Normal Spontaneous Vaginal Delivery

Indications

1. Complete dilation
2. Absence of contraindications

Contraindications

1. Maternal
    - Active genital herpes
    - Placenta previa
    - Prior vertical cesarean delivery
    - Absolute cephalopelvic disproportion
    - Serious medical illness where valsalva maneuver not tolerated
2. Fetal
    - Severe non-reassuring heart tones if vaginal delivery not imminent
        - Malpresentation
        - Congenital anomalies
            - Hydrocephalus
            - Neural tube defects
            - Skeletal dysplasia

Materials

1. Gown and gloves
2. Set of cloth or paper towels
3. 4x4's
4. Hemostats
5. Mayo scissors
6. Needle holder
7. Ring forceps
8. Towel clip
9. Thumb forceps
10. Bulb syringe
11. Cord clamp

PROCEDURE

Positioning

1. Positioning of Mother during Pushing
    - Supine
        - Associated w/less blood loss and decr 2nd degree tears but incr pain, non-reassuring heart tones, and incr instrumented deliveries
    - Hands and knees
        - Reduces pain associated w/OP/transverse lie but no significant change in operative delivery or fetal position at time of delivery (SOR:A)
    - Lateral
        - Same benefits as upright position but associated w/less perineal trauma than upright[2]

- Upright (squatting or kneeling)
  - Reduced duration of 2nd stage, decr episiotomies, decr pain, incr 2nd degree tears, incr blood loss (SOR:A)[2]
- Water delivery
  - Data too limited to assess outcomes but water immersion in 1st stage reduces analgesia use, decr pain w/out change in labor duration, operative delivery, or neonatal outcomes (SOR:A)[3]
- Take Home
  - Women should be encouraged to push in position they find most comfortable and positions will be limited by epidural anesthesia[2]

Physiology of Labor

1. Stages of Labor
   - 1st Stage:
     - Onset of labor until complete cervical dilation
   - 2nd Stage:
     - Complete dilation until delivery of infant
   - 3rd Stage:
     - Delivery of infant until delivery of placenta
2. Three P's of Labor
   - Power: Force generated by uterine contractions
     - Can be measured externally
       - Adequate considered 5 contractions in 10 mins
     - Can be measured w/IUPC
       - Adequate considered at least 200-250 Montevideo units in 10 mins
   - Passenger: Variables affecting fetus include:
     - Size of fetus
     - Lie
       - Transverse
       - Longitudinal
       - Oblique
     - Presentation
       - Vertex
       - Breech
       - Shoulder
       - Compound
     - Position
       - Occiput anterior
       - Occiput posterior
       - Transverse
     - Station
       - Degree of descent in relationship of fetal head and ischial spines
     - Number of fetuses
   - Pelvis
     - Delivery affected by bony pelvis and soft tissues including cervix and pelvic floor musculature

        - Difficult to assess adequate pelvis via imaging or clinical measurements
        - Pelvimetry has been replaced by a trial of labor
3. Seven Cardinal Stages of Fetal Movement
    - Engagement
        - Widest diameter of head passes through pelvic inlet (0 station)
    - Descent
        - Downward passage of fetus
        - Occurs throughout labor
            - Most occurs during second stage
    - Flexion
        - Flexion of fetal head onto chest occurs passively due to resistance of bony and soft tissues of pelvis
    - Internal Rotation
        - Head rotates usually from transverse to anterior-posterior
    - External Rotation (restitution)
        - Head returns to correct anatomic position in relation to torso as head emerges
    - Expulsion
        - Delivery of rest of fetus
        - Anterior shoulder rotates under pubic symphysis

Other Considerations

1. Fetal heart tone monitoring
    - ACOG supports
        - Use of intermittent FHR monitoring in low risk pregnancies[4]
    - ACOG recommends
        - Continuous FHR monitoring in high risk pregnancies[4]
    - Electronic FHR monitoring does not decrease perinatal death or prevent cerebral palsy
        - It does decrease frequency of neonatal seizures and increase operative delivery rates (SOR:A)[5]
2. Pain management
    - Opiates
        - Use limited in second stage d/t respiratory depression of fetus at delivery
    - Epidural
        - Local anesthetic +/- pain medications injected via catheter into epidural space
        - Obtains good pain relief but may compromise pushing and incr duration of second stage
        - Can incr need for instrumented delivery
    - Spinal
        - Local anesthetic +/- pain medications injected into subarachnoid space
        - Technically easier to perform and can be administered by providers other than anesthesiologists
    - Pudendal blocks

        - Can be used in conjunction with epidural if sacral nerves inadequately blocked or for low forceps delivery
        - Has high failure rate
    - General anesthesia if complication arises requiring urgent C-section
3. Delayed vs. early pushing
    - Allowing women to "labor down" and push only when head is at perineum or woman feels desire to push decr rotational or mid-pelvic instrumented deliveries in those with epidural
        - Increases duration of 2nd stage by an average of 54 mins
        - No significant difference in C-sections, episiotomy, lacerations, apgar scores, or perinatal death (SOR:A)[6]
4. Perineal massage during labor
    - Massaging or stretching perineum with each contraction does not affect rates of episiotomy or 1st and 2nd degree tears
    - Trend towards decr 3rd degree tears[7]
5. Role of episiotomy
    - Routine episiotomy not recommended
    - Associated w/incr 3rd and 4th degree tears
    - Associated w/incr dyspareunia and pelvic pain
    - Should be limited to soft tissue dystocia or need to facilitate delivery of fetus
6. Meconium
    - Neonatal Resuscitation Guidelines
        - Recommend against routine intrapartum suctioning of infants vigorous at birth
    - Deep suctioning at perineum no longer recommended
        - Intubation w/suctioning should be done by resuscitation team if not vigorous at delivery[8]

Delivery of head, shoulders, and body

1. Head
    - As head crowns, one hand is used to keep neck flexed preventing precipitous expulsion
    - Modified Ritgen's maneuver if delay of delivery of head
        - Sterile towel used to apply upward pressure on fetal chin through perineum to facilitate extension of head
    - Allow restitution of head in relationship to torso
    - Check for cord around neck
        - Loop around neck to reduce if loose or double clamp and cut cord
        - May also attempt to deliver through cord
    - Suction mucous from mouth and then nose using bulb syringe
2. Shoulders
    - Using downward traction towards mother's sacrum w/mother pushing, deliver anterior shoulder under pubis symphysis
    - Immediate upward traction is then used to deliver posterior shoulder
3. Body
    - Delivery of body then occurs spontaneously or with assisted pushing from mother

- Infant then dried and placed skin to skin with mother or wrapped in warm blanket

Third Stage

1. Cord clamping, cutting, and cord drainage
   - Clamp cord 1 inch above umbilicus and 2nd clamp placed above
     - Cord is cut in between 2 clamps
   - Collect umbilical blood if needed for pH, Rh typing, or mother-baby studies
   - Delayed cord clamping with baby held below mother's abdomen can incr iron stores esp in pre-term infants
     - No evidence of incr jaundice or polycythemia
     - No clear benefit for use in all deliveries[9]
   - Placental cord drainage may reduce length of 3rd stage but number of studies of small (SOR:A)[10]
2. Delivery of placenta
   - 3 signs of placental separation include lengthening of umbilical cord, gush of blood from vagina, and elevation of fundal height
   - Expectant management
     - Delivery of placenta with out use of uterotonic agents, cord clamping, or traction
   - Active management
     - Early cord clamping, controlled cord traction and administration of oxytocin before or after delivery of placenta
       - Recommended because of decr post-partum bleeding and prolonged 3rd stage (SOR:A)[11]
       - Associated with incr side effects of nausea, vomiting and hypertension (SOR:A)[11]
   - Membranes will trail after delivery of placenta
     - Slowly rotate placenta while grasping membranes with a clamp helps prevent them from tearing and being retained
   - Examine placenta for
     - Intactness
     - Succenturiate lobes
     - Number of vessels
   - Estimate blood loss
     - Should be <500 ml
       - >500ml = postpartum hemorrhage
3. Inspection of perineum for trauma and need for repair
   - Examine for lacerations
     - Cervix
     - Vagina
     - Perineum
   - Ensure adequate anesthesia if repair is needed
   - Absorbable synthetic suture material should be used as it reduces perineal pain as compared to catgut
     - Fast absorbing polyglactin suture is associated with quicker return to sexual intercourse (SOR:A)[12]

- Continuous subcuticular technique is associated with less pain than interrupted sutures

Post-Delivery Management

1. Routine postpartum orders
    - Monitor for post partum hemorrhage
    - Management of RH negative mothers
        - RhoGAM given within 72 hrs to all mothers w/Rh positive or Rh unknown infants
        - Rubella non-immune mothers should receive MMR at time of discharge
        - Tdap at time of discharge
        - Ensure successful implementation of breast feeding
        - Discharge medications
            - Ibuprofen as effective at Tylenol #3 with no significant differences in pt satisfaction[13]
            - Colace to keep bowel movements soft esp if 3rd/4th degree tear or episiotomy
            - Topical perineal anesthetics not shown to be helpful[14]
            - Bromocriptine to reduce breast engorgement not recommended

Pearls

1. Tips on protecting perineum
    - Allow perineum to stretch at time of crowning if fetal heart tones good
    - Have mother initiate smaller, half pushes as head is delivered
    - May use gauze pad to pinch posterior perineum while delivering head to help prevent tears

Complications

1. Labor dystocia
2. Precipitous delivery
3. Breech presentation
4. Shoulder dystocia
5. Post-partum hemorrhage
6. Meconium
7. Cord prolapse
8. Endometritis
9. Vacuum assisted delivery

Post Discharge Care

1. Outpatient 6 wk post-partum check
2. Contraception
    - Immediate vs outpt
3. Monitor for post partum depression

Patient Education

1. "Labor and Delivery" from MD consult pt education handouts
2. "Vaginal Delivery" from Micromedix

3. "Recovering From Delivery" at Familydoctor.org

CPT Codes

1. 59400: Global Vaginal Delivery (includes delivery and antepartum care)
2. 59409: NSVD only

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Author: Ginger Allen, MD, *University of Washington Medical Center-Harborview*

Editor: Kara Cadwallader, MD, *Rural FMR of Idaho*