Normal labor and delivery

L. Sekhavat M.D
Terminology

- **Gravida** - number of pregnancies
- **Para** - number of pregnancies carried to viability and delivered
- **Viability** - able to survive outside the womb (24+ weeks gestation)
- **Primigravida** - pregnant for first time
- **Multigravida** - pregnant more than once
- **Nulliparous** - never carried a pregnancy to viability
- **Multiparous** - has had two or more deliveries that were carried to viability
Duration of Pregnancy

- Average 280 days or 40 weeks (9 lunar months)
- Estimated Date of Confinement (EDC)
  Nagele’s rule:
  - Date of first day of LMP
  - Subtract 3 months
  - Add 7 days
- Accurate to plus or minus 2.5 weeks
Theories of parturition

- Retreat from pregnancy maintenance
  - Repression of contractile inhibitors
- Uterotonin induction of contractions
  - Synthesis or activation of factors that increase uterine contractility
- Combination of both
Onset of Labor

- Progesterone withdrawal theory
- Estrogen
- Oxytocin
- Prostaglandins
- Fetal effect
- Uterine distention
- CRF
Endocrinology of parturition

$E/P$ ratio changes

becomes $> 1$
Hormones and parturition

- Fetal cortisol
- Maternal progesterone
- Maternal estradiol

Days before parturition:
- 7
- 6
- 5
- 4
- 3
- 2
- 1
- 0
Increased E/P ratio causes:

- Oxytocin receptors rise in the uterus
  - Inhibition of uterine contractions is now limited
  - Labor begins
- Increased production of Oxytocin
- Increased production of PGF$_{2\alpha}$
Fetal ejection reflex

Stimulation or distention of cervix, uterus, or vagina results in neural feedback turning on the secretion of Oxytocin.
Requirements for birth

• **Uterine contractions**
  ✓ Forceful
  ✓ Coordinated

• **Cervical changes**
  ✓ Effacement
  ✓ Dilation
Characteristics of True and False Labor

- Regular Contractions
- Contractions stronger, longer, closer together
- Bloody show often present
- Cervix effaced and dilated
- Head is fixed between contractions
- Sedation does not stop true labor
History

- Identifying information- age, gravida, para, weeks gestation
- Labor history- uterine contractions, status of membranes, vaginal bleeding
- Present pregnancy history
- Past obstetric history
- Past medical/surgical history
- Past family history
Premature Rupture of Membranes

- Spontaneous rupture of membranes prior to the onset of labor is known as premature rupture of membranes (PROM).
- **Preterm PROM (PPROM)** is the rupture of membranes before 37 weeks gestation.
- Prolonged rupture of membranes is rupture more than 24 hours before birth.
PROM

- Risk of preterm labor and preterm delivery
- Risk of chorioamnionitis
- Risk of cord compression
Premature Rupture of Fetal Membranes with Prolapse of Umbilical Cord

Pre-rupture Condition
- Umbilical cord
- Amniotic fluid
- Fetal membranes
- Cervix
- Birth canal

Rupture of Fetal Membranes
- Prolapsed umbilical cord
- Ruptured fetal membranes
- Amniotic fluid leaks through birth canal

Subsequent Condition
- Hypoxia of fetus
- Fetal head engaged
- The prolapsed umbilical cord is compressed, interrupting oxygenation.
The Diagnosis of PROM

- Direct observation of amniotic fluid in the vagina is the single best confirming test.
- Diagnosis may be “confirmed” by:
  - Alkaline pH (nitrazine paper)
  - Ferning
  - Demonstration of fetal fibronectin
  - Indigo carmine dye
Physical Examination

- **Basic physical exam**
- **Uterine contractions:**
  - Frequency
  - Intensity
  - Duration
- **Uterine fundus:**
  - Fundal height
  - Fetal lie
  - Estimated fetal weight
Fetal Lie

FIGURE 12-2. Lies. A. longitudinal; B. transverse; C. oblique.
Leopold maneuver
First Stage of Labor

- Begins with onset of coordinated contractions leading to dilation of cervical os and ends with complete dilation (10 cm) of the cervical os.

- False Labor (Braxton Hicks contractions)
  - Cervix fails to dilate greater than 2 cm

- Duration of first stage -
  - Primigravida: 12 hours
  - Multiparous: 7 hours or less
First Stage Contractions

- **Interval**
  - 10 to 20 minutes between contractions: early labor
  - 3 to 5 minutes between contractions: late labor

- **Duration**
  - 20 second long contraction: early labor
  - 40 to 80 second long contraction: late labor

- **Quality**
  - Uterus can be dented (poor quality): early labor
  - Uterus is hard (good quality): late labor
First Stage Management

- Take VS between contractions
- Fetal Heart Rate should be between 120 - 160 BPM
- Mother should be coached to relax and conserve energy between contractions
Assessing Progress of Labor

Vaginal Exam:

- **Cervix**
  - Soft or Hard
  - Effaced or Thick
  - Dilatation

- **Presentation**
  - Part (cephalic, breech, shoulder)
  - Flexion, Extension
  - Station
Cervical Effacement and Dilatation During Labor

1. Cervix is not effaced or dilated.

2. Cervix is fully effaced and dilated to 1 cm.

3. Cervix is dilated to 5 cm.

4. Cervix is fully dilated to 10 cm.
Cephalic Presentations
Breech Presentations

A. Complete breech.

B. Frank breech.

C. Footling breech.

D. Kneeling breech.
Lab Tests

- CBC with platelets
- Clot tube to hold
- Urinalysis - protein, glucose, ketones
- Urine drug screen - unregistered, disoriented, prior drug history or medical reason
- Prenatal labs - type, Rh, RPR, HBsAG, Rubella, HIV
Mechanism of Labor

Positional movements the fetus undergoes to accommodate itself through the maternal pelvis

• Engagement
• Descent
• Flexion
• Internal rotation
• Extension
• External rotation
• Birth of the shoulders
Fetal Station
Engagement
A. At onset of labor.

B. Descent and flexion.

C. Internal rotation: LOT to LOA.

D. Internal rotation: LOA to OA.

E. Extension beginning.

F. Extension complete.

G. Restitution: OA to LOA.

H. External rotation: LOA to LOT.
Second Stage of Labor

• Begins with complete dilation of the cervix and ends with delivery of fetus

• **Duration**
  ▶️ *primigravida*: 50 minutes
  ▶️ Multiparous: 20 minutes or less

• **Contractions**
  ▶️ *Interval*: 2 to 3 minutes
  ▶️ *Duration*: 50 to 100 seconds
Second Stage of Labor

- **Management**
  - Mother may feel urge to push, coach to push only during a contraction once the cervix has been determined to be fully dilated

- **Episiotomy**
  - Perform to avoid unnecessary tearing when head is crowning
  - Controlled delivery avoids need for episiotomy in most cases
FIGURE 13-11. Combination of fetal head control and perineal support at the time of crowning.
Second Stage of Labor

- **Delivery of head**
  - Control head to prevent explosive delivery and subsequent tearing
- **Check for presence of cord around neck**
- **Aspirate oral and nasal cavities with bulb syringe**
- **Deliver anterior shoulder with downward pressure**
- **Complete delivery**
Second Stage of Labor

- Clear airway, Assess respirations, Resuscitate if necessary
- Clamp cord when pulsations cease
- Leave 3 - 6 inches of cord on baby
- Obtain blood for fetal labs from the placental stub of cord
Third Stage of Labor

• Begins after delivery of baby and ends with delivery of the placenta
• Average duration: 8 minutes
• Signs of separation
  ✓ Uterus rises to become globular
  ✓ Increase (gush) of blood from vagina
  ✓ Lengthening of cord
• Do not PULL cord. Apply gentle traction
• Check Placenta for completeness
Third Stage of Labor

- Recover missing pieces of placenta as necessary
- Massage uterus to aid in hemostasis
- IV Oxytocin can be given if available to aid uterine contractions and aid in hemostasis
Fourth Stages of Labor

- Begins with birth of the placenta and ends one hour later
- Highest risk to maternal well-being
- Observations: examine uterus for firmness, inspect cervix, vagina, perineum for lacerations and repair, evaluate maternal vital signs, examine the baby