

Indications for Cesarean Section by ACOG - 2011

Many indications exist for performing a cesarean delivery. In those women who are having a scheduled procedure (ie, an elective or indicated repeat, for malpresentation or placental abnormalities), the decision made is that vaginal delivery is least optimal.

For other patients admitted to labor and delivery, the anticipation is for a vaginal delivery. If the patient's situation should change, a cesarean delivery is performed because it is believed that outcome may be better for the fetus, the mother, or both.

A cesarean delivery is performed for maternal indications, fetal indications, or both.

The leading indications for cesarean delivery are:

- Previous cesarean delivery
- Breech presentation
- Dystocia
- Fetal distress.

These indications are responsible for 85% of all cesarean deliveries.

Maternal indications

Maternal indications for cesarean delivery include the following:

- Repeat cesarean delivery
- Obstructive lesions in the lower genital tract, including malignancies, large vulvovaginal condylomas, obstructive vaginal septa, and leiomyomas of the lower uterine segment that interfere with engagement of the fetal head
- Pelvic abnormalities that preclude engagement or interfere with descent of the fetal presentation in labor

Relative maternal indications include conditions in which the **increasing intrathoracic pressure** generated by Valsalva maneuvers could lead to maternal complications; these include:

- Left heart valvular stenosis,
 - Dilated aortic valve root,
 - Certain cerebral arteriovenous malformations (AVMs)
 - Recent retinal detachment.
- Women who have previously undergone vaginal or perineal reparative surgery (eg, colporrhaphy or repair of major anal involvement from inflammatory bowel disease) also benefit from cesarean delivery to avoid damage to the previous surgical repair.

No clear evidence supports planned cesarean delivery for extreme maternal obesity.

- A prospective cohort study from the United Kingdom included women with a body mass index of 50 kg/m² or more and noted possible increased shoulder dystocia (3% vs 0%) but found no significant differences in anesthetic, postnatal, or neonatal complications between women who underwent planned vaginal delivery and those who underwent planned cesarean delivery.

Dystocia in labor (labor dystocia) is a very commonly cited indication for cesarean delivery, but it is not specific.

- Dystocia is classified as a protraction disorder or as an arrest disorder.
 - These can be primary or secondary disorders. Most dystocias are caused by abnormalities of the power (uterine contractions), the passage (maternal pelvis), or the passenger (the fetus).
- When a diagnosis of dystocia in labor is made, the indication should be detailed according to the previous classification (ie, primary or secondary disorder, arrest or protraction disorder, or a combination of the above).

Recently, debate has arisen over the option of elective cesarean delivery on maternal request (CDMR).

- Evidence shows that it is reasonable to inform the pregnant woman requesting a cesarean delivery of the associated risks and benefits for the current and any subsequent pregnancies. The clinician's role should be to provide the best possible evidence-based counseling to the woman and to respect her autonomy and decision-making capabilities when considering route of delivery.
- Detractors of CDMR argue that the premise of cesarean on request applies to a very small portion of the population and that it should not be routinely offered on ethical grounds.

In 2006, the National Institutes of Health (NIH) convened a consensus conference to address **cesarean delivery on maternal request - CDMR**. They resolved that the evidence supporting this concept was not conclusive. Their **recommendations** included the following:

- CDMR should be avoided by women wanting several children.
 - CDMR should not be performed before the 39th week of pregnancy or without verifying fetal lung maturity.
 - CDMR has a potential benefit of decreased risk of hemorrhage for the mother and decreased risk of birth injuries for the baby.
 - CDMR has a potential risk of respiratory problems for the baby.
 - CDMR is associated with a longer maternal hospital stay and increasing risk of placenta previa and placenta accreta with each successive cesarean.
- The NIH further noted that the procedure requires individualized counseling by the practitioner of the potential risks and benefits of both vaginal and cesarean delivery, and it should not be motivated by the unavailability of effective pain management.

Fetal indications

Fetal indications for cesarean delivery include the following:

- Situations in which neonatal morbidity and mortality could be decreased by the prevention of trauma
- Malpresentations
- Certain congenital malformations or skeletal disorders
- Infection
- Prolonged acidemia

A fetus in a nonvertex presentation is at increased risk for trauma, cord prolapse, and head entrapment. Malpresentation includes preterm breech presentations and non-frank breech term fetuses.

- The decision to proceed with a cesarean delivery for the term frank breech singleton fetus has been challenged; although most practitioners will always perform a cesarean delivery in this situation.
 - ACOG has left open the option to consider a breech delivery under the appropriate circumstances, including a practitioner experienced in the evaluation and management of labor and skilled in the delivery of the breech fetus.

External cephalic version

- If a patient is diagnosed with a fetal malpresentation (ie, breech or transverse lie) after 36 weeks, the option for an external cephalic version is offered to try to convert the fetus to a vertex lie, thus allowing an attempt at a vaginal delivery.
 - An external cephalic version is usually attempted at 36-38 weeks with studies underway to establish the use of performing external cephalic version at 34 weeks' gestational age.
 - Ultrasonography is performed to confirm a breech presentation.
 - If the fetus is still in a nonvertex presentation, an intravenous (IV) line is started.
 - The baby is monitored with an external fetal heart rate monitor prior to the procedure to confirm well-being.
 - With a reassuring fetal heart rate tracing, the version is attempted.
- An external cephalic version involves trying to externally manipulate the fetus into a vertex presentation.
- This is accomplished with ultrasonographic guidance to ascertain fetal lie. An attempt is made to manipulate the fetus through either a "forward roll" or "backward roll."
 - The overall chance of success is approximately 60%.
 - Some practitioners administer an epidural to the patient before attempting version, and others may give the patient a dose of subcutaneous terbutaline (a beta-mimetic used for tocolysis) just before the attempt.

Factors influencing external cephalic version:

- Multiparity, a posterior placenta, and normal amniotic fluid with a normally grown fetus. In addition, to be a candidate, a patient must be eligible for an attempted vaginal delivery.

Relative contraindications include: poor fetal growth or the presence of congenital anomalies.

Risks of an external cephalic version include:

- Rupture of membranes, labor, fetal injury, and the need for an emergent cesarean delivery due to placental abruption.
 - A recent review reported a severe complication rate of 0.24% and a cesarean section rate secondary to complications of 0.34%.
- If the version is successful, the patient is placed on a fetal monitor in close proximity to the labor and delivery unit or in the labor and delivery unit itself.
- If fetal heart rate testing is reassuring, the patient is discharged to await spontaneous labor, or she may be induced if the fetus is of an appropriate gestational age or the patient has a favorable cervix.

Multiple births

- The first twin in a nonvertex presentation is an indication for a cesarean delivery, as are higher order multiples (triplets or greater). A large body of literature supports both: outright cesarean delivery as well as spontaneous breech delivery or extraction of the second twin.
- The decision is made in conjunction with the patient after appropriate counseling regarding the risks and benefits as well as under the supervision of a physician experienced in the management of the labor and delivery of a breech fetus. Evidence suggests that the rate of severe complications of the second breech twin is independent of the mode of delivery.

Congenital anomalies

Several congenital anomalies are controversial indications for cesarean delivery; these include::

- Fetal neural tube defects (to avoid sac rupture), particularly defects that are larger than 5-6 cm in diameter.
 - One study noted no difference in long-term motor or neurologic outcomes. Some authors noted no relationship between mode of delivery and infant outcomes,^[26] while others have advocated cesarean delivery of all infants with a neural tube defect.
- Cesarean delivery is indicated in certain cases of hydrocephalus with an enlarged biparietal diameter, and some skeletal dysplasias such as type III osteogenesis imperfecta.
- Whether or not an outright cesarean delivery should be performed in the setting of a fetal abdominal wall defect (eg, gastroschisis or omphalocele) remains controversial.
 - Most reviews agree that cesarean is not advantageous unless the liver is extruded, which is a very rare event.

- The overall incidence of cesarean delivery in this group of patients is probably due to an increased incidence of intrauterine growth retardation and fetal distress prior to or in labor.

Acidemia

In the setting of a nonremediable and nonreassuring pattern remote from delivery, a cesarean delivery is recommended to prevent a mixed or metabolic acidemia that could potentially cause significant morbidity and mortality.

- Electronic fetal monitoring was used in 85% of labors in the United States in 2002.
 - Its use has increased the cesarean delivery rate as much as 40%.
 - This has occurred without a decrease in the cerebral palsy or perinatal death rate.
- ACOG has recommended that any facility providing obstetric care have the capability of performing a cesarean delivery within 30 minutes of the decision. Despite this recommendation, a decision to delivery time of more than 30 minutes is not necessarily associated with a negative neonatal outcome.

Infection

- Among patients with first-episode genital herpes infection, the risk of maternal-fetal transmission is 33 times higher than with recurrent outbreaks.
 - The largest population-based study reported that for primary infection, the risk of transmission to the newborn was 35%, compared with a 2% risk for recurrent infection.
 - Among patients with culture-positive herpes, the transmission rate with vaginal delivery was 7 times that with cesarean delivery.
- **Currently, all patients with active or symptomatic herpes infection are candidates for cesarean delivery.**
 - Neonatal infection with herpes can lead to significant morbidity and mortality, especially with a primary outbreak.
 - With recurrent outbreaks, the risk to the neonate is reduced by the presence of maternal antibodies.
 - Unfortunately, not all women with active viral shedding can be detected upon admission to labor and delivery.
- Treatment of women with HIV infections has undergone tremendous change in the past few years.
 - Women with a viral count above 1,000 should be offered cesarean delivery at 38 weeks (or earlier if they go into labor).
 - In women who are being treated with highly active antiretroviral therapy (HAART), cesarean delivery (before labor or without prolonged rupture of membranes) appears to further lower the risk for neonatal transmission, particularly among those with viral counts above 1,000.
 - Among patients with low or undetectable viral counts, the evidence supporting a benefit is not as clear; nevertheless, the patient should be given the option of a cesarean delivery.

Maternal and fetal indications

Indications for cesarean delivery that benefit both the mother and the fetus include the following:

- Abnormal placentation
- Abnormal labor due to cephalopelvic disproportion
- Situations in which labor is contraindicated

Abnormal placentation

In the presence of a placenta previa (ie, the placenta covering the internal cervical os), attempting vaginal delivery places both the mother and the fetus at risk for hemorrhagic complications. This complication has actually increased as a result of the increased incidence of repeat cesarean deliveries, which is a risk factor for placenta previa and placenta accreta. **Both placenta previa and placenta accreta carry increased morbidity related to hemorrhage and need for hysterectomy.**

Cephalopelvic disproportion

Cephalopelvic disproportion can be suspected on the basis of possible macrosomia or an arrest of labor despite augmentation. Many cases diagnosed as cephalopelvic disproportion are the result of a primary or secondary arrest of dilatation or arrest of descent. Predicting true primary or secondary arrest of descent due to cephalopelvic disproportion is best assessed by sagittal suture overlap, but not lambdoid suture overlap, particularly where progress is poor in a trial of labor.

Continuing to attempt a vaginal delivery in this setting increases the risk of infectious complications to both mother and fetus from prolonged rupture of membranes. Less often, maternal hemorrhagic and fetal metabolic consequences occur from a uterine rupture, especially among patients with a previous cesarean delivery. Vaginal delivery can also increase the risk of maternal trauma and fetal trauma (eg, Erb-Duchenne or Klumpke palsy and metabolic acidosis) from a shoulder dystocia.

Among women who have a uterine scar (prior transmurular myomectomy or cesarean delivery by high vertical incision), a cesarean delivery should be performed prior to the onset of labor to prevent the risk of uterine rupture, which is approximately 4-10%.

Contraindications

There are few contraindications to performing a cesarean delivery. If the fetus is alive and of viable gestational age, then cesarean delivery can be performed in the appropriate setting.

In some instances, a cesarean delivery should be avoided.

- Rarely, maternal status may be compromised (eg, with severe pulmonary disease) to such an extent that an operation may jeopardize maternal survival.
 - In such difficult situations, a care plan outlining when and if to intervene should be made with the family in the setting of a multidisciplinary meeting.
- A cesarean delivery may not be recommended if the fetus has a known karyotypic abnormality (trisomy 13 or 18) or known congenital anomaly that may lead to death (anencephaly).