Prenatal Care

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Prenatal Care - Introduction

- Prenatal care focuses on prevention
- Majority of pregnant gravidas will deliver without major complications
- Goal of prenatal care is to select gravidas at risk for development of major complications and early prevention/intervention in order to affect improved outcome
Gestational Age

• Outcome in pregnancy is gestational age dependant
• Calculation of gestational age is made using a variety of methods:
  – Patient history
  – Initial pelvic exam/biochemical test of pregnancy
  – Fetal heart auscultation (10-11 or 18-19 weeks)
  – Quickening (16-20 weeks)
  – Serial fundal height measurement (at umbilicus - 20 weeks)
  – Ultrasound estimation of gestational age
• Dating (U.S.) best based upon MENSTRUAL DATING (Last normal menstrual period to estimated date of confinement 40 7-day weeks)
Ultrasound Dating

• Ultrasound dating less accurate as gestational age advances

• Early pregnancy - Crown Rump Length (CRL): CRL + 6.5 approximates gestational age (±7 days)

• Mid pregnancy (12-28 weeks) - correlation between ultrasound and menstrual dating is ±10-14 days

• In late pregnancy, ultrasound accuracy as single estimate of gestational age is not great (±21 days)
Physical Exam - Fundal Height

- Fundal Height evaluation is a reasonable estimate of gestational age.
- After 20 weeks gestation:
  - Gestational age in menstrual weeks roughly equivalent to centimeters from superior aspect of symphysis pubis to fundal portion of uterus.
  - Inter-observer differences exist.
  - Circumstances may alter measurement:
    - Multiple gestation
    - Oligohydramnios/Polyhydramnios
    - Uterine pathology
Antenatal Testing

- High-risk pregnancies at risk for fetal loss receive antenatal testing at least once per week:
  - Nonstress testing
  - Contraction stress testing
  - Biophysical profile testing
Fetal Movement Testing

- Fetal movement positively associated with fetal well-being and negatively associated with intrauterine fetal demise
- Average fetal movement varies with gestational age
- Maternal perception of fetal movement varies
  - In late pregnancy force of fetal movement is less than earlier in gestation
  - Quickening first felt at 16-20 weeks
Laboratory Tests - Prenatal Care

- Hemoglobin/Hematocrit
- Urinalysis/Urine Culture/Urine Dipstick
- Glucose testing
- Blood Type/Rh
- Serologic test for Syphilis
- N. Gonorrhea/Chlamydia
- Other tests
Hemoglobin/Hematocrit (H/H)

- Normally red-cell mass increases in pregnancy and plasma volume increases (even more)
- Result of expansion is a measured decrease in hemoglobin/hematocrit - nadir of H/H at approx 28 weeks
- In U.S., H/H tested early in pregnancy, at 28 weeks and at or near term
- Anemia can be a screen for:
  - Maternal disease
  - Hemoglobinopathy
  - Anemia (Iron deficiency; Folate; B12)
Urinalysis/Culture/Dipstick

• In U.S., urinalysis and dipstick generally done at intake (culture optional)
• Dipstick for Proteinuria
  – Done each visit
  – If +, may indicate renal disease, preeclampsia, or infection
• Dipstick for glucose - not reliable association with serum glucose
• Cystitis and Pyelonephritis much more common in pregnancy - use low threshold for diagnosis
Blood Type/RH

- In U.S., Rh-negative blood is approximately 10%-20%
- Typing done in case blood later needed
- Indirect antibody testing for antibodies to red cell antigens performed
- If fetus is at risk for disease, level of monitoring is increased
Infectious Disease Testing

- In U.S., Gonorrhea, Syphilis, and Chlamydial cervical cultures obtained
- In U.S., most areas screen for HIV
  - Immunoprophylaxis in labor and treatment antepartum lowers perinatal transmission
- Lancefield Group B **Streptococcus** may be cultured or empirically treated in labor if in a high-risk group (preterm, prior infant with disease, prolonged ruptured membrane, etc.)
Glucose Testing

- Gestational diabetes (U.S.) incidence is approximately 5% of pregnant population
- Diabetes screen (28 weeks gestation)
  - 1-hr post 50 gram glucose load by mouth
  - Diabetes suspected if >140 mg%
- Glucose tolerance test diagnostic
  - 100 gram glucose load with fasting, 1 hr, 2 hr, and 3 hr serum glucose
  - Any two values abnormal diagnostic (<105; >190; >165; >145 mg%, respectively)
- Fasting and 2 hr postprandial may be alternative
- Macrosomia is risk factor
Visit Interval - Pregnancy (Uncomplicated Patient)

- Conception until 26-28 weeks gestational age - Every 4 weeks (Pelvic exam on first visit)
- 28-36 weeks gestational age - Every 2 weeks
- 36-40 weeks gestation - Every week (Pelvic exam at least by term)
- High risk pregnancy may alter visit intervals
- Preterm labor risk may alter pelvic exam interval
- Post dates pregnancy - Consider evaluation for antenatal testing (Nonstress testing)
Other Testing

• Serum marker screening (Maternal serum alphafetoprotein, human chorionic gonadotropin, and estriol) usually offered in U.S. to patients 15-21 weeks
• Patients at risk for fetal aneuploidy may receive invasive prenatal diagnosis (such as amniocentesis)
• In U.S., prenatal Rubella immunity testing performed
Symptoms to Evaluate During Pregnancy

- Bleeding
- Decreased fetal movement
- Swelling
- Headache
- Visual disturbance
- Contractions
- Leakage of fluid
Bleeding in Pregnancy

- Etiology of bleeding is influenced by gestational age.
- Early pregnancy bleeding is more important if associated with pelvic pain (Threatened abortion?)
- Late pregnancy bleeding differential diagnosis:
  - Abruptio placenta
  - Placenta previa
  - Cervicitis
  - Labor
  - Vasa previa
Swelling (Edema)

• Edema is relatively common in pregnancy (80%+ in warm climates or high salt consumption)

• Pathologic edema may be associated with preeclampsia:
  – >4 lb weight gain in one week
  – Sudden swelling of hands or face
  – Presence of other symptoms associated with preeclampsia
Decreased Fetal Movement

• Decreased fetal movement may be lack of maternal perception of fetal movement
• Intrauterine fetal compromise may be preceded by decreased fetal movement
• Probably a wise idea to address maternal perception of decreased fetal movement
Headache/Visual Disturbance

• Headache and visual disturbance (double vision, photophobia, etc.) may be:
  – Preeclampsia
  – Migraine/Cluster headache
  – Other neurological conditions
  – Isolated event

• Careful history may elucidate “normal” causes from “abnormal causes”

• Headache/visual disturbance with hypertension should be considered preeclampsia until proven otherwise
Leakage of Fluid ("ROM")

- Pregnancy normally associated with increased amount of vaginal discharge
- Warning signs for discharges:
  - Watery discharge = possible ROM
  - Green discharge = possible meconium
  - Itching discharge = possible vaginitis
  - Bloody discharge = cervicitis or serious causes of vaginal bleeding
Leakage of Fluid (“ROM”) (2)

- If ruptured membranes suspected, sterile speculum exam can evaluate:
  - pH: Amniotic fluid typically with alkaline pH (>7.0)
  - Pooling or direct leakage: Fluid will directly leak out of cervix during Valsalva
  - Fetal ferning: Classic ferning pattern under microscopic visualization
Leakage of Fluid ("ROM")

(3)

- Prolonged rupture of amniotic membranes (>24 hours) associated with increase in intrauterine infection
- Preterm rupture of amniotic membranes associated with preterm labor and infection
- Term ROM associated with spontaneous labor in over 90% of patients
Contractions

- Uterine contractions occur throughout pregnancy (4/hour in early third trimester)
- Frequency of contractions increases just prior to the onset of perceived labor
- Persistent contractions of closer than 15 minutes apart that do not resolve with simple bedrest or fluids need some sort of evaluation
- Cystitis often associated with uterine irritability
- Multiple pregnancy and polyhydramnios also associated with irritability
Weight Gain in Pregnancy

- At term, approximate weight of blood volume expansion, fetus, uterus, and edema generally equals approximately 7 kg
- Weight gain of 200-500 gm per week is advocated
- Many suggest an additional weight at term to account for breast feeding fat reserve - total of approximately 10 kg recommended
- Excessive weight gain over 20-25 kg may increase risk of gestational diabetes and other complications
Blood Pressure

• Blood pressure normally decreases to a nadir at mid-pregnancy
• Blood pressure then rises to early pregnancy levels by term
• Blood pressure should be taken in the right or left arm while the subject is sitting
• A large degree of blood pressure variation exists between sitting, in the lateral recumbent position, or supine position during late pregnancy
Nutrition in Pregnancy

• On average, an additional 300 Kcal intake is recommended during pregnancy
• An additional 5-6 gm/day of protein needed
• Calcium:
  – Although optimal for women in general, only about 30 gm of calcium (2.5% of total stores) is scavenged by the fetus
• Folate:
  – A minimum of 0.4 mg folate will reduce the rate of open neural tube defects
Nutrition - Iron (Fe)

- 300 mg of Fe transferred to fetus during pregnancy
- 500 mg of Fe used to expand maternal blood volume
- Women usually are at an Fe deficit:
  - Minimal recommendation is 15 mg Fe/day
  - If depleted, 30-60 mg more reasonable
  - Multiple gestation or anemia may require up to 200 mg/day
Alcohol/Tobacco

• Smoking effects:
  – Lower birthweight/growth restriction
  – Placental abruption
  – Placenta previa

• Alcohol effects:
  – Birth defects
  – Behavior disorder
  – Placental abruption

• Summary - Do not drink or smoke while pregnant
Common Complaints/Issues in Pregnancy

• Constipation
• Morning sickness (Nausea and vomiting during pregnancy)
• Heartburn
• Hemorrhoids
• Backache
Constipation

• Caused by motility effects of progesterone and direct mass-effect of gravid uterus

• Treatment generally should be via dietary modification:
  – Increased fluids
  – Increased bulk

• Mild laxatives or stool softeners may be reasonable
Morning Sickness

• Nausea typically occurs between 6-12 menstrual weeks - some patients have symptoms longer

• Dietary modifications:
  – Frequent small meals

• Anti-emetics may be needed:
  – Antihistamines
  – Phenothiazone

• Acupressure may help

• Rare refractory cases may require hospitalization, nutrition, etc.
Heartburn

• Reflux esophagitis is more frequent during pregnancy

• Dietary treatment:
  – Limit spicy foods
  – Limit eating prior to reclining

• Medications:
  – Antacids
  – H2 antagonists

• Lifestyle treatment:
  – Bed elevation
Hemorrhoids

- Constipation worsens preexisting hemorrhoids
- Stool softeners and/or treatment of constipation probably helpful
- Local measures may help
Backache

• Posture in pregnancy is lordotic
• Back strain is common
• Treatment of back strain is problematic:
  – Aspirin and NSAID’s not recommended
• Best advice is prevention (good lifting mechanics)
• Bedrest, massage, heat, and non-aspirin analgesia as treatment for pain
Conclusion

• Prenatal care is preventive and supportive in nature

• Through cooperation between the pregnant patient and her care provider, complications can be monitored