

**STRUCTURAL BASIS OF MEDICAL PRACTICE**

**EXAMINATION II**

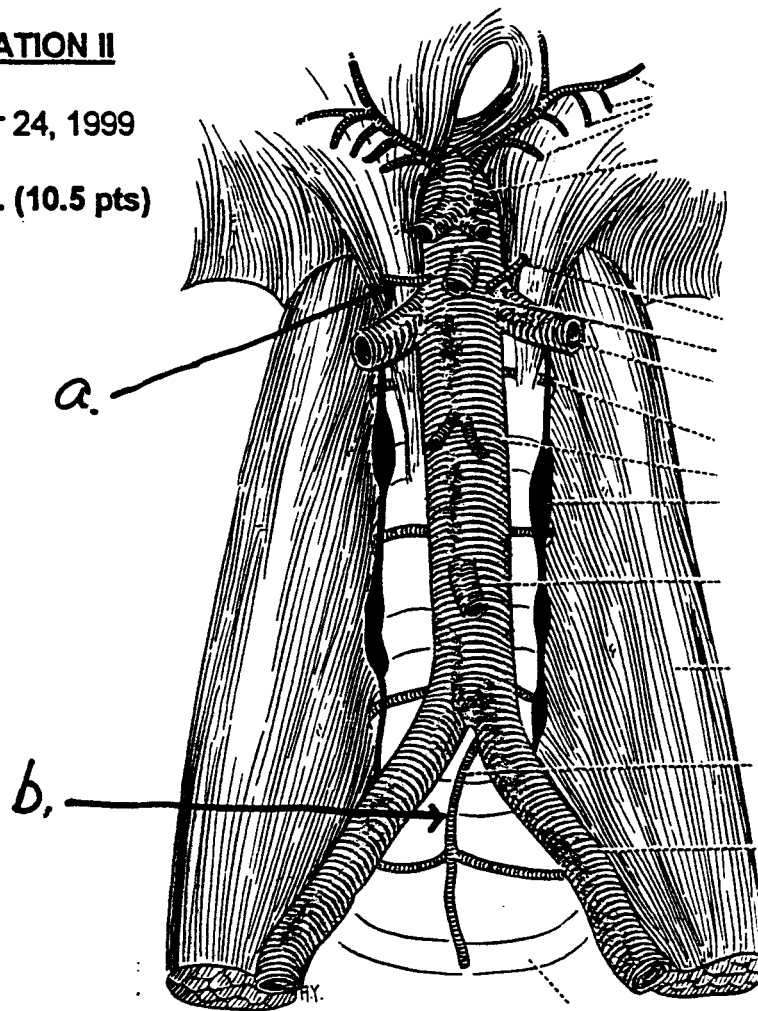
September 24, 1999

**PART I. Answer in the space provided. (10.5 pts)**

1. Identify the structures. (1 pt)

a. \_\_\_\_\_

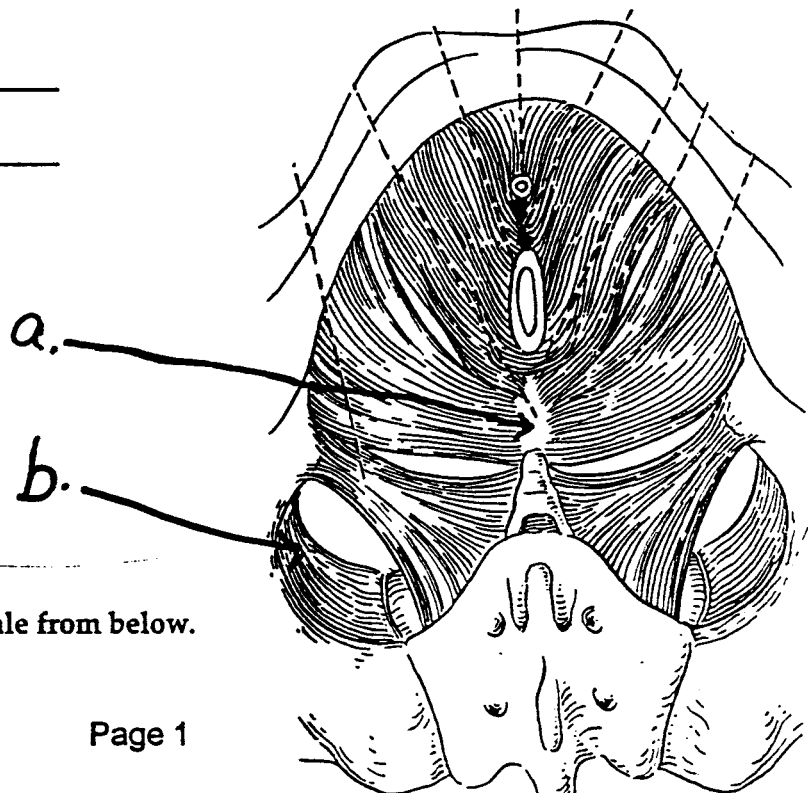
b. \_\_\_\_\_



2. Identify the structures. (1 pt)

a. \_\_\_\_\_

b. \_\_\_\_\_



**FIGURE 27-5.**  
The pelvic diaphragm of the male from below.

3. Identify the structures. (1.5 pts)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

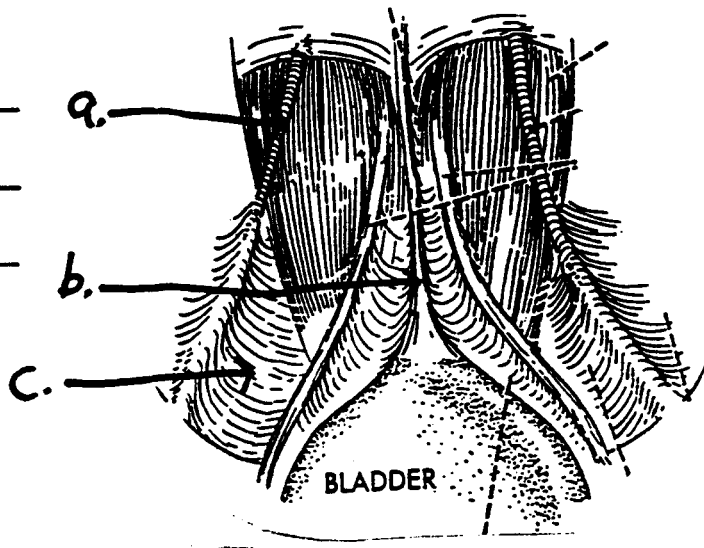


FIGURE 23-26.

View of the posterior surface of the lower part of the anterior abdominal wall, showing the structures that produce the folds and fossae related to the bladder and inguinal region.

4. Identify the structures. (1 pt)

a. \_\_\_\_\_

b. \_\_\_\_\_

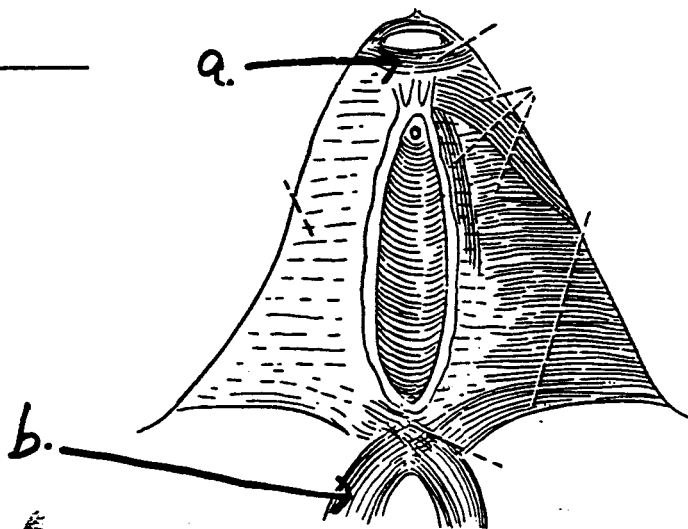


FIGURE 28-9.

The urogenital diaphragm of the female, from *below*.

5. Identify the structures. (1.5 pts)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

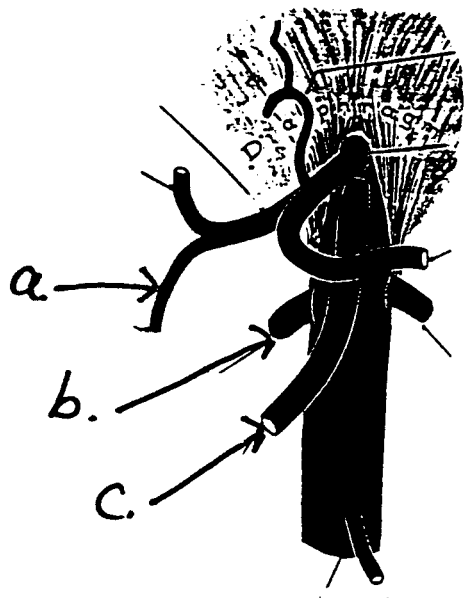


Figure 2.42. A, Branches of the abdominal aorta.

6. Identify the structures. (2 pts)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

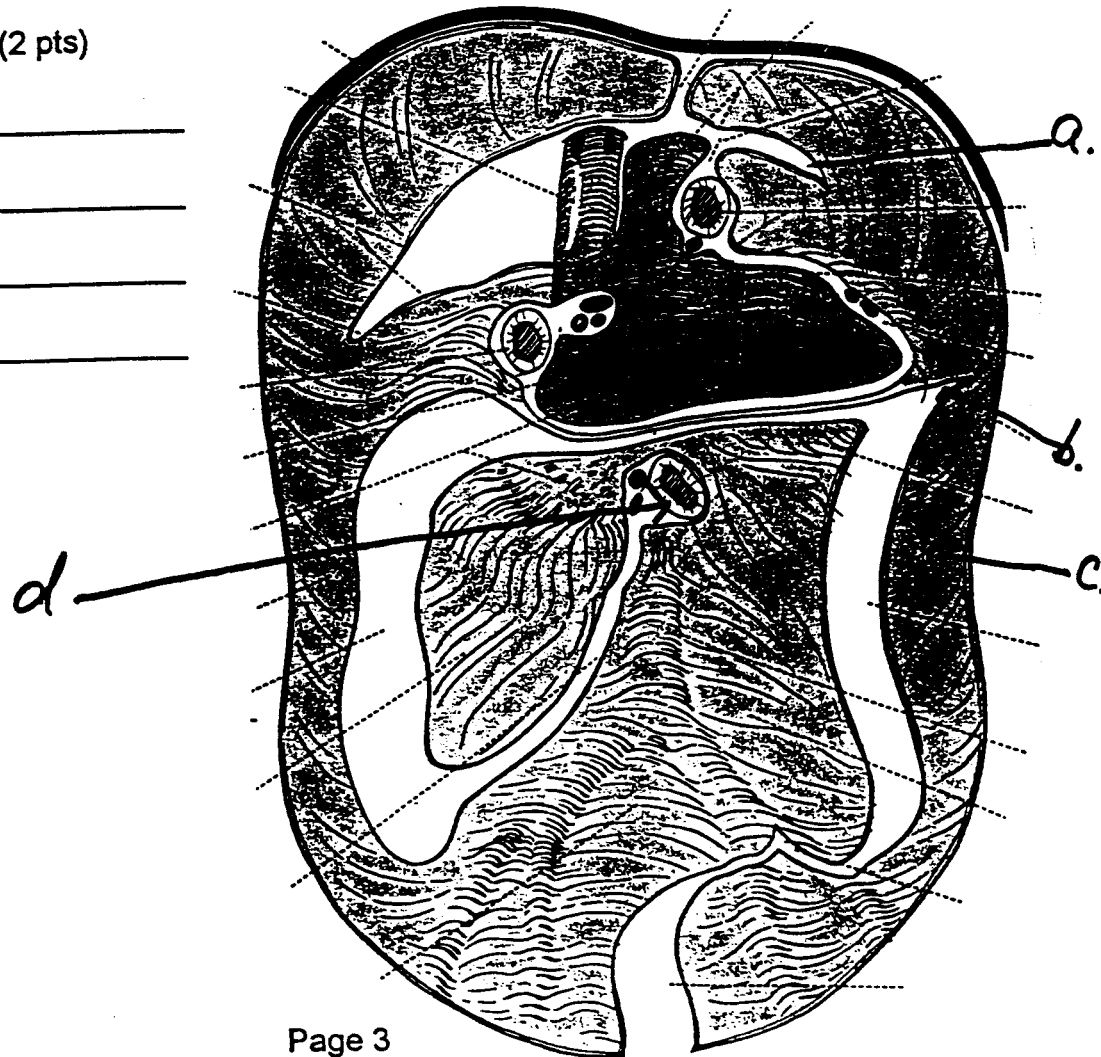
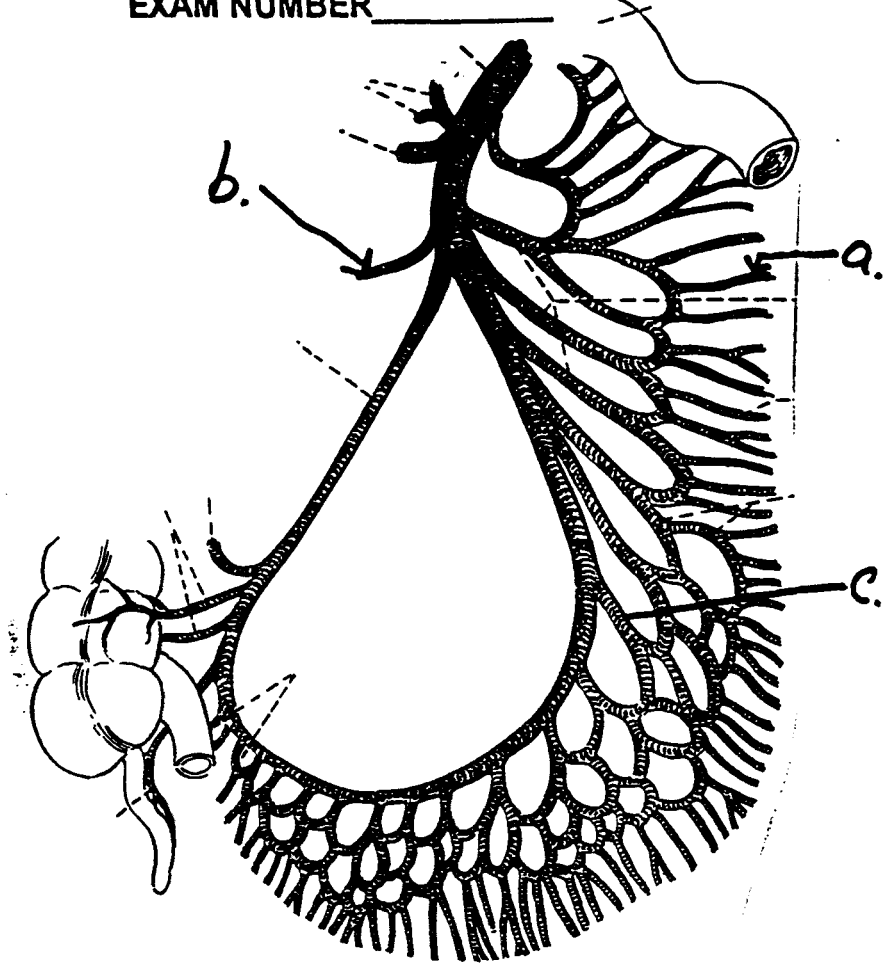


FIGURE 23-20. Peritoneal attachments to the posterior abdominal wall and the diaphragm

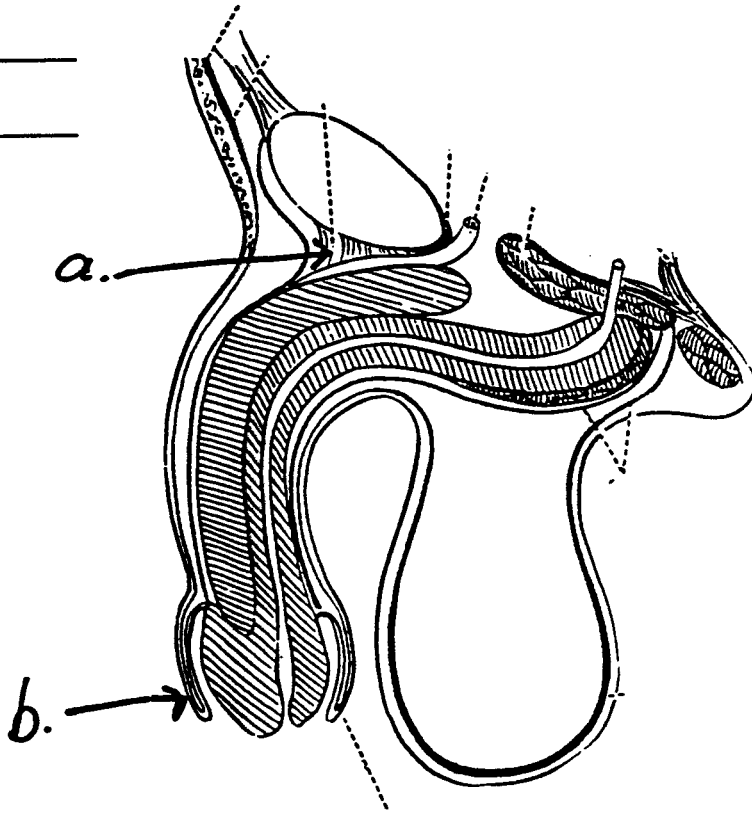
7. Identify the structures. (1.5 pts)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_



8. Identify the structures. (1 pt)

- a. \_\_\_\_\_
- b. \_\_\_\_\_



**Part II. Circle the one best answer. (2 pts)**

1. The human mesonephros, a transitory functional kidney, has largely degenerated by the \_\_\_\_\_ week.
  - a. fifth
  - b. sixth
  - c. seventh
  - d. eighth
  - e. ninth
  
2. A bicomuate uterus was diagnosed in a 20-year old patient who had been referred to a gynecologist on account of several miscarriages. This uterine anomaly results from
  - a. failure of fusion of the mesonephric ducts
  - b. failure of the sinovaginal bulbs to fuse
  - c. failure of fusion of the paramesonephric ducts
  - d. absence of the urogenital sinus
  - e. none of the above
  
3. The rostral and caudal neuropores usually close during the \_\_\_\_\_ week.
  - a. third
  - b. fourth
  - c. fifth
  - d. sixth
  - e. seventh

4. At birth, the caudal end of the spinal cord lies at the level of the \_\_\_\_\_ vertebra.
- a. third sacral
  - b. first sacral
  - c. third lumbar
  - d. first lumbar
  - e. twelfth thoracic

**Part III. Circle the correct answer. All, none, or some may apply. (33.5 pts)**

**1. With regard to hernias:**

- a. The neck of a direct inguinal hernia is located superior and medial to the pubic tubercle.
- b. The neck of a indirect inguinal hernia occurs inferior and lateral to the pubic tubercle.
- c. Abdominal contents of a descended direct inguinal hernia are contained in the processus vaginalis.
- d. Direct inguinal hernias occur medial to the conjoint tendon.
- e. Indirect inguinal hernias occur in the lateral inguinal fossa.

**2. With respect to the liver and gall bladder:**

- a. The caudate lobe is located between the ligamentum venosum and the gall bladder.
- b. The ductus venosus in the fetus shunts blood from the left (branch) portal vein to the left hepatic vein.
- c. The fundus of the gall bladder contains the spiral fold.
- d. The gall bladder is innervated by postganglionic sympathetic fibers from the superior mesenteric ganglia.
- e. In the lesser omentum the proper hepatic artery lies to the left of the common bile duct and anterior to the portal vein.

**3. The duodenum:**

- a. Has plicae circulares (circular folds) in all 4 parts (superior, descending, horizontal, ascending).
- b. The superior (first) part of the duodenum is the inferior border of the epiploic foramen of Winslow.
- c. The minor duodenal papilla is located superior to the greater duodenal papilla in the second (descending) part of the duodenum.

- d. The suspensory ligament (of Trietz) stabilizes the duodenojejunal flexure and is derived in part from connective tissue arising from the right crus of the diaphragm.
- e. Distention (aneurysm) at the origin of the superior mesenteric artery may compress the third (horizontal) part of the duodenum.

4. With respect to the pancreas:

- a. The dorsal pancreatic artery is situated medial to the great pancreatic artery.
- b. The tail of the pancreas enters the gastrolial ligament.
- c. The root of the transverse mesocolon attaches across the head of the pancreas.
- d. The pancreas develops from the union of a dorsal and a ventral primordium, and the ventral pancreatic duct forms the terminal portion of the chief pancreatic duct.
- e. The common bile duct descends posterior to the tail of the pancreas.

5. In regard to fascia:

- a. The parietal pelvic fascia is a condensation of the extraperitoneal layer from the abdomen.
- b. Scarpa's fascia (or a derivative) attaches to the posterior border of the urogenital diaphragm.
- c. Extravasation of urine may dilate the space between the tunica albuginea and Colle's fascia.
- d. The puboprostatic ligament is a condensation of visceral pelvic fascia.
- e. The superior fascia of the pelvic diaphragm is formed by the parietal peritoneum.

6. With regard to the nervous system:

- a. The nervi erigentes represents parasympathetic nerves from S2-4.
- b. The helicine arteries are constricted by the sympathetic nerves.
- c. Sacral sympathetic ganglia have both white and gray rami communicans.
- d. Stimulation of the parasympathetic nerves relaxes the pelvic diaphragm.
- e. The plevic parasympathetic nerves synapse in the inferior mesenteric ganglia.



**7. With regard to the nervous system:**

- a. The sympathetic innervation to the testes is by way of the lumbar splanchnics.
- b. Sacral splanchnic nerves originate from S2-4.
- c. Transection above S2-4 results in a automatic "cord" bladder.
- d. Peristaltic movement of the sigmoid colon is stimulated by the pelvic somatic efferents.
- e. Referred pain is a feature only of the autonomic nervous system.

**8. With respect to the diaphragm:**

- a. The right and left crus unite to form the median arcuate ligament.
- b. The right crus forms the esophageal hiatus.
- c. The right crus forms the inferior vena cava hiatus.
- d. The esophagus passes through the diaphragm at the level of T12.
- e. The trigone of the diaphragm, often referred to as the lumbocostal trigone, is located inferior to the lateral arcuate ligament (lumbocostal arch).

**9. With regard to the kidneys and suprarenal (adrenal) glands:**

- a. The renal fascia is a specialization of the transversalis fascia.
- b. The kidneys have the quadratus lumborum as a posterior boundary.
- c. The renal columns taper to form the renal papillae.
- d. The left suprarenal vein drains into the left renal vein.
- e. In general, the kidneys extend approximately from vertebral levels T12 to L3.

**10. With respect to the development of the gastrointestinal tract:**

- a. The phrenicocolic ligament is a derivative of the ventral mesentery.
- b. The superior mesenteric artery can be considered an axis of rotation of the gut.
- c. The gastrointestinal tract herniates into the umbilicus on week 5 and undergoes a 90 degree clockwise rotation.

- d. The right triangular ligament is a derivative of the dorsal mesentery.
- e. Meckel's diverticulum represents the remains of the vitelline artery.
- f. The anal membrane usually ruptures at the end of the seventh week.

11. With respect to the pelvis:

- a. The pelvic brim is defined in part by the sacral prominence and the pubic symphysis.
- b. The pelvic brim corresponds to the pelvic inlet.
- c. The correct orientation of the pelvis indicates that the posterior superior iliac spine and the pubic tubercles are in the same vertical plane.
- d. The pubic arch (subpubic angle) is wider in the female than male.
- e. The Cardinal ligaments are located in the false (greater) pelvis.

11. In the abdominal cavity:

- a. The posterior boundary of the epiploic foramen of Winslow is the inferior vena cava.
- b. The portal vein courses through the hepatoduodenal ligament (lesser omentum).
- c. The proper hepatic artery courses through the hepatoduodenal ligament (lesser omentum).
- d. The short gastric arteries are located in the gastrosplenic ligament.
- e. The hepatorenal recess is in the lesser sac (omental bursa).
- f. The sympathetic trunk passes deep to the medial lumbocostal arch (arcuate ligament).

12. With respect to the jejunum and ileum:

- a. The ileum is longer than the jejunum.
- b. The arcades of the ileum are more complex than that in the jejunum.
- c. The "windows" between the blood vessels in the ileum are more translucent (clearer) than in the jejunum.

- d. Lymphoid follicles termed Peyer's patches are formed in the submucosa of the ileum.
- e. The jejunum and ileum do not have tenia coli or haustra, but do have appendices epiploicae.

13. With respect to the pelvic cavity:

- a. The levator ani includes the coccygeus (ischiococcygeus) muscle.
- b. The internal pudendal artery exits the pelvic cavity superior to the coccygeus muscle.
- c. The superior gluteal artery commonly passes between the lumbosacral trunk and the first sacral nerve.
- d. The fascia of Denonvillier is derived from the transversalis fascia.
- e. The levator ani forms a major part of the urogenital diaphragm.
- f. The lateral sacral arteries are branches of the anterior division of the internal iliac artery.

**Part IV. Answer in the space provided (including the back of the page and additional pages for each question). (54 pts)**

1. While serving as a resident in emergency medicine, a 50-yr old female is admitted with severe pains in the abdomen. Taking a history and physical, the patient reports vomiting what appeared to be coffee grounds; emesis (vomiting) of precipitated blood clots rendered black by the action of gastric acid indicates a hemorrhage of the upper gastrointestinal tract. A diagnosis of carcinoma of the pyloric region is made, and the patient is designated for an immediate partial resection of the stomach. At morning conference the day following the operation, you are asked to review the structure of the stomach. Include the anatomy of the stomach, supporting elements, vasculature, lymphatic drainage, innervation (e.g., preganglionic, postganglionic, pathways), and relationship to surrounding structures. (15 pts)

2. A 75-yr male comes into the clinic with anorectal trauma, and you make the diagnosis of a perforation of the rectum by a foreign object (in this case a chicken bone that was passed along the gastrointestinal tract). Prior to operation, you review the structure of the rectum. **Include the anatomy of the rectum, relationships to peritoneum and surrounding structures, innervation (e.g., preganglionics, postganglionics, pathways), vasculature, and lymphatic drainage in your response. What structures can be palpated upon rectal examination. (12 pts)**

3. A 55-yr old female returns to the clinic with a bulge in the anterior abdominal wall. A week earlier, the patient had a laporatomy (exploratory surgery) because of complaints of pain in the abdominal cavity. You diagnose that the patient has an incisional hernia, with a protrusion of organs and tissues through a surgical incision due to improper healing of the anterior abdominal wall. **Discuss the organization of the anterior abdominal wall, and include muscles, ligaments, fascia, fascial specializations, nerves, and vascular supply. Do not include the inguinal region in your answer. (12 pts)**

4. The extremely vascular vestibular bulbs in the female perineum often bear the trauma of pressure exerted by the fetus during parturition. The bulbar tissues are occasionally torn as a result of fetal pressure or secondary to obstetric manipulations. As a consequence, considerable bleeding into the superficial pouch (space) may occur. **Discuss the organization of the female perineum (including external genitalia), with special attention paid to the superficial/lesser pouch (space). Include vascularization, lymphatic drainage, innervation (e.g., autonomics, somatics), structures, and relationships. (15 pts).**