

Laparotomic manual replacement for uterine inversion following vaginal birth: a case report

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Background: Puerperal uterine inversion is a potentially life-threatening obstetric emergency, and there is a lack of knowledge concerning its optimal management. **Case:** This report describes a case of successful manual replacement via laparotomy for acute uterine inversion following vaginal birth. **Conclusions:** Our successful experience with laparotomic manual replacement in this case may provide a reference for the management of uterine inversion in clinical practice.

Keywords

Laparotomy; Manoeuvre; Vaginal mass

1. Introduction

Uterine inversion is an obstetric emergency, the incidence of which varies and is reported to range from 1 case in 2000 to 1 case in every 50,000 deliveries. The massive and often underestimated blood loss can be fatal in as many as 15% of cases in some series [1]. To date, several therapeutic strategies have been previously reported, including drugs, manual manoeuvres and surgical interventions [2]. However, there is a lack of knowledge on the best management due to the rarity. The aim of this article is to describe a case of acute uterine inversion following vaginal birth after caesarean (VBAC) delivery and manual replacement via laparotomy.

2. Case presentation

We present the case of a 43-year-old woman, gravida 6, para 2032, at 38 1/7 weeks of gestation who was admitted to our hospital in the first stage of labour. The patient's history was notable for a full-term pregnancy and caesarean section 13 years prior as well as 3 first-trimester, induced abortions. She did not have any medical problems or other prior surgeries except for caesarean section. She desired a vaginal delivery, and after 4 hours of active labour, she had a normal delivery. Sixteen minutes after delivery, without any cord traction, the placenta passed through the introitus accompanied by severe abdominal pain and bleeding with an estimated volume of 300 mL. Vaginal examination was then performed, and a palpable, firm mass was found in the lower segment of the vagina. The diagnosis of complete acute uterine inversion was made based on physical examination and emergency bedside ultrasonography. Immediately, a referral to the consultant obstetrician was made, and manual replacement of the

uterus was attempted. At the same time, blood transfusion, vigorous fluid resuscitation, and intravenous antibiotics were initiated. Due to the unsuccessful attempts as well as the total estimated blood loss of 1330 mL 42 minutes after childbirth, the patient was rushed to the operating room for intervention under general anaesthesia using propofol. After another manual attempt failed, a laparotomy was performed.



Fig. 1. Uterine inversion at laparotomy.

During surgery, uterine inversion was detected with buckling of the uterine fundus (Fig. 1) and was corrected by manual replacement without the administration of tocolytic agents. The procedure was performed as follows: Step 1: the uterus was grasped with one hand and the area around the incision was pressed with the other hand while the uterus was pulled out through the incision; the assistant manually pressed around the incision to facilitate removal. Step 2: after the uterus was removed, two thumbs were applied to the fundus of the uterus at the site of inversion, and the remaining fingers were pressed against the inverted part through the anterior and posterior walls of the uterus. Then, outward and upward pressure was applied. The process of replacement was facilitated by the assistant (Motion Image 1). It was not necessary to use surgical instruments that may result in secondary injury to the uterus or even to make an incision in the cervical ring. Her uterus and adnexa had a normal macroscopic appearance after the uterine reversion. Uterine curettage was also performed due to incomplete separation of the



Motion Image 1. The embedded movie may also be viewed at <https://ceog.imrpress.com/EN/10.31083/j.ceog4804154>.

placenta and membranes. Additionally, the patient chose to undergo bilateral tubal ligation for permanent sterilization. Her vital signs were normal; a total of 4 units of red blood cells were transfused during surgery. After surgery, uterotonics were administered for the treatment of postpartum haemorrhage. The patient was transferred to the normal postpartum ward after 16 hours of monitoring in the intensive care unit. She recovered without complications and was discharged on day 4 with a short course of oral antibiotics. Histological examination of the placenta showed no alterations and no signs of accretism.

3. Discussion

Two large population-based, nationwide studies concluded that signs of prolonged labour followed by third-stage manipulation [3], younger age, abnormal placentation, prolonged labour, and severe pre-eclampsia were risk factors for uterine inversion [4]. None of these factors were identified in our case. However, the patient's history was notable due to a previous caesarean section. We may speculate the cause of uterine inversion based on anatomy and the unique characteristics of uterine contraction. The underlying mechanism may be explained as follows: The muscular layer of the caesarean scar at the lower segment of the uterus was thin, with poor contractility, and still in a relatively dilated state; on the other hand, the uterine contraction of the fundus and corpus was more intense but not coordinated. After delivery of the foetus and placenta, the pressure of the uterine cavity decreased. Due to the coordinated uterine contraction, the fun-

dus invaginated into the area of the weakness located in the lower uterine cavity where retraction was not present, resulting in uterine inversion.

We describe a successful method of laparotomic manual replacement for uterine inversion with a good outcome. The key points of this manual replacement were the outward opposing force in the cervical ring through the abdominal cavity, and the upward pressure on the uterine fundus through the serosal surface of the lower uterine segment. The advantage of the management strategy was that surgical instruments were not used during the invasive procedures to avoid causing damage to the uterus, in comparison to previous surgical approaches, which required clamps or even an incision in the uterus [5].

Our successful experience with laparotomic manual replacement in only one case may provide a reference for clinical practice; however, more studies with larger sample sizes are required to establish the success rate of this technique.

Author contributions

XYC, CY, JA and MP designed the study. XYC, CY and JA collected data and wrote the manuscript. JA and MP revised the manuscript. All authors read and approved the final manuscript.

Ethics approval and consent to participate

This research was conducted in accordance with ethical standards. Informed consent was obtained from the patient and the patient's husband for the publication of any potentially identifiable images or data included in this article. Ethical approval number: FJSFY-2019-019.

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Conflict of interest

The authors declare no competing interests.

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