

Abnormal Presentations in Pregnancy

Presentation denotes that portion of the fetus that overlies the pelvic inlet (cephalic, breech, or shoulder); abnormal presentation is more commonly associated with the need for operative delivery, and places the mother and neonate at increased risk of morbidity and mortality.

ANESTHETIC CONSIDERATIONS:

- Anesthetic considerations for pregnancy
- Increased incidence of c-section
- Increased obstetric complications
- Increased risk of maternal morbidity and mortality
- Increased neonatal morbidity and mortality – related to factors predisposing to malpresentation

ANESTHETIC GOALS:

1. To be prepared for rapid changes in delivery and anesthetic plan for malpresentation.
2. To provide adequate analgesia and anesthesia to facilitate delivery of malpresenting fetus.
3. Be prepared to provide uterine relaxation if necessary.
4. NICU should be immediately available.

Definitions:

- The *presentation* denotes that portion of the fetus that overlies the pelvic inlet (cephalic, breech, or shoulder). Cephalic presentations are further subdivided into vertex, brow, and face presentations according to the degree of flexion of the neck.
- The *lie* refers to the alignment of the fetal spine with the maternal spine. The fetal lie can be either longitudinal or transverse. A fetus with a vertex or breech presentation has a longitudinal lie.
- The *position* of the fetus denotes the relationship of a specific fetal bony point to the maternal pelvis. The position of the occiput defines the position for vertex presentations. Other markers for position are the sacrum for breech presentations, the mentum for face presentations, and the acromion for shoulder presentations.

History:

- Obstetrical
 - History of current and previous pregnancies
- Factors associated with or predisposing to breech presentation:
 - Abnormalities of the maternal pelvis or uterus
 - Pelvic tumors
 - Uterine anomalies
 - Pelvic contracture
 - Abnormalities of the fetus
 - Hydrocephalus
 - Anencephaly
 - Uterine distention or relaxation
 - Multiparity
 - Multiple gestation
 - Hydramnios
 - Macrosomia
 - Other conditions:
 - Previous breech delivery
 - Preterm gestation
 - Oligohydramnios
 - Cornual-fundal placenta
 - Placenta previa
 - Low free thyroid hormone (T4) levels at 12 weeks' gestation may be associated with breech presentation at term
- PMedHx
- PSurgHx and Anesthetic Hx
- Medications
- Allergies
- Last meal

Physical:

- Vitals of mother and FHR
- Airway exam
- Cardiopulmonary exam
- Obstetrical exam for malpresenting part or lie

Investigations:

- Labs –CBC
- Imaging
 - U/S to confirm fetal presentation or lie
- FHR Monitoring
 - Nonreassuring fetal heart rate tracings occur more commonly in patients with a term breech presentation, even those who have undergone successful external cephalic version

Optimization:

- Administer a nonparticulate antacid at the time of transfer to the delivery room

Anesthetic Considerations for Breech Presentation Delivery:

- Breech presentation: A longitudinal lie in which the fetal buttocks and/or lower extremities overlie the pelvic inlet
- Most common malpresentation (3-4% are breech at term)
- 3 types: 1) Frank breech (lower extremities flexed at hips and extended at knees)
2) Complete breech (lower extremities flexed at both hips and knees)

3) Incomplete breech (one or both lower extremities extended at hips)

- The type of breech presentation may influence obstetrician's decision regarding mode of delivery: a frank breech tends to remain in that presentation throughout labor, whereas a complete breech may change to an incomplete breech presentation at any time before or during labor
- Anesthetic Set-Up:
 - Good IV access
 - Supplemental oxygen on the patient during vaginal breech delivery as umbilical cord compression is common during the second stage of labor
 - Routine monitors + FHR monitoring
 - Emergency drugs
 - Prepare for emergency administration of general anesthesia at any time with external cephalic version or vaginal delivery attempt
 - The patient with a breech presentation should deliver in a room where an emergency cesarean delivery can be performed immediately
 - Infants with a breech presentation tend to be more depressed than infants with a vertex presentation- NICU should be immediately available
- Anesthetic options and considerations depend on mode of delivery:
 - External Cephalic Version
 - Consider use of epidural or spinal anesthesia or analgesia for external cephalic version
 - Increases chance of success of version
 - Requires continuous FHR monitoring
 - May require administration of a tocolytic agent or nitroglycerine for uterine relaxation before performing external cephalic version
 - Vaginal Delivery
 - Cesarean delivery is preferred but planned vaginal delivery of a singleton breech fetus at term may be reasonable depending on the experience of the obstetrician
 - Consider epidural or combined spinal-epidural analgesia
 - Ability to quickly provide a dense block is important if cesarean delivery is required
 - First stage of labour: Epidural analgesia inhibits early pushing during the first stage of labor, therefore preventing fetal head entrapment or prolapsed umbilical cord
 - Second stage of labour: Epidural analgesia provides effective pain relief and skeletal muscle relaxation of the pelvic floor and perineum
 - Total breech extraction of a singleton fetus is unacceptable but may need to quickly provide analgesia for use of forceps to the aftercoming head after spontaneous delivery of the infant to the level of the umbilicus
 - Administration of nitroglycerin for uterine relaxation may be requested (sublingual nitroglycerin 400-800 µg or intravenous doses ranging from 50-500 µg or more)
 - Cesarean Delivery
 - Spinal, epidural, or general anesthesia can be administered for cesarean delivery
 - Uterine relaxation may be necessary in cases of fetal malformations (e.g., sacral teratoma, hydrocephalus)
 - When general anesthesia is used, the anesthesia provider may increase the concentration of the volatile halogenated agent
 - When neuraxial anesthesia is used, a small dose of nitroglycerin or a beta-adrenergic tocolytic agent typically provides adequate relaxation

Complications:

- Increased incidence of obstetric complications:
 - Intrapartum fetal death
 - Intrapartum asphyxia
 - Umbilical cord prolapse (highest risk in incomplete breech presentation)
 - Umbilical cord prolapse typically necessitates prompt cesarean delivery
 - Birth trauma
 - Arrest of aftercoming head
 - Spinal cord injuries with deflexion
 - Major congenital anomalies (6%-18%) including hydrocephalus and anencephaly
 - Preterm delivery (16%-33%)
 - Hyperextension of the head
- Higher risk of perinatal morbidity and mortality with breech presentation, even when the risk is adjusted for preterm gestation (mostly due to the factors causing breech presentation)
 - Both nonreassuring fetal heart rate tracings and dystocia occur more commonly in patients with a term breech presentation, even those who have undergone successful external cephalic version
- Increased risk of maternal morbidity and mortality
 - Higher risk of maternal infection, perineal trauma, and hemorrhage
- External cephalic version:
 - Increased risk for intrapartum c-section because of dystocia or a nonreassuring FHR tracing
 - Complications include:
 - Transient (5.7%) and persistent (0.37%) FHR abnormalities
 - Vaginal bleeding (0.47%)
 - Placental abruption (0.12%)
 - Fetomaternal hemorrhage

Other Common Malpresentations:

Face Presentation

- Face presentation occurs in 1 in 500 live births
- Approximately 70% to 80% of infants with a face presentation can be delivered vaginally
- In general, the infant can be delivered vaginally only if the mentum rotates to an anterior position
- Manual efforts to flex the fetal cervical spine or convert an unfavorable mentum posterior position to a more favorable mentum anterior position are rarely successful

Brow Presentation

- The cervical spine position is intermediate between the full flexion of a normal vertex presentation and the full extension of a face presentation
- Brow presentation occurs in approximately 1 in 1500 deliveries
- Persistent brow presentation typically requires cesarean delivery due to dystocia
- Spontaneous flexion or extension of the neck may occur during labor, which may allow vaginal delivery

Compound Presentation

- An extremity is prolapsed alongside the main presenting fetal part
- Compound presentation occurs in 1 in 400 to 1 in 1200 deliveries
- Most often, an upper extremity presents with the vertex
- Umbilical cord prolapse is common (10% to 20%), as is neurologic or musculoskeletal damage to the involved extremity
- Labor and delivery may occur safely, but abdominal delivery is needed in patients with cord prolapse or arrest of labor
- Manipulation of the prolapsed extremity should be avoided

Transverse Lie

- Transverse lie presentation mandates performance of cesarean delivery except in two circumstances:
 - First, successful external cephalic version may allow vaginal delivery
 - Second, the obstetrician may perform internal podalic version and total breech extraction of a second twin with a shoulder presentation
- Cesarean delivery of a fetus with a back-down transverse lie can be especially difficult
 - This presentation represents one of the few indications in contemporary obstetric practice for a classic uterine incision

Shoulder Dystocia

- In ~3% of vaginal deliveries, the anterior shoulder is trapped above the pubic symphysis
- If delivery is not accomplished soon, umbilical cord compression may result in asphyxia
- Excessive traction on the fetal head may result in damage to the brachial plexus (e.g., Erb's palsy), which may be permanent or temporary
- During the manipulations undertaken to effect delivery, a fracture of the clavicle or humerus may result
- Risk factors for shoulder dystocia are those that predict or reflect mechanical difficulty
 - Maternal diabetes mellitus are predisposed to shoulder dystocia, not only because fetal macrosomia is more common but also because the fetus of a mother with diabetes has a shoulder circumference that is disproportionately large relative to head circumference
 - Fetal macrosomia
 - Delayed active phase of labour
 - Prolonged second stage of labour
 - Operative vaginal delivery
- Appropriate management of shoulder dystocia begins with the recognition that there is sufficient time to deliver the baby safely
- Neuraxial anesthesia is ideal but not essential
- Extension of the episiotomy should be considered
- Although greater posterior room does not directly permit delivery, it does permit vaginal manipulations that may be necessary to effect delivery
- Management of shoulder dystocia:
 - If suprapubic pressure (directed toward the floor) coupled with gentle traction on the head is not efficacious, the mother's thighs are removed from their supports and are hyperflexed alongside her abdomen (i.e., the McRoberts maneuver) which elevates the symphysis in a cephalad direction and often frees the impacted shoulder and allows easy delivery
 - If the McRoberts maneuver is not successful, vaginal manipulations are undertaken to move the shoulders into an oblique position in the pelvis or to deliver the posterior arm
 - Vaginal delivery of the head does not necessarily commit one to vaginal birth of the baby
 - Cephalic replacement (i.e., the Zavanelli maneuver)
 - If all measures have failed, the mechanism of labor is reversed: the position of the vertex is made occiput anterior, flexion is achieved, and the head is elevated, which may be facilitated by tocolysis (e.g., sublingual or intravenous nitroglycerin 100 µg, subcutaneous or intravenous terbutaline 0.25 mg, or general anesthesia with a volatile anesthetic agent)
 - After the fetal head has been placed back into the vagina, prompt cesarean delivery is performed

Occiput Posterior and Occiput Transverse Positions

- The fetal occiput rotates from a transverse or oblique position to a direct occiput anterior position
 - In a minority of patients, malrotation from an occiput anterior to a posterior position can result in a persistent occiput posterior position
 - Occiput posterior position may lead to a prolonged labor that is associated with increased maternal discomfort
 - Less often, the vertex remains in the occiput transverse position (deep transverse arrest)
- Obstetricians used to perform rotational forceps delivery but no longer for fear of causing excessive maternal and/or fetal trauma
 - In cases of persistent occiput posterior position, the contemporary obstetrician is more likely to allow the head to remain in the occiput posterior position at vaginal delivery
 - One third of nulliparous women and 55% of parous women with a persistent occiput posterior position achieve spontaneous vaginal delivery
 - Some cases of persistent occiput posterior position, and many cases of deep transverse arrest, require cesarean delivery because of dystocia
 - During administration of epidural analgesia in a patient with an abnormal position, it is helpful to add a lipid-soluble opioid to a dilute solution of local anesthetic. This combination provides analgesia while preserving pelvic muscle tone. Relaxation of the pelvic floor and perineum may deter the spontaneous rotation of the vertex during labor. In contrast, profound pelvic floor relaxation is needed to facilitate instrumental vaginal delivery.

References:

Chestnut, very little in Barash