

433 Teams

OBSTETRICS & GYNECOLOGY

Preterm labor

Video + Case

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Preterm labor

Objectives:

- Identify the modifiable and non-modifiable risk factors and causes for preterm labor
- Describe the signs and symptoms of preterm labor
- Describe the initial management of preterm labor
- List indications and contraindications of medications used in preterm labor
- List the adverse outcomes associated with preterm birth
- Describe the counseling for reducing preterm birth risk

Preterm labor

Source: Essentials of Ob/Gyn.
by Hacker & Moore

Definition:

Delivery between **20-37 wks.** of EGA that include uterine **contractions + cervical dilation +/- effacement.**

Some countries consider preterm labor from **20-24 wks.**

Epidemiology: Common, **12.7%** of all deliveries in the United States.

Risk factors: → **slide 7**

Evaluations:

- 1- **CBC**, Random blood glucose, Serum electrolyte levels ... etc.
- 2- **Vaginal examination** → cervical length, dilation, station, presentation.
- 3- **Ultrasound** → fetal weight, presentation, any congenital malformations, multifetal gestation, uterine anomalies.
- 4- Any underlying **correctable conditions.**
- 5- Put patient in **lateral decubitus position.**
- 6- Monitor **uterine activity.**
- 7- **Swap/Culture** for presence of infection.

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Diagnosics:

- Cervical and vaginal fetal fibronectin (**+Positive+** in fetal membrane rupture, short cervix, infection)

The diagnosis of preterm labor is by two ways:

- 1- **True Uterine contractions** → 4/20 min. (Poor indicator of preterm labor)
- 2- **Cervical changes** → 80 % effacement or 2 cm dilation. (Good indicator)

Management:

- 1- **Hydration** and **bed rest** can resolve uterine contractions in 20% of patients.
- 2- **Antibiotic** if there is infection or as prophylactic, ampicillin or erythromycin. In case of penicillin allergy use clindamycin. [see table in slide 5].
- 3- If patient does not respond to hydration and bed rest, give **Tocolytic therapy** [see table].
- 4- Delivery in Preterm labor is usually **vaginally** (normally or using outlet forceps), except for very low-birth fetuses (↓1500 g) where **cesarean delivery** is better, as in 28 wks. 23% of infants have breech presentation.
- 5- **Neonatal care unit** that can help within viability limits (24 wks. or greater than 500 g).

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	Medications	MOA	Side effects	Contra- indications
Antibiotics	Ampicillin "penicillin-type"	Bacteriostatic,	Nausea, vomiting, diarrhea	
	Erythromycin "penicillin-type"	Bacteriostatic antibiotic macrolide, protein synthesis inhibitor.	Nausea, vomiting, diarrhea	
	Clindamycin "Use if allergy to penicillin"	Bacteriostatic, protein synthesis inhibitor.	Diarrhea	
Tocolytic agents	Magnesium Sulfate "Solution" less < 32 wks. of EGA	↓Ca ⁺⁺ by competing on cell entry. (myometrial relaxation)	Warmth, flushing at administration. Respiratory depression (level 12-15 mg/dL). cardiac conduction defects/arrest (higher levels). In neonates: low muscle tone, drowsiness and low APGAR score	Severe preeclampsia, Bleeding due to placenta Previa/ abruption.
	Nifedipine "Oral"	Inhibit the slow inward Ca ⁺⁺ during 2 nd phase of Action potential.	Headache, flushing, hypotension, tachycardia.	IUGR, fetal anomalies, Fetal demise.
	Indomethacin (Prostaglandin Synthetase Inhibitors)	Inhibits myometrial contractions. <u>Short-term use only! Due to side effects</u>	In neonates: Oligohydramnios, patent ductus arteriosus, necrotizing enterocolitis, intracranial hemorrhage.	
Atosiban (Oxytocin receptor antagonists)	Binds to receptors in myometrium, preventing inositol triphosphate that increases Ca ⁺⁺ levels.			
Combined: Nifedipine + Prostaglandin Synthetase Inhibitors				
Betamethasone, Dexamethasone (Glucocorticoids) 24-34 wks. of EGA	↑ Fetus lung maturity, ↓ risk of RDS, intracranial hemorrhage, necrotizing enterocolitis			
Progesterone supplements (injections, pills)	In case of Hx of preterm pregnancies.			

TEACHING CASE

CASE:

An 18-year-old African-American, G2P0101 woman who is 12 weeks pregnant, presents to your prenatal clinic for a new patient visit. Before you walk into the room to see the patient, you look through her records and note that she delivered her last pregnancy just 12 months ago.

Beginning at 24 weeks in her previous pregnancy, the patient presented numerous times to Labor and Delivery reporting contractions, and was sent home each time with a diagnosis of “Braxton-Hicks contractions.” She eventually presented at 28 weeks gestation and was diagnosed with preterm labor.

She delivered at 29 weeks. The neonate’s course was complicated by intra-ventricular hemorrhage and respiratory distress syndrome. The child now appears to have cerebral palsy and chronic lung disease due to bronchopulmonary dysplasia.

1. What are the risk factors for preterm labor, and which ones does this patient have?

- Prior history of preterm birth (highest risk)
- Low pre-pregnancy BMI
- Premature rupture of membranes (PROM)
- Shortened cervix on transvaginal ultrasound
- Maternal smoking (associated with PROM)
- Inflammation
- Pathologic uterine distension
- Excessive uterine enlargement (Polyhydramnios, Multiple gestation)
- Uterine distortion (Leiomyomas, Septate uterus, uterine didelphis, and other anomalies)
- Placental abnormalities (Abruptio placentae, Placenta previa)
- African-American race
- Preterm uterine contractions
- Incompetent cervix
- Infections (Urinary, Vaginal (BV), Intra-amniotic)
- Substance abuse
- Decidual hemorrhage

2. What characteristics distinguish Braxton-Hicks contractions from true labor contractions?

Braxton-Hicks contractions	True Labor Contractions
Irregular and sporadic contractions (↑ in the last 4-8 wks. Of pregnancy)	Regular intervals
painless or mild intensity	progressively ↑ in frequency and intensity
Not associated with progressive cervical dilation and effacement	Associated with cervical dilation
Resolve with rest, hydration, and/or sedation	Not resolve with sedation

3. What should you counsel the patient regarding the signs and symptoms of preterm labor?

The primary method for identifying preterm labor is by **screening for maternal signs and symptoms** as summarized below:

- Menstrual-like cramps
- Pelvic pressure
- Increase or change in vaginal discharge (mucous, watery, light bloody discharge)
- Uterine contractions, often painless
- Low, dull backache
- Abdominal cramping (with or without diarrhea)
- Abdominal pressure

4. What recommendations, if any, would you discuss with this patient regarding prevention strategies to reduce the risk of preterm delivery in this pregnancy?

- Intramuscular or vaginal progesterone, begun in the second trimester, has been shown to decrease the rate of preterm birth in women who previously experienced a preterm birth. Evidence does not currently exist to recommend one route of progesterone delivery over the other in preventing preterm delivery.
- Magnesium sulfate administered to the mother, prior to an anticipated preterm birth, reduces the risk of cerebral palsy in surviving infants; thus if delivery before 34 weeks gestation is anticipated, consideration should be given to administration of magnesium sulfate.
- Antibiotics should be administered during preterm labor as prophylaxis against Group B strep sepsis in the neonate.
- A course of antenatal steroids (betamethasone or dexamethasone) should be administered to the mother diagnosed with preterm labor in an effort to enhance fetal lung maturity and decrease the risk of necrotizing fasciitis and intracranial bleeds in the neonate.

5. If the patient does experience PTL in this pregnancy, what recommendations would you make regarding treatment and management?

- **Fetal fibronectin testing** (negative) and **cervical length** (greater than 2.5 cm) have good negative predictive value in deciding which patients do not require treatment for preterm labor.
- There is no clear first line tocolytic medication; however, current medications in use include **magnesium sulfate**, **nifedipine**, **indomethacin**, and **beta-mimetics**. The primary benefit of tocolytics appears to be delaying delivery in order to complete a course of antenatal steroids and transport the mother to a tertiary care facility for adequate care of the premature newborn.

The risks of tocolytics include:

- **Magnesium** (maternal flushing, decreased reflexes, muscle weakness, pulmonary edema and fetal lethargy, hypotonia, respiratory distress and bone abnormalities if used > 7 days)
- **Nifedipine** (maternal hypotension)
- **Indomethacin** (maternal nausea, esophageal reflux, gastritis, emesis and possible platelet dysfunction and fetal in utero closure of ductus arteriosus with > 48 hour use and possibly patent ductus arteriosus for neonate)
- **Beta-mimetics** (maternal tachycardia, hypotension, tremor, shortness of breath, chest discomfort, pulmonary edema, hypokalemia and hyperglycemia and fetal tachycardia)

6. What are the potential adverse outcomes of preterm birth for the fetus?

- Respiratory distress syndrome (RDS)
- Necrotizing enterocolitis
- Neurologic impairment
- Long term-bronchopulmonary dysplasia
- Intraventricular hemorrhage
- Sepsis
- Seizures
- Developmental abnormalities: cerebral palsy

References:

APGO video + case

Essentials of Ob/Gyn. by Hacker & Moore

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