Breech Vaginal Delivery Simulation

1.0 Example Case Scenarios

CLINICAL SCENARIO
A 25 y/o G3P2002 at 36 weeks presents to triage with the complaint of rupture of membranes that occurred approximately one hour ago. She also reports intermittent contractions that have become increasingly more painful and a thick brown discharge. She denies any complications with this pregnancy. She reports that her provider checked her in the office yesterday and told her that she was 1 cm dilated and 50% effaced. Her history is otherwise uncomplicated and she has had 2 previous term vaginal deliveries.

CLINICAL SCENARIO
A 40 y/o G2P1001 at 37 weeks presents to the triage room of Labor and Delivery. On exam the fetus is in a frank breech presentation with the buttocks visible at the introitus. The fetal heart rate is 150 beats per minute and the patient feels a strong urge to push. The estimated fetal weight is 7lbs. The patient states that she had one prior vaginal delivery of a 9lb infant and she does not want a cesarean section. Her prenatal course has been otherwise uncomplicated.
Breech Vaginal Delivery Simulation

2.0 Pre-Simulation Briefing/Orientation

- Do a brief orientation to the room, equipment and mannequins. This should take approximately 5 minutes.

- Explain that if you are using staff as actors for the patient’s partner/family or nurses, that they will respond to requests but will not initiate actions.

- Set the stage for the simulation by doing the following:
  - Discuss what the learning objectives are for the station, i.e., closed loop communication, leadership in a crisis, demonstration of maneuvers to deliver a breech vaginally, etc.
  - Review the Breech Vaginal Delivery Clinical Checklist

- Read these basic instructions to all participants:

  You will be briefed by the simulation staff and then join the team when requested.

  You may ask questions during the scenario if you have them, and please remember to:

  1. Treat the scenario as real as possible
  2. Use personal protection equipment (gloves, etc) as needed
  3. Request assistance if needed
  4. Please do not cut the perineum, but indicate if you would make an episiotomy
  5. Ask for medications if you feel that you require them
  6. You may request to move the patient to the OR if you feel this is necessary
3.0 Simulation Setup

Simulators to be used

- The simulator that will be utilized for this will be a birthing mannequin with the ability to simulate a breech vaginal delivery. Some common simulators used for this are the NOELLE, PROMPT, Sophie's Mum, or SIMMOM birthing mannequins (See Figures 1-4).

- For most simulators, a staff member will push the fetus out in the breech position. Some of the simulators (NOELLE) can also be delivered with the assistance of an internal birthing motor.

Room Setup

- The room should be set up similar to a delivery room. If you have the facilities, you may have another room set up as an operating room, though the goal of the scenario is for the participants to perform a breech **vaginal** delivery.

- The simulator is set up on an examination table, gurney, or bed with the lower torso draped.

- A delivery table should be available with the basic equipment as listed below.

- Additional tools should be available such as Piper Forceps. These should not be visible at the beginning of the simulation, but available if requested.
Breech Vaginal Delivery Simulation

Figures 1 - 4: Examples of Birthing Simulators

Figure 1: NOELLE birthing mannequin (Gaumard Scientific, FL)

Figure 2: PROMPT birthing trainer (Bristol, UK)

Figure 3: SimMom birthing simulator (Laerdal, NY)

Figure 4: Sophie’s Mum
Breech Vaginal Delivery Simulation

Optional Equipment

- Fetal Monitoring: Fetal heart rate monitors may be used to demonstrate a terminal bradycardia during the breech vaginal delivery. Incorporating this into the training to produce a fetal bradycardia as the fetal legs/buttocks delivers helps add to the realism of the scenario.

- Programmable fetal monitoring simulators are also commercially available.
  
  If you do not have a fetal heart rate simulator other effective options include:

  o Verbalize the FHR to the participants during the scenario

  o Use your own fetal monitor and tap on the ultrasound (the one used to detect fetal heart tones) to recreate a bradycardia (be sure to place gel on the ultrasound monitor to enhance the sound)

  o Use a metronome app from a smart phone to reproduce the fetal heart sounds

Personnel needed

- Staff to control fetus and maternal mannequin (1)

- Staff to play role of the Nurse (1-2) (if there are not any in the class)

- Staff to create fetal heart tones (if no fetal heart rate simulator is available)

Optional

- Staff to play role of patient and patient’s family (mother, sister, husband, or partner) (1-2)
Breech Vaginal Delivery Simulation

4.0 Basic Scenario Tips

Answers to common questions that come up

- The staff playing the nurse, patient or family member role can help to increase the realism of the scenario by making comments like “the baby looks really blue” or “is the butt supposed to come first?”.

- It is not necessary for the staff/actor holding the fetus to make the scenario more difficult with a nuchal arm (unless that is one of the objectives)

  - Consider enlisting “actors” with some clinical experience. This will allow them to better answer clinical questions posed by learners as well as respond to spontaneous actions of learners that may be difficult to predict.

Common pitfalls to monitor for

- Use plenty of lubrication for the fetus. The mannequins generally come with some silicone lubricant that may work well. Other options: ultrasound gel or commercial vaginal lubrication. Remember that the fetus will not deliver without this and will tear the perineum.

- Make sure to tell the providers to only simulate an episiotomy if they feel that one is necessary and NOT to actually cut the mannequin! (Some mannequins come with a precut episiotomy.)
Breech Vaginal Delivery Simulation

5.0 Case Flow/Algorithm with branch point and completion criteria

1) Setup the delivery simulator as described

2) Brief the participants on the initial clinical scenario

Participant enters the patient’s room

The assistant playing the role of the patient or spouse/family informs the participant that patient is having pressure and has to push.

*Give the participant a chance to counsel the patient about breech vaginal delivery before pushing the baby out if they begin to discuss this.

Scenario can move to operating room or stay in labor and delivery room depending on facilities available/location of training

Once set up in appropriate room, the assistant/actor can push the fetal head until the buttocks begins to deliver in the sacrum anterior position and then allow the provider to prepare for delivery of the breech fetus

Provider should recognize the breech presentation and begin maneuvers to deliver the infant

Respond to maneuvers with feedback if they ask questions
Be prepared to have Piper forceps available, but do not provide unless they ask for them
Allow the provider to complete the delivery

When the provider has completed the delivery, clearly tell them the scenario is over
Breech Vaginal Delivery Simulation

6.0 Post-Simulation

- Gather the individual and team together to debrief and review performance
- Use the Breech Vaginal Evaluation/Debriefing Form
7.0 Breech Vaginal Delivery Checklist

BREECH VAGINAL DELIVERY Checklist

☐ Announce that you have a breech presentation
  - Determine type of breech (frank/complete/footling)
  - Quickly counsel patient/family on situation

☐ Call for additional assistance
  - Staff Physician
  - Additional nursing staff as needed
  - Anesthesia support
  - Pediatric/Personnel to resuscitate fetus after delivery

Maintain Calm Environment/Assemble Care Team

☐ Determine route of delivery (vaginal vs cesarean)
  - Cesarean section unless imminent delivery
  - Move to OR if possible regardless of mode of delivery

☐ Obtain additional supplies
  - Delivery table & instruments/surgical towel
  - Piper forceps

☐ Allow breech to deliver to level of umbilicus with maternal effort only

☐ Deliver legs
  - Splint medial thigh parallel to femur and sweep laterally
  - Place towel on fetal trunk

☐ Deliver arms
  - Lovset maneuver (rotate fetal shoulder to vertical and sweep anterior arm across chest)

☐ Perform Mauriceau-Smellie-Veit Maneuver or place Piper Forceps
  - Index and middle fingers applied over maxilla to flex head
  - Two fingers of opposite hand hooked over neck from above
  - Suprapubic pressure applied by assistant

☐ If head entrapment, consider the following:
  - Terbutaline .25 mg SQ or 2.5-10mcg/min IV
  - Nitroglycerine 50-200mcg IV
  - Duhrssen incision
  - Zavenelli maneuver

☐ Cesarean Prep
  - Insert foley catheter
  - Prep abdomen
  - Count instruments (if time allows)
  - Brief surgical timeout (if time allows)
8.0 Debriefing / Feedback

1) Communication/Teamwork

Instructors should meet after the scenario before the debrief to discuss what deficits (if any) were noted that need to be emphasized in the debrief. It may help to make a short list of the most important teaching points that you want to cover.

For Breech Vaginal Delivery, critical teaching points that should be emphasized include the following:

- Verbalizing that there is a breech presentation and calling for help in a timely manner
- Performing counseling regarding vaginal breech delivery and at least considering moving to the operating room, even when the delivery will be completed vaginally.
- Directed communication with check-backs with other team members during the delivery
- Appropriate use of assistants
- Keep the patient/family informed of what is going on in a calm and appropriate manner

2) Medical Care/Technique/Documentation

- Knowledge of standard maneuvers required for breech delivery
- Performance of informed consent explaining risks and benefits of breech delivery, including head entrapment.
- Avoidance of improper maneuvers
- Appropriate progression through maneuvers if initial ones do not result in delivery
- Calling for pediatrics in time for them to be present when delivery occurs
- Documentation after the event
- How would you discuss this complication with the patient?
- What are important things to discuss with regards to risks for subsequent deliveries?

3) Debriefing/Providing Feedback

- Start by asking for a quick summary from the participants, allowing them to vent about the simulation (they will often note their own deficits at this time).
- Add factual/didactic information as needed but make sure to include a discussion of teamwork and communication
- Utilize the Breech Vaginal Delivery Evaluation Form (Section 7.0) as a guide to discuss the technical parts of the procedure and performance.
- If you have time or want to, you may allow the provider to practice maneuvers and/or go through the delivery again after the debriefing.