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Intrapartum care

Objectives:

- Differentiate between the signs and symptoms of true and false labor
- Perform the initial assessment of the laboring patient
- Describe the four stages of labor and recognize common abnormalities
- Explain pain management approaches during labor
- Describe methods of monitoring the mother and fetus
- Describe the steps of a vaginal delivery
- List indications for an operative delivery
- Identify maternal risks specific to delivery in developing countries

References*:* team 433, hacker and moore 5th Ed. and kaplan lecture note 2018

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Labor

Labor:

Is defined as progressive **cervical effacement and dilation** resulting from **regular painful uterine contractions** that occur at least every 3-5 minutes and last 30 to 60 seconds each.

False labor "Braxton-Hicks contractions":

Painless, **irregular** contractions **without** cervical dilatation & effacement.

They may serve a physiologic role in preparing the uterus and cervix for true labor.

Signs that Labor is within a Few Weeks or Days:

1. Lightening[1] (the mother is relieved when the fetus is engaged).
2. Bloody show (Loss of mucus plug).
3. Rupture of membranes
4. Nesting (a burst of energy that a woman has while she is pregnant).
5. Effacement.
6. Dilation.
7. Consistent (painful) Contractions.

Initial assessment of laboring patient

When the mom present to the hospital in labor we must assess:

- **Fetal heart tone**
- **Fetal presentation :** cephalic, breech (frank, complete and footling), compound and shoulder.
- **We also need to do sterile vaginal exam to assess:**
  - **Cervical dilation**: Complete dilation is 10 cm
  - **Effacement**: is when the length between external os and internal os is decreased
    Is expressed in percentage or in centimeter :
    - 0% un-effaced (2 cm long and 2 cm wide)
    - 100% full effacement (no length or paper thin)
  - **Station**: is the fetal presenting part in relation to ischial spine
    - Ischial spine: 0 station
    - Above ischial spine: -1,-2,-3,-4,-5
    - Below ischial spine: +1,+2,+3,+4,+5

Hacker & moores

Every woman admitted in labor should have:
hematocrit or hemoglobin, crossmatch, Blood group, Rhesus (Rh) type, hepatitis B status.

Maternal Monitoring:

Maternal pulse rate, blood pressure, respiratory rate, and temperature.

Fetal Monitoring:

The fetal heart rate should be evaluated either by auscultation with a De-Lee stethoscope, by external monitoring with Doppler equipment, or by internal monitoring with a fetal scalp electrode.

[1] flattening of the upper abdomen and an increased prominence of the lower abdomen.

Stages of labor

There are four stages of labor, each of which is considered separately. These stages in actuality are definitions of progress during labor, delivery, and the puerperium.

- **Stage 1:** is the onset of labor to full cervical dilation (10 cm) is divided into a latent and active phase.
    - **Latent phase:** < 4 cm dilation "it can last for days"
    - **Active phase:** > 4 cm dilation "1.2 – 1.5 cm dilation every hour"
    - **New study shows :** Transition from latent to active phase is at **6 cm**, rather than **4 cm**
- During the first stage of labor, the entire cervical length is retracted into the lower uterine segment.
- Its purpose is to soften and efface the cervix preparing it for rapid dilation.
- **Stage 2:** starts from the complete dilation to time of delivery.
- Its purpose is descent of the fetus through the birth canal.
- **Stage 3:** starts from delivering the baby to the expulsion of the placenta, take up to 30 minutes.
- The placenta should be examined to ensure its complete removal and to detect placental abnormalities.
- Signs of placental separation are as follows:
    - a fresh show of blood from the vagina.
    - the umbilical cord lengthens outside the vagina.
    - the fundus of the uterus rises up.
    - the uterus becomes firm and globular.
- **Stage 4:** is the immediate postpartum period after delivering the placenta to 2 hours later.
- Close observation of the patient: Blood pressure, pulse rate, and uterine blood loss.

CHARACTERISTICS OF NORMAL LABOR		
Characteristic	**Primipara**	**Multipara**
Duration of first stage	6-18 hr	2-10 hr
Rate of cervical dilation during active phase	1 cm/hr	1.2 cm/hr
Duration of second stage	30 min to 3 hr	5-30 min
Duration of third stage	0-30 min	0-30 min

Abnormal labor

1- prolonged latent phase: regular uterine contraction and cervical dilation < 6 cm for > 14 hours
2- prolonged active phase: regular uterine contraction and no change in cervical dilation for > 4 hours
3- prolonged second stage: regular uterine contraction and cervical dilation 10 cm at +1 station and no descent change in 3 hours
4- prolonged third stage: failure to deliver the placenta within 30 minutes.

Pain in labor

- Pain Pathways:
    - Uterine contractions and cervical dilation result in visceral pain (T10 - L1) **[stage 1].**
    - Descent of the fetal head and subsequent pressure on the pelvic floor, vagina, and perineum generate somatic pain transmitted by the pudendal nerve (S2–4) **[stage 2].**

Pain control during labor

- Epidural block: **the most effective**
- (rare complication is paralysis due injection site hematoma so in women with bleeding tendency be aware)
- Pudendal nerve block: anesthetizes somatic afferent nerve fibers entering the spinal cord at sacral segments S2 to S4. It is usually effective at relieving the perineal pain of the **second stage of labor.**
- IV Opioids: They work best in the early first stage when the pain is primarily visceral and less intense.
    - All opioids readily cross the placental barrier.
- Nitrous oxide mixture is commonly used and very effective give as inhaler during contraction in 1st, 2nd and 3rd stage.
- Active management of the 3rd stage of labor:
    - This can decrease postpartum hemorrhage It includes:
        - Fundal massage.
        - Gentle cord traction.
        - IV \ IM Oxytocin.

Operative Delivery

Is used when:

1. Prolonged or arrested second stage of labor.
2. Suspicion of immediate or potential fetal death.
3. Shortening of the second stage for maternal benefit.

Instruments used:

1. Forceps.
2. Vacuum.

Major complications after delivery:

1. Bleeding.
2. Infections.
3. High blood pressure.
4. Unsafe abortions.
5. Complications from delivery.

Steps of viginal delivery

- Cardinal movements of labor:
    - The first three steps occur simultaneously:
        - Engagement - Descent - Flexion
    - The next four occur in order:
        - Internal rotation - Extension - External rotation - Expulsion

Case

A 23-year old G1P0 woman at 38 weeks gestation comes to Labor and Delivery complaining of a 5-hour history of painful contractions occurring every 5 minutes and lasting 45-60 seconds in duration. She denies leaking of fluid per vagina, but has noted bloody show. She reports normal fetal movement.
In reviewing her chart, you find that she has had an uncomplicated prenatal course. She had an ultrasound at 17 weeks that revealed a male fetus and was consistent with her last menstrual period dating. A screening culture at 36 weeks was positive for group B streptococcus. The cervical exam at the 36-week visit was closed and long.
Her blood pressure is 96/54, pulse 92 beats per minute, respirations are 20/minute and oral temperature is 98° F. Leopold's maneuver reveals the fetal back is palpable at the right side of the maternal abdomen and the vertex is palpable through the maternal abdomen just below her symphysis pubis. Fetal heart rate (FHR) is in the 150s with moderate variability, with accelerations and no decelerations. Contractions are noted on the external monitor every 3 minutes. The patient's cervix is 3 cm dilated, 50% effaced with the fetal vertex at 0 station. The remainder of the physical exam is unremarkable.

Questions

Is this patient in labor? What elements of the case history support a diagnosis of labor?

- True labor is defined as **progressive dilation** and **effacement** of the cervix in response to regular **uterine contractions.**
- False labor is defined as contractions at term that do not result in cervical change and are termed **"Braxton-Hicks"** contractions.

What is the stage and phase of labor for this patient?

She is at latent phase of first stage because the cervical dilation is less than 6

- **Stage 1:** is the onset of labor to full cervical dilation (10 cm) is divided into a latent and active phase.
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    - **New study shows :** Transition from latent to active phase is at **6 cm**, rather than **4 cm**
- **Stage 2:** starts from the complete dilation to time of delivery.
- **Stage 3:** starts from delivering the baby to the expulsion of the placenta, take up to 30 minutes.
- **Stage 4:** is the immediate postpartum period after delivering the placenta to 2 hours later.

In addition to determining whether this patient is in labor or not, what should be included in the initial evaluation of a patient who presents in labor?

- Establish the gestational age through comparison of available dating criterion such as last menstrual period, sonography, and physical exam (e.g. fundal height).
- Identify any maternal medical or obstetrical complications of pregnancy by review of patient records and focused history and physical exam.
- Identify any fetal conditions by review of patient records and focused history and physical exam.
- Review routine screenings tests (e.g. group B streptococcus)
- Identify any new maternal conditions that may impact labor management (e.g. preeclampsia, chorioamnionitis).
- Establish fetal viability using either external ultrasound Doppler or bedside sonography.
- Evaluate the fetal presentation and estimated fetal weight using either **Leopold's maneuvers** (this maneuver is may OSCE station), vaginal exam, or bedside sonography.
- Assess the adequacy of the maternal pelvis through physical examination (clinical pelvimetry) and review of patient's prior labor outcomes, if applicable.
- Assess the cervical status and membrane status.

What are your next steps in management of this patient?

- Appropriate prophylaxis (e.g. group B streptococcus)
- Fetal heart rate monitoring (external vs. internal and intermittent vs. continuous)
- Uterine contraction monitoring (external vs. internal)
- Serial assessment of maternal labor progress (dilation, effacement, station)
- Serial assessment of maternal pain status

What options for pain management are available for this patient?

- Pain Pathways:
    - Uterine contractions and cervical dilation result in visceral pain (T10 - L1)
    - Descent of the fetal head and subsequent pressure on the pelvic floor, vagina, and perineum generate somatic pain transmitted by the pudendal nerve (S2–4).

- Analgesia and Anesthesia options:
    - Systemic narcotics
    - Regional:
        - Local anesthetic agents
        - Pudendal block
        - Para-cervical block
    - Continuous lumbar epidural
    - Prepared childbirth (e.g.Lamaze classes)

Describe the process by which the fetus descends through the birth canal and the steps of vaginal delivery.

- The fetus descends through the maternal pelvis through various flexions and rotations called the cardinal movements of labor:

Engagement - Descent - Flexion - Internal rotation - Extension - External rotation - Expulsion

What are other methods of delivery if the patient had not been able to push effectively or if fetal intolerance of labor had developed?

- Modes of operative delivery:
    - Operative vaginal delivery (forceps or vacuum)
    - Cesarean delivery
- Indications for operative delivery can be put into 4 categories:
    - Maternal indications (e.g. poor expulsive effort)
    - Fetal indications (e.g. fetal intolerance of labor, anomalies/malformations)
    - Abnormal labor (e.g. secondary arrest of dilation in the active phase)
    - Elective (primary or repeat Cesarean)

The End !