# Uterine Rupture Guideline for Management

University Hospitals of Leicester NHS Trust

**Trust ref:C45/2011**

Contents



## 1. Introduction and Who Guideline applies to

This document sets out the procedures and processes to follow in the event of a uterine rupture with the intention of providing safe and effective care to this patient group.

These guidelines are for the use of all staff involved in the management of uterine rupture. This includes midwifery, obstetric, anaesthetic, imaging and blood transfusion staff.

**Related documents:**

Enhanced Maternity Care Trust ref: B47/2011
Resuscitation of the newborn infant at birth Trust ref: B35/2008
Cardiopulmonary Resuscitation Policy UHL LLR Alliance LPT.pdf Trust ref: E4/2015
Blood Transfusion UHL Policy Trust ref: B16/2003
Fetal Monitoring in Labour UHL Obstetric Guideline.pdf Trust ref: C23/2021
Duty of Candour UHL Policy Trust ref: B42/2010

**Key points;**

- Monitor progress of labour carefully (dilatation should be at least 0.5 cm/hour).
- Monitor MEOWS chart including maternal tachycardia, hypotension, clinical signs of shock maybe due to concealed haemorrhage.
- In the case of **uterine hypertonus** administer either terbutaline 250mcg
- During labour pregnant women and pregnant people should be counselled and encouraged to report any acute scar tenderness or severe abdominal pain especially if it persists between contractions.
- If a pregnant woman or pregnant person with a previous CS has not delivered **after maximum 1 hour in the active second stage**, they should be reviewed and assessed by an ST3 or above with a view for assisted delivery.
- Stop the oxytocin infusion if insitu
- Pull the emergency buzzer and call the obstetric team
- Give facial oxygen
- Continuously record maternal temperature, pulse, Blood pressure and CTG assessment of fetal well-being

## 2. Guideline Standards and Procedures

### Background:

Rupture of the uterus is a major obstetric emergency with potential high morbidity and mortality for mother and fetus. MBRRACE have highlighted that there was a failure to identify the clinical features of uterine rupture in four out of five women affected, leading to delays in care. Studies have shown an increasing rate of uterine rupture, which is felt due to rising caesarean rates, increasing inductions or augmentation and potentially a higher clinical awareness leading to greater identification. A high index of **clinical suspicion** and **prompt diagnosis and action** can allow good neonatal and maternal outcome.[1] Maternal complications include major obstetric haemorrhage, with possible need for peripartum hysterectomy, ITU admission, damage to other organs, and longer hospital stay; fetal complications include hypoxic ischaemic encephalopathy, permanent brain injury and even death.

The incidence of complete uterine rupture in the UK is 1.9 per 10,000 maternities.[10]

### Definition:

**Uterine Rupture**: Separation of the entire thickness of the uterine wall including the serosa, with or without expulsion of the fetus, involving rupture of membranes at the site of the uterine rupture or extension into uterine muscle separate from any previous scar, and endangering the life of the mother and fetus.

- Uterine rupture can occur in a scarred or intact uterus, most commonly in labour, but can also occur spontaneously or through trauma.
- Rupture of an unscarred uterus is a rare event, with the incidence being reported as 1/12,960 deliveries to 1/17,000.[6]

**Uterine Dehiscence**: Is defined as a disruption of the uterine muscle with intact uterine serosa, without extravasation of intra-amniotic contents and fetal parts into the peritoneal cavity.[7,8]

- This can be asymptomatic (in up to 48% of cases).[9]

**Risk Factors:**

Awareness of risk factors is essential. These can be during pregnancy, during labour and post-delivery.[6] The **dominant single risk factor is a uterine scar.** Although uterine rupture is associated with significant mortality and morbidity, even amongst pregnant women or pregnant people with a previous caesarean section planning a vaginal delivery, it is a rare occurrence.[10]

**Table 1: Risk factors for uterine rupture**

| | **Risk Factors for uterine rupture** |
|---|---|
| **In pregnancy** | • Previous uterine scar / uterine surgery with cavity breached (hysterotomy / myomectomy / uterine perforation<br>• Grand multiparity<br>• Road traffic accidents[6]<br>• Hysteroscopic metroplasty[6]<br>• Mullerian anomalies[6] e.g. Septate, Bicornuate & duplicated uterus & cervix<br>• Other (rare): Ehlers Danlos syndrome, chronic steroid use, cocaine use[6] |
| **Intrapartum** | • Abnormal placentation (placenta accreta, increta or percreta)<br>• Tumour obstructing the birth canal[6]<br>• Pelvic deformity[6]<br>• External Cephalic Version[10]<br>• Induction of labour, use of oxytocins or prostaglandins, especially if combined with other factors[2,4] refer to Induction of labour obstetric guideline<br>• Grand multiparity (risk increases with use of prostaglandins/oxytocins)<br>• High doses of misoprostol in parous women [(6)]<br>• Uterine hypertonus<br>• Precipitate labour[6]<br>• Malpresentation [6]<br>• Obstructed labour<br>• Difficult/high/rotational forceps delivery (Kiellands)<br>• VBAC and the following[8]:<br>Maternal age of >/= 40 years<br>Obesity<br>Fetal macrosomia (>4kg)<br>Short inter-delivery interval (<12 months)<br>Post-date pregnancy<br>Lower pre-labour Bishop score<br>Decreased ultrasonographic lower segment myometrial thickness |
| Post delivery | • Placenta accreta[6]<br>• Manual removal of retained placenta[6]<br>• Uterine manipulation (intrauterine balloon)[6] |

**Antenatal management:**

Follow local updated VBAC guidelines and pathway while counselling pregnant women or pregnant people with previous CS. Fully document the outcome in the notes.

**Diagnosis:**

Scar dehiscence can be difficult to diagnose.

**Signs of uterine rupture:**

- An abnormal CTG (usually bradycardia [10]) is present in 66-76% of cases[8]
- Blood stained liquor or vaginal bleeding
- Haematuria
- Severe pain (breaking through a previously effective epidural) or persisting between contractions[8]
- Altered pattern of uterine contractions
- Cessation of previously efficient uterine activity[8]
- Maternal hypotension[8]
- Shock/collapse
- Abnormal contouring of abdomen
- Inability to pick up fetal heart rate[8]
- Loss of station of the presenting part[8]
- Shoulder tip pain[10]
- Maternal tachycardia[10]
- Acute onset scar tenderness [8,10]

**The majority of ruptures of previous scars occur in labour:**

Overall, the estimated incidence of uterine rupture is 2 per 10,000 maternities[10]

- Incidence in 1 previous CS planning a Vaginal delivery: 21 per 10,000 maternities[10]
- Incidence in 1 previous CS planning an Elective CS: 3 per 10,000 maternities[10]
- Incidence in 1 previous CS in Spontaneous labour: 0.9%[2,3]
- Incidence in 2 previous CS in Spontaneous labour: 1.8%[3]
- Incidence in 1 previous Classical CS in Spontaneous labour: 4%
- Previous uterine rupture has >/= 5% risk for recurrent uterine rupture[8]

**Key points during labour:**

- Monitor progress of labour carefully (dilatation should be at least 0.5 cm/hour).
- Monitor MEOWS chart including maternal tachycardia, hypotension, clinical signs of shock maybe due to concealed haemorrhage.

- In the case of **uterine hypertonus** administer either terbutaline 250mcg subcutaneously or as a slow bolus dose intravenously over 3 minutes, diluted in 5mls 0.9% sodium chloride.

- During labour pregnant women and pregnant people should be counselled and encouraged to report any acute scar tenderness or severe abdominal pain especially if it persists between contractions.

- If a pregnant woman or pregnant person with a previous CS has not delivered **after maximum 1 hour in the active second stage**, they should be reviewed and assessed by an ST3 or above, with a view for assisted delivery.

**Management:**

1. **Resuscitation:**

   - Stop the oxytocin infusion if insitu
   - Pull the emergency buzzer and call the obstetric team
   - Early escalation to Obstetric and Anaesthetic Consultants if not already present.
   - Give facial oxygen
   - Insert 2 large bore intravenous cannulae (16 gauge)
   - Continuously record maternal temperature, pulse, Blood pressure and CTG assessment of fetal well-being
   - IV fluids infusion as clinically indicated
   - Request 6 units of group specific blood and alert Blood Bank – Send urgent bloods for FBC, Clotting/FDP's, U&E's

2. **Inform:**
   - Midwife Coordinator on Delivery Suite
   - Obstetric Consultant
   - Anaesthetist Consultant and Anaesthetic practitioner
   - Neonatal Registrar

3. **Emergency Laparotomy (aim for delivery of baby within 15 minutes)**
   Aim to repair the uterus; decision for hysterectomy should be confirmed by and performed by a Consultant. Ensure systematic review of the pelvis including the broad ligament and bladder which may have been damaged. Use of cell salvage from the onset of the procedure for effective blood conservation.

4. **Thromboprophylaxis** as per protocol for a high risk woman, including use of Flotron® boots.

**Risk Management:**

- Documentation of the procedure and a plan of care for the immediate post-natal period should be documented by the operating obstetrician.

- A clinical incident reporting form must be completed for all obstetric emergencies. Please refer to the Maternity Services Risk Management Strategy for details. Completion of Incident form (DATIX) is mandatory.

- Postnatal debriefing with Duty of Candour, see- Being Open (Duty of Candour) UHL Policy

- Counselling regarding avoidance of future pregnancy and postnatal contraception.

## 3. Education and Training:

All Obstetricians and Midwives attend a mandatory training day every year. Skill drills are part of this day and uterine rupture would be covered by the maternal collapse session.

## 4. Monitoring Compliance

| What will be measured to monitor compliance | How will compliance be monitored | Monitoring Lead | Frequency | Reporting arrangements |
|---|---|---|---|---|
| Notes and Incident forms | Individual notes review for each incident. Each case discussed at Perinatal Risk Group | Risk leads and Matrons | As required | Reported at Maternity Governance and Quality and Safety Board |

## 5. Supporting References

**Guideline Development Methodology:**

Extensive literature searches were undertaken of the Cochrane, CINAHL, MEDLINE, and Embase databases. Few papers were identified of appropriate trials on which to base recommendations on management of emergencies. A review of up to date was also performed, which included systematic review of scar dehiscence/uterine rupture. (Few papers were identified of appropriate trials on which to base recommendations on management of emergencies.)
A textbook search was performed, and the following texts chosen to support recommendations:


- Dewhursts Textbook of Obstetrics and Gynaecology for Postgraduates, 5th edition (1995) ed. C Whitfield, Oxford: Blackwell
- Obstetrics (1989) eds. Sir Alex Turnbull, Geoffrey Chamberlain. Edinburgh: Churchill Livingstone
- Obstetrics and the Newborn 3rd Edition (1997) eds. NA Beischer, EV Mackay, PB Colditz
- Fundamentals of Obstetrics and Gynaecology 6th Edition (1998) Derek Llewellyn-Jones. London: Mosby

1. Leung AS, Leung EK, Paul RH. Uterine rupture after previous Caesarean section delivery: maternal and fetal consequences. *Am J Obstet Gynaecol* 1993; 169: 945-50

2. Dodd JM, Crowther CA. Elective repeat caesarean section versus induction of labour for women with a previous caesarean birth. *The Cochrane Database of Systematic Reviews* 2004, Issue 3. Art. No: CD004906. DOI: 10.1002/14651858.CD004906

3. Macones GA, Cahill A, Pare E et al. Obstetric outcomes in women with two prior caesarean deliveries: is vaginal birth after caesarean delivery a viable option? *Am J Obstet Gynecol* Apr 2005; 192 (4): 1223-8

4. Ravasia DJ, Wood SL, Pollard JK. Uterine rupture during induced trial of labour among women with previous caesarean section. *Am J Obstet Gynecol* Nov 2000; 183 (5): 1176-1179

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6. Manoharan M, Wuntakal R, Erskine K, Uterine rupture- a re-visit. *The Obstetrician and Gynaecologist. 2010* **12***:4:*223-230

7. *Hamar BD, Levine D, Katz NL, Lim KH Expectant management of uterine dehiscence in the second trimester of pregnancy Obstet Gynecol 2003* ***102*** *1139–42*

8. RCOG Green Top Guideline No. 45- *Birth After Caesarean Section*, October 2015

9. Guiliano M, Closset E, Therby D, LeGeoueff F, Deruelle P, Subtil D. Signs, Symptoms and Complications of complete and partial uterine ruptures during pregnancy and delivery. *Eur J Obstet Gynecol Reprod Biol* 2014; 179:130-4

10. Fitzpatrick KE, Kurinczuk JJ, Alfirevic Z, Spark P, Brocklehurst P, Knight M. Uterine Rupture by Intended Mode of Delivery in the UK: A National Case-Control Study. PLoS Med. 2012;9(3):

11. MBRRACE. Perinatal Confidential Enquiry: term, singleton, intrapartum stillbirth and intrapartum-related neonatal death. (2017)

## 6. Key Words

Hypertonus, Laparotomy, Maternal collapse, Terbutaline, Uterine Dehiscence, Uterine rupture

**The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.**
**As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.**

**EDI Statement**

We are fully committed to being an inclusive employer and oppose all forms of unlawful or unfair discrimination, bullying, harassment and victimisation.

It is our legal and moral duty to provide equity in employment and service delivery to all and to prevent and act upon any forms of discrimination to all people of protected characteristic: Age, Disability (physical, mental and long-term health conditions), Sex, Gender reassignment, Marriage and Civil Partnership, Sexual orientation, Pregnancy and Maternity, Race (including nationality, ethnicity and colour), Religion or Belief, and beyond.

We are also committed to the principles in respect of social deprivation and health inequalities.

Our aim is to create an environment where all staff are able to contribute, develop and progress based on their ability, competence and performance. We recognise that some staff may require specific initiatives and/or assistance to progress and develop within the organisation.

We are also committed to delivering services that ensure our patients are cared for, comfortable and as far as possible meet their individual needs.

| **DEVELOPMENT AND APPROVAL RECORD FOR THIS DOCUMENT** | |
|---|---|
| **Author:**<br>Gulafshana Khan - Locum Consultant Obstetrician | **Executive Lead**<br>Chief Medical Officer |
| **Reviewed by:** Miss K Moores – Consultant Obstetrician | |

**REVIEW RECORD**

| Date | Issue Number | Reviewed By | Description Of Changes (If Any) |
|---|---|---|---|
| December 2018 | V1 | G Khan and C Jones– Higher Speciality Doctor | |
| October 2021 | V2 | K Moores | High doses of misoprostol in parous women<br>& Malpresentation now included in intrapartum risk factors.<br>Specified which members of the MDT need to be notified when suspected uterine rupture occurs.<br>Re-formatted throughout |
| March 2025 | V3 | K Moores<br>R Baranikumar | Introduction updated to acknowledge failure to identify the clinical features of uterine rupture in four out of five women affected, leading to delays in care. An increasing rate of uterine rupture, and possible causes.<br>Added information in cases of ruptures of previous scars, key points in labour<br>Updated resuscitation section to include<br>Stop the oxytocin infusion if insitu<br>Pull the emergency buzzer and call the obstetric team<br>Early escalation to Obstetric and Anaesthetic Consultants if not already present.<br>Give facial oxygen<br>Continuously record maternal temperature, pulse, Blood pressure and CTG assessment of fetal well-being<br>Updated emergency laparotomy section to include; Ensure systematic review of the pelvis including the broad ligament and bladder which may have been damaged. Use of cell salvage from the onset of the procedure for effective blood conservation. |