



Faculty Guide

A practical guide to training with
MamaBirthie CS



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Purpose of the Guide

This training guide serves as an educational resource to accompany the MamaBirthieCS birthing simulator. Its primary objective is to promote the development of skills and competencies surrounding cesarean section (CS) care – enabling health providers, instructors, and students to practice hands-on procedures and realistic scenarios in a safe learning environment, regardless of pre-existing education or experience levels.

Developed by Laerdal Global Health (LGH) and the Ethiopian Society of Obstetricians and Gynecologists (ESOG) – with inputs from colleagues and partners from around the world – the training guide offers a range of exercises and recommendations that may be used in any order and at the discretion of the user(s) depending on the learning objectives of the training session. The guide is iterative in nature and will be updated regularly based on the development of additional training exercises, the emergence of new evidence or best practice, or any changes to the MamaBirthieCS simulator. Users are encouraged to apply and adapt this guide according to the guidelines and policies in their clinical or educational setting – whether as a standalone training aid or part of a more comprehensive training program.

Guiding Principles

This training guide aims to improve the competence and confidence of health professionals and students who are expected to perform the functions of CS in clinical practice. The authors recognize that aspects of CS care vary from country to country and facility to facility, limiting the application of a “one size fits all” approach to CS education and training. As a result, both the MamaBirthieCS simulator and the content of this guide have been developed to accommodate a wide spectrum of users and use cases, informed by the following principles:

- **Resource-agnostic:** Can be used in any setting, irrespective of geography or income
- **Educationally flexible:** Accessible for users of any educational level in both pre- and in-service contexts
- **Cadre-independent:** Appropriate for any type of CS provider
- **Supportive, not prescriptive:** Offers training suggestions that instructors can incorporate at their own discretion
- **Team-oriented:** Can be used by individuals to practice certain technical skills but geared toward team-based exercises
- **Simulation-based:** Rooted in the pedagogy of medical simulation and the Circle of Learning approach to competency development

The Circle of Learning Approach



The Circle of Learning is an educational tool that serves as bridge between cognitive and skills-based learning with real-life clinical experience, harnessing the potential of simulation-based education to drive improvements in provider performance and patient outcomes. The Circle of Learning represents a comprehensive approach that can be referenced to plan and execute educational programs. The various segments that make up the Circle of Learning are also valuable learning modalities for individual learners to obtain knowledge, practice skills, hone critical thinking, simulate scenarios, and enhance clinical experience.

This training guide features exercises that span the Circle of Learning to empower users with both a methodology and set of materials to deliver high-quality CS education and training. This includes:



Knowledge Acquisition

Learners are introduced to the knowledge needed to meet their educational objectives, often delivered through textbooks, lectures, and demonstrations and reinforced through self-assessments. This guide includes exercises intended to convey various pieces of theoretical knowledge around CS care.



Skills Proficiency

Learners have the chance to be introduced to, practice, and master the psychomotor skills required for high-quality healthcare. In this guide, the authors have included exercises that teach certain technical procedures and enable students and providers to practice those skills.



Decision Making

After learning knowledge and honing skills, learners must develop the capacity for critical thinking and competent decision making. This guide offers exercises that present key decision points in the delivery of CS care for users to gain the awareness and confidence they need to perform CS effectively.



Simulation in Teams

Practicing simulation in teams allows learners to rehearse clinical and non-clinical scenarios in a safe, realistic learning environment, enabling improved communication and leadership among both individuals and teams. In this guide, the authors have included simulation scenarios that capture key roles in the CS procedure and promote high-quality CS care.



Clinical Experience

Clinical experience is the culmination of the Circle of Learning, where learners can put their competencies to use, identify gaps or areas of improvement, and test their newly acquired knowledge or skills. This guide includes suggestions and guidelines for clinical practice, coaching, and evaluation that can be used by instructors or providers during live cases.

Training Equipment

MamaBirthie CS is a birthing simulator and skills trainer that can be used as a tabletop model for demonstration and skills training across the continuum of care.

During skills training or for in-situ team simulation, the simulator can be worn by a facilitator or peer. This encourages learners to include respectful communication with the patient into their training.



MamaBirthie CS is built on the MamaBirthie birthing simulator, which is ideal for demonstrating the mechanics of birth and to train skills including (*click the links to see videos*):

- [Abdominal](#) and [vaginal examinations](#)
- [Normal birth](#)
- [Vacuum assisted delivery](#)
- [Shoulder dystocia](#)
- [Breech birth](#)

With the additional CS module included in MamaBirthie CS, teams and surgical providers can also train (*click the links to see videos*):

- [Preparation and infection prevention for cesarean section](#)
- [Surgical technique](#) including:
 - Abdominal entry
 - Cesarean delivery (cephalic, impacted head or breech)
 - Closure of uterine incision, fascia and skin
- [Surgical management of PPH with B-Lynch suture](#)



Setup and supply considerations:

Watch a video on how to set up MamaBirthie CS [here](#).

In addition to a birthing simulator, learners should also have the appropriate instruments and supplies available to practice each skill. See the instructions of each simulation scenario for a more detailed list of supplies needed.

- Instrument kit for cesarean section
- Suture
- Personal protective equipment
- Labeled empty bottles of relevant medication
- Printed forms for documentation, such as consent forms, Surgical Safety Checklist

1. Preparation for Cesarean Section

In this module, learners will gain an understanding of how to prepare themselves and the patient for a cesarean section. Instructors will take learners through knowledge, skills, and decision-making exercises before facilitating a comprehensive, team-based simulation scenario that covers key components of the preparation procedure. Each exercise should be followed by reflection or debriefing to ensure that learners are sufficiently competent and confident before proceeding.

Note: The exercises don't have to be completed in one session. They can be spaced out over a longer period or used independently to fit any existing curriculum.



A. Knowledge Acquisition

Organize the learners in a space and format that allows for classroom teaching and discussion. Facilitate a conversation around the following areas of knowledge needed to prepare for a C-section. Use your own judgement to insert any additional clinical and scientific points, local guidelines and expectations, or other relevant pieces of information for your learners.

1A.1: Considerations in preparing to perform a Cesarean section

The pre-operative preparation for cesarean section (CS) does not start at the time of decision to perform CS. Antenatal care is a very important period in preparing the patient for the possibility of CS and should be part of the birth preparedness and complication readiness plan.

1A.2: Pre-admission/Pre-operation information and counselling

Pre-admission/Pre-operation information and counselling should include information-sharing and support before, during, and after the procedure.

For emergency cesarean sections, which can occur with very little lead time, it is important to inform patients about the potential need for the CS procedure together with the risks, benefits, and alternatives. The informed consent process prior to emergency CS procedures is especially important, and requires instructive support, essential information-sharing, and reassuring behavior from the clinical staff. It is recommended that clinical teams also provide a short description of the indication for CS, the proposed type of anesthesia, and information related to the surgical procedure and its urgency.

1.A.3: Surgical safety checklist

It is important that all providers involved in cesarean section surgery learn, practice, and adhere to surgical safety checklists to ensure high-quality care and patient safety. Many countries and institutions have adapted their own surgical checklists from guidelines published by international authorities such as the World Health Organization and Royal College of Surgeons. It is therefore advised to follow the checklist recommended for use in your place of practice. It is also advised to make use of checklists with due consideration on the urgency of the indication for cesarean section.

1.A.4: Pre-procedure medications

Antacids:

There is a strong recommendation to administer antacids and histamine H2 receptor antagonists as premedication to reduce the risk from aspiration pneumonitis^{3,4}.

Antibiotics:

Prophylactic intravenous antibiotics should be administered routinely 30-60 minutes before the CS skin incision. First and second generation cephalosporins and penicillin classes of antibiotics are favored over other classes as they allow for a broad spectrum of activities and are widely available in all settings^{3,4}.

1.A.5: Vaginal cleansing

All patients undergoing CS should have vaginal cleansing with povidone-iodine (1-10%) or chlorhexidine gluconate (0.05% to 0.25%) for 30 seconds, performed immediately before the procedure. Pre-operative vaginal cleansing is found to decrease the risk of endometritis and post-operative sepsis.^{4,5,6,8}

1.A.6: Skin preparation

Preventing infection by properly preparing the skin before the incision is made is an important part of the overall care given to women prior to CS. Use of alcohol-based chlorhexidine gluconate (e.g., 2% chlorhexidine gluconate in 70% alcohol) is recommended. Where chlorhexidine gluconate is not available, other antiseptic agents such as povidone-iodine can be considered a suitable antiseptic agent for preoperative skin preparation.

Rubbing, starting primarily from the incision site and widening the cleaning to the rest of the abdomen, is recommended. Alcohol needs air-drying for 3 minutes to decrease the flammability as it may ignite when in contact with electrocautery. It is also important to ensure that the drapes are not saturated with alcohol.^{4,7,8}

1.A.7: Anesthesia management

Regional anesthesia is the preferred method of anesthesia for CS. Generally, regional anesthesia has been found to have a positive impact for enhanced recovery outcomes in terms of pain control, organ function, mobility, postoperative nausea and vomiting, number of days spent in hospital, and adverse events. General anesthesia can be considered based on urgency, patient refusal to undergo regional anesthesia, inadequate or failed regional attempts, and contraindications including coagulation or spinal abnormalities.^{4,8}

1. Preparation for Cesarean Section



B. Skills Practice

Organize the learners in a setting appropriate for demonstration and hands-on practice, where you can go through the following skills exercises. You may wish to start by demonstrating each skill before allowing learners to practice individually, in pairs, or in small groups – based on your discretion and the makeup of the team. If it is relevant for the skill at hand, one person can wear the simulator and act as the pregnant woman.

1.B.1 Skills Practice: Counselling for Cesarean section

Sara, a 25 year old gravida 1 woman with gestational age of 39 weeks came to the labor and delivery ward two hours ago with a complaint of pushing down pain of 10 hours duration. She had leakage of liquor of 2 hours duration. She has no other complaints and danger signs of pregnancy. Labor has been followed in the hospital for two hours until abnormal fetal heartbeat was detected and cesarean section was decided.

Ask learners to practice in pairs:

One person acts as the woman in labor, the other will counsel her on the need for cesarean section, the procedure itself, and answer any questions.

Learner Actions:

- Share essential information related to the surgical procedure and its urgency
- Provide short description on:
 - Indication for CS
 - Proposed type of anesthesia
- Provide information about risks, benefits and alternatives
- Communicate in a respectful and reassuring manner. Answer her questions and concerns and reach a shared decision on the course of action.

When the exercise is finished, learners should give each other feedback and discuss:

- What went well?
- What would you do differently next time?
- How did it feel to be in the role of the woman being counseled?

Give your learners enough time to switch roles and repeat the practice until they feel confident.

1.B.2 Skills Practice: Vaginal and abdominal cleansing

Sara is transferred to the operation theater for emergency CS for indication of abnormal fetal heart rate. A urinary catheter is in place and she has received spinal anesthesia. As part of preparation for CS, you perform abdominal and vaginal cleansing.

Ask learners to practice in pairs:

One person can wear the simulator while lying on the table, or the simulator can be mounted on the table with the table clamp.

The other learner demonstrates how they would perform abdominal and vaginal cleansing.

Learner Actions:

- Perform vaginal cleansing with povidone iodine. With gloved hands, gently spread the labia and gently clean the area of cervix and upper vagina for 30 seconds
- With a new swab and container of antiseptic, clean the planned incision site, going back and forth for 30 seconds
- With a new swab, widen the cleaning to the rest of the abdomen
- Allow the area to dry for three minutes before you drape the client

When the exercise is finished, learners should give each other feedback and discuss:

- What went well? Why?
- What would you do differently next time? Why?
- Which antiseptic solution do you use for vaginal cleansing? Why?
- Which antiseptic solution do you use for abdominal skin preparation? Why?

Give your learners enough time to switch roles and repeat the practice until they feel confident.

1. Preparation for Cesarean Section



C. Decision making

Organize the learners in a space and format that allows for discussion. Prompt them to respond to various scenarios and decisions related to their role in preparing for a cesarean section.

Sara, a 25 year-old gravida 1 woman with gestational age of 39 weeks, came to the labor ward 2 hours ago with a complaint of pushing down pain that has lasted for 10 hours. Sara had antenatal follow-ups at her nearby health center and her pregnancy was normal.

On admission, she was in active labour. The fetal heartrate was 90-100 beats/minute, the cervix 7 cm dilated and the membranes ruptured spontaneously during vaginal examination. Labour was monitored in the hospital for two hours until a progressive change of fetal heartrate was observed. Despite supportive measures the FHR became non-reassuring.

Discussion questions:

- What would be your approach to the initial assessment and management in this case? Why?
- When should the decision for CS be taken in non-reassuring fetal heart rate? Why?
- What are important aspects to consider when counseling a woman for CS? Why?

Note Before Proceeding:

The following section uses the same clinical scenario from the previous sections; instructors should proceed to the full simulation scenario only once learners have mastered the competencies covered in previous sections.

1. Preparation for Cesarean Section



D. Simulation Scenario

Organize the learners in a space and setup that resembles a clinical environment – either in situ or in a simulation laboratory – and includes all necessary teaching materials. Ensure that the learners are familiar with basic concepts of simulation, role-playing, and debriefing before introducing the scenario and assigning roles. Depending on your setting and learners, you may wish to modify the scenario's steps, incorporate additional instructors and roles, or encourage others to observe.

Roles to be Assigned:

- 1 Surgical provider
- 1 Surgical Assistant
- 1 Anesthesia provider
- 1 Scrub nurse
- 1 Midwife or newborn care provider

Expected Duration

- Set-up: 10-15 min
- Pre-briefing: 10 min
- Scenario: 10 -15 min
- Debriefing: 30 - 45 min

Learning Goal

Manage the pre-operative process when preparing for CS

Learning Objectives

At the end of the session learners will be able to:

- Demonstrate pre-operative counselling during caesarean section
- Perform recommended steps for infection prevention (prophylactic antibiotics, vaginal cleansing, skin preparation and draping according to recommendations)
- Demonstrate the use of the surgical safety checklist as a team

Equipment Requirements

- MamaBirthie CS simulator
- Labelled empty bottles of:
 - Povidone iodine
 - Alcohol-based chlorhexidine gluconat
 - IV medications (antibiotics, IV fluids)
 - Anesthesia medications (Lidocaine, Bupivacaine, drugs for general anesthesia)
- Equipment and supplies for anesthesia
- Equipment and supplies for neonatal resuscitation
- Personal protective equipment
- Surgical drapes
- Swabs
- Swab holding forceps
- Urinary catheter
- IV cannula
- Consent form and surgical safety checklist

Case information

Sara, a 25 year-old gravida 1 woman with gestational age of 39 weeks, came to the labor ward 2 hours ago with a complaint of pushing down pain that has lasted for 10 hours. She had leakage of liquor of 2 hours duration. She has no other complaints and danger signs of pregnancy. Labor has been monitored in the hospital for 2 hours until abnormal fetal heartbeat was detected.

Simulator State

Let participants know in advance how they will get these readings.

Eg. "You will attach the BP cuff, verbalise the action and look at the white board to get the reading."

- INITIAL VITALS:
 - BP = 100/60 mmHg
 - HR = 96/min
 - RR = 18/min
 - Temp = 36°
 - SpO2 = 94%
- HEAD, EYES, EARS, NOSE & THROAT: Respiratory and cardio vascular system = no abnormal finding detected
- ABDOMEN/LEOPOLD MANEUVER: Term-sized uterus, longitudinal lie, cephalic presentation, 4 contractions / 10 minutes / 40-45 seconds, FHB = 90-100/min
- VAGINAL EXAM: Cervix=7cm dilated, Station = 1, membrane ruptured with Grade III meconium-stained amniotic fluid, cord not felt, no blood on examining finger

Diagnosis/Assessment

Do not share with participants ahead of the scenario.

Discuss the following aspects in the debriefing:

Primigravida + term pregnancy + fetal bradycardia + grade III meconium-stained amniotic fluid

Expected Performance

The below checklist contains a summary of the key actions in the scenario and is intended to serve as a debriefing aid for instructors and learners. If staffing allows, the checklist may be completed by an external observer (non-participant) in real time and provided to the lead facilitator to inform the debrief discussion and/or to the learners to enable self-reflection.

| Action | Done? | Comments |
|---|-------|----------|
| 1. Open IV line, start crystalloids | | |
| 2. Administer supplemental oxygen (face mask) | | |
| 3. Put patient on left lateral position | | |
| 4. Counseling on the labor progress status, fetal condition, and recommendation for actions | | |
| 5. Get informed consent for CS and anesthesia | | |
| 6. Complete the first section of the Surgical Safety Checklist as a team ("Sign in") | | |
| 6. Administer prophylactic IV antibiotics | | |
| 7. Administer anesthesia (regional or general) | | |
| 8. Administer anti-acid | | |
| 9. Insert urinary catheter | | |
| 10. Perform vaginal cleansing | | |
| 11. Do abdominal skin preparation | | |
| 12. Drape the patient | | |
| 13. Complete the second section of the Surgical Safety Checklist as a team ("Time Out") | | |
| 14. Document the findings and medications administered on client record | | |

Debriefing Guide

As you observe participants going through the scenario, take notes about each of the learning objectives: What went well, what didn't?

After the scenario, gather all participants for a debrief. Ask the participants questions to reflect on their performance. You can use the questions below as a starting point and add on your own questions using your notes and observations.

Try to understand why participants acted in the way they did. Based on their rationale, discuss possible areas of improvement.

Discussion Questions:

- Were you satisfied with your ability to care for the patient? Why/Why not?
- What went well? What are the areas that need improvement next time? How would you do it differently?
- What did you learn?

2. Performing Primary Cesarean Section

In this module, learners will be tasked with performing a primary cesarean section and caring for the patient(s) throughout the procedure. Instructors will take learners through knowledge, skills, and decision-making exercises before facilitating a comprehensive, team-based simulation scenario that covers key components of the cesarean section procedure. Each exercise should be followed by reflection or debriefing to ensure that learners are sufficiently competent and confident before proceeding.

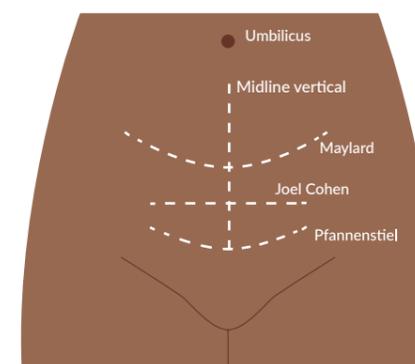
Note: The exercises don't have to be completed in one session. They can be spaced out over a longer period or used independently to fit any existing curriculum.



A. Knowledge Acquisition

Organize the learners in a space and format that allows for classroom teaching and discussion. Facilitate a conversation around the following areas of knowledge needed to perform a primary cesarean section. Use your own judgement to insert any additional clinical and scientific points, local guidelines and expectations, or other relevant pieces of information for your learners.

2.A.1 Abdominal Incision



Options of abdominal incisions are:

- Pfannenstiel technique
- Joel-Cohen technique
- Maylard incision [less common, will not be addressed below]
- Midline vertical incision

Factors that influence the type of incision include: the urgency for the delivery, placental disorders such as anterior complete placenta previa and placenta accreta, prior incision type, and the potential need to explore the upper abdomen for non-obstetric pathology and surgeon's experience.

Lead a discussion on the following topics before proceeding to skills practice.

Pfannenstiel Incision

The Pfannenstiel incision is the most common incision used for CS and is considered less painful and associated with a smaller risk of developing an incisional hernia and wound dehiscence than the midline vertical incision or Maylard incision. *[Note comparison with Joel Cohen incision]*

Joel-Cohen Incision

In comparison to Pfannenstiel incision, the Joel Cohen incision is associated with less blood loss, shorter operating time and reduced time to oral intake, less risk of fever, shorter duration of postoperative pain, lower analgesic requirements and shorter time from skin incision to delivery of the baby.

2.A.2 Uterine Incision

There are two main types of uterine incisions – a low transverse (or Monroe-Kerr) incision and a vertical incision – which may be chosen based on factors such as fetal presentation, gestational age, placental location, and presence of a formed lower uterine segment.

Low Transverse (Monroe-Kerr) Incision

In more than 90% of cesarean sections, a low transverse incision is made. This incision is associated with less degree of blood loss, shorter operating time and lower rate of uterine rupture in the subsequent pregnancy. However, it has a risk of extension to the uterine vessels.

Vertical Incision

A vertical incision may be indicated in some cesarean section patients, such as those who have an unformed lower uterine segment, anterior placenta previa, lower uterine segment tumor, transverse lie with back down, preterm non-vertex presentation, and when hysterectomy is intended in the setting of adherent placenta and cervical cancer. These indications should always be carefully balanced with the risks of vertical incision, which is associated with a greater degree of blood loss, longer operating time, and a higher rate of uterine rupture in the subsequent pregnancy.

Vertical incisions can be made in one of two ways:

- Low vertical/de-lee: incision made through the non-contractile lower uterine segment in a vertical fashion [Note: Risk of uterine rupture on a subsequent pregnancy is low in low-vertical incisions if it does not extend upwards to the body of the uterus, and trial of labor on the subsequent pregnancy can be considered if it is certain that it is purely a low-vertical incision]
- Classical cesarean section: incision made through the upper contractile portion of the myometrium [Note: Carries the highest risk for uterine rupture on subsequent pregnancy (4-10%)]

2.A.3 Techniques for Delivery of the Baby

The key steps and techniques for delivering the fetus during a cesarean section should be discussed by the facilitator/faculty.

2.A.4 Delayed Cord Clamping and Immediate Essential Newborn Care

Delayed cord clamping for at least 1 minute is strongly recommended following the delivery of the baby who does not require resuscitation. It increases the baby's blood volume and iron stores.

For premature babies, cord clamping should be delayed for at least 30 seconds. Delayed cord clamping in pre-term babies reduces the risk of necrotizing enterocolitis and intra-ventricular hemorrhage.

The key steps/techniques for performing essential neonatal care should be discussed by the facilitator/faculty.

2.A.5 Techniques for delivery of the placenta

Spontaneous delivery of the placenta using gentle continuous cord traction is associated with less blood loss, lower rate of endometritis, and lower maternal exposure to fetal red blood cells in an RH setup.

- After delivery of the baby, ask the anesthetist to give uterotonics according to local guidelines (oxytocin 10IU intramuscular or 20 IU put on the IV fluid/1000ml RL/NS) to facilitate uterine contraction
- Deliver the placenta by controlled cord traction and check that it is complete.

Manually mop the uterus with pack to confirm no membranes or cotyledon remain

2.A.6 Techniques for Surgical Closure

The following process – marked by a uterine closure, abdominal wall closure, and completion of the procedure – represents key techniques for surgical closure during the cesarean section operation.

Uterine Closure

Closure of uterine incision involving the upper segment usually requires several layers using a heavy suture material. The first layer closes the inner half of the incision, with a second and possibly a third layer used to close the outer half and serosal edges.

Repair of the uterus can be facilitated by manual delivery of the uterine fundus through the abdominal incision. The need for exteriorization of the uterus for repair depends on the surgeon's preference and the presence of adhesions.

Note: Facilitator/faculty discusses the up-to-date recommendations on key steps/techniques of uterine closure.

Abdominal Wall Closure

Before closure of the abdominal wall the incision site should be inspected for homeostasis, and any blood clots are removed with laparotomy sponges.

Note: Facilitator/faculty discusses the up-to-date recommendations on key steps/techniques of abdominal wall closure.

Completing the procedure

- Start and finish the procedure with a count of all instruments, sharps, and sponges
- Perform the count before closure of abdomen and after closure of skin
- Document in record that counts were correct
- Use the WHO Surgical Safety Checklist or local checklist to confirm everything is completed

2.A.7 Perioperative Fluid Management

Perioperative euvolemia is an important factor to obtain optimal outcomes after cesarean delivery. Intravascular volume determines not only blood pressure but also cardiac output and oxygen delivery.

Note: facilitator/faculty discusses the up-to-date recommendations and considerations to be made on perioperative fluid management.

2. Performing Primary Cesarean Section



B. Skills Practice

Organize the learners in a setting appropriate for demonstration and hands-on practice, where you can go through the following skills exercises. You may wish to start by demonstrating each skill before allowing learners to practice individually, in pairs, or in small groups – based on your discretion and the makeup of the team. If it is relevant for the skill at hand, one person can wear the simulator and act as the pregnant woman.

2.B.1 Skills Practice: Performing abdominal wall and uterine incisions

“Eden is a 32 years old gravida 1 woman at gestational age of 36 weeks and 5days, who has been diagnosed with preeclampsia with severity features two weeks ago. She has been on conservative management as per the national protocol for the management of preeclampsia. Meanwhile, while U/S and fetal doppler ultrasound was performed, it was found that there was a growth restricted baby with reversed umbilical artery diastolic flow, which leads to a decision for CS. Eden is counseled and prepared for CS. You perform an abdominal incision using one of the preferred abdominal incision techniques. After you have performed the abdominal wall incisions, you observe that there is a normal gravid uterus and adnexa.

Ask learners to practice in pairs:

One learner will take the role of the surgeon, one will be assisting.

A third person can wear the simulator while lying on the table, or the simulator can be mounted on the table with the table clamp.

The team of learners will demonstrate how to dissect each layer of the abdomen, then proceed with demonstrating the incision of the uterus.

Learner Actions (Joel Cohen + Monroe Kerr technique):

- Skin incision 3cm below the line that joins anterior superior iliac spines
- Blunt dissection of the subcutaneous tissue (avoid inferior epigastric vessels)
- Use blunt technique to separate fascia
- Blunt separation of the rectus abdominis muscle
- Use blunt dissection of the peritoneal layer
- Place a bladder retractor
- Sharp dissection of the uterus using a transverse lower uterine segment incision and widen it with index fingers

When the exercise is finished, learners should give each other feedback and discuss:

- What went well? Why?
- What would you do differently next time? Why?

Give your learners enough time to switch roles and repeat the practice until they feel confident.

2.B.2 Skills Practice: Delivery of the Baby, Placenta and Essential Newborn Care

“After making the uterine incision, you get an intact membrane with head of the baby in the lower uterine segment. You proceed with the delivery of the baby. You find that the baby is born with APGAR score of 7 and 9, but small for gestational age with a weight of 1.8kg. The placenta is delivered completely, and there is minimal bleeding.”

Ask learners to practice in pairs:

One learner will take the role of the surgeon, one will be assisting.

A third person can wear the simulator while lying on the table, or the simulator can be mounted on the table with the table clamp.

The team of learners will demonstrate how to deliver the baby, care for the baby and deliver the placenta.

Learner Actions:

- Rupture the amniotic membrane if encountered.
- Insinuate fingers between the symphysis pubis and the fetal head until the posterior surface is reached.
- Lift the fetal head carefully anteriorly and, as necessary, superiorly to bring it from beneath the symphysis to the level of the uterine incision rather than bringing the incision down to the head.
- As the fetal head is lifted through the incision, pressure is applied by the assistant to the uterine fundus through the abdominal wall to help expel the fetus.

Apply essential neonatal care:

- Dry the baby thoroughly, cover with dry warm towel. If the condition allows, put the baby skin to skin
- Support breathing and circulation if needed, as this is a baby with severe intrauterine growth restriction
- Wait for at least 60 seconds, then clamp and cut the cord
- Ask the anesthetist to administer uterotonic
- Deliver placenta using gentle continuous cord traction
- Check for completeness of the placenta
- Mop the uterus, check for bleeding and contraction

When the exercise is finished, learners should give each other feedback and discuss:

- What went well? Why?
- What would you do differently next time? Why?

Give your learners enough time to switch roles and repeat the practice until they feel confident.

2.B.3 Skills Practice: Performing Surgical Closure

After mopping the uterus, you made sure that the placenta is complete and the uterus is well contracted. You proceed with closing the uterus and the abdominal wall layers.

Ask learners to practice in pairs:

One learner will take the role of the surgeon, one will be assisting.

A third person can wear the simulator while lying on the table, or the simulator can be mounted on the table with the table clamp.

The team of learners will demonstrate how to close the uterus and abdominal wall.

Learner Actions:

- (Exteriorize the uterus and cover with moist pack) - optional
- Close the uterine incision with two layers of continuous inverting stitches
- Replace the uterus back into the abdominal cavity
- Ensure that hemostasis is well secured and the uterus is well contracted.
- Close fascia with running, unlocked suture with 1cm separation between bites, bites at least 1cm from wound edge
- Close subcutaneous tissue based on its thickness
- Close the skin with continuous absorbable subcuticular suture or interrupted silk
- Chose suture types and size based on the structure to be repaired

When the exercise is finished, learners should give each other feedback and discuss:

- What went well? Why?
- What would you do differently next time? Why?

Give your learners enough time to switch roles and repeat the practice until they feel confident.

2. Performing Primary Cesarean Section



C. Decision making

Organize the learners in a space and format that allows for discussion. Prompt them to respond to various scenarios and decisions related to their role in performing a cesarean section.

“Eden is a 32 years old gravida 1 woman at gestational age of 36 weeks and 5 days, who has been diagnosed with preeclampsia with severity features two weeks ago. She has been on conservative management as per the national protocol for the management of preeclampsia. Meanwhile, while ultrasound and fetal doppler ultrasound was performed, it was found that there was a growth restricted baby with reversed umbilical artery diastolic flow. She was counselled and cesarean section was decided”

Discussion Questions:

- What are the indications to terminate pregnancy in preeclampsia?
- When is cesarean section indicated in the case of Intrauterine Growth Restriction?
- Which incision technique would you choose and why?
- What type of uterine incision do you perform? What is your justification for your preference?
- What special consideration might be needed for the low-birth-weight babies?
- What is the relevance of delayed cord clamping, and keeping the baby warm?
- What special consideration/observation are needed before closing? Why?

Note Before Proceeding:

The following section uses the same clinical scenario from the previous sections; instructors should proceed to the full simulation scenario only once learners have mastered the competencies covered in previous sections.

2. Performing Primary Cesarean Section



D. Simulation Scenario

Organize the learners in a space and setup that resembles a clinical environment – either in situ or in a simulation laboratory – and includes all necessary teaching materials. Ensure that the learners are familiar with basic concepts of simulation, role-playing, and debriefing before introducing the scenario and assigning roles. Depending on your setting and learners, you may wish to modify the scenario's steps, incorporate additional instructors and roles, or encourage others to observe.

Roles to be Assigned:

- 1 Surgical provider
- 1 Surgical Assistant
- 1 Anesthetist
- 1 Scrub nurse
- 1 Midwife or newborn care provider

Expected Duration

- Set-up: 15 min
- Pre-briefing: 10 min
- Scenario: ca. 60 min
- Debriefing: 30-45 min

Learning Goal

To acquire the competency necessary for performing primary CS

Learning Objectives

At the end of this session the learners will be able to:

- Perform surgical incision in CS based on the recommendations
- Apply the techniques of delivery of the baby and placenta
- Exercise essential neonatal care and delayed cord clamping
- Perform surgical closure techniques based on recommendations

Equipment Requirements

- MamaBirthie CS simulator
- Labelled empty bottles of:
 - Povidone iodine
 - Alcohol-based chlorhexidine gluconat
 - IV medications (antibiotics, oxytocin, ergometrine, IV fluids)
- Personal protective equipment
- Surgical drapes
- Equipment and supplies for anesthesia
- Equipment and supplies for neonatal care and resuscitation
- Surgical Safety Checklist
- Urinary catheter
- IV cannula
- Instruments for cesarean section, at minimum:
 - Scalpel without blade
 - Bladder retractor
 - Needle holder
- Sutures
- Gauze (different sizes)

Case information

Eden, a 32-year-old gravida 1 woman with gestational age of 36 weeks and 5 days, is admitted to your ward with a diagnosis of pre-eclampsia with severity features two weeks ago. She was on conservative management as per the national protocol for the management of preeclampsia. She had high blood pressure and cerebral symptoms which were managed and have since subsided. She was put on anti-hypertensives, has taken MgSO₄ for seizure prophylaxis. She feels the fetal kick well. She has no vaginal bleeding or leakage of fluids. On a follow up scan with doppler ultrasound, reversed diastolic flow was detected on the umbilical artery. Therefore, the decision was made to deliver her by cesarean section.

Simulator State

- INITIAL VITALS:
 - BP = 130/90 mmHg,
 - HR = 90/min, RR=18/min,
 - Temp = 36.4 degrees,
 - Oxygen saturation = 96%
- GENERAL STATUS: comfortable, not in labor
- HEAD, EYES, EARS, NOSE & THROAT:
 - pink conjunctiva, non-icteric sclera
 - Respiratory: normal breath sounds
 - Cardio vascular system: Normal heart sounds
- ABDOMEN/LEOPOLD MANEUVER: 35 weeks sized gravid uterus, longitudinal lie, cephalic presentation. FHR- 140/minutes, no tenderness
- GUS: cervix closed, uneffaced, intact membranes
- CNS: conscious and oriented
- LABORATORY RESULTS: positive HELLP syndrome, Complete blood count: Platelet 90 000/uL, Creatinine 1.6mg/dl, Increased liver enzymesn, AST 75 IU/I, LDH 650 IU/L

Diagnosis/Assessment

Do not share with participants ahead of the scenario.

Discuss the following aspects in the debriefing:

Primigravid + near-term pregnancy + severe pre-eclampsia + IUGR with reversed umbilical diastolic flow

Expected Performance

The below checklist contains a summary of the key actions in the scenario and is intended to serve as a debriefing aid for instructors and learners. If staffing allows, the checklist may be completed by an external observer (non-participant) in real time and provided to the lead facilitator to inform the debrief discussion and/or to the learner to enable self-reflection.

| Action | Done? | Comments |
|---|-------|----------|
| 1. Adequately prepare patient for CS | | |
| 2. Perform correct abdominal incision | | |
| 3. Dissect uterus as per recommendation | | |
| 4. Deliver baby as per recommendation | | |
| 5. Provide appropriate/essential newborn care | | |
| 6. Deliver placenta as per recommendation | | |
| 7. Exteriorize uterus correctly | | |
| 8. Mop uterus correctly | | |
| 9. Count instruments before uterus and abdominal closure | | |
| 10. Close uterus as per recommendation | | |
| 11. Close abdominal wall as per recommendation | | |
| 12. Manage peri-operative fluid and medications as per recommendation | | |
| 13. Document all on client records | | |

Debriefing Guide

As you observe participants going through the scenario, take notes about each of the learning objectives: What went well, what didn't?

It can be helpful to ask a co-facilitator or observer to take notes as well.

After the scenario, gather all participants for a debrief. Ask the participants questions to reflect on their performance. You can use the questions below as a starting point and add on your own questions using your notes and observations.

Try to understand why participants acted in the way they did. Based on their rationale, discuss possible areas of improvement.

Reflection Questions

- Were you satisfied with your ability to care for the patient? Why/why not?
- What went well? Why?
- What are the areas that could be improved next time? How would you do it differently?
- What did you learn?

3. Management of Common Complications During Cesarean Section

In this module, learners will gain understanding on common complications that arise during cesarean section and develop the competencies to competently manage them.

Instructors will take learners through knowledge, skills, and decision-making exercises before facilitating a comprehensive, team-based simulation scenario that covers key components of the preparation procedure. Each exercise should be followed by reflection or debriefing to ensure that learners are sufficiently competent and confident before proceeding.

Note: The exercises don't have to be completed in one session. They can be spaced out over a longer period or used independently to fit any existing curriculum.



A. Knowledge Acquisition

Organize the learners in a space and format that allows for classroom teaching and discussion. Facilitate a conversation around the following areas of knowledge needed to prepare for a cesarean section. Use your own judgement to insert any additional clinical and scientific points, local guidelines and expectations, or other relevant pieces of information for your learners.

3.A.1: Considerations in performing cesarean section in cephalopelvic disproportion and intraoperative postpartum hemorrhage resulting from uterine atony

Timely diagnosis of cephalo-pelvic disproportion (CPD)

CPD can rarely be diagnosed before labor begins. The earliest signs are abnormalities in the duration of labor.

The late signs of CPD in cephalic presentation include significant caput of the fetal head (edema of the fetal scalp from the constant pressure from the pelvis) and molding (overlapping of the fetal skull bones over the sagittal suture).

Possible difficulties in cesarean section done for CPD

- Fetal extraction is difficult in 1-2% of cesarean deliveries
- Surgical preparation for cesarean section should include anticipating potential difficulties with fetal extraction, taking steps to prevent these difficulties, and having a plan for managing them if they occur.
- Impaction is most likely to occur following a prolonged second stage of labor or after failed attempts at operative vaginal delivery.
- Use of standard delivery maneuvers in this setting may cause extensive trauma to the lower uterine segment, uterine vessels, cervix, vagina, and/or urinary tract and may injure the fetus (intracranial hemorrhage, skull fracture, neck fracture, asphyxia).
- A well-placed incision and slow, careful, and deliberate placement of the operator's hand around the vertex will allow controlled extraction of the vertex and lower the likelihood of uterine extension.

Surgical techniques for delivering a deeply impacted head

Two techniques have been described, the reverse breech extraction (pull method) and the abdominopelvic delivery (push method).

Facilitator/faculty discusses on the steps of performing the techniques in detail and on the preferred choice based on up-to-date recommendations

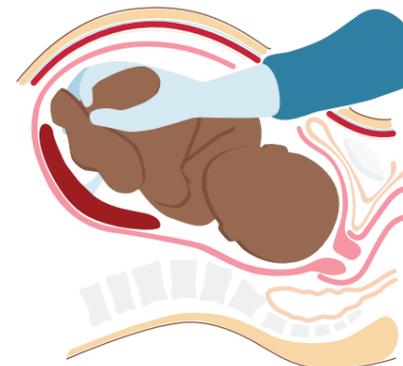


Figure- Reverse breech extraction (Pull method)

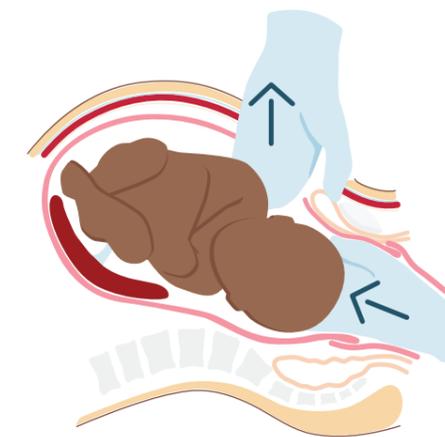


Figure- Abdomino-pelvic delivery (push method)

Diagnosis of post-partum hemorrhage during cesarean section

Uterine atony during cesarean section is a serious cause of maternal morbidity and mortality. PPH is diagnosed in postpartum women with bleeding that is greater than expected and results in signs and/or symptoms of hypovolemia. Although PPH is classically defined by the volume of blood loss (ie, estimated blood loss ≥ 500 mL after vaginal birth or ≥ 1000 mL after cesarean delivery), this diagnosis is problematic because bleeding may not be visible externally or blood in collection devices may be mixed with amniotic fluid. Common causes of severe PPH at cesarean section includes:

- Atony due to prolonged/obstructed labor, overdistended uterus, chorioamnionitis, placental abruption
- Retained tissue; abnormal placentation eg. Placenta previa, placental abruption, accreta/increta/percreta
- Trauma. Eg. Lacerations, tears, uterine rupture
- Thrombin, abnormal coagulation e.g. Severe Preeclampsia/Eclampsia, placental abruption, hypofibrinogenemia, DIC

Management of uterine atony during cesarean section

Management strategies include medical treatment with uterotonic agents, manual compression of the uterus, and interventional or surgical procedures.

During cesarean birth, uterotonic drugs and manual uterine massage and compression are still the initial treatments for bleeding due to atony, but operative interventions for control of hemorrhage are performed sooner since the abdomen is already open.

Decision making process in the sequential techniques in the management of uterine atony

The nonsurgical interventions for reduction and control of bleeding due to atony are applied in rapid sequence until bleeding is controlled, which may be the result of the cumulative combined effect of multiple interventions. All patients with PPH related to atony receive uterine massage/manual compression and administration of uterotonic drugs and tranexamic acid.

If these measures do not control bleeding, and the patient is hemodynamically stable, we rapidly move on to placement of uterine compression sutures, which are an effective method for reducing uterine blood loss related to atony.

B-lynch suturing technique

The procedure was originally described by Christopher B-Lynch.

The B-Lynch suture is the most common technique for uterine compression; several variations of this technique have been described and no technique has been proven significantly more effective than another. Procedure-related complications, such as uterine necrosis, erosion, and pyometra, have been reported rarely. It should only be used in cases of uterine atony; B-lynch suture will not control hemorrhage from placenta accreta spectrum.

Facilitator/ faculty discusses on the steps of of performing the surgical technique of B-lynch suturing.

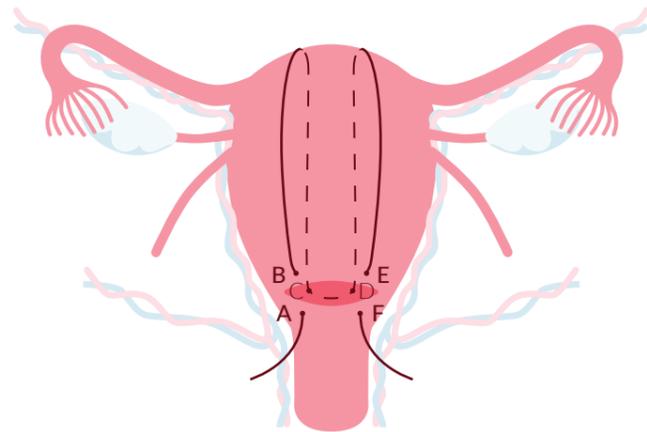


Figure: B-lynch suturing technique

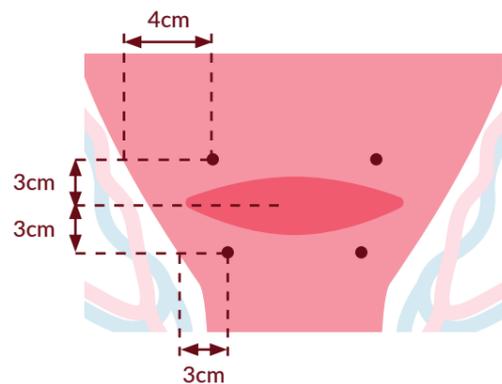


Figure: B-lynch suture placement

Uterine artery ligation

Ligation of the uterine and utero-ovarian arteries can decrease uterine bleeding by reducing perfusion pressure in the myometrium. It will not completely control bleeding from uterine atony or placenta accreta spectrum but may decrease blood loss while other interventions are being attempted. It does not harm the uterus and does not appear to impact reproductive function.

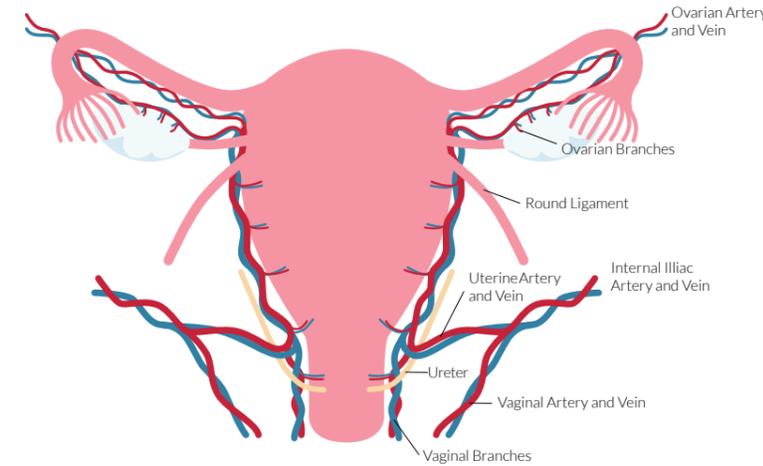


Figure: Anatomy of the uterine vessels

Bilateral ligation of the uterine vessels (O’Leary stitch) is the preferred approach for controlling PPH from laceration of the uterine artery or branches of the utero-ovarian artery. It is preferable to internal iliac artery ligation because the uterine arteries are more readily accessible, the procedure is technically easier, and there is less risk to major adjacent vessels and the ureters.

Facilitator/ faculty discusses on the steps of of performing the surgical techniques of uterine artery and utero-ovarian artery ligations.

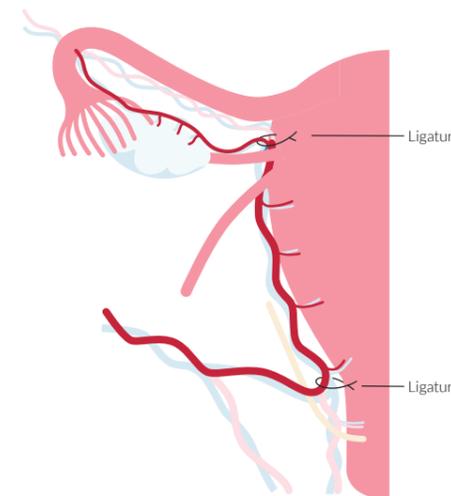


Figure: Uterine and utero-ovarian artery ligation

3. Management of Common Complications



B. Skills Practice

Organize the learners in a setting appropriate for demonstration and hands-on practice, where you can go through the following skills exercises. You may wish to start by demonstrating each skill before allowing learners to practice individually, in pairs, or in small groups – based on your discretion and the makeup of the team. If it is relevant for the skill at hand, one person can wear the simulator and act as the pregnant woman.

3B:1: Delivering an Impacted Head

“Amina is a 37-year-old gravida 3 para 2 woman at gestational age of 40 weeks and 1day. She came to your hospital referred from a nearby health center with a diagnosis of prolonged labor after laboring there for 8 hours. She states that her abdomen on this pregnancy is bigger than her previous pregnancies. You diagnosed she has CPD and decide to do cesarean section. In the middle of the procedure you encountered difficulty in delivering the impacted head.”

Ask learners to practice in pairs:

One learner will take the role of the surgeon, one will be assisting.

A third person can wear the simulator while lying on the table, or the simulator can be mounted on the table with the table clamp.

The team of learners will demonstrate how to deliver the impacted head (using one of the techniques below).

Learner Actions (Reverse breech extraction/pull method):

- Insert hand into the uterus towards the fundus to grasp the fetal feet, which are then pulled to perform a footling breech extraction
- When grasping and pulling the feet, take care to only apply traction parallel to the axis of the legs to avoid fracturing the fetal tibia and/or fibula
- Once the feet are through the hysterotomy incision, the delivery is accomplished as a typical breech delivery, with care taken to avoid hyperextension of the fetal neck

Learner Actions (Abdominopelvic delivery/push method):

- Three or four fingers are separated and spread over a large area of fetal skull to avoid exerting excessive focal pressure, which can be traumatic.
- The operating surgical provider assists from above by providing steady upward traction on the fetal shoulders and by attempting to flex the fetal head or at least prevent further deflexion.
- To facilitate vaginal access, the mother’s legs are abducted into the “Whitmore” or “frog” position on the operating room table.

Note: Although the use of an assistant’s hand trans-vaginally is the preferred method to accomplish this maneuver, the primary obstetrician can also perform this task, but should change gloves before resuming transabdominal procedures.

When the exercise is finished, learners should give each other feedback and discuss:

- What went well? Why?
- What would you do differently next time? Why?

Give your learners enough time to switch roles and repeat the practice until they feel confident.

3B:2: Surgical management of uterine atony

Amina is a gravida 3 para 2 woman for whom cesarean section was being performed for cephalopelvic disproportion in labor. She started to bleed significantly from atonic uterus during the cesarean section right after delivery of the placenta. Your team applied the recommended medical management of uterine atony but the uterus failed to contract. You decide to perform surgical procedures to manage the post-partum hemorrhage and the uterine atony.

Ask learners to practice in pairs:

One learner will take the role of the surgeon, one will be assisting.

A third person can wear the simulator while lying on the table, or the simulator can be mounted on the table with the table clamp.

The team of learners will demonstrate the techniques of B-lynch suturing and uterine and uterine artery ligations.

Learner actions:

- Apply B-lynch suture (Refer to the figure of B-lynch suture in the “Knowledge” section)
 - A large Mayo needle with #2 chromic catgut is used to enter and exit the uterine cavity at A and B.
 - Loop the suture over the fundus and then reenter the uterine cavity posteriorly at C, which is directly below B.
 - Pull the suture very tight
 - Exit the posterior wall of the uterine cavity at D
 - Loop the suture back over the fundus, and anchor it by entering the anterior lateral lower uterine segment at E
 - Cross through the uterine cavity to exit at F.
 - The free ends at A and F are tied down securely to compress the uterus
- Perform sequential arterial ligation (Refer to the figure on uterine and utero-ovarian artery ligation in the “Knowledge” section)

When the exercise is finished, learners should give each other feedback and discuss:

- What went well? Why?
- What would you do differently next time? Why?

Give your learners enough time to switch roles and repeat the practice until they feel confident

3. Management of Common Complications



C. Decision making

Organize the learners in a space and format that allows for discussion. Prompt them to respond to various scenarios and decisions related to their role in performing a cesarean section.

3.C.1 Cephalopelvic disproportion

“Amina is a 37-year-old gravida 3 para 2 woman at gestational age of 40 weeks and 1 day. She came to your hospital referred from a nearby health center with a diagnosis of prolonged labor after laboring there for 8 hours. She states that her abdomen on this pregnancy is bigger than her previous pregnancies. On examination you find a fetal heart rate of 170-180/minute, on vaginal examination the cervix is 7 cm dilated, membrane ruptured, moderate caput and molding++, station +1. Your diagnosis is CPD and you decide to do cesarean section.”

Discussion Questions:

- When do you decide to do CS for suspected cephalopelvic disproportion?
- What precautions do you need to take while performing CS?
- What complications would you anticipate both for the mother and baby?

3.C.2 Impacted Head

“While delivering the baby you encountered difficulty in delivering the head as it is deeply in the pelvis (impacted head).”

Discussion Questions :

- What will be your immediate action? Why?
- What alternatives would you choose to deliver the head? Why?
- What complications/risks would you anticipate during impacted head extractions? Why?

3.C.3 Uterine Atony

“After delivery of the baby and placenta she started to bleed significantly from atonic uterus.”

Discussion questions:

- What will be your immediate action for the woman actively bleeding after placental delivery? Why?
- How do you assess if the bleeding is from atonic uterus?
- When do you decide to do surgical procedures for PPH secondary to uterine atony? Why?
- When do you decide to do B-lynch suturing for uterine atony? Why?
- When do you decide to do sequential artery ligation for uterine atony? Why?
- What considerations will you apply during B-lynch suture?

Note Before Proceeding:

The following section uses the same clinical scenario from the previous sections; instructors should proceed to the full simulation scenario only once learners have mastered the competencies covered in previous sections.

3. Management of Common Complications



D. Simulation Scenario

Organize the learners in a space and setup that resembles a clinical environment – either in situ or in a simulation laboratory – and includes all necessary teaching materials. Ensure that the learners are familiar with basic concepts of simulation, role-playing, and debriefing before introducing the scenario and assigning roles. Depending on your setting and learners, you may wish to modify the scenario's steps, incorporate additional instructors and roles, or encourage others to observe.

Roles to be Assigned:

- 1 Surgical provider
- 1 Surgical Assistant
- 1 Anesthetist
- 1 Scrub nurse
- 1 Midwife or newborn care provider

Expected Duration

- Set-up: 5 min
- Scenario: ca. 60 min
- Debriefing: 15 min

Learning Goal

To improve decision making and proficiency of managing common complications during cesarean section

Learning Objectives

At the end of this session, learners will be able to:

- Identify and exercise the techniques of delivering a deeply impacted head
- Practice decision making process in the sequential techniques in the management of uterine atony
- Exercise B-lynch suturing technique
- Exercise uterine artery and utero-ovarian artery ligation

Equipment Requirements

- MamaBirthie CS simulator
- Surgical Safety Checklist
- Labelled empty bottles of:
 - Povidone iodine
 - Alcohol-based chlorhexidine gluconat
 - IV medications (antibiotics, oxytocin, ergometrine, IV fluids)
- Personal protective equipment
- Surgical drapes
- Equipment and supplies for anesthesia
- Equipment and supplies for neonatal care and resuscitation
- Urinary catheter
- IV cannula
- Instruments for cesarean section, at minimum:
 - Scalpel without blade
 - Bladder retractor
 - Needle holder
- Sutures
- Gauze (different sizes)

Case information:

Amina, a gravida 3 para 2 woman with gestational age of 40 weeks and 1 day came referred from a health center with a diagnosis of prolonged labor after 8 hours of follow-up of labor. She has passed liquor 6 hours prior to her arrival at your hospital. She has no other complaints except she had smoother and shorter labor in her previous deliveries compared to the current one and has noticed that her abdomen is bigger in the current pregnancy. Her ante-natal follow up was all smooth and she was told that she has no diabetes.

Cesarean section was done for CPD. During cesarean section, difficulty in delivering the impacted head was encountered. She also started to bleed significantly from atonic uterus.

Simulator State:

- INITIAL VITALS:
 - BP= 90/60 mmHg
 - HR=100/min, RR=20/min
 - Temp 36.8 degrees
 - Oxygen saturation= 96%
- GENERAL STATUS: In labor pain
- HEAD, EYES, EARS, NOSE & THROAT:
 - pink conjunctiva, Non-icteric sclera
 - Respiratory: normal breath sounds
 - Cardio vascular system: Normal heart sounds
- ABDOMEN/ LEOPOLD MANEUVER: Big for date uterus, longitudinal lie, cephalic presentation, 4contractions/10min/40-45 sec, fetal heartbeat 170-180/min
- VAGINAL EXAMINATION: cervix =7cm dilated, station +1, moderate caput, grade two molding, membrane ruptured with Grade II meconium stained amniotic fluid, no blood on examining finger
- CNS: conscious and oriented

Diagnosis/Assessment

Do not share with participants ahead of the scenario.

Discuss the following aspects in the debriefing:

Multiparous + term pregnancy + protracted active phase of labor secondary to CPD, secondary to fetal macrosomia

Expected Performance

The below checklist contains a summary of the key actions in the scenario and is intended to serve as a debriefing aid for instructors and learners. If staffing allows, the checklist may be completed by an external observer (non-participant) in real time and provided to the lead facilitator to inform the debrief discussion and/or to the learner to enable self-reflection.

| Action | Done? | Comments |
|---|-------|----------|
| 1. Diagnose CPD | | |
| 2. Make decision for cesarean section | | |
| 3. Anticipate difficult delivery and PPH | | |
| 4. Apply push or pull technique to deliver the baby | | |
| 5. Detect post-partum hemorrhage early | | |
| 6. Seek help | | |
| 7. Take measures to resuscitate | | |
| 8. Assess the cause of PPH | | |
| 9. Manage uterine atony medically | | |
| 10. Apply B-lynch suture | | |
| 11. Ligate arteries sequentially | | |

Debriefing Guide

As you observe participants going through the scenario, take notes about each of the learning objectives: What went well, what didn't?

It can be helpful to ask a co-facilitator or observer to take notes as well.

After the scenario, gather all participants for a debrief. Ask the participants questions to reflect on their performance. You can use the questions below as a starting point and add on your own questions using your notes and observations.

Try to understand why participants acted in the way they did. Based on their rationale, discuss possible areas of improvement.

Reflection Questions

- Were you satisfied with your ability to care for the patient? Why/why not?
- What went well? Why?
- What are the areas that could be improved next time? How would you do it differently?
- What did you learn from the session managing multiple complications at once?

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Pilots

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