



# Emergency Cesarean Delivery in the Labor and Delivery Room

by Gracelia A Scott, CST

This article addresses a new procedure for handling Cesarean deliveries performed in the Labor and Delivery Room (LDR) under extreme circumstances, eg, the mother is dying or has died.

## INTRODUCTION

The origin of the term Cesarean has been thought to come from the birth of Julius Caesar. It is unlikely however, as his mother, Aurelia Cotta, lived for many years afterwards. It is more likely that the term originated from “Caesar’s Law,” which states that if a pregnant woman is clearly dead, the fetus should be cut out of her in an attempt to save it. Cesarean deliveries have been recorded in history for many centuries. Surgical removal of a baby from a dead or dying mother has been documented as far back as ancient Egyptian times. In these ancient times, if the mother-to-be was dying or had just died, Cesarean delivery was an attempt to rescue the fetus/neonate.

In the early 1900s, Cesarean delivery became more widely accepted, even though there were also other options, such as forceps and vaginal breech delivery. By the 1960s, the maternal mortality rate secondary to Cesarean delivery in severe emergencies, such as fetal bradycardia, shoulder dystocia, and cardiac arrest, was nearly zero because of major advances in anesthesiology and better methods of controlling hemorrhage.

Notwithstanding medical advances, the need for saving the

## LEARNING OBJECTIVES

- ▲ Review the relevant anatomy for this procedure
- ▲ Examine the set-up and surgical positioning for this procedure
- ▲ Compare and contrast the different types of breech birth
- ▲ Assess the needs of the surgical team for this type of procedure
- ▲ Evaluate the inherent dangers of Cesarean section births





**Figure 1. Successful Cesarean section performed by indigenous healers in Kahura, Uganda. As observed by RW Felkin in 1879.**

neonate when a mother is dying is great, and can happen in an instant and in a labor and delivery room (LDR) setting. Sometimes, the delivery must be performed immediately after maternal death. A Cesarean delivery in the LDR is the delivery of a neonate by means of an incision into the uterus in a life-threatening emergency. Every surgical technologist who works in labor and delivery needs to be prepared for any and all emergencies.

Despite the advances in medicine and the ability to respond to LDR emergencies, mortality still remains. Since anesthesia was first used in Cesarean deliveries in 1847, the likelihood of fetal or maternal death has played an important role in deciding whether the procedure is necessary. In a true LDR emergency, the goal is to deliver the neonate as quickly as possible.

#### **LDR CESAREAN DELIVERY REQUIREMENTS**

In an LDR Cesarean Section the hospital staff may include, but is not limited to:

- The attending obstetrician
- Charge nurse or (nurse team leader)
- Anesthesiologist
- Resident on call
- Physician assistant (PA) on call
- In-house obstetric attending physician
- Patient's primary nurse
- Circulating nurse

- Scrub person (ST, RN, LPN with best skills)
- Neonatal team
- Blood bank

New York Hospital Medical Center of Queens (NYHQ), where this author works, has developed a Code Blue cart that is equipped with the following supplies, required for Cesarean deliveries in the LDR:

- Betadine solution
- Disposable scalpels (2)
- Cesarean delivery tray tally sheets
- Blades: #10 (1), and #20 (1)
- PBDS Latex-Free Labor and Delivery Module, Cesarean delivery
- Laparotomy pads (40)
- ABG kits (5)
- Placenta bucket
- Sandbag
- OR Gowns (2)
- OR bonnets, caps
- OR boots
- Masks
- Goggles
- Gloves: 7.0 latex-free (2), and 7.5 latex-free (2)
- 3/4 sheets for table (2)
- Receptacle for lap count
- Sutures: 1.0 Polyglactin 910 (2), and 1.0 Chromic (2)
- Light handle (1)
- Bovie grounding pads (2)
- Bovie pencil (2)
- 3000 cc suction set-up for surgery
- Stapler
- Foley catheter kit
- 10 cc syringe
- Suction tubing

These supplies are kept in a locked (breakaway lock), designated Code Blue cart on the labor and delivery floor, and it is brought into the LDR immediately, along with the neonatal box and anesthesia box, at the time of emergency. These boxes contain all the supplies needed to resuscitate and support the fetus and mother. The Code Blue cart is checked and signed off once each shift (7:00 am to 3:00 pm; 3:00 pm to 11:00 pm; and 11:00 pm to 7:00 am) to ensure that it is always fully stocked and ready for emergencies.

#### **CODE BLUE PROCEDURE AT NYHQ**

Once the team leader (a physician or member of the nursing staff) decides to call an emergency Cesarean delivery in the



Figure 2. The anesthesia cart at NYHQ.



## VAGINAL BREECH BIRTH

While Cesarean section remains the most common way to deliver a breech baby in most First World countries, some infants are still delivered by a breech birth. In the breech presentation, the baby enters the birth canal with the buttocks or feet first as opposed to the normal head-first presentation.

According to the American Pregnancy Association, breech births occur in about one of 25 full-term births. When labor is premature, the incidence of breech presentation is higher. Instances of breech birth are also higher with multiple fetuses (twins, triplets, etc.); abnormal volume of amniotic fluid; fetal abnormalities; uterine abnormalities and in mothers who have undergone a prior Cesarean section.

### THERE ARE FOUR CATEGORIES OF BREECH BIRTHS:

- Frank breech—the neonate's bottom comes first, and his or her legs are flexed at the hip and extended at the knees with feet near the ears. Between 65-70 percent of breech babies are in the frank breech position.
- Complete breech—the neonate's hips and knees are flexed so that it is sitting cross-legged with feet beside the bottom
- Footling breech—one or both feet come first, with the bottom at a higher position. This is rare at term, but relatively common with premature fetuses.
- Kneeling breech—the neonate is in a kneeling position, with one or both legs extended at the hips and flexed at the knees. This is extremely rare and is excluded from many classifications.

Risks to a breech birth include umbilical cord prolapse, head entrapment and injury to the brain and skull. In both umbilical cord prolapse and head entrapment, oxygen deprivation is a major concern. Brain and skull injuries are more likely in preterm births. The rapid passage of the fetus's head through the mother's pelvis causes rapid decompression of the head, which may injure the brain. In contrast, a fetus delivered in the head-down position usually experiences gradual molding of the skull over the course of a few hours.

The potential injuries that may be sustained during a breech birth may also occur during Cesarean birth, though rare. A Cesarean birth is still a breech birth; however, the soft tissues of the uterus and abdominal wall are more forgiving than the hard, bony ring of the pelvis.

LDR (Code Blue), the patient's primary nurse must communicate the decision to the nurse team leader. The nurse team leader will immediately activate the Code Blue. The alarm is heard throughout the hospital, as well as in all LDR's and operating rooms. The entire hospital knows that the labor and delivery unit needs help. The charge nurse and the hospital support team from other floors arrive at labor and delivery as quickly as possible. The nurse team leader will then assign duties to designated nursing staff. At this time, the operating room should be opened so abdominal closure can occur in a more sterile and controlled environment.

The role of the surgical technologist is critical in managing the situation. He or she arrives at the LDR as fast as possible with OR gowns and gloves in hand. Upon arrival, the surgical technologist asks for the name of the team leader who is assigned to the Code Blue. The surgical technologist identifies him/herself as such. As other members of the medical staff arrive, they will give their names and titles to the nurse recorder. The team leader will direct a staff member (nurse, surgical technologist or nurse's aide) to bring the Code Blue cart into the LDR, open the Code Blue cart, and take out the instruments for the surgical technologist. The surgical technologist finds a table or any available space to set up the instruments. At the same time, the team leader gives the surgical technologist the situation, background and assessment recommendation (SBAR) report, history and physical (H&P) and the history of events preceding the Code.

The following staff, minimally, must be present in the LDR during a Code Blue:

- Team leader
- Anesthesiologist
- Resident (most experienced)
- Nurse recorder or patient's primary nurse
- Code Blue/CAT RN (bedside nurse)
- Medication nurse
- Nurse manager
- Assistant nurse manager/charge nurse
- Runner
- Neonatal team

The runner is placed in charge of obtaining additional supplies needed for the emergency (*ie*, STAT ECG machine, etc). The runner will transport and pick up blood products from the blood bank, as well as deliver all specimens to the laboratory. Only the team leader directs the runner.

The nurse recorder documents the initial basic life support (BLS), vital signs, assessment, medications, procedures



Figure 3. Cesarean section “Code Blue” cart at NYHQ

and tests performed. The nurse must also record times of event and activities of Code Blue/Response Code, recording as each team member arrives. He or she will always ask names of personnel in attendance, and will fill out a debriefing form.

### SURGICAL OVERVIEW

In a Code Blue, the sandbag, or bolster, is not positioned under the patient’s right hip. No safety strap is secured and, because the patient is in the LDR, the Foley catheter is already in place along with the blood pressure cuff. There is no skin preparation but, if time permits, Betadine solution is poured directly on the patient’s skin, mid-chest to pubic

area. The Cesarean delivery drape is placed. A #10 blade is used to incise the skin via a midline vertical incision down to the level of fascia. The fascia is incised at the midline and carried laterally on both sides using Mayo scissors. The posterior fascia is bluntly dissected from the rectus abdominis muscle and secured with two Kocher clamps. Sharp dissection of the aponeurosis is accomplished superiorly to near the umbilicus and inferiorly to the symphysis pubis using Mayo scissors. The peritoneal cavity is entered atraumatically. No bladder flap is created. A bladder blade is placed over the bladder. A transverse incision is made in the lower uterine segment and carried bilaterally with Lister bandage scissors. The #10 blade is the only knife used. The surgical



Figure 4. The neonatal box at NYHQ.

technologist should be moving as quickly as possible and must always know where the blade is. All sharp and metal objects should be removed from the field, if possible, before the delivery.

## DELIVERY

The head is delivered first by flexing and elevating the fetal head. The umbilical cord is clamped with two small Kelly clamps and then cut with Lister bandage scissors. The neonate is then passed to the awaiting neonatal team. The Bovie can then be brought in for use. Warm Lactated Ringers solution and sterile water are also brought into the room at this time.

While the neonate is being taken care of, the surgical technologist prepares to move the patient. The attending physician makes the decision on when to move the patient from the LDR to the operating room (which should already be open) for the closure of the patient's abdominal wound. There should already be two #1 Polyglactin 910 CTX and two # 1 chromic sutures stocked in the Code Blue cart for use in the LDR.

## CONCLUSION

Throughout the twentieth century, there have been many improvements in labor and delivery. Although the maternal mortality rate has decreased in the last several decades, women are having children at a much later age and under higher-risk circumstances. As surgical technologists, we

must be prepared for all situations and be able to react quickly. The Code Blue cart can be an invaluable tool to a surgical technologist and can save critical minutes. A Cesarean delivery that takes place in the LDR is the only hope for survival of the infant, and that can be maximized by rapid response and skilled, well-trained staff.

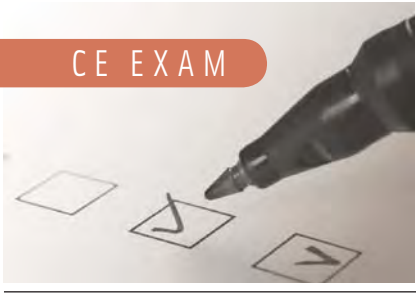
## ABOUT THE AUTHOR

Gracelia A Scott, CST, lives in New York and graduated from the New York University Medical Center Surgical Technology Program. She has been a surgical technologist for more than 20 years at New York Hospital Medical Center of Queens. She is a member of AST and wrote this article to help fellow surgical technologists learn a new approach to an existing procedure as it is being performed in the LDR at New York Hospital Medical Center of Queens. In her spare time, Ms Scott enjoys riding her motorcycle and working with a different instrument kit—wrenches, sockets and pliers.



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1. **Early practice of Cesarean section often resulted in \_\_\_\_.**
  - a. Fetal bradycardia
  - b. Shoulder dystocia
  - c. Cardiac arrest
  - d. All of the above
2. **What important innovation helped make the Cesarean delivery safer in the mid-1800s?**
  - a. Anesthesia
  - b. Blood bank
  - c. ESU
  - d. Oxytocin
3. **The \_\_\_\_ must be present in the LDR during a Code Blue.**
  - a. Patient's next of kin
  - b. Anesthesiologist
  - c. Blood bank
  - d. In-house obstetric attending physician
4. **The rarest presentation of a breech birth \_\_\_\_.**
  - a. Kneeling breech
  - b. Complete breech
  - c. Frank breech
  - d. Footling breech
5. **The \_\_\_\_ is placed in charge of obtaining additional supplies in emergency situations.**
  - a. Nurse manager
  - b. Assistant nurse manager
  - c. Patient's primary nurse
  - d. Runner
6. **During the delivery, the \_\_\_\_ is delivered first.**
  - a. Bottom
  - b. Head
  - c. Feet
  - d. Umbilical cord
7. **Breech birth risks include \_\_\_\_.**
  - a. Umbilical cord prolapse
  - b. Head entrapment
  - c. Oxygen deprivation
  - d. All of the above
8. **What size blade does the surgical technologist need to incise the patient's skin?**
  - a. #20
  - b. #11
  - c. #15
  - d. #10
9. **Which of the following factors is not influential in the occurrence of a breech birth?**
  - a. The sex of the baby
  - b. Multiple fetuses
  - c. Premature labor
  - d. Uterine abnormalities
10. **Who determines if the patient should be moved to the OR for further patient management and/or closure?**
  - a. Team leader
  - b. Physician
  - c. Medication nurse
  - d. None of the above

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