Ultrasound Evaluation of Threatened Abortion and the Gravid Cervix

*Presented by Faye C. Laing, MD, Professor of Radiology, Georgetown University Hospital*

**Self-Assessment Questions:**

**Lecture 1: Ultrasound Evaluation of Threatened Abortion**

**Question 1.1:** In a patient with a first trimester subchorionic hemorrhage, which of the following is not used to predict a poor outcome?

A. Size of the hemorrhage  
B. Echogenicity of the hemorrhage  
C. Maternal age  
D. Gestational age

**Question 1.2:** What is the sequence of structures to become visible on a normal 1st trimester ultrasound exam?

A. Gestational sac, embryo, yolk sac, heart beat, amnion  
B. Gestational sac, yolk sac, embryo, heart beat, amnion  
C. Gestational sac, yolk sac, amnion, embryo, heart beat  
D. Gestational sac, embryo, heart beat, yolk sac, amnion  
E. Gestational sac, yolk sac, embryo, amnion, heart beat,

**Question 1.3:** Which of the following predictors associated with a poor pregnancy outcome is least likely to occur?

A. Bradycardia  
B. Small sac size  
C. Abnormal yolk sac  
D. Abnormal amnion  
E. Chorionic bump

**Lecture 2: Imaging the Gravid Cervix: Helpful Hints**

**Question 2.1:** During pregnancy, the most accurate cervical length measurement is routinely obtained by which examination?

A. Digital pelvic examination  
B. Translabial ultrasound  
C. Transabdominal ultrasound  
D. Transvaginal ultrasound  
E. Magnetic resonance imaging

**Question 2.2:** During pregnancy, which condition is a relative contraindication to doing a transvaginal ultrasound?

A. History of preterm labor  
B. Preterm rupture of membranes  
C. Possible cervical incompetence  
D. Post cerclage placement  
E. Active labor

**Question 2.3:** To diagnose vasa previa, ultrasound should observe which one of the following?

A. Arterial vessels with a fetal heart rate crossing over the cervix.  
B. Large distended veins crossing over the cervix.  
C. Arterial vessels with a maternal heart rate crossing over the cervix.  
D. Placental tissue crossing over the cervix.  
E. Placental migration.

**Answer Key & References for Additional Study:**
Lecture 1: Ultrasound Evaluation of Threatened Abortion

**Question 1.1:** Correct answer = B - Echogenicity of the hemorrhage

When more than 500 women with a first trimester subchorionic hemorrhage were evaluated by ultrasound, the overall spontaneous abortion rate was 9.3%. The rate was almost 19%, however, when the hematoma was large; and it was almost 14% when the women was either older than 35 years, or when the gestational age was less than 8 weeks.


**Question 1.2:** Correct answer = B - Gestational sac, yolk sac, embryo, heartbeat, amnion

Ultrasound is used in the 1st trimester to evaluate the development of the gestational sac and its contents. Recognizing the sequence of normal development is important, because when pregnancies ultimately fail, this sequence often becomes abnormal. Based on ultrasound findings, the normal sequence is to initially detect a yolk sac within the gestational sac; subsequently the embryo appears. Shortly thereafter cardiac activity is detected and the amnion becomes visible.


**Question 1.3:** Correct answer = E - Chorionic bump

The prevalence of a chorionic ‘bump’ is less than 1%; it probably represents a small hematoma that bulges into the gestational sac. In a small study of 15 patients, 80% delivered when cardiac activity was observed; bleeding and infertility were associated with increased risk for demise. The remaining 4 choices listed above occur more commonly than does the chorionic ‘bump’.


Lecture 2: Imaging the Gravid Cervix: Helpful Hints

**Question 2.1:** Correct answer = D - Transvaginal ultrasound

Transvaginal ultrasound is the gold standard for determining cervical length during pregnancy. Digital pelvic examination is limited by anatomic constraints and it is a subjective assessment. Transabdominal ultrasound cervical evaluation is limited by the degree of bladder filling and acoustic shadowing. Translabial ultrasound often underestimates cervical length due to limited ability to visualize the region of the external os. Magnetic resonance imaging is not routinely used for this purpose.

**References:**

**Question 2.2:** Correct answer = B - Preterm rupture of membranes

With preterm rupture of membranes, digital examination of the cervix is contraindicated because of risk of infection. Although transvaginal sonography has not been associated with increased infection when used to evaluate the cervix in patients with preterm rupture of membranes, studies are limited. Until more studies are done to substantiate the vaginal approach, translabial scans should be used instead. Considering the other conditions listed above, once a transabdominal or translabial scan determines
that membranes are not protruding into the vagina (so called ‘hour glass’ configuration of the cervix), a transvaginal scan can be done to best determine the length and appearance of the cervix.

References:


Question 2.3: Correct answer = A - Arterial vessels with a fetal heart rate crossing over the cervix.
Vasa previa occurs when umbilical cord vessels cross over the cervix. Because these are fetal vessels, spectral Doppler establishes the diagnosis by determining the heart rate in these vessels is identical to that of the fetus. Distended veins (cervical varices), or maternal arterial vessels are not consistent with vasa previa. In patients with vasa previa, placental tissue does not overlie the cervical os. Although placental migration may, in some cases, ultimately lead to developing vasa previa, migration per se cannot be used to establish the diagnosis.

References: