

Special Considerations in OB Anesthesia: Malpositions & Multiples

Beth Ann Clayton, CRNA, MS

AmSol Obstetric Anesthesia CRNA Educator

Obstetric Anesthesia Clinical Coordinator

Mercy Health-Fairfield Hospital

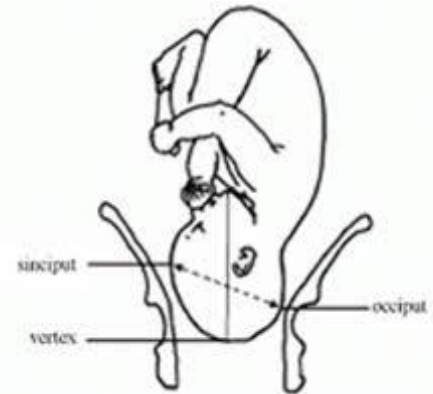
Assistant Professor, University of Cincinnati

Presentation of Fetus

- Lie
- Presenting fetal part
- Attitude

Attitude

- **Attitude** of the fetal head
 - either **flexion** or **extension**
- **Vertex presentation with flexion**
 - Associated with the greatest Chance of safe vaginal delivery



Breech Presentation

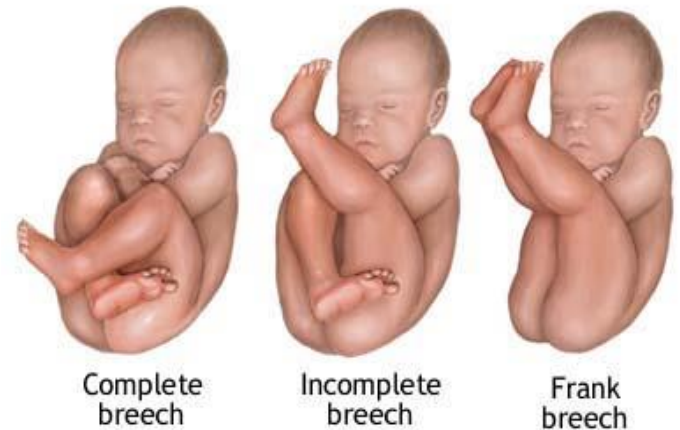
- Prevalence decreases with increasing gestational age
 - End of 2nd trimester: 25%
 - 30 weeks: 17%
 - Term: 3.5%



Breech Presentation

- Defined by the presenting body part and whether the hips and knees are flexed or extended

Variations of the breech position



adam.com

Fetal Risks

- Neonatal mortality with breech presentation is about 5x greater than that of term cephalic presentations
- **Umbilical cord compression and prolapse**
 - Footling breech: 10%
 - Complete breech: 5%
 - Frank breech: 0.5%
 - the same as with a vertex presentation

Fetal Risks

- Nuchal arm
 - posterior aspect of the shoulder
- Difficulty with aftercoming head
- Fetal mechanical injury
 - Skull fracture
 - Brachial plexus injury
- Fetal anoxic brain injury and death

Maternal Risks

- **Increased morbidity r/t use of C/S**
- **Increased risk with vaginal delivery**
 - Intrauterine manipulation
 - Increases risk of infection
 - Uterine relaxation
 - Increases risk of uterine atony & hemorrhage

Systemic Review

ECV: a safe procedure?

- Reviewed 6 RCT from 1997-2010
 - 2 studies: Analgesic doses used
 - 4 studies: Anesthetic doses used
- Results:
 - Significant improvement on ECV success rate in four studies that used anesthetic doses
 - Two studies that utilized analgesic doses reported no significant difference

Sultan P & Carvalho, B. IJOA 2011

Meta Analysis

Anesthetic dose of neuraxial blockade increases success rate of ECV

- Central neuraxial anesthesia with anesthetic –compared-analgesic-doses
 - associated with an increase in ECV success rate for breech
 - Anesthetic dose defined:
 - Producing a motor block

Lavoie A and Guay J. Can J Anes, 2010

Obstetric Management for Breech Deliveries

- **Cesarean Section**

- As risks for C/S decrease, the use of C/S for breech deliveries increases
 - 80% - 100% C/S rate
- 4-10 fold increase of fetal trauma with vaginal breech delivery compared to abdominal delivery
 - However, maternal morbidity is several times higher with C/S

Anesthetic Considerations

- **Vaginal Breech delivery**

- Epidural

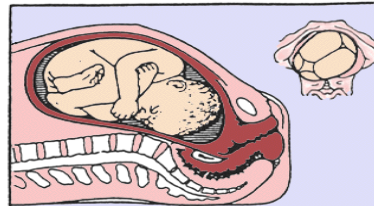
- Preferred for breech presentation
 - May slow delivery, does not effect fetus
 - Excellent pain relief
 - Decreases desire to bear down
 - before for full dilation
 - Analgesia for C/S if needed
 - Pelvic floor relaxation
 - leads to controlled delivery

Anesthetic Considerations

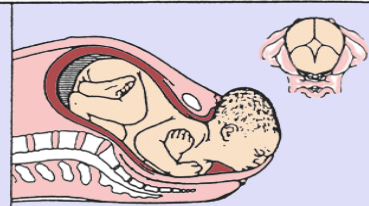
- **Vaginal Breech delivery**
- Uterine relaxation may be required immediately to assist with delivery of aftercoming head
 - Nitroglycerine
 - 50 – 100 ug
 - 0.8 mg SL aerosol spray
 - General Anesthesia
 - High dose volatile anesthetic

Normal Vertex Delivery

Head floating

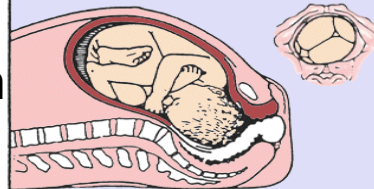


1. Head floating, before engagement

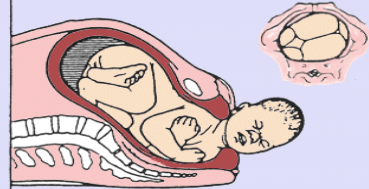


5. Complete extension.

Engagement flexion

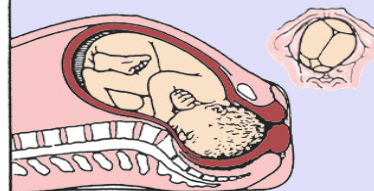


2. Engagement; flexion, descent.

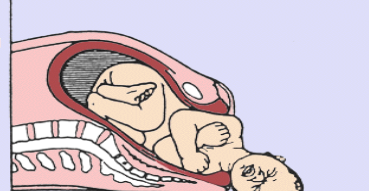


6. Restitution, (external rotation).

Internal rotation

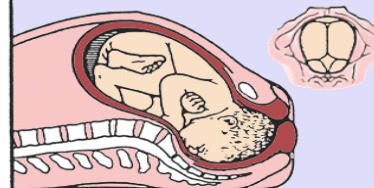


3. Further descent, internal rotation

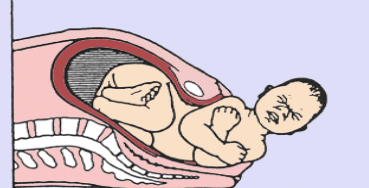


7. Del. of ant. shoulder.

Complete rotation,
begin extension



4. Complete rotation,
beginning extension



8. Delivery of posterior shoulder.

Complete extension

External rotation

Delivery of anterior
shoulder

Delivery of posterior
shoulder

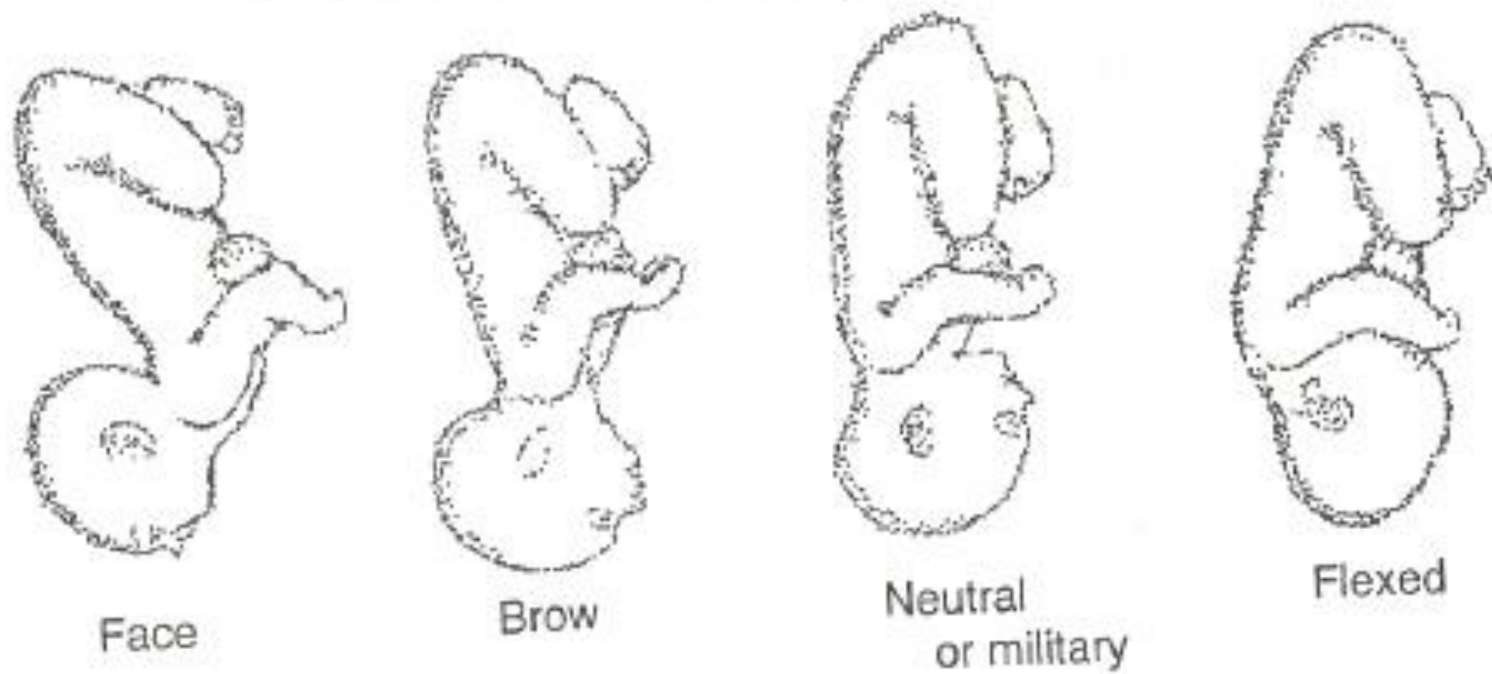


FIG. 3. Attitudes of the vertex.

Malpresentation of vertex

- **Most common factor associated with malpresentation:**

- *Cephalopelvic disproportion*

- Occurs when the baby's head or body is too large to fit through the mother's pelvis
- Due to large fetal size or contracted maternal pelvis
- May inhibit flexion and rotation of fetal head

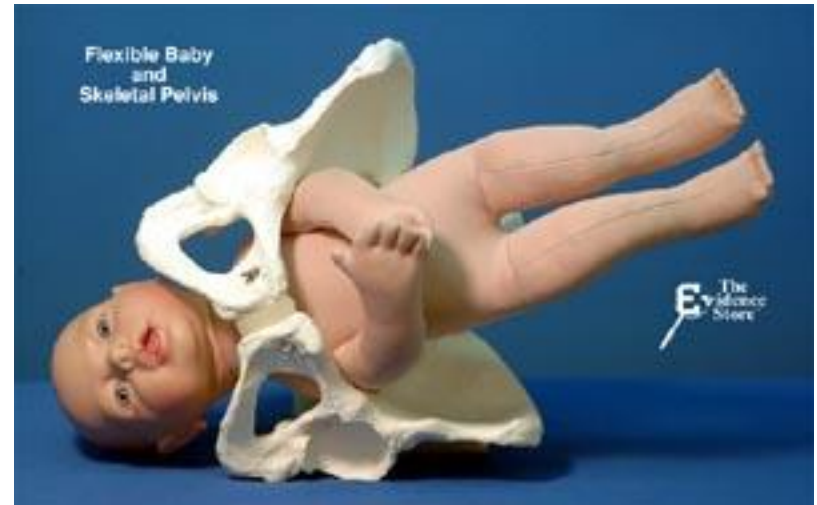
Occiput posterior presentation



- 5% of births
- Larger cephalic diameter presents into pelvis
 - Greater frequency of cephalopelvic disproportion
- Fetal occiput fails to spontaneously rotate anteriorly
- Persistent occiput posterior presentation
 - results in more prolonged and painful labor

Shoulder Dystocia

- Occurs if after the delivery of the fetal head the shoulders arrest
- Shoulders are against the bony pelvis and thus the rest of the fetal body can not be delivered



Treatment

- **Vaginal delivery**
 - Complete episiotomy
 - McRoberts procedure
 - Mother abducts legs > chest
 - Suprapubic pressure
 - Manual rotation of anterior shoulder
 - Extraction of posterior arm
 - Replacement of the head and C/S

Shoulder Dystocia

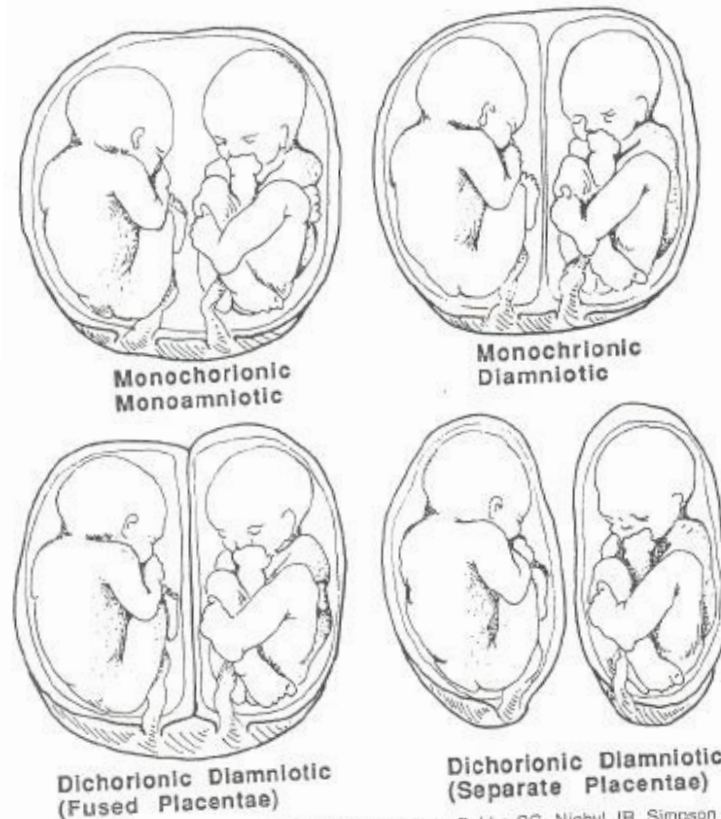
- **Maternal Complications**
 - Uterine atony
 - hemorrhage
 - Uterine rupture
 - Vaginal lacerations
 - Fourth degree tear
 - Genital tract trauma and infection

Multiple Births

Placenta Classification

Chorion
-placenta

Amnion
-amniotic sac



Placentation in twin pregnancies. (Reprinted from Gabbe SG, Niebyl JR, Simpson JL, eds. *Principles of normal and problem pregnancies*. 2nd ed. New York: Churchill Livingstone, 1991, with permission.)

Placenta Classification

- Type of placentation determines likelihood of vascular communications
 - Vascular communications occur
 - Nearly all monochorionic placentas
 - Rare dichorionic placentas
 - May result in
 - Twin-twin transfusion syndrome
 - Intrauterine fetal death

Maternal Physiologic Changes

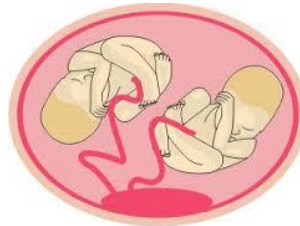
- **Increased uterine size**
 - decreased total lung capacity
 - Decreased FRC
 - Displaces stomach cephalad
 - decreases competence of lower esophageal sphincter
- **Weight gain > rate after 30 weeks**
- **Maternal blood volume** (additional 500ml) **& CO increases**

Fetal Risks

- **Twin delivery increases perinatal mortality**
 - 6-8x's
- **Morbidity and Mortality r/t prematurity**
 - 40-50% PTL, 30-40% deliver <37 weeks
 - Rare to carry to term
 - Uterus doesn't remain latent until term bc of insufficient uterine blood flow
- **Abnormal presentations**
 - Increases the risk for umbilical cord prolapse

Twin-to-Twin Transfusion

- Abnormal connection of chorionic blood vessels in the placenta bt. two monochorionic twins
 - one twin becomes the donor and the other twin becomes the recipient
 - Donor twin is smaller and is at risk for intrauterine growth restriction and anemia
 - Recipient twin is plethoric (excess amount of blood) and is at risk for volume overload and cardiac failure



Twin-to-Twin Transfusion

- **Treatment**
 - Serial amnioreduction to control polyhydramnios
 - Selective feticide to allow the other fetus to survive
 - Selective fetoscopic laser photocoagulation of the vascular anastomoses bt. the two twins
 - Laser inserted either percutaneously or through a maternal laparotomy

Anesthesia TTTS Fetal Surgery

- Considerations
 - Analgesia, amnesia and immobility
 - Mom & Baby
 - Preserve gas exchange and cardiovascular stability of both
 - Control uterine tone

Fetal Risks

- **Second twin**

- Increased morbidity and mortality than first
 - FHR monitoring improves outcome
- After delivery of twin A the following reduce intervillous blood flow and oxygenation to the 2nd twin:
 - Partial separation of placenta
 - Reduced uterine size
 - Clamping of the 1st umbilical cord

Twin Fetal Risks

- **Malpresentation**
 - d/t growth retardation and polyhydramnios
- **Placental problems**
 - Cord prolapse/entanglement d/t:
 - Malpresentation
 - Malposition
 - Premature rupture of membranes

Maternal Risks

- **Physiologic risks**

- Increased CO

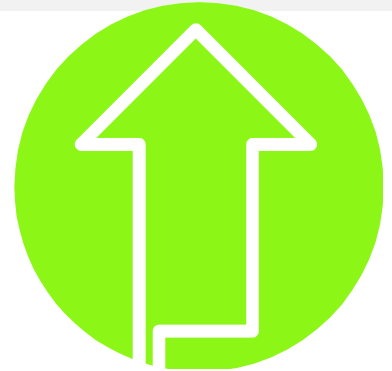
- an additional 15%

- Increased Supine Hypotensive Syndrome

- a 32-week uterus of a twin gestation is as big as a term uterus containing a single-fetus and gets progressively larger

- **Anemia**

- occurs 2-4x more often



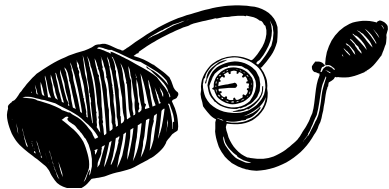
Maternal Risks

- **Physiologic risks**
 - Hypoxia
 - Decrease in FRC
 - Increase in closing volume and oxygen consumption
 - Pulmonary edema
 - Use of tocolytics
 - Difficult intubation
 - Pulmonary aspiration

Obstetrical Risks

- **PIH and preeclampsia**

- 5x more common



- **Antepartum hemorrhage**

- Abruptio placenta & placenta previa



- **Postpartum hemorrhage**

- Uterine atony d/t over distended uterus
 - 2-3 x times increased risk

Obstetrical Risks

- **Malpresentation**

- Greater frequency of C/S and postoperative infection

- **Polyhydramnios**

- Excess of amniotic fluid
- Occurs in about 12% of multiple gestations
- Heralds congenital abnormalities including GI and CNS

Obstetric Management

- **Indications for C/S**
 - Malpresentation of twin A
 - Discordancy (twin B > twin A)
 - Intrauterine death of one fetus
 - Twin-twin transfusion
 - Congenital deformities
 - Decreased uteroplacental reserve
 - Fetal cardiac decelerations
 - Prematurity
 - Three or more fetuses



Intrapartum Management

- **Delivery should occur in the OR**
 - emergency abdominal delivery can be performed
 - Provide supplemental O2
 - Have LA to extend epidural for C/S