

## **Guidelines for the Management of Uterine Inversion**

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## Guidelines Definition

Clinical guidelines are systemically developed statements that assist clinicians and patients in making decisions about appropriate treatments for specific conditions.

They allow deviation from a prescribed pathway according to the individual circumstances and where reasons can be clearly demonstrated and documented.

## Minor Amendments

If a minor change is required to the document, which does not require a full review please identify the change below and update the version number.

Type of change	Why change made	Page number	Date of change	Version 1 to 1.1	Name of responsible person
New Guideline for CTMUHB	Amalgamation of POW into CTUHB to form a CTMUHB Document	All	07.12.2019	1	Intrapartum Guideline Committee

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## 1. Introduction

### 1.1 Definition

Uterine inversion occurs when the uterine fundus collapses into the endometrial cavity, turning the uterus partially or completely inside out. It is a rare but life-threatening complication of vaginal or caesarean delivery which requires prompt intervention.

Partial or complete inversion complicates 1:2000 births, and can occur with both vaginal and caesarean deliveries. The placenta may still be attached. It can be spontaneous or iatrogenic.

### 1.2 Classification

Uterine inversions are classified by the extent of inversion and time of occurrence:

#### Extent of inversion:

- 1<sup>st</sup> degree (incomplete) – The fundus is within the endometrial cavity
- 2<sup>nd</sup> degree (complete) – The fundus protrudes through the cervical os
- 3<sup>rd</sup> degree (prolapsed) – The fundus protrudes to or beyond the introitus
- 4<sup>th</sup> degree (total) – Both the uterus and vagina are inverted

In practice it is simply referred to as complete or incomplete depending on whether the fundus has passed through the cervix.

#### Time of occurrence:

- Acute – Within 24 hours of delivery
- Subacute – More than 24 hours but less than four weeks postpartum
- Chronic –  $\geq 1$  month postpartum

## 2. Rationale

The large majority of uterine inversions occur within 24 hours of birth. Uterine inversion can be associated with massive haemorrhage and shock. These can rapidly be fatal and the condition requires immediate

action. Management is aimed at maintaining maternal circulation and replacing the uterus as quickly as possible. Inversion is associated with macrosomia, a fundalplacenta and uterine atony.

### **2.1 Risk Factors for Spontaneous Inversion**

- Adherent fundal placenta
- Uterine atony
- Short umbilical cord
- Primiparity
- Macrosomia
- Arcuate or bicornuate uterus
- Previous uterine inversion
- Ehlers Danlos syndrome and other connective tissue disorders
- Retained placenta, and placenta accreta

### **2.2 Iatrogenic Inversion**

- Excessive traction on the cord, especially if the uterus is atonic
- Fundal pressure when the uterus is relaxed.

### **2.3 Prevention**

- Appropriate management of third stage
- Cord traction should not be applied until the signs of placental separation are apparent.

### **2.4 Recognition**

Early recognition is vital to enable prompt treatment.

Symptoms and signs include:

- Haemorrhage.
- Severe low abdominal pain.
- Shock (out of proportion to blood loss).
- Placenta may or may not be in situ.
- Uterine fundus not palpable per abdomen.
- Vaginal examination reveals a mass in the vagina.

- On abdominal examination, a cup-like defect (fundal notch) may be palpated in the area of the normally globular fundus in incomplete uterine inversion
- Urinary retention

### **3. Management**

Treatment involves prompt and immediate replacement of the inversion and prevention of cardiovascular shock. See Appendix A for Acute Management of Uterine Inversion Guide.

#### **3.1 Management Process**

##### **1. Call for Help**

Pull the emergency buzzer and dial 2222 stating clearly and concisely and declaring the emergency. (Experienced Midwife; Senior Doctor, SHO & Consultant Obstetrician, Obstetric Anaesthetist & ODP). Be ready to transfer to theatre.

##### **2. Resuscitation**

**AIRWAY:** Secure and maintain airway

**BREATHING:** 15 litres oxygen therapy via non-rebreather mask

**CIRCULATION:**

- IV Access: wide bore cannula x 2 (ideally 16G, grey) Take blood: X Match – 4-6 units, FBC and Clotting Screen.
- Commence infusion of Ringer's lactate or sodium lactate solution (Hartmann's).

**MONITOR:**

- Continuous pulse and blood pressure recording (using oximeter and automated BP recording).
- All observations should be recorded on MEOWS Chart
- Observe woman for signs of shock

**3. Discontinue uterotonic drugs** since uterine relaxation is needed for replacement of the uterine fundus.

#### **4. Treatment**

- If placenta adherent, **LEAVE IN SITU**. Attempts to deliver the placenta may cause MASSIVE HAEMORRHAGE and/or shock.
- **Immediately attempt to manually replace the inverted uterus** to its normal position. This is best accomplished by placing a hand inside the vagina and pushing the fundus along the long axis of the vagina toward the umbilicus (Johnson's Maneuvers).
- Prompt intervention is critical since the lower uterine segment and cervix will contract over time and create a constriction ring, thus making manual replacement progressively more difficult.
- If a constriction ring is palpable, pressure should be applied to the part of the fundus nearest the ring to ease it through from bottom to top. This avoids attempting to push a wider diameter of the fundal mass through the ring, which is likely to fail.
- Attempts at manual replacement may be accompanied by severe bleeding.
- If the patient is haemodynamically unstable after an initial attempt at replacement, it is reasonable to proceed directly to laparotomy.
- In hemodynamically stable patients, **give uterine relaxants** when immediate uterine replacement is unsuccessful. Manual replacement is then reattempted.

#### **Uterine relaxants**

- **Nitroglycerin** (glyceryl trinitrate) 50 micrograms administered intravenously, followed by up to four additional doses of 50 micrograms, as needed to achieve adequate uterine relaxation for replacement. Nitroglycerin has an extremely short half-life which could be advantageous in women with severe hemorrhage and haemodynamic instability (UpToDate).

- **Terbutaline** (0.25 milligrams subcutaneously) or magnesium sulfate (4 to 6 grams intravenously over 15 to 20 minutes) are other options for uterine relaxation. Magnesium sulfate has a slow onset of action (UpToDate).

### **3.2 Secondary (surgical) interventions**

If the above measures to replace the uterus fail, then the patient should be taken promptly to the operating room to attempt surgical correction of the inversion.

At laparotomy, in place of the uterus, a constriction ring containing a dimple or cup or slit is often observed, and the adnexa (fallopian tubes, round ligaments, and possibly one or both ovaries) are typically pulled into this hole.

#### **Huntington's procedure:**

- The cup formed by the inversion is located
- A clamp, such as an Allis or Babcock clamp, is placed on each round ligament entering the cup, approximately 2 cm deep in the cup
- The myometrium can be clamped if the round ligaments cannot be identified. Gently pulling on the clamps exerts upward traction on the inverted fundus. Clamping in 2 cm increments followed by traction is repeated until the inversion is corrected.
- If available, a second operator can place a hand in the vagina and apply upward pressure on the fundus to facilitate the procedure.

#### **Haultain's procedure:**

- Incision (approximately 1.5 inches in length) in the posterior surface of the uterus to transect the constriction ring and thus increase the size of the previously constricted area.
- Surgical release of the constriction ring should allow manual reduction of the uterine inversion.



- Manual reduction can be performed through the vagina or by placing a finger abdominally through the myometrial incision to below the fundus and then exerting pressure on the fundus to reduce the inversion.
- The incision is repaired when the uterus has been returned to a normal position.

### **3.3 Other options**

#### **Hydrostatic Reduction (O’Sullivan technique):**

- **Uterine rupture must be excluded.**
- Warm sodium chloride solution preferably should be used.
- Using the largest giving set available, sterile fluid is rapidly run into the vagina whilst the introitus is manually sealed.
- Two or three litres of fluid may be required.
- Another technique involves connecting the giving set to a silastic ventouse cup in order to obtain a better seal.

### **3.4 Procedures to avoid**

Vaginal surgical approaches are no longer performed.

Type of anaesthesia given to patient should be decided by the anaesthetist based on the patient’s general condition, degree of shock and the procedure contemplated.

## **4. Post procedure**

- Careful exploration of uterus and remove any remaining bits of placenta. Ensure there is no uterine/cervical trauma. Treat haemorrhagic shock and watch out for Post-Partum Haemorrhage.
- Commence oxytocin infusion after successful removal of the placenta to induce myometrial contraction and maintain uterine involution. Atonic postpartum haemorrhage is common after

correction of uterine inversion, an oxytocin 40 units in 500ml infusion over 4 hours will reduce the risk of haemorrhage and impede reinversion.

- **Antibiotic prophylaxis:**

If patient known or suspected to have resistant organisms e.g, MRSA, discuss prophylaxis regimen with Consultant Microbiologist

Prophylactic antibiotics should be given within 60 minutes before the skin is incised and as close to the time of incision as practically possible.

**First Line:**

Cefuroxime (IV) 1.5g

PLUS

Metronidazole (IV) 500mg

**Cephalosporin/severe penicillin allergy:**

Clindamycin (IV) 600mg

PLUS

Gentamicin (IV) 3mg/kg (use booking weight)

**If surgery lasts 4 hours or more:**

Give additional dose of Cefuroxime 750mg

Give additional dose of Clindamycin 300mg

- Ensure adequate documentation.
- Debrief the woman and her birthing partner.

## 5. Postnatal Care

Following replacement of the uterus, the woman will require nursing in the high care area for at least 24 hours with postpartum management similar to that after massive postpartum haemorrhage (PPH).

## **6. Documentation**

All cases of uterine inversion should be reported via Datix

## **7. Debriefing**

An opportunity should be given for the woman and family to see a senior obstetrician prior to discharge home. If uterus is still in situ advice regarding future mode of delivery should be given and documented.

The woman and her partner should be given an opportunity to have a further consultation after discharge from hospital.

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## **Appendix A - Management of Acute Uterine Inversion**

**Call for help (bleep 2222)**



**Withhold uterotonics; leave placenta in-situ if not separated already**



**Try immediate manual replacement**



**Aim to treat haemorrhagic and neurogenic shock simultaneously**



**2 x IV accesses, Cross-match blood (6 units), FBC+Coag, IV fluids, Foley catheter. Consider Atropine if bradycardic and hypotensive**



**Anaesthesia and tocolysis (terbutaline; GTN, MgSO<sub>4</sub>)**



**Attempt manual replacement**



**Hydrostatic replacement**



**Laparotomy and surgical replacement**



**Huntington**



**Haultain**

**Careful exploration of the uterus**

**Oxytocin infusion for 4-6 hours**

**Antibiotic prophylaxis – See CTMUHB Antimicrobial Guidelines**

## **Appendix B- Annual Auditable Standards**

The following standards with formulate the annual record keeping audit plan:-

1. DATIX form completed
2. Antibiotic prophylaxis prescribed
3. Postnatal debriefing undertaken

## **Appendix C**