

# Complete Uterine Inversion Managed With a Rusch Balloon Catheter

Azubuike Uzoma<sup>a, c</sup>, Bolarinde Ola<sup>b</sup>

## Abstract

Acute uterine inversion is a rare but very serious obstetric emergency which is highlighted by this case report. Risk factor here was the rapid labor with first to third stage lasting only 45 minutes and associated active pushing in the third stage. Even with the hallmark of massive post-partum hemorrhage, quick intervention resulted in adequate resuscitation. A modified hydrostatic method of reduction using the Rusch balloon catheter repositioned the uterus while serving the additional role of managing any further post-partum hemorrhage. The outcome was good due to multi-disciplinary cooperation, prompt management and senior involvement.

**Keywords:** Uterus; Inversion; Hemorrhage; Rusch balloon catheter

## Introduction

Acute puerperal uterine inversion is an obstetric emergency. Early recognition and prompt management will reduce maternal mortality.

## Case Report

A 22 years old woman in her third pregnancy presented in labor and on examination was found to be 5 cm dilated. Thirty minutes later fetal bradycardia was noted and assessment showed she was fully dilated. The fetal head was below the spine, following which she had a ventouse delivery. The first

stage lasted 30 minutes and second stage 10 minutes.

Placenta and membranes were delivered by controlled cord traction and maternal effort with the third stage lasting only 5 minutes. As soon as the placenta was delivered, an unusual hard mass was noticed outside the introitus. The uterine fundus was not palpable abdominally and patient complained of abdominal pain which was followed by a drop in blood pressure and maternal tachycardia with cold clammy extremities, in keeping with shock. She was resuscitated with colloids pending the arrival of blood. Attempted reduction of the inverted uterus in the room by the attending Obstetrician was unsuccessful. With resuscitation and rise of her blood pressure she was immediately transferred to theatre for replacement of the uterus.

Examination in theatre under general anesthesia confirmed complete uterine inversion. The uterus was partially replaced manually and a Rusch balloon catheter inserted into the partially reduced uterus and inflated with about 300 ml of normal saline to achieve full repositioning of the uterus to its anatomical position. The inflated Rusch balloon catheter served the purpose of achieving replacing, maintaining the normal anatomy of the uterus and at the same time preventing further hemorrhage by a tamponade effect on the uterus. Total blood loss was 3000 ml and she required 4 units blood transfusion. A urinary catheter was inserted and vaginal packs used to support and hold the Rusch balloon catheter in place.

She had Syntometrine injection, Syntocinon infusion and Carbaprost as part of management for the associated post-partum hemorrhage. The next day the Rusch balloon catheter was removed and patient debriefed. She made good recovery and was discharged 2 days later.

## Discussion

Uterine inversion is a rare but significant cause of massive obstetric hemorrhage which is associated with increased morbidity and mortality. Incidence varies widely from 1:500 to 1:57393 [1, 2]. Maternal mortality rate of up to 15% have been reported [3]. The rapid emptying of the uterus as in this case has also been suggested as a possible predisposing

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<sup>a</sup>Specialist Registrar in Obstetrics and Gynaecology, Sheffield Teaching Hospital NHS Trust, Sheffield S10 2SF, UK

<sup>b</sup>Consultant Obstetrician and Gynaecologist, Jessop Wing, Sheffield Teaching Hospitals NHS Trust, Sheffield S10 2SF, UK

<sup>c</sup>Corresponding author, email: azuuzoma@doctors.net.uk

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factor [4]. Other recognized risk factors include excessive fundal pressure, relaxed uterus, fundal placenta and short umbilical cord [5]. Diagnosis is clinical and for complete inversion, a mass is palpated or seen at the introitus. An associated fundal defect will be noted on abdominal palpation. The presence of symptoms and signs of shock will further consolidate the diagnosis of uterine inversion.

Management involves immediate replacement of the inverted uterus and simultaneous correction of shock which is usually out of proportion. Most Obstetricians will advise removal of the placenta only after reduction of the uterus, as doing otherwise will result in increased blood loss and worsening hemodynamics [6]. In this case the placenta had already been removed at delivery. Tocolytic drugs like terbutaline, magnesium sulphate and glyceryl trinitrate have all been used to aid uterine replacement by relaxing the uterus. General anesthetic agent like Halothane is also useful.

The reduction here was achieved by partially replacing the uterus manually and inserting a Rusch balloon catheter which was inflated to achieve full replacement of the uterus. This can be described as a modified form of hydrostatic reduction. Hydrostatic reduction was first described by O'Sullivan in 1945 and the principle involves infusing fluid while maintaining a water seal around the vagina to generate the pressure required in correcting the inversion. One of the drawbacks of the hydrostatic method is the difficulty in maintaining a water seal [4]. This has been overcome by the use of the Rusch balloon catheter in this case. Other methods of achieving a water seal including use of a ventouse cup have been described [7].

Another method of correction is the manual method also known as Johnson maneuver, in which the inverted uterine fundus is pushed back in through the cervical ring with pressure directed towards the umbilicus [6, 8].

Surgical procedures are indicated when manual reduction fails. Huntington procedure involves a laparotomy to locate the cup of the uterus. Allis forceps is used to gently apply upward traction until the inversion is corrected. Haultain technique involves a longitudinal incision on the posterior cervical ring and reversal by gentle traction as in the Huntington procedure [4, 9]. A modified laparoscopic reduction has been reported recently [8]. When all these methods

fail, then a hysterectomy may be the only option. The use of an intrauterine Rusch balloon catheter in this case achieved three objectives of replacing the inverted uterus, maintaining the position and preventing further post-partum hemorrhage.

It has been shown that quick replacement of the inverted uterus and resuscitation will give a better outcome [10]. The early involvement of a senior Obstetrician and multi-disciplinary Obstetric emergency team, is very vital. It is a traumatic experience for the patient and her family, so the importance of debriefing the patient cannot be over emphasized.

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