

42.5

H 91.5
P 80

HF

PART I. Answer in the space provided. (15 pts.)

1. Identify the structures. (2 pts.)

- a. lesser omentum
- b. gastrolienal lig.
- c. lienorenal lig.
- d. Aorta

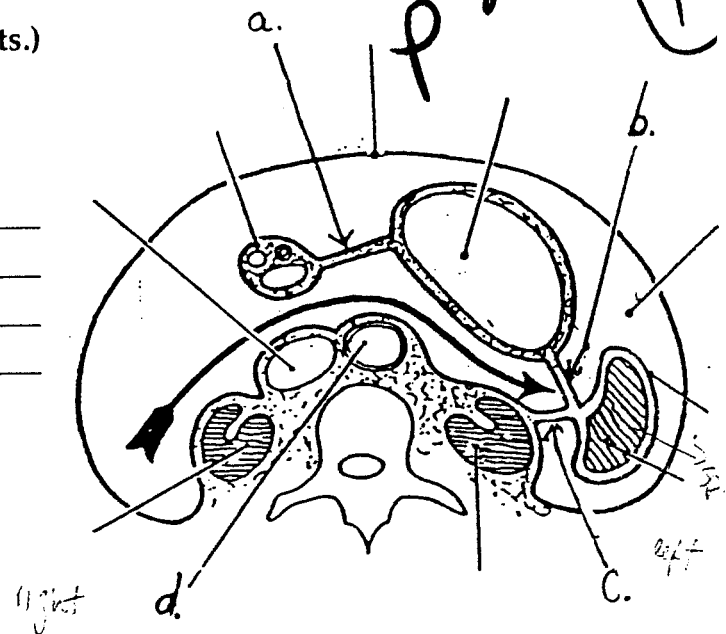


Figure 2. 26. Horizontal extent of omental bursa (lesser sac).

2. Identify the gutter in (a) and the structure in (b). (1 pt.)

- a. right Gastrocolic gutter
- b. phrenicocolic lig.

48
- 5.5
42.5

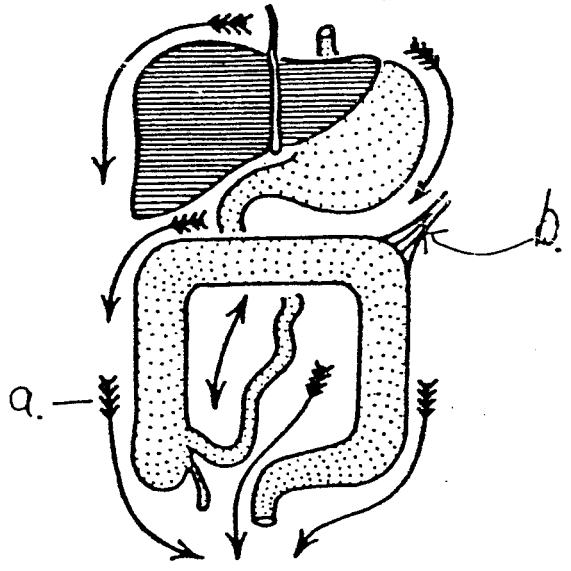


Figure 2. 29. Gutters in the peritoneal cavity.

Part 1. Answer in the space provided.

3. Identify the structures. (3 pts.)

- a. Inferior Mesenteric artery
- b. internal iliac a.
- ~~c. Deep iliac circumflex~~
- ~~d. External iliac a.~~
- ~~e. inferior epigastric~~
- ~~f. Obturator foramen~~

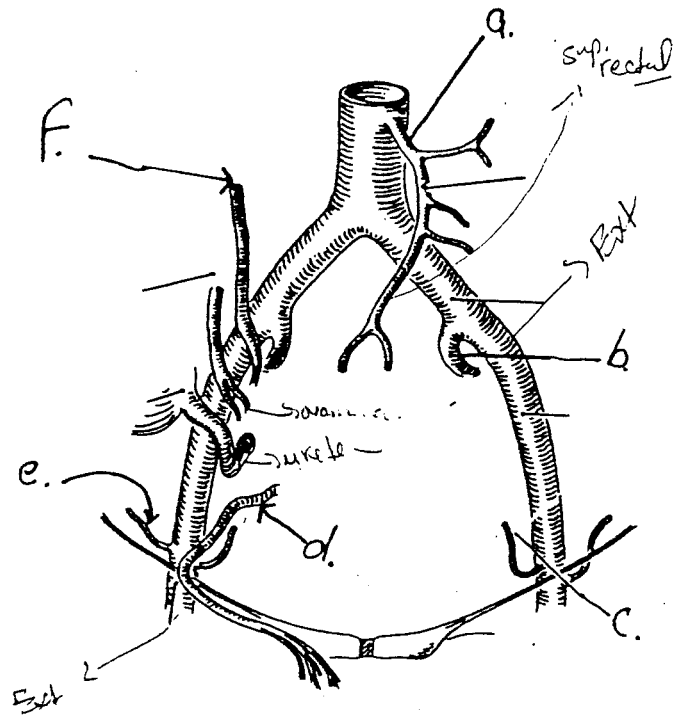


Figure 3.37. Structures crossing the iliac arteries to enter or leave the pelvis.

4. In the fetus, name the structures. (3 pts.)

- a. Arcuate line
- b. inferior epigastric a.
- c. Umbilical artery
- ~~d. lateral umbilical lig.~~
- ~~e. urachus~~
- ~~f. Psoas major m.~~

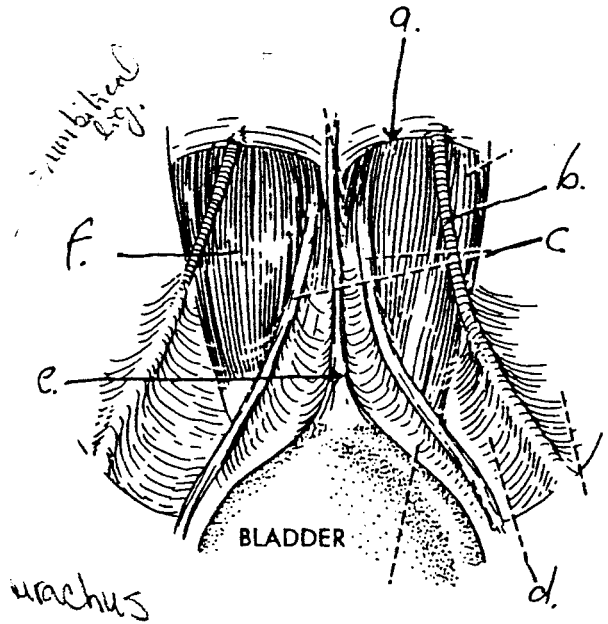


FIG. 23-26. View of the posterior surface of the lower part of the anterior abdominal wall, showing the structures that produce the folds and fossa related to the bladder and inguinal region.

Part 1. Answer in the space provided.

5. Identify the structures. (2 pts.)

- ~~a.~~ Supra duodenal a.
- b. Common hepatic a.
- c. Superior Post. pancreaticoduodenal a.
- ~~d.~~ Superior anterior pancreaticoduodenal a.

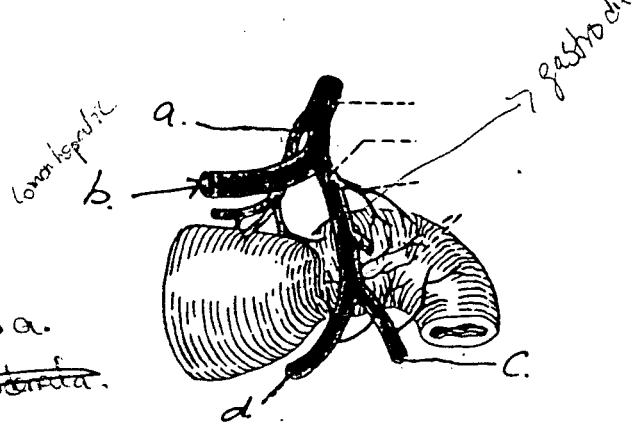
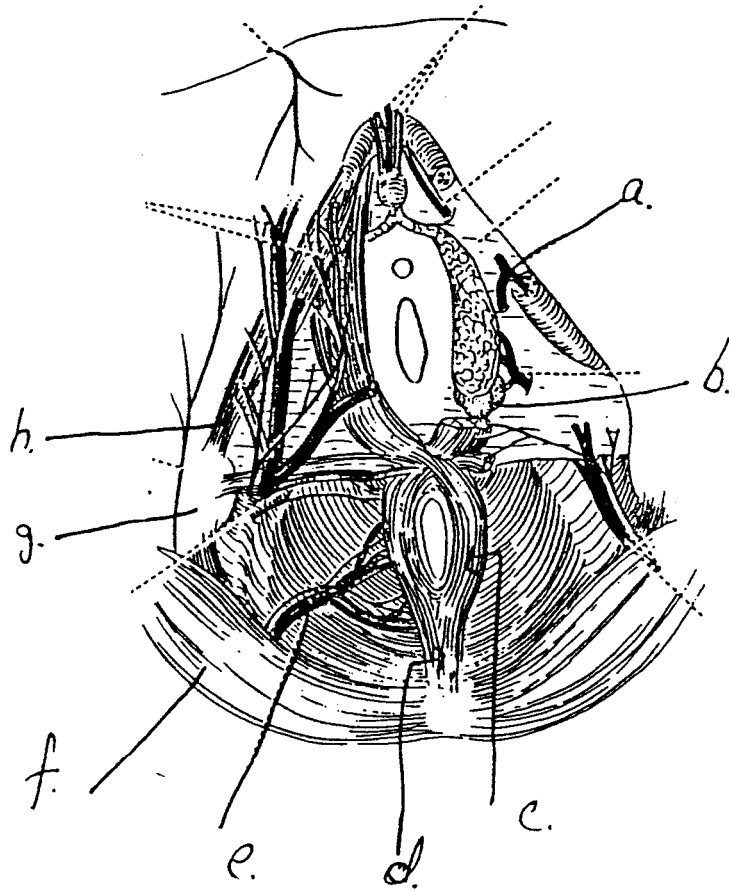


FIG. 24-23. posterior view of the blood supply to the first part of the duodenum.

6. Identify the structures. (4 pts.)

- a. Deep artery of Clitoris
- b. greater vestibular gland
- c. External anal sphincter
- d. Anisococcyg-l raphe (lig)
- e. Inf. rectal a.
- f. glut. max. m.
- ~~g.~~ ischial ram
- h. ischioavernosus m.



PART II: Circle the correct answer(s). All, none, or some may apply. (19 pts.)

1. In regard to the fascia in the abdomen, pelvis, and perineum:

- a. The parietal pelvic fascia of the pelvis is an extension of the transversalis fascia of the abdomen.
- b. The obturator fascia has a thickening called the arcuate line.
- c. The superior fascia of the pelvic diaphragm is a condensation of the extraperitoneal connective tissue.
- d. The perivesical fascia is related to the extraperitoneal connective tissue.
- e. The transversalis fascia originates from the thoracolumbar fascia.

2. With regard to development of the gastrointestinal tract:

- a. The inferior mesenteric artery can be considered the axis of rotation of the gastrointestinal tract.
- b. The gastrointestinal tract undergoes a 270° counterclockwise rotation during embryonic week 5.
- c. The stomach undergoes a 90° clockwise rotation during development.
- d. The greater omentum is derived from the ventral mesentery.
- e. Meckel's diverticulum in adults is located in the ileum approximately 2 to 3 feet from the ileocecal junction and is related to the persistence of the urachus.

3. With regard to the kidneys:

- a. The renal fascia is a condensation of the extraperitoneal connective tissue.
- b. The ureter lies ventral (anterior) to the renal artery. (V, A, Ureter)
- c. The renal columns terminate in the medulla as renal papilla. (pyramids)
- d. The right renal artery passes behind the inferior vena cava.

4. With respect to the inguinal region:

- a. Indirect inguinal hernias occur in the lateral inguinal fossa.
- b. The contents of a descended indirect inguinal hernia lie within the tunica albuginea of the testis.
- c. Direct inguinal hernias do not involve the transversalis fascia.
- d. The cremaster artery arises from the inferior epigastric artery.

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

5. With regard to the diaphragm:

- a. The hiatus of the inferior vena cava is formed by the right crus.
- b. The greater splanchnic nerve passes from the thorax to the abdomen by way of the aortic hiatus.
- c. The azygous vein passes upward from the abdomen to the thorax through the aortic hiatus. (Sometimes ascending to Hagg's)
- d. An esophageal or hiatal hernia, whereby parts of the cardia and fundus of the stomach slide upward through an enlarged esophageal hiatus, occurs at the level of the tenth thoracic vertebra.

6. With respect to the liver:

- a. The hepatic veins drain into the portal vein.
- b. According to internal morphology of the liver, the quadrate lobe and a part of the caudate lobe belong to the left lobe.
- c. The left triangular ligament is formed by the peritoneum.
- d. Cancerous growths of the right lobe of the liver may cause problems to the right kidney.

7. In regard to the pectinate line:

- a. Is a region that may be involved in portal hypertension.
- b. Dilated and redundant veins below this line are referred to as external hemorrhoids.
- c. Is located just above the anal columns.
- d. The region above (superior) this line is supplied with afferent innervation by somatic nerve fibers of the pudendal nerve.

8. With respect to the female pelvis:

- a. The pelvic inlet is usually oval.
- b. The subpubic angle is wider than in the male.
- c. The pelvic outlet is larger than in the male.
- d. The false pelvis is deeper than in the male.

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

9. With regard to the pelvic nerves and vessels:

- a. An automatic "cord" bladder results when spinal cord transection occurs superior to S2-4.
- b. The "nervi erigentes" refers to the somatic afferents in the pudendal nerve that are sensitive to touch.
- c. During urination, the neck of the bladder is allowed to extend by a relaxation of the pelvic diaphragm. *levator ani + sphincter urethrae muscle*
- d. Defecation includes reflex arcs involving the parasympathetics and the pudendal nerve.

PART III: Answer in the space provided. (14 pts.)

- a. Explain why an ascending venereal infection (such as gonorrhea) is more likely to produce pelvic peritonitis (irritation of the peritoneum) in the female than in the male. (2 pts.)

B/C in the female, bacteria can enter the uterus via the cervix, travel through the route of uterine tubes and via the fundus of the uterine tube which opens into the peritoneal cavity, enter into the peritoneal cavity and cause peritonitis. In the female, the ovary is w/ the peritoneal cavity and thus fundus of uterine tube opens into the cavity + surround ovary via its fimbriae to receive the ovulated egg during each cycle.

- b. Procedures involving the external genitalia often require anesthesia. Discuss the anterior and posterior scrotal/labial nerve(s) In your answer, indicate which nerve(s) they are derived from and the location of innervation. (4 pts.)

Posterior Scrotal / Labial nerve:

A branch of the femoral branch of the external pudendal nerve. The posterior scrotal nerve, after branching in the deep pouch, will pierce the inferior fascia of the urogenital diaphragm to enter the superficial pouch and innervate posterior aspect of the scrotum.

Anterior Scrotal / Labial Innervation

Anterior scrotal nerve which is a branch of iliohypogastric nerve

Also genital br. from genitofemoral nerve (L1) will supply innervation to the anterior portion of the scrotum as well as

cremasteric fibers - results - cremasteric reflex

Both above branches enter after going through inguinal canal and passing through the superficial inguinal ring. (genitofemoral portion will also go through the

Part III. Answer in the space provided.

c. A loop of small intestine can occasionally pass through the epiploic foramen into the omental bursa and become strangulated by the edges of the foramen. Briefly discuss the boundaries of the epiploic foramen (of Winslow). (4 pts.)

Superior border: Peritoneum of caudate lobe of liver

Inferior border: Peritoneum covering medial half of superior duodenum (1st portion of duodenum)

Posterior: Peritoneum covering IVC

Superior: Free, right border of lesser omentum which contains the hepatoduodenal ligament. w/ this ligament will find common bile duct, proper hepatic artery, and portal vein (posterior to both common bile duct and hepatic artery)

d. "...a finger placed between the membranous superficial fascia (Scarpa's fascia) and the deep fascia of the external oblique (muscle) cannot be pushed (very far) into the thigh, but it can pass with relative ease into the penis, wall of the scrotal sac, or the labia majora (Hollinshead and Rosse, pg. 582). Explain. (4 pts.)

Below the level of umbilicus, membranous Scarpa will descend inferiorly to cover the penis (Colle's) as well as the scrotum (Dartos tunic). A portion of Colle's, fusing to the posterior margin of Iliac diaphragm as well as ischio pubic rami, changes name to Superficial perineal fascia.

Scarpa also continues about one inch below the inguinal ligament and attaches to fascia lata of the thigh. In other words, it is not continuous w/ fascia lata of the thigh, thus can't slide finger further than an inch below the inguinal lig.

Laterally w/ abdominal region, Scarpa attaches to thoracoabdominal fascia.

These boundaries are important in cases of extravasation of urine - the superficial pouch, since urine will be trapped w/ the boundaries described above. - O.R.F.

superficial portion of Ext. oblique m.

Moore's Fascia

PART IV. Answer in the space provided.

The 1st part of the duodenum is susceptible to a number of clinical problems (e.g., ulcers). Discuss the anatomy of the 1st part of the duodenum. In your answer, include a definition of the relationships to other structures and fascia/peritoneum, innervation, vasculature, and lymphatics. (10 pts.) About Level Q1

- Superior portion of duodenum is ~~retro~~ peritoneal
- Also result of GI rotation during fetal development, it is considered part of foregut
- Anteriorly will be covered by peritoneum. Also, superior duodenum can be considered as continuation of pylorus of stomach.

Borders

Posteriorly: Head of the pancreas + gastroduodenal a.

Anterior: Portion of fimbria of gall bladder + right lobe of liver
Important: clinically like inflammation of GB can result in inflammation of 1st portion of duodenum

also forms inferior border of epiploic foramen.

superior border attached to hepatoduodenal lig. of liver insertion, which contains common bile duct, portal vein, proper hepatic artery

Bld Supply

Retroduodenal a. from gastroduodenal a. which

comes from common hepatic a., which is a br. of celiac trunk.

Might also get some bld from Superior Artery + Post pancreaticoduodenal a. from gastroduodenal a.

Venous drainage: follows same route as arteries named above → drain into portal vein

Innervation

Since portion of foregut innervation mostly comes from celiac plexus

Sympathetic: Post ganglionic fibers of ~~Celiac plexus~~ Celiac plexus coming from celiac plexus

Para Symp: ~~Post ganglionic~~ fibers of vagus from celiac plexus they synapse w/ their post ganglions in the duodenum.

PART V: Answer in the space provided. (32 pts.)

30

a. Cancer of the uterus and vagina is not uncommon, and these cancers may metastasize to other areas. Describe the primary lymphatic drainage of the uterus and vagina. (5 pts.)

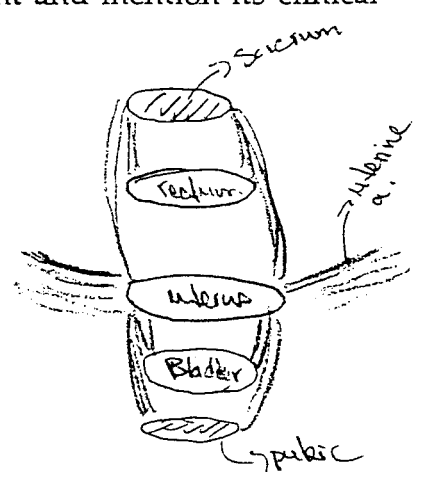
uterus

- Fundus + upper portion of body: along w/ round ligament → superficial inguinal nodes
- Lower portion of body + cervix: internal iliac nodes (along route of uterine a.)
- Upper 3/4 of vagina: internal iliac nodes (along route of vaginal a. from internal iliac a.)
- Lower 1/4 of vagina: Superficial inguinal nodes
- Ovary + uterine tube: lumbar nodes (along route of ovarian a.)

b. Discuss the lateral cervical (Cardinal, Mackendrodt's) ligament and mention its clinical significance. (3 pts.)

Cardinal lig is condensation of Extra-pair CT (visceral perineum) along w/ some SF fibers.

Provides lateral support of uterus to anterior abdominal wall. Weakening of this ligament results in prolapse of uterus, elongation, also prolapse of bladder.



superior border, uterine artery (from internal iliac a.) travels to supply lower portion of body of uterus + cervix

During gynecological exam, when rock uterus up + down, test strength of

Part IV. Answer in the space provided.

c. The arcuate line serves as an important anatomical boundary and a landmark in surgery. Define the arcuate line of the anterior abdominal wall. (3 pts.)

Above Arcuate Line: apo from Transverse abdominis and post. leaflet of apo from Int. Oblique join to form post. rectus sheath.

Below Arcuate line, the above apo's join the apo from Ext. Oblique and ant. leaflet of apo from Int. oblique (Ant. rectus sheath). Thus below arcuate line, Rectus Abdominus m. is directly on Transversalis fascia and has no posterior sheath.

Superior epigastric a. pierces transversalis foramen + traverses anterior to arcuate line to go b/w rectus abdominus m. + posterior sheath and finally anastomose w/ Superior epigastric a. above umbilical level. Arcuate line occurs approx. lower 1/4 of abdominal wall.

d. Infections in the ischioanal fossa may lead to discomfort and pain. Briefly define the anterior recess of the ischioanal fossa. (5 pts.)

Borders:

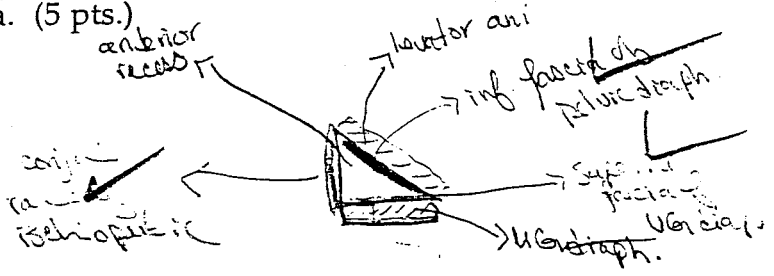
laterally: union ischio-pubic ramus

medially: fusion of inf. pelvic diaphragmatic fascia w/ Superior UG diaph. fascia

superior: Superior UG diaph. fascia

Posteriorly in contact w/ posterior recess which lies deep to gluteus max. and is filled w/ fat allowing for distension of anal canal during defecation etc...

Infections can easily spread through the fat content from anterior to posterior or vice versa.



See picture on back.

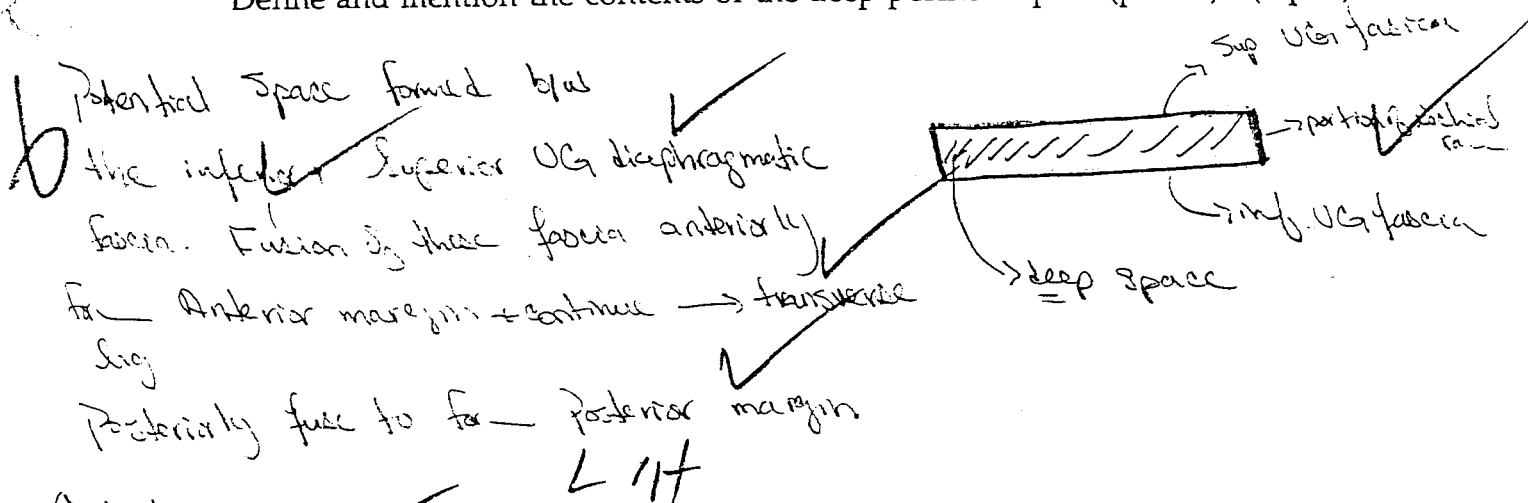
Part IV. Answer in the space provided.

e. Define the "lumbocostal trigone" (or "vertebrocostal triangle") and discuss its clinical significance. (3 pts.)

Superior to the lateral arcuate ligament, fibers of the costolumbar portion of the diaphragm show marked ~~weakening~~ (i.e. shape of a triangle) when during renal surgery (left kidney), if ~~force~~ pierce through this weakened area, will superiorly enter the costodiaphragmatic recess and result in a pneumothorax.

This lumbocostal trigone is associated w/ left lateral arcuate ligament and can result in pneumothorax during left renal surgery if pierced.

f. Catheterization of the urethra may lead to damage of the deep perineal space/pouch. Define and mention the contents of the deep perineal space (pouch). (6 pts.)



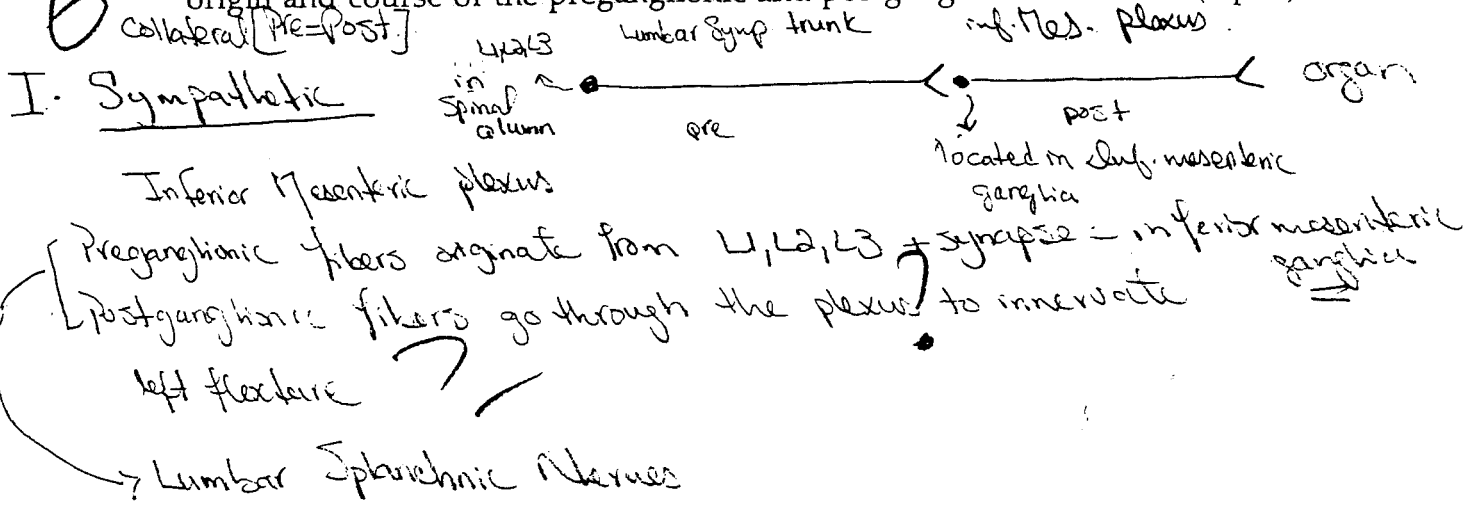
Contents:

Sphincter urethrae m., Deep transverse perineal m., bulbourethral glands (in male), Branches of internal pudendal a. (portions of perineal br., artery to bulb, artery to urethra, deep artery of penis/ditoris, dorsal artery. These arteries will eventually leave the deep space by piercing the inferior UG fascia). Branches of pudendal nerve

Membranous urethra (in males) goes through middle of the UG diaphragm (through deep fascia)

Part V. Answer in the space provided.

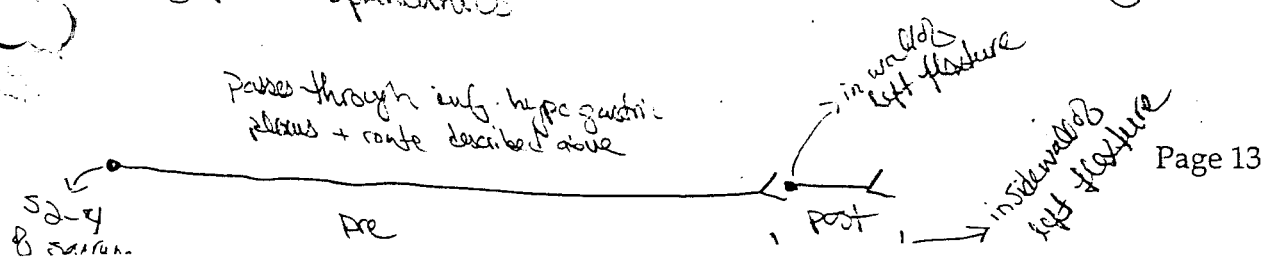
g. A chronic disease of the colon called ulcerative colitis is characterized by severe inflammation and ulceration of the colon and rectum. Indicate your knowledge of the autonomic nerve innervation to the left colic flexure. Include a discussion about the origin and course of the preganglionic and postganglionic neurons. (7 pts.)



Travel w/ Lumbar Sympathetic Trunk
 Visceral afferents mostly concerned w/ referred pain travel w/ lumbar splanchnic as well

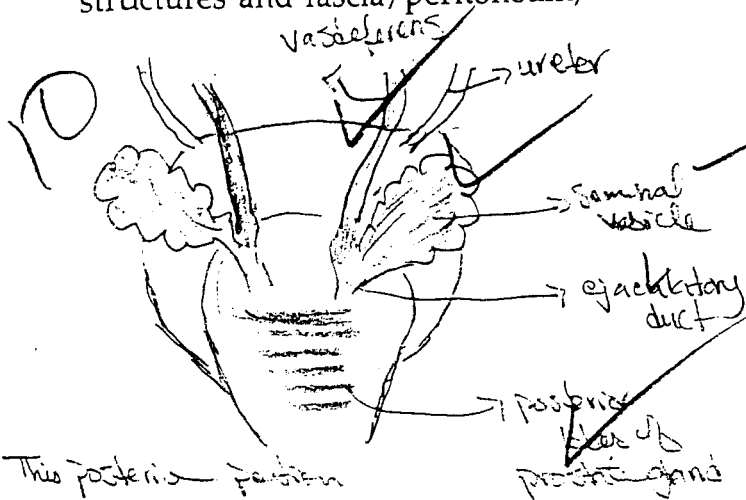
Para Sympathetic

Pelvic Splanchnic S2, 3, 4
 Preganglionic fibers arise from ventral ramus of S2-4. Travel through inferior hypogastric plexus (do not synapse), continue along lateral side of left hypogastric nerve until level of pelvic brim, separate + continue laterally along route of sigmoid colon + descending colon. Will synapse in the wall of left flexure thus post ganglionic fibers are very short => will cause increased peristalsis
 postganglionic cells bodies are called enteric - wall of organs
 visceral afferents (stretch receptors...) also travel along w/ efferents of pelvic splanchnics



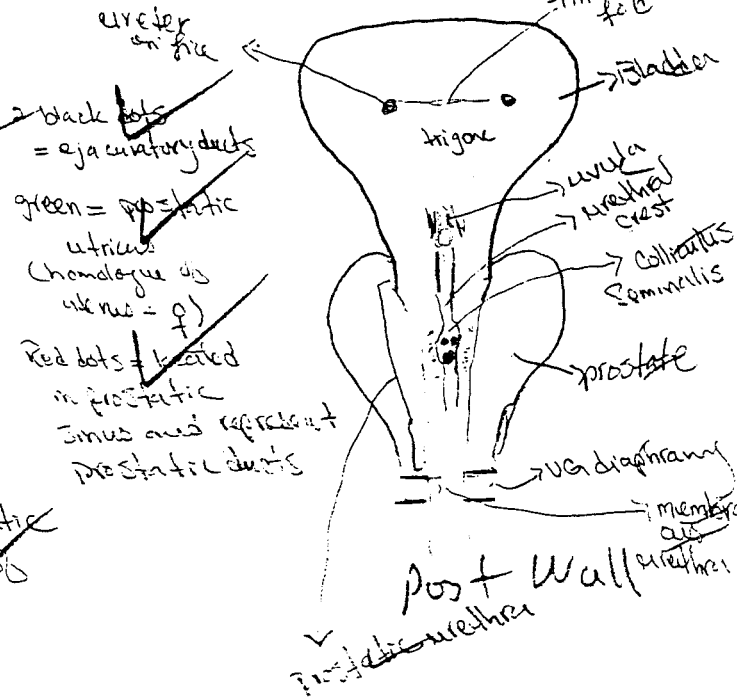
PART VI. Answer in the space provided.

Cancer of the prostate gland is one of the most common tumors in men. Indicate your knowledge of the prostate. In your answer, include a definition of the relationships to other structures and fascia/peritoneum, innervation, vasculature, and lymphatics. (10 pts.)



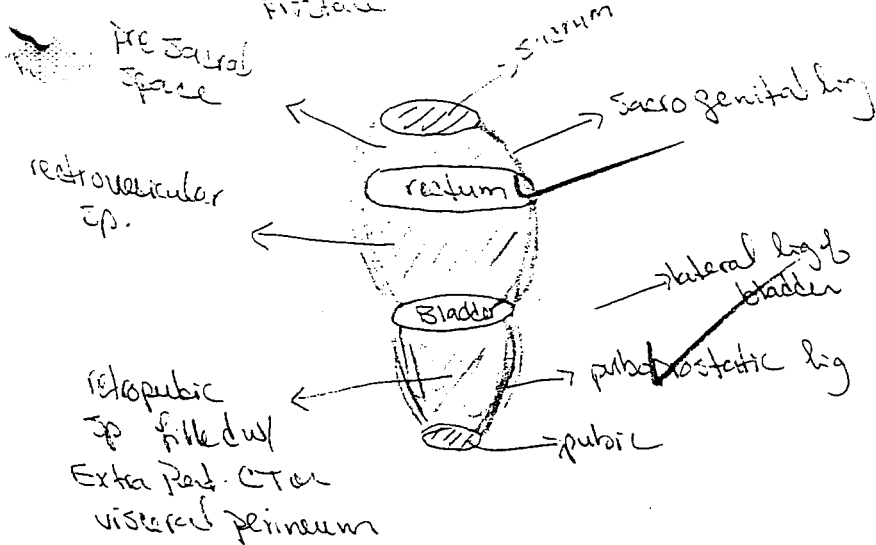
This posterior portion of lobe (its fossa) is felt during prostate examination to feel numerous growths inside prostate

Covered by periprostatic fascia → fascia of Denon Villier



black dots = ejaculatory ducts
green = prostatic utricle (homologue of uterus = ♀)
Red dots = located in prostatic sinus and represent prostatic ducts

Ligaments shown are formed as condensation of Extra Perit. CT (visceral perineum) and support the bladder + prostate. They include some ST7 fibers



Prostate gland has four lobes: anterior (core), medial (two), lateral (two), posterior (core).
Mostly glandular tissue responsible for secretion of fructose + plasma content of semen. (Gives milky color to semen)

homologous to paraurethral glands in the female.

During ejaculation, seminal fluid from Seminal vesicles Page 14

(alkaline substance + gives some - its color) + sperm via vas deferens enter into the urethra