Sanders: Mosby's Paramedic Textbook, Revised 3rd Edition

PowerPoint Lecture Notes

Chapter 42: Obstetrics

Chapter 42
Obstetrics

Objectives

- Describe organization and function of structures of pregnancy
- Outline fetal development
- Explain maternal physiological changes during pregnancy
- Describe obstetrical patient history taking
- Describe assessment of pregnant patients

Objectives

- Describe care of the pregnant patient
- Discuss care after trauma to the mother or fetus
- Describe assessment and management of patients with:
  - Preeclampsia and eclampsia
  - Vaginal bleeding in pregnancy

Objectives

- Outline the changes during labor
- Describe the paramedic's role during labor and delivery
- Compute an Apgar score
- Describe assessment and management of postpartum hemorrhage
- Discuss implications of complicated deliveries

Scenario

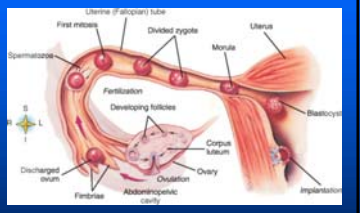
Your patient is G5P4 and due in 1 week with this pregnancy. She called 9-1-1 because she had painless vaginal bleeding, but by the time you arrive, contractions have begun and the bleeding has increased. As you administer oxygen and start an IV, she becomes pale and complains of sudden, severe difficulty breathing. Her oxygen saturation drops to 84%.

Discussion

- What could be causing her bleeding?
- Why did she become short of breath?
- Does her pregnancy history make her high risk for any of these problems?
- How will these signs and symptoms affect the fetus?
- Describe your priorities of care for this patient

Normal Events of Pregnancy

- Ovulation
- Fertilization
  - Distal third of fallopian tube
- Implantation
  - Uterus



Specialized Structures of Pregnancy

- Placenta
- Umbilical cord
- Amniotic sac and fluid

Placenta

- Transfer of gases
- Transport other nutrients
- Excretion of wastes
- Hormone production
- Protection

Umbilical Cord

- Connects placenta to fetus
- 2 arteries and 1vein

Amniotic Sac and Fluid

- Membrane surrounding fetus
- Fluid from fetus: Urine, secretions
  - Accumulates rapidly
  - 175-225 mL by 15th week
  - About 1 L at birth
- Rupture of membrane
  - Watery discharge

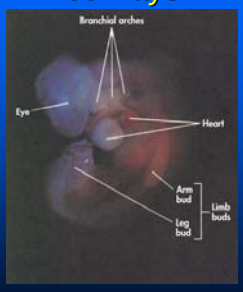
Fetal Growth and Development

- First 8 weeks of pregnancy
  - Embryo
- After that and until birth
  - Fetus

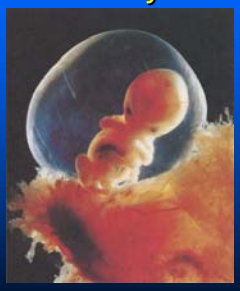
Fetal Growth and Development

- Gestation
  - Period during which intrauterine fetal development takes place
  - Average 40 wks from fertilization to delivery
  - 90-day periods (trimesters)

Human Embryo and Fetus at 35 Days



Human Embryo and Fetus at 49 Days



Human Embryo and Fetus at End of 1st Trimester

Human Embryo and Fetus at 4 Months

Obstetrical Terminology

- Gravida
  - All current and past pregnancies
- Para
  - Number of past pregnancies viable to delivery
- Antepartum
  - Period before delivery
- Gestation
  - Period of intrauterine fetal development
- Grand multipara
  - Seven deliveries or more

Obstetrical Terminology

- Multipara
  - Two or more deliveries
- Natal
  - Connected with birth
- Nullipara
  - Has never delivered
- Perinatal—occurring
  - At or near time of birth
- Postpartum
  - Period after delivery

Obstetrical Terminology

- Prenatal
  - Before birth
- Primigravida
  - Pregnant for first time
- Primipara
  - Gave birth once
- Term
  - Pregnancy at 40 weeks' gestation

Maternal Changes During Pregnancy

- Cessation of menstruation
- Enlargement of uterus
- Other changes affect:
  - Genital tract
  - Breasts
  - Gastrointestinal system
  - Cardiovascular system
  - Respiratory system
  - Metabolism

Obstetrical History

- Length of gestation
- Parity and gravidity
- Previous cesarean delivery
- Maternal lifestyle
- Infectious disease status
- Previous gynecological or obstetrical complications
- Pain

Obstetrical History

- Quantity, character of vaginal bleeding
- Abnormal vaginal discharge
- "Show"
  - Expulsion of mucous plug in early labor
- Rupture of membranes
- General health and prenatal care

Obstetric History

- Allergies, medications taken
  - Use of narcotics within 4 hrs
- Urge to bear down
- Sensation of imminent bowel movement

Physical Examination

- Chief complaint determines exam
  - Rapidly identify acute surgical or life-threatening conditions or imminent delivery
  - Take appropriate management steps

Physical Examination

- Evaluate general appearance and skin color
- Assess vital signs and reassess
- Examine abdomen for previous scars and any gross deformity

Evaluation of Uterine Size

- 8-10 weeks
  - Uterine contour irregular
- 12-16 weeks
  - Uterus above symphysis pubis
- 24 weeks
  - Uterus at level of umbilicus
- Term
  - Uterus near xiphoid process

Changes in Fundal Height

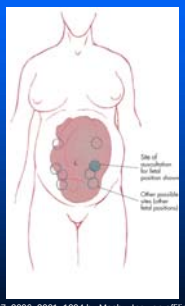
Fetal Monitoring

- Fetal heart sounds
  - Auscultate between 16 and 40 wks by stethoscope, fetoscope, or Doppler
- Benefits of fetal monitoring
- Procedure
- Normal fetal heart rate: 120-160 bpm

Fetoscope

Doppler

Sites for Auscultation of Fetal Heart Tones



General Management of OB Patient

- If birth not imminent, care for healthy patient often can be limited to basic treatment modalities
- In absence of distress or injury, transport in position of comfort:
  - Usually left lateral recumbent
  - ECG monitoring, oxygen, and fetal monitoring may be indicated
  - Based on assessment
  - IV access in some patients

Complications of Pregnancy

- Trauma
- Medical conditions
- Pregnancy itself
- Prior disease processes
  - Aggravated by pregnancy

Trauma in Pregnancy

- Causes of maternal injury
  - Vehicular crashes
  - Falls
  - Penetrating objects
- Greatest risk of fetal death
  - Fetal distress and intrauterine demise caused by trauma to mother or her death

Trauma in Pregnancy

- Assess and intervene for mother
- Fetal death from maternal trauma
- Pregnant trauma patient needs physician evaluation
- Assessment
  - Signs of shock can be slow to develop
  - Decreased fetal movement/HR may indicate shock

Trauma in Pregnancy

- Management
  - High concentration oxygen, administer fluid
  - Vasopressors not recommended
  - Prepare for labor
  - Aggressive resuscitation if arrest
  - Immobilize and transport
    - Left lateral recumbent position
    - Manual uterine displacement

Medical Conditions

- Pregnancy can mask or aggravate:
  - Appendicitis
  - Cholecystitis
  - Hypertension
  - Diabetes
  - Infection
  - Neuromuscular disorders
  - Cardiovascular disease

Preeclampsia

- Unknown cause
  - Often healthy, normotensive primigravida
    - After twentieth week, often near term
- Characterized by:
  - Vasospasm
  - Endothelial cell injury
  - Increased capillary permeability
  - Activation of clotting cascade

Preeclampsia and Eclampsia

- Diagnosis of preeclampsia
  - Hypertension
    - Blood pressure >140/90 mm Hg
    - Acute rise of 20 mm Hg in systolic pressure
      OR
    - 10 mm Hg rise in diastolic pressure over prepregnancy levels
  - Proteinuria
  - Excessive weight gain with edema
- Treat hypertension, prevent seizures

Eclampsia

- Same signs and symptoms plus seizures or coma
- Tonic-clonic activity
- Often begins as oral twitching
- Often apnea during seizure
- Can initiate labor

Eclampsia—Management

- Left lateral recumbent position
- Minimize stimulation
- Oxygen and ventilation assistance
- IV
- If seizures:
  - Magnesium sulfate
  - Diazepam
  - Monitor vital signs

Gestational Diabetes Mellitus

- Mother can't metabolize carbohydrates
- Excess glucose goes to fetus
  - Stored as fat
- Treatment
  - Glucose monitoring
  - Diet
  - Exercise
  - Insulin

Vaginal Bleeding

- Abortion (miscarriage)
- Ectopic pregnancy
- Abruptio placentae
- Placenta previa
- Uterine rupture
- Postpartum hemorrhage

Abortion

- Termination of pregnancy from any cause before 20th week of gestation
  - Later is known as *preterm birth*
- Common classifications of abortion
- Determine:
  - Onset of pain and bleeding
  - Amount of blood loss
  - If any tissue passed with blood
- Management

Ectopic Pregnancy

- Ovum implants outside uterus
- Common
- Predisposing factors
- Classic triad of symptoms
  - Abdominal pain
    - Shoulder pain
  - Vaginal bleeding
  - Amenorrhea
    - May not be present

Ectopic Pregnancy

- Can result in frank shock
- True emergency
- Requires rapid transport for surgery
- Manage for hemorrhagic shock

Third-Trimester Bleeding

- 3% of pregnancies
- Never normal
- Most often due to:
  - Abruptio placentae
  - Placenta previa
  - Uterine rupture

Abruptio Placentae

- Partial or complete detachment of normally implanted placenta at more than 20 weeks' gestation
- Predisposing factors
  - Trauma
  - Maternal hypertension
  - Preeclampsia
  - Multiparity
  - Previous abruption

Abruptio Placentae

- Sudden vaginal bleeding in 3rd trimester
- Pain
  - Abdomen may be tender or rigid
- May be minimal bleeding with shock
  - Most of hemorrhage may be hidden
- Contractions may be present
- If fetal heart tones absent, fetal death is likely

Placenta Previa

- Placental implantation in lower uterine segment, encroaching on or covering cervical os
- 1 in 300 deliveries
  - More common in preterm birth
- Painless, bright red bleeding
  - Increases if labor begins
  - Fetal compromise

Placenta Previa

- More common with:
  - Increased maternal age
  - Multiparity
  - Previous cesarean section
  - Previous placenta previa

Uterine Rupture

- Spontaneous or traumatic rupture of uterine wall
- Causes
  - Previous scar opens
  - Trauma
  - Prolonged or obstructed labor
- Rare but accounts for 5%-15% maternal deaths
  - 50% of fetal deaths

Uterine Rupture

- Sudden abdominal pain
  - "Tearing"
- Active labor
- Early signs of shock
- Vaginal bleeding
  - May be hidden

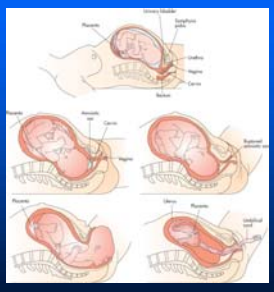
Management of 3rd Trimester Bleeding

- Prevent shock
- Do not examine patient vaginally
  - May increase bleeding and start labor
- Emergency care
  - ABCs
  - Left lateral recumbent position
  - IV therapy
  - Check fundal height

Labor and Delivery

- Process by which infant is born
- Uterus progressively more irritable
- Cervix begins to dilate:
  - Complete dilation is 10 cm
- Amniotic sac rupture
- Fetus and then placenta are expelled

Parturition



Stages of Labor

- Stage 1
  - Onset of regular contractions
  - Ends with complete dilation of cervix
- Stage 2
  - From full dilation of cervix to delivery of infant
- Stage 3
  - Begins at delivery of infant
  - Ends when placenta has been expelled and uterus has contracted

Signs and Symptoms of Imminent Delivery

- Prepare for delivery if:
  - Regular contractions lasting 45-60 sec at 1-2 min intervals
  - Urge to bear down or sensation of bowel movement
  - Large amount of bloody show
  - Crowning occurs
  - Mother believes delivery is imminent

Signs and Symptoms of Imminent Delivery

- Do not delay or restrain delivery except for cord presentation
- If complications are anticipated or abnormal delivery occurs, medical direction may recommend expedited transport to a medical facility
- Preparing for delivery
- Delivery equipment

Prehospital Delivery Equipment

Assisting with Delivery

- Assist in natural events of childbirth
- Responsibilities of EMS crew:
  - Prevent uncontrolled delivery
  - Protect infant from cold stress after birth

Assisting with a Normal Delivery

- Delivery procedure
- Evaluating infant
- Cutting umbilical cord
- Delivery of placenta
- Fundal massage to promote uterine contraction

Normal Delivery

When crowning, apply gentle pressure to infant's head

Normal Delivery

Examine neck for looped umbilical cord

Normal Delivery

Support infant's head as it rotates for shoulder presentation

Normal Delivery

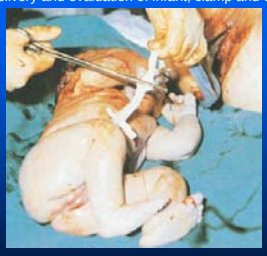
Guide infant's head downward to deliver anterior shoulder

Normal Delivery

Guide head upward to release posterior shoulder

Delivery

After delivery and evaluation of infant, clamp and cut cord



Is Resuscitation Needed?

- Full term gestation?
- Clear amniotic fluid?
- Is baby breathing or crying?
- Does the baby have good muscle tone?
- If yes to all four questions
  - Need to resuscitate is unlikely

Postpartum Hemorrhage

- >500 mL of blood loss after delivery
- Immediate or delayed 24 hrs
- Risk factors
  - Uterine atony from labor
  - Grand multiparity
  - Twins
  - Placenta previa
  - Full bladder

Postpartum Hemorrhage

- Control external hemorrhage
- Massage uterus
- Encourage infant to breast feed
- Administer oxytocin
- Don't attempt vaginal exam
- Rapid transport

Delivery Complications

- Maternal factors
  - Age
  - No prenatal care
  - Lifestyle
  - Preexisting illness
  - Previous OB history
  - Intrapartum disorders

Delivery Complications

- Fetal factors
  - Lack of fetal well-being
  - Decreased fetal movement
  - History of heart rate abnormalities
  - Fetal immaturity
  - Fetal growth

Cephalopelvic Disproportion

- Difficult labor because of:
  - Small pelvis
  - Oversized fetus
  - Fetal abnormalities
    - Hydrocephalus, conjoined twins, fetal tumors
  - Often primigravida experiencing strong, frequent contractions for long period

Cephalopelvic Disproportion

- Prehospital care
  - Maternal oxygen administration
  - IV access for fluid resuscitation if needed
  - Rapid transport to receiving hospital

Abnormal Presentation

- Most infants born head first
  - Cephalic or vertex presentation
  - Rarely abnormal presentation
- Breech presentation
  - Management
- Shoulder dystocia
  - Management
- Shoulder presentation (transverse presentation)
  - Management

Breech Presentations

Abnormal Presentation

- Cord presentation (prolapsed cord)
  - Elevate mother's hips
  - Maternal oxygen
  - Have mother pant with contractions
  - Apply moist, sterile dressing to cord
  - Gently push infant back into vagina
    - Elevate presenting part
    - Maintain during transport

Other Abnormal Presentations

- Face or brow
- Occiput posterior presentation
  - Face up
- Increased perinatal morbidity and mortality
- Early recognition critical

Abnormal Presentation

- Prehospital management
  - Recognition of potential complications
  - Maternal support and reassurance
  - Rapid transport for definitive care

Premature Birth

- Birth at <37 weeks of gestation
- Care of premature infant
  - Keep warm
  - Suction mouth and nares often
  - Monitor cord for oozing
  - Administer oxygen
    - Monitor for need to assist ventilations
  - Gently transport

Multiple Gestation

- More than one fetus
- Associated complications
  - Premature labor and delivery
  - Premature rupture of membranes
  - Abruptio placentae
  - Postpartum hemorrhage
  - Abnormal presentation
- Delivery procedure

Multiple Gestation

- Delivery procedure
  - Deliver first twin as normal birth
  - Cut and clamp cord
  - Second twin delivery within 30-45 min
    - Medical direction may recommend transport
  - Keep warm
  - Monitor for severe postpartum hemorrhage

Precipitous Delivery

- Rapid spontaneous delivery
- Less than 3 hrs from onset of labor to birth
- Overactive uterine contractions and little maternal soft tissue or bony resistance
- Apply gentle counterpressure to head

Uterine Inversion

- Rare serious complication of childbirth
- Uterus turns inside out
  - After contraction, sneezing, coughing
  - Iatrogenic
- Signs and symptoms
  - Profuse postpartum hemorrhage
  - Severe lower abdominal pain

Uterine Inversion

- Management
  - Position patient supine
  - Push fundus up through cervical canal or
  - Cover with moist sterile dressings
  - Rapid transport
  - Medical direction may advise use of analgesics

Pulmonary Embolism

- Pregnancy, labor, or postpartum period
- Common cause of maternal death
- Often blood clot from pelvis
- More common with cesarean delivery

Pulmonary Embolism

- Signs and symptoms
  - Dyspnea
  - Sharp chest pain
  - Tachycardia, tachypnea
  - Hypotension possible
- Management
  - ABCs
  - ECG and IV
  - Transport

Fetal Membrane Disorders

- Premature rupture of membranes
  - Amniotic sac rupture before labor
  - "Trickle" or sudden gush of fluid from vagina
  - Infection possible if delivery delayed
  - Transport

Fetal Membrane Disorders

- Amniotic fluid embolism
  - Amniotic fluid gains access to maternal circulation:
    - During labor or delivery
    - Immediately after delivery
- Signs and symptoms
  - Same as for pulmonary embolism
  - High mortality
- Management
  - As for pulmonary embolism

Conclusion

Obstetrical emergencies can develop suddenly and become life threatening. The paramedic must be prepared to recognize and manage these events.

Questions?