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## Chapter

# Difficult Cesarean Delivery

*Awol Yemane Legesse and Hale Teka*

## Abstract

Cesarean section rate has been on the rise. It is commonly perceived as a simple and safe alternative to difficult vaginal birth. However, there are situations during C section where delivery of fetus may be difficult. There are multiple reasons for a cesarean section to be difficult such as poorly accessible lower segment, difficult fetal extraction, abnormal placentation, and visceral injuries. If the difficult cesarean section is not handled properly, it is high likely that the procedure will end up in catastrophic maternal and neonatal outcome. To avoid such disaster, it is imperative to have sufficient knowledge on anticipation, planning, and appropriate conduct of the procedure. Thus, this chapter aims at guiding practitioners on the management of common causes of difficult cesarean section.

**Keywords:** difficult CD, complicated CD, extensive adhesion, transverse lie

## 1. Introduction

Cesarean section (CS), defined as the birth of fetus through a surgical incision on the abdomen and uterine wall to effect delivery of fetus and product of conceptus, and it is one of the commonest obstetrical surgical procedures worldwide [1].

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If the difficult cesarean section is not handled properly, it is high likely that the procedure will end up in catastrophic maternal and neonatal outcome. To avoid such disaster, it is imperative to have sufficient knowledge on anticipation, planning, and appropriate conduct of the procedure [3].

Thus, this chapter aims at guiding practitioners on the management of common causes of difficult cesarean section.

To avoid such mishaps, anticipation of potential difficulties and planning in advance can be fruitful.

Before prepping and drapping the patient:

- Check the presenting part
- Check the location of the placenta

- Type of scar if she had previous scars
- Gestational age

## **2. Maternal and fetal factors contributing for difficult cesarean delivery**

Absence of lower uterine segment, placenta previa, previous surgery with extensive adhesions, fibrous uterus are maternal factors which contribute for difficult cesarean delivery. Transverse lie, breech presentation, multiple pregnancy, small fetus are fetal factors commonly encountered in difficult cesarean section [3–5].

## **3. Classical uterine incision**

Classical uterine incision is type of uterine incision in which the incision is made in the contractile part of the uterus so that the inaccessible lower segment can be bypassed. This incision is usually deferred because it is susceptible to rupture with succeeding pregnancies. Most of the indications arise from difficulty in exposing the lower segment. In the remaining occasions, fetal indications such as transverse lie, and conjoined fetus dictate the incision [3].

### **3.1 Existing indications for classical CS**

1. If the lower segment is not well developed and if intrauterine non routine maneuvers are anticipated
2. If there is tumor previa which poses difficulty for a transverse incision. (eg. large fibroid, anterior placenta previa)
3. Extensive bladder adhesion from previous repeat surgery.
4. Postmortem delivery
5. Transverse lie with the fetal back presenting over the pelvis
6. Leiomyoma filling the lower uterine segment
7. If cesarean hysterectomy is preplanned
8. If the previous classical section scar is highly thinned out
9. Cervix invaded by cancer

### **3.2 Surgical steps and technique**

As with all surgery, lucid understanding of the anatomy is fundamental. The following listed techniques are to be followed during conduct of classical cesarean section.

### **3.3 Abdominal entry**

1. Midline subumbilical incision preferred
2. Open peritoneum in the upper part of the incision
3. Check that the uterus is not rotated

### **3.4 Uterine incision**

1. Make a vertical 10 cms incision in the anterior part of the uterus beginning as low as possible, if possible within the lower segment quickly
2. Care should be exercised to avoid cutting the fetus
3. The leg of the fetus is grasped and delivered
4. Estimate blood loss and replace if excessive

### **3.5 Closing the uterus**

1. Close inner myometrial layer
2. Have the assistant manually approximate the edges
3. Close the mid portion of the myometrium, leaving 1 cm of outer myometrium still open
4. Close the serosa and outer layer using a baseball stitch, which is hemostatic and minimizes exposed raw surfaces, and thus may reduce adhesions

### **3.6 Techniques to avoid lacerating the fetus**

1. Allis clamps to the superior and inferior edges of the myometrial incision and elevate them
2. Directly apply the end of the suction tubing to the center of the myometrial incision to balloon-out and thin-out

### **3.7 Midline incision fascial closure**

1. Use of a simple running technique
2. Use of #1 or #2 delayed absorbable monofilament suture (eg, polydioxanone [PDS])
3. Mass closure of all layers of abdominal wall
4. Wide tissue bites ( $\geq 1$  cm)

5. Utilization of short tissue interval ( $\leq 1$  cm)
6. Suture length should be 4 times larger than wound length
7. Use of tension free bites

#### **4. Extracting impacted head**

A cesarean section done for later stages labor or prolonged labor, in which the fetal head is impacted in the pelvis, can lead to worse maternal and perinatal outcomes.

##### **4.1 Methods to dis-impact the deeply engaged fetal head include**

1. Abdomino-vaginal delivery
2. The reverse breech extraction technique
3. Use of a head elevator
4. Utilization of non-dominant hand for extraction
5. Lowering down the operating table
6. Insertion of a ballon device to disimpact an engaged fetal head before an emergency CD and
7. Patwardhan's shoulders first technique

##### **4.2 General steps**

1. Adequate abdominal wall and uterine incisions
2. Adequate uterine relaxation with nitroglycerine
3. Avoiding using fulcrum on the lower uterine segment

##### **4.3 Abdominovaginal delivery (push techniques)**

1. Put the mother in Whitmore or Frog position
2. An assistant's hand/dominant hand of the surgeon disimpacts the head
3. The surgeon uses upward traction on the shoulders and avoids fetal head deflection
4. After fetal head is disimpacted delivery through the hysterectomy incision is completed

#### **4.4 Reverse breech extraction**

If you are taking a mother with prolonged labor for caesarian section, it would be beneficiary if you decide the method to dis-impact the deeply engaged fetal head ahead of time. Thus, localizing the maternal side which the feet of the fetus are located would shorten the precious intraoperative time spent in search of it.

1. Make slightly higher up transverse incision in the uterus
2. Look for the fetal foot
3. Slowly deliver the foot one by one
4. Then deliver the trunk
5. Avoid hyper extension during the delivery of the head of the fetus.

Though there was no statistically significant difference in bladder injury, several systematic reviews and meta-analysis showed that reverse breech extraction is associated with significantly lower maternal risks compared with the push method. Uterine incision extension, infection, mean blood loss, and operative time were significantly higher with the push technique compared with the reverse breech extraction [4, 6–8].

#### **5. Extraction of floating head**

Elective cesarean section for fetal growth restriction or for premature fetus may pose difficulty in extraction of the fetal head.

Vacuum or forceps extraction, Coyne spoon assisted delivery, internal podalic version are the techniques for extraction of floating head.

#### **6. Placenta Previa**

Placenta previa occurs when the placenta covers the internal uterine orifice. Placenta previa is common risk factor for antepartum and postpartum hemorrhage, postpartum hysterectomies, with increased maternal morbidity and mortality. Cesarean section in the presence of placenta previa is difficult experience. Avoiding placental incision is first rule [9, 10].

Options of management can be:

1. Low vertical avoiding the placenta on one side if placental location is anterolateral
2. J or T shaped uterine incisions for placental shear down
3. Classical uterine incision
4. Go-through

Lower segment placentation bleeding

1. Figure of-8 sutures in the placental bed
2. Use oxytocine and misoprostol simultaneously
3. Direct injection of Prostaglandin F<sub>2</sub>

## 7. Transverse lie

Transverse lie is fetal presentation in which the fetal longitudinal axis lies perpendicular to maternal spine. It affects <1% of pregnancies at term and it is an indication for cesarean section [11–13]. Fetal extraction is the commonest difficulty encountered during the procedure. All women with transverse lie must be admitted at 37 weeks +0 days.

- External cephalic version at 37 weeks +0 days, if successful and recurs a repeat external cephalic version at 38–39 weeks
- If successful at 38–39 weeks
  - Rapture the membrane while the vertex is held in position and start induction
- If no experienced personnel for ECV or the mother refuses
  - Schedule the mother for elective CD at 39–39 weeks +6 days

Dorso-superior (back up) transverse lie

- Skin incision
  - Good free access to the lower uterine segment
- Review fetal lie
  - Try to convert it to longitudinal
  - Rule out placenta previa
  - Keep the lower uterine segment free of fluids with suction
  - Incise the lower uterine segment
  - Feel for the presenting part
- For the back-up transverse lie in women with a well-developed lower uterine segment
  - Make a low transverse hysterotomy using an accentuated curvilinear incision to reduce the risk of extension into the broad ligament

- The surgeon standing on the same side as the fetal head then attempts to grasp the fetal feet and perform a footling breech extraction
- If difficulty is encountered, a vertical incision is made to form an inverted-T

#### Dorso-inferior (back down) transverse lie

- The dorso-inferior (back down) transverse lie is more difficult to deliver than the back up transverse lie because the fetal feet are difficult to grasp.
- If the fetal membranes are intact,
  - perform an intra-abdominal version to convert the transverse lie to a cephalic or breech presentation before making the hysterotomy, thus facilitating delivery through the low segment accentuated curvilinear transverse uterine incision
  - For the version, one hand is placed on the fetal head and the other hand is placed on the buttocks
  - The fetal pole that will become the presenting part is very gently manipulated toward the pelvic inlet while the other pole is guided in the opposite direction
  - Although either cephalic or podalic version can be performed, we have found that breech extraction is technically easier
  - After the version has been completed, an assistant holds the fetus in the longitudinal position so it will not revert to its original position, the hysterotomy is made, and the fetus is delivered

The assistant performs intraabdominal version prior to hysterotomy and holds the fetus in its new longitudinal position. The surgeon will then perform the lower-segment uterine incision at the dotted line.

After external version from transverse lie to breech, the fetus is extracted in the breech presentation by the operator, while the assistant continuously holds the fetus in longitudinal position.

- Some experts recommend a vertical uterine incision for the back down transverse lie, which is also a reasonable approach. But vertical hysterotomy, even if mostly confined to the lower segment, is less desirable than a transverse incision as it may increase the risk of uterine rupture in a subsequent pregnancy, but it may be necessary if the lower uterine segment is poorly developed [3]
- If the fetus is large, especially if membranes are ruptured and the shoulder is impacted in the birth canal, a classical incision may be necessary

## **8. Previous CS/surgery with extensive adhesions**

Adhesions are common following cesarean delivery and after abdominal surgery. The extent of adhesions varies among individuals. In the presence of adhesions, the



cesarean section and fetal extraction are difficult, incision to delivery time is prolonged and the risk of complications such as hemorrhage, bowel or bladder injury is heightened [2, 14, 15].

- Bladder, bowel, and the uterus might be adherent to the sheath
- The most important aspect of adhesions is to try to restore normal anatomy as far as possible
- Cut and tie of bands
  - Cut muscles
- If omentum is adherent to the peritoneum,
  - Clamp the adhesion, cut and tie it with vicryl
- If the bladder is adherent to uterine wall,
  - Try to open the peritoneal cavity by cutting higher up
- If bowel adhesions are encountered.
  - Try to separate the bowel from the adherent tissue using sharp dissection
- One often has thick fibrous bands extending from the uterus to the rectus muscle
  - Those are also tied and cut through, in order to secure easy access to the lower uterine segment
- In the event of poor exposure to the lower uterine segment cut the bellies of rectus muscle laterally
  - Do not hesitate to call in the help of other specialties and your seniors!
- Perform the hysterotomy in the most appropriate accessible location
- Another option is a paravesical or supravesical extraperitoneal approach

## **9. Absent lower uterine segment**

- This is encountered during
  - Delivery of premature infant
  - Placenta previa

- Classic Incision is preferred
  - Secure hemostasis
  - Close the serosa to avoid adhesions

## 10. Fibroid uterus

If the fibroid is situated near the lower segment at the uterine incision line it becomes a potential life threatening problem. Will

- In such cases do
  - Vertical lower uterine incision
  - Classical cesarean section

### CD in Breech Presentation

- Increase the lower uterine segment exposure
- Introduce your right hand and find the feet
- Perform a gentle breech extraction
- Always keep the baby's back upwards


## Author details

Awol Yemane Legesse\* and Hale Teka  
Department of Obstetrics and Gynecology, College of Health Sciences, Mekelle  
University, Ethiopia

\*Address all correspondence to: [hayuawol1@gmail.com](mailto:hayuawol1@gmail.com)

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