Obstetrics – Complications

Effective February 2007
12 – 16%

Genetic studies
Chorionic villus sampling (CVS)
- test used to obtain a fetal karyotype by the culturing of fetal cells
- ultrasound-directed biopsy of the placenta or chorionic villi (chorion frondosum Ψ).
- chorionic villi are fetal in origin

Advantages include:
- It is performed early in pregnancy (10 to 12 weeks).
- Results are available within 1 week.
- Earlier results allow more options for parents.

Procedure risks
- 1% to 3% fetal loss
- association with limb-reduction defects when before 10 weeks of gestation

Genetic studies
Amniocentesis
- first used as a technique to
  - relieve polyhydramnios
  - predict Rh isoimmunization
  - fetal lung maturity (LS ratio)
- Most common reason for performing amniocentesis - Advanced maternal age

Risk for down’s syndrome
- Women 35 years of age 1 in 365
- women 21 years of age is 1 in 2000
- ideally performed at 15 to 18 weeks of gestation
Genetic studies
Amniocentesis
• 20 and 30 ml of fluid will be collected for chromosomal analysis and AFP evaluation
• when performed for a known anomaly acetylcholinesterase and viral studies may be ordered. (TORCH titers Ψ)

Genetic studies
Amniocentesis and Multiple Gestations
• sonographic examination for each fetus should be performed
• Monzygosity or dizygocity should be determined

Genetic studies
Amniocentesis and Multiple Gestations
• To be certain that amniotic fluid is obtained from each sac, indigo carmine dye can be injected into the first sac.
• clear amniotic fluid indicates
  – the second sac has been penetrated when the second pass is made
• dye-stained fluid is visible
  – indicates that the first sac has been penetrated a second time.

Genetic studies
Cordocentesis
• Fetal blood is obtained through needle aspiration of the umbilical cord.
• Karyotype processed within 2 to 3 days
• rapid assessment when a fetal anomaly is detected later in pregnancy

Genetic studies
Alpha-fetoprotein (AFP)
• major protein in fetal serum
  – produced by the yolk sac in early gestation and later by the fetal liver.
• found in the fetal spine, gastrointestinal tract, liver, and kidneys.

Genetic studies
Alpha-fetoprotein (AFP)
• measured in the maternal serum (MSAFP)
• measured in amniotic fluid (AFAFP)
• considered abnormal when elevated or low
• MSAFP screening detects
  – 88% of anencephalics
  – 79% of open spina bifida cases
• A common reason for elevations is incorrect dates Ψ
Genetic studies
Alpha-fetoprotein (AFP)

- AFP level in a twin pregnancy will be twice that of a singleton pregnancy
- Low AFP levels seen in chromosomal abnormalities
  - trisomy 21, trisomy 18, and trisomy 13

Genetic studies
Quadruple Screen

- This test evaluates
  - AFP
  - human chorionic gonadotropin (hCG)
  - unconjugated estriol
  - dimeric inhibin A.
- improves the detection rate for trisomy 21
  - high hCG levels - decreased AFP and estriol levels.
- screening may suggest trisomy 18
  - hCG, AFP, and estriol levels are all decreased.

Genetic studies
Pregnancy-Associated Plasma Protein A (PAPP-A)

- first-trimester serum marker used to detect anomalies is pregnancy
- PAPP-A levels decreased in pregnancies affected by aneuploidy.

Fetal demise

- Lithopedion calcified fetus:
  - a fetus that has died but not been expelled from the womb and has, over a long period, become calcified

Removal of RTOC

- Common medical interventions used for removal of retained products of conception
  - Dilatation and curettage
    - Scaring
  - Dilation and evacuation
  - Labor induction - pitosin
• the most common cause of first trimester fetal demise is Chromosomal abnormalities
• the most common cause of third trimester fetal demise is unknown
  – variable due lifestyle and geographic location

Fetal demise imaging findings
• Absence of cardiac motion Demonstrate with
  – color flow
  – Spectral Doppler
  – M-mode
• Spalding’s sign could be present
• Druel’s sign might be present

Intrauterine growth restriction
Chapter 47
• best described as a decreased rate of fetal growth
• 3% to 7% of all pregnancies
• fetal weight at or below 10%
• IUGR babies at a greater risk of
  – antepartum death
  – perinatal asphyxia
  – neonatal morbidity
  – developmental problems.

• significant maternal factors
  – history of a previous fetus with IUGR
  – maternal hypertension and/or smoking
  – presence of a uterine anomaly (bicornuate uterus or large leiomyoma)
  – significant placental hemorrhage.

Classifications of IUGR
Symmetric
• fetus that is proportionately small throughout pregnancy
  – physical parameters (e.g., BPD, HC, AC, FL)
• result of a first trimester insult.
  – low genetic growth potential
  – intrauterine infection
  – severe maternal malnutrition
  – fetal alcohol syndrome
  – chromosomal anomaly
  – severe congenital anomaly.

Classifications of IUGR
Asymmetric
• more common IUGR - usually caused by placental insufficiency.
• result of maternal disease
  – chronic hypertension
  – cardiac or renal disease
  – abruptio placenta
  – multiple pregnancy
  – Smoking
  – poor weight gain
  – drug usage
  – uterine anomaly.
characterizes asymmetric IUGR.
- appropriate BPD and HC with a disproportionately small AC
  - reinforces brain-sparing effect
- FL may be decreased in size
- Amniotic fluid pocket >1 to 2 cm
- FL to AC has a poor positive value

**Maternal conditions**
- Maternal Hypertension can result in
  - IUGR
  - Fetal demise
  - Oligohydramnios
  - Advanced placental grade for gestational age
- An RH- mother is given Rhogam to protect against alloimmunization

**Multiple gestations**
- Twins
  - Two eggs
  - Two sperm
  - Two chorion’s
  - Two amnion’s
  - Two placentas

- One egg
  - One chorion
  - Two amnions
  - One placenta

- Twin reversal arterial perfusion (TRAP)ψ
  - Results in acardiac twin
Multiple gestations
Twin to Twin transfusion
• One placenta, two amnion, one chorion
• One fetus gets most of the blood
• IUGR in one hydrops in
  The other

Postpartum
• Lasts 6-8 weeks
• Possible cause of postpartum hemorrhage
  – Multiple gestations
  – Macrosomia
  – Long labor
  – polyhydramnios

Syndromes
Trisomy 21 (Downs)
• one of the most
  common chromosomal
  disorders
• association with advanced maternal age
• abnormal triple screen.

associated anomalies include
• Nuchal fold ≥ 6 mm
  Extremity anomalies
  (hypoplasia of the middle phalanx or clinodactyly of the fifth finger, space between first and second toes)
• Shortened femurs
• Heart defects
  (present in approximately 40% to 50% of fetuses)
• IUGR
• Mild pyelectasis
• Echogenic bowel
• Mild ventriculomegaly
• Duodenal atresia

Syndromes
Trisomy 18 (Edward’s syndrome)
• second most common chromosomal trisomy
• abnormal triple screen
• often spontaneously aborts
• considered a lethal anomaly
• 90% of infants die within the first year

Trisomy 18
Associated anomalies
• dolichocephaly
• microcephaly
• hydrocephalus
• agenesis of the corpus callosum
• cerebellar hypoplasia
• Micrognathia
• cleft lip and palate
• Omphalocele
• cystic hygroma
• neural tube defects
• renal anomalies
• persistently clenched hands
• rocker-bottom feet
• Talipes
### Syndromes

#### Trisomy 13 (Patau’s syndrome)
- extremely severe anomaly
- considered a lethal anomaly.
- 85% die within the first year
- Trisomy 13 and Meckel-Gruber syndrome have similar sonographic appearance
  - encephalocele, cystic kidneys, polydactyly
- 40% of fetuses have holoprosencephaly
- Heart defects are present in 90% of fetuses

#### Triploidy
- complete extra set of chromosomes
- result of an ova being fertilized by two sperm.
- most fetuses spontaneously abort in the first trimester
- considered a lethal condition
  - those surviving the gestational period dying shortly after birth.

#### Triploidy
- Physical features of triploidy include
  - heart defects
  - renal anomalies
  - omphalocele
  - meningomyelocele
  - Holoprosencephaly
  - agenesis of the corpus callosum
  - Hydrocephalus
  - Dandy-Walker malformation

#### Turner’s Syndrome
- absence of the X or Y chromosome
- is not associated with advanced maternal age
- Cystic hygroma is pathognomonic for this disorder
Syndromes

• grave prognosis when the fetus presents with a large cystic hygroma and edema or hydrops.
• Most fetuses spontaneously abort

Syndromes
Turner’s Syndrome additional findings

• cardiac anomalies present in 20%
  – coarctation of the aorta the most common.
• Renal anomalies
  – horseshoe kidney
  – renal agenesis
  – hydrenephrosis
• Generalized lymphedema and hydrops