

Mitigating the Risk of Obstetrical Emergencies: Learning Through Case Studies

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Management of obstetrical (OB) emergencies, including fetal distress, shoulder dystocia, uterine rupture, and post-partum hemorrhages require a collaborative labor and delivery team, standardized processes that are regularly reviewed and practiced, and open lines of communication between nursing staff and the OB providers. A collaborative culture can be influenced and enhanced by conducting culture of safety surveys, and by developing a teamwork model which reviews and develops evidence-based processes.

A review of ten years of closed OB claims data reveals several trends, as noted below. Multiple case studies with associated risk mitigation strategies are included, and pertinent industry resources are noted at the end of this publication.

OB-Related Claims Data

- Delays in treating fetal distress and the management of difficulties encountered during vaginal deliveries contribute to half of the inpatient OB-related claim volume.
- Three-fourths of these OB-related claims result in a clinically severe patient injury to the baby or to the mother.
- Birth asphyxia and brachial plexus injuries are most commonly noted in the fetal claims, while maternal hemorrhage tops the list of post-partum injuries.
- The average indemnity paid per inpatient OB-related claim is 75% higher than the average indemnity payment of all inpatient claims.
- OB emergencies most often involve several risk issues, including errors in clinical judgment, such as failure to recognize a slowly evolving situation, misinterpretation of fetal monitoring strips, mismanagement of shoulder dystocia, and delayed response to post-partum changes.
- OB emergencies often arise over weekends, holidays and nighttime shifts - times when a full staff might not be otherwise as readily available. Combine the expectation for routine deliveries with the infrequently occurring scenarios, and the situation is ripe for error.
- Inadequate communications and failed teamwork between nursing and physician staff members are common, resulting in missed opportunities to respond earlier to emergencies.

Case Scenarios & Risk Strategies



Case #1: Delay in Recognizing Significance of Fetal Distress and Evolving Uterine Rupture Leads to Irreversible Injury

A 29-year old G2P1 who had delivered her first baby via cesarean section (C-section) presented to the hospital at 40 weeks for induction and a trial of labor after cesarean (TOLAC). Two hours after induction with oxytocin, the membranes were ruptured at 07:50.

- 13:20: RN-A documented the fetal heart rate (FHR) to be 140.
- 14:56: OB-A noted FHR had decreased to 110.
- 14:57: FHR 100
- 15:01: FHR recovered to baseline of 140's with 5 ½ min decelerations to 95-100; documentation reflects that OB-A was made aware by the nursing staff, and that no new orders were received.
- 19:00: Change of shift; RN-B now responsible for the patient. During bedside report, decelerations were noted and the oxytocin was discontinued. RN-B called OB-B (OB-A had left the facility) to inform her that the patient was dilated at 9 centimeters with variable decelerations. OB-B said she would come to the hospital after she was finished seeing her office patients, and did not issue any additional orders.
- 19:20: Patient began to have left-sided pain despite a spinal epidural, and was re-dosed by the anesthesiologist.
- 19:30: RN-B called the hospital's in-house OB (OB-C) to report that a FHR could not be identified. OB-C came immediately to see the patient, reviewed the strips, and noted that the cervix was 6 to 7 centimeters dilated with a vertex at -2 to -3 station with moderate bleeding. The fact that dilatation was now less than it had been earlier suggested that the uterus had ruptured. OB-C called for an emergent C-section, and the operating room and team were readied.
- 19:37: OB-B arrived and assumed care.
- 19:53: A male infant was delivered and was noted to have significantly depressed APGAR scores of 1, 4 and 4. The baby was also acidotic with a venous PH of 6.76 and an arterial blood gas of 6.68. The baby was immediately transferred to the neonatal intensive care unit (NICU) and thereafter was transferred to another facility to receive hypothermia therapy in an attempt to minimize damage from hypoxic-ischemic encephalopathy.

During a review of the event, and with the benefit of hindsight, OB-A was criticized for leaving the hospital and not monitoring a TOLAC pt more closely (he failed to maintain close communications with the nursing staff). RN-B was criticized for not conveying any sense of urgency when she called OB-B at 1900 to report repeated decelerations.

The baby was diagnosed with cerebral palsy, profound cognitive impairment, seizures, and blindness.

Case resolution: settlement.

Risk Issues:

- Clinical judgment: inadequate assessment by the patient's managing OB as to the appropriateness of TOLAC; failure to appreciate/reconcile significance of FHR tracings; mismanagement of labor in a TOLAC patient; inadequate patient monitoring;
- Communication: during shift change/transition of care, the significance of the earlier decelerations at 14:56 & 14:57 was not noted; failure of nursing staff to utilize the chain of command process to escalate concerns during the 19:00 call to the on-call OB-B.
- Informed consent: failure of the patient's managing OB to obtain/document the patient's informed consent for TOLAC and birth method options;

Risk Mitigation Strategies:

- Implement and adhere to a process for close and continuous monitoring for TOLAC patients (use of [ACOG's Practice Bulletin #205](#) is recommended), and ensure that a physician who is credentialed to perform emergency operative delivery is immediately available throughout active labor.
- Ensure prompt communication of significant FHR findings and changes in a patient's condition to the responsible OB provider.
- Obstetrical safety drills and/or simulation-based training should be conducted regularly to prepare staff for the occurrence of high acuity, low frequency emergent events such as uterine rupture.
- Clearly define OB-related emergency response protocols and conduct simulation drills.
- Develop and implement a maternal early warning signs protocol with defined clinical triggers.
- Utilize a standardized oxytocin protocol and pre-administration checklist.
- Standardize handoff communication processes.



Case #2: Failure to Report Signs of Fetal Distress Leads to Hypoxic Encephalopathy

A 21-year old G1P0 presented to the hospital at 41 weeks in labor on a weekend evening. During the evening, the FHR had been reassuring until after midnight. Then, between 0158 and 0313, there were 12 observed late decelerations. The OB was not notified by the nursing staff. Later, the RN admitted her failure to call the OB to report these decelerations, and her failure to even document the late decelerations. Later, upon review,

an OB expert opined that between 0230 and 0700 the strips revealed a Category 3 reading, and were clearly getting worse.

- 0227: OB was at the bedside, and indicated that the strips were “ok” at that time. There is no documentation in the chart to support whether or not she reviewed the previous strips where late decelerations were noted. The OB then left hospital.
- 0800: OB returned to the hospital but didn’t review any strips after those from around 0230. (Later, experts indicated that when the OB arrived at 0800 she was obligated to review all the strips from the overnight hours.)
- 0847: Membranes were ruptured by the RN. Heavy meconium was noted but was not reported to the OB.
- 1013: RN notified the OB of concerning FHR strip readings.
- 1028: OB called for C-section.
- 1033: A female infant was delivered, with APGAR scores at 0, 4, and 5. The baby, covered with meconium, was sent to the NICU and shortly thereafter was transferred to another facility.

The baby was born with a very low hemoglobin/hematocrit (representing a possible maternal/fetal bleed, but no testing was done. If there was in fact a bleed, experts opined that it was probably a late event, which may have been averted with an earlier delivery.). The baby was diagnosed with hypoxic encephalopathy and cerebral palsy, and has severe mobility/cognitive deficits.

Case resolution: settlement.

Risk Issues:

- Clinical judgment: failure to appreciate/reconcile significance of FHR tracings; misinterpretation of diagnostic studies; mismanagement of laboring patient;
- Clinical environment/setting: weekend and night shift;
- Communication: failure of nursing staff to notify OB of critical changes in the FHR tracings during the overnight hours;
- Documentation: failure to document late decelerations.

Risk Mitigation Strategies:

- OB personnel (providers & nursing staff) should receive shared continuing education that uses the standardized, descriptive terms of the National Institute of Child Health and Human Development (NICHD) to communicate and document FHR characteristics. Staff and providers must be competent in FHR reading, interpretation, documentation and communication.
- Review and document all FHR monitoring findings and any measures taken to address them.

- Ensure prompt communication of significant findings of FHR and changes in a patient's condition to the responsible OB provider.
- The OB provider should promptly evaluate the fetal status in the event of a Category III FHR tracing and promptly take measures to resolve the FHR pattern.
- Implement simulation and team training, and include providers (e.g., TeamSTEPPS; see Resources section below).
- Establish and adhere to chain of command expectations.



Case #3: Improper Performance of Vaginal Delivery Results in Brachial Plexus Injury

The patient was admitted at 36 weeks with irregular contractions. Throughout her pregnancy, she had uncontrolled gestational diabetes and was non-compliant with her diet and medications. She had a history of pulmonary emboli and was on anticoagulants.

- 1800: Admitted with spontaneous rupture of membranes and irregular contractions.
- 2245: Examined by OB-A who documented that labor was progressing 'nicely.'
- 2300: Recheck with no concerns noted.
- 0110: Nursing staff called OB-A, indicating that the patient was fully dilated, but too exhausted to push. OB-A arrived and called for OB-B to assist with the delivery.

OB-A used a low vacuum one time; shoulder dystocia was encountered. Nursing staff performed the McRobert's maneuver, and OB-B applied suprapubic pressure and performed an episiotomy. During a subsequent review of the delivery, OB-A mentioned a tight nuchal cord which he clamped and cut (but didn't document in the record). The FHR record revealed that there were significant decelerations on fetal monitoring strips prior to delivery, but there was no documentation in the chart by either the nursing staff or OBs to reflect that these decelerations were noted/appreciated.

At 0228, a Woods corkscrew maneuver was performed and the baby was delivered, weighing 7 pounds; APGAR scores were 3, 8. The mother later alleged that a C-section should have been performed, but OB-A asserted that he did not consider this to be a delivery option because of the risk of maternal hemorrhage due to anticoagulation medications, and that there was no clinical indication for a C-section.

Subsequent pediatrician notes in the chart indicated that delivery had been complicated by cord prolapse and perinatal asphyxia, but there was no documentation of these findings elsewhere in the chart. Post-delivery nursing documentation indicate bruising on the baby's neck; OB-A attributed this bruising to the clamping and cutting of the tight nuchal cord while shoulder dystocia was present.

The infant was diagnosed with a significant left brachial plexus injury, and subsequently underwent surgery to release a left elbow flexion contracture and was referred for physical therapy.

Case resolution: settlement.

Risk Issues:

- Clinical environment/setting: night shift/weekend;
- Clinical judgment: misinterpretation of diagnostic studies;
- Documentation: insufficient documentation of the events occurring during labor, including the significant decelerations on the FHR strips;
- Technical performance of delivery.

Risk Mitigation Strategies:

- OB personnel (providers & nursing staff) should receive shared continuing education and training on emergency measures and protocols to follow for the treatment of shoulder dystocia, and use of forceps or vacuum application.
- Obstetrical safety drills and/or simulation-based training should be conducted regularly to prepare staff for the occurrence of high acuity, low frequency emergent events, such as shoulder dystocia.
- Review and document all FHR monitoring findings and any measures taken to address them.
- The OB provider's documentation in the chart should include details of the events that occurred during labor & delivery.
- Review provider credentialing to ensure that residency or other post-graduate training support the use of vacuum-assisted deliveries.
- Standardize how shoulder dystocia events are documented in the chart; consider development of a template.



Case #4: Inadequate Post-Operative Assessment Leads to Maternal Death

A 43-year old G5P4 presented at 35 weeks in labor, under the care of her family physician. She was admitted, and the fetus was found to be in breech position. An OB and an OB resident attempted to reposition the baby but bradycardia was noted and an emergent C-section was ordered. The patient's family physician and a family medicine resident performed the C-section delivery. Estimated blood loss was 1500ccs. The mother's heart rate increased, and the OB was called in to verify no further bleeding, and then the surgical incision was closed.

After closure, the patient's blood pressure dropped, but was stabilized, only to drop again while still in the operating room. The CRNA who had been present during the C-section

ordered two units of packed red blood cells. The patient was taken to recovery with the transfusion in progress. Her blood pressure and heart rate dropped soon after arriving in the recovery area. The CRNA was called by the nursing staff, but gave no new orders, except to ask that the family physician be called. The family physician was called several times by the nursing staff without response, and was then paged. He arrived 15 minutes later after the page was sent.

The patient became unresponsive. A code was called but the patient was unable to be revived. The OB and the family physician both thought that the patient had suffered an amniotic fluid embolism; the CRNA opined that it was a hemorrhage. An autopsy revealed hemorrhagic shock due to an obstetrical hemorrhage which originated in, or was adjacent to, the left side of the uterus, due to intraoperative complications of an emergency C- section.

Case resolution: settlement.

Risk Issues:

- Clinical environment/setting: night shift;
- Clinical judgment: inadequate patient assessment; failure of the CRNA to quickly appreciate/reconcile significance of variation in blood pressure readings;
- Communication: failure to establish clear lines of responsibility among the providers; delay in contacting/reaching attending physician.

Risk Mitigation Strategies:

- Obstetrical safety drills and/or simulation-based training should be conducted regularly to prepare staff for the occurrence of high acuity, low frequency emergent events, such as postpartum hemorrhage.
- Implement a massive transfusion protocol (MTP)/[obstetric hemorrhage patient safety bundle](#) based on industry best practices.
- Ensure prompt communication of significant assessment findings and changes in a patient's condition to the responsible OB provider.
- Ensure that the provider responsible for ongoing management of the patient is clearly identified and communicated to the healthcare team.



Case #5: Lack of Massive Hemorrhage Protocol Resulted in Significant Maternal Injuries

A 34-year old presented to a rural hospital via ambulance over a holiday weekend with vaginal bleeding (estimated blood loss upon arrival was 2 liters). She was at 31 weeks, and had a history of four previous miscarriages, including one due to placental abruption several years earlier. She had previously delivered one healthy baby at 37 weeks via C-section.

An emergent C-section was initiated by the on-staff emergency physician who was then joined by the OB. Placenta previa was diagnosed (serial ultrasounds performed during pregnancy had failed to reveal a low-lying placenta), and bleeding was thought to be controlled post-operatively. The viable infant was transferred to a larger facility immediately after birth.

Within an hour of surgery, around 0130 and after the OB had left the hospital, the mother's hemoglobin dropped to 2.8, despite having received several transfusions. The emergency physician and hospitalist treated her with fluid resuscitation and blood replacement, and documented disseminated intravascular coagulation. The OB was not called until the patient coded several hours later at 0630.

The patient was transferred to a larger facility where she underwent numerous surgeries and massive blood replacement. She had a stormy hospital course resulting in renal failure and extensive loss of bowel due to surgeries.

The rural hospital was criticized for not having an established massive hemorrhage protocol.

Case resolution: settlement.

Risk Issues:

- Administrative: lack of policy/protocol for massive hemorrhages;
- Clinical environment/setting: weekend/holiday/night shift;
- Clinical judgment: management of pregnancy (OB was criticized for not referring the patient to a high-risk OB during pregnancy); failure/delay of the emergency physician and hospitalist to obtain immediate consult/referral;
- Communication: failure to communicate immediately with the OB when patient's condition deteriorated.

Risk Mitigation Strategies:

- Implement a massive transfusion protocol (MTP)/[obstetric hemorrhage patient safety bundle](#) based on industry best practices.
- Obstetrical safety drills and/or simulation-based training should be conducted regularly to prepare staff for the occurrence of high acuity, low frequency emergent events, such as postpartum hemorrhage.
- Assess patients who are at high-risk for placenta previa and transfer patient to an appropriate level of care for delivery if placenta previa is suspected.
- Ensure prompt communication of significant assessment findings and changes in a patient's condition to the responsible OB provider.
- Establish and adhere to chain of command expectations.

Additional Focus: Use of Midwives

Midwives are noted in approximately 4% of all OB-related allegations. Midwifery claims primarily involve the management of complications during vaginal deliveries and delays in responding to/treating fetal distress. In addition, while three-fourths of all OB claims result in a clinically severe injury, 85% of midwifery-involved claims are of high clinical severity.



Case #6: Inadequate Management of Evolving Fetal Distress Leads to Death of Infant

The patient (G1P0) was admitted to the rural hospital's labor unit by the nurse midwife for induction of labor. An OB was available offsite for consultation. The hospital's protocol allowed for remote monitoring by the midwife who left the hospital after the membranes were ruptured.

Baseline fetal heart rate readings were 130-140 with accelerations present. Over the course of labor, short-term variability (STV) was noted; over time, there was long-term variability (LTV) with a variance of 5-25 beats per minute.

- 1700: Magnesium sulfate drip was started for treatment of pregnancy-induced hypertension and pre-eclampsia (this medication can cause respiratory depression in newborns).
- 0211: 2 doses of misoprostol were administered to ripen the cervix.
- 0415: Oxytocin was initiated.
- 1223: An intrauterine pressure catheter was inserted when cervical ripening had progressed only to 2-3 cm.
- 1430: 1st deceleration noted. Subsequent expert review indicated that labor had stalled; there was no progress in cervical dilatation from 1430 to 1730 despite regular, strong contractions. The fetal heart rate wasn't reassuring between 1430 and 1730, and the presence of consistent, repeated decelerations should have been a concern especially when LTV & STV were severely diminished or absent.
- 1569: Placement of fetal scalp electrode; decelerations continued.
- 1724: Mother requested C-section due to exhaustion. Nursing staff contacted the midwife at home. The midwife noted early decelerations and contacted the OB to discuss. A joint decision was made to continue oxytocin for one more hour, and then to proceed with a C-section if no progress.
- 1731: Epidural was re-bolused. The 1st prolonged deceleration occurred (to 100 over 60 seconds). Nursing staff discontinued the oxytocin, and administered oxygen and an IV bolus. The midwife told the nursing staff to prep the patient for a C-section and to notify the OB. The midwife then left for the hospital (had been monitoring labor progression remotely, which was allowed under hospital protocol).
- 1745: OB was notified of continuing decelerations and he left for the hospital.
- 1812: Mother was transported to the operating room.

- 1826: Female infant delivered by the OB (nuchal cord x1 noted).

A code was called upon delivery, but ultimately the baby died several days later of hypoxic encephalopathy. Subsequent review of the event revealed several criticisms of the code process:

- Medication administration guidelines for CPR were not available for reference on the infant warmer;
- Absence of 1:1000 epinephrine vials;
- Delay encountered in placing an umbilical venous catheter;
- Ineffective infant chest compressions and ventilations even after intubation;
- 14 minute delay in administering resuscitative medications;
- No nursing documentation in the chart of the late decelerations other than the alerts from the fetal heart monitoring system.

Case resolution: settlement.

Risk Issues:

- Administrative: inadequate staff training/education related to the code process;
- Clinical judgment: misinterpretation of diagnostic studies; mismanagement of labor; midwife's choice to continue monitoring remotely rather than in person at the hospital;
- Clinical systems: lack of availability of medications;
- Documentation: lack of documentation of clinical findings;
- Technical performance: poor technique during resuscitation.

Risk Mitigation Strategies:

- Conduct ongoing training and education on neonatal resuscitation and ensure that appropriate emergency medications and equipment are readily available to providers and staff.
- Obstetrical and neonatal safety drills and/or simulation-based training should be conducted regularly to prepare staff for the occurrence of high acuity, low frequency emergent events, such as neonatal resuscitation.
- Review and document all FHR monitoring findings and any measures taken to address them.
- Ensure prompt communication of significant findings of FHR and changes in a patient's condition to the responsible OB provider.
- Perform close and continuous monitoring for patients receiving epidural anesthesia and/or oxytocin, and ensure that a physician credentialed to perform emergency operative delivery is readily available throughout active labor.

Resources

- **Agency for Healthcare Research and Quality (AHRQ):**
 - [TeamSTEPPS](#)
 - [Toolkit for Improving Perinatal Safety](#)
- **American College of Obstetricians and Gynecologists (ACOG) Practice Bulletins:**
 - #106: Intrapartum FHR Monitoring: Nomenclature, Interpretation, and General Management Principles (Obstet Gynecol 2009;114:192-202); (Reaffirmed 2019)
 - #178: Shoulder Dystocia (Obstet Gynecol 2017;129:e123-33); (Reaffirmed 2019)
 - #183: Postpartum Hemorrhage (Obstet Gynecol 2017;130:e168-86); (Reaffirmed 2019)
 - #205: Vaginal Birth After Cesarean Delivery (Obstet Gynecol 2019;133:e110-27); (Interim Update)
- **American College of Obstetricians and Gynecologists - other resources:**
 - [Obstetric Hemorrhage Bundle](#)
 - [Preparing for Clinical Emergencies in Obstetrics and Gynecology](#)
- **CRICO Strategies:**
 - [OB Guidelines](#)
- **Council on Patient Safety in Women's Health Care:**
 - [Maternal Patient Safety Bundles](#)
- **Other industry resources:**
 - [In-situ Interprofessional Perinatal Drills](#): Greer J A, Haischer-Rollo G, Delorey D, et al. (February 19, 2019) In-situ Interprofessional Perinatal Drills: The Impact of a Structured Debrief on Maximizing Training While Sensing Patient Safety Threats. Cureus 11(2): e4096. doi:10.7759/cureus.4096
 - [Implementing Obstetric Early Warning Systems](#): Friedman AM, Campbell ML, Kline CR, Wiesner S, D'Alton ME, Shields LE. Implementing Obstetric Early Warning Systems. AJP Rep. 2018;8(2):e79-e84. doi:10.1055/s-0038-1641569

Data Source

MedPro Group closed claims data, 2008-2017

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