**Answers: Chapter 21**

**Matching**

1. h 6. c 11. j 16. s
2. m 7. n 12. r 17. g
3. a 8. q 13. e 18. p
4. t 9. f 14. o 19. i
5. k 10. d 15. b 20. l

**Image Labeling**

1. stomach
2. liver
3. diaphragm
4. hypoplastic compression of lung
5. intestine forced into thorax
6. heart
7. omphalocele
8. gastroschisis
9. fistula
10. cyst
11. sinus

12. Grade 0: Normal
   - Renal pelvis: <1 cm in anteroposterior diameter
   - Calyces: Not visualized
   - Cortex: Unremarkable

13. Grade I: Renal pelvis: 1.0 to 1.5 cm
   - Calyces: Not visualized (normal)
   - Cortex: Unremarkable

14. Grade II: Renal pelvis: >1.5 cm
   - Calyces: Slight dilatation
   - Cortex: Unremarkable

15. Grade III: Renal pelvis: >1.5 cm
   - Calyces: Moderately dilated
   - Cortex: No significant abnormality

16. Grade IV: Renal pelvis: >1.5 cm
   - Calyces: Severe dilatation
   - Cortex: Atrophic

17. Grade V: Renal pelvis: >1.5 cm
   - Calyces: Severe dilatation
   - Cortex: Atrophic

**Fill-in-the-Blank**

1. a. unilocular bronchogenic cyst
2. b. cystic adenomatoid malformation (CCAM), types II and III
3. c. base
4. d. thorax
5. e. abdomen
6. f. cystic hygromas
7. g. hydrothorax
8. h. pleural effusion
9. i. the same
10. j. thoracic
11. k. diaphragm
12. l. congenital diaphragmatic hernia
13. m. thorax
14. n. hydrodrops fetalis
15. o. being the offspring of a diabetic mother
16. p. gastroschisis
17. q. ascites
18. r. meconium
19. s. increases
20. t. decreases

**Multiple Choice**

1. a 6. c 11. c 16. a
2. b 7. b 12. b 17. b
3. c 8. d 13. a 18. c
4. a 9. c 14. a 19. a
5. d 10. a 15. d 20. d

**Short Answer**

1. Compression on the esophagus by a mass could lead to polyhydramnios because of gastrointestinal tract obstruction. Restriction of the trachea will lead to pulmonary hypoplasia and respiratory distress postnatally. Mass impression on the vena cava may compromise blood return to the fetal heart and lead to the development of fetal hydrops.

2. Diaphragmatic abnormalities are frequently left sided. Usually noted is the posterolateral herniation through the foramen of Bochdalek, retrosternal, anteromedial herniation through the foramen of Morgagni, protrusion of the bowel through the diaphragm (eventration), and complete uncommon absence of a diaphragm.

3. Partial or complete gastrointestinal obstruction, CDH, CCAM, and hydrodrops. Masses causing blockage can also include teratoma, cyst, lymphangioma, and meningocele.
### Image Evaluation/Pathology

1. The oblique view (image A) of this fetal abdomen demonstrates a considerably dilated bowel. Image B, of the superior abdomen, clearly shows bowel dilation. This was diagnosed prenatally as volvulus, which was confirmed after delivery.

2. The image demonstrates a transverse fetal abdomen in a prone position. Bilateral kidneys are displayed adjacent to the spine in the image near field. The renal pelvis of the kidney on the left side of the image measures 0.4 cm, as does the opposite renal pelvis. Note that neither the image nor the kidneys are labeled, so assigning situs is impossible from this view. A renal pelvis of 0.4 cm is considered a Grade I for fetal hydronephrosis.

3. This image reveals a transverse fetal abdomen with loops of bowel floating outside within amniotic fluid. The correct diagnosis is gastroschisis.

4. This fetal image shows an axial image of omphalocele with a central insertion of the umbilical vessels. The defect displays the fetal liver extending into the sac.

5. A subcutaneous edema is seen posterior to the fetal spine.

### Case Study

1. In the transverse view of the fetal head, a significant scalp edema is noted. A thorough examination of the entire fetus must be performed to determine a diagnosis.

2. The echogenic homogenous mass (arrow) within the posterior chest raises suspicion for pulmonary sequestration. A pulmonary sequestration is a solid, nonfunctioning mass of lung tissue contained within the pleural sac that lacks communication with the tracheobronchial tree and has a systemic arterial blood supply. The extralobar type either above or below the diaphragm has its own pleural sac and a systemic venous drainage and may mimic adrenal or abdominal organ masses.

<table>
<thead>
<tr>
<th>4. Omphalocele</th>
<th>Herniation of abdominal viscera into the base of the umbilical cord; liver involvement common</th>
<th>Complex membrane-enclosed sac; midline anterior wall defect continuous with umbilical cord; size varies with amount of involved viscera.</th>
<th>29% to 66% association with other anomalies</th>
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</thead>
<tbody>
<tr>
<td>Gastrochisis</td>
<td>Herniation of abdominal viscera through an off-midline defect in the abdominal wall, usually located just to the right of the umbilicus; liver involvement very unusual</td>
<td>Free-floating bowel loops not bound by a sac; normal umbilical cord insertion</td>
<td>Common: associated gastrointestinal anomalies Rare: anomalies of other systems</td>
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<tr>
<td>Umbilical cord hernia</td>
<td>Protrusion of a small amount of intestine at the umbilicus</td>
<td>Similar to omphalocele; covered by skin and subcutaneous tissue, usually less than 2 to 4 cm</td>
<td>Limited clinical significance Rare: associated anomalies</td>
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</table>

5. Even fetal temperature, biochemical homeostasis, development of the tracheobronchial tree, fetal growth, and movement.