CEOG Clinical and Experimental Obstetrics & Gynecology

Sonographic diagnosis of complete uterine inversion: an unusual case

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Summary

Complete puerperal uterine inversion is an uncommon but potentially life-threatening obstetric emergency. It generally occurs as an obstetrical complication in the postpartum period and can present in acute, subacute, and chronic forms depending on the time interval after delivery. Maternal mortality has been reported to be as high as 15%, mainly because of life associated threatening blood loss and shock. Early diagnosis and treatment are essential, but diagnosis of this is not simple. This is a report of unusual case of complete uterine inversion diagnosed by accurate ultrasound leading to prompt potentially life-saving treatment.

Key words: Puerperal uterine inversion; Prompt diagnosis; Ultrasound examination.

Introduction

Puerperal uterine inversion is a rare but potentially life-threatening obstetric complication in the postpartum period. Earlier diagnosis is very critical to the therapy, the misdiagnosis based on symptoms and physical examination often led to delayed treatment. Sonographic findings were crucial to assist a prompt diagnosis. Several cases of uterine inversion were reported in the literature, with 15% of morbidity [1]. Unfortunately in some cases, hysterectomy was performed. The present authors report a subacute complete uterine inversion diagnosed by accurate ultrasound. Orthometria was performed successfully through the uterine isthmus incision and hysterectomy was avoided.

Case Report

A 27-year-old Chinese woman (gravida 1, para 1) was admitted to the present hospital due to profuse vaginal bleeding for three successive days after spontaneous vaginal delivery. She vaginally delivered a full-term female infant three days prior at a local hospital. The infant weighed 3,850 g with good Apgar scores. The first stage of labor lasted about five hours. Pressure was applied at delivery of the infant. When the placenta was delivered by controlled cord traction, the patient passed approximately 500 ml fresh blood. Vaginal examination revealed non palpable uterus with a shaggy appearing globular mass of 8×9×10 cm protruding from the os into vagina. A diagnosis of submucous myoma was made at the peripheral hospital. Pitocin (10 U) was injected into the uterus and 400 μg misoprofil suppository was given rectally. Uterine bleeding was still intermittent. Blood loss was approximately 1,700 ml in two hours. Then three PVP were inserted into vaginal to decrease bleeding, and cefuroxime and metronidazole were administered to prevent infection. Total blood loss was approximately 2,600 ml in 16 hours. The patient was given eight units of blood transfusion and fresh frozen plasma 1,200 ml then. After two days, PVP were taken out of the vagina. Vaginal bleeding decreased, but still remained intermittent and more than usual lochia. Then she was admitted to the emergency department of the present hospital. She did not appear well, but the blood pressure and pulse were normal. Abdominal examination was pained and rebound tenderness noted in the lower abdomen. The fundus of uterus was not palpable.

A transabdominal ultrasound examination revealed an enlarged uterus at 12 week size. Longitudinal image revealed that the long axis of uterus turned 180 degrees (Figure 1). As is shown in Figure 1, the fundus of uterus lay in the vagina and the cervix lay at the top of pelvic cavity. The endometrium lined the periphery of the inverted fundus and perimetrium lay in the center of the inverted uterus. The uterus appeared as a mirror image of a normally situated uterus. The two opposed serosal surfaces simulated the appearance of an endometrial stripe or "pseudostripe." Transverse image showed the uterus appeared as a "target sign" with a hyperechoic fundus surrounded by a hypoechoic rim, representing fluid within the space between the inverted fundus and the vaginal wall (Figure 2). Transabdominal imaging showed the obvious position change of two ovaries (Figure 3). The two ovaries appeared to be attached to each other and retracted to the midline as "kissing ovaries", and were close to the top of cervix. Based on ultrasound findings, a diagnosis of a complete uterine inversion was made.

Vaginal exploration was performed by an obstetrician. Mucosal surface measuring 8 × 9 cm was seen at the top of vagina, with obvious congestion and edema. Cervix and vaginal fornix were not found. The diagnosis of complete uterine inversion was confirmed.

The patient was immediately taken to the operating room. Attempts to replace uterine inversion with intravaginal pressure under the epidural anesthesia were not successful. Then exploratory laparotomy was performed, confirming a complete uterine inversion. The cervix lay at the top while the corpus turned down. Rough endometrium was seen outside which showed spherical inversion of uterus. It confirmed the diagnosis by ultrasound. Manual repositioning was attempted without success because the cervix was tight around the uterus. Hysterotomy was performed. Uterine isthmus was longitudinally incised from an-

Revised manuscript accepted for publication September 14, 2013

Figure 1. — Ultrasound images of the uterus in the sagittal plane showing the inverted fundus turned 180 degrees (arrow).

Figure 2. — Transverse image showing the 'target' sign with a hyperechoic fundus centrally surrounded by uterine walls (arrow).

terior uterine wall. Metrorthosis was performed successfully through the incision.

Three days later, the patient was re-examined by ultrasound. The position of womb was normal. Two ovaries lay on either side of the womb. There had been a successful replacement of uterine inversion. The postoperative period was uncomplicated. The patient fully recovered and was discharged from hospital. Findings on follow-up examinations two weeks later were unremarkable.

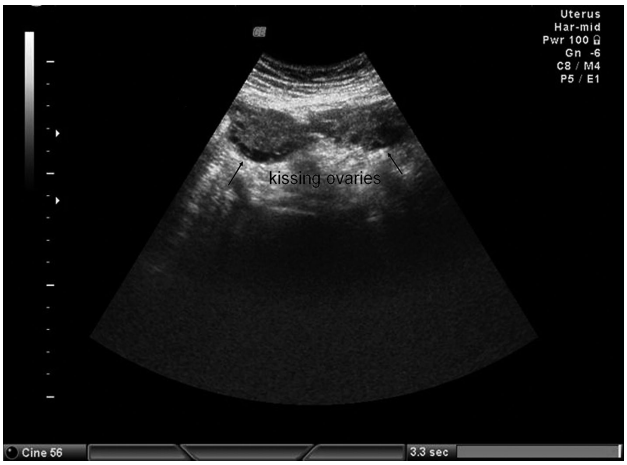

Figure 3. — Ultrasound examination demonstrating the two ovaries appear to be attached to each other as "kissing ovaries.

Discussion

Puerperal uterine inversion is considered one of the most serious complications in obstetrics. A few case reports of puerperal uterine inversion have been published; they are extremely rare [2]. Unfortunately in some cases, hysterectomy was performed.

Complete puerperal uterine inversion has been classified into acute, subacute, and chronic on the basis of the chronologic diagnosis. Acute, within 24 hours of delivery; subacute, 24 hours to 30 days postpartum; and chronic, greater than 30 days postpartum. Most of postpartum uterine inversion occurred within 24 hours of delivery, occurred usually early in the third early stage of labor. On the basis of clinical history and sonographic findings, the presented patient had subacute uterine inversion.

It is unclear why inversion occurs. The most likely cause is strong traction on the umbilical cord in the third stage of labor particularly if the placenta is fundal in position. Other related factors include Crede's method of placental delivery, excessive fundal pressure, relaxed uterus, morbidly adherent placenta especially involving the fundus, a short umbilical cord, congenital weakness of the uterus, and antepartum use of magnesium sulphate or oxytocin. Some intrinsic risk factors such as primiparity, pauciparity uterine hypotonia secondary to twin pregnancy, betamimetic, fundic or accrete placenta, fundic myoma and short umbilical cord have been reported too [3]. In the present case, the reason for the inversion may have been related to fundal pressure applied to the uterus for the delivery of the infant and umbilical cord traction.

The most common symptoms of uterine inversion are abnormal vaginal bleeding and low abdominal pain. Atypical symptoms render the diagnosis more difficult [4]. In the present case, the main symptom was intermittent vaginal bleeding. The prolonged treatment results from misdiagnosis based on symptoms and physical examination. Thus sonographic findings were crucial to assist in a prompt diagnosis.

Puerperal uterine inversion can easily be confused with a submucous myoma due to the similar symptoms. For example, there was uterine bleeding and the cervix could not be touched by vaginal exams in both diseases. It is dangerous as misdiagnose may lead to incorrect treatment, threatening the life of the patient. Ultrasound imaging showed that the position of the fundus of uterus and the cervix re-

versed in the puerperal uterine inversion, while the fundus of uterus and the cervix was eutopic in submucous myoma, and the position of two ovaries obviously changed, appearing to be attached to each other and retract to the midline as "kissing ovaries" in the puerperal uterine, while the two normal ovaries lay in bilateral iliac fossa, far away from each other in submucous myoma.

Puerperal uterine inversion can be differentiated from a markedly retroflexed uterus when the transducer abuts the normal-appearing cervix, whereas in complete uterine inversion, the transducer abuts the fundus, and a normal cervix is not shown, while the position of the fundus of uterus and the cervix reversed in the puerperal uterine inversion. In a markedly retroflexed uterus, ultrasound imaged that the two normal ovaries lie in normal position, far away from each other. The present case testified that preoperative ultrasonographic diagnosis of complete uterine inversion was feasible.

Treatment methods vary due to the time of occurrence of uterus inversion. As far as in the present case is concerned, oxytocin should not be used before the successful reset of the uterus because cervical contractile ring led by oxytocin was adverse for orthometria. Orthometria through the uterine isthmus incision successfully repositioned the uterine and avoided hysterectomy.

Prompt diagnosis of uterine inversion and immediate treatment are necessary because it can cause life-threatening hemorrhage. In the present case, the patient had subacute uterine inversion. Some cases reported that the uterine inversion was life threatening and diagnosis was difficult [5-7]. In cases of chronic uterine inversion, hysterectomy was performed as the optimal method for management. These patients had psychological issues later.

The present case alludes that it might be possible and feasible to avoid hysterectomy if uterine inversion is diagnosed earlier. The ideal result might be obtained in the acute and subacute uterine inversion. Ultrasound evaluation facilitates the assessment of clinically undetectable uterine inversion and should always be performed as soon as possible in cases of unexplained postpartum hemorrhage. Most important in the proper management of this obstetric emergency is rapid recognition and prompt attempts in resuscitation and reposition of the inverted uterus.

Acknowledgements

The authors acknowledge the "Population and Family Planning Project of Zhejiang province" No.(2011)50 and the Natural Science Foundation of Zhejiang Province (No.Y4090224).

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