The anterior portion of the rectus sheath below the arcuate line is formed from the:
A. aponeuroses of the external oblique and transversus abdominis muscle.
B. aponeuroses of the external oblique, internal oblique and transversus abdominis muscle.
C. aponeuroses of the external oblique, transfersalis fascia and internal oblique.
D. transversalis fascia.
E. none of the above.
Answer = B

The communication between the omental bursa (or lesser sac) and the "greater sac" is the:
A. ligament of Treitz
B. lienorenal ligament
C. epiploic foramen
D. fossa ovalis
E. none of the above
Answer = C

Appendices epiploicae are characteristic of the
A. duodenum
B. jejunum
C. transverse colon
D. ileum
E. stomach
Answer = C

All of the following structures raise peritoneal folds on the inner surface of the anterior abdominal wall EXCEPT the
A. obliterated urachus.
B. ligamentum venosum.
C. inferior epigastric artery.
D. obliterated umbilical artery.
E. median umbilical ligament.
Answer = B

In preparation for removal of an inflamed gallbladder, the surgeon endoscopically examined the surface of the liver and noted that it is in contact with all of the following organs EXCEPT the
A. right kidney.
B. stomach.
C. right suprarenal gland.
D. pancreas.
E. right colic flexure.
Answer = D

The common bile duct, in the free margin of the lesser omentum, lies
A. posterior to the hepatic artery.
B. anterior to the head of the pancreas.
C. posterior to the inferior vena cava.
D. anterior to the portal vein.
E. lateral to the descending (or 2nd) portion of the duodenum.
Answer = D

All of the are following structures are located posterior to the left kidney EXCEPT the
A. quadratus lumborum muscle.
B. 12th rib.
C. iliohypogastric nerve.
D. subcostal nerve.
E. descending colon.
Answer = E

A ligament which forms from an obliterated fetal blood vessel is the
A. median umbilical ligament.
B. falciform ligament.
C. hepatoduodenal ligament.
D. lateral umbilical ligament.
E. medial umbilical ligament.
Answer = E

The aponeurosis of the external oblique contributes to the formation of all of the following EXCEPT the
A. inguinal ligament.
B. anterior sheath of rectus abdominus.
C. conjoint tendon.
D. linea alba.
E. external spermatic fascia.
Answer = C

Derivatives of the ventral mesentery include all of the following structures EXCEPT the
A. falciform ligament.
B. coronary ligament.
C. right triangular ligament.
D. hepatoduodenal ligament.
E. ligamentum teres (hepatis).
Answer = E

Obstruction of portal venous flow in the liver commonly leads to enlargement of veins in all of the following EXCEPT the
A. lower esophagus.
B. posterior abdominal wall.
C. anal canal.
D. umbilical region.
E. ileocecal junction.
Answer = E

All of the following structures empty directly into the inferior vena cava EXCEPT the
A. right inferior phrenic vein.
B. right suprarenal vein.
C. left testicular vein.
D. right fourth lumbar vein.
E. left renal vein.
Answer = C

All of the following structures are secondarily retroperitoneal EXCEPT the
A. pancreas.
B. duodenum.
C. ascending colon.
D. abdominal esophagus.
E. descending colon.
Answer = D

All of the following types of nerves would be found in the celiac ganglion EXCEPT
A. sympathetic preganglionic fibers.
B. parasympathetic postganglionic fibers.
C. visceral afferents from the stomach.
D. parasympathetic preganglionic fibers.
E. visceral afferents from the biliary system.
Answer = B

The iliohypogastric nerve innervates all of the following EXCEPT the
A. transversus abdominus muscle.
B. skin in the hypogastric (pubic) region.
Which of the following structures does not invest the spermatic cord?

A. External spermatic fascia
B. Cremasteric muscle
C. Dartos muscle
D. Cremasteric fascia
E. Internal spermatic fascia

Answer = C

When drawing excess fluid from the peritoneal cavity, a needle inserted through the anterior abdominal wall in the midline, immediately superior to the umbilicus, would pass through all of the following structures EXCEPT the

A. superficial fascia.
B. linea alba.
C. rectus abdominis muscle.
D. transversalis fascia.
E. parietal peritoneum.

Answer = C

All of the following ligaments are derivatives of the ventral mesentery EXCEPT the

A. falciform.
B. hepatogastric.
C. gastrocolic.
D. coronary.
E. hepatoduodenal.

Answer = C

All of the following statements about the rectus abdominis muscle are correct EXCEPT

A. it has a segmental neural innervation.
B. its lateral border is the semilunar line.
C. it is divided into sections by tendinous intersections.
D. its sheath contains both terminal branches of the internal thoracic artery.
E. the aponeurotic component of the posterior rectus sheath is only present above the arcuate line.

Answer = D

Select the lettered statement that best describes the chain (paravertebral) ganglia.

A. It provides parasympathetic innervation of the descending colon.
B. It provides sympathetic innervation of thoracic viscera.
C. It provides parasympathetic innervation of the duodenum.
D. It does not descend below L3.
E. It contains only visceral efferent fibers.

Answer = B

If the spongy urethra ruptures into the superficial perineal space, urine would pass into all of the following areas EXCEPT the

A. space deep to darts tunic.
B. space deep to Scarpa's fascia.
C. space superficial to Buck's fascia.
D. ischiorectal fossa.
E. space deep to Colles' fascia.

Answer = D

Postganglionic axons are found in the

A. pelvic splanchnic nerves.
B. greater splanchnic nerve.
C. vagus nerve.

D. cardiac plexus.
E. ventral root.

Answer = D

The tunica vaginalis is derived from the

A. transversalis fascia.
B. internal spermatic fascia.
C. processus vaginalis.
D. gubernaculum.
E. subserous fascia.

Answer = C

The umbilical artery, before it obliterates at birth, is a branch of the

A. abdominal aorta.
B. common iliac.
C. external iliac.
D. internal iliac.
E. inferior epigastric.

Answer = D

All of the following are statements concerning the cremasteric fascia or muscle are correct EXCEPT that it

A. is superficial to the internal spermatic fascia.
B. is derived from the internal oblique muscle.
C. is invested by the tunica vaginalis.
D. is innervated by nerve fibers from spinal cord segments L1 and L2.
E. may be found within the inguinal canal.

Answer = C

The artery which is closely related to the left renal vein as it crosses anterior to the aorta is the

A. celiac artery.
B. superior mesenteric artery.
C. inferior mesenteric artery.
D. left colic artery.
E. middle colic artery.

Answer = B

A tumor arising in the testes would most likely metastasize to the

A. superficial inguinal nodes.
B. internal iliac nodes.
C. external iliac nodes.
D. lumbar nodes.
E. deep inguinal nodes.

Answer = D

All of the following characterize the inguinal canal EXCEPT

A. its floor includes the inguinal ligament.
B. its posterior wall includes the transversalis fascia and fibers of the conjoined tendon at its medial boundary.
C. its anterior wall includes fibers of the internal abdominal oblique.
D. the inferior epigastric vessels are found just medial to the deep inguinal ring.
E. its deep ring is formed by the peritoneum.

Answer = E

Blockage of portal circulation in the liver may result in all of the following EXCEPT

A. backflow through the inferior mesenteric vein.
B. varices at the anastomosis of superior and inferior rectal veins.
C. caput medusa.
D. backflow into the inferior vena cava through the left gastric vein.
E. backflow of portal blood into external iliac veins via the inferior epigastric veins.
Which of these is enclosed by the internal spermatic fascia?
A. direct inguinal hernia
B. indirect inguinal hernia
C. the cremasteric fascia
D. the dartos
E. the genitofemoral nerve

Answer = B

The coronary ligament of the liver can be characterized by all of the following EXCEPT that it
A. converges to form the triangular ligaments of the liver.
B. defines the limits of the bare area.
C. is derived from the dorsal mesentery.
D. is continuous with the falciform ligament.
E. reflects onto the liver as visceral peritoneum.

Answer = C

In preparation for surgical repair of a hiatal hernia, the new resident reviewed his knowledge of the stomach and esophagus and recalled that all of the following correctly characterize the esophagus EXCEPT that it
A. receives arterial branches from the thoracic aorta.
B. passes through the diaphragm anterior to vertebral level T8.
C. has venous drainage into the azygos system.
D. has venous drainage into the portal system.
E. passes posterior to the trachea.

Answer = B

All of the following statements correctly characterize either the ligamentum teres hepatis or the ligamentum venosum EXCEPT that
A. is derived from the left umbilical vein.
B. is continuous with the ligamentum venosum.
C. helps to divide the right lobe of the liver from the quadrate, caudate and left lobes superficially.
D. lies within the embryonic dorsal mesentery.
E. is drained in part by branches of the portal system.

Answer = D

The cell bodies of preganglionic sympathetic fibers that supply the stomach are located in the:
A. celiac plexus.
B. sympathetic chain ganglia (T5-T9).
C. superior mesenteric plexus.
D. myenteric plexus.
E. spinal cord.

Answer = E

Autonomic innervation to midgut structures can be characterized by all of the following EXCEPT:
A. the vagus supplies parasympathetic postganglionic fibers.
B. the intermediolateral cell column at T-10 may contain sympathetic cell bodies which innervate the midgut.
C. postganglionic sympathetic fibers emanate from the superior mesenteric ganglion.
D. the lesser splanchnic nerves contain some of its preganglionic fibers.
E. white rami at T-11 contain preganglionic sympathetic fibers.

Answer = A

A direct inguinal hernia
A. can pass through the superficial inguinal ring.
B. is found at the deep inguinal ring.
C. is often due to a congenital defect.
D. passes inferior to the inguinal ligament.
E. is not surrounded by peritoneum.

Answer = A

All of the following are usually branches of the superior mesenteric artery EXCEPT the:
A. middle colic artery.
B. right colic artery.
C. left colic artery.
D. ileocolic artery.
E. jejunal arteries.

Answer = C

A surgeon attempting to expose the kidney from the posterolateral abdominal wall would take care to isolate several nerves that sweep across the posterior surface of the kidney. These nerves include the surface of the kidney. These nerves include the
A. greater and lesser splanchnic.
B. subcostal and iliohypogastric and ilioinguinal.
C. obturator and femoral.
D. lateral femoral cutaneous and femoral.
E. lesser splanchnic and subcostal.

Answer = B

The least splanchnic nerve
A. contains primarily postganglionic fibers to the kidney.
B. supplies preganglionic fibers to the aorticorenal ganglion.
C. is associated with the middle colic artery.
D. enters the abdominal cavity through the aortic hiatus.
E. is formed by branches from the L-1 and L-2 sympathetic chain ganglia.

Answer = B

Autonomic innervation to midgut structures can be characterized by all of the following EXCEPT:
A. the vagus supplies parasympathetic postganglionic fibers.
B. the intermediolateral cell column at T-10 may contain sympathetic cell bodies which innervate the midgut.
C. postganglionic sympathetic fibers emanate from the superior mesenteric ganglion.
D. the lesser splanchnic nerves contain some of its preganglionic fibers.
E. white rami at T-11 contain preganglionic sympathetic fibers.

Answer = A

A direct inguinal hernia
A. can pass through the superficial inguinal ring.
B. is found at the deep inguinal ring.
C. is often due to a congenital defect.
D. passes inferior to the inguinal ligament.
E. is not surrounded by peritoneum.

Answer = A

All of the following anatomical structures lie ventral to a probe placed within the epiploic foramen of Winslow EXCEPT the
A. portal vein.
B. common bile duct.
C. inferior vena cava.
D. lesser omentum.
E. proper hepatic artery.

Answer = C

At which vertebral level is the esophageal hiatus located?
A. L-1
B. T-8
C. T-12
D. T-10
E. T-9
If the superior and inferior mesenteric arteries are ligated at their origins, blood could be supplied to the jejunum via anastomotic connections that include the

A. right gastroepiploic and gastroduodenal arteries.
B. left colic and middle colic arteries.
C. inferior pancreaticoduodenal and superior pancreaticoduodenal arteries.
D. ileocolic and right colic arteries.
E. right gastroepiploic and left gastroepiploic arteries.
Answer = C

The skin around the umbilicus on the anterior abdominal wall gains its sensory innervation from

A. T8
B. T10
C. T12
D. L1
E. L2
Answer = B

All of the following statements regarding referred pain are correct EXCEPT that

A. a ruptured spleen can refer pain to the left shoulder.
B. an inflamed gall bladder can refer pain to an area between the xiphoid process and the umbilicus.
C. a large tumor in the descending colon can refer pain to the suprapubic region.
D. an inflamed Meckel's diverticulum can refer pain to the umbilical region.
E. an inflamed sigmoid colon can refer pain to the region of the epigastric region.
Answer = E

Which of the following lists most closely describes the structures found in the medial 1/3 of the inguinal canal in a normal adult male?

A. Peritoneum, internal spermatic fascia.
B. Internal spermatic fascia, cremasteric fascia, peritoneum
C. Internal spermatic fascia, cremasteric fascia, external spermatic fascia
D. Peritoneum, internal spermatic fascia, external spermatic fascia
E. Internal spermatic fascia, cremasteric fascia
Answer = E

After passing through the diaphragm, the esophagus

A. forms a groove in the right lobe of the liver.
B. receives its blood supply from the left gastric artery.
C. has veins which drain directly into the inferior vena cava.
D. has lymphatic vessels which drain into the axillary lymph nodes.
E. receives preganglionic sympathetic innervation from the lesser splanchnic nerve.
Answer = B

Each of the following statements regarding the spleen is correct EXCEPT that it

A. is intraperitoneal.
B. lies superior to the 12th rib (when the patient is lying down).
C. receives its blood supply from a branch of the celiac artery.
D. lies superior to the left colic flexure.
E. lies immediately inferior to the region of the greater curvature of the stomach supplied by the right gastroepiploic artery.
Answer = E

A patient with cancer of the cecum and ascending colon requires the removal of the gastrointestinal tract from the distal 4 inches of the ileum to the proximal half of the transverse colon. Arteries that must be tied off include the

A. ileal, jejunal and ileocecal arteries.
B. left colic, marginal, sigmoidal, and superior rectal arteries.
C. only the right colic and middle colic arteries.
D. ileocolic, right colic, and right branch of the middle colic arteries.
E. right colic, middle colic and left colic arteries.

A patient with a cancer of the head of the pancreas probably would present with jaundice and severe abdominal pain. The pain fibers involved include branches

A. from spinal cord levels L-1 and L-2.
B. of the least splanchnic nerve.
C. of postganglionic fibers from the celiac ganglion.
D. of nerves from spinal cord levels T5 to T9.
E. of the lumbar splanchnics.
Answer = D

Which of the following organs is correctly matched to its venous drainage?

A. Right testis: right renal vein: inferior vena cava
B. Right lobe of liver: portal vein: inferior vena cava
C. Right atrium: anterior cardiac vein: coronary sinus
D. Right colic flexure: superior mesenteric vein: portal vein
E. Right primary bronchus: right bronchial vein: hemiazygos vein
Answer = D

Stuctures passing through the esophageal hiatus of the diaphragm include the

A. thoracic duct.
B. right phrenic nerve.
C. branches of the left gastric artery.
D. superior epigastric artery.
E. greater splanchnic nerve.
Answer = C

A tumor that compresses both vagal trunks at the esophagogastric junction can affect the motility of all of the following structures EXCEPT the

A. stomach.
B. ascending colon.
C. duodenum.
D. descending colon.
E. ileum.
Answer = D

The posterior wall of the rectus sheath at the level of the umbilicus includes the

A. posterior portion of the external oblique aponeurosis.
B. arcuate line.
C. subserous fascia (extraperitoneal connective tissue).
D. posterior portion of internal oblique aponeurosis.
E. transversalis fascia.
Answer = D

All the following statements concerning openings in the diaphragm are correct EXCEPT the

A. inferior vena cava pierces the diaphragm at T8.
B. greater splanchnic nerves pass through the crura.
C. esophagus and vagus nerves pass through the diaphragm at T10.
D. sympathetic chain pierces the diaphragm at T12.
E. right phrenic nerve passes through the diaphragm with the inferior vena cava.
Answer = D

A gunshot wound damaged the body of the pancreas. The condition of the superior mesenteric artery must be assessed by the surgeon. An important relation of the artery is that its first part lies

A. anterior to the body of the pancreas.
B. posterior to the 3rd part of the duodenum.
C. posterior to the inferior vena cava.
D. anterior to the left renal vein.
E. anterior to the transverse colon.
Answer = D

Each of the following veins drain directly into the inferior vena cava EXCEPT the
A. right ovarian vein.
B. left renal vein.
C. 3rd lumbar vein.
D. inferior mesenteric vein.
E. right suprarenal vein.
Answer = D

The structure which gives rise to the median umbilical ligament extends from the
A. urinary bladder.
B. common iliac artery.
C. external iliac artery.
D. umbilical artery.
E. inferior epigastric artery.
Answer = A

Autonomic innervation to midgut structures can be characterized by all of the following EXCEPT that the
A. vagus nerve contains postganglionic parasympathetic fibers.
B. gray matter at spinal cord level T10 contains sympathetic neurons which innervate neurons that supply the midgut.
C. postganglionic sympathetic fibers originate from neurons whose cell bodies are in the superior mesenteric ganglion.
D. lesser splanchnic nerve contains some of its preganglionic fibers.
E. white rami communicantes connected to spinal nerve at T11 contain preganglionic sympathetic fibers.
Answer = A

All of the following statements about the lumbar plexus are usually correct EXCEPT that the
A. genitofemoral nerve can be found on the anterior surface of the psoas major muscle.
B. lateral femoral cutaneous nerve passes deep to the inguinal ligament.
C. obturator nerve leaves the pelvis through the obturator foramen.
D. fibers from spinal cord levels L2-L4 contribute to the femoral nerve.
E. obturator nerve is located lateral to the psoas major muscle.
Answer = E

Trauma to the liver often requires manipulation of structures in the free edge of the lesser omentum. The tip of a finger placed posterior to the free edge would be located
A. posterior to the inferior vena cava.
B. anterior to the common bile duct.
C. anterior to the transverse colon.
D. posterior to the proper hepatic artery.
E. anterior to the 1st part of the duodenum.
Answer = D

All of the following types of fibers are usually found in the celiac plexus EXCEPT
A. sympathetic postganglionic fibers.
B. parasympathetic postganglionic fibers.
C. visceral afferents from the stomach.
D. parasympathetic preganglionic fibers.
E. visceral afferents from the biliary system.
Answer = B

A patient has a paralysis and complete sensory loss of the diaphragm. All of the following structures could be damaged EXCEPT
A. nerves from spinal cord levels C3, C4 and C5.
B. branches from lower intercostal nerves.
C. the phrenic nerves.
D. the greater splanchnic nerve.
Answer = D

A 72-year-old male patient presents with a mass 6 cm in diameter located in the porta hepatis. All of the following are likely to be compressed by the mass EXCEPT
A. postganglionic sympathetic fibers.
B. the common hepatic duct.
C. the portal vein.
D. the hepatic arteries.
E. the hepatic veins.
Answer = E

An abdominal CT scan reveals that blood flow through the left renal vein is being occluded where it crosses anterior to the aorta by an arterial aneurysm. The aneurysm most likely involves the
A. celiac artery.
B. superior mesenteric artery.
C. inferior mesenteric artery.
D. left colic artery.
E. middle colic artery.
Answer = B

The patient is a 19-year-old female who fell onto a large rock striking her posterior left lower thoracic/upper lumbar region in a bicycle accident. X-rays show damage to the left kidney and tissues lying posterior to the kidney. The least likely structure to have been injured is the
A. quadratus lumborum muscle.
B. twelfth rib.
C. iliohypogastric nerve.
D. subcostal nerve.
E. genitofemoral nerve.
Answer = E

All of the following statements regarding the diaphragm are correct EXCEPT that
A. it is anchored to the vertebral bodies by two cura, the right crus extending more inferiorly than the left.
B. the least splanchnic nerve usually passes posterior to the medial arcuate ligament.
C. the inferior vena cava passes through it inferior to the point where the aorta passes through it.
D. the right phrenic nerve passes through it in a position superior to where the vagal trunks passes through it.
E. the central tendon is fused to the pericardial sac.
Answer = C

A 63-year-old male had a teratoma adjacent to the celiac ganglion and plexus. This mass would probably compress all of the following EXCEPT
A. sympathetic preganglionic fibers.
B. parasympathetic postganglionic fibers.
C. visceral afferents from the stomach.
D. parasympathetic preganglionic fibers.
E. sympathetic postganglionic fibers.
Answer = B

Preganglionic neurons of the lumbar splanchnic nerves terminate in the
A. celiac ganglia.
B. superior mesenteric ganglia.
C. inferior mesenteric ganglia.
D. wall of the sigmoid colon.
E. aorticorenal ganglia.
Answer = C

During abdominal surgery the small intestine of a 37-year-old female has been inspected to determine any involvement in metastatic ovarian cancer. The upper jejunum is distinguished by all of the following characteristics EXCEPT the
A. presence of plicae circulares.
B. absence of aggregated lymph nodules (Peyers patches).
C. presence of long vasa recta.
D. presence of tertiary and quaternary arterial arcades.
E. presence of a minimum amount of fat in its mesentery.
Answer = D

Following a discussion of the effects of global warming on the environment in a local establishment of food and beverage, gunfire erupts. In the Emergency Dept. of a local hospital you are asked to treat one of the participants who has a gunshot wound. The bullet has entered the abdomen one inch to the left of the umbilicus and lodged in the body of L3. It could have passed through all of the following EXCEPT the
A. inferior epigastric artery and/or its branches.
B. anterior layer of the rectus sheath.
C. transversalis fascia.
D. fibers of the transversus abdominis muscle.
E. parietal peritoneum.
Answer = D

The aponeurosis of the external oblique muscle contributes to the formation of all of the following EXCEPT the
A. inguinal ligament.
B. anterior sheath of the rectus abdominis muscle.
C. conjoint tendon.
D. linea alba.
E. external spermatic fascia.
Answer = C

During a laparoscopic procedure to remove the gall bladder, you have an excellent opportunity to view the inner surface of the anterior abdominal wall. In discussions with the surgeon, you indicate that all of the following structures raise peritoneal folds on the inner surface of the anterior abdominal wall EXCEPT the
A. it receives sensory innervation from intercostal and phrenic nerves.
B. it forms pulmonary ligaments which extend inferiorly from the hilum of the lungs.
C. pleural recesses are formed between two layers of the parietal pleura.
D. the parietal pleura in the right pleural cavity is discontinuous with the parietal pleura in the left pleural cavity.
E. it extends superiorly only to the level of the first rib.
Answer = E

An aortic aneurysm at the aortic hiatus of the diaphragm would directly compress the
A. hemiazygos vein.
B. vagal trunks.
C. sympathetic chain.
D. thoracic duct.
E. greater splanchnic nerve.
Answer = D

A patient comes to your office complaining of localized pain over the xiphoid process. The sensations of pain are being transmitted via spinal nerve
A. T3.
B. T5.
C. T7.
D. T9.
E. T11.
Answer = C

Preganglionic sympathetic nerve fibers are found in all of the following EXCEPT
A. the lesser splanchnic nerve.
B. the ventral roots of thoracic spinal nerves.
C. the sympathetic chain.
D. lumbar splanchnic nerves.
E. gray rami communicantes.
Answer = E

The inferior pancreaticoduodenal artery is accidently transected during surgery to remove the head of the pancreas. Bleeding can best be controlled by ligating the
A. splenic artery.
B. proper hepatic artery.
C. celiac artery.
D. right gastroepiploic artery.
E. superior mesenteric artery.
Answer = E

Below the arcuate line, the anterior wall of the rectus sheath is formed by
A. aponeurosis of the external oblique muscle.
B. aponeurosis of the internal oblique muscle.
C. aponeurosis of the transversus abdominis muscle.
D. A and B.
E. A, B and C.
Answer = E

All of the following statements concerning the pancreas are correct EXCEPT that
A. its venous return flows into the portal system.
B. it is secondarily retroperitoneal.
C. its tail enters the lienorenal ligament.
D. the splenic artery is located in its superior border.
E. the portion of the main pancreatic duct entering the major papilla is derived from the dorsal pancreatic bud.
Answer = E

The vagal trunks
A. pass through the aortic hiatus.
B. travel along the greater curvature of the stomach.
C. contain postganglionic parasympathetic fibers.
D. contain visceral afferent fibers.
E. provide preganglionic parasympathetic innervation to the descending colon.
Answer = D

A tumor in the intervertebral foramen affecting the T8 spinal nerve could result in decrease or loss of innervation to all of the following EXCEPT
A. a portion of the parietal peritoneum.
B. a portion of the rectus abdominis muscle.
C. some postganglionic cell bodies in the celiac ganglion.
D. skin of the anterior abdominal wall above the umbilicus.
E. the cremaster muscle.
Answer = E

A 52-year-old male who complains of pain in the epigastric region could be experiencing referred pain from
A. a testicular tumor.
B. a stone in the pelvis of the left kidney.
C. an ulcer in the first part of the duodenum.
D. rectal polyps.
E. a spasm in the transverse colon.
Answer = C

A 45-year-old female with stones lodged in her gallbladder had severe pain that involved transmission of impulses along visceral afferent fibers in the
A. upper lumbar splanchnic nerves.
B. greater splanchnic nerve.
C. lesser splanchnic nerve.
D. vagus nerve.
E. pelvic splanchnic nerves.
Answer = B

The skin immediately superior to the pubic symphysis (suprapubric region) transmits its sensory information to spinal cord level
A. T8.
B. T9.
C. T10.
D. T12.
E. L1.
Answer = E

The superior hypogastric plexus contains all of the following EXCEPT
A. visceral afferent fibers.
B. parasympathetic fibers from the vagus nerve.
C. branches from the lumbar splanchnic nerves.
D. preganglionic sympathetic fibers.
E. postganglionic sympathetic fibers.
Answer = B

During surgery for a hernia repair, the surgeon inadvertently compressed the ilioinguinal nerve at its exit through the superficial inguinal ring. Structures denervated (loss of nerve supply) by this injury include
A. a section of the transversus abdominus muscle.
B. the skin of the scrotal area.
C. a section of the internal oblique muscle.
D. the cremasteric muscle.
E. the skin of the suprapubic area.
Answer = B

In a patient with bowel cancer, a surgeon removed the cecum and ascending colon. Arteries that were tied off during the surgery included the
A. jejunal branches of the superior mesenteric artery.
B. colic branches of the ileocolic artery.
C. middle colic branch of the superior mesenteric artery.
D. left colic artery.
E. inferior mesenteric artery.
Answer = B

The artery which is most closely related to the left renal vein as the vein crosses anterior to the aorta is the
A. celiac artery.
B. superior mesenteric artery.
C. inferior mesenteric artery.
D. left colic artery.
E. middle colic artery.
Answer = B

A patient passes blood in his urine. A pyelogram reveals an abnormality in the portion of the collecting system immediately following the renal calyces. The abnormality is in the
A. ureter.
B. minor calyx.
C. renal medulla.
D. renal pelvis.
E. renal sinus.
Answer = D

All of the following pass through BOTH the deep and superficial inguinal rings EXCEPT
A. cremasteric nerve fibers.
B. the ilioinguinal nerve.
C. visceral afferent fibers.
D. the round ligament of the uterus.
E. the testicular artery.
Answer = B

A patient has a stenosis (narrowing) in the third part of her duodenum. Before surgery you review some duodenal anatomy and recall that all of the following statements correctly characterize the third part EXCEPT that it
A. is secondarily retroperitoneal.
B. passes inferior to the origin of the superior mesenteric artery.
C. has sympathetic innervation involving the least splanchnic nerves.
D. lies inferior to the left renal vein.
E. is innervated by the vagus nerve.
Answer = C

During surgery grand rounds you are put on the spot by the attending physician with a series of questions on characteristics of the GI tract. However, you did well because you knew that all of the following statements characterize the GI tract EXCEPT that it
A. is secondary retroperitoneal.
B. passes inferior to the origin of the superior mesenteric artery.
C. has sympathetic innervation involving the least splanchnic nerves.
D. lies inferior to the left renal vein.
E. is innervated by the vagus nerve.
Answer = C

Destruction of the ventral roots originating from spinal cord level T-6 will interrupt autonomic nerve axons which primarily synapse on neurons whose cell bodies are in
A. celiac ganglia.
B. superior mesenteric ganglion.
C. aortico-renal ganglia.
D. inferior mesenteric ganglion.
E. esophageal plexus.
Answer = A

The peritoneal gutter most likely to provide a pathway for the spread of infection from the lesser sac into the abdominopelvic cavity is the
A. gutter to the right of the root of the mesentery.
B. gutter to the left of the root of the mesentery.
C. right lateral gutter.
D. left lateral gutter.
Answer = C

During exploratory abdominal surgery you are asked by the chief surgeon a series of questions concerning the small intestine. You indicate that all of the following statements are correct EXCEPT that it
A. is partially supplied by the celiac trunk.
B. has epiploic appendices.
C. begins after the pyloric sphincter.
D. ends at the ileocecal junction.
E. is partially supplied by the superior mesenteric artery.
Answer = B

A surgeon is more cautious in making incisions of peritoneal ligaments which contain blood vessels. All the following peritoneal ligaments contain significant blood vessels EXCEPT the
A. hepatogastric.
B. gastroplenic.
C. phrenico-colic.
D. hepatoduodenal.
While observing a cholecystectomy, you realize that the gallbladder has direct contact with all of the following structures EXCEPT the

A. liver.
B. duodenum.
C. colon.
D. anterior abdominal wall.
E. stomach.
Answer = E

An incision is made through the anterior abdominal wall two inches to the right of the midline and two inches inferior to the interspinous line. Just posterior to the rectus abdominis muscle the incision passes through the

A. aponeurosis of the internal oblique, transversalis fascia, and the peritoneum.
B. aponeurosis of the transversus abdominis, suberous fascia, and the peritoneum.
C. aponeurosis of the interal oblique and transversus abdominis, transversalis fascia, subserous fascia, and the peritoneum.
D. transversalis fascia and the peritoneum.
E. aponeurosis of the internal oblique and transversus abdominis, transversalis fascia, subserous fascia, and the peritoneum.
Answer = D

After a surgical procedure, a patient had paresthesia (tingling) of the skin around the umbilicus. This could be due to irritation of the

A. 8th intercostal nerve.
B. 10th intercostal nerve.
C. subcostal nerve.
D. iliohypogastric nerve.
E. ilioinguinal nerve.
Answer = B

Al Hirt underwent resection of portions of his greater omentum as part of a weight control therapy. During its removal, the surgeons noted that the greater omentum

A. is attached to the lesser curvature of the stomach.
B. is attached to the lower border of the pancreas.
C. contains the right gastric artery.
D. contains the left gastroepiploic artery.
E. contains the superior mesenteric artery.
Answer = D

During an endoscopic appendectomy you observe the anterior abdominal wall and note that the structure which gives rise to the median umbilical ligament extends from the

A. urinary bladder.
B. common iliac artery.
C. external iliac artery.
D. umbilical artery.
E. inferior epigastric artery.
Answer = A

While assisting in an appendectomy you carelessly destroy the iliohypogastric nerve. You are somewhat concerned because this nerve innervates all of the following structures EXCEPT the

A. transversus abdominis muscle.
B. skin in the suprapubic region.
C. internal oblique muscle.
D. parietal peritoneum.
E. skin on the anterior aspect of the scrotum.
Answer = E

While exploring the posterior abdominal wall you noted that all the following relations of the lumbar spinal nerves are correct EXCEPT that the

A. genitofemoral nerve is found on the anterior surface of the psoas major muscle.
You are a third year student observing the repair of an inguinal hernia. During the procedure, you are asked a question about the superficial inguinal ring. Since you want to demonstrate your knowledge, you respond that it is

A. formed in part by the conjoined tendon.
B. formed in part by the rectus sheath.
C. a deficiency in the internal oblique aponeurosis.
D. a deficiency in the transversalis fascia.
E. a deficiency in the external oblique aponeurosis.

**Answer = E**

A 64-year-old man has cancer of the abdominal esophagus and fundus of the stomach and complains of severe abdominal pain. The pain fibers often involved are associated with

A. nerves from spinal cord levels T5 through T9.
B. the least splanchnic nerve.
C. postganglionic fibers from the celiac ganglion.
D. spinal cord levels L1 and L2.
E. the lumbar splanchnic nerves.

**Answer = A**

During surgery for a perforated ulcer, it was necessary to ligate the superior mesenteric artery, which passes

A. posterior to the uncinate process of the pancreas.
B. anterior to the horizontal part (3rd. part) of the duodenum.
C. posterior to the left renal vein.
D. anterior to the body of the pancreas.
E. lateral to the common bile duct.

**Answer = B**

A third year medical student is assisting with an abdominal surgery case. The student is instructed to make an incision one-inch to the right of the midline, extending from just below the level of the xiphoid process to the level of the umbilicus. After retracting the rectus abdominis muscle, the student is asked to incise the posterior rectus sheath which, at the level of the incision, is made up of fibers from the aponeuroses of the

A. external oblique and internal oblique muscles.
B. internal oblique muscle only.
C. internal oblique and transversus abdominis muscles.
D. transversus abdominis muscle and the transversalis fascia.
E. external oblique, internal oblique and transversus abdominis muscle.

**Answer = C**

To create a portal-caval shunt in a 48-year-old man with portal hypertension, which of the following venous anastomoses could produce such a shunt?

A. Superior mesenteric vein to inferior mesenteric vein.
B. Right gastric vein to the left gastric vein
C. Right renal vein to right gonadal vein
D. Splenic vein to left renal vein
E. Left gastric vein to splenic vein

**Answer = D**

A 32-year-old woman is brought to the emergency department. She has had previous gastric surgery in which both vagal trunks were severed at the esophageal hiatus of the diaphragm. After the surgery, which of the following organs would still receive preganglionic parasympathetic fibers?

A. Stomach
B. Cecum
C. Sigmoid colon
D. Gallbladder
E. Duodenum

**Answer = C**

During removal of a cystic right kidney, the surgeon remembered that the right suprarenal gland usually

A. has an arterial supply that includes a branch from the adjacent lumbar arteries. 

**Answer = C**

While performing exploratory surgery, the surgeon observed several structures which were secondarily retroperitoneal, one of which was the

A. spleen.
B. urachus.
C. pancreas.
D. median umbilical ligament.
E. sigmoid colon.

**Answer = C**

During a routine physical exam, you palpate a swelling that you believe to be an indirect inguinal hernia. All of the following statements are correct regarding an indirect inguinal hernia EXCEPT that it

A. passes through the deep ring.
B. is the consequence of a congenital anomaly.
C. may occur in females.
D. enters the inguinal canal medial to the inferior epigastric artery.
E. passes lateral to the lateral umbilical ligament.

**Answer = D**

When drawing excess fluid from the peritoneal cavity, a needle inserted through the anterior abdominal wall in the midline, immediately superior to the umbilicus, would pass through all of the following structures EXCEPT the

A. superficial fascia.
B. linea alba.
C. rectus abdominis muscle.
D. transversalis fascia.
E. parietal peritoneum.

**Answer = C**

In performing a vasectomy in a normal adult male, the physician would encounter all of the following structures EXCEPT

A. cremasteric muscle fibers.
B. linea alba.
C. rectus abdominis muscle.
D. transversalis fascia.
E. parietal peritoneum.

**Answer = D**

During a surgical repair of a perforated duodenal ulcer, the surgeon ligates the gastroduodenal artery. After this procedure, the pancreas would continue to receive blood from the

A. splenic artery.
B. proper hepatic artery.
C. inferior mesenteric artery.
D. left gastric artery.
E. right gastroepiploic artery.

**Answer = A**

You examine a patient complaining of pain, which you localize to his epigastric region. Pain can be referred to the epigastric region from all the following structures EXCEPT the

A. abdominal esophagus.
B. duodenum.
C. gallbladder.
D. ileum.
E. stomach.

**Answer = E**

A 72-year-old man has a 6-cm mass in the porta hepatitis. All of the following structures are likely to be compressed by the mass EXCEPT
A. postganglionic sympathetic fibers.
B. the common hepatic duct.
C. the portal vein.
D. the hepatic arteries.
E. the hepatic veins.
Answer = E

During an endoscopic appendectomy, you observe that all of the following structures often raise peritoneal folds on the anterior abdominal wall EXCEPT the

A. obliterated urachus.
B. ligamentum venosum.
C. inferior epigastric artery.
D. obliterated umbilical artery.
E. median umbilical ligament.
Answer = B

A deep horizontal stab wound, passing from right to left through the right 9th intercostal space in the midaxillary line, would probably injure all of the following structures EXCEPT the

A. parietal pleura.
B. parietal peritoneum.
C. diaphragm.
D. liver.
E. celiac artery.
Answer = E

In a 60-year-old alcoholic with severe portal hypertension there could be enlargement of all of the following vessels EXCEPT the

A. superior rectal veins.
B. splenic vein.
C. hepatic veins.
D. left gastric veins.
E. paraumbilical veins.
Answer = C

During removal of a diseased liver, the surgeon excised peritoneal reflections onto the liver which included all of the following ligaments EXCEPT the

A. ligamentum venosum.
B. hepatorenal.
C. left triangular.
D. coronary.
E. falciform.
Answer = A

A 34-year-old male comes into the emergency department with excruciating abdominal pain in the left flank and inguinal region. Evidence of blood in a urine sample suggests that the patient is in the process of passign a renal calculus (kidney stone). He soon complains that the pain is worse and has moved into the anterior and medial aspects of the left thigh as well as to the pubic region. Plain film radiographs of the kidneys, ureters, and bladder suggest a presence of a calculus in the lower left quadrant of the abdomen. The initial pain in the flank and inguinal region resulting from the kidney stone is attributed to afferent fibers which travel in the

A. greater splanchnic nerve.
B. iliohypogastric nerve.
C. least splanchnic nerve.
D. pelvic splanchnic nerves.
E. vagus nerve.
Answer = C.