

Managing Major Postpartum Haemorrhage Following Acute Uterine Inversion: A Case Report and Literature Review

M. Rahaoui*, H. Zizi, N. Mamouni, S. Errarhay, C. Bouchikhi, A. Banani

Department of Gynecology and Obstetrics 1, University Hospital Hassan II, BP1893, Km2.200, Route de Sidi Hrazem, Fez 30000, Morocco

DOI: [10.36348/sijog.2020.v03i03.010](https://doi.org/10.36348/sijog.2020.v03i03.010)

| Received: 12.03.2020 | Accepted: 24.03.2020 | Published: 30.03.2020

*Corresponding author: Dr. Mohamed Rahaoui

Abstract

The uterine inversion is a rare and severe puerperal complication that may cause maternal death. Fundal placental insertion, uncontrolled cord traction and uterine expression are the common causes described. The diagnosis is clinical and its management must be immediate to avoid maternal complications. We describe a case of acute puerperal uterine inversion occurred after a vaginal delivery complicated by major postpartum haemorrhage in 24 years old primigravida woman, how referred in our unit for delivery which done in ambulance. She has uterine inversion stage IV caused by the only fundal insertion of placenta. Successful non-invasive management was performed and manual reduce of the uterine inversion with Jonhson's method was attempts.

Keywords: Uterine inversion, post partum, haemorrhage chock, Jonhson's method.

Copyright @ 2020: This is an open-access article distributed under the terms of the Creative Commons Attribution license which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use (NonCommercial, or CC-BY-NC) provided the original author and source are credited.

INTRODUCTION

Acute puerperal uterine inversion is the penetration into the uterine cavity of the uterus bottom [1]. This complication is a rare and serious obstetric emergency. It can impact badly the maternal prognosis. The incidence varies considerably and can range from 1 case in 2000 to 1 case in every 200,000 deliveries [2]. It is associated with major postpartum haemorrhage with or without shock. Shock is sometimes out of proportion to the haemorrhage. When not immediately identified, the massive and often underestimated blood loss can lead to hypovolemic shock and maternal death that can reach 15% in some series [3].

The best management options for this condition are not fully known. There are several therapeutic strategies described in the literature, including drugs, manual manoeuvres and surgical interventions.

We describe in this article a case of acute puerperal uterine inversion occurred after a vaginal delivery complicated by major postpartum haemorrhage and we provide a literature review of uterine inversion,

its classification, etiology, risk factors, diagnosis and treatment.

CASE PRESENTATION

She was a healthy 24 years-old woman, nullipara, with no known antenatal risk factors for postpartum haemorrhage and the pregnancy proceeded without complications. She had referred from another hospital for irregular foetal rhythm and she had a spontaneous fast delivery in the ambulance without uterine expression and without any cord traction. The male new born weighted 3300g and had an Apgar score of 10. She was admitted with hemorrhagic shock, 30 minutes after delivery. Her mean arterial pressure was below 60–70 mmHg. She had tachycardia at 130 bpm and mild agitation and confusion. The placenta, not yet removed, had a fundal implantation, passed through the introitus (Figure-1). The placenta and membranes were overlaying a firm mass that was identified as the uterine cavity (Figure-2) and the diagnosis of postpartum haemorrhage by complete acute uterine inversion without a cervical restriction was made.

The patient was taken immediately to the operating room for conditioning (secure an airway and provide adequate oxygenation, Intravenous access of large calibre in two sites to facilitate rapid volume infusion. Intravascular replacement of blood volume lost using crystalloid). The medical team started maneuvers of manual correction of uterine inversion with successful attempts. Medical management included antibiotics, a Syntocinon infusion and 1 mg of misoprostol rectally. To restore intravascular volume and oxygen-carrying capacity we used three packed red blood cells and control hemoglobin concentration was 8g/dl.



Fig-1: Complete uterine inversion with placenta not completely removed in a primigravida 24 years old woman



Fig-2: Uterine cavity appears like a firm masse after placental remove

DISCUSSION

Puerperal uterine inversion is an extremely rare condition however, once it occurs, it is very likely to result in massive hemorrhage and a state of shock. Thus, it is a serious and critical obstetric condition that could result in maternal death if early appropriate treatment is not given. Hence, the decision for appropriate treatment needs to be made immediately [1].

Uterine inversion is a condition in which the uterus turns inside out with prolapse of the fundus through the cervix, happening usually following childbirth [4]. Unusually it can accounts in non-puerperal uterus with a rate of 5% of all uterine inversions. In this condition, it's associated with tumors in 97% of the cases [5, 6].

Presentation of puerperal uterine inversion can be acute (within 24 hours of delivery), subacute (over 24 hours and up to the 30th postpartum day), or chronic (more than 30 days after delivery) [7]. This Uterine inversion can be classified in four degrees, depending on the localization of the uterine fundus:

- First degree: the uterine fundus is inside the cavity and did not cross the cervix of the uterus
- Second degree: the fundus exceeds the cervical external os.
- Third degree: the uterine base is exteriorized at the vulva.
- Fourth degree: vaginal walls participate to the inversion, it is called complete inversion [3].

Various etiological factors have been linked to uterine inversion, though in the majority of cases no obvious causes are found. Risk factors associated with this situation are tension on the umbilical cord, fundal pressure, fundal insertion of placenta, fetal macrosomia, and excessive fundal pressure, abnormal adherence of the placenta, short umbilical cord, ligaments laxity, and congenital abnormalities of the uterus. Some studies have suggested other predisposing factors for uterine inversion as nulliparity, rapid or long labours, previous uterine inversion, and certain drugs such as magnesium sulphate and other tocolytic drugs [1, 3, 7]. In our case, there was only one risk factor for uterine inversion: the fundal insertion of the placenta.

The classic presentation of acute inversion, as in our case, is lower abdominal pain, massive haemorrhage, shock and sudden appearance of a vaginal mass.

In this condition, the diagnosis of acute puerperal uterine inversion is easy when the inner surface of the uterus is exposed to the endocervical canal or the vagina.

Diagnosing a first-degree inversion is difficult; therefore, if hemorrhage of unknown cause persists in the third stage of delivery, the possibility of uterine inversion should be considered.

The diagnosis is usually suspected when it is difficult to feel the uterine fundus. Chronic cases are unusual and difficult to diagnose [4, 8]. They may present with spotting, discharge, and low-back pain. Ultrasound may be required to confirm the diagnosis. It detects a vaginal mass with specific characteristics (the echogenicity of the endometrium shows the shape of C letter and the echogenicity of the uterus the shape of H letter) [3]. Kawano *et al.*, [9] has described Upside-Down sign in incomplete inversion and Inside-Out Sign in complete inversion before placenta removal in acute postpartum uterine inversion, shock is out of proportion with apparent blood loss - being a neurogenic shock, due to stretching of the infundibulopelvic and round ligament, ovaries and associated nerves being pulled into the crater of the inversion that provides a strong vasovagal stimulus [10].

With regard to the treatment, once the diagnosis of uterine inversion is made, measures should be undertaken to rapidly improve systemic shock and immediately reduce the inverted uterus.

To improve the systemic conditions, infusion, blood transfusion, antishock therapy, and anti-disseminated intravascular coagulation therapy should be performed.

Non-invasive or invasive techniques can be used for the reduction of the inverted uterus. Non-invasive reduction methods, such as the use of manual or hydrostatic pressure, should be attempted first after the discontinuation of uterotonic drugs [2, 10-12]. The method described by Johnson is often used for manual reduction of inverted uterus: the uterus is replaced by placing a fist on the fundus and gradually pushing it back into the pelvis through the dilated cervix. Bimanual uterine compression and massage should be maintained until the uterus is well contracted and bleeding has stopped [7].

If contraction of the cervix has occurred, magnesium sulfate, nitroglycerin, or beta-adrenergic agents such as terbutaline may be used if necessary to relax the uterus. Anesthetic agents such as halothane or enflurane may also be used as uterine relaxants [12].

Management following successful replacement of the uterus often includes uterotonics such as Oxytocin, Hemabate, Cytotec, or Methergine [12].

Even if the manual replacement has failed, then use of hydrostatic replacement with Rusch balloon or SOS Bakri Balloon [11] or O'Sullivan's technique is usually the next approach. The urological Rusch

balloon has been described as preferable method in replacement of inverted uterus and managing major postpartum haemorrhage by virtue of larger capacity, ease of use, and low cost [7]. Recently, Gupta *et al.* reported a modified hydrostatic reduction method using transurethral resection of the prostate set to reduce failure rate [10].

In the present case, we used a non-invasive method with a manual reduce of inverted uterus with Johnson's method to successfully reduce the uterus after removal of placenta. It was not necessary to use any other technique maybe for an immediate reduction before contraction of cervix and before any administration of uterotonic agents. We have attempt after reduction, perfusion of uterotonic (Oxytocin) and misoprostol (Cytotec 1 mg rectally) in vision to resituate adequate contraction of security globe and prevent reinversion.

Surgical therapy has also been described in the literature. It includes trans-abdominal operation according to Huntington's and Haultain's methods, transvaginal operation according to Spinelli's and Kutner's methods, and simple hysterectomy [12].

CONCLUSION

Uterine inversion is rare but carries high morbidity including major postpartum haemorrhage and blood transfusion. Rapid diagnosis and early treatment are the key factors for successfully reducing acute puerperal uterine inversion in patients. This associates a medical reanimation and a rapid manual reinversion with or without hydrostatic methods for avoiding invasive surgical approach. In the present case, the manual reduction and use of uterotonic agents are effective for hemostasis, reduction, and the prevention of reinversion. The prevention is essentially based on the eviction of extrinsic factors.

COMPETING INTERESTS

None of the authors have a relationship with companies that may have a financial interest in the information contained in the paper Authors.

REFERENCES

1. Thiam, M., Niang, M. M., Gueye, L., Sarr, F. R., Diémé, M. E. F., & Cissé, M. L. (2015). Puerperal uterine inversion managed by the uterine balloon tamponade. *Pan African Medical Journal*, 22(1).
2. Cumming, D. C., & Taylor, P. J. (1978). Puerperal uterine inversion: report of nine cases. *Canadian Medical Association Journal*, 118(10), 1268.
3. Leal, R. F. M., Luz, R. M., de Almeida, J. P., Duarte, V., & Matos, I. (2014). Total and acute uterine inversion after delivery: a case report. *Journal of medical case reports*, 8(1), 347.
4. Bouchikhi, C., Saadi, H., Fakhir, B., Chaara, H., Bouguern, H., Banani, A., & Melhouf, M. A.

- (2008). Uterine Inversion; A case report. *Libyan Journal of Medicine*, 3(1), 58-59.
5. Atalay, M. A., Demir, B. Ç., Solak, N., Atalay, F. O., & Küçükkömürçü, Ş. (2013). An unusual presentation of a submucous leiomyoma accounting to a non-puerperal uterine inversion: A case report. *Journal of the Turkish German Gynecological Association*, 14(2), 116-118.
6. Mehra, R., Siwatch, S., Arora, S., & Kundu, R. (2013). Non-puerperal uterine inversion caused by malignant mixed mullerian sarcoma. *Case Reports*, 2013, bcr2013200578.
7. Keriakos, R., & Chaudhuri, S. R. (2011). Managing major postpartum haemorrhage following acute uterine inversion with Rusch balloon catheter. *Case reports in critical care*, 2011.
8. Rudra, S., Naredi, N., Duggal, B. S., & Seth, A. (2010). Chronic uterine inversion: A rare complication of mismanaged labour. *Medical journal, Armed Forces India*, 66(1), 91-92.
9. Kawano, H., Hasegawa, J., Nakamura, M., Maruyama, D., Arakaki, T., Ono, A., ... & Sekizawa, A. (2016). Upside-down and inside-out signs in uterine inversion. *Journal of clinical medicine research*, 8(7), 548- 549.
10. Gupta, P., Sahu, R. L., & Huria, A. (2014). Acute uterine inversion: a simple modification of hydrostatic method of treatment. *Annals of medical and health sciences research*, 4(2), 264-267.
11. Ida, A., Ito, K., Kubota, Y., Nosaka, M., Kato, H., & Tsuji, Y. (2015). Successful reduction of acute puerperal uterine inversion with the use of a bakri postpartum balloon. *Case reports in obstetrics and gynecology*, 2015.
12. Pieh-Holder, K. L., Bell, H., Hall, T., & DeVente, J. E. (2014). Postpartum prolapsed leiomyoma with uterine inversion managed by vaginal hysterectomy. *Case reports in obstetrics and gynecology*, 2014.