

Graduate Anatomy 503
EXAMINATION 3

October 14, 2022

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

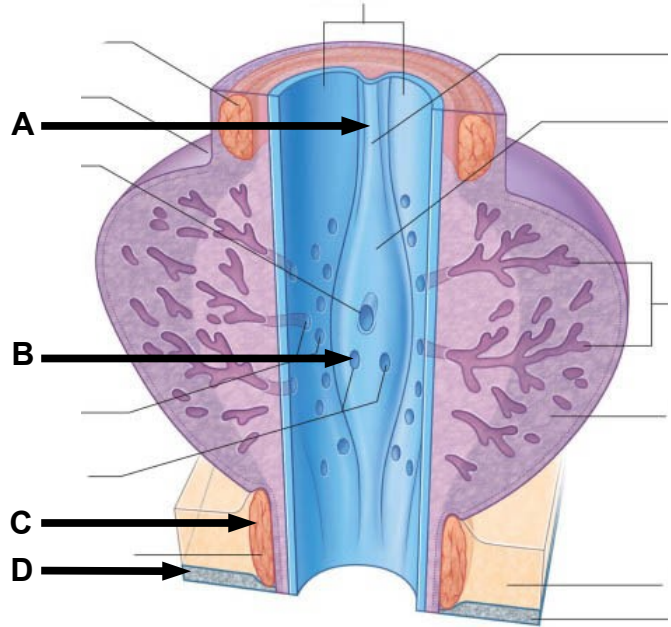
1. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



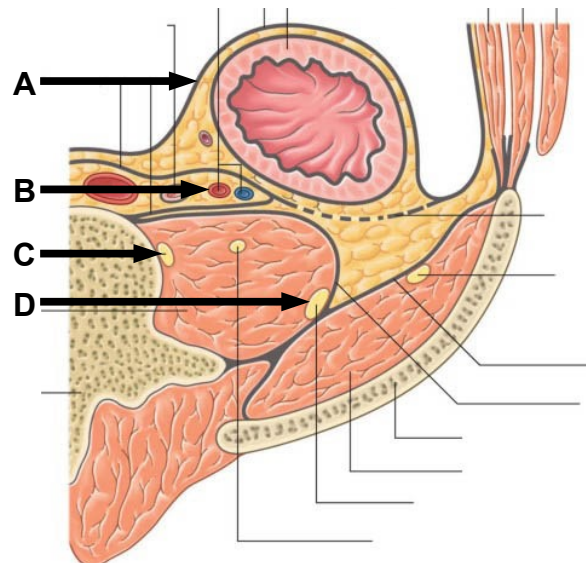
2. Identify the structures. (2 pts)

A. _____

B. _____

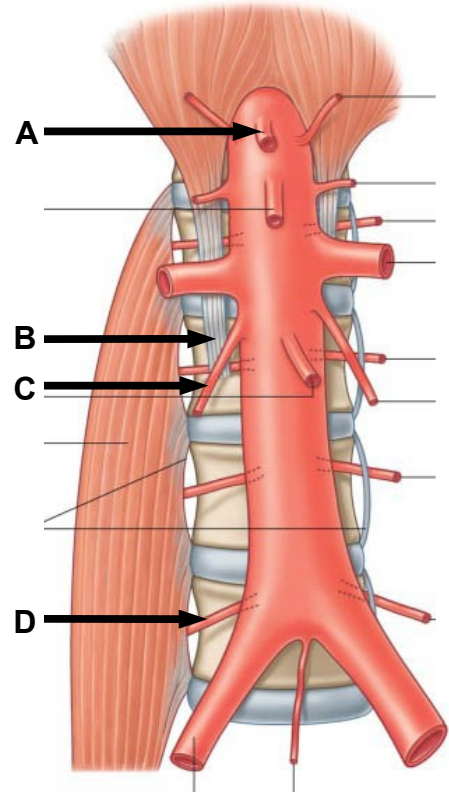
C. _____

D. _____



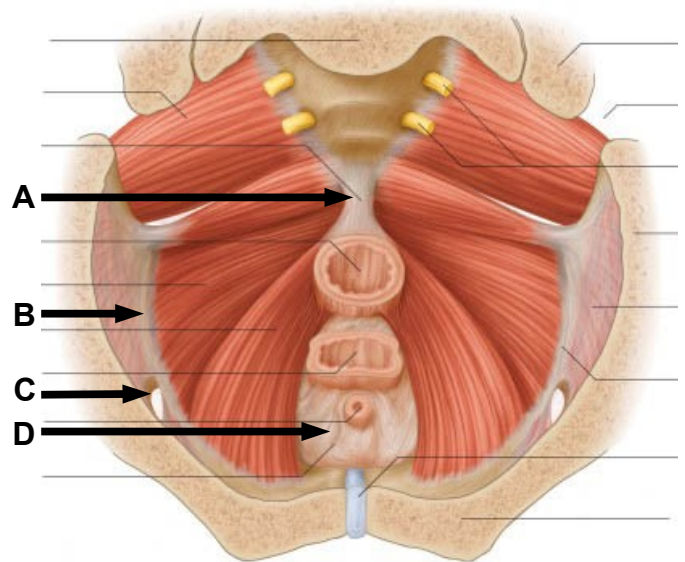
3. Identify the structures. (2 pts)

- A. _____
- B. _____
- C. _____
- D. _____



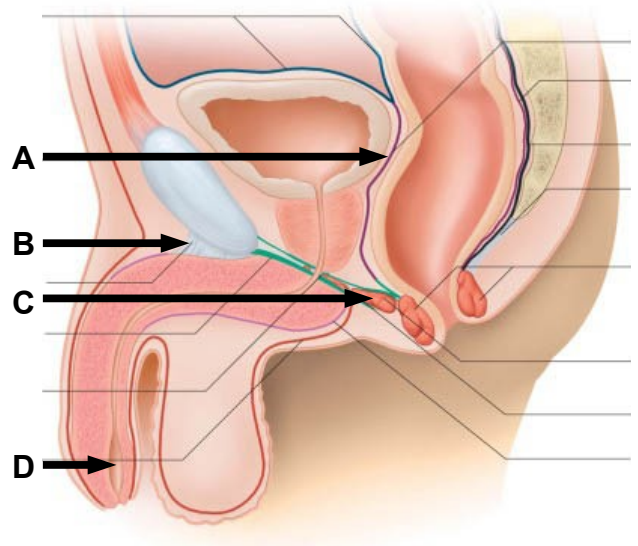
4. Identify the structures. (2 pts)

- A. _____
- B. _____
- C. _____
- D. _____



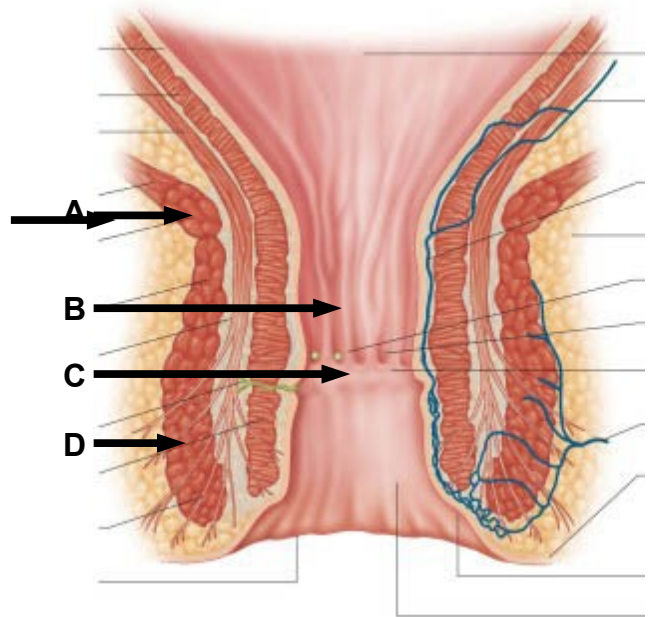
5. Identify the structures. (2 pts)

- A. _____
- B. _____
- C. _____
- D. _____



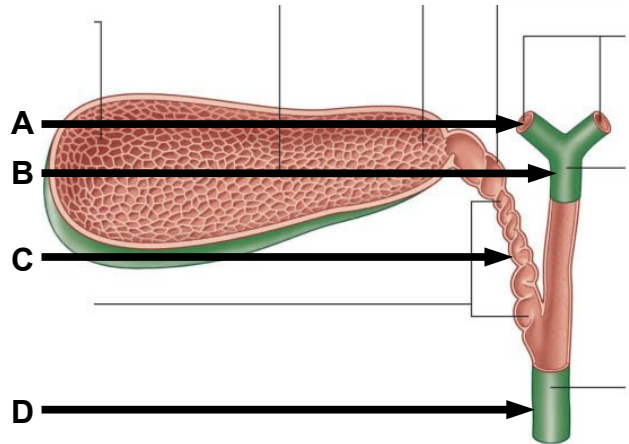
6. Identify the structures. (2 pts)

- A. _____
- B. _____
- C. _____
- D. _____



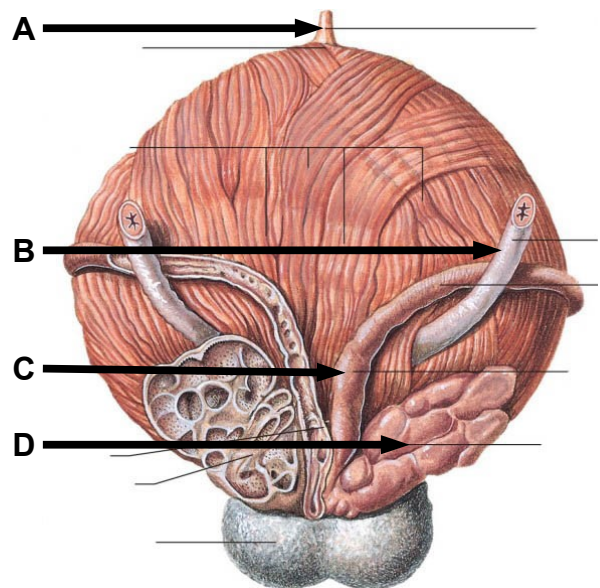
7. Identify the structures. (2 pts)

- 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 within the extraperitoneal connective tissue.
 - b) The umbilicus is at the L3/4 vertebral level and at the T10 dermatome level.
 - c) An indirect inguinal hernia that descends into the scrotum is palpated at the posterior wall of the scrotum.
 - d) The conjoint tendon receives contributions from the transversus abdominis and the external oblique aponeurosis.
 - e) The medial umbilical ligament is a fold of parietal peritoneum deep to the urachus.
 - f) The cremasteric fascia is derived from the internal oblique muscle.
2. With regard to the abdominopelvic cavity and vasculature:
 - a) The left and right colic arteries anastomose along the greater curvature of the stomach.
 - b) The superior and middle rectal veins anastomose proximal to the pectinate line.
 - c) The antrum of the stomach may undergo ischemic necrosis if the short gastric arteries are inadvertently ligated.
 - d) Primary lymphatic drainage from the duodenojejunal flexure is to the celiac nodes.
 - e) The vagal trunks pass through the aortic hiatus, whereas the greater, lesser, and least splanchnic nerves pass through the crura of the diaphragm.
 - f) The superior vesical arteries supply the superior region of the bladder and are the final branches of the umbilical artery before it obliterates to become the median umbilical ligament.
3. With regard to the liver, duodenum, pancreas, and posterior abdominal structures:
 - a) A blockage of the common hepatic duct is not expected to cause colicky pain, but may cause jaundice.
 - b) The body of the pancreas is located along the transpyloric plane (L1 vertebral level).
 - c) The superior pole of the right kidney is at the T11 vertebral level and related to the lumbocostal trigone and, thus left renal surgery may risk pneumothorax.
 - d) Blood from the portal system normally passes through the liver before draining into the inferior vena cava by way of the portal veins.
 - e) The ligament venosum extends from the portal vein to the left hepatic vein.
 - f) The common hepatic 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 presacral space provides surgical access to the pubovesical ligament without the need to enter the peritoneal cavity.

- b) Lymphatic drainage of the anal canal proximal to the dentate line is to inferior mesenteric nodes and to internal iliac nodes.
 - c) The presacral space is a subperitoneal space posterior to the rectum and anterior to the sacrum.
 - d) Taenia coli, semilunar folds, and appendices epiploicae are characteristics of the rectum.
 - e) Transversalis fascia is thickened at the posterior wall of the rectum and, at this location, is known as the fascia of Denonvilliers.
 - f) Lymphatic channels passing through the inguinal canal communicate between uterine nodes and superficial inguinal nodes.
5. With regard to the pelvic diaphragm and anal region:
- a) The ischiococcygeus (coccygeus) takes origin from the external surface of the sacrospinous ligament.
 - b) The external anal sphincter is somatically innervated and is, thus, under voluntary control.
 - c) The puborectalis muscle circles the proximal anal canal superior to the anococcygeal ligament (body) and inferior to the anococcygeal raphe.
 - d) Internal hemorrhoids, more so than external hemorrhoids, may develop during portal hypertension.
 - e) The arcus tendineus is a specialization of the obturator internus fascia 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) Injury to the spinal cord superior to the S2-4 cord levels preserves the spinal reflexes of micturition and, thus, results in a neurogenic bladder.
 - b) The cavernous nerves are predominantly derived from pelvic splanchnic nerves.
 - c) Sectioning of the hypogastric nerves to disrupt visceral afferent fibers removes all sympathetic supply to the uterus.
 - d) Lumbar splanchnic nerves convey preganglionic sympathetic fibers from the lumbar plexus to the aortic plexus.
 - e) The falciform edge is along the medial margin of the superior pubic ramus and contributes to the formation of the pudendal canal.
 - f) The rectouterine pouch of the female and the rectovesical pouch of the male define the most inferior extents of the abdominopelvic cavity.

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

- 1. The location of a symptomatic bile stone can be predicted from the patient interview and additional serum tests. Discuss the anatomy of the biliary tree and main pancreatic duct. Account for symptoms according to the location of a lodged stone. (6 pts)**

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

3. Define the relationships of the ala of the sacrum. (6 pts)

4. Define the structure and relationships of the duodenal cap (Part I). (6 pts)

5. An episiotomy is performed to limit uncontrolled damage to the pelvic floor and urogenital diaphragm during parturition. **Discuss the anatomy of the perineal body. What structures are at risk when performing an episiotomy? (6 pts)**

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

- 1. Perforation of the posterior stomach wall releases highly corrosive acid into the lesser sac (omental bursa). Indicate your understanding of the lesser sac with respect to boundaries (anterior, posterior, superior, inferior, medial, lateral), surgical access, communications, relationships, and related viscera vulnerable to damage. Discuss the basis for dull and referred pain due to perturbation of the stomach wall and then discuss the basis for rapid onset of sharp pain following perforation of the stomach wall. (12 pts)**

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2. Indirect inguinal hernias pass into a patent processus vaginalis. Abdominal viscera may move through the processus vaginalis into the scrotum. **Review the anatomy of the spermatic cord. Include contents, coverings, fascial boundaries, innervation, vasculature, lymphatic drainage, and relationships. Discuss the pathway and location of an indirect inguinal hernia that has descended into the scrotum. Cite an example of clinical relevance. (12 pts)**

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3. A hysterosalpingogram determines patency of the uterine ostia and uterine tubes. Radiographic contrast is injected into the uterine cavity through the vagina and cervix. If the uterine tubes are patent, dye appears in the abdominal cavity. Blockages are then ruled out as the cause of a patient's infertility. **Indicate your understanding of the uterus, uterine tubes, and ovary as to structure, orientation, relationships (anterior, posterior, superior, inferior, medial, lateral), ligamentous support, peritoneal associations, innervation (preganglionic, postganglionic, and visceral afferent pathways), vasculature, and lymphatic drainage. Cite an example of clinical relevance. (12 pts)**

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