

### Important Terms

- **Threatened abortion:** Unexplained bleeding, cramping or backache indicate the fetus may be in jeopardy. Cervix is closed; may be followed by partial or complete expulsion of pregnancy or may resolve. Mom should be assessed for a hydatidiform mole or ectopic pregnancy.
- **Imminent abortion:** More cramping and bleeding, internal cervical os dilates and membranes may rupture.
- **Incomplete abortion:** Part of the products are retained (usually placenta). Internal cervical os is dilated.
- **Complete abortion:** All the products are expelled, uterus is contracted and cervical os may be closed.
- **Missed abortion:** Fetus dies but is not expelled. Mom may have a vaginal brownish discharge...things stop growing and cervix is closed. If the fetus is retained beyond 4 weeks there is a release of thromboplastin when the cells break down and this leads to DIC.
- **Recurrent abortion:** Consecutive in 3+ pregnancies
- **Septic abortion:** Presence of infection; can occur with prolonged and unrecognized ROM, pregnancy with IUD, or amateur attempts to terminate a pregnancy.
- **Placenta Previa:** Placenta implanted in lower part of uterine wall
- **Abruptio Placentae:** Placenta pulling away from uterine wall
- **Ectopic Pregnancy:** Implantation anywhere but endometrial lining of uterus
- **Gestational Trophoblastic Disease:** pathologic proliferation of trophoblastic cells
- **Hyperemesis gravidarum:** N/V so severe that they affect hydration and nutritional status.
- **Premature rupture of membranes (PROM):** rupture of the bag of waters after 37 weeks, but before onset of labor
- **Preterm premature rupture of membranes (PPROM):** Rupture before 37 weeks gestation
- **Preterm Labor (PTL):** Labor that occurs between 20 and 37 weeks gestation

### Bleeding in Pregnancy...divided up into two types

- First trimester causes of bleeding
  - Abortion
  - Ectopic
  - Gestational trophoblastic disease
- Second and Third Trimester causes of bleeding
  - Placenta Previa (improper placement of placenta)
  - Placenta Abruptio (placenta pulling away from uterine wall)

### Spontaneous Abortion (Miscarriage)

- Etiology...not sure about why this happens. There are a couple of theories...immunologic factors that the woman is rejecting the pregnancy. Could be related to infection (STD or some kind of bacterial infection that is causing her to miscarry). Could be an exaggerated immune response (which relates to the first thing she said)
- Factors...women who have polycystic ovarian disease and metabolic abnormalities (antiphospholipid syndrome is one...diabetes is another one)...cyanotic heart disease is one also. Incompetent cervix (shortened is a problem...or she may have had surgery to have cancer cells removed from cervix). A study said that SpAb before 3 months is secondary to a woman's intolerance to pregnancy (so this leads us to think it is immune related). This study also said after 3 months that the pregnancy may be related to an inflammatory response (release of cytokines causing the abortion)
- Classifications (TEST)...look these up!
  - Threatened abortion: Bleeding, but os hasn't opened yet.
  - Imminent abortion: Most likely for the woman to miscarry...the external os is opening and she is bleeding. She is probably going to lose the pregnancy. Nothing can prevent the miscarriage...prep mom for this.
  - Incomplete abortion...products of conception have not left uterine cavity..provider will have to go in and do a D&C to get the products out.
  - Complete abortion: All the products of conception are expelled. The uterus is contracted and the cervical os may be closed.
  - Missed abortion: Fetus dies in utero, but is not expelled.

#### Antiphospholipid Syndrome

The immune system mistakenly produces antibodies to certain proteins in your blood, causing clotting. In pregnancy it is associated with recurring miscarriage, pre-eclampsia, SGA babies, thrombosis in vein or artery.

- Recurrent abortion: 3+ pregnancies (these women often have antiphospholipid syndrome)
- Septic abortion: Presence of infection; may occur with prolonged and unrecognized ROM, pregnancy with IUD, or attempts to do a self-induced or “back alley” abortion.

### **Nursing Care Management of Spontaneous Abortion**

- Assessment
  - How much are you bleeding
  - Ultrasound to listen for heart or watch for heart
  - Speculum exam to see if os is open.
  - Date of last menstrual period
  - Blood test..H&H to see how much she’s bled and if it’s affecting oxygen-carrying capacity
  - Hormone levels...check the hCG. If it’s starting to decline, then this is a sign of a miscarriage.
- Hospital-base care
  - The plan is to usually send mom home to rest and get fluids.
  - Hospital based care is necessary for a D&C...to prep her for the OR:
    - NPO
    - Type and Cross-Match possibly
    - Informed consent
    - Large-bore IV
- Psychological support: Emotional support. Check pt history to see what her background is as it relates to family planning.
- Self-care teaching
  - She will experience bleeding and cramps afterward
  - S&S of infection...fever, foul-smelling discharge, blood clots
  - No sexual activity for 4-6 weeks
  - Future pregnancy planning...when she can start trying again, how to take care of herself prior to pregnancy

### **Ectopic Pregnancy**

- Risk Factors:
  - PID
  - previous surgery
  - IUD
  - high levels progesterone
  - ovulation drugs
  - smoking
  - primary infertility
  - advanced maternal age
- Serious serious problems if implantation occurs outside of the uterine cavity. This person will have normal S&S of pregnancy (including Chadwick’s and Goodell’s), but then have pain in abdominal area accompanied by pain. Doc will check for a palpable mass or use ultrasound to check for it. 4% higher chance if woman has IVF...also saw 3x as likely.
- Any scarring in the uterine cavity can increase the risk of ectopic pregnancy.
- Serious problems if implantation occurs in fallopian tube as well
- High levels of progesterone cause the motility of the egg to slow down leading to an ectopic pregnancy.
- Smoking can be a risk factor
- Advanced maternal age is also a risk factor

### **Diagnosing Ectopic Pregnancies**

- Assessment of menstrual history: How many weeks she’s past her period due date
- Pelvic Exam: Can palpate for tenderness and feel a mass
- Laboratory testing: H&H, hCG (rises slowly then drops)
- Transvaginal ultrasound: can detect where pregnancy is (can be used around 4-8 weeks)
- Laparoscopy: if all else fails

## **Nursing Care Management**

- Treatment
  - For a non-ruptured pregnancy, embryo size 3.5 cm or less, no fetal cardiac activity, and in stable condition...then she'll get **Methotrexate**. Usually done in outpatient...dissolves the pregnancy. Will need to follow up b/c need to watch for hCG levels to drop.
  - For women with ruptured pregnancy, fetal cardiac activity...will take the tube out if ruptured...if not ruptured will go in and suck it out of the tube to hopefully save the tube (salpingostomy removes the products but saves the tube, salpingectomy removes the tube)
    - Need to watch for signs of shock b/c mom may be bleeding into abdominal cavity if the tube ruptures.

## **Gestational Trophoblastic Disease (GTD)..a proliferation of trophoblastic cells...they get fluid-filled vesicles**

- Hydatidiform Moles (two types)
  - Partial Mole (an egg that is fertilized by two sperm, or a sperm that didn't go under meiosis). It's abnormal...has too many chromosomes. Get a positive pregnancy test and a HR, around 8 weeks the fetus dies. Start to have discharge that's a "prune-like" b/c the RBCs are viscous.
  - Complete Mole (picture to the right). The egg has no genetic makeup...the sperm goes into the egg and multiplies so it's just a bunch of male genetic material...no fetal or embryonic tissue. The complete mole can be associated with choriocarcinoma. (If choriocarcinoma will get **Methotrexate**)
  - Disease of early age (adolescents) and older (perimenopausal)

## **Diagnosing GTD**

- Vaginal bleeding is prune-like. May have vesicles. Bleeding may occur early or begin around 2nd trimester.
- Anemia: monitor labs
- Uterine enlargement: usually greater than what the gestational age should be.
- Hydroptic vesicles: partial moles has smaller grape-like fluid-filled vesicles...complete has bigger ones.
- hCG
- Hyperemesis
- Preeclampsia
- Low MSAF
- PIH (pregnancy-induced HTN): woman may present with signs of PIH earlier than expected (first trimester should not have PIH)
- No fetal heart rate with positive pregnancy test. An ultrasound will be done to check for HR. They will see a snow-like image on the US (can be done around 6-8 weeks)

## **Treatment of GTD: get the abnormal growth out!**

- Early evacuation and curettage
- Extensive follow up: monitor hCG to ensure it's going down (q 1-2 wks...needs to be negative for 2 consecutive times....then q 1-2 months for one year), get a baseline CXR to make sure the mole hasn't metastasized (choriocarcinoma), physical exam. Recommend not to get pregnant for a year.
- This woman will get **Rhogam** if she is planning future pregnancies

## **One more type of Mole = Invasive Mole**

- Similar to complete mole
- Invades myometrium (the other moles do not do this)
- Treatment is the same; may do hysterectomy

## **Placenta Previa**

- In HR labor and delivery section of book, but problems can occur earlier in pregnancy
- Implantation of the placenta into the lower uterine segment
- Categorized according to how much it covers the cervix (complete totally covers the cervix...partial coverage is incompletely covering the internal os...sometimes called incomplete "B"..."C" is marginal or low-lying)

- No known cause, but the theory is that it's a defective vascularization of the myometrium. The egg will come down and look for an area that has appropriate vascularization. If mom had had repeated ThAb...there is scarring of the area and the blastocyst will look for an area with no scarring, and sometimes that means it comes down low. Also, alteration in normal ovum transport causes it to implant lower than normal.
- Associated with increased age and placenta accreta (placenta grows into uterine wall)
- Associated with prior cesarean birth d/t implanting at scar tissue
- Recent or numerous Th. Ab.
- Large placenta is also a risk factor...part of it can be a low-lying or partial previa.

### **Clinical Management**

- If this woman goes into labor...the placenta gets exposed and she will be bleeding. Often it starts out mild, they get stabilized and go home...then come back with a BIG bleed.
- Continuous fetal monitoring
- Greater than 37 weeks
  - Relatively problem-free baby
- Less than 37 weeks (preterm labor)
  - **Betamethazone** to mature lungs (machine?)
  - Make a referral to social services to ensure she has a support system
- Expectant management (She was all over the place on this...look in book)

### **Abruptio Placentae**

- Can be associated with maternal HTN, maternal trauma
- Contributing factors are uterine fibroid, over-uterine distention, fetal growth restriction (baby is growing small and placenta is not attaching well), advanced maternal age, alcohol consumption, cocaine use, short umbilical cord that pulls on the placenta.
- Often you'll see a funky contraction pattern on the monitor.
- Three categories of abruptio placentae
  - Marginal: the blood passes between the fetal membranes and the uterine wall and escapes vaginally. Separation begins at the periphery of the placenta; may or may not get worse.
  - Central: placenta separates in center, but there is a concealed bleed. Uterus gets larger d/t the blood. Mom will complain of pain!
  - Complete: the placenta completely abrupts from the uterine wall and blood goes into myometrium, turning it blue. If they can't stop the bleeding, they will do a hysterectomy.

### **Maternal & Fetal Risk Abruptio Placenta**

- DIC d/t mom using up all her clotting factors
- Mom can go into shock, vascular spasm, renal failure
- The baby has a 25% mortality rate (depends on gestational age and how quickly they get the baby out)

### **Clinical Therapy**

- Hemodynamic monitoring (mom is bleeding, can exsanguinate pretty quickly!)
  - Ensure intravenous access (may need 2)
  - May need central line
  - Prevention of hypovolemia
- Coagulation studies & Type & Cross
- Mild separation: can try and induce if baby is at term
- Moderate to Severe separation: C-Section

### **Hyperemesis Gravidarum**

- Nausea and Vomiting that is out of control. Mom can't tolerate anything at all. Some women salivate excessively
- Normally begins around 4-6 weeks...resolves usually around 20 weeks pregnancy (but 10% have it the whole time). In a normal pregnancy, the N/V usually stops at around 8 weeks. If mom continues to vomit and has ketones and has lost more than 5% of body weight...suspect HG!
- Diagnosis = ketones and loss of 5% body weight (I think dehydration also)

- Cause is unclear
- The Consequence of Inadequate Nutrition in Pregnancy
  - Baby is small (can cause preterm labor, thermoregulation probs, liver may have some problems and will be jaundiced, nutritional deficiencies)
  - Placenta too small
  - Blood flow to fetus not good

### **Clinical Treatment**

- Goal
  - Treat dehydration and malnutrition. Mom starts out NPO, then gets IV fluids, then PO fluids, advance as tolerated. If that doesn't work, then parenteral nutrition
  - Support her in things she decides to do (may decide to abort)
- Initial workup
  - US to exclude possibility of a molar pregnancy
  - Labs to check electrolytes ( $\downarrow$  K),  $\uparrow$  BUN,  $\uparrow$  Hct (d/t hemoconcentration)
  - Vital Signs (will be tachycardic, have low BP)
  - UA to check for ketones
- Management
  - Advance diet or parenteral nutrition
  - Ginger
  - Corticosteroids

### **Incompetent Cervix**

- Cervix is too weak to stay closed during pregnancy. The cervix opens prematurely without labor or contractions.
- Diagnosis with US is made when cervical os is greater than 2.5 cm or shortened to less than 20 mm.
- Sometimes funneling is seen...this is the internal os beginning to efface. The external os will be unaffected if the Dx is done in time.
- Not sure why it occurs...think it may be related to congenital, acquired or biochemical causes (list pg 489)
  - Congenital: Pt's mom had DES exposure; pt with double-horn on uterus
  - Acquired: Inflammation, infection, cervical trauma, late abortion (2nd trimester), multiples
  - Biochemical: Increased levels of relaxin (it relaxes the connective tissue and the cervix opens up)
- Obstetrical history: take a thorough history, find out if she's had this before
- Endovaginal ultrasound measurement to see the length of the cervix. Anything less than 3cm is considered "small"...if it gets smaller then will need some intervention most likely.
- Surgical options
  - Elective cerclage aka "McDonald's" (usually at around 12-16 weeks) a purse-string stitch to close cervix at external os. Need to take this out when woman goes into labor.
  - Abdominal cerclage is the least common...usually done if cervix is too short. This is PERMANENT. This is done if they have an amputated cervix, a cervical defect, or a cone biopsy. Will need C-Section
  - Shirodkar...go in and stitch near the internal os. Will need C-Section b/c this is permanent.
- Risks, Results, & Morbidity and Mortality
  - Risks: rupture of membranes, pre-term labor; infection of cervix and/or amniotic sac, injury to cervix or bladder
  - Normal results: she skipped this.
  - Morbidity and Mortality Rates: she skipped this

### **Premature Rupture of Membranes**

- Premature rupture of membranes (PROM): prematurely rupturing before onset of labor (1-12 hours before labor)
- Prolonged rupture of membranes: rupture of membranes greater than 24 hours before birth of baby
- Preterm Premature rupture of membranes (PPROM)

### **Rupture of Fetal Membranes**

- Mechanism is unknown
- Cause: alteration in collagen of cervix, polyhydramnios, or chorioamnionitis; can be a response to infection to get rid of the pregnancy.

- Maternal Risk
  - Infection (chorioamnionitis is an inflammation of the amnion and chorion d/t bacterial infection).
    - 3-15% get this if PROM and 15-25% get if premature, endometriitis may also be involved).
  - Childbirth complications...baby doesn't have extra fluid so baby can't change position after the membrane ruptures.
  - Fetal compromise: baby can sit on its cord and cause decrease blood flow, cord can prolapse
  - Abruptio Placentae can also happen...thought to be d/t inflammation of decidua.
- Fetal-Neonatal Risks of PPROM & PROM
  - Increased risk of neonatal morbidity and mortality
  - What type of complications would you expect with PPROM?
    - Respiratory problems
    - Infection
    - Thermoregulation probs
    - Baby not ready to eat yet...will need gavage b/c won't be able to suck and swallow effectively
    - Necrotizing enterocolitis can happen if you feed them too early...the bowel dies and child may need colostomy or end up with short bowel syndrome.
    - Can cause some limb defects and facial abnormalities
- Clinical Therapy
  - Physical Inspection
    - Ask clinical history...ask what is the fluid like, how much has come out...was it a trickle or a gush?
  - Sterile Speculum exam
    - Will take a swab or get some fluid and look at it under the microscope to see if it is ferning...if it ruptures it looks like a fern.
  - Possible amniocentesis if it is pre-term. Depends on how much fluid is around the baby.
  - Antibiotics
- Fetal evaluation (she skipped this...big surprise)
- Less than 37 weeks
  - If 37 weeks, let them wait 12 hours, then induce
  - If less than, BR, IV fluids and ABX and try to get them further along.
  - Non-stress tests daily
  - Mag Sulfate if contracting to prevent from having baby at that time.
- Less than 24 weeks
  - They go home
  - Rupture can seal over...mom gets checked regularly until she gets to 37 weeks or until labor.

### **Plan of Care for Women with Premature Rupture of Membranes**

- Preterm
  - Expectant management (aka: watchful waiting and active surveillance)
  - Assess fetal pulmonary status
  - Risk of infection evaluated
  - Penicillin G or ampicillin treatment
  - Adjunctive antibiotic therapy
  - Corticosteroids to enhance fetal lung surfactant
  - Birth after latent period
  - Assess for Group B, chylamydia, Neisseria gonorrhoeae
- Term
  - Expectant management for woman with no complications or an unfavorable cervix
  - Induction if spontaneous labor does not occur in 12 hours or if the cervix is not ripe or there are other complications.

### **Preterm Labor**

- Facts
  - Labor that occurs between 20 to 37 weeks
  - 1992 to 2002 preterm labor rate 13%=480,812

- United States 11% to 12%
  - Prevention of preterm labor ineffective
- Initiation not by single event
  - May be maternal or fetal factors

### **Fetal-Neonatal Risks of Preterm Labor**

- Mortality
- Maturational deficiencies

### **Prevention of Preterm Labor**

- Primary Prevention
  - Diagnosis (abd pain, back pain, pelvic pain, menstrual-like cramps, vaginal leeding, increased discharge, pelvic pressure, urinary frequency, diarrhea); may also check fFN...fFN is normal before 20 weeks and again at term; digital cervical exam once ROM has been ruled out to check for cervical length and dilation.
  - Treatment of infections (bacterial infection can cause PTL)
  - Cervical Cerclage
  - Progesterone administration
- Secondary Prevention
  - Antibiotic treatment
  - Tocolysis

### **Treatment for preterm labor**

- Screening Tests
  - Preterm prevention programs
  - 60% of preterm births occur to women screened low
- Nonpharmacologic treatment
  - Bed rest, pelvic rest, hydration (may be unproven therapies)
- Drug treatment : **Mag sulfate**, Yutopar (the only drug FDA approved for pre-term labor, but not used much at all), Nifedipine (CCB...need to watch for hypotension), Terbutaline (causes BS to go up, so don't use with diabetic...don't give if pulse over 120), Indocin (can't use past 32 weeks b/c it causes premature closure of the ductus).
  - Mag has a lot of side effects (it is a CNS depressant)...have to watch RR, deep tendon reflex, urinary output (b/c can divert fluid into lungs and get pulmonary edema). The reversal is **Calcium Gluconate** (TEST). Deep tendon reflexes go first...then respiratory. So monitor DTT go first.
- Diagnosis
- Clinical Therapy
  - Digital exam after ROM has been ruled out.
  - Contraction monitoring
  - Cervical length
  - fFN (see above)

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