urine pregnancy test and an ultrasound scan.

At presentation, the patient was acutely ill-looking, pale, with cold and clammy extremities. She was also pyretic with an axillary temperature of 38.5°C. Her pulse rate and blood pressure were 128 beats per minute and 90/40mmHg, respectively. Abdominal examination revealed suprapubic tenderness and no palpable mass per abdomen. Vaginal examination revealed an irreducible, foul-smelling, necrotic mass, with a sloughing surface protruding outside the introitus (Figure 1). The mass measured about 12cm × 8cm, and the cervical lip was not felt around it. A bimanual pelvic examination revealed the absence of the uterine fundus per abdomen, while a bedside pelvic ultrasound scan confirmed the absence of the uterus in the pelvis.

A diagnosis of infected acute uterine inversion with haemorrhagic shock was made. The packed cell volume (PCV) was 16%, and the total white blood cell (WBC) count was elevated at 14,000/mm³, with an absolute neutrophilia of 79%. This picture was suggestive of sepsis, although blood culture was not done. Serum electrolytes, urea and creatinine and liver

function tests were within normal limits. The patient was resuscitated with one litre of intravenous normal saline and three units of whole blood transfusion, each unit transfused over about two hours. She also received intravenous antibiotics, and antipyretics, namely cefuroxime 750 mg, metronidazole 500 mg, and paracetamol (*Surex*[®])

1 g, all administered eight-hourly. The inverted uterus was covered with povidone iodine-soaked gauze. The patient was informed, educated, and counselled on the diagnosis and the need for a vaginal hysterectomy because the inverted uterus was infected, necrotic, and irreducible.



Figure 1: Gangrenous and irreducible completely inverted uterus

About six hours after presentation and having obtained written informed consent from the patient, a vaginal hysterectomy was performed. She was transfused with an additional unit of whole blood intra-operatively. The postoperative period was uneventful, and she was discharged home on the fourth postoperative day for further follow-up care in the Gynaecology Clinic. At the two-week follow-up visit, she was asymptomatic, and her general condition was good. Histology study on the hysterectomy specimen confirmed a gangrenous uterus. Future fertility options, including adoption and surrogacy, were discussed with the patient.

Discussion

Uterine inversion is a rare and life-threatening obstetric emergency; it is usually a complication of a mismanaged third stage of labour. [9] Fundal pressure and cord traction before the signs of placental separation, while the uterus is still relaxed in the third stage of labour, predispose to uterine inversion. [1, 4, 5] It is associated with significant maternal mortality and morbidity including, but not limited to, postpartum

haemorrhage (PPH) with or without shock, requiring blood transfusion, disseminated intravascular coagulation and multi-organ damage complicating major PPH, hysterectomy from intractable haemorrhage, tissue necrosis and damage to the bladder or urethra, especially in resource-poor settings. [1-5,10-15]

The reported incidence of uterine inversion varies widely between 1 in 2,000 to 1 in 50,000 deliveries, reflecting variations in the management of the third stage of labour. [1] The incidence has remarkably reduced with the advent of active management of the third stage of labour. Whereas many cases of puerperal uterine inversion following vaginal or caesarean delivery have been reported, only a few cases of post-abortion inversion have been documented in the literature. [4, 11-13] In our centre, available hospital records show that this is the first documented case of uterine inversion complicating unsafe abortion in over 15 years. The uterine inversion in the index case may have resulted from overzealous traction of an adherent placental tissue by the TBA.

The majority of cases of uterine inversion present with immediate life-threatening haemorrhage and shock, [1,3] as recorded in the index patient, who required resuscitation with intravenous fluids and blood transfusion pre- and intraoperatively. Diagnosis is usually clinical, but imaging (ultrasound, computerized tomographic scan, or Magnetic Resonance Imaging) may be helpful for confirmation and in detecting cases that are not clinically apparent. [3] Ultrasound is also helpful in confirming the appropriate replacement of the uterus to its normal anatomic position. [14]

Early recognition and timely intervention to promptly replace the inverted uterus is critical in preventing maternal morbidity and mortality associated with uterine inversion. Maternal mortality, usually from haemorrhage and shock,

can complicate up to 15% of cases. [15] Treatment options vary, depending on the patient's presentation, the skill of the surgeon, as well as the availability of facilities for intervention. Many cases that present early can be corrected non-surgically by manual or hydrostatic repositioning due to the high elasticity of the uterus and its surrounding structures. [4, 5] Manual replacement of the inverted uterus, also known as the Johnson manoeuvre, was first described in 1949 by AB Johnson. [16] Following the establishment of anaesthesia, with or without tocolysis, the inverted uterine fundus, with or without the attached placenta, is cupped in the palm, with the tips of the thumb and fingers at the uterocervical junction, and the whole uterus is then lifted towards and above the level of the umbilicus. This manoeuvre stretches and tenses the uterine ligaments (round, broad, uterosacral and uterovesical ligaments) by significantly increasing the distance between their origins and insertions, thereby relaxing and widening the cervical ring, facilitating the passage of the uterine fundus through the ring and returning the uterus to its normal anatomic position. [16, 17] Once the inverted uterine fundus is replaced, the hand is kept in the uterus while oxytocin infusion is given to contract the uterus before the hand is slowly withdrawn.

O'Sullivan described a hydrostatic reduction technique in 1945. [18] Before performing this procedure, any uterine or vaginal laceration should be sutured. Using warmed normal saline hung on a drip stand and connected to a fluid giving set, the tubing of the fluid giving set is guided into the posterior vaginal fornix by one hand of the accoucheur, which also cups the inverted uterine fundus. While the forearm of the accoucheur forms a seal at the introitus, about 3-5 litres of fluid is instilled into the upper vagina. The infused fluid distends the vaginal fornices pulls open the cervical ring, allowing replacement of the inverted uterus. [18] Alternatively, as described by Ogueh and Ayida,

the tubing of the fluid giving set can be attached to the cup of a Silastic vacuum extractor, which is placed inside the introitus to provide a better water seal. [19]

Where manual or hydrostatic reduction fails, surgical replacement is indicated. This involves a laparotomy and Huntington's operation, which entails using a pair of Allis or other similar forceps, to grasp the inverted uterine fundus and correct the inversion. [20] Alternatively, a soft Silastic vacuum extraction cup is placed onto the inverted uterine fundus, a vacuum is created, and the inversion is reduced by traction on the vacuum cup. [21] When the cervical ring is so tight that successful surgical reduction becomes difficult, posterior (Haultain's operation) or anterior, (Ocejo incision) division of the constricting cervical ring transabdominally is recommended to facilitate surgical correction. [4, 17] The constricting cervical ring can also be divided via the vaginal route, posteriorly (Kustner's operation) or anteriorly (Spinelli method). [15] Aside from facilitating surgical correction, the cervical ring can also be incised to create more space for manual replacement of the uterus. The posterior division is associated with less risk of bladder injury. [17]

Hysterectomy is indicated in cases of uterine inversion refractory to non-surgical and surgical correction. [4] A vaginal hysterectomy was performed in the index case because the inverted uterus was irreducible and grossly septic and gangrenous. This was done after excluding bowel loops in the contents of the vulval mass. The decision to perform a hysterectomy in a nulliparous teenage girl was challenging but inevitable. Laparoscopic reduction of uterine inversion has been reported, but its safety and efficacy need further investigation before recommendation. [22]

Conclusion

Though rare, Uterine inversion is a life-threatening complication of unsafe abortion and should be considered a differential diagnosis in cases of massive haemorrhage and shock following mid-trimester pregnancy termination. This index case highlights the consequences of the high unmet need for FP and the restrictive abortion laws in Nigeria, which limit access to effective contraception and safe abortion services, respectively, with increased risk of maternal mortality and morbidity from unsafe abortion and its complications. Prompt recognition and timely intervention are critical in mitigating the maternal mortality and morbidity associated with uterine inversion. Early presentation in the index case might have prevented the uterine gangrene, sepsis, and hysterectomy.

Consent: A written, informed consent was obtained from the patient to publish this case and the accompanying image.

Authors' Contributions: NS managed the patient, conceptualized the case report, and wrote the first draft of the manuscript. UAE contributed to the literature review and revised the draft of the manuscript for sound intellectual content. Both authors read and approved the final manuscript.

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