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STRUCTURAL BASIS OF MEDICAL PRACTICE
EXAMINATION 3

September 23, 2004

PART I. Answer in the space provided. (8 pts)

1. Identify the structures. (1.5 pts)

a. Proper hepatic artery

b. Anterior superior pancreaticoduodenal artery

c. Superior mesenteric vein

2. Identify the structures. (1.5 pts)

a. Medial lumbocostal arch (medial arcuate ligament)

b. Quadratus lumborum

c. Lateral femoral cutaneous nerve

3. Identify the structures. (1.5 pts)

a. Annococcygeal raphe _____

b. (Ischio)Coccygeus muscle _____

c. Piriformis muscle _____

4. Identify the structures. (1.5 pts)

a. Internal iliac artery _____

b. Vaginal artery _____

c. Internal pudendal artery _____

5. Identify the structures. (2 pts)

a. Vestibular bulb

b. Deep artery of clitoris

c. Inferior fascia of the U.G. diaphragm

d. External anal sphincter

Part II. Circle the correct answer. All, none, or some may apply. (18 pts)

1. In regard to the nervous system of the abdomen, pelvis, and perineum:
 - a. Transection of the spinal cord at S2-4 allows for an "autonomous (neurogenic)" bladder.
 - b. The ischiocavernosus muscle is skeletal and innervated by the somatic nervous system.
 - c. The puborectalis muscle is innervated by the pelvic splanchnic nerves and sympathetic fibers from the lumbar splanchnics.
 - d. The sphincter urethra raises the pelvic diaphragm to close off the urethra at the uvula.
 - e. Pelvic splanchnic nerves stimulate peristaltic movement in the descending colon.
 - f. The external anal sphincter muscle must be stimulated to contract for defecation.
 - g. The "nervi erigentes" refers to somatic afferent fibers traveling in the pudendal nerve.
 - h. The sympathetic trunks converge on the anterior surface of the coccyx in the ganglion impar.

2. With regard to the kidneys and suprarenals:
 - a. The pararenal fat is derived from the extraperitoneal connective tissue.
 - b. The minor calyx drains directly into the renal pelvis.
 - c. The renal arteries are derived from the aorta superior to the testicular arteries.
 - d. The inferior suprarenal artery is derived from the renal artery.
 - e. The renal veins are located anterior to the renal arteries at the hilum of the kidney.
 - f. The sympathetic nerve innervation of the suprarenal gland is the greater splanchnic nerve.

3. With respect to the abdomen:

- a. At week 10, the stomach undergoes a 270 degree clockwise rotation.
- b. Meckel's diverticulum is located in the jejunum.
- c. Vasa recta of the jejunum and ileum are derived from the marginal artery.
- d. The splenic artery courses in part through the lienorenal ligament.
- e. The sigmoidal arteries are located in the sigmoid mesocolon, a derivative of the dorsal mesentery.
- f. According to internal morphology (e.g., vasculature), the quadrate lobe is part of the left lobe of the liver.
- g. The hepatorenal recess is part of the greater sac.
- h. The gastroduodenal ligament is derived from the ventral mesentery.
- j. The left medial umbilical ligament represents the left umbilical artery in the fetus.
- k. The fundus of the stomach is vascularized by the short gastric arteries.
- l. In portal hypertension, blood flow from the superior rectal vein to the middle and inferior rectal veins may occur, resulting in hemorrhoids.
- m. Pain in the appendix may be referred to the umbilical region by way of T10.

4. In regard to the pelvis and perineum:

- a. Hemorrhoids above the pectinate line are painful because they involve somatic pain fibers.
- b. The arcus tendineus is formed by a condensation of the visceral pelvic fascia.
- c. The deep transverse perineal muscle is situated within the urogenital diaphragm.
- d. The coccygeus (ischiococcygeus) muscle is part of the pelvic diaphragm.
- e. The suspensory ligament of the penis is derived from Scarpa's fascia.
- f. The round ligament (ligament teres) of the uterus is derived from the gubernaculum.

- g. The middle one-third of the rectum has peritoneum on the anterior and lateral surfaces.

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- h. The perineal branch of the pudendal nerve is located in the deep pouch and forms the anterior scrotal nerves.

- i. The mesosalpinx is part of the broad ligament.

- j. The uterus is normally in an anteflexed and anteverted position.

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Part III. Indicate your understanding (characteristics, importance, function, relationships, boundaries and/or contents) of the following. Answer in the space provided. (26 pts)

1. Puborectalis muscle. (4 pts)

2. Pelvic splanchnic nerves and their contribution to the innervation of the hindgut (include pathways). (6 pts)

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3. Posterior fornix. (4 pts)

4. Renal fascia. (4 pts)

5. Marginal artery. (4 pts)

6. Mesovarium (structure, contents). (4 pts)

Part IV. Answer in the space provided (including the back of the page or the additional page for each question). (48 pts)

1. A 45-yr old female is brought to the emergency room after a car accident. She complains of severe abdominal pain, and you suspect that the 2nd part of the duodenum has been traumatized. In preparation for surgery to further investigate the problem, you are asked to review the structure of the 2nd part of the duodenum. **Present the anatomy of the 2nd part of the duodenum; include structure, relationships, innervation (sensory and motor), vasculature, and lymphatics.** (12 pts).

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2. A 40-yr old male presents to your clinic with a perianal abscess that occupies the ischioirectal fossa. At grand rounds, you are requested to **present a comprehensive review of the ischioirectal fossa. Include boundaries, fascial specializations, relationship to the superficial and deep pouches, and provide explanation why infections in the ischioirectal fossa do not enter the superficial or deep pouches.** (12 pts)

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3. A 21-yr old male is rushed to the emergency room with a gun shot wound that enters through the anterior abdominal wall. In preparation for surgery, you review 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)**

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4. A 25-yr old male weight lifter complains of a bulge that is visible and palpable in the groin. Your evaluation concludes that this patient has an indirect inguinal hernia. **Present a detailed account of the spermatic cord that includes contents, coverings, fascial boundaries, relationships, vasculature, innervation, and lymphatics. Discuss the pathway and location of an indirect inguinal hernia that descends into the scrotum.** (12 pts)

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