Lesson 2: First Trimester Ultrasound: Typical Growth Patterns and Suggested Threshold Measurement Revisions in Assessing Early Embryonic Demise
Tyler L. Cooke, MD, Maija Cheung, MD, and Robert D. Harris, MD, MPH

Question 2-1. This question calls attention to a fetal anomaly that can be identified on ultrasound during a first trimester of pregnancy as a paramedian abdominal wall defect, which is gastroschisis (C). The abdominal wall defect of gastroschisis usually occurs in the right paramedian abdominal wall, and the herniated contents are not covered by a peritoneal sac. So (C) is true. An omphalocele (A) is a midline abdominal wall defect with the herniated contents covered by a peritoneal sac. Thus (A) is false. An abdominal wall defect is not present in either duodenal atresia (B) or the pentalogy of Cantrell (D). So (B) and (D) are false. Herniation of abdominal contents through a diaphragmatic hernia into the pericardial cavity does occur in the pentalogy of Cantrell. Thus (C), gastroschisis, is the correct answer.

Question 2-2. This question draws attention to the method used to calculate the mean gestational sac diameter (MSD) on first trimester ultrasound, using the sac’s orthogonal measurements. The sac’s 3 orthogonal dimensions on ultrasound (i.e., craniocaudal [CC], transverse [TRV], and anteroposterior [AP]) are added and divided by 3 (A). The MSD is used to access preembryonic gestational dating and to indirectly assess the early health of the pregnancy. So (A) is the correct answer.

Question 2-3. This question is a reminder that the fetal gut herniates through the fetal abdominal wall as a normal, transient physiologic phenomenon at 10 to 11 weeks of gestation and then returns into the abdominal cavity at 12 weeks of gestational age (B). The physiologic herniation of the gut should not be misdiagnosed as an abdominal wall defect leading to an omphalocele or gastroschisis. So (B) is the correct answer.

Question 2-4. This question emphasizes the measurements on first trimester ultrasound (in mm) that represent the new threshold measurement revisions for assessing early embryonic demise, using a mean sac diameter (MSD) without a living embryo and an embryonic crown rump length (CRL) with absent heart beat, respectively. These measurements are 25 mm for MSD and 7 mm for CRL (E). So (E) is the correct answer.

Question 2-5. This question alludes to the gestational week when the yolk sac typically is first seen on first trimester ultrasound, which is the fifth gestational week (C). So (C) is the correct answer.

Question 2-6. This question emphasizes the definition of fetal bradycardia, always a poor prognostic sign, which is a heart rate at any gestational age below a threshold of 90 bpm (D). So (D) is the correct answer.
Question 2-7. This question concerns the CRL (in mm) when the embryo is first visible on first trimester ultrasound, which is 2 to 3 mm (B). At this point of a viable pregnancy, a heart beat is present. So (B) is the correct answer.

Question 2-8. This question speaks to the date when the first trimester of pregnancy begins in a patient with a regular menstrual cycle, which is 4 weeks after the first day of the patient’s last normal menstrual cycle (C). So (C) is the correct answer.

Question 2-9. This question highlights the first definitive sonographic sign of a viable intrauterine pregnancy noted on first trimester ultrasound, which is the identification of the yolk sac (B). So (B) is the correct answer.

Question 2-10. This question refers to the duration of the first trimester of pregnancy, which is the first 13 weeks (D). So (D) is the correct answer.

Answer Key for Volume 38 # 2:

1. C
2. A
3. B
4. E
5. C
6. D
7. B
8. C
9. B
10. D