

# An unusual case of uterine inversion: A case report

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## Abstract

Uterine inversion is a rare obstetric emergency. The incidence varies considerably and can range from 1 case in 2000 to 1 case in every 50,000 births. This postpartum complication has an academic importance due to its rarity and severity. 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. The best management options for this condition are not fully known, given the worldwide scarce experience of each obstetrical team managing this type of situation. There are several therapeutic strategies described in the literature, including drugs, manual maneuvers and surgical interventions. The aim of this article is to describe a case of complete acute uterine inversion after a normal delivery, and provide a literature review of uterine inversion, its definition, etiology, predictive and risk factors, diagnosis and treatment.

**Keywords:** uterine inversion.

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## INTRODUCTION

Uterine inversion is a rare obstetric emergency. The incidence varies considerably and can range from 1 case in 2000 to 1 case in every 50,000 births<sup>1</sup>. This postpartum complication has an academic importance due to its rarity and severity. 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<sup>2</sup>. The best management options for this condition are not fully known, given the worldwide scarce experience of each obstetrical team managing this type of situation. There are several therapeutic strategies described in the literature, including drugs, manual maneuvers and surgical interventions. The aim of this article is to describe a case of complete acute uterine inversion after a normal delivery, and provide a literature review of uterine inversion, its definition, etiology, predictive and risk factors, diagnosis and treatment.

## CASE REPORT

A 21-year old 2<sup>nd</sup> para was referred to Bharati Hospital with neurogenic shock. She had a vaginal delivery, 10 hours prior in a peripheral hospital and had given birth to a healthy female baby, weighing 2.6 kg. The uterus inverted soon after the delivery of the placenta. On arrival to our hospital, the patient was pale and in pain and had excessive PV bleeding, her pulse rate was 155 bpm, her BP was 80/50 mm Hg and her uterus was palpable, just above the pubic symphysis and cupping of uterus was present. Her per speculum examination revealed a hard coconut like structure (inverted uterus). Her abdominal ultrasound was inconclusive. Antishock measures and antibiotic therapy were instituted. Manual reposition was attempted under controlled general anaesthesia, with partial success. Bleeding did not stop even after all medical measures. so her emergency laparotomy was planned. On laparotomy, the cup of the uterine inversion was identified. Traction on the round ligaments was avoided, as it invariably gets torn. The bimanual reposition was unsuccessful because of oedema, with the vaginal surgeon attempting to reduce the uppermost part of inverted uterus, first on one side and then on the other side. The uterus was pale and flabby, oxytocics were given and Hayman's suture (the suture was placed through and through in the lower uterine segment and it was braced over the fundus. The same was repeated on the opposite side) was applied to aid tonicity and to

prevent reinversion. Inversion was corrected, but the bleeding did not cease and uterus was still flabby, so we had to go ahead with obstetric hysterectomy as a life saving measure. The patient was observed in the intensive care unit for a few hours, antibiotics were given and breast feeding was initiated the next day. The patient was discharged after 7 days.

This case is unusual in the sense that it recurred after correction and was recorrected at laparotomy, even after which bleeding did not stop, oxytocics, other medical and surgical measures. Hysterectomy was the life saving measure. The exact aetiology of uterine inversion remains unclear, but the most common and likely cause is mismanagement of the third stage of labour. The incidence of uterine inversion is 1 in 8537 (India), 1 in 23127 (US) and 1 in 27902 (Britain)<sup>1</sup>. The risk factors for spontaneous uterine inversion are primiparity, oxytocin use, the fundal insertion of the placenta, a short umbilical cord, macrosomia and uterine abnormality. The most common clinical presentation is pain, vaginal bleeding and shock. The treatment requires the immediate implementation of shock therapy, uterine repositioning and antibiotic therapy. The nonsurgical methods are manual repositioning (Johnson's maneuver) and hydrostatic reduction (O'Sullivan). The surgical methods include the incision of the constriction ring vaginally (Spinelli), upward traction on the round ligaments with the assistant applying upward pressure from the vagina (Huntington) and incising the constriction ring posteriorly at laparotomy (Haultain). The newer methods include laparoscopic reduction<sup>2</sup>, the use of obstetric ventouse at laparotomy<sup>3</sup>, and application of cephalad traction on the deepest visible part of the posterior uterus<sup>4</sup>.

## DISCUSSION

### Uterine inversion Definition

Uterine inversion is defined as the passage of the uterine fundus through the endometrial cavity and cervix, turning the uterus inside out. This, although rare, can occur in two distinct clinical situations: in the postpartum period and spontaneously. Non-puerperal uterine inversion accounts for 5% of all uterine inversions and is generally associated with exteriorization of uterine cavity tumors<sup>3,4</sup>. Uterine inversion can be classified in four degrees, depending on the localization of the uterine fundus. In the 1st degree, the fundus is inside the cavity. If it reaches but does not exceed the cervical external os, it is a 2nd degree inversion.

A 3rd degree inversion occurs when the fundus extends out of the external os. When it is beyond the vaginal introitus, it is called complete inversion<sup>5</sup> or 4th degree uterine inversion<sup>6</sup>. The term full uterine inversion is used to report situations of vaginal and uterine inversion

caused by mass effect in the context of a pelvic tumor; it is also important to describe when the inversion occurs in relation to delivery. Thus it is classified as acute uterine inversion if it takes place before the contraction of the cervical ring, subacute if this occurs after contraction of the cervical ring, or chronic if it occurs after the first 4 weeks after birth<sup>7</sup>.

### Etiology

Although generally associated with excessive cord traction in the third stage of labor, the causes of uterine inversion remain unexplained. In fact, there are several cases in which no tension was carried out on the cord. Risk factors associated with this situation are tension on the umbilical cord, fetal macrosomia, excessive fundal pressure, placenta accreta, short umbilical cord, ligaments laxity, and congenital abnormalities of the uterus<sup>2,8</sup>. Some authors argue that the use of magnesium sulfate may be a risk factor for uterine inversion, although there is no scientific evidence to support this. Some studies have suggested that the rapid uterine emptying, nulliparity and fundal implantation of the placenta are other predisposing factors for uterine inversion.

### Diagnosis

The diagnosis of uterine inversion is clinical. The observation of the uterine fundus beyond the vaginal introitus in the complete form or the palpation of the fundus through the external os in the 3rd degree uterine inversion is the most common sign. Nevertheless, the diagnosis is often suspected in the presence of massive blood loss after childbirth or in the absence of uterine fundus during abdominal palpation. Hypotension and tachycardia may supervene and evolve into hypovolemic shock. When a physical examination is inconclusive and the patient is hemodynamically stable, the diagnosis can also be confirmed by ultrasound, which 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)<sup>9</sup>.

### Treatment

The initial approach is to try to reverse immediately the uterus with manual pressure on the fundus through the vagina. This maneuver, called Johnson maneuver, should be carried out as soon as possible to minimize the blood loss and to improve the chances to resolve, since the longer the time between the inversion and the beginning of the maneuver, the lower is the success rate. This is explained by the involution of the cervix which induces a rigid ring that makes the restoration of the normal position of the uterus difficult. It is also essential to establish other therapeutic actions including suspension of oxytocic infusion and administration of drugs with utero relaxant effect. Magnesium sulfate and salbutamol

are the most commonly prescribed drugs due to their availability and frequent administration. Some authors have reported good results with nitroglycerin for relaxation of the cervical ring<sup>10</sup>. When the initial approach fails, it is essential to have an operating room, an obstetrical team and an anesthetist available for a surgical intervention.

There are two main surgical techniques described: Huntington and Haultaim.

According to the Huntington technique, clamps are placed on the round ligament, near to its insertion in the uterus, and traction is applied while the assistant exerts traction on the contralateral way through the vagina. This is the simplest technique and has a lower risk of complications. In case of failure, the Haultaim technique should be performed. In this technique, an incision is made in the posterior portion of the ring formed by the cervix in order to increase the size of the ring and thus reposition the uterus. Taking into account the low incidence of uterine inversion not reduced by the Johnson maneuver, there are no cohort studies large enough to establish the individual success rate of these two surgical techniques or randomized controlled trials to compare them. Another surgical technique by vaginal route was described by Spinelli. In the latter, the surgeon performs a dissection of the vesicouterine space and makes an incision on the cervix, allowing the uterus to return to its original position<sup>11</sup>. Some authors described a technique using hydrostatic pressure as an alternative when manual reduction is not successful and conditions for surgical intervention are absent<sup>2,10</sup>.

In this technique, balloons are placed intravaginally to increase the pressure on the uterine fundus to push the uterus to its initial position. There are other techniques described, but they still require scientific studies to demonstrate their efficacy and safety, including the use of obstetric vacuum extractor (ventouse) to reverse the uterine fundus<sup>12</sup> or surgical resolution by laparoscopy<sup>13</sup>. Regardless of the technique, there is no consensus on the timing of the removal of the placenta. However, many authors argue that this removal should occur only after the normal repositioning of the uterus, to reduce blood loss<sup>14</sup>. After reversal of the clinical condition, it is essential to administrate uterotonic agents (oxytocin or misoprostol) to prevent recurrence. Some authors support the use of large spectrum antibiotics to prevent endometritis or sepsis<sup>15</sup>.

## CONCLUSION

Uterine inversion is an obstetric complication that, due to its gravity, requires a rapid diagnosis and immediate

clinical action. Its low incidence leads to scarce experience in solving this kind of situation. Regardless of the treatment, vaginal or surgical approach, the best prognosis occurs in situations when the diagnosis and maneuvers for uterine reversal are made early. The authors concluded that there are no predictive factors known for uterine inversion because of its rarity, only risk factors. Therefore, it is essential to keep in mind this diagnosis in all cases of postpartum hemorrhage, and be updated about the medical therapy and surgical techniques required to solve this type of complication.

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