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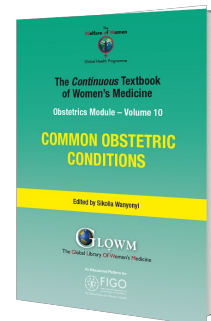
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Chapter

Abnormal Lie/Presentation

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INTRODUCTION

The mechanism of labor and delivery, as well as the safety and efficacy, is determined by the specifics of the fetal and maternal pelvic relationship at the onset of labor. Normal labor occurs when regular and painful contractions cause progressive cervical dilatation and effacement, accompanied by descent and expulsion of the fetus. Abnormal labor involves any pattern deviating from that observed in the majority of women who have a spontaneous vaginal delivery and includes:

1. Protraction disorders (slower than normal progress);
2. Arrest disorders (complete cessation of progress).

Among the causes of abnormal labor is the disproportion between the presenting part of the fetus and the maternal pelvis, which rather than being a true disparity between fetal size and maternal pelvic dimensions, is usually due to a malposition or malpresentation of the fetus.

This chapter reviews how to define, diagnose, and manage the clinical impact of abnormalities of fetal lie and malpresentation with the most commonly occurring being the breech-presenting fetus.

DEFINITIONS

At the onset of labor, the position of the fetus in relation to the birth canal is critical to the route of delivery and, thus,

should be determined early. Important relationships include fetal lie, presentation, attitude, and position.

Fetal lie

Fetal lie describes the relationship of the fetal long axis to that of the mother. In more than 99% of labors at term, the fetal lie is *longitudinal*. A *transverse lie* is less frequent when the fetal and maternal axes may cross at a 90° angle, and predisposing factors include multiparity, placenta previa, hydramnios, and uterine anomalies. Occasionally, the fetal and maternal axes may cross at a 45° angle, forming an *oblique lie*.

Fetal presentation

The *presenting part* is the portion of the fetal body that is either foremost within the birth canal or in closest proximity to it. Thus, in longitudinal lie, the presenting part is either the fetal head or the breech, creating *cephalic* and *breech presentations*, respectively. The *shoulder* is the presenting part when the fetus lies with the long axis transversely.

Commonly the baby lies longitudinally with cephalic presentation. However, in some instances, a fetus may be in breech where the fetal buttocks are the presenting part. Breech fetuses are also referred to as malpresentations. Fetuses that are in a transverse lie may present the fetal back (or shoulders, as in the acromial presentation), small parts (arms and legs), or the umbilical cord (as in a funic presentation) to the pelvic inlet. When the fetal long axis is at an angle to the bony inlet, and no palpable fetal part generally is presenting, the fetus is likely in oblique lie. This lie usually is transitory and occurs during fetal conversion between other lies during labor.

The *point of direction* is the most dependent portion of the presenting part. In cephalic presentation in a well-flexed fetus, the occiput is the point of direction.

The *fetal position* refers to the location of the point of direction with reference to the four quadrants of the maternal outlet as viewed by the examiner. Thus, position may be right or left as well as anterior or posterior.

Unstable lie

Refers to the frequent changing of fetal lie and presentation in late pregnancy (usually refers to pregnancies >37 weeks).

Fetal position

Fetal position refers to the relationship of an arbitrarily chosen portion of the fetal presenting part to the right or left side of the birth canal. With each presentation there may be two positions – right or left. The fetal occiput, chin (mentum) and sacrum are the determining points in vertex, face, and breech presentations. Thus:

- left and right occipital presentations
- left and right mental presentations
- left and right sacral presentations.

Fetal attitude

The fetus instinctively forms an ovoid mass that corresponds to the shape of the uterine cavity towards the third trimester, a characteristic posture described as attitude or habitus. The fetus becomes folded upon itself to create a convex back, the head is flexed, and the chin is almost in contact with the chest. The thighs are flexed over the abdomen and the legs are bent at the knees. The arms are usually parallel to the sides or lie across the chest while the umbilical cord fills the space between the extremities. This posture is as a result of fetal growth and accommodation to the uterine cavity. It is possible that the fetal head can become progressively extended from the vertex to face presentation resulting in a change of fetal attitude from convex (flexed) to concave (extended) contour of the vertebral column.

The categories of frank, complete, and incomplete breech presentations differ in their varying relations between the lower extremities and buttocks (Figure 1). With a frank breech, lower extremities are flexed at the hips and extended at the knees, and thus the feet lie close to the head. With a complete breech, both hips are flexed, and one or both knees are also flexed. With an incomplete breech, one or both hips are extended. As a result, one or both feet or knees lie below the breech, such that a foot or knee is lowermost in the birth canal. A footling breech is an incomplete breech

with one or both feet below the breech.

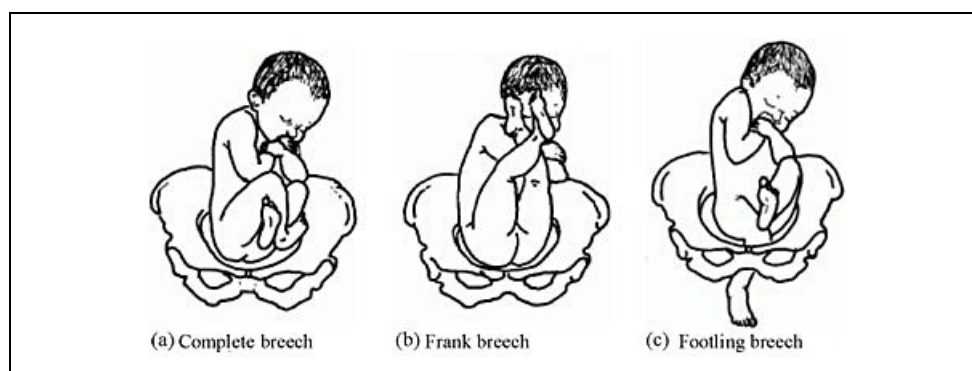


Figure 1 Types of breech presentation. Reproduced from WHO 2006,¹ with permission.

INCIDENCE

The relative incidence of differing fetal and pelvic relations varies with diagnostic and clinical approaches to care.

About 1 in 25 fetuses are breech at the onset of labor and about 1 in 100 are transverse or oblique, also referred to as non-axial.²

With increasing gestational age, the prevalence of breech presentation decreases. In early pregnancy the fetus is highly mobile within a relatively large volume of amniotic fluid, therefore it is a common finding. The incidence of breech presentation is 20–25% of fetuses at <28 weeks, but only 7–16% at 32 weeks, and only 3–4% at term.^{2,3}

Face and brow presentation are uncommon. Their prevalence compared with other types of malpresentations are shown below.⁴

1. Occiput posterior – 1/19 deliveries;
2. Breech – 1/33 deliveries;
3. Face – 1/600–1/800 deliveries;
4. Brow – 1/500–1/4000 deliveries;
5. Transverse lie – 1/833 deliveries;
6. Compound – 1/1500 deliveries.

Transverse lie is often unstable and fetuses in this lie early in pregnancy later convert to a cephalic or breech presentation.

ETIOLOGY

The fetus has a relatively larger head than body during most of the late second and early third trimester, it therefore tends to spend much of its time in breech presentation or in a non-axial lie as it rotates back and forth between cephalic and breech presentations. The relatively large volume of amniotic fluid present facilitates this dynamic presentation.

Abnormal fetal lie is frequently seen in multifetal gestation, especially with the second twin. In women of grand parity, in whom relaxation of the abdominal and uterine musculature tends to occur, a transverse lie may be encountered.

Prematurity and macrosomia are also predisposing factors. Distortion of the uterine cavity shape, such as that seen with leiomyomas, prior uterine surgery, or developmental anomalies (Mullerian fusion defects), predisposes to both abnormalities in fetal lie and malpresentations. The location of the placenta also plays a contributing role with fundal and cornual implantation being seen more frequently in breech presentation. Placenta previa is a well-described affiliate for both transverse lie and breech presentation.

Fetuses with congenital anomalies also present with abnormalities in either presentation or lie. It is possibly as a cause (i.e. fitting the uterine cavity optimally) or effect (the fetus with a neuromuscular condition that prevents the normal

turning mechanism). The finding of an abnormal lie or malpresentation requires a thorough search for fetal abnormalities. Such abnormalities could include chromosomal (autosomal trisomy) and structural abnormalities (hydrocephalus), as well as syndromes of multiple effects (fetal alcohol syndrome).

In most cases, breech presentation appears to be as a chance occurrence; however, up to 15% may be owing to fetal, maternal, or placental abnormalities. It is commonly thought that a fetus with normal anatomy, activity, amniotic fluid volume, and placental location adopts the cephalic presentation near term because this position is the best fit for the intrauterine space, but if any of these variables is abnormal, then breech presentation is more likely.

Factors associated with breech presentation are shown in Table 1.

Table 1 Risk factors for breech presentation.

Preterm gestation
Previous breech presentation in sibling or parent
Uterine abnormality (e.g., bicornuate or septate uterus, fibroid)
Placental location (e.g., placenta previa)
Multiparity
Extremes of amniotic fluid volume (polyhydramnios, oligohydramnios)
Fetal anomaly (e.g., anencephaly, hydrocephaly, sacrococcygeal teratoma)
Fetal neurologic impairment
Fetal growth restriction
Maternal anticonvulsant therapy
Older maternal age
Crowding from multiple gestation
Extended fetal legs
Short umbilical cord
Contracted maternal pelvis
Female sex

Spontaneous version may occur at any time before delivery, even after 40 weeks of gestation. A prospective longitudinal study using serial ultrasound examinations reported the likelihood of spontaneous version to cephalic presentation after 36 weeks was 25%.⁵

In population-based registries, the frequency of breech presentation in a second pregnancy was approximately 2% if the first pregnancy was not a breech presentation and approximately 9% if the first pregnancy was a breech presentation. After two consecutive pregnancies with breech presentation at delivery, the risk of another breech presentation was approximately 25% and this rose to 40% after three consecutive breech deliveries.^{6,7}

In addition, parents who themselves were delivered at term from breech presentation were twice as likely to have their offspring in breech presentation as parents who were delivered in cephalic presentation. This suggests a possible heritable component to fetal presentation.⁸

DIAGNOSIS

Leopold's maneuvers

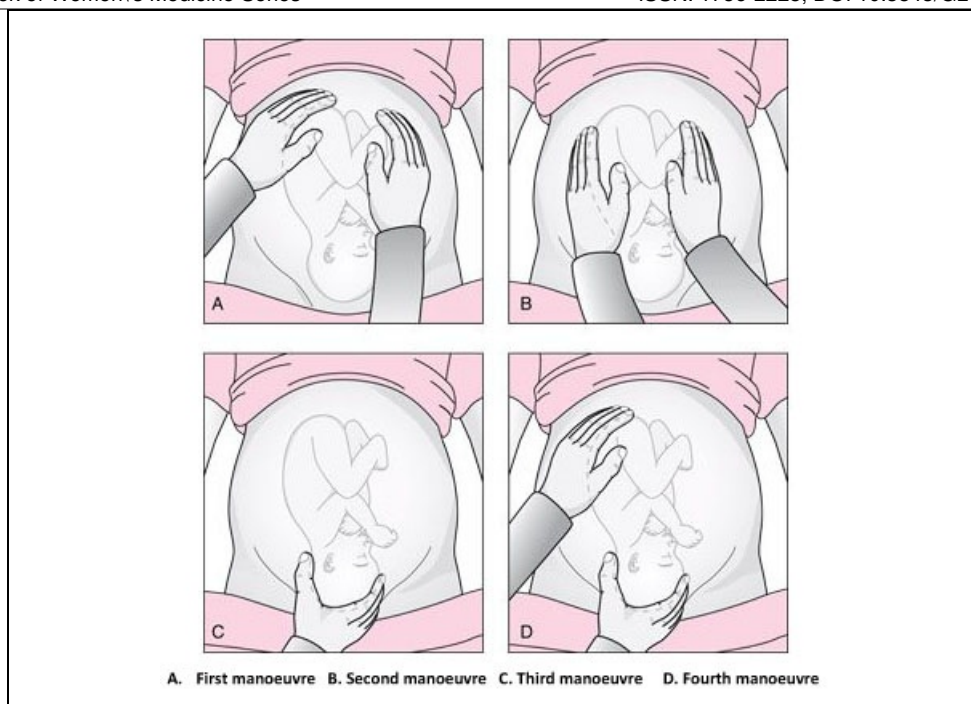


Figure 2 The Leopold's maneuvers: palpation of fetus in left occiput anterior position. Reproduced from World Health Organization, 2006,¹ with permission.

Abdominal examination can be conducted systematically employing the four maneuvers described by Leopold in 1894.^{9,10} In obese patients, in polyhydramnios patients or those with anterior placenta, these maneuvers are difficult to perform and interpret.

The first maneuver is to assess the uterine fundus. This allows the identification of fetal lie and determination of which fetal pole, cephalic or podalic – occupies the fundus. In breech presentation, there is a sensation of a large, nodular mass, whereas the head feels hard and round and is more mobile.

The second maneuver is accomplished as the palms are placed on either side of the maternal abdomen, and gentle but deep pressure is exerted. On one side, a hard, resistant structure is felt – the back. On the other, numerous small, irregular, mobile parts are felt – the fetal extremities. By noting whether the back is directed anteriorly, transversely, or posteriorly, fetal orientation can be determined.

The third maneuver aids confirmation of fetal presentation. The thumb and fingers of one hand grasp the lower portion of the maternal abdomen just above the symphysis pubis. If the presenting part is not engaged, a movable mass will be felt, usually the head. The differentiation between head and breech is made as in the first maneuver.

The fourth maneuver helps determine the degree of descent. The examiner faces the mother's feet, and the fingertips of both hands are positioned on either side of the presenting part. They exert inward pressure and then slide caudad along the axis of the pelvic inlet. In many instances, when the head has descended into the pelvis, the anterior shoulder or the space created by the neck may be differentiated readily from the hard head.

According to Lyndon-Rochelle *et al.*,¹¹ experienced clinicians have accurately identified fetal malpresentation using Leopold maneuvers with a high sensitivity 88%, specificity 94%, positive-predictive value 74%, and negative-predictive value 97%.

Vaginal examination

Prelabor diagnosis of fetal presentation is difficult as the presenting part cannot be palpated through a closed cervix. Once labor begins and the cervix dilates, and palpation through vaginal examination is possible. Vertex presentations and their positions are recognized by palpation of the various fetal sutures and fontanelles, while face and breech presentations are identified by palpation of facial features or the fetal sacrum and perineum, respectively.

Sonography and radiology

Sonography is the gold standard for identifying fetal presentation. This can be done during antenatal period or

intrapartum. In obese women or in women with muscular abdominal walls this is especially important. Compared with digital examinations, sonography for fetal head position determination during second stage labor is more accurate.^{12,13}

COMPLICATIONS

Adverse outcomes in malpresented fetuses are multifactorial. They could be due to either underlying conditions associated with breech presentation (e.g., congenital anomalies, intrauterine growth restriction, preterm birth) or trauma during delivery.

Neonates who were breech *in utero* are more at risk for mild deformations (e.g., frontal bossing, prominent occiput, upward slant and low-set ears), torticollis, and developmental dysplasia of the hip.

Other obstetric complications include prolapse of the umbilical cord, intrauterine infection, maldevelopment as a result of oligohydramnios, asphyxia, and birth trauma and all are concerns.

Birth trauma especially to the head and cervical spine, is a significant risk to both term and preterm infants who present breech. In cephalic presenting fetuses, the labor process prepares the head for delivery by causing molding which helps the fetus to adapt to the birth canal. Conversely, the after-coming head of the breech fetus must descend and deliver rapidly and without significant change in shape. Therefore, small alterations in the dimensions or shape of the maternal bony pelvis or the attitude of the fetal head may have grave consequences. This process poses greater risk to the preterm infant because of the relative size of the fetal head and body. Trauma to the head is not eliminated by cesarean section; both intracranial and cervical spine trauma may result from entrapment in either the uterine or abdominal incisions.

In resource-limited countries where ultrasound imaging, urgent cesarean delivery, and neonatal intensive care are not readily available, the maternal and perinatal mortality/morbidity associated with transverse lie in labor can be high. Uterine rupture from prolonged labor in a transverse lie is a major reason for maternal/perinatal mortality and morbidity.

EXTERNAL CEPHALIC VERSION

External cephalic version (ECV) is the manual rotation of the fetus from a non-cephalic to a cephalic presentation by manipulation through the maternal abdomen (Figure 3).

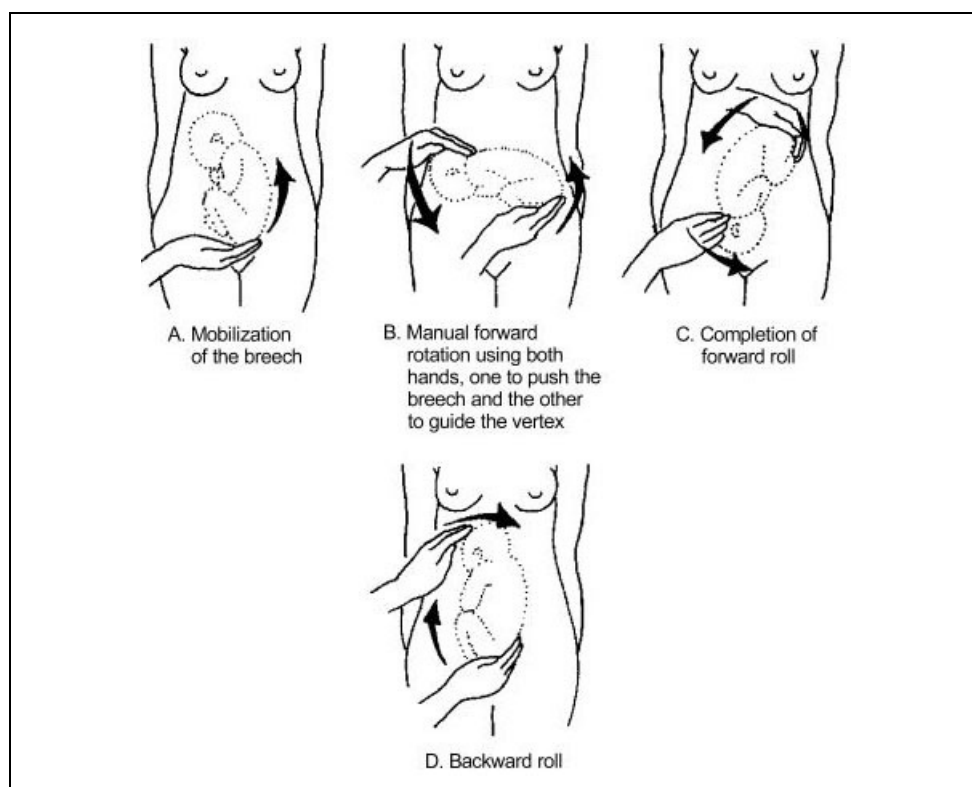


Figure 3 External version of breech presentation. Reproduced from WHO

2003,¹⁴ with permission.

This procedure is usually performed as an elective procedure in women who are not in labor at or near term to improve their chances of having a vaginal cephalic birth. ECV reduces the risk of non-cephalic presentation at birth by approximately 60% (relative risk [RR] 0.42, 95% CI 0.29–0.61) and reduces the risk of cesarean delivery by approximately 40% (RR 0.57, 95% CI 0.40–0.82).⁷

In a 2008 systematic review of 84 studies including almost 13,000 version attempts at term, the pooled success rate was 58%.¹⁵

A subsequent large series of 2614 ECV attempts over 18 years reported a success rate of 49% and provided more details:¹⁶

1. The success rate was 40% in nulliparous women and 64% in parous women.
2. After successful ECV, 97% of fetuses remained cephalic at birth, 86% of which were delivered vaginally.
3. Spontaneous version to a cephalic presentation occurred after 4.3% of failed attempts, and 2.2% of successfully vertexed cases reverted to breech.

Factors associated with lower ECV success rates include nulliparity, anterior placenta, lateral or cornual placenta, decreased amniotic fluid volume, low birth weight, obesity, posteriorly located fetal spine, frank breech presentation, ruptured membranes.

MANAGEMENT

The following factors should be considered while managing malpresentations: type of malpresentation, gestational age at diagnosis, availability of skilled personnel, institutional resources and protocols and patient factors and preferences.

Breech presentation

According to a term breech trial,¹⁷ planned cesarean delivery carries a reduced perinatal mortality and early neonatal morbidity for babies with breech presentation at term compared to vaginal breech delivery. When planning a breech vaginal birth, appropriate patient selection and skilled personnel in breech delivery are key in achieving good neonatal outcomes. In appropriately selected patients and skilled personnel in vaginal breech deliveries, perinatal mortality is between 0.8 and 1.7/1000 for planned vaginal breech birth and between 0 and 0.8/1000 for planned cesarean section.^{18,19} The choice of the route of delivery should therefore be made considering the availability of skilled personnel in conducting breech vaginal delivery; providing competent newborn care; conducting rapid cesarean delivery should need arise and performing ECV if desired; availability of resources for continuous intrapartum fetal heart rate and labor monitoring; patient clinical features, preferences and values; and institutional policies, protocols and resources.

Four approaches to the management of breech presentation are shown in Figure 4:⁸

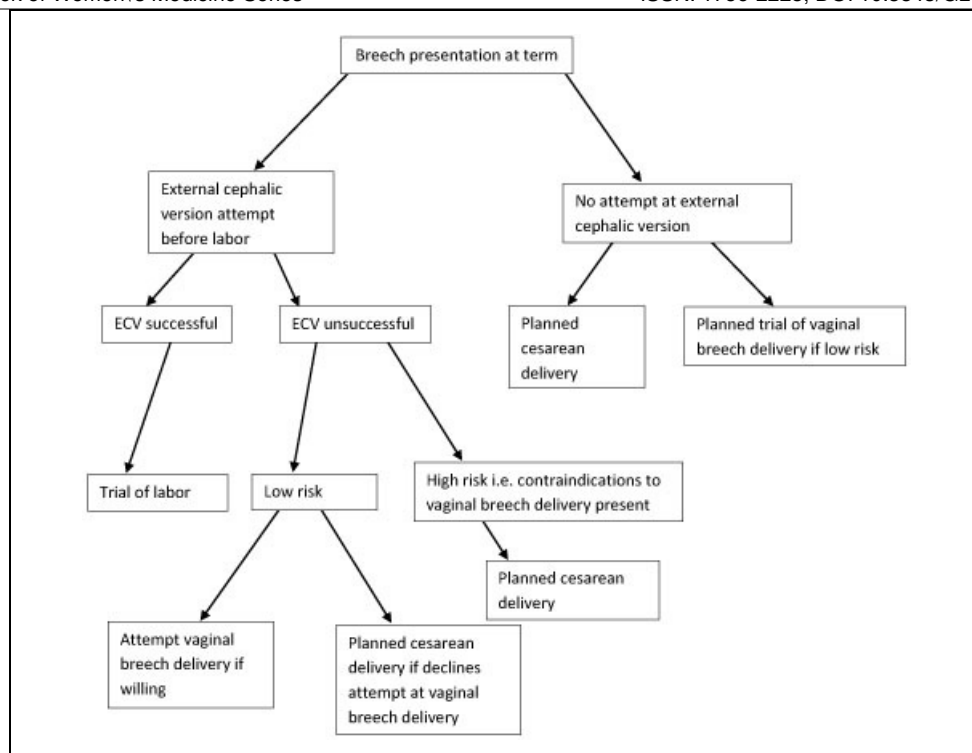


Figure 4 Management of breech presentation. ECV, external cephalic version.

The options available are:

1. Attempting external cephalic version (ECV) before labor with a trial of labor if successful and conducting cesarean delivery if unsuccessful.
2. Attempting ECV before labor with a trial of labor if successful. If ECV is unsuccessful, to offer trial of labor and vaginal breech delivery to carefully selected patients with favorable clinical features for vaginal breech delivery. Cesarean delivery is offered to those who decline an attempt at vaginal breech delivery and those with contraindications to breech vaginal delivery including:
 - a. Footling or kneeling breech presentation;
 - b. Fetal macrosomia;
 - c. Fetal growth restriction;
 - d. Hyperextended fetal neck in labor;
 - e. Previous cesarean delivery;
 - f. Unavailability of skilled personnel in breech delivery;
 - g. Other contraindications to vaginal delivery like placenta previa, cord prolapse;
 - h. Fetal anomaly that may interfere with vaginal delivery like hydrocephalus.
3. Planned cesarean delivery without an attempt at ECV.
4. Planned trial of vaginal breech delivery in patients with favorable clinical characteristics for vaginal delivery without an attempt at ECV.

All the four approaches should be discussed in detail with the patient, and in light of all the considerations highlighted above, a safe plan of care agreed upon by both the patient and the clinician in good time.

Transverse and oblique lie

If a diagnosis of transverse/oblique fetal lie is made before onset of labor and there are no contraindications to vaginal birth or ECV, ECV can be attempted at 37 weeks' gestation. If the malpresentation recurs, further attempts at ECV can be made at 38–39 weeks with induction of labor if successful.

ECV can also be attempted in early labor with intact fetal membranes and no contraindications to vaginal birth.

If ECV is declined or is unsuccessful, then planned cesarean section should be arranged after 39 weeks' gestation.

MANAGEMENT OF LABOR AND DELIVERY

Breech presentation

Skills to conduct vaginal breech delivery are very important as there are women who may opt for planned vaginal breech birth and even among those who choose planned cesarean delivery, about 10% may go into labor and end up with a vaginal breech delivery.¹⁷ Some implications of cesarean delivery such as need for repeat cesarean deliveries, placental attachment disorders and uterine rupture make vaginal birth more desirable to some individuals. In addition, vaginal birth has advantages such as affordability, quicker recovery, shorter hospital stay, less complications and is more favorable for resource poor settings.

In appropriately selected women, planned vaginal breech birth is not associated with any significant long-term neurological morbidity. Regardless of planned mode of birth, cerebral palsy occurs in approximately 1.5/1,000 breech births, and abnormal neurological development occurs in approximately 3/100.¹⁸ Careful patient selection is very important for good outcomes and it is generally agreed that women who choose to undergo a trial of labor and vaginal breech delivery should be at low risk of complications from vaginal breech delivery. Some contraindications to vaginal breech delivery have been highlighted above.

Women with breech presentation near term, pre- or early-labor ultrasound should be performed to assess type of breech presentation, flexion of the fetal head and fetal growth. If a woman presents in labor and ultrasound is unavailable and has not recently been performed, cesarean section is recommended. Vaginal breech deliveries should only take place in a facility with ability and resources readily available for emergency cesarean delivery should the need arise.

Induction of labor may be considered in carefully selected low-risk women. Augmentation of labor is controversial as poor progress of labor may be a sign of cephalo-pelvic disproportion, however, it may be considered in the event of weak contractions. A cesarean delivery should be performed if there is poor progress of labor despite adequate contractions. Labor analgesia including epidural can be used as needed.

Vaginal breech delivery should be conducted in a facility that is able to carry out continuous electronic fetal heart rate monitoring sufficient personnel to monitor the progress of labor. From the term breech trial,¹⁷ the commonest indications for cesarean section are poor progress of labor (50%) and fetal distress (29%). There is an increased risk of cord compression which causes variable decelerations. Since the fetal head is at the fundus where contractions begin, the incidence of early decelerations arising from head compression is also higher. Due to the irregular contour of the presenting part which presents a high risk of cord prolapse, immediate vaginal examination should be undertaken if membranes rupture to rule out cord prolapse. The frequency of cord prolapse is 1% with frank breech and more than 10% in footling breech.⁸

Fetal blood sampling from the buttocks is not recommended. A passive second stage of up to 90 minutes before active pushing is acceptable to allow the breech to descend well into the pelvis. Once active pushing commences, delivery should be accomplished or imminent within 60 minutes.¹⁸

During planned vaginal breech birth, a skilled clinician experienced in vaginal breech birth should supervise the first stage of labor and be present for the active second stage of labor and delivery. Staff required for rapid cesarean section and skilled neonatal resuscitation should be in-hospital during the active second stage of labor.

The optimum maternal position in second stage has not been extensively studied. Episiotomy should be undertaken as needed and only after the fetal anus is visible at the vulva. Breech extraction of the fetus should be avoided. The baby should be allowed to deliver spontaneously with maternal effort only and without any manipulations at least until the level of the umbilicus. A loop of the cord is then pulled to avoid cord compression. After this point, suprapubic pressure can be applied to facilitate flexion of the fetal head and descent.

Delay of arm delivery can be managed by sweeping them across the face and downwards towards in front of the chest or by holding the fetus at the hips or bony pelvis and performing a 180° rotation to deliver the first arm and shoulder and then in the opposite direction so that the other arm and shoulder can be delivered i.e., **Lovset's maneuver** (Figure 5).

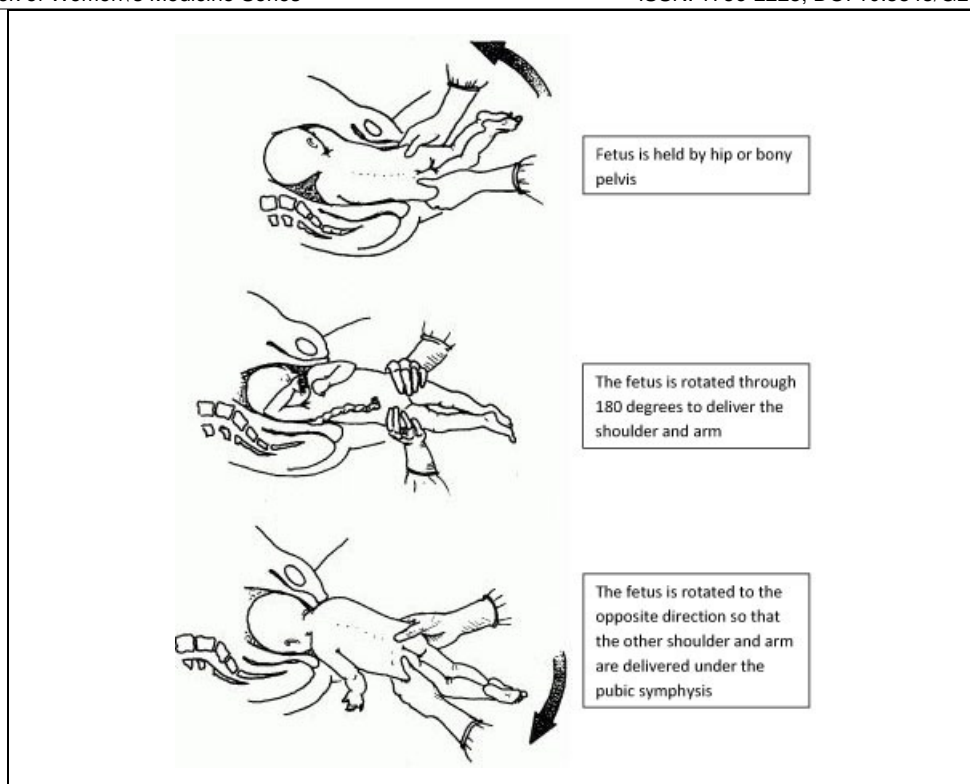


Figure 5 Lovset's maneuver. Reproduced from WHO 2006,¹ with permission.

The fetal head can deliver spontaneously or by the following maneuvers:

1. Turning the body to the floor with application of suprapubic pressure to flex the head and neck.
2. **Mauriceau-smellie-veit maneuver** where the fetal trunk lies along the operator's forearm, with the middle finger of the right hand placed on the maxilla and the second and fourth fingers placed on malar prominences while counter pressure is applied on the occiput with middle finger of left hand to facilitate flexion (Figure 6).

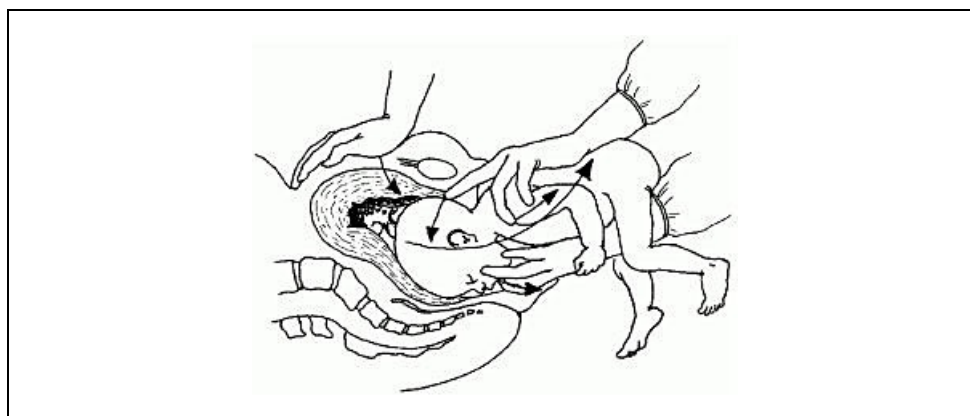


Figure 6 Mauriceau-smellie-veit maneuver. Reproduced from WHO 2003,¹⁴ with permission.

3. By use of Piper's forceps.
4. **Burns-Marshall maneuver** where the baby's legs and trunk are allowed to hang until the nape of the neck is visible at the mother's perineum so that its weight exerts gentle downwards and backwards traction to promote flexion of the head. The fetal trunk is then swept in a wide arc over the maternal abdomen by grasping both the feet and maintaining gentle traction; the aftercoming head is slowly born in this process.

If the above methods fail to deliver the fetal head, **symphysiotomy** and **zavanelli maneuver** with cesarean section can be attempted. **Duhrssen incisions** where 1–3 full length incisions are made on an incompletely dilated cervix at the 6, 2 and 10 o'clock positions can be done especially in preterm.

Face presentation

The diagnosis of face presentation is made during vaginal examination where the presenting portion of the fetus is the fetal face between the orbital ridges and the chin. At diagnosis, 60% of all face presentations are mentum anterior, 26% are mentum posterior and 15% are mentum transverse. Since the submentobregmatic (face presentation) and suboccipitobregmatic (vertex presentation) have the same diameter of 9.5 cm, most face presentations can have a successful vaginal birth and not necessarily require cesarean section delivery.⁶ The position of a fetus in face presentation helps in guiding the management plan. Over 75% of mentum anterior presentations will have a successful vaginal delivery, whereas it is impossible to have a vaginal birth in mentum posterior position unless it converts spontaneously to mentum anterior position. In mentum posterior position the neck is maximally extended and cannot extend further to deliver beneath the symphysis pubis (Figure 7).

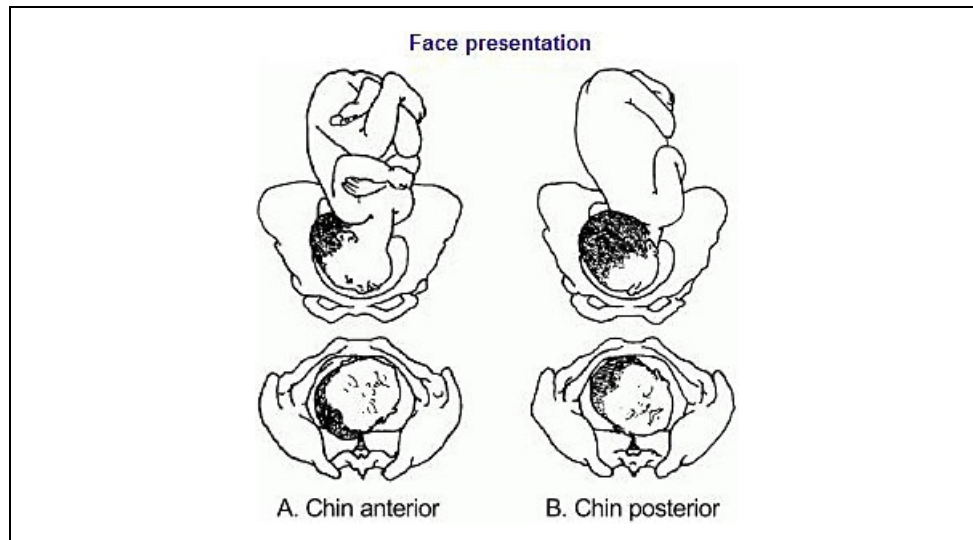


Figure 7 Face presentation. Reproduced from WHO 2003,¹⁴ with permission.

As in breech management, face presentation also requires continuous fetal heart rate monitoring, since abnormalities of fetal heart rate are more common.^{5,6} In one study,²⁰ only 14% of pregnancies had normal tracings, 29% developed variable decelerations and 24% had late decelerations. Internal fetal heart rate monitoring with an electrode is not recommended, as it may cause facial and ophthalmic injuries if incorrectly placed. Labor augmentation and cesarean sections are performed as per standard obstetric indications. Vacuum and midforceps delivery should be avoided, but an outlet forceps delivery can be attempted. Attempts to manually convert the face to vertex or to rotate a posterior position to a more favorable anterior mentum position are rarely successful and are associated with high fetal morbidity and mortality, and maternal morbidity, including cord prolapse, uterine rupture, and fetal cervical spine injury with neurological impairment.

Brow presentation

The diagnosis of brow presentation is made during vaginal examination in second stage of labor where the presenting portion of the fetal head is between the orbital ridge and the anterior fontanel.

Brow presentation may be encountered early in labor, but is usually a transitional state and converts to a vertex presentation after the fetal neck flexes. Occasionally, further extension may occur resulting in a face presentation. The majority of brow presentations diagnosed early in labor convert to a more favorable presentation and deliver vaginally. Once brow presentation is confirmed, continuous fetal heart rate monitoring is necessary and labor progress should be monitored closely in order to pick any signs of abnormal labor. Since the brow diameter is large (13.5 cm), persistent brow presentation usually results in prolonged or arrested labor requiring a cesarean delivery. Labor augmentation and instrumental deliveries are therefore not recommended.

CESAREAN DELIVERY

Breech presentation

This is an option for women with breech presentation at term to choose cesarean section as their preferred mode of delivery, for those with unsuccessful ECV who do not want to attempt vaginal breech delivery, have contraindications for vaginal breech delivery or in the event that there is no available skilled personnel to safely conduct a vaginal breech delivery. Women should be given enough and accurate information about pros and cons for both planned cesarean section and planned vaginal delivery to help them make an informed decision.

Since the publication of the term breech trial,^{17,19} there has been a dramatic global shift from selective to planned cesarean delivery for women with breech presentation at term. This study revealed that planned cesarean section carried a reduced perinatal mortality and early neonatal morbidity for babies with breech presentation at term compared to planned vaginal birth (RR 0.33, 95% CI 0.19–0.56). The cesarean delivery rate for breech presentation is now about 70% in European countries, 95% in the United States and within 2 months of the study's publication, there was a 50–80% increase in rates of cesarean section for breech presentation in The Netherlands.

A planned cesarean delivery should be scheduled at term between 39–41 weeks' gestation to allow maximum time for spontaneous cephalic version and minimize the risk of neonatal respiratory problems.⁸ Physical exam and ultrasound should be performed immediately prior to the surgery to confirm the fetal presentation. A detailed consent should be obtained prior to surgery and should include both short- and long-term complications of cesarean section and the alternatives of care that are available. The abdominal and uterine incisions should be sufficiently large to facilitate easy delivery. Thereafter, extraction of the fetus is similar to what is detailed above for vaginal delivery.

Face presentation

Cesarean section for face presentation is indicated for persistent mentum posterior position, mentum transverse and some mentum anterior positions where there is standard indication for cesarean section.

Brow presentation

Persistent brow presentation usually necessitates cesarean delivery due to the large presenting diameter that causes arrest or protracted labor.

Transverse/oblique lie

Cesarean section is indicated for patients who present in active labor, in those who decline ECV, following an unsuccessful ECV or in those with contraindications to vaginal birth.

For dorsosuperior (back up) transverse lie, a low transverse incision is made on the uterus and an attempt to grasp the fetal feet with footling breech extraction is made. If this does not succeed, a vertical incision is made to convert the hysterotomy into an inverted T incision.

Dorsoinferior (back down) transverse lie is more difficult to deliver since the fetal feet are hard to grasp. An attempt at intraabdominal version to cephalic or breech presentation can be done if membranes are intact before the uterine incision is made. Another option is to make a vertical uterine incision; however, the disadvantage of this is the risk of uterine rupture in subsequent pregnancies.

PERINATAL OUTCOME

Availability of skilled neonatal care at delivery is important for good perinatal outcomes to facilitate resuscitation if needed for all fetal malpresentations.⁸ All newborns born from fetal malpresentations require a thorough examination to check for possible injuries resulting from birth or as the cause of the malpresentation.

Neonates who were in face presentation often have facial edema and bruising/ecchymosis from vaginal examinations that usually resolve within 24–48 hours of life and low Apgar scores. Trauma during labor may cause tracheal and laryngeal edema immediately after delivery, which can result in neonatal respiratory distress and difficulties in

PRACTICE RECOMMENDATIONS

- **Diagnosis of unstable lie is made when a varying fetal lie is found on repeated clinical examination in the last month of pregnancy.**
- **Consider external version to correct lie if not longitudinal.**
- **Consider ultrasound to exclude mechanical cause.**
- **Inform woman of need for prompt admission to hospital if membranes rupture or when labor starts.**
- **If spontaneous rupture of membranes occurs, perform vaginal examination to exclude the presence of a cord or malpresentation.**
- **If the lie is not longitudinal in labor and cannot be corrected perform cesarean section.**

CONFLICTS OF INTEREST

The authors of this chapter declare that they have no interests that conflict with the contents of the chapter.

REFERENCES

- 1 WHO. *Managing prolonged and obstructed labour: Education material for teachers of midwifery* 2nd edn. World Health Organization, 2006:51. Available: http://whqlibdoc.who.int/publications/2006/9241546662_4_eng.pdf.
- 2 Scheer K, Nubar J. Variation of fetal presentation with gestational age. *Am J Obstet Gynecol* 1976;125(2):269–70.
- 3 Hickok DE, Gordon DC, Milberg JA, et al. The frequency of breech presentation by gestational age at birth: a large population-based study. *Am J Obstet Gynecol* 1992;166(3):851–85
- 4 Sorensen T, Hasch E, Lange AP. Fetal presentation during pregnancy. *Lancet (London, England)* 1979;2(8140):477.
- 5 Hughey MJ. Fetal position during pregnancy. *Am J Obstet Gynecol* 1985;153(8):885–6.
- 6 Gardberg M, Leonova Y, Laakkonen E. Malpresentations—impact on mode of delivery. *Acta Obstetrica et Gynecologica Scandinavica* 2011;90(5):540–2.
- 7 Ghosh MK. Breech presentation: evolution of management. *The Journal of Reproductive Medicine* 2005;50(2):108–16.
- 8 Hofmeyr G. Overview of breech presentation. UpToDate [Internet] Waltham, MA: UpToDate. 2014.
- 9 Kastner I, Kachlik D. [German gynecologist and obstetrician Christian Gerhard Leopold (1846–1911)]. *Ceska Gynekol* 2010;75(3):218–21.
- 10 Sharma JB. Evaluation of Sharma's modified Leopold's maneuvers: a new method for fetal palpation in late pregnancy. *Arch Gynecol Obstet* 2009;279(4):481–7.
- 11 Lydon-Rochelle M, Albers L, Gorwoda J, et al. Accuracy of Leopold maneuvers in screening for malpresentation: a prospective study. *Birth (Berkeley, Calif)* 1993;20(3):132–5.
- 12 Ramphul M, Kennelly M, Murphy DJ. Establishing the accuracy and acceptability of abdominal ultrasound to define the foetal head position in the second stage of labour: a validation study. *Eur J Obstet Gynecol Reprod Biol* 2012;164(1):35–9.
- 13 Wiafe YA, Whitehead B, Venables H, Nakua EK. The effectiveness of intrapartum ultrasonography in assessing cervical dilatation, head station and position: A systematic review and meta-analysis. *Ultrasound* 2016;24(4):222–32.
- 14 WHO. *Managing complications in pregnancy and childbirth: a guide for doctors and midwives* Geneva: World Health Organization, 2003. Available: <http://www.who.int/reproductive-health/impac/mcpc.pdf>.
- 15 Grootscholten K, Kok M, Oei SG, et al. External cephalic version-related risks: a meta-analysis. *Obstet Gynecol* 2008;112(5):1143–51.
- 16 Melo P, Georgiou EX, Hedditch A, et al. External cephalic version at term: a cohort study of 18 years' experience. *BJOG: an International Journal of Obstetrics and Gynaecology* 2019;126(4):493–9.
- 17 Hannah ME, Hannah WJ, Hewson SA, et al. Planned caesarean section versus planned vaginal birth for breech presentation at term: a randomised multicentre trial. *The Lancet* 2000;356(9239):1375–83.
- 18 Kotaska A, Menticoglou S. No. 384-Management of Breech Presentation at Term. *Journal of Obstet Gynaecol Canada* 2019;41(8):1193–205.
- 19 No G-tG. management of breech presentation: green-top guideline No. 20b management of breech presentation: Green-top guideline No. 20b. 2017.
- 20 Benedetti TJ, Lowensohn RI, Truscott A. Face presentation at term. *Obstetrics and Gynecology* 1980;55(2):199–202.