Normal and Abnormal Labor and Delivery

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Objectives

At the end of this lecture, you will be able to:

– Diagnose labor and define the stages
– Assess a laboring patient
– Diagnose abnormal labor
– Understand the cardinal movements of labor
– Deliver a baby
– Understand complications of labor
What is Labor?

Progressive dilation of the uterine cervix in association with repetitive contractions.
What is Labor like?

**Subjectively:**
- Regular contractions getting stronger, longer, closer together
- Bloody show present
- Sedation does not stop true labor

**Objectively:**
- Cervical change occurs
- Descent of the presenting part
What is cervical change?
Dilation/ Effacement/Station

A  B  C  D  E

Cervix not effaced.  Cervix partly effaced.  Cervix fully effaced  Cervix dilated 3 cm  Cervix dilated 8 cm

Length of cervical canal = 4 cm  Length of cervical canal = 2 cm
Fetal Station

Williams 2001
# Bishops Score

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dilation (cm)</strong></td>
<td>0</td>
<td>1-2</td>
<td>3-4</td>
<td>5+</td>
</tr>
<tr>
<td><strong>Effacement (%)</strong></td>
<td>0-30</td>
<td>40-50</td>
<td>60-70</td>
<td>80+</td>
</tr>
<tr>
<td><strong>Station</strong></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td><strong>Consistency</strong></td>
<td>firm</td>
<td>med</td>
<td>soft</td>
<td></td>
</tr>
<tr>
<td><strong>Position</strong></td>
<td>post</td>
<td>mid</td>
<td>ant</td>
<td></td>
</tr>
</tbody>
</table>
False Labor is different!

- Irregular contractions
- No bloody show
- No cervical change
- Head may be ballotable
- Sedation stops false labor

- Cervical insufficiency (incompetence): dilation without contractions
Taking a Labor History and Physical

**History:**
- Know 4 facts (at least):
  - Onset of contractions?
  - Did the water break (ROM)?
  - Vaginal bleeding?
  - Fetal movement (FM)?
- PMH/ Meds?
- Last PO intake?

**Physical:**
- Vitals
- CV/Pulm/Abd
- FHT (fetal heart tracing)
- Tocometer (ctx tracing)
- EFW by Leopolds
- Pelvic exam
- Fetal position and presentation
Assessing labor

What is normal labor?
Stages of Labor

First Stage: labor onset to complete dilation

Second Stage: complete dilation to delivery of infant

Third Stage: delivery of infant to delivery of placenta

Fourth Stage: After delivery of the placenta...
**Figure 2. Abnormal labor**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Nullipara</th>
<th>Multipara</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prolonged latent phase</td>
<td>&gt; 20 hours</td>
<td>&gt; 14 hours</td>
</tr>
<tr>
<td>Average second stage</td>
<td>50 minutes</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Prolonged second stage without</td>
<td>&gt; 2 hours</td>
<td>&gt; 1 hour</td>
</tr>
<tr>
<td>(with) epidural</td>
<td>(&gt; 3 hours)</td>
<td>(&gt; 2 hours)</td>
</tr>
<tr>
<td>Protracted Dilation</td>
<td>&lt; 1.2 cm/hr</td>
<td>&lt; 1.5 cm/hr</td>
</tr>
<tr>
<td>Protracted Descent</td>
<td>&lt; 1.0 cm/hr</td>
<td>&lt; 2.0 cm/hr</td>
</tr>
<tr>
<td>Arrest of Dilation*</td>
<td>&gt; 2 hours</td>
<td>&gt; 2 hours</td>
</tr>
<tr>
<td>Arrest of Descent*</td>
<td>&gt; 2 hours</td>
<td>&gt; 1 hour</td>
</tr>
<tr>
<td>Prolonged third stage</td>
<td>&gt; 30 minutes</td>
<td>&gt; 30 minutes</td>
</tr>
</tbody>
</table>

*Adequate contractions - > 200 MV U/10 minutes for 2 hours*
Assessing labor

The importance of P’s

Power
Passage
Passenger
POWER!

Measuring contractions:

- Palpation: duration, frequency, intensity
  - work intensive

External Tocometer: graphic display
- no info on strength of contractions

Intrauterine pressure catheter (IUPC):
- accurate feedback in Montevideo units
IUPC

Adequate contractions are >200 MVU in 10 minutes
The Pelvis = Passage
Clinical Pelvimetry

- Obstetrical conjugate
  - anterior – symphysis pubis
  - posterior – sacral promontory
  - lateral – linea terminalis

- Diagonal conjugate (clinical)
  - inferior border of s. pubis to s. promontory

- Interspinous/ Bi-ischial diameter
Bi-ischial Diameter
Calwell-Moloy Classification
Pelvic Types

Gynecoid
Platypelloid
Android
Anthropoid
Gynecoid Pelvis

- Pelvic brim is a transverse ellipse (nearly a circle)
- Most favorable for delivery
- 50 percent of patients
Android Pelvis

- Pelvic brim is triangular
- Convergent Side Walls (widest posteriorly)
- Prominent ischial spines
- Narrow subpubic arch
- More common in white women
Anthropoid Pelvis

- Pelvic brim is an anteroposterior ellipse
- Gynecoid pelvis turned 90 degrees
- Narrow ischial spines
- Much more common in black women
Platypelloid Pelvis

- Pelvic brim is transverse kidney shape
- Flattened gynecoid shape
Don’t forget about the Passenger!
Leopold's maneuvers

4 maneuvers to identify fetal landmarks and review feto-maternal relationships
Definitions

- **Presentation** - the part that lies closest to the pelvic inlet
- **Attitude** - relationship of fetal parts to each other (flexion/extension)
- **Lie** - relationship between long axis of fetus to mother
- **Position** - relationship between fetal denominator and the vertical (a/p) and horizontal (r/l) planes of the birth canal
- **Synclitism**
Cephalic Presentation and Attitude

vertex  sinciput  brow  face

Williams 2001
Breech Presentation

A. Complete breech.

B. Frank breech.

C. Footling breech.

D. Kneeling breech.

Williams 2001
Lie

A. Longitudinal: 99% of lie

B. Transverse: Associated with multiparity, placentae previa, polyhydraminos, uterine anomaly

C. Oblique: Unstable

Williams 2001
Presentation at Term

3.5% breech
96% vertex
0.3% face

Position at Term

66% LOA or LOP
33% ROA or ROP
Position

Anterior Fontanelle  Posterior Fontanelle
Determining Position

OP

OA

OT
Synclitism

A. Anterior asynclitism
B. Posterior asynclitism

Williams 2001
Caput and molding

www.fammed.washington.edu/.../Newbornexam.htm
Abnormal Labor

- **Prolonged latent phase**
  - Treatment: therapeutic rest
  - 85% active, 10% false labor

- **Protraction disorder (primary dysfunctional labor)**
  - dilation/descent occur at a slower rate

- **Secondary arrest**
  - cessation of a previous normal dilation for 2 hours
Maximum Dilation: 10!

Finally the Second stage of labor!
Cardinal Movement of Labor

- Engagement
- Descent
- Flexion
- Internal rotation
- Extension
- External rotation (restitution)
- Expulsion
Engagement

descent of BPD to a level below the plane of the pelvic inlet
often occurs before true labor, especially in multiparous
Flexion during descent

9.5cm for vtx / 13.5 cm for brow
Stage 1

1. Head floating, before engagement
2. Engagement; flexion, descent.
3. Further descent, internal rotation.

Stage 2

5. Complete extension.
7. Del. of ant. shoulder.
8. Delivery of posterior shoulder.
Our job in the delivery room

- Control extension of the head
- Protect the perineum
- Check for Nuchal cord
- Suction mouth and nose
- Avoid stimulation if meconium
- Catch the baby!
- Clamp the cord
Delivery Complications

- Arrest of descent
- Nuchal cord
- Fetal distress
- Perineal laceration
- Shoulder dystocia
Perineal Lacerations

- First degree - may involve the vaginal mucosa, perineal skin
- Second degree - perineal muscles
- Third degree - external anal sphincter
- Fourth degree - anterior rectal wall
Episiotomy?

- Easier to repair
- Decrease length of second stage
- Decreased trauma to the perineum

- Increased blood loss
- Increased trauma

Mediolateral incision
Midline incision
Shoulder Dystocia

- Incidence 0.2-2% of deliveries (Acker 1986)
- Impingement of bi-acromial diameter of the fetus against the s.pubis and the s.promontory
- 40-50% occur with birth weight <4000g
- Risk factors: fetal macrosomia, diabetes, hx shoulder dystocia, prolonged second stage
Shoulder Dystocia

- Maternal morbidity - postpartum hemorrhage, 4th degree lacerations

- Neonatal morbidity - asphyxia, brachial plexus (Erb palsy, 10-20%, 80-90% recover completely), fracture of humerus/clavicle
Shoulder Dystocia Maneuvers

- Look for turtle sign
- Avoid excessive traction on shoulders
- McRoberts: flattens the lumbosacral curve
- Suprapubic pressure
- Ruben/Wood Screw - rotate shoulders to oblique position and pushing posterior shoulder toward fetal back
- Deliver posterior arm
- Zavanelli
Baby’s out!

Now What?

Stage 3: Placenta
Delivery of the Placenta

**Signs of placenta separation**
- rise in the fundus
- firm, globular uterus
- sudden gush of blood
- umbilical cord lengthening

**Examine the placenta**

**Delivers within 5-30 minutes**
Placenta delivery
<table>
<thead>
<tr>
<th>Apgar Scoring System</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Pale</td>
<td>Blue</td>
<td>Pink</td>
</tr>
<tr>
<td><strong>Pulse</strong></td>
<td>Absent</td>
<td>&lt;100</td>
<td>&gt;100</td>
</tr>
<tr>
<td><strong>Grimace</strong></td>
<td>Absent</td>
<td>Grimace</td>
<td>Cry Active</td>
</tr>
<tr>
<td><strong>Activity</strong></td>
<td>Limp</td>
<td>Some tone</td>
<td>Active</td>
</tr>
<tr>
<td><strong>Respiration</strong></td>
<td>Absent</td>
<td>Irregular</td>
<td>Reg &amp; Cry</td>
</tr>
</tbody>
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Conclusions

You will be able to:

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Thank you!

Any questions?