chapter 21

# Nursing Management of Labor and Birth at Risk

## KeyTERMS

amnioinfusion
cesarean birth
dystocia
hypertonic uterine dysfunction
hypotonic uterine dysfunction
forceps
labor induction
postterm pregnancy
umbilical cord prolapse
vacuum extractor
vaginal birth after cesarean (VBAC)

## LearningOBJECTIVES

*After studying the chapter content, the student should be able to accomplish the following:*

1. Define the key terms.
2. Identify dysfunctional labor patterns and appropriate interventions to promote maternal and fetal well-being.
3. Discuss the care needed for a woman experiencing a postterm pregnancy.
4. Describe obstetric emergency situations, including appropriate management.
5. Explain nursing management for the woman undergoing labor induction/augmentation, forceps- and vacuum-assisted birth, cesarean birth and vaginal birth after cesarean (VBAC).

**WOW**

*In face of a crisis or a potentially bad outcome, add a mixture of warmth and serenity to your technical abilities.*

Most women describe pregnancy as an exciting time in their life, but the development of an unexpected problem can suddenly change this description dramatically. Consider the woman who has had a problem-free pregnancy and then suddenly develops a condition during labor, changing a routine situation into a possible crisis. Many complications give little or no warning and present challenges for the perinatal healthcare team as well as the family. The nurse plays a major role in identifying the problem quickly and coordinating immediate intervention, ultimately achieving a positive outcome.

Two National Health Goals address positive maternal and newborn outcomes related to issues involving complications of labor and birth and cesarean birth (Healthy People 2010).

This chapter will address several conditions occurring during labor and birth that may increase the risk of an adverse outcome for the mother and fetus. Nursing management of the woman and her family focuses on professional support and compassionate care.

HEALTHY PEOPLE 2010

**National Health Goals Related to Labor and Birth at Risk**

| Objective | Significance |
|---|---|
| Reduce maternal illness and complications due to pregnancy | Will help to focus attention on the need for close antepartum surveillance and identification of risk factors for maternal illness and complications, particularly those most likely to be associated with maternal death |
| Reduce maternal complications during hospitalized labor and delivery from a baseline of 31.2/100 deliveries to a target of 24/100 deliveries | |
| Reduce cesarean births among low-risk (full term, singleton, vertex presentation) women | Will help to promote development of specific guidelines for trials of labor and labor management, continual labor support, and practice patterns, while helping to ensure positive maternal and newborn outcomes |
| Reduce the number of cesarean births in women giving birth for the first time from a baseline of 18% to 15% | |
| Reduce the number of cesarean births in women with prior cesarean birth from 72% to 63% | |

USDHHS, 2000.

**ConsiderTHIS!**

I attended all the natural childbirth classes and felt like I would be prepared for anything concerning labor and birth. I had purchased several books on the subject and surfed the Internet extensively for anything I could find about birthing. I was truly "up for the challenge" when my labor pains started. My partner was ready to be a good coach and help me through this life experience, until my water broke spontaneously and the baby's cord came floating down too. There I was, with this glistening white cord protruding from my vagina. I didn't prepare for this event! All of a sudden the whole atmosphere changed, from one that was calm to, now, a big production. I was asked to turn myself upside down while the nurse placed a gloved hand into my raised bottom to take pressure off the cord as we sailed to the operating room in this position for an immediate cesarean birth.

Looking back over that experience, I was glad for everyone's quick response, which saved my child's life, but at the same time it taught me a life lesson—You can prepare for the expected childbirth events, but you really need to be prepared for the unexpected ones that occur without warning! I am grateful for the nurses, who knew what to do, and I appreciate their quick actions.

**Thoughts: No one has a crystal ball to see what the future holds for any of us, and certainly not a prolapsed cord. It is an event that rarely can be anticipated, although many women can be placed in the high-risk category with twins, malpresentation, hydramnios, or preterm infants. Despite not being in a high-risk category, this woman still experienced this unexpected event. Nurses always need to be prepared for any emergency, even if risk factors are absent. What important assessment is needed when membranes rupture? What instructions should the woman be given should this occur?**

## Dysfunctional Labor

**Dystocia,** defined as abnormal or difficult labor, can be influenced by a vast number of maternal and fetal factors. Dystocia is said to exist when the progress of labor deviates from normal and is characterized by a slow and abnormal progression of labor. It occurs in approximately 8% to 11% of all labors and is the leading indicator for primary cesarean birth in the United States (Ressel, 2004).

To characterize a labor as abnormal, a basic understanding of normal labor is essential. Normal labor starts with regular uterine contractions that are strong enough to result in cervical effacement and dilation. Early in labor, uterine contractions are irregular and cervical effacement and dilation are gradual. When cervical dilation reaches 4 cm and uterine contractions become more

powerful, the active phase of labor begins. It is usually during the active phase that dystocia becomes apparent. Because dystocia cannot be predicted or diagnosed with certainty, the term "failure to progress" is often used. This term includes lack of progressive cervical dilation, lack of descent of the fetal head, or both. An adequate trial of labor is needed to declare with confidence that dystocia or "failure to progress" exists.

Early identification of and prompt interventions for dystocia are essential to minimize risk to the woman and fetus. According to American College of Obstetrics and Gynecology (ACOG), factors associated with an increased risk for dystocia include epidural analgesia, excessive analgesia, multiple gestation, hydramnios, maternal exhaustion, ineffective maternal pushing technique, occiput posterior position, longer first stage of labor, nulliparity, short maternal stature (<5′), fetal birth weight (>8.8 lb), shoulder dystocia, abnormal fetal presentation or position (breech), fetal anomalies (hydrocephalus), maternal age older than 35 years, gestational age more than 41 weeks, chorioamnionitis, ineffective uterine contractions, and high fetal station at complete cervical dilation (Ressel, 2004).

Dystocia can result from problems or abnormalities involving the expulsive forces (known as the "powers"); presentation, position, and fetal development (the "passenger"); the maternal bony pelvis or birth canal (the "passageway"); and maternal stress (the "psyche").

## Problems With the Powers

When expulsive forces of the uterus become dysfunctional, the uterus may either never fully relax (hypertonic contractions), placing the fetus in jeopardy, or relax too much (hypotonic contractions), causing ineffective contractions. Still another dysfunction can occur when the uterus contracts so frequently and with such intensity that a very rapid birth will take place (precipitous labor).

### Hypertonic Uterine Dysfunction

**Hypertonic uterine dysfunction** occurs when the uterus never fully relaxes between contractions. Subsequently, contractions are erratic and poorly coordinated because more than one uterine pacemaker is sending signals for contraction. Placental perfusion becomes compromised, thereby reducing oxygen to the fetus. These hypertonic contractions exhaust the mother, who is experiencing frequent, intense, and painful contractions with little progression. This dysfunctional pattern occurs in early labor and affects nulliparous women more than multiparous women (Smith, 2004).

These contractions occur in the latent phase of the first stage of labor (cervical dilation of <4 cm) and are uncoordinated. Typically, the force of the contractions occurs in the midsection of the uterus at the junction of the active upper and passive lower segments of the uterus rather than in the fundus. Thus, the downward pressure to push the presenting part against the cervix is lost (Gilbert & Harmon, 2003). Commonly, the woman becomes discouraged due to her lack of progress and has increased pain secondary to uterine anoxia.

#### Diagnosis

The diagnosis of a hypertonic labor pattern is based on the characteristic hypertonicity of the contractions and the lack of labor progress.

#### Treatment

Treatment of this dysfunctional labor pattern involves therapeutic rest with the use of sedatives to promote relaxation and stop the abnormal activity of the uterus. Any factors that might be contributing to this abnormal labor pattern are identified and addressed. Because high resting tone and persistent pain are also seen in abruptio placentae, this complication needs to be ruled out prior to making treatment decisions. After a 4- to 6-hour rest period, many women will awaken and begin a normal labor pattern (Condon, 2004).

### Hypotonic Uterine Dysfunction

**Hypotonic uterine dysfunction** occurs during active labor (dilation >4 cm) when contractions become poor in quality and lack sufficient intensity to dilate and efface the cervix. This dysfunction is often termed secondary uterine inertia because the labor begins normally and then the frequency and intensity of contractions decrease (Joy & Lyon, 2005). Common factors associated with this dysfunctional labor pattern include an overdistended uterus with a multifetal pregnancy or a large single fetus; too much pain medicine given too early in labor; fetal malposition; and regional anesthesia (Bonilla & Forouzan, 2004). The major risk with this complication is hemorrhage after giving birth because the uterus cannot contract effectively to compress blood vessels.

#### Diagnosis

Diagnosis of this dysfunctional labor pattern includes evaluation of the woman's labor to confirm that the woman is having hypotonic active labor rather than a long latent phase. The maternal pelvis and fetal presentation and position are also evaluated to ensure that they are not contributing to the prolonged labor without noticeable progress.

#### Treatment

Treatment of this dysfunctional labor pattern involves identifying the causes of inefficient uterine action, which might include a malpositioned fetus, a maternal pelvis that is too small, or overdistention of the uterus with fluid or a macrosomic fetus. If all of the causes that might contribute to dysfunction are ruled out, then rupture of the amniotic sac (amniotomy) usually is performed. In addition, labor augmentation with oxytocin (Pitocin) may be used to stimulate effective uterine contractions. If neither of these interventions evokes a change in progress, a cesarean birth is needed.

## Precipitous Labor

Precipitous labor is one that is completed in less than 3 hours. This pattern is characterized by an abrupt onset of higher-intensity contractions occurring in a shorter period of time instead of the more gradual increase in frequency, duration, and intensity that typifies most spontaneous labors. Women experiencing precipitous labor typically have soft perineal tissues that stretch readily, permitting the fetus to pass through the pelvis quickly and easily. Maternal complications are rare if the maternal pelvis is adequate and the soft tissues yield to a fast fetal descent.

### Diagnosis

Diagnosis of this rapid labor pattern is based on the rapidity of progress through the stages of labor. Potential fetal complications may include head trauma, such as intracranial hemorrhage or nerve damage, and hypoxia due to the rapid progression of labor (Kennelly et al., 2003).

### Treatment

Typically, the fetus is delivered vaginally if the maternal pelvis is adequate.

# Problems With the Passenger

Any presentation other than occiput anterior or a slight variation of the fetal position or size increases the probability of dystocia. These variations can affect the contractions or fetal descent through the maternal pelvis. Common problems involving the fetus include occiput posterior position, breech presentation, multifetal pregnancy, excessive size (macrosomia) as it relates to cephalopelvic disproportion (CPD), and structural anomalies.

## Persistent Occiput Posterior Position

Persistent occiput posterior is the most common malposition, occurring in about 15% of laboring women. The fetal head engages in the left or right occipito-transverse position and the occiput rotates posteriorly rather than into the more favorable occiput anterior position. In effect, the fetus will be born facing upward instead of the normal downward position (Bonilla & Forouzan, 2004).

The reasons for this malrotation are often unclear. This position presents slightly larger diameters to the maternal pelvis, thus slowing the progress of fetal descent. A fetal head that is poorly flexed may be responsible. In addition, poor uterine contractions may not push the fetal head down into the pelvic floor to the extent that the fetal occiput sinks into it rather than being pushed to rotate in an anterior direction. The labor is usually much longer and more uncomfortable (causing increased back pain during labor) if the fetus remains in this position.

### Diagnosis

The diagnosis is made clinically by vaginal examination in conjunction with the mother's complaints of severe back pain, because the back of the fetal head is pressing on her sacrum and coccyx. The fetus may experience extensive caput succedaneum and molding from the sustained occiput posterior position.

### Treatment

The best management is to allow the labor to proceed, preparing the woman for a long labor. Many malpositions resolve themselves without intervention. Comfort measures and maternal position changes can help promote fetal head rotation.

Effective pain relief is crucial to help the woman to tolerate the back discomfort. Low back counterpressure during contractions helps to ease the discomfort. Other helpful measures to attempt to rotate the fetal head include lateral abdominal stroking in the direction that the fetal head should rotate; assisting the client into a hands-and-knees position (all fours); and squatting, pelvic rocking, stair climbing, assuming a side-lying position toward the side that the fetus should rotate, and side lunges (Lowdermilk & Perry, 2004). In addition, anxiety reduction, continuous reinforcement of the woman's progress, and education about measures to facilitate fetal head rotation are essential.

## Face and Brow Presentations

Face and brow presentations are rare and are associated with fetal abnormalities (anencephaly), pelvic contractures, high parity, placenta previa, hydramnios, low birthweight, or a large fetus (Olds et al., 2004). If there is a complete extension of the fetal head, the face will present for delivery.

In a brow presentation, the fetal head stays between full extension and full flexion so that the largest fetal skull diameter presents to the pelvis. This condition can be diagnosed only once labor is well established.

### Diagnosis

Diagnosis is made clinically by a vaginal examination. Typically, the examiner can feel the facial features as the presenting part rather than the fetal head.

### Treatment

With a face presentation, labor will be longer, but if the pelvis is adequate and the head rotates, a vaginal birth is possible. If the head rotates backward, a cesarean birth is necessary. With a brow presentation, unless the head flexes, a vaginal birth is not possible.

The birth attendant needs to explain fetal malpositions to the woman and her partner. In addition, close observation for any signs of fetal hypoxia, as evidenced by late decelerations on the fetal monitor, is important.

## Breech Presentation

Breech presentation, which occurs in 3% to 4% of labors, is frequently associated with multifetal pregnancies, grand multiparity (more than five births), advanced maternal

age, placenta previa, hydramnios, preterm births, and fetal anomalies such as hydrocephaly (London et al., 2003). In this malpresentation the fetal buttocks, or breech, presents first rather than the head. Perinatal mortality is increased 2- to 4-fold with a breech presentation, regardless of the mode of delivery (Molkenboer et al., 2004).

### Diagnosis

Vaginal examination determines a breech presentation. "Breech babies" can present in three different attitudes:

- *Frank breech:* The buttocks is the presenting part, with hips flexed and legs and knees extended upward.
- *Complete breech (or full breech):* The buttocks is the presenting part, with hips flexed and knees flexed in a "cannonball" position.
- *Footling or incomplete breech:* One or two feet are the presenting part, with one or both hips extended (see Fig. 13-7).

### Treatment

The optimal method of birth for a breech presentation is controversial. Some health care providers consider any type of breech presentation as an indication for cesarean birth unless the fetus is small and the mother has a large pelvis. Others believe that a vaginal birth is appropriate for a breech presentation, with each occurrence treated individually and labor monitored very closely.

Regardless of the birth method selected, the risk for maternal and fetal trauma remains high due to the abnormal presentation. When a vaginal delivery is determined to be safe, the fetus will be allowed to spontaneously deliver up to the umbilicus. Then, maneuvers will be initiated to assist in the delivery of the remainder of the body, arms, and head. Fetal membranes typically are left intact as long as possible to act as a dilating wedge and to prevent cord prolapse. An anesthesiologist and a pediatrician are present for all vaginal breech deliveries because of the increased risk to mother and fetus.

Breech presentation also places a fetus at increased risk. The outcome for the baby is improved with a planned caesarean birth compared with current medical practice for planned vaginal birth. External cephalic version (turning the fetus to the vertex position by external manipulation) attempts to reduce the chance of breech presentation at birth, thus reducing the adverse effects of cesarean birth. However, this technique is not always successful.

External cephalic version is the transabdominal manual manipulation of the fetus into a vertex presentation. It is attempted after the 36th week of gestation but before the start of labor, because some fetuses spontaneously turn to a cephalic presentation on their own toward term, and some will return to the breech presentation if external cephalic version is attempted too early (Fischer, 2005). Success rates vary and risks include fractured bones, ruptured viscera, abruptio placentae, fetomaternal hemorrhage, and umbilical cord entanglement (Fischer, 2005). Tocolytic drugs to relax the uterus, as well as other methods, have been used in an attempt to facilitate external cephalic version at term (Hofmeyr & Gyte, 2004). After the procedure, RhoGAM is administered to the Rh-negative woman to prevent a sensitization reaction from occurring if trauma has occurred and the potential for mixing of blood exists (Gilbert & Harmon, 2003). Each woman must be evaluated individually for all factors before any interventions are initiated.

## Shoulder Dystocia

Shoulder dystocia is defined as the obstruction of fetal descent and birth by the axis of the fetal shoulders after the fetal head has been delivered. The fetal head delivers but the neck does not appear and the chin retracts against the perineum, much like a turtle's head going back into his shell. The shoulders remain wedged behind the mother's pubic bone, causing a difficult birth with potential for injury to both mother and baby. If the shoulders are still above the brim at this stage, no advance occurs. The newborn's chest is trapped within the vaginal vault. Although the nose and mouth are outside, the chest cannot expand with respiration. When shoulder dystocia occurs, umbilical cord compression between the fetal body and the maternal pelvis is a risk due to impending fetal acidosis.

Shoulder dystocia is an emergency, an often unexpected complication that can result in significant neonatal and maternal morbidity. It is one of the most anxiety-provoking emergencies encountered in labor. Failure of the shoulders to deliver spontaneously places both the woman and the fetus at risk for injury. Fetal risks include asphyxia, nerve damage, clavicle fracture, central nervous system (CNS) injury or dysfunction, and death. Poor maternal outcomes may include postpartum hemorrhage, extensive lacerations, uterine rupture, infection, fistulas, bladder injury, and psychological trauma (Connors, 2004).

### Diagnosis

The diagnosis is made when the newborn's head delivers but the neck and remaining body structures do not. History may reveal primary risk factors such as suspected infant macrosomia (weight >4,500 g), presence of diabetes mellitus in the mother, excessive maternal weight gain, abnormal maternal pelvic anatomy, post-dates pregnancy, short stature, a history of previous shoulder dystocia, and use of epidural analgesia (Baxley & Gobbo, 2004). If shoulder dystocia is anticipated on the basis of these risk factors, preparatory tasks can be accomplished before the birth: key personnel can be alerted, the woman and her family can be educated about the steps that will be taken in the event of a difficult birth, and the woman's bladder is emptied to allow additional room for possible maneuvers needed for the birth.

### Treatment

Once shoulder dystocia is identified, the health care provider usually initiates manual maneuvers to facilitate birth (Fig. 21-1). In McRobert's maneuver, the mother's thighs are flexed and abducted as much as possible, which straightens the pelvic curve. Another method used to relieve shoulder dystocia is suprapubic pressure: pressure is applied just above the pubic bone, pushing the fetal anterior shoulder downward to displace it from above the mother's symphysis pubis. The newborn's head is depressed toward the maternal anus while suprapubic pressure is applied. These actions offer additional space and a better maternal position for birth. The combination of the McRoberts maneuver with suprapubic pressure may relieve more than 50% of cases of shoulder dystocia (Baxley & Gobbo, 2004).

The neonatal resuscitation team should be readily available in case of potential newborn injury, asphyxia, or both. The room must be cleared of unnecessary clutter to make room for additional personnel and equipment (Curran, 2003). After the birth, the newborn should be assessed for crepitus, deformity, or bruising, which might suggest that a fracture is present (McKinney et al., 2005).

## Multiple Gestation

Multiple gestation refers to twins, triplets, or more infants within a single pregnancy (Box 21-1). The incidence is increasing, primarily as a result of infertility treatment (both ovarian stimulation and in vitro fertilization) and an increased number of women giving birth at older ages (Damato et al., 2005). The incidence of twins is approximately 1 in 30 conceptions, with about two thirds of them due to the fertilization of two ova (dizygotic or fraternal) and about one third occurring from the splitting of one fertilized ovum (monozygotic or identical twins). One in approximately 8,100 pregnancies results in triplets (Green & Wilkinson, 2004).

Multiple gestations may result in dysfunctional labor or dystocia due to uterine overdistention, which may lead to hypotonic contractions, and abnormal presentations of the fetuses. In addition, fetal hypoxia during labor is a significant threat because the placenta must provide oxygen and nutrients to more than one fetus. The most common maternal complication is postpartum hemorrhage resulting from uterine atony.

### Diagnosis

Nearly all multiple gestations are now diagnosed early by ultrasound. In addition, most women with a multiple gestation go into labor earlier than 37 weeks.

### Treatment

A woman with a multiple gestation who goes into labor should be admitted to a hospital with a specialized care unit to handle any newborn problems after birth. With no complicating factors, the mother can go into spontaneous labor provided the first fetus is lying longitudinally. Fetal presentations can be vertex, breech, or a combination. Labor may proceed rapidly if each fetus is small and malpresentation is not an issue.

Throughout labor and birth, each fetal heart rate is monitored separately. Once the first fetus is delivered,


● Figure 21-1 Maneuvers to relieve shoulder dystocia. (**A**) McRobert's maneuver. (**B**) Suprapubic pressure.

BOX 21-1

**MULTIPLE GESTATION**

As the name implies, multiple gestation involves more than one fetus. These fetuses can result from fertilization of a single ovum or multiple ova. Twin pregnancies that are single-ovum conceptions (monozygotic twins) share one chorion (membrane closest to the uterus), and each twin has his or her own amnion (membrane surrounding the amniotic fluid). One fertilized ovum splits into two separate individuals who are said to be natural clones. They have separate amniotic sacs and placentas, are identical in appearance, and are always the same gender. Twin pregnancies that are multiple-ova conceptions (dizygotic twins) result from two ova fertilized by two sperm. Genetically, dizygotic twins are as alike (or unlike) as any other pair or siblings.

The fetuses of a twin gestation, whether monozygotic or dizygotic, are slightly "squashed" because two fetuses develop in a space usually occupied by one. This compression is reflected in the slowing of weight gain in both twins compared to that for singletons (Hall, 2003).

Multiple births other than twins can be of the identical type, the fraternal type, or combinations of the two. Triplets can occur from the division of one zygote into two, with one dividing again, producing identical triplets, or they can come from two zygotes, one dividing into a set of identical twins, and the second zygote developing as a single fraternal sibling, or from three separate zygotes. Triplets are said to occur once in 7,000 births and quadruplets once in 660,000 births (Sloane, 2002). In recent years, fertility drugs used to induce ovulation have resulted in a greater frequency of quadruplets, quintuplets, sextuplets, and even octuplets.

the cord is clamped and the lie of the second twin is assessed carefully. External cephalic version may be necessary to assist in providing a longitudinal lie. In addition, the second and subsequent fetuses are at greater risk for birth-related complications, such as umbilical cord prolapse, malpresentation, and abruptio placentae (Leonard, 2002). If risk factors are high, a cesarean birth is done.

## Excessive Fetal Size and Abnormalities

Excessive fetal size and abnormalities can also contribute to labor and birth dysfunctions. Complications associated with dystocia related to excessive fetal size and anomalies include an increased risk for postpartum hemorrhage, dysfunctional labor, fetopelvic disproportion, soft tissue laceration during vaginal birth, fetal injuries or fractures, and asphyxia (Joy & Lyon, 2005).

Although vaginal births are possible, much of the time vacuum-assisted or low forceps are needed to assist in the birthing process.

A macrosomic newborn weighs 4,000 to 4,500 g (8.13 to 9.15 lb) or more at birth. Macrosomia complicates approximately 10% of all pregnancies (Jazayeri & Contreras, 2005). This excessive size can cause fetopelvic disproportion, in which the fetus cannot fit through the maternal pelvis to be born vaginally. When the uterus is overdistended by a large fetus, contraction strength is reduced, leading to a prolonged labor and the potential for birth injury and trauma. Fetal abnormalities such as hydrocephalus, ascites, or a large mass on the neck or head may interfere with fetal descent, causing labor to be prolonged and birth to be difficult.

### Diagnosis

A diagnosis of fetal macrosomia can be confirmed by measuring the birthweight after birth. Macrosomia can be suspected based on the findings of an ultrasound examination before labor begins. When a woman is admitted to the labor and birth unit, Leopold's maneuvers are used to estimate fetal weight and position. If macrosomia is suspected, such as with maternal diabetes mellitus or obesity, fetal weight may be estimated using ultrasound.

### Treatment

If the diagnosis was made before the onset of labor, a cesarean birth might be scheduled to reduce the risk of injury to both the newborn and the mother. If identified by Leopold's maneuvers, some healthcare providers allow a trial labor to evaluate progress. However, many opt to proceed with a cesarean birth in a primigravida with a macrosomic fetus (Jazayeri & Contreras, 2005).

## Problems With the Passageway

Problems with the passageway (pelvis and birth canal) are related to a contraction of one or more of the three planes of the maternal pelvis: inlet, midpelvis, and outlet.

The female pelvis can be classified into four types based on the shape of the pelvic inlet, which is bounded anteriorly by the posterior border of the symphysis pubis, posteriorly by the sacral promontory, and laterally by the linea terminalis. The four basic types are gynecoid, anthropoid, android, and platypelloid (see Chapter 12 for additional information). Women with gynecoid and anthropoid types have a good prognosis for vaginal births, while those with android and platypelloid types have a poorer prognosis.

Contraction of the midpelvis is more common than inlet contraction and typically causes an arrest of fetal descent. It is difficult to diagnose in advance. The outlet of the pelvis can be assessed in early pregnancy to determine whether it can accommodate a normal-sized fetus.

Obstructions in the maternal birth canal, termed soft tissue dystocia, are factors that impede labor progression outside the maternal bony pelvis. Examples of obstructions include placenta previa that partially or completely obstructs the internal os of the cervix; fibroids in the lower

uterine segment; a full bladder or rectum; an edematous cervix caused by premature bearing-down efforts; and human papillomavirus (HPV) warts.

## Problems With Psyche

Many women experience an array of emotions during labor, which may include fear, anxiety, helplessness, being alone, and weariness. These emotions can lead to psychological stress, which indirectly can cause dystocia. Dystocia occurs due to the release of stress-related hormones (catecholamines, cortisol, epinephrine, beta-endorphin), which act on smooth muscle (uterus) and reduce uterine contractility. Excessive release of catecholamines and other stress-related hormones is not therapeutic. In addition to leading to dystocia, their release can also result in decreased uteroplacental perfusion and increase the risk of poor newborn adjustment (Gilbert & Harmon, 2003).

Ongoing encouragement to minimize the woman's stress is helpful in assisting her to cope with labor and to promote a positive, timely outcome. Assisting her to relax and providing for her comfort will help her body work more effectively with the forces of labor.

## Nursing Management

Nursing management of dystocia, regardless of the etiology, requires patience and the provision of physical and emotional support to the client and her family. The final outcome of any labor depends on the size and shape of the maternal pelvis, the quality of the uterine contractions, and the size, presentation, and position of the fetus. Thus, dystocia is diagnosed not at the start of labor, but rather after it has progressed for a time. The nurse monitors cervical dilation, effacement, and fetal descent and documents that all assessed parameters are progressing. If a dysfunctional labor occurs, contractions will slow or fail to advance in frequency, duration, or intensity; the cervix will fail to respond to uterine contractions by dilating and effacing; and the fetus will fail to descend. Table 21-1 summarizes the management of dystocia based on the underlying problem.

### Assessment

Assessment starts at admission by reviewing the client's history to look for risk factors for dystocia. Include in the assessment the mother's frame of mind to identify fear, anxiety, stress, lack of support, and pain, which can hinder uterine contractions and impede labor progress. Helping the woman to relax will promote normal labor progress. Additional assessments include:

- Monitor maternal vital signs for signs of infection or hypovolemia.
- Assess for abnormal uterine contractions (hypotonic versus hypertonic).
- Monitor the fetal heart rate to identify abnormal patterns indicating hypoxia.
- Review laboratory test results for signs contributing to dystocia.
- Assess for emotional factors that might impede labor progress or affect the woman's level of coping.
- Assess for a full bladder every 2 hours and encourage bladder emptying.
- Assess the mother's level of fatigue throughout labor, such as:
  - Verbal expressions of feeling exhausted
  - Inability to cope in early labor
  - Inability to rest or calm down between contractions
- Monitor hydration level and correlating it with intake and output.
- Assess fetal position via Leopold's maneuvers to identify any deviations; report any deviations found during vaginal examinations.
- Assess for signs of infection, such as fever or foul-smelling amniotic fluid.
- Assess the woman's level of pain and degree of distress using a 1-to-10 scale.
- Monitor bowel status to prevent obstruction of fetal descent.
- Assess for cervical edema or excessive fetal caput.
- Observe for visible cord prolapse when membranes rupture.
- Observe for visible cord and/or variable decelerations if breech.

### Nursing Interventions

During labor, assessments are ongoing to evaluate fetal descent, cervical effacement and dilation, and characteristics of the contractions. These are paramount to determine progress or lack of progress. Additional nursing interventions include:

- Provide labor support: emotional, educational, physical, and advocacy.
- Provide an environment conducive to rest so the woman can conserve her energy:
  - Lower the lights and reduce external noise by closing the hallway door.
  - Offer a warm shower to promote relaxation (if not contraindicated).
  - Support the woman in a comfortable position with pillows.
  - Change the woman's position every 30 minutes to reduce tension and to enhance uterine activity/efficiency.
  - Offer a backrub to reduce muscle tension.
  - Offer fluids/food to moisten the woman's mouth and replenish her energy (Fig. 21-2).
  - Encourage the woman to visualize the descent and birth of the fetus.
  - Praise the woman and her partner for their efforts.
- Use physical comfort measures to promote relaxation and reduce stress.
- Perform vaginal examinations to determine dilation and effacement and progression.

## Table 21-1 Management of Dystocia

| | |
|---|---|
| **Problems with the Powers** | |
| Hypertonic labor contractions | Bed rest and sedation to promote relaxation and reduce pain<br>Measures to rule out fetopelvic disproportion and fetal malpresentation<br>Evaluate of fetal tolerance to labor pattern, such as monitoring of FHR patterns<br>Assess for signs of maternal infection<br>Adequate hydration through IV therapy<br>Pain management through epidural or IV analgesics<br>Administration of intravenous oxytocin (Pitocin) to promote normal labor pattern<br>Amniotomy to augment labor<br>Explanations to woman and family of dysfunctional pattern<br>Planning for operative birth if normal labor pattern is not achieved |
| Hypotonic labor contractions | Oxytocin augmentation probable after fetopelvic disproportion is ruled out<br>Amniotomy if membranes are intact<br>Continuous electronic fetal monitoring<br>Ongoing monitoring of vital signs, contractions, and cervix<br>Assessment for signs of maternal and fetal infection<br>Explanations to woman and family of dysfunctional pattern<br>Planning for surgical birth if normal labor pattern is not achieved or fetal distress occurs |
| Precipitous labor | Close monitoring of woman with previous history of this<br>Use of scheduled induction to control labor rate<br>Pharmacologic agents, such as tocolytics, to slow labor<br>Constant attendance to monitor progress |
| **Problems with the Passenger** | |
| Persistent occiput-posterior position | Assessment for complaints of intense back pain in first stage of labor<br>Possible use of forceps to rotate to anterior position at birth<br>Manual rotation to anterior position at end of second stage<br>Assessment for prolonged second stage of labor with arrest of descent (common with this malposition)<br>Maternal position changes to promote fetal head rotation: hands and knees and rocking pelvis back and forth; side-lying position; side lunges during contractions; sitting, kneeing, or standing while leaning forward; squatting position to give birth and enlarge pelvic outlet<br>Possible cesarean birth if rotation is not achieved |
| Face and brow presentations | Palpation of fetal forehead or face as presenting part<br>Evaluation for fetopelvic disproportion<br>Cesarean birth if vertex position is not achieved |
| Breech presentation | Assessment for possible associated conditions such as placenta previa, hydramnios, fetal anomalies, and multiple gestation<br>Ultrasound to confirm fetal presentation<br>External cephalic version possible at 37 weeks<br>Tocolytics to assist with external cephalic version<br>Trial labor for 4 to 6 hours to evaluate progress if version is unsuccessful<br>Planning for cesarean birth if no progress is seen or fetal distress occurs |
| Shoulder dystocia | Urgent intervention necessary due to cord compression<br>McRobert's maneuver and application of suprapubic pressure<br>Squatting position, hands and knees position, or lateral recumbent position for birth to free shoulders<br>Cesarean birth if no success in dislodging shoulders |

*(continued)*

**Table 21-1** Management of Dystocia (continued)

| | |
|---|---|
| Multiple gestation | Assessment for hypotonic labor pattern due to overdistention<br>Evaluation of fetal presentation, maternal pelvic size, and gestational age to determine mode of delivery<br>Presence of neonatal team for birth of multiples<br>Cesarean births common in multiple gestations |
| Excessive fetal size and abnormalities | Assessment for inability of fetus to descend<br>Difficulty in ascertaining true fetal size prior to birth<br>Vacuum and forceps-assisted births are very common<br>Cesarean birth is possible if maternal parameters are not adequate to give birth to large fetus |
| **Problems with the Passageway** | Assessment for poor contractions, slow dilation, prolonged labor<br>Evaluation of bowel and bladder status to reduce soft tissue obstruction and allow increased pelvic space<br>Trial of labor; if no labor progression after an adequate trial, plan for cesarean birth |
| **Problems with the Psyche** | Provide comfortable environment—dim lighting, music<br>Encourage partner to participate<br>Pain management measures to reduce anxiety and stress<br>Continuous presence of staff to allay anxiety<br>Frequent updates concerning fetal status and progress |

- Be prepared to administer a labor stimulant such as oxytocin (Pitocin) in hypotonic labor.
- Keep the birth attendant informed of the progress or lack thereof.
- Be prepared to assist with manipulations if shoulder dystocia is diagnosed.
- Make sure the woman avoids supine positions, which cause vena cava compression.
- Provide backrubs and counterpressure if the baby is in the occiput posterior position.
- Encourage upright positions to facilitate fetal rotation and descent.
- Evaluate progress in active labor by using the simple rule of 1 cm/hour.
- Prepare the woman and family for the possibility of a cesarean birth if there is no progress.
- Educate the client and family about dysfunctional labor and its causes and therapies.
- Administer needed analgesics according to protocol or the provider's order.
- Assist the client to assume different positions to encourage fetal rotation.
- Remain with the client to demonstrate caring.
- Prepare the woman for any therapeutic intervention to assist the labor process.
- Keep the woman and her partner informed of progress.
- Provide empathetic listening to increase the client's coping ability.

● Figure 21-2 The nurse applies a cool, moist washcloth and offers ice chips to combat thirst and provide comfort for the woman with dystocia.

- Encourage the client and her partner to participate in decision-making before any interventions.
- Encourage the woman to express her fears and anxieties.
- Provide encouragement to help the woman to maintain control.
- Support and encourage the client and her partner in their coping efforts.
- Coach the woman not to push until the cervix is completely dilated.
- Document the timing of events, the maneuvers used, and the care given.

## Postterm Labor and Birth

Usually a term pregnancy lasts 38 to 42 weeks. A **postterm pregnancy** is one that continues past the end of the 42nd week of gestation, or 294 days, from the first day of the last menstrual period. Postterm pregnancies account for about 10% of births (Wilkes & Galan, 2004). Incorrect dates account for the majority of these cases: many women have irregular menses and thus cannot identify the date of their last menstrual period accurately.

The exact etiology of a postterm pregnancy is unknown because the mechanism for the initiation of labor is not completely understood. Theories suggest there may be a deficiency of estrogen and continued secretion of progesterone that prohibits the uterus from contracting, but no evidence has validated this. A woman who has one postterm pregnancy is at greater risk for another in subsequent pregnancies.

Postterm pregnancies may adversely affect both the mother and fetus or newborn. Maternal risk is related to the large size of the fetus at birth, which increases the chances that a cesarean birth will be needed. Other issues might include dystocia, birth trauma, postpartum hemorrhage, and infection. Mechanical or artificial interventions such as forceps or vacuum-assisted birth and labor induction with oxytocin may be necessary. In addition, maternal exhaustion and feelings of despair over this prolonged gestation can add to the woman's anxiety level and reduce her coping ability.

Fetal risks associated with a postterm pregnancy include macrosomia, shoulder dystocia, brachial plexus injuries, and cephalopelvic disproportion. All of these conditions predispose this fetus to birth trauma or a surgical birth. The perinatal mortality rate at more than 42 weeks of gestation is twice that at term and increases sixfold and higher at 43 weeks of gestation and beyond. Uteroplacental insufficiency, meconium aspiration, and intrauterine infection contribute to the increased rate of perinatal deaths (ACOG, 2004). As the placenta ages, its perfusion decreases and it becomes less efficient at delivering oxygen and nutrients to the fetus. Amniotic fluid volume also begins to decline by 40 weeks of gestation, possibly leading to oligohydramnios, subsequently resulting in fetal hypoxia and an increased risk of cord compression because the cushioning effect offered by adequate fluid is no longer present. Hypoxia and oligohydramnios predispose the fetus to aspiration of meconium, which is released by the fetus in response to a hypoxic insult (Sanchez-Ramos et al., 2003). All of these issues can compromise fetal well-being and lead to fetal distress.

### Nursing Management

Many women are unsure of the date of their last menstrual period, so the date given may be unreliable. Despite numerous methods used to date pregnancies, many are still misdated. Accurate gestational dating via ultrasound is key.

Once the dates are established and postdate status is confirmed, monitoring fetal well-being becomes critical. When determining the plan of care for a woman with a postterm pregnancy, the first decision is whether to deliver the baby or wait. If the decision is to wait, then fetal surveillance is key. If the decision is to have the woman deliver, labor induction is initiated. Both decisions remain controversial, and there is no clear answer about which option is more appropriate. Therefore, the plan must be individualized.

#### Assessment

Antepartum assessment for a postterm pregnancy typically includes daily fetal movement counts done by the woman, nonstress tests done twice weekly, amniotic fluid assessments as part of the biophysical profile, and weekly cervical examinations to evaluate for ripening. This intense surveillance is time-consuming and intrusive, adding to the anxiety and worry already being experienced by the woman about her overdue status. Be alert to the woman's anxiety and allow her to discuss her feelings. Provide reassurance about the expected time range for birth and the well-being of the fetus based on the assessment tests. Validating the woman's stressful state due to the prolonged pregnancy provides an opportunity for her to verbalize her feelings openly. Key areas of assessment include:

- Pregnancy date to ascertain the most accurate one
- Client's understanding of the various fetal well-being tests
- Client's stress and anxiety concerning her lateness
- Client's coping ability and support network

During the intrapartum period, continuous assessment and monitoring of the fetal heart rate (FHR) is needed to identify potential fetal distress early (e.g., late or variable decelerations) so that interventions can be initiated. Assessment of the woman's hydration status is important to maximize placental perfusion. Assessment of the amniotic fluid characteristics (color, amount, and odor) is vital to identify previous fetal hypoxia and prepare for prevention of meconium aspiration. Assessment of the woman's labor pattern is essential because dysfunctional patterns are common (Gilbert & Harmon, 2003).

### Nursing Interventions

Nursing care for the postterm client is similar to that for any client at term. However, the following interventions are key:

- Educate the woman and family about the purpose and findings of each test.
- Prepare the woman for the possibility of induction if her labor isn't spontaneous or a surgical delivery if fetal distress occurs.
- Discuss the cervical ripening methods that may be used for induction.
- Inform the woman about potential complications of postterm pregnancies.
- Encourage the woman to verbalize her feelings and concerns; answer all questions.
- Keep the woman well hydrated to increase placental perfusion for the fetus.
- Provide continuous electronic fetal monitoring throughout labor.
- Provide support, presence, information, and encouragement throughout.
- Explain that amnioinfusion may be used to minimize the risk of meconium aspiration by diluting meconium in amniotic fluid expelled by the hypoxic fetus.
- Report meconium-stained amniotic fluid when the membranes rupture.
- Support the client and family throughout the experience (Gilbert, 2004).

## Women Requiring Induction and Augmentation of Labor

Ideally, all pregnancies go to term, with labor beginning spontaneously. However, many women need help to initiate or sustain the labor process. **Labor induction** involves the stimulation of uterine contractions by medical or surgical means to produce delivery before the onset of spontaneous labor. The labor induction rate is at an all-time high in the United States. The widespread use of artificial induction of labor for convenience has contributed to the recent increase in the number of cesarean births. Evidence is compelling that elective induction of labor significantly increases the risk of cesarean birth, instrumented delivery, use of epidural analgesia, and neonatal intensive care unit admission, especially for nulliparous women (Simpson & Atterbury, 2003).

Labor induction is not an isolated event: it brings about a cascade of other interventions that may or may not produce a favorable outcome. Labor induction also involves intravenous therapy, bed rest, continuous electronic fetal monitoring, significant discomfort from stimulating uterine contractions, epidural analgesia/anesthesia, and a prolonged stay on the labor unit (Simpson & Atterbury, 2003).

Labor augmentation enhances ineffective contractions after labor has begun. Continuous electronic FHR monitoring is necessary.

There are multiple medical and obstetric reasons for inducing labor, the most common being postterm gestation. Other indications for inductions include prolonged premature rupture of membranes, gestational hypertension, renal disease, chorioamnionitis, dystocia, intrauterine fetal demise, isoimmunization, and diabetes (Baxley, 2003). Contraindications to labor induction include complete placenta previa, abruptio placentae, transverse fetal lie, prolapsed umbilical cord, a prior classic uterine incision that entered the uterine cavity, pelvic structure abnormality, previous myomectomy, vaginal bleeding with unknown cause, invasive cervical cancer, active genital herpes infection, and abnormal FHR patterns (Littleton & Engebretson, 2005). In general, labor induction is indicated when the benefits of birth outweigh the risks to the mother or fetus for continuing the pregnancy. However, the balance between risk and benefit remains controversial.

### Considerations for Induction

The decision to induce labor is based on a thorough assessment of maternal and fetal status. Typically, this includes an ultrasound to evaluate fetal size, position, and gestational age and to locate the placenta; pelvimetry to rule out fetopelvic disproportion; a nonstress test to evaluate fetal well-being; a phosphatidylglycerol (PG) level to assess fetal lung maturity; Nitrazine paper and/or fern test to confirm ruptured membranes; complete blood count and urinalysis to rule out infection; and a vaginal examination to evaluate the cervix for inducibility (Green & Wilkinson, 2004). Accurate dating of the pregnancy also is essential before cervical ripening and induction are initiated to prevent a preterm birth.

### Cervical Ripeness and Labor Induction

There has been increasing awareness that if the cervix is unfavorable or unripe, a successful vaginal birth is unlikely. Cervical ripeness is an important variable when labor induction is being considered. A ripe cervix is shortened, centered (anterior), softened, and partially dilated. An unripe cervix is long, closed, posterior, and firm. Cervical ripening usually begins prior to the onset of labor contractions and is necessary for cervical dilatation and the passage of the fetus.

Various scoring systems to assess cervical ripeness have been introduced, but the Bishop score is most commonly used today. The Bishop score helps identify women who would be most likely to achieve a successful induction (Table 21-2). The duration of labor is inversely correlated with the Bishop score: a score over eight indicates a successful vaginal birth. Bishop scores of less than six usually indicate that a cervical ripening method should be used prior to induction (Tenore, 2003).

#### Nonpharmacologic Methods

Nonpharmacologic methods are less used today, but nurses need to be aware of them and question clients about their

**Table 21-2** Bishop Scoring System

| Score | Dilation (cm) | Effacement (%) | Station | Cervical Consistency | Position of Cervix |
|---|---|---|---|---|---|
| **0** | Closed | 0–30% | –3 | Firm | Posterior |
| **1** | 1–2 cm | 40–50% | –2 | Medium | Midposition |
| **2** | 3–4 cm | 60–70% | –1 or 0 | Soft | Anterior |
| **3** | 5–6 cm | 80% | +1 or +2 | Very soft | Anterior |

Modified from Bishop, E. H. (1964). Pelvic scoring for elective induction. *Obstetrics & Gynecology, 24*(2), 267.

use. Methods may include herbal agents such as evening primrose oil, black haw, black and blue cohosh, and red raspberry leaves. In addition, castor oil, hot baths, and enemas are used for cervical ripening and labor induction. The risks and benefits of these agents are unknown.

Another nonpharmacologic method suggested for labor induction is sexual intercourse along with breast stimulation. This promotes the release of oxytocin, which stimulates uterine contractions. In addition, human semen is a biological source of prostaglandins used for cervical ripening. According to a Cochrane Review, sexual intercourse with breast stimulation would appear beneficial, but safety issues have not been fully evaluated, nor can this activity be standardized (Kavanagh & Kelly, 2005). Therefore, its use as a method for labor induction is not validated by research.

### Mechanical Methods

Mechanical methods are used to open the cervix and move labor along. All share a similar mechanism of action—application of local pressure stimulates the release of prostaglandins to ripen the cervix. The risks associated with these methods include infection, bleeding, membrane rupture, and placental disruption (Simpson, 2002).

For example, an indwelling (Foley) catheter (e.g., 26 French) can be inserted into the endocervical canal to ripen and dilate the cervix. The catheter is placed in the uterus, and the balloon is filled. Direct pressure is then applied to the lower segment of the uterus and the cervix. This direct pressure causes stress in the lower uterine segment and probably the local production of prostaglandins (Rai & Schreiber, 2005).

Hygroscopic dilators absorb endocervical and local tissue fluids; as they enlarge they expand the endocervix and provide controlled mechanical pressure. The products available include natural osmotic dilators (laminaria, a type of dried seaweed) and synthetic dilators containing magnesium sulfate (Lamicel, Dilapan). Hygroscopic dilators are advantageous because they can be inserted on an outpatient basis and no fetal monitoring is needed. Several dilators are inserted in the cervix. They will expand the cervix over 12 to 24 hours as they absorb water. Absorption of water leads to expansion of the dilators and opening of the cervix. They are a reliable alternative when prostaglandins are contraindicated or unavailable (Lowdermilk & Perry, 2004).

### Surgical Methods

Surgical methods used to ripen the cervix and induce labor include stripping of the membranes and performing an amniotomy. Stripping of the membranes is accomplished by inserting a finger through the internal cervical os and moving it in a circular direction. This motion causes the membranes to detach. Manual separation of the amniotic membranes from the cervix is thought to induce cervical ripening and the onset of labor (Rai & Schreiber, 2005).

An amniotomy involves inserting a cervical hook (Amniohook) through the cervical os to rupture the membranes. This promotes pressure of the presenting part on the cervix and stimulates an increase in the activity of prostaglandins locally. Risks associated with these procedures include umbilical cord prolapse or compression, maternal or neonatal infection, FHR deceleration, bleeding, and client discomfort (Tenore, 2003).

When either of these techniques is used, amniotic fluid characteristics (such as whether it is clear or bloody, or meconium is present) and the FHR pattern must be monitored closely.

### Pharmacologic Agents

The use of pharmacologic agents has revolutionized cervical ripening. The use of prostaglandins to attain cervical ripening has been found to be highly effective in producing cervical changes independent of uterine contractions (Baxley, 2003). In some cases, women will go into labor, requiring no additional stimulants for induction. Induction of labor with prostaglandins offers the advantage of promoting both cervical ripening and uterine contractility. A drawback of prostaglandins is their ability to induce excessive uterine contractions, which can increase maternal and perinatal morbidity (Sanchez-Ramos & Hsieh, 2003). Currently, three prostaglandin analogs are used for the purpose of cervical ripening: dinoprostone gel (Prepidil), dinoprostone inserts (Cervidil), and misoprostol (Cytotec).

Misoprostol (Cytotec), a synthetic PGE1 analog, is a gastric cytoprotective agent used in the treatment and prevention of peptic ulcers. It can be administered intravaginally or orally to ripen the cervix or induce labor. It is available in 100-mcg or 200-mcg tablets, but doses of 25 to 50 g are typically used. However, it is not approved by the FDA for cervical ripening (Drug Guide 21-1).

Oxytocin (Pitocin) is one of the most commonly used drugs for labor induction and augmentation in the United States. It is produced naturally by the posterior pituitary gland and stimulates contractions of the uterus. For women with low Bishop scores, cervical ripening is typically initiated before oxytocin is used. Once the cervix is ripe, oxytocin is the most popular pharmacologic agent used for inducing or augmenting labor. Frequently a woman with an unfavorable cervix is admitted the evening before induction to ripen her cervix with one of the prostaglandin agents. Then induction begins with Pitocin the next morning if she has not already gone into labor. Doing so markedly enhances the induction success. Response to oxytocin varies widely: some women are very sensitive to even small amounts. The most common adverse effect of oxytocin is uterine hyperstimulation, leading to fetal compromise and impaired oxygenation (Breslin & Lucas, 2003). Close attention must be paid to the uterine response throughout labor so that the oxytocin infusion can be titrated appropriately. In addition, oxytocin has an antidiuretic effect, resulting in decreased urine flow that may lead to water intoxication. Symptoms to watch for include headache and vomiting.

Oxytocin is administered via an IV infusion pump piggybacked into the main IV line at the port most proxi-

**Drug Guide 21-1** Drugs Used for Cervical Ripening and Labor Induction

| Drug | Action/Indication | Nursing Implications |
|---|---|---|
| Dinoprostone (Cervidil insert; Prepidil gel) | Directly softens and dilates the cervix/to ripen cervix and induce labor | Provide emotional support.<br>Administer pain medications as needed.<br>Frequently assess degree of effacement and dilation.<br>Monitor uterine contractions for frequency, duration, and strength.<br>Assess maternal vital signs and FHR pattern frequently.<br>Monitor woman for possible adverse effects such as headache, nausea and vomiting, and diarrhea. |
| Misoprostol (Cytotec) | Ripens cervix/to induce labor | Instruct client about purpose and possible adverse effects of medication.<br>Ensure informed consent is signed per hospital policy.<br>Assess vital signs and FHR patterns frequently.<br>Monitor client's reaction to drug.<br>Initiate oxytocin for labor induction at least 4 hours after last dose was administered.<br>Monitor for possible adverse effects such as nausea and vomiting, diarrhea, uterine hyperstimulation, and nonreassuring FHR pattern. |
| Oxytocin (Pitocin) | Acts on uterine myofibrils to contract/to initiate or reinforce labor | Administer as an IV infusion via pump, increasing dose based on protocol until adequate labor progress is achieved.<br>Assess baseline vital signs and FHR and then frequently after initiating oxytocin infusion.<br>Determine frequency, duration, and strength of contractions frequently.<br>Notify health care provider of any uterine hypertonicity or abnormal FHR patterns.<br>Maintain careful I & O, being alert for water intoxication.<br>Keep client informed of labor progress.<br>Monitor for possible adverse effects such as hyperstimulation of the uterus, impaired uterine blood flow leading to fetal hypoxia, rapid labor leading to cervical lacerations or uterine rupture, water intoxication (if oxytocin is given in electrolyte-free solution or at a rate exceeding 20 mU/min), and hypotension. |

mal to the venous site. Usually 10 units of Pitocin is added to 1 L of isotonic solution to achieve an infusion rate of 1 mU/min = 6 mL/hr. The dose is titrated according to protocol to achieve stable contractions every 2 to 3 minutes lasting 40 to 60 seconds (London et al., 2003). The uterus should relax between contractions. If the resting uterine tone remains above 20 mm Hg, uteroplacental insufficiency and fetal hypoxia can result. This outcome underscores the importance of continuous FHR monitoring.

Oxytocin has many advantages: it is potent and easy to titrate, it has a short half-life (1 to 5 minutes), and it is generally well tolerated. However, induction using oxytocin has side effects, but because the drug does not cross the placental barrier, no direct fetal problems have been observed (Simpson & Atterbury, 2003) (Fig. 21-3).

## Nursing Management

Nurses working with women in labor play an important role acting as the "eyes" and "ears" for the healthcare provider because they remain at the client's bedside throughout the entire experience. Close, frequent assessment and follow-up interventions are essential to ensure the safety of the mother and her unborn child during cervical ripening and labor induction or augmentation.

● Figure 21-3 The nurse monitors an intravenous infusion of oxytocin being administered to a woman in labor. Note the use of an infusion pump to regulate the flow of the oxytocin, which has been piggybacked into the main IV line.

Nursing Care Plan 21-1 presents an overview of nursing care for a woman undergoing labor induction.

### Assessment

Assessment of the woman undergoing labor induction or augmentation includes:

- Assess cervical status, including cervical dilatation and effacement, and station via vaginal examination before cervical ripening or induction is started.
- Assess fetal well-being to validate the client's and fetus's ability to withstand labor contractions.
- Review relative indications for induction or augmentation, such as diabetes, hypertension, postterm status, dysfunctional labor pattern, prolonged ruptured membranes, maternal or fetal infection, and contraindications such as placenta previa, overdistended uterus, active genital herpes, fetopelvic disproportion, fetal malposition, or severe fetal distress.
- Determine the gestational age of the fetus to prevent a preterm birth.
- Assess contractions for frequency, duration, and intensity and resting tone.
- Evaluate for any contraindications to prostaglandin use, such as infection or bleeding.
- Assess the need for pain management and provide comfort measures.
- Determine Bishop score to determine probable success of induction.

### Nursing Interventions

Explain to the woman and her partner about the induction or augmentation procedure clearly, using simple terms (Teaching Guidelines 21-1). Ensure that an informed consent has been signed after the client and her partner have received complete information about the procedure, including its advantages, disadvantages, and potential risks. Determine the cervical Bishop score before proceeding.

Prepare the oxytocin infusion by diluting 10 units of oxytocin in 1,000 mL of lactated Ringer's solution. Use an infusion pump on a secondary line connected to the primary infusion. Start the oxytocin infusion in mU/min or milliliters per hour as ordered. Typically, the initial dose is 0.5 to 1 mU/min; anticipate increasing the rate in increments of 1 to 2 mU/min every 30 to 60 minutes. Maintain the rate once the desired contraction frequency has been reached. To ensure adequate maternal and fetal surveillance during induction or augmentation, the nurse-to-client ratio should not exceed 1:2 (Smith, 2004).

During induction or augmentation, monitoring of the maternal and fetal status is essential. Apply an external electronic fetal monitor or assist with placement of an internal device. Obtain the mother's vital signs and the FHR every 15 minutes during the first stage. Evaluate the contractions for frequency, duration, and intensity, and

*(text continues on page 602)*

# Nursing Care Plan 21-1

## Overview of the Woman Undergoing Labor Induction

Rose, a 29-year-old primipara, is admitted to the labor and birth suite at 40 weeks' gestation for induction of labor. Assessment reveals that her cervix is ripe and 80% effaced, and she is 2 cm dilated. Rose tells the nurse she is very anxious about being induced and is afraid of the pain associated with the medication used to start contractions. She consents to being induced but wants reassurance that this procedure won't harm the baby. Upon examination the fetus is engaged and in a cephalic presentation, with the vertex as the presenting part. Her partner is at her side.

### Nursing Diagnosis: Anxiety related to induction of labor and lack of experience with labor

| Outcome identification and *evaluation* | Interventions with *rationales* |
|---|---|
| Client will experience decrease in anxiety *as evidenced by ability to verbalize understanding of procedures involved and use coping skills to reduce anxious state.* | Provide a clear explanation of the labor induction process *to provide client and partner with a knowledge base.*<br>Maintain continuous physical presence *to provide physical and emotional support and demonstrate concern for maternal and fetal well-being.*<br>Explain each procedure before carrying it out and field questions *to promote understanding of procedure and rationale for use.*<br>Encourage use of coping strategies used in the past *to aid in controlling anxiety.*<br>Instruct client's partner in helpful measures to assist client in coping and encourage their use *to foster joint participation in the process and provide support to the client.*<br>Offer frequent reassurance of fetal status and labor progress *to help alleviate client's concerns and foster continued participation in the labor process.* |

### Nursing Diagnosis: Pain related to uterine contractions

| | |
|---|---|
| Client will report a decrease in pain as evidenced *by statements of increased comfort and pain rating of 3 or less on numerical pain rating scale.* | Explain to the client that she will experience discomfort sooner than with naturally occurring labor *to promote client awareness of events and prepare client for the experience.*<br>Frequently assess client's pain using a pain rating scale *to quantify client's level of pain and evaluate effectiveness of pain-relief measures.*<br>Provide comfort measures, such as hygiene, backrubs, music, and distraction and encourage the use of breathing and relaxation techniques *to help promote relaxation.* |

## Overview of the Woman Undergoing Labor Induction (continued)

| Outcome identification and *evaluation* | Interventions with *rationales* |
|---|---|
| | Provide support for her partner *to aid in alleviating stress and concerns.*<br>Employ nonpharmacologic methods, such as position changes, birthing ball, hydrotherapy, visual imagery, and effleurage, *to help in managing pain.*<br>Administer analgesia or anesthesia as appropriate and ordered *to control pain.*<br>Evaluate pain-management techniques used *to determine their effectiveness.* |
| **Nursing Diagnosis: Risk for injury (maternal or fetal) related to induction procedure** | |
| Clients will remain free of complications associated with induction as evidenced by *progression of labor as expected, delivery of healthy newborn, and absence of signs and symptoms of maternal and fetal adverse effects.* | Follow agency's protocol for medication use and infusion rate *to ensure accurate, safe drug administration.*<br>Set up oxytocin IV infusion to piggyback into the primary IV bag *to allow for prompt discontinuation should adverse effects occur.*<br>Use an infusion pump *to deliver accurate dose as ordered.*<br>Gradually increase oxytocin dose in increments of 1 to 2 mU/min every 30 to 60 minutes based on assessment findings and protocol *to promote effective uterine contractions.*<br>Maintain oxytocin rate once desired frequency has been reached *to ensure continued progress in labor.*<br>Accurately monitor contractions for frequency, duration, and intensity and resting tone *to prevent development of hypertonic contractions.*<br>Maintain a nurse–client ratio of 1:2 *to ensure maternal and fetal safety.*<br>Monitor FHR via an electronic fetal monitoring during induction and constantly observe the FHR response to titrated medication rate *to ensure fetal well-being and identify adverse effects immediately.*<br>Obtain maternal vital signs every 1 to 2 hours or as indicated by agency's protocol, reporting any deviations, *to promote maternal well-being and allow for prompt detection of problems.*<br>Communicate with birth attendant frequently concerning progress *to ensure continuity of care.*<br>Discontinue oxytocin infusion if tetanic contraction (>90 seconds), uterine hyperstimulation (<2 minutes apart), elevated uterine resting tone, or a nonreassuring FHR pattern occurs *to minimize risk of drug's adverse effects.*<br>Provide frequent reassurance of maternal and fetal status *to alleviate anxiety.* |

**TEACHING GUIDELINES 21-1**

Teaching in Preparation for Labor Induction

- Your health care provider may recommend that you have your labor induced. This may be necessary for a variety of reasons, such as elevated blood pressure, a medical condition, prolonged pregnancy over 41 weeks, or problems with fetal heart rate patterns or fetal growth.
- Your health care provider may use one or more methods to induce labor, such as stripping the membranes, breaking the amniotic sac to release the fluid, administering medication close to or in the cervix to soften it, or administering a medication called oxytocin (Pitocin) to stimulate contractions.
- Labor induction is associated with some risks and disadvantages, such as overactivity of the uterus; nausea, vomiting, or diarrhea; and changes in fetal heart rate.
- Prior to inducing your labor, your health care provider may perform a procedure to ripen your cervix to help ensure a successful induction.
- Medication may be placed around cervix the day before you are scheduled to be induced.
- During the induction, your contractions may feel stronger than normal. However, the length of your labor may be reduced with induction.
- Medications for pain relief and comfort measures will be readily available.
- Health care staff will be present throughout labor.

resting tone and make rate adjustments to the oxytocin infusion accordingly. Monitor the characteristics of the FHR, including baseline rate, baseline variability, and decelerations to determine whether the oxytocin rate needs adjustment. Discontinue the oxytocin and notify the birth attendant if uterine hyperstimulation or a nonreassuring FHR pattern occurs. Perform or assist with periodic vaginal examinations to determine cervical dilation and fetal descent: cervical dilation of 1 cm/hour typically indicates satisfactory progress.

Continue to monitor the FHR continuously and document it every 15 minutes during the active phase of labor and every 5 minutes during the second stage. Assist with pushing efforts during the second stage.

Provide pain management as needed by asking the woman frequently about her pain level. Monitor her need for comfort measures as contractions increase. Measure and record intake and output to prevent excess fluid volume. Encourage the client to empty her bladder every 2 hours to prevent soft tissue obstruction.

Throughout induction and augmentation, frequently reassure the woman and her partner about the fetal status and labor progress. Assess the woman's ability to cope with stronger contractions (Simpson, 2002). Note her reaction to any medication given, and document its effect.

## Intrauterine Fetal Demise

When an unborn life suddenly ends with fetal demise or stillbirth, the family members are profoundly affected. The sudden loss of an expected child is tragic and the family's grief can be very intense, can last for years, and can cause extreme psychological stress and emotional problems (Lindsey & Hernandez, 2004). History and physical examination are of limited value in the diagnosis of fetal death, since the only history tends to be recent absence of fetal movement. An inability to obtain fetal heart sounds on examination suggests fetal demise, but an ultrasound is necessary to confirm the absence of fetal cardiac activity. Once fetal demise is confirmed, induction of labor is indicated.

The cause of fetal death can be due to numerous conditions, such as prolonged pregnancy, infection, hypertension, advanced maternal age, Rh disease, uterine rupture, diabetes, congenital anomalies, cord accident, abruption, premature rupture of membranes, or hemorrhage; it may be unexplained (Gilbert & Harmon, 2003). Early pregnancy loss may be through a spontaneous abortion (miscarriage), an induced abortion (therapeutic abortion), or a ruptured ectopic pregnancy. A wide spectrum of feelings may be expressed, from relief to sadness and despair. A stillbirth can occur at any gestational age, and typically there is little or no warning other than reduced fetal movement.

The period following a fetal death is extremely difficult for the family. For many women, emotional healing takes much longer than physical healing. The feelings of loss can be intense. The grief response in some women may be so great that their relationships become strained, and healing can become hampered unless appropriate interventions and support are provided.

Fetal death also affects the healthcare staff. Despite the trauma that the loss of a fetus causes, some staff members avoid dealing with the bereaved family, never talking about or acknowledging their grief. This seems to imply that not discussing the problem will allow the grief to dissolve and vanish. This is unreasonable and merely makes the bereaved family members feel that they are alone and their needs are unrecognized. Failing to keep the lines of communication open with a bereaved client and her family closes off some of the channels to recovery and healing that may be desperately needed.

### Nursing Management

The nurse can play a major role in assisting the grieving family. With skillful intervention, the bereaved family may be better prepared to resolve their grief and move forward. To assist families in the grieving process, use the following interventions:

- Provide accurate, understandable information to the family.

- Encourage discussion of the loss and venting of feelings of grief and guilt.
- Provide the family with baby mementos and pictures to validate the reality of death.
- Allow unlimited time with the stillborn infant after birth to validate the death; provide time for the family members to be together and grieve; offer the family the opportunity to see, touch, and hold the infant.
- Use appropriate touch, such as holding a hand or touching a shoulder.
- Inform the chaplain or the religious leader of the family's denomination about the death and request his or her presence.
- Assist the parents with the funeral arrangements or disposition of the body.
- Provide the parents with brochures offering advice about how to talk to other siblings about the loss.
- Refer the family to the support group SHARE Pregnancy and Infant Loss Support, Inc., which is designed for those who have lost an infant through abortion, miscarriage, fetal death, stillbirth, or other tragic circumstances.
- Make community referrals to promote a continuum of care on discharge.

# Obstetric Emergencies

Obstetric emergencies are challenging to all labor and birth personnel because of the increased risk of adverse outcomes for the mother and fetus. Quick clinical judgment and good critical decision-making will increase the odds of a positive outcome for both mother and fetus. This chapter will discuss a few of these emergencies: umbilical cord prolapse, placental abruption, uterine rupture, and amniotic fluid embolism.

## Umbilical Cord Prolapse

An **umbilical cord prolapse,** although rare, requires prompt recognition and intervention for a positive outcome. The condition is defined as the protrusion of the umbilical cord alongside (occult) or ahead of the presenting part of the fetus (Fig. 21-4). It occurs in 1 out of every 300 births (March of Dimes, 2005). With a 50% perinatal mortality rate, it is one of the most catastrophic events in the intrapartum period (Gabbe et al., 2002). Although rare in a full-term fetus with a cephalic presentation, cord prolapse is more common in pregnancies involving malpresentation, growth restriction, prematurity, ruptured membranes with a fetus at a high station, hydramnios, grandmultiparity, and multifetal gestation (Poole & White, 2003).

Prolapse usually leads to total or partial occlusion of the cord. Since this is the fetus's only lifeline, fetal perfusion deteriorates rapidly. Complete occlusion renders the fetus helpless and oxygen-deprived. Without quick intervention to relieve cord compression, the fetus will die.

### Nursing Management

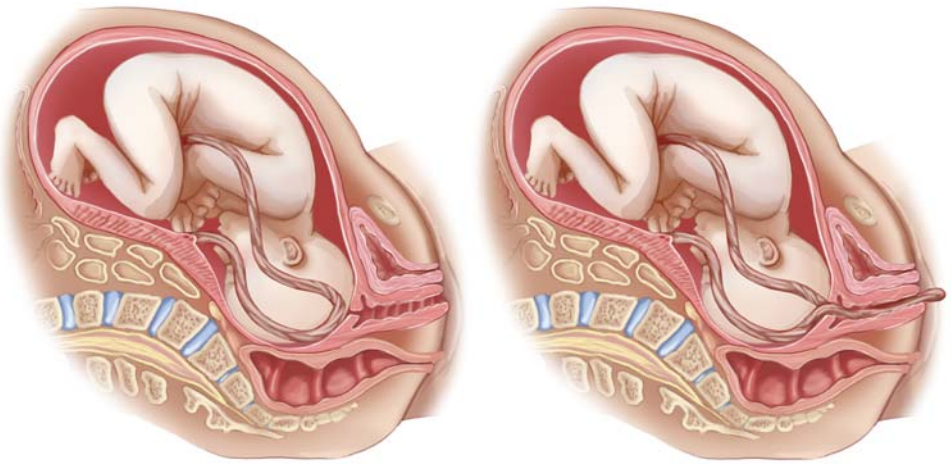
Prevention is the key to managing cord prolapse by identifying clients at risk for this condition. When the presenting part does not fully occupy the pelvic inlet, prolapse is more likely to occur. Nurses can be instrumental in promoting positive perinatal outcomes for women in this situation.

#### Assessment

Carefully assess each client to help predict her risk status. Ensure continuous assessment of the client and fetus to detect changes and to evaluate the effectiveness of any interventions performed. Provide emotional support and explanations as to what is going on to allay the woman's fears and anxiety.

#### Nursing Interventions

Prompt recognition of a prolapsed cord is essential to reduce the risk of fetal hypoxia resulting from prolonged cord compression. When membranes are artificially




● Figure 21-4 Prolapsed cord. (**A**) Prolapse within the uterus. (**B**) Prolapse with the cord visible at the vulva.

ruptured, assist with verifying that the presenting part is well applied to the cervix and engaged into the pelvis. If pressure or compression of the cord occurs, assist with measures to relieve the compression. Typically, the examiner places a sterile gloved hand into the vagina and holds the presenting part off the umbilical cord. Changing the woman's position to a modified Sims, Trendelenburg, or knee–chest position also helps relieve cord pressure. An emergency cesarean birth is typically done to save the fetus's life if the mother's cervix is not fully dilated.

## Placental Abruption

Placental abruption refers to premature separation of a normally implanted placenta from the maternal myometrium. Risk factors include preeclampsia, gestational hypertension, seizure activity, uterine rupture, trauma, smoking, cocaine use, coagulation defects, previous history of abruption, domestic violence, and placental pathology. These conditions may force blood into the underlayer of the placenta and cause it to detach (Curran, 2003).

Management of placental abruption depends on the gestational age, the extent of the hemorrhage, and maternal–fetal oxygenation perfusion/reserve status (see Chapter 19 for additional information on abruptio placentae). Treatment should be individualized depending on the circumstances. Typically once the diagnosis is established, the focus is on maintaining the cardiovascular status of the mother and developing a plan to deliver the fetus quickly. A cesarean birth takes place if the fetus is still alive. A vaginal birth may take place if there is fetal demise.

## Uterine Rupture

Uterine rupture is a catastrophic tearing of the uterus at the site of a previous scar into the abdominal cavity. Its onset is often marked only by sudden fetal bradycardia, and treatment requires rapid surgical attention for good outcomes. Among the many clinical conditions associated with uterine rupture are uterine scars, prior cesarean births, prior rupture, trauma, prior invasive molar pregnancy, history of placenta percreta or increta, malpresentation, labor induction with excessive uterine stimulation, and crack cocaine use (Toppenberg & Block, 2002).

### Nursing Management

Timely management of uterine rupture depends on prompt detection. Because many women desire a trial of labor after a previous cesarean birth, the nurse must be familiar with the signs and symptoms of uterine rupture. It is difficult to prevent uterine rupture or to predict which women will experience rupture, so constant preparedness is necessary.

#### Assessment

Generally, the first and most reliable symptom of uterine rupture is sudden fetal distress. Other signs may include acute and continuous abdominal pain with or without an epidural, vaginal bleeding, hematuria, irregular abdominal wall contour, loss of station in the fetal presenting part, and hypovolemic shock in the woman, fetus, or both (Curran, 2003). Screening all women with previous uterine surgical scars is important, and continuous electronic fetal monitoring should be used during labor because this may provide the only indication of an impending rupture. Reviewing a client's history for risk factors might prove to be life-saving for both mother and fetus.

#### Nursing Interventions

Because the presenting signs may be nonspecific, the initial management will be the same as that for any other cause of acute fetal distress. Urgent delivery by cesarean birth is indicated. The life-threatening nature of uterine rupture is underscored by the fact that the maternal circulatory system delivers approximately 500 mL of blood to the term uterus every minute (Toppenberg & Block, 2002). Maternal death is a real possibility without rapid intervention.

Newborn outcome after rupture depends largely on the speed with which surgical rescue is carried out. Monitor maternal vital signs and observe for hypotension and tachycardia, which might indicate hypovolemic shock. Assist in preparing for an emergency cesarean birth by alerting the operating room staff, anesthesia provider, and neonatal team. Insert an indwelling urinary (Foley) catheter if one isn't in place already. Inform the woman of the seriousness of this event and remind her that the healthcare staff will be working quickly to ensure her health and that of her fetus. Remain calm and provide reassurance that everything is being done to ensure a safe outcome for both.

## Amniotic Fluid Embolism

Amniotic fluid embolism is a rare and often fatal event characterized by the sudden onset of hypotension, hypoxia, and coagulopathy. Amniotic fluid containing particles of debris (e.g., hair, skin, vernix, or meconium) enters the maternal circulation and obstructs the pulmonary vessels, causing respiratory distress and circulatory collapse (Lowdermilk & Perry, 2004). The incidence is approximately 1 case per 8,000 to 30,000 pregnancies (Moore & Ware, 2004).

Normally, amniotic fluid does not enter the maternal circulation because it is contained within the uterus, sealed off by the amniotic sac. An embolus occurs when the barrier between the maternal circulation and the amniotic fluid is broken and amniotic fluid enters the maternal venous system via the endocervical veins, the placental site (if the placenta is separated), or a site of uterine trauma (Perozzi & Englert, 2004). This condition has a high mortality rate: as many as 60% of women die within the first hour after the onset of symptoms, and a large percentage

of survivors have permanent hypoxia-induced neurologic damage (Perozzi & Englert, 2004).

Although medical science has supplied many answers to questions about this condition, health care providers remain largely unable to predict or prevent an amniotic fluid embolism or to decrease its mortality rate.

### Nursing Management

Immediate recognition and diagnosis of this condition are essential to improve maternal and fetal outcomes. Until recently, the diagnosis could be made only after an autopsy of the mother revealed squamous cells, lanugo hair, or other fetal and amniotic material in the pulmonary arterial vasculature (Gilbert, 2004).

#### Assessment

The clinical appearance is varied, but most women report difficulty breathing. Other symptoms include hypotension, cyanosis, seizures, tachycardia, coagulation failure, disseminated intravascular coagulation pulmonary edema, uterine atony with subsequent hemorrhage, adult respiratory distress syndrome, and cardiac arrest (Mitchell, 2002). Amniotic fluid embolism should be suspected in any pregnant women with an acute onset of dyspnea, hypotension, and disseminated intravascular coagulation.

#### Nursing Interventions

Once the signs and symptoms are recognized, supportive measures should be implemented: oxygenation (resuscitation and 100% oxygen), circulation (IV fluids, inotropic agents to maintain cardiac output and blood pressure), control of hemorrhage and coagulopathy (oxytocic agents to control uterine atony and bleeding), and administration of steroids (Solu-Cortef) to control the inflammatory response (Moore & Ware, 2004).

Care is largely supportive and aimed at maintaining oxygenation and hemodynamic function and correcting coagulopathy. There is no specific therapy that is lifesaving once this condition starts. Adequate oxygenation is necessary, with endotracheal intubation and mechanical ventilation for most women. Vasopressors are used to maintain hemodynamic stability. Management of disseminated intravascular coagulation may involve replacement with packed red blood cells or fresh-frozen plasma as necessary. Oxytocin infusions and prostaglandin analogs can be used to address uterine atony.

Explain to the client and family what is happening and what therapies are being instituted. The woman is usually transferred to a critical care unit for intensive observation and care. Assist the family to express their feelings and provide support as needed.

## Women Requiring Birth-Related Procedures

Most women can give birth without the need for operative obstetric interventions. Most will expect to have a "natural" birth experience and don't anticipate the need for medical intervention. However, in some situations interventions are necessary to safeguard the health of the mother and fetus. The most common birth-related procedures are amnioinfusion, episiotomy (see Chapter 14), forceps-assisted or vacuum-assisted birth, cesarean birth, and vaginal birth following a previous cesarean birth. Nurses play a major role in helping the couple to cope with any unanticipated procedures by offering thorough explanations of the procedure, its anticipated benefits and risks, and any other options available.

### Amnioinfusion

**Amnioinfusion** is a technique in which a volume of warmed, sterile, normal saline or Ringer's lactate solution is introduced into the uterus through an intrauterine pressure catheter to increase the volume of fluid when oligohydramnios is present (Olds et al., 2004). It is used to change the relationship of the uterus, placenta, cord, and fetus to improve placental and fetal oxygenation. Instilling an isotonic glucose-free solution into the uterus helps to cushion the umbilical cord or dilute thick meconium (Littleton & Engebretson, 2005). This procedure is commonly indicated for severe variable decelerations due to cord compression, oligohydramnios due to placental insufficiency, postmaturity or rupture of membranes, preterm labor with premature rupture of membranes, and thick meconium fluid. Contraindications to amnioinfusion include vaginal bleeding of unknown origin, umbilical cord prolapse, amnionitis, uterine hypertonicity, and severe fetal distress (Green & Wilkinson, 2004).

There is no standard protocol for amnioinfusion. After obtaining informed consent, a vaginal examination is performed to evaluate for cord prolapse, establish dilation, and confirm presentation. Next, 250 to 500 mL of warmed normal saline or lactated Ringer's solution is administered using an infusion pump over 20 to 30 minutes. Overdistention of the uterus is a risk, so the amount of fluid infused must be monitored closely (Lowdermilk & Perry, 2004).

### Nursing Management

Nursing management during this procedure includes:

- Explain the need for the procedure, what it involves, and how it may solve the problem.
- Inform the mother that she will need to remain on bed rest during the procedure.
- Assess the duration and intensity of uterine contractions frequently to identify overdistention or increased uterine tone.
- Monitor the mother's vital signs and associated discomfort level.
- Maintain adequate intake and output records.
- Stay alert to the FHR pattern to determine whether the amnioinfusion is improving the fetal status.

- Prepare the mother for a possible cesarean birth if the FHR does not improve after the amnioinfusion.

## Forceps- or Vacuum-Assisted Birth

Forceps or a vacuum extractor may be used to apply traction to the fetal head or to provide a method of rotating the fetal head during birth. **Forceps** are stainless-steel instruments, similar to tongs, with rounded edges that fit around the fetus's head. Some forceps have open blades and some have solid blades. Outlet forceps are used when the fetal head is crowning and low forceps are used when the fetal head is at a +2 station or lower but not yet crowning. The forceps are applied to the sides of the fetal head. The type of forceps used is determined by the birth attendant. All forceps have a locking mechanism that prevents the blades from compressing the fetal skull (Fig. 21-5).

A **vacuum extractor** is a cup-shaped instrument attached to a suction pump used for extraction of the fetal head (Fig. 21-6). The suction cup is placed against the occiput of the fetal head. The pump is used to create negative pressure (suction) of approximately 50 to 60 mm Hg. The birth attendant then applies traction until the fetal head emerges from the vagina.

The indications for the use of either method are similar and include a prolonged second stage of labor, a nonreassuring FHR pattern, failure of the presenting part to fully rotate and descend in the pelvis, limited sensation and inability to push effectively due to the effects of regional anesthesia, maternal heart disease, acute pulmonary edema, intrapartum infection, maternal fatigue, or infection (Olds et al., 2004).

The use of forceps or a vacuum extractor poses the risk of tissue trauma to the mother and the newborn. Maternal trauma may include lacerations of the cervix, vagina, or perineum; hematoma; extension of the episiotomy incision into the anus; hemorrhage; and infection. Potential newborn trauma includes ecchymoses, facial and scalp lacerations, facial nerve injury, cephalhematoma, and caput succedaneum (Smith, 2004).

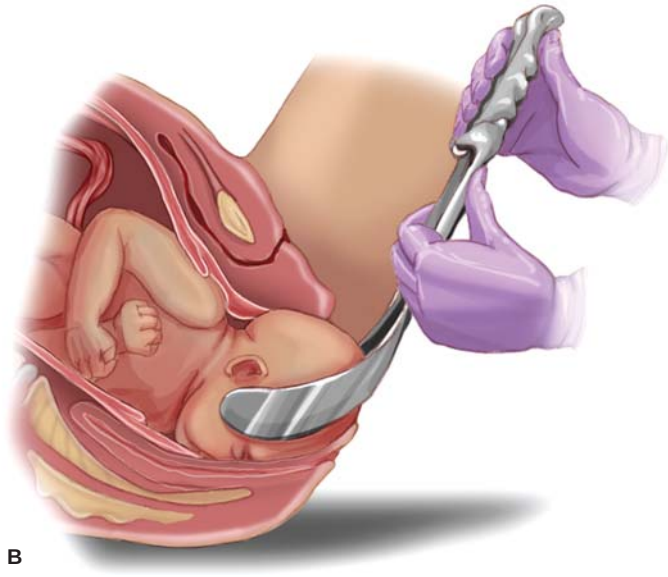
### Nursing Management

Nursing management for either forceps or vacuum extraction involves preventive measures to reduce the need for either procedure. These measures include frequently changing the client's position, encouraging ambulation if permitted, frequently reminding the client to empty her bladder to allow maximum space for birth, and providing adequate hydration throughout labor. Additional nursing measures include assessing maternal vital signs, the contraction pattern, the fetal status, and the maternal response to the procedure. Provide a thorough explanation of the procedure and the rationale for its use. Reassure the mother that any marks or swelling on the newborn's head or face will disappear without treatment within 2 to 3 days. Alert the postpartum nursing staff about the use of the technique so that they can observe for any bleeding or infection related to genital lacerations.

## Cesarean Birth

A **cesarean birth** is the delivery of the fetus through an incision in the abdomen and uterus. A classic (vertical) or low transverse incision may be used; today, the low transverse incision is more common (Fig. 21-7).

The number of cesarean births has steadily risen in the United States: today approximately one in five births occurs this way (Mackenzie et al., 2003). Although there has been some decline in rates since the 1980s, the United States still has a way to go to reduce its surgical birth rates (USDHHS, 2000).


● Figure 21-5 Forceps delivery. (**A**) Example of forceps. (**B**) Forceps applied to the fetus.



● Figure 21-6 Vacuum extractor for delivery. (**A**) Example of a vacuum extractor. (**B**) Vacuum extractor applied to the fetal head to assist in delivery.

● Figure 21-7 Low transverse incision for cesarean birth.

Several factors may explain this increased incidence of cesarean deliveries: the use of electronic fetal monitoring, which identifies fetal distress early; the reduced number of forceps-assisted births; older maternal age and reduced parity, with more nulliparous women having infants; convenience to the client and doctor; and a increase in malpractice suits (Youngkin & Davis, 2004).

Cesarean birth is a major surgical procedure with increased risks compared to a vaginal birth. The client is at risk for complications such as infection, hemorrhage, aspiration, pulmonary embolism, urinary tract trauma, thrombophlebitis, paralytic ileus, and atelectasis. Fetal injury and transient tachypnea of the newborn also may occur (Green & Wilkinson, 2004).

Any condition that prevents the safe passage of the fetus through the birth canal or that seriously compromises maternal or fetal well-being may be an indication for a cesarean birth. Examples include active genital herpes, fetal macrosomia, fetopelvic disproportion, prolapsed umbilical cord, placental abnormality (previa or

abruptio), previous classic uterine incision or scar, gestational hypertension, diabetes, positive HIV status, and dystocia (Breslin & Lucas, 2003). Fetal indications include malpresentation (nonvertex presentation), congenital anomalies (fetal neural tube defects, hydrocephalus, abdominal wall defects), and fetal distress (Sehdev, 2005).

## Preoperative Nursing Management

Once the decision has been made to proceed with a cesarean birth, extensive preparation is needed. Several diagnostic studies are usually ordered to ensure the well-being of both parties. These may include a complete blood count; urinalysis to rule out infection; blood type and cross-match so that blood is available for transfusion if needed; an ultrasound to determine fetal position and placental location; and an amniocentesis to determine fetal lung maturity if needed. Spinal, epidural, or general anesthesia is used for cesarean births. Epidural anesthesia is most commonly used today because most women wish to be awake and aware of the birth experience. The health-care provider usually discusses the need for the cesarean birth and the risks and obtains a signed informed consent. Client preparation varies depending on whether the cesarean birth is planned or unplanned.

The nurse's role before surgery includes the following:

- Assess maternal and fetal status frequently.
- Determine the time of last oral intake and document what was eaten.
- Ascertain the client's and family's understanding of the surgical procedure.
- Allow discussion of fears and expectations if the surgery is unplanned.
- Schedule all diagnostic tests ordered and monitor the results.
- Reinforce the reasons for surgery given by the surgeon.
- Outline the procedure and expectations of the surgical experience.
- Provide teaching about interventions to reduce postoperative complications.
- Demonstrate the use of the incentive spirometer and deep-breathing exercises.
- Prepare the surgical site as ordered.
- Start an IV infusion for fluid replacement therapy as ordered.
- Insert an indwelling (Foley) catheter and inform the client about how long it will remain in place (usually 24 hours).
- Administer any preoperative medications as ordered; document the time administered and the client's reaction.
- Reassure the client that pain management will be provided throughout the procedure and afterward.
- Explain what to expect postoperatively to allay anxiety.
- Help transport the client and her partner to the operative area.
- Maintain a calm, confident manner in all interactions with the client and family.

## Postoperative Nursing Management

Postoperative care for the mother who has had a cesarean birth is similar to that for one who has had a vaginal birth, with a few additional measures:

- Assess vital signs and lochia flow every 15 minutes for the first hour, then every 30 minutes for the next hour, and then every 4 hours if stable.
- Assess the woman's level of consciousness if sedative drugs were administered.
- Monitor the return of sensation to the legs if a regional anesthetic was used.
- Encourage the woman to cough, perform deep-breathing exercises, and use the incentive spirometer every 2 hours.
- Inspect the abdominal dressing and document description of drainage.
- Assess uterine tone to determine fundal firmness.
- Monitor urinary output and check for flow within the catheter system.
- Instruct the client on perineal hygiene.
- Administer pain medication as ordered and provide comfort measures.
- Assist the client to move in bed and turn side to side to improve circulation.
- Check the patency of the IV line, make sure the infusion is flowing at the correct rate, and inspect the infusion site frequently for redness.
- Monitor intake and output as per orders.
- Encourage early touching and holding of the newborn to promote bonding.
- Assist with breastfeeding initiation and offer continued support.
- Complete a complete head-to-toe assessment daily and document.
- Assess for evidence of abdominal distention and auscultate bowel sounds.
- Assist with early ambulation to prevent respiratory and cardiovascular problems.
- Assess the couple's perception of the surgical birth experience.
- Provide discharge teaching such as adequate rest, signs of infection, lifting restrictions.

Although the nurse's role in a cesarean birth can be very technical and skill-oriented at times, the focus must remain on the woman, not the equipment surrounding the bed. Care should be centered on the family, not the surgery. Provide education and minimize separation of the mother, father, and newborn. Remember that the client is anxious and concerned about her welfare as well as that of her child. Use touch, eye contact, therapeutic communication, and genuine caring to provide couples with a positive birth experience, regardless of the type of delivery.

# Vaginal Birth After Cesarean

**Vaginal birth after cesarean (VBAC)** describes a woman who gives birth vaginally after having at least one

previous cesarean birth. The old expression "once a cesarean, always a cesarean" is still largely true today. Despite evidence that some women who have had a cesarean birth are suitable candidates for vaginal birth, most women who have had a cesarean birth once undergo another for subsequent pregnancies (Dauphinee, 2004). The choice of a vaginal or a repeat cesarean birth can be offered to women who had a lower abdominal incision. However, controversy remains. The argument against VBAC focuses on the risk of uterine rupture and hemorrhage. Although the risk of uterine rupture is relatively low, concerns over malpractice issues have resulted in an increased incidence of repeat cesarean births.

Contraindications to VBAC include a prior classic uterine incision, prior transfundal uterine surgery (myomectomy), uterine scar other than low-transverse cesarean scar, contracted pelvis, and inadequate staff or facility if a cesarean birth is required (Caughey, 2004). Most women go through a trial of labor to see how they progress, but this must be performed in an environment capable of handling the acute emergency of uterine rupture. The use of cervical ripening agents increases the risk of uterine rupture and thus is contraindicated in VBAC clients. The woman considering induction of labor after a previous cesarean birth needs to be informed of the increased risk of uterine rupture with an induction than with spontaneous labor (Dauphinee, 2004).

Women are the primary decision-makers about the choice of birth method, but they need education about VBAC during their prenatal course.

### Nursing Management

Nursing management is similar for any women experiencing labor, but certain areas require special focus:

- *Consent:* Fully informed consent is essential for the woman who wants to have a trial of labor after cesarean birth. The client must be advised about the risks as well as the benefits. She must understand the ramifications of uterine rupture, even though the risk is small.
- *Documentation:* Record-keeping is an important component of safe client care. If and when an emergency occurs, it is imperative to take care of the client, but also to keep track of the plan of care, interventions and their timing, and the client's response. Events and activities can be written right on the fetal monitoring tracing to correlate with the change in fetal status.
- *Surveillance:* A nonreassuring fetal monitor tracing in a women undergoing a trial of labor after a cesarean birth should alert the nurse to the possibility of uterine rupture. Terminal bradycardia must be considered an emergency situation, and the nurse should prepare the team for an emergency delivery.
- *Readiness for emergency:* According to ACOG criteria for a safe trial of labor for a woman who has had a previous cesarean birth, the physician, anesthesia provider, and operating room team must be immediately available. Anything less would place the women and fetus at risk (Dauphinee, 2004).

Nurses must act as advocates, giving input on the appropriate selection of women who wish to undergo VBAC. Nurses also need to become experts at reading fetal monitoring tracings to identify a nonreassuring pattern and set in motion an emergency delivery. Including all these nursing strategies will make VBAC safer for all.

## KEY CONCEPTS

- Risk factors for dystocia include epidural analgesia, occiput posterior position, longer first stage of labor, nulliparity, short maternal stature (<5′), high birth weight, maternal age older than 35 years, gestational age more than 41 weeks, chorioamnionitis, pelvic contractions, macrosomia, and high station at complete cervical dilation.
- Dystocia may result from problems in the powers, passenger, passageway, or psyche.
- Problems involving the powers that lead to dystocia include hypertonic uterine dysfunction, hypotonic uterine dysfunction, and precipitous labor.
- Management of hypertonic labor pattern involves therapeutic rest with the use of sedatives to promote relaxation and stop the abnormal activity of the uterus.
- Any presentation other than occiput or a slight variation of the fetal position or size increases the probability of dystocia.
- Multiple gestation may result in dysfunctional labor due to uterine overdistention, which may lead to hypotonic dystocia, and abnormal presentations of the fetuses.
- During labor, evaluation of fetal descent, cervical effacement and dilation, and characteristics of uterine contractions are paramount to determine progress or lack thereof.
- Antepartum assessment for a postterm pregnancy typically include daily fetal movement counts done by the woman, nonstress tests done twice weekly, amniotic fluid assessments as part of the biophysical profile, and weekly cervical examinations to check for ripening for induction.
- Once the cervix is ripe, oxytocin is the most popular pharmacologic agent used for inducing or augmenting labor.
- Generally, the first and most reliable symptom of uterine rupture is fetal distress.
- Amniotic fluid embolism is a rare but often fatal event characterized by the sudden onset of hypotension, hypoxia, and coagulopathy.
- Cesarean births have steadily risen in the United States; today, approximately one in five births occurs this way. Cesarean birth is a major surgical procedure and has increased risks over vaginal birth.

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## Web Resources

American Society of Reproductive Medicine: **www.asrm.org**
American Academy of Pediatrics: **www.app.org**
American College of Obstetricians and Gynecologists: **www.acog.org**
Association of Women's Health, Obstetric and Neonatal Nurses: **www.awhonn.org**
Birthrites: Healing after Cesarean, Inc.: **www.birthrites.org**
Department of Health and Human Services: **www.4women.gov**
International Cesarean Awareness Network: **www.ican-online.org**
March of Dimes: **www.modimes.org**
Mothers of Super Twins: **www.mostonline.org**
National Perinatal Association: **www.nationalperinatal.org**
SHARE Parents support group: **www.nationalshareoffice.com/**
Sidelines: High Risk Pregnancy Support Group: **www.sidelines.org**
Smoke-free Families: **www.smokefreefamilies.org**
VBAC: **www.vbac.com**

# Chapter WORKSHEET

## MULTIPLE CHOICE QUESTIONS

1. The medical record of a client reveals a condition in which the fetus cannot physically pass through the maternal pelvis. The nurse interprets this as:
   a. Cervical insufficiency
   b. Contracted pelvis
   c. Maternal disproportion
   d. Fetopelvic disproportion
2. The nurse would anticipate a cesarean birth for a client who has which infection present at the onset of labor?
   a. Hepatitis
   b. Herpes simplex virus
   c. Toxoplasmosis
   d. Human papillomavirus
3. After a vaginal examination, the nurse determines that the client's fetus is in an occiput posterior position. The nurse would anticipate that the client will have:
   a. Intense back pain
   b. Frequent leg cramps
   c. Nausea and vomiting
   d. A precipitous birth
4. The rationale for using a prostaglandin gel for a client prior to the induction of labor is to:
   a. Stimulate uterine contractions
   b. Numb cervical pain receptors
   c. Prevent cervical lacerations
   d. Soften and efface the cervix
5. A client in active labor and dilated 4 cm suddenly has no progress and her contractions weaken in intensity and frequency. The nurse interprets this as a sign of:
   a. Hypertonic labor
   b. Precipitous labor
   c. Hypotonic labor
   d. Dysfunctional labor

## CRITICAL THINKING EXERCISES

1. Marsha, a 26-year-old multipara, is admitted to the labor and birth suite in active labor. After a few hours, the nurse notices a change in her contraction pattern—poor contraction intensity and no progression of cervical dilatation beyond 5 cm. Marsha keeps asking about her labor progress and appears anxious about "how long this labor is taking."
   a. Based on the nurse's findings, what might you suspect is going on?
   b. How can the nurse address Marsha's anxiety?
   c. What are the appropriate interventions to change this labor pattern?
2. Marsha activates her call light and states, "I feel increased wetness down below."
   a. What new development might be occurring?
   b. How will the nurse confirm her suspicions?
   c. What interventions are appropriate for this finding?

## STUDY ACTIVITIES

1. Visit the SHARE Pregnancy and Infant Loss Support, Inc. website (http://www.nationalshareoffice.com/) and critique it as to its helpfulness to parents and resources available to assist them locally.
2. Outline the fetal and maternal risks associated with a postterm pregnancy.
3. An abnormal or difficult labor describes _____.