

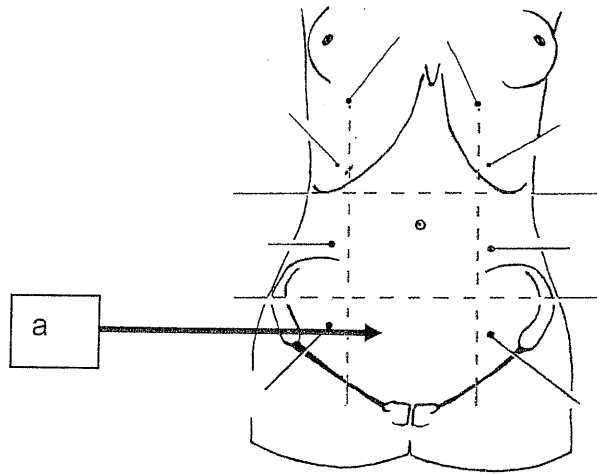
**STRUCTURAL BASIS OF MEDICAL PRACTICE**  
**EXAMINATION 3**

September 22, 2008

**PART I. Answer in the space provided. (6 pts)**

1. Identify the region. (0.5 pt)

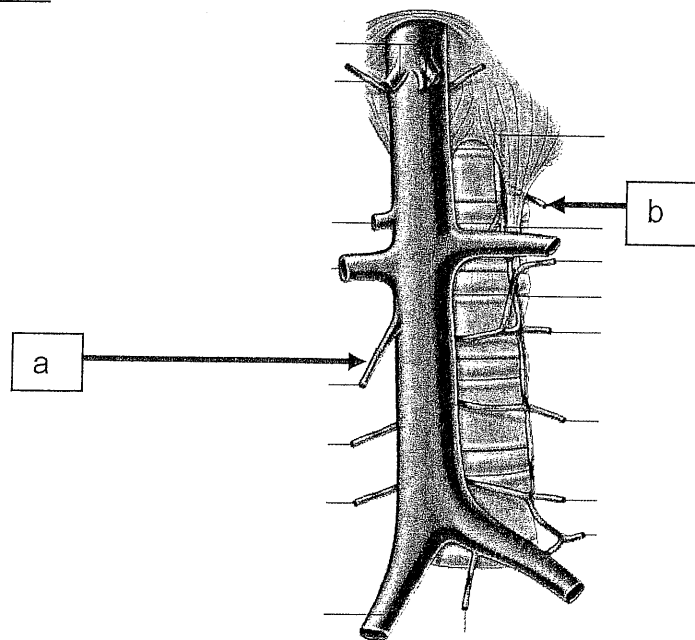
a. \_\_\_\_\_



2. Identify the veins. (1 pt)

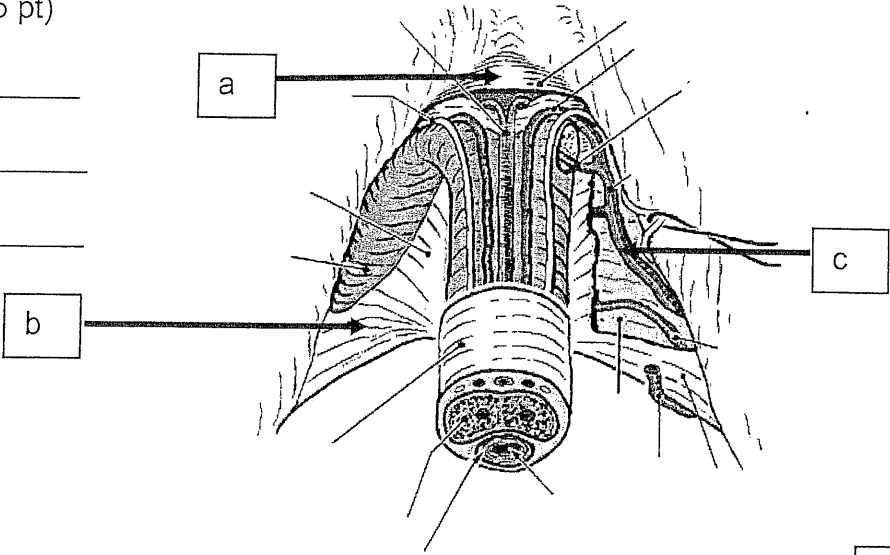
a. \_\_\_\_\_

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



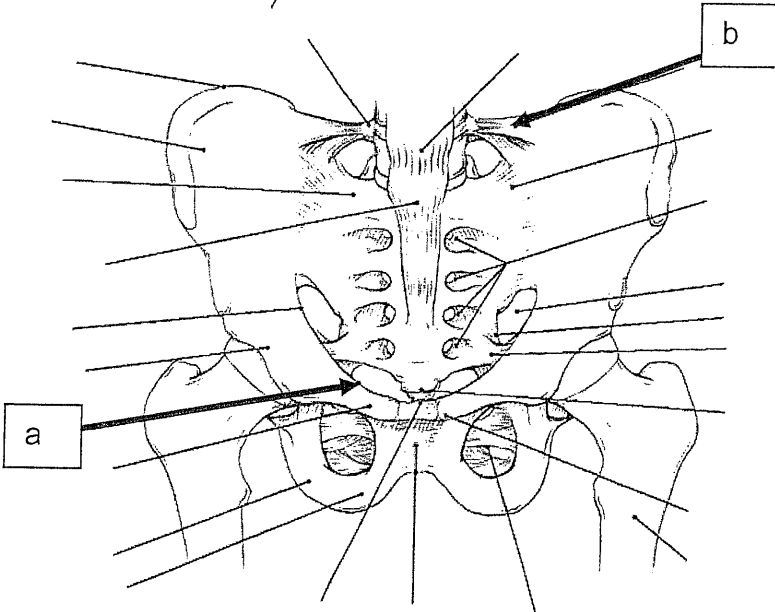
3. Identify the structures. (1.5 pt)

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



4. Identify the structures. (1 pt)

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

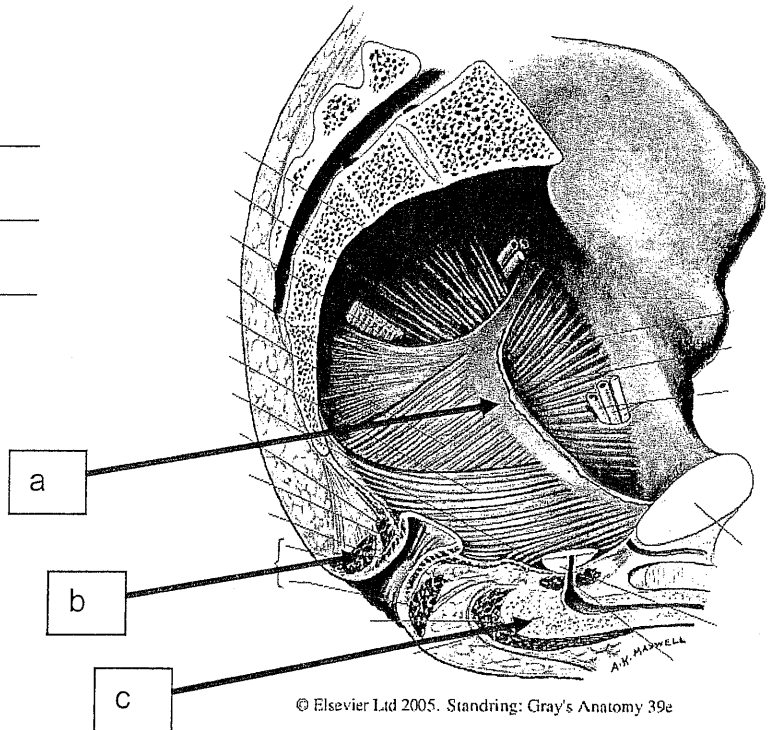


5. Identify the structures. (1.5 pts)

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

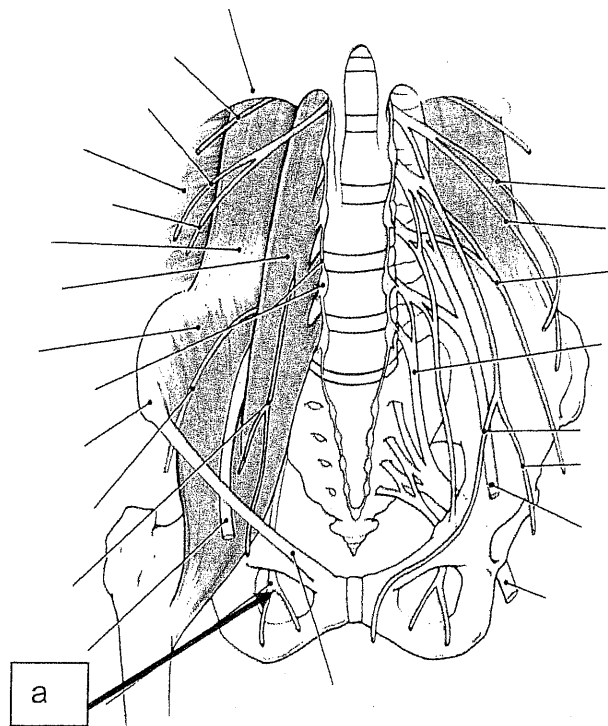
b. \_\_\_\_\_

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



6. Identify the structure. (0.5 pt)

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



**Part II. Circle the correct answer. All, none, or some may apply. (36 pts)**

1. With respect to the inguinal region:

- a. Direct inguinal hernias occur medial to the inferior epigastric artery and can descend into the scrotum where they are located between the parietal and visceral layers of the tunica vaginalis.
- b. Inguinal hernias occur superior and lateral to the pubic tubercle.
- c. The iliohypogastric nerve lies superior to the ilioinguinal nerve.
- d. The transversus abdominis muscle has part of its origin from the lateral one-third of the inguinal ligament.
- e. The deep inguinal ring refers to a finger-like diverticulum of the external spermatic fascia.
- f. The cremaster artery arises from the umbilical artery.
- g. The scrotal ligament is a remnant of the gubernaculum.
- h. The testis is innervated in part by the vagal parasympathetic nervous system.

2. In regard to the abdominal vasculature and nerves:

- a. The proper hepatic artery courses through the hepatoduodenal ligament.
- b. The inferior mesenteric ganglia are located at the level of L3
- c. The middle colic artery contributes blood to the marginal artery.
- d. The first part of the duodenum lies inferior to the superior pancreaticoduodenal artery.
- e. The dorsal pancreatic artery is located posterior to the tail of the pancreas.
- f. The ileocolic artery is located in the mesentery.
- g. The superior mesenteric vein crosses the 3rd part of the duodenum and the uncinata process of the pancreas.
- h. The superior rectal artery is the continuation of the sigmoidal arteries to vascularize the rectum.

3. With respect to the liver, duodenum, and pancreas:

- a. The anterior layers of the coronary ligament is a derivative of the ventral mesentery.

- b. According to internal morphology, the quadrate lobe and part of the caudate lobe belong to the right lobe of the liver.
  - c. The lesser omentum extends from the stomach and first part of the duodenum to the porta hepatis and fissure for the ligamentum teres.
  - d. The gastroduodenal artery, the common bile duct, and the portal vein lie anterior to the 1st part of the duodenum.
  - e. The transverse colon lies ventral to the 2nd part of the duodenum.
  - f. The root of the intestinal mesentery begins at the duodenojejunal flexure.
  - g. The accessory pancreatic duct is derived from the ventral pancreas.
  - h. Ileum comes from the Latin and means "empty", and jejunum means "twisted".
  - i. The superior mesenteric and splenic veins unite to form the portal vein posterior to the neck of the pancreas.
  - k. Part of the tail of the pancreas lies within the gastrosplenic ligament.
4. In regard to the kidneys, suprarenal glands, and abdominal nerves:
- a. The renal fascia is a derivative of the transversalis fascia.
  - b. Perirenal fat lies in the renal sinus.
  - c. The central vein of the right suprarenal gland drains into the inferior vena cava.
  - d. All but the inferior surface of the suprarenal glands are enclosed by renal fascia.
  - e. Parasympathetic innervation of the left colic flexure is by the vagal nerve.
  - f. The kidneys receive sympathetic nerve innervation by the lumbar splanchnic nerves.
  - g. The appendix is innervated by somatic nerves from spinal nerve T10.
  - h. Sympathetic trunk ganglia at L4 have gray but no white rami communicans.
  - i. The intermesenteric plexus receives contributions from the pelvic splanchnic nerves.
  - j. Both the lumbar splanchnic and pelvic splanchnic nerves contain pre-ganglionic nerve fibers.

5. With respect to the perineum:

- a. The deep transverse perineus muscle lies anterior (inferior) to the superior fascia of the U.G. diaphragm.
- b. The bulbourethral glands in the male are homologous to the greater vestibular glands in the female and both glands reside in the superficial pouch/space.
- c. The perineal membrane (inferior fascia of the U.G. diaphragm) is parietal pelvic fascia.
- d. The superior fascia of the pelvic diaphragm is a condensation of parietal visceral fascia.
- e. The ischiorectal fossa and superficial pouch are continuous at the posterior border of the U.G. diaphragm.
- f. Scarpa's fascia is a specialization of the tela subcutanea in the ischiorectal fossa.
- g. The membranous urethra of the female is in the deep pouch/space.
- h. The deep dorsal vein of the penis lies deep to Buck's fascia on the dorsal surface of the corpora cavernosa penis.
- i. The fusion of the superior and inferior fascia of the U.G. diaphragm at the anterior margin of the U.G. diaphragm is the transverse perineal ligament.
- j. Extravasation of urine into the superficial pouch by damage of the spongy urethra can course into the anterior recess of the ischiorectal fossa.

6. With respect to the pelvic anatomy:

- a. The levator ani consists of the puborectalis, ischiococcygeus, and iliococcygeus muscles.
- b. The iliococcygeus muscle forms the "puborectal sling".
- c. The iliac fossa is part of the false/greater pelvis.
- d. The male (true) pelvis has an "inlet" that is "heart-shaped".
- e. In weight distribution involving the pelvis, weight passes from the 5th lumbar vertebrae to the base of the sacrum, and then to the sacrotuberous joint.
- f. The posterior fascial wall of the prostate gland is termed the "Fascia of Denonvillier's" which is derived from the pelvic visceral fascia.
- g. The seminal colliculus is medial to the utricle.

- h. The lower third of the rectum is devoid of peritoneum.
- i. There are 2 left transverse rectal folds but only 1 right transverse fold.
- j. The anal canal lies above (superior) to the pelvic diaphragm.
- k. The middle rectal artery drains into the internal iliac artery.
- l. Hemorrhoids below the pectinate line involve the superficial inguinal lymph nodes and have somatic nerve innervation.

7. In regard to the pelvic nerves and vessels:

- a. The iliacus muscle is innervated by the obturator nerve.
- b. An autonomous/neurogenic bladder results when spinal cord transection occurs superior to S2-4.
- c. Defecation involves reflex arcs of the parasympathetic and vagal sympathetic nerves.
- d. The "nervi erigentes" refers to the pelvic splanchnic nerves (S2-4).
- e. The pelvic splanchnic nerves are responsible for parasympathetic innervation of the descending colon, and synapse in the inferior hypogastric ganglion.
- f. The anterior scrotal nerves are part of the innervation of the scrotum and consist of the ilioinguinal and genitofemoral nerves.
- g. The right and left sympathetic trunks converge inferiorly and terminate anterior to the coccyx in the ganglion impar.
- h. The helicine arteries are stimulated to dilate by visceral afferent nerves of the parasympathetic nervous system.

8. "This and that":

- a. The suspensory ligament of the penis is a continuation of the median septum of the membranous layer of the superficial fascia attached to the linea alba.
- b. The inferior fascia of the thoracic diaphragm is provided by the transversalis fascia.
- c. The thoracic duct passes from the abdomen to the thorax at the level of T12.
- d. The greater splanchnic nerve pass from the thorax to the abdomen through the aortic hiatus.

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- e. The testicular arteries arise from the aorta inferior to the middle suprarenal arteries.
- f. The periphery of the diaphragm has motor innervation by the phrenic nerve.



EXAM NUMBER \_\_\_\_\_

**Part III. Indicate your understanding of the following. Answer in the space provided. (11 pts)**

1. Renal fascia.(4 pts)

2. Right paracolic gutter. (3 pts)

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3. Pelvic splanchnic nerves. (4 pts)

EXAM NUMBER \_\_\_\_\_

Part IV. Indicate your understanding of the following. Answer in the space provided. (11 pts)

1. Left renal vein. (4 pts)

2. Medial umbilical ligament. (3 pts)

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3. Perineal body. (4 pts)

**Part V. Answer in the space provided (including the back of the page or the additional pages for each question). (36 pts)**

1. A 69-year old Biochemistry professor has been complaining of abdominal pain for the past month. Following a series of tests that proved unremarkable in revealing a diagnosis, a laparotomy is scheduled to investigate her abdominal cavity for signs of disease. Prior to surgery you are part of a team asked to review the case at Surgical Grand Rounds. Your responsibility is to: **Define the origin(s), insertion(s), and relationships of the external abdominal oblique muscle, including any aponeurotic/derivations/ligamentous terminations. Discuss the innervation, vasculature, and lymphatics of this muscle. (12 pts)**

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2. A 42-year old male is brought by ambulance to the emergency department after falling from a roof while painting. You evaluate the patient and given the trauma and method of injury you suspect bleeding from the internal pudendal artery. You consult the vascular surgery team for repair. While assessing the patient in the Emergency Department the vascular surgeon asks you to review the case with him. **Discuss the course and branches of the internal pudendal artery in the pelvis, gluteal region, and perineum. Please include anatomical relationships of the artery, fascial layers involved, as well as spaces/recesses encountered by the internal pudendal artery and its branches. (12 pts)**

3. A 56-year old male presents to your office with pain in the perineum. He has noted swelling in the area and some purulent drainage (pus), but cannot see the area due to his poor vision from diabetes mellitus. Upon examination a severe infection of the perineum is noted, consistent with "Fournier's gangrene". The patient is admitted to the hospital for emergent surgical debridement of the tissue. During this surgery, extensive dissection of the pelvic diaphragm will occur. Since the pelvic diaphragm is responsible for maintaining the position of pelvic organs and acts as a support of the abdominopelvic cavity, this is very delicate surgery. Before this patient goes to the operating room you review the case. **Discuss the anatomy of the pelvic diaphragm. Include structure, fascial coverings, spaces, vascularization, lymphatic drainage, innervation, and relationships. (12 pts)**