

**Graduate Anatomy 503**  
**EXAMINATION 3**

October 13, 2017

**PART I. Answer in the space provided. (16 pts)**

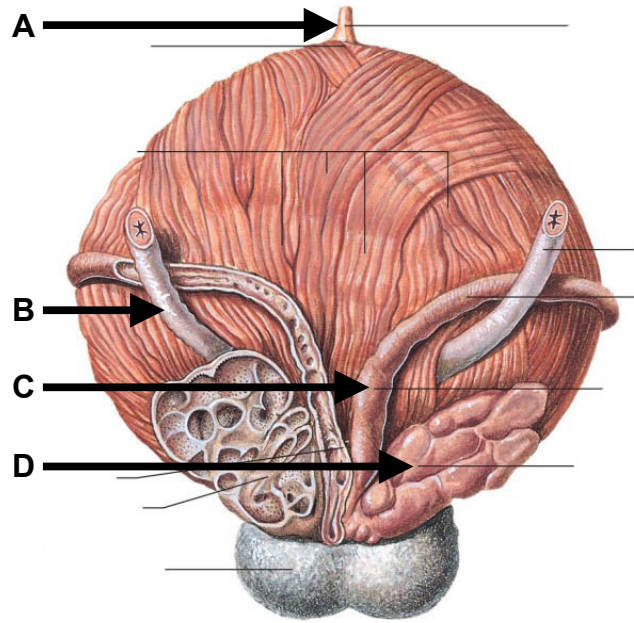
1. Identify the structures. (2 pts)

A. \_\_\_\_\_

B. \_\_\_\_\_

C. \_\_\_\_\_

D. \_\_\_\_\_



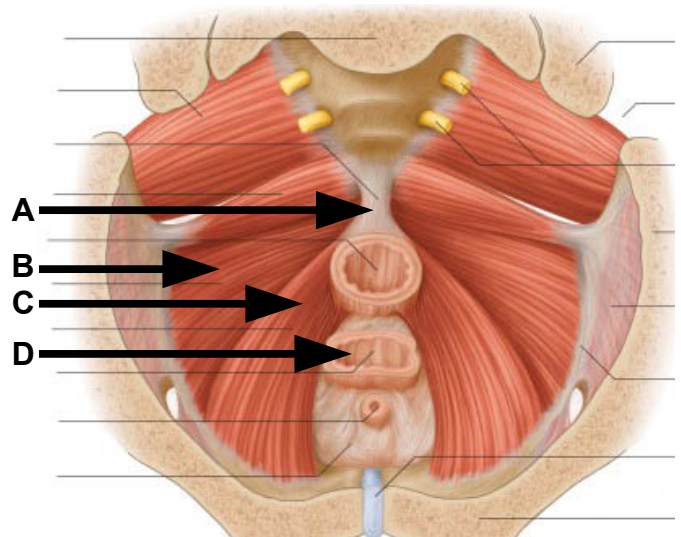
2. Identify the structures. (2 pts)

A. \_\_\_\_\_

B. \_\_\_\_\_

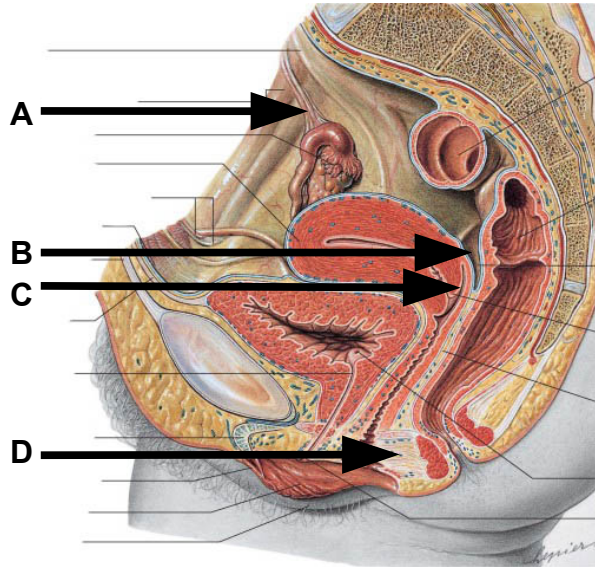
C. \_\_\_\_\_

D. \_\_\_\_\_



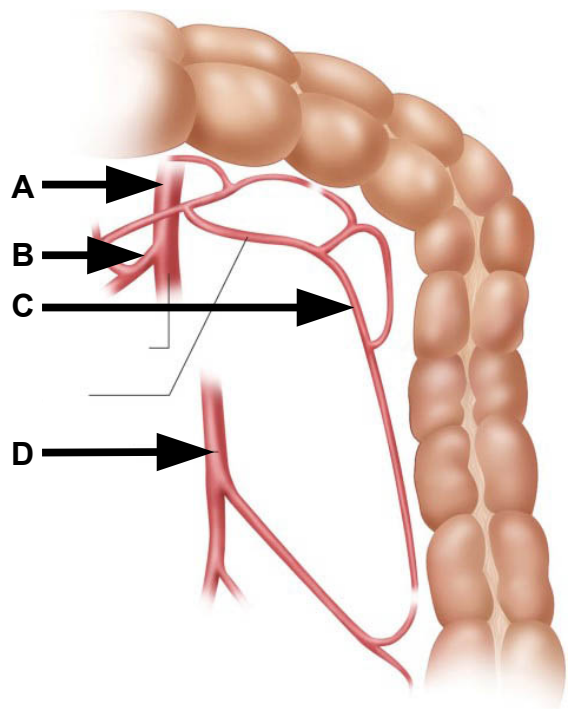
3. Identify the structures. (2 pts)

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_



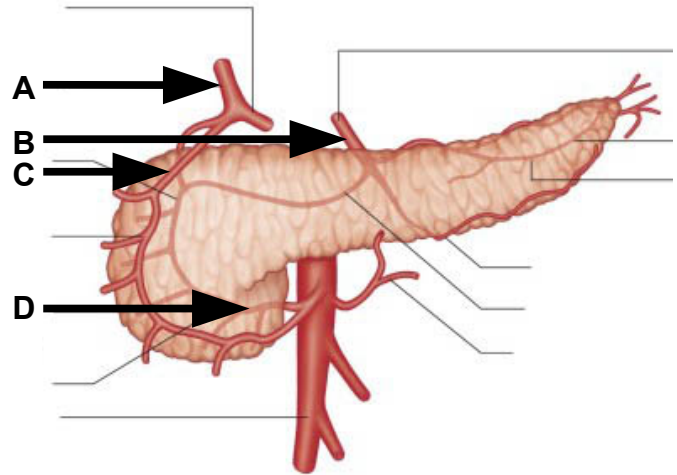
4. Identify the structures. (2 pts)

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_



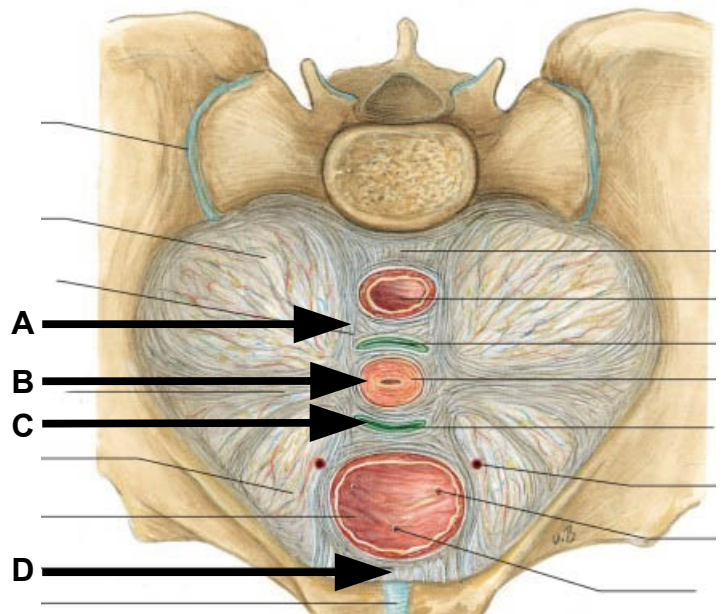
5. Identify the structures. (2 pts)

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_



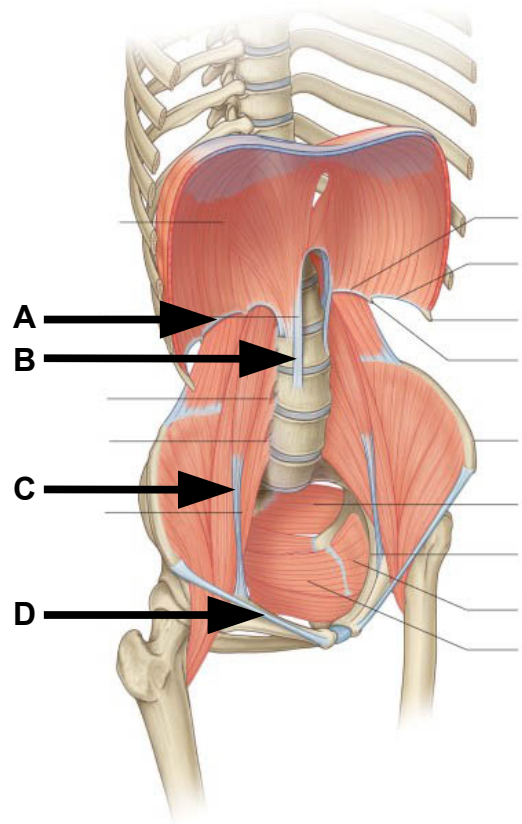
6. Identify the structures. (2 pts)

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_



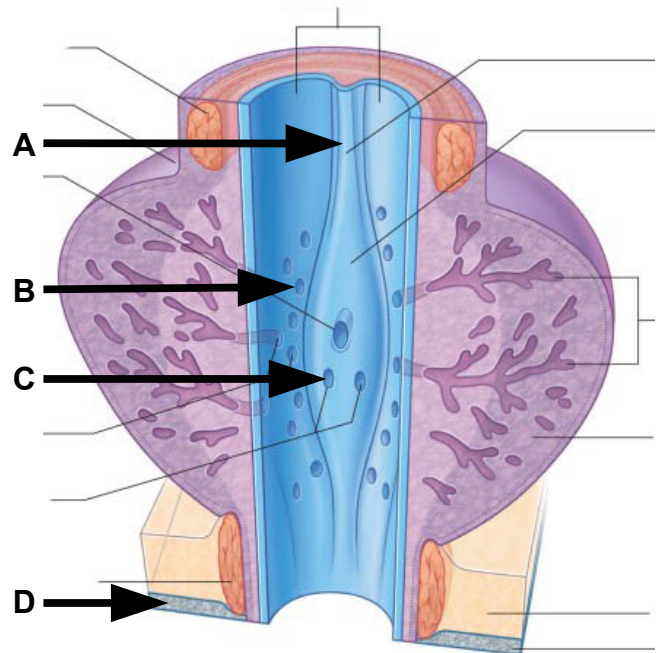
7. Identify the structures. (2 pts)

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_



8. Identify the structures. (2 pts)

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_



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

1. With regard to anterior abdominal wall and inguinal canal:
  - a) Inferior to the arcuate line, the rectus abdominis muscle is in contact with extraperitoneal connective tissue.
  - b) The umbilicus is at the L3 vertebral level and the T10 dermatome level.
  - c) The external oblique muscle contributes to the inguinal, reflected inguinal, pectineal, and lacunar ligaments; to the medial, lateral, and intercruar crural fibers; and to the conjoint tendon.
  - d) The inferior free edge of the transversus abdominis muscle passes superior to the deep ring.
  - e) Each of the three digastric muscles that make up the anterior abdominal wall contribute a tunic to the spermatic cord.
  - f) Metastatic disease from the inferior pole of the ovary may follow a lymphatic pathway through the inguinal canal and then to the superficial inguinal lymph nodes.
2. With regard to the abdominal cavity and vasculature:
  - a) The celiac artery supplies blood to the foregut, diverticula of the foregut, and to the spleen.
  - b) The middle and left colic arteries anastomose along the alimentary canal at a location that marks the transition from midgut to hindgut.
  - c) Lymphatic drainage from the duodenal cap is to the inferior mesenteric nodes.
  - d) Lymphatic drainage from the fundus of the stomach is to the superior mesenteric nodes.
  - e) The superior anterior and posterior pancreaticoduodenal arteries anastomose with the inferior anterior and posterior pancreaticoduodenal arteries at a location along the alimentary canal that marks the transition from foregut to midgut.
  - f) Lymphatic drainage from the descending colon is to the inferior mesenteric nodes.
3. With regard to the liver, duodenum, pancreas, and posterior abdominal structures:
  - a) The caudate lobe of the liver provides the posterior boundary of the epiploic foramen.
  - b) The inferior vena cava passes through the bare area of the liver and provides the anterior boundary of the epiploic foramen.
  - c) The falciform ligament is a visceral ligament that contains a fibrous ligament and the paraumbilical veins.
  - d) Blood from the portal system normally passes through the liver before draining into the inferior vena cava by way of the hepatic veins.
  - e) The ligament venosum extends from the portal vein to the left hepatic vein.
  - f) The common bile duct is joined by the accessory pancreatic duct to form the ampulla of Vater.

4. With regard to the pelvic viscera and perineum:
- a) The retropubic space provides surgical access to the pubovesical ligament without the need to enter the peritoneal cavity.
  - b) The seminal vesicle lies posterior to the bladder and medial to the ampulla of the vas deferens.
  - c) The vesicouterine pouch is a subperitoneal space posterior to the bladder and anterior to the uterus.
  - d) The rectovesical pouch is unique to the male.
  - e) Periprostatic fascia is thickened at the posterior prostate and, at this location, is known as the fascia of Denonvilliers.
  - f) Lymphatic channels passing through the broad ligament communicate with upper lumbar nodes and superficial inguinal nodes.
5. With regard to the pelvic diaphragm and anal region:
- a) The ischiococcygeus (coccygeus) takes origin from the internal surface of the sacrospinous ligament.
  - b) The puborectalis muscle is inferior to the pubococcygeus muscle.
  - c) The perivisceral fascia of the rectum is opposed to the fascia of Denonvilliers.
  - d) Internal hemorrhoids, more so the external hemorrhoids, may develop during portal hypertension.
  - e) The arcus tendineus is a specialization of the obturator externus muscle that provides a site of attachment for the iliococcygeus muscle.
  - f) Contraction of the ischiococcygeus raises the pelvic floor.
6. With regard to the pelvic nerves and vessels:
- a) A transection of the spinal cord at the S2 cord level preserves the spinal reflexes of micturition.
  - b) The cavernous nerves are a continuation of fibers from the sacral splanchnic nerves.
  - c) Sectioning of the hypogastric nerves to disrupt visceral afferent fibers removes all sympathetic supply to the uterus.
  - d) Disruption of the pelvic splanchnic nerves is expected to cause impotence.
  - e) The falciform edge is on the medial margin of the ischial tuberosity and contributes a bony contribution to the pudendal canal.
  - f) The sympathetic supply to the descending colon is by an arterial path and the parasympathetic supply is by a retroperitoneal path along the medial margin of the descending colon.

**Part III. Indicate your understanding of the following. (30 pts)**

1. Indirect inguinal hernias may occur after the processus vaginalis fails to close during development. **Define the anatomical pathway of an indirect inguinal hernia. (6 pts)**

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



2. Cirrhosis of the liver causes portal hypertension. **Discuss the anatomical basis for esophageal varices. (6 pts)**

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

3. Gastrointestinal motility is modulated along the alimentary canal. **Define the ligament of Treitz. (6 pts)**

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

4. A varicocele is caused by venous engorgement of the pampiniform venous plexus. **Define the pampiniform venous plexus and the conditions that may lead to a varicocele. (6 pts)**

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

5. Gall stones of the biliary system may cause blockages. **Explain the symptoms that predict blockages of the cystic duct, common hepatic duct, common bile duct, and ampulla of Vater.**

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



**Part IV. Answer in the space provided. (36 pts)**

- 1. Peptic ulcer disease may erode the posterior wall of the stomach. Stomach contents spill into the lesser sac. Define the boundaries (including spaces and/or recesses) of the lesser sac. Account for dull pain followed by sharp pain when the posterior stomach wall perforates. Discuss the pathway of spilled stomach contents that pass from the lesser sac into the greater sac, and the location of these contents with respect to body position. (12 pts)**

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

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

2. Catheterization of the urinary bladder may tear the membranous urethra and the inferior fascia of the urogenital diaphragm. **Discuss the boundaries of Scarpa's fascia and its derivatives with respect to the containment of urine in the male. Specify the fascial layers associated with the accumulation of urine. Discuss whether urine will be found in the ischiorectal fossa. (12 pts)**

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

3. Fecal continence and defecation involves a complex orchestration of somatic and autonomic nervous control. **Discuss the structures, functions, relationships, ligaments, spaces, and innervations (preganglionic, postganglionic, visceral afferent, somatic efferent and somatic afferent) that mediate fecal continence and defecation. (12 pts)**

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



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