Maternal Perinatal Watch
Uterine Rupture

The Clinical Excellence Commission's Patient Safety Directorate have developed the following summary from completed Maternal and Perinatal Serious Adverse Event Reviews (SAERS). A human factors thematic analysis of several recent SAERs uncovered common themes and learnings relating to uterine rupture. This thematic analysis was achieved by using a modified version of the Systems Engineering Initiative for Patient Safety (SEIPS).

All cases discussed in this publication are fictional. Any resemblance to incidents past or present is entirely co-incidental.

Uterine rupture

Uterine rupture is an obstetric emergency. It refers to the complete division of all three layers of the uterus. It is a rare but serious complication of pregnancy and can be a life-threatening obstetric emergency. It most commonly occurs during labour in women undergoing a Vaginal Birth after Caesarean Section (VBAC), however it can also occur in women who have not had a previous caesarean section (LSCS). In Australia, rates of uterine rupture in women attempting a VBAC are between 5 and 7 in 1000[1].

Risk factors:

May include one of more of the following:

- Previous caesarean birth
- Previous fundal or high vertical hysterotomy
- Previous uterine rupture or dehiscence
- VBAC undergoing induction of labour
- Previous caesarean birth with a reduced inter-birth (from birth to subsequent birth) interval < 18 months.

Signs and symptoms

May include some or all of the following:

- Fetal heart rate abnormalities - most commonly bradycardia or repetitive complicated variable decelerations
- Maternal abdominal pain, especially if persisting between contractions
- Acute onset of previous LSCS scar tenderness
- Vaginal bleeding
- Loss/ regression of the station of the presenting part of the fetus
- Haematuria
- Changes in contraction patterns (increased or decreased contractility, loss of uterine tone)
- Dizziness, nausea, vomiting and/or maternal haemodynamic instability (hypotension, tachycardia, or signs of shock).

Case study 1

At 2am, a woman at 39 weeks gestation presented to her local maternity service in spontaneous labour, planning for a VBAC. Two hours later, she experienced acute abdominal pain and fetal bradycardia. A category 1 LSCS was called, but there was a delay in expediting the birth as theatre and anaesthetic staff were not onsite after hours. The Consultant Obstetrician was advised of the woman's presentation at the time they were asked to attend for the LSCS.

During the LSCS, a uterine scar rupture was discovered, with the placenta and baby floating in the abdominal cavity. The baby was resuscitated but suffered severe hypoxic ischaemic encephalopathy (HIE) and sadly passed away.

It was later discovered that the woman had not been informed of her ongoing risks for uterine rupture or the facility's after-hours limitations, affecting her ability to make an informed choice about her mode and place of birth.

Informed decision making

Informed decision making in maternity care ensures all women receive and understand relevant and available information regarding care options, enabling her to choose the best options for her individual circumstances[4]. This includes her choice for place of birth. Making women aware of the facility / service

capability of their local maternity service and its limitations can assist with informed decision making.

Lesson – Ensure all women receive information during pregnancy about the service capability of their local service as per NSW Health Guideline Maternity and Neonatal Service Capability (GL2022_002) to support informed decision making around place of birth.

Consent

For women planning a VBAC, written consent is required[2]. Women must be provided with information throughout their pregnancy journey on all available options, risks, benefits and outcomes to enable them to provide informed consent[3]. Conversations with the woman around consent should be revisited as changes or new information arises during her pregnancy, labour, and birth.

Lesson – When obtaining valid consent for VBAC, the sharing of comprehensive information and ensuring high quality documentation occurs are essential components of good clinical care in support of a women's informed decision making.

Care planning and decision making

Effective collaborative care planning and decision-making that draws on the expertise of all members of the care team and includes the woman and her family is essential to ensure the safety and well-being of both the mother and the baby.

"Stop the clock" moments are a useful strategy to enable the clinical care team to pause, reflect and reassess the maternal and fetal condition as well as the current care plan. These moments enhance critical thinking, collaboration, and patient safety by facilitating informed, thoughtful decisions and early identification of existing, emerging, and cumulative risks and address any concerns raised by the woman.

Lesson – Ensure all necessary members of the care team, including the woman, are involved in the care planning and decision making.

Case study 2

At 41+6 weeks, a woman having her first baby underwent a planned induction of labour with Oxytocin® experienced increasing distress and pain despite an initially effective epidural. During labour she became tachycardic at 136 bpm (yellow zone), which was attributed to her pain and not escalated. Despite having her epidural re-sited, her pain persisted, and shortly thereafter, she progressed to a normal vaginal birth.

The baby unexpectedly required resuscitation and therapeutic cooling for HIE. On review of the cardiotocograph (CTG) afterwards, it was noted that there had been a gradually rising baseline, reduced variability, and an extended period of hyperstimulation prior to birth which had not been recognised. This was attributed to a loss of situational awareness and the teams focus on managing the woman's pain.

The woman was transferred to theatre for management of a postpartum haemorrhage (PPH) and was diagnosed with uterine rupture. A hysterectomy was required to control her bleeding.

Identifying and responding to deterioration

Uterine rupture may present with subtle changes to maternal and/or fetal condition. Signs such as a rising fetal heart rate (FHR) baseline and changes to FHR variability (reduced or absent), and maternal yellow zone observations such as heart rate 120-140bpm. Maternal reports of increasingly severe abdominal pain or atypical labour pain should raise clinical suspicion of possible uterine rupture.

Lesson – identifying, escalating, and responding to potential early warning signs of uterine rupture is essential in minimising the risks of significant maternal and / or fetal morbidity.

Maintaining situational awareness

Maintaining situational awareness throughout the course of labour and birth is crucial as it helps individuals and teams to quickly identify and respond to any changes or complications. Safety Huddles can be helpful in promoting shared situational awareness.

Lesson – Maintaining situational awareness and a human factors-based approach to care can improve care planning, decision making and improved clinical outcomes.

Anchoring and diagnostic error

Be aware of diagnostic anchoring (fixed to a single diagnosis). Listen to, consider, and act on the concerns of the mother and other clinicians. Ensure regular comprehensive assessment occurs during labour, taking into consideration the full clinical picture. Be willing to consider other diagnoses as new information arises.

It is important that clinicians are aware that the rarity of uterine rupture might lead to underestimating its likelihood, resulting in a diagnostic error. Therefore, it is critical that clinicians maintain a high level of suspicion, especially in women with a higher risk.

Lesson – Keep an open mind and carefully consider the full clinical situation, the concerns of others and all new information as is arises, to determine if there has been a change in the maternal or fetal condition.

Case study 3

A woman at 36+2 weeks gestation was admitted to the antenatal ward following spontaneous rupture of membranes. She had a history of a previous LSCS, and she was planning for a VBAC. During the afternoon, she reported left-sided abdominal pain and following midwifery assessment was administered paracetamol. Due to concerns raised by the woman around worsening and ongoing pain, two clinical reviews were attended by two different obstetric residents with no escalation to a more senior obstetric clinician. Her pain was managed with repeated doses of oxycodone.

Early the next morning following a third clinical review regarding the woman's pain, a prolonged fetal bradycardia was identified, resulting in an emergency LSCS. The baby required extensive resuscitation and transfer to higher level care. At LSCS, a uterine rupture and undiagnosed placenta accreta were found.

The incident review highlighted a lack of senior obstetric oversight and poor communication. The woman felt her concerns regarding pain were ignored, and post-birth debriefing was rushed and conducted by clinicians that were unfamiliar to her.

Senior obstetric oversight

For woman with identified risk factors for uterine rupture, early involvement of senior obstetric clinicians and their oversight of a woman's antenatal and intrapartum care is vital to support informed decision-making and care planning. The involvement of senior obstetric clinicians during labour and birth provides an opportunity for leadership and mentoring and can also support teams to maintain situational awareness.

Lesson – Ensure a senior obstetrician is involved early to support informed decision-making and care planning for women with risk factors for intrapartum complications.

Communication and the environment

Awareness of the environment/ location of the woman and the impact this may have on the care team's ability to communicate with clarity and timeliness is essential for improving situational awareness, reducing the chance of errors, enhancing patient safety, and ultimately improving maternal and fetal outcomes.

Including women and their families in the care teams communications empowers informed decision making, ensures the woman's concerns are addressed, builds trust, and improves patient satisfaction and outcomes.

Lesson – Ensure clear and timely communication between all members of the healthcare team, including women and their families, especially during handovers and critical situations.

Debriefing

Consider the time and place when undertaking a debriefing session. Opportunities for debriefing with the family should be facilitated at a time, place and duration that suits the family's needs and circumstances, whilst also maintaining privacy and confidentiality. All efforts should be made to ensure continuity of carer is provided for debriefing conversations to enhance psychological safety and trust.

Where the baby and family have been transferred to another facility for ongoing care, telehealth should be utilised to facilitate this. Family support should be provided by on site, local facility clinicians.

Lesson – Family debriefing should be facilitated at a time and place that suits the family's needs and circumstances, whilst maintaining continuity of carer where possible.

NSW Health resources

- Connecting, Listening and Responding: A Blueprint for Action – Maternity Care in NSW IB2023_006
- Guideline – Maternity and Neonatal Service Capability GL2022_002
- Guideline – Supporting Women in their next Birth After Caesarean Section (NBAC) GL2014_004
- Maternal and neonatal service capability fact sheets
- Policy Directive – Clinical Handover PD2019_020
- Policy Directive - Recognition and management of patients who are deteriorating PD2020_018

CEC resources

- Clinical Handover
- Diagnostic Error
- Perinatal Safety Education
- Safety Huddles
- Safety Fundamentals for Person Centred Communication
- Safety and Quality in Action Podcast Series - Preventing Harm from Diagnostic Error

We value your feedback. If you have any questions or comments about this publication, please email: CEC-PatientSafety@health.nsw.gov.au

References

1. Australian Institute of Health and Welfare (AIHW), National Core Maternity Indicators - Women having their second birth vaginally whose first birth was by caesarean section, [Web report]. Australian Institute of Health and Welfare, Canberra. Available at: https://www.aihw.gov.au/reports/mothers-babies/national-core-maternity-indicators/contents/labour-birth/b6#clinical_commentary_vbac
2. New South Wales Health, Consent requirements for pregnancy and birth, New South Wales Ministry of Health, Sydney. Available at: https://www.health.nsw.gov.au/kidsfamilies/MCFhealth/maternity/Pages/consent-req-pregnancy-birth.aspx
3. New South Wales Health, 2020, Consent to Medical and Healthcare Treatment Manual, New South Wales Ministry of Health, Sydney. Available at: https://www.health.nsw.gov.au/policies/manuals/Pages/consent-manual.aspx
4. New South Wales Health, 2023. Connecting, Listening and Responding: A Blueprint for Action – Maternity Care in NSW, New South Wales Ministry of Health, Sydney. Available at: https://www1.health.nsw.gov.au/pds/Pages/doc.aspx?dn=IB2023_006