Paper-I

01. During Bronchoscopy, Foreign body is most likely to be found in which part?

a) Right upper bronchi
b) Right Lower bronchi
c) Left upper bronchi
d) Left middle bronchi
e) Left lower bronchi

Answer: B

Explanation:

- Inhalation of foreign bodies into the lower respiratory tract is common, especially in children.
- Pins, screws, nuts, bolts, peanuts, and parts of chicken bones and toys have all found their way into the bronchi. Parts of teeth may be inhaled while a patient is under anesthesia during a difficult dental extraction.
- Because the right bronchus is the wider and more direct continuation of the trachea, foreign bodies tend to enter the right instead of the left bronchus.
- From there, they usually pass into the middle or lower lobe bronchi.

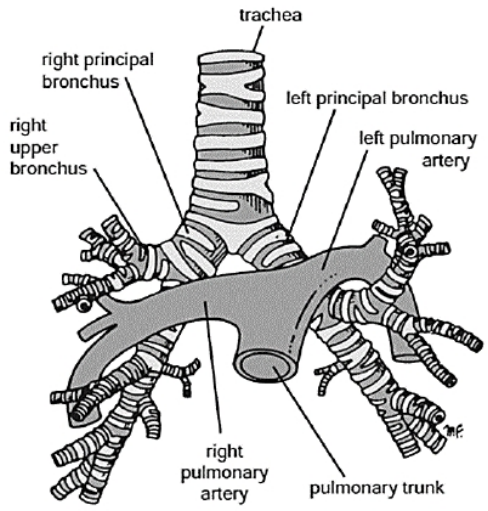


FIGURE 3.11 Relationship of the pulmonary arteries to the bronchial tree.

Ref: Snell clinical Anatomy/9th / P-66

02. A 30-year-old female presented with mitral stenosis due to chronic Rheumatic Heart disease. Where is the anatomical location of Mitral valve?

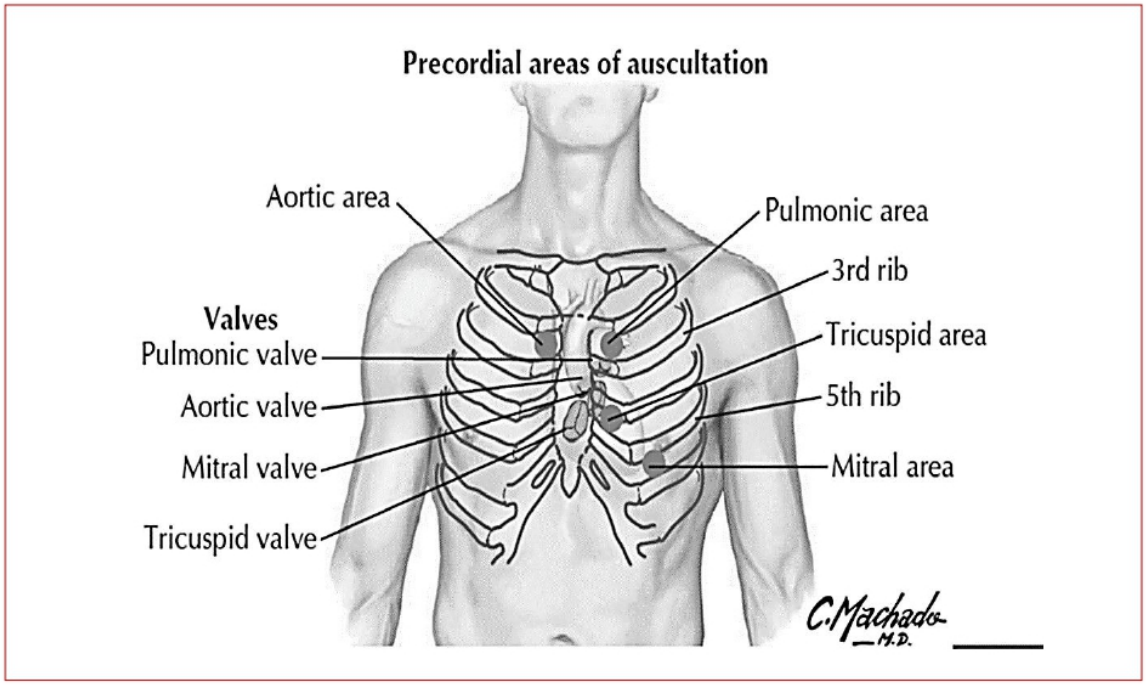
a) At the level of the fifth left intercostal space 9 cm from the midline
b) Behind the left half of the sternum opposite the 4th costal cartilage.
c) Behind the Right half of the sternum opposite the 4th costal cartilage.
d) Behind the left half of the sternum opposite the 3rd intercostal space.
e) Behind the Right half of the sternum opposite the 3rd intercostal space.

Answer: B

Explanation:

Surface Anatomy of the Heart Valves

- The surface markings of the heart valves are as follows
- The tricuspid valve lies behind the right half of the sternum opposite the 4th intercostal space.
- The mitral valve lies behind the left half of the sternum opposite the 4th costal cartilage.
- The pulmonary valve lies behind the medial end of the third left costal cartilage and the adjoining part of the sternum.
- The aortic valve lies behind the left half of the sternum opposite the 3rd intercostal space.



Ref: Snell clinical anatomy/ 9th / P-90

03. Which area is mostly supplied by left coronary artery?

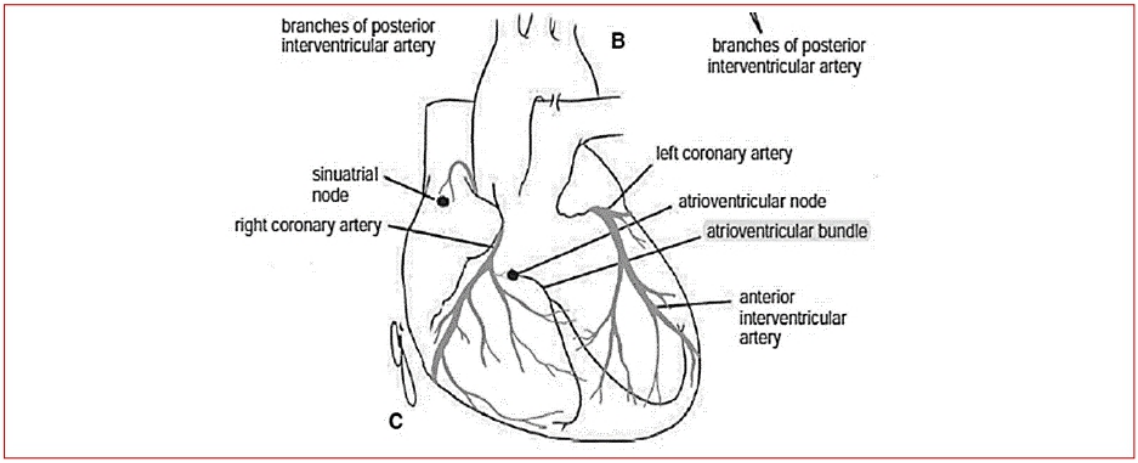
a) SA node
b) AV Node
c) RBB of Atrioventricular bundle
d) LBB of Atrioventricular bundle
e) Whole Left atrium

Answer: C

Explanation:

Arterial Supply to the Conducting System:

- The sinuatrial node is usually supplied by the right (60% case) but sometimes by the left coronary artery.
- The atrioventricular node and the atrioventricular bundle are supplied by the right coronary artery.
- The **RBB of the atrioventricular bundle** is supplied by the left coronary artery; the LBB is supplied by the right and left coronary arteries



Ref: Snell clinical anatomy/ 9th / P-88

04. During post-operative period a patient presented with central chest pain. ECG shows ST elevation in V1-V 3 leads. Which is the most likely site of coronary artery blockage?

a) Proximal LAD
b) Distal LAD
c) Circumflex artery
d) Proximal RCA
e) Distal RCA

Answer: B

Explanation:

- Myocardial infarction occurs when coronary flow is suddenly reduced or stopped and the cardiac muscle undergoes necrosis.
- Different coronary arteries that supply the different areas of the myocardium. This information can be helpful when attempting to correlate the site of myocardial infarction, the artery involved, and the electrocardiographic signature.

Coronary artery Lesions. Infarct location, and ECG signature

Coronary artery	Infarct location	ECG signature
Proximal LAD	Large anterior wall	ST elevation: I, L, V1-V6
More distal LAD	Anteroapical Inferior wall if wraparound LAD	ST elevation: V2-V4 ST elevation: II, III, F
Distal LAD	Anteroseptal	ST elevation: V1-V3
Early obtuse, marginal	High lateral wall	ST elevation: I, L, V4-V6
More distal marginal branch, circumflex	Small lateral wall	ST elevation: I, L, or V4-V6, or no abnormality
Circumflex	Posterolateral	ST elevation: V4-V6 ST depression: V1, V2
Distal RCA	Small inferior wall	ST elevation II, III, F; depression: I, L
Proximal RCA	Large inferior wall and posterior wall Some lateral wall	ST elevation: II, III, F; ST depression: I, L, V1-V3 ST eleveation: V5-V6
RCA	Right ventricular Usually, inferior	ST elevation V2R-V4R: some ST elevation: V1-or ST depression V2-V3 ST elevation: II, III, F

Ref: Snell Clinical Anatomy/ 9th / P-89

05. The safest site for insertion of a chest drain, except-

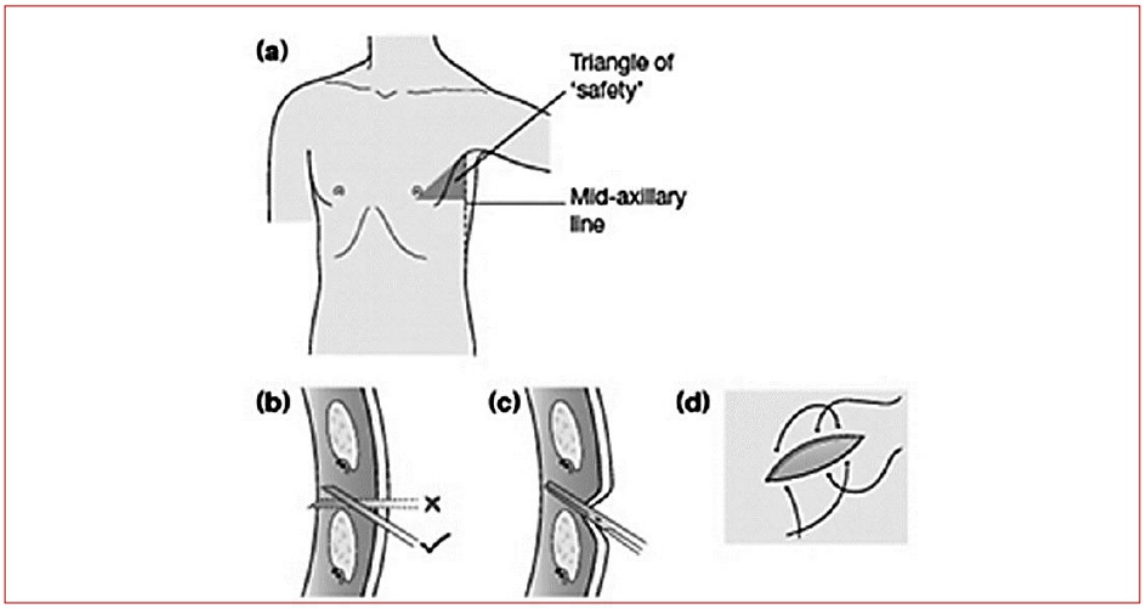
a) Anterior to mid axillary line
b) Below and lateral to the pectoralis major muscle
c) Along the posterior axillary line
d) Above the level of the nipple
e) In the 4th/5th ICS.

Answer: C

Explanation:

The safest site for insertion of a drain is in the triangle that lies:

- Anterior to the mid-axillary line;
- Above the level of the nipple;
- Below and lateral to the pectoralis major muscle.



Ref: Bailey & Love's/28th/P-374

06. Your patient presents with pneumonia. Examination of lateral-view chest films that the pneumonia is localized just inferior to the horizontal fissure. pneumonia most likely be localized?

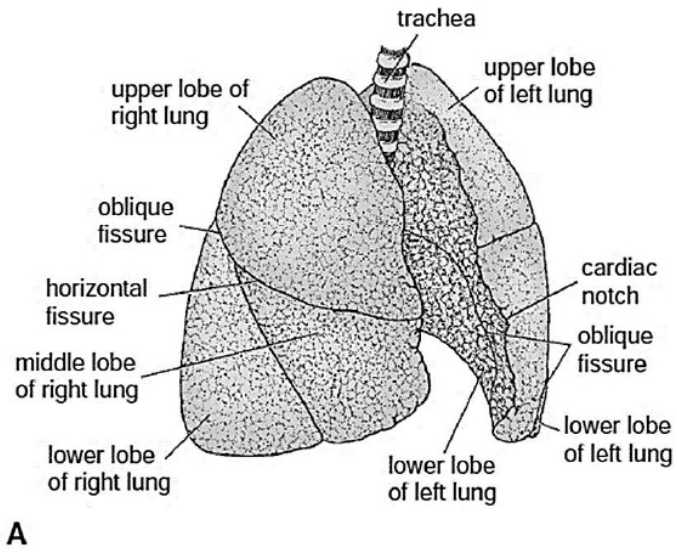
a) Inferior lobe of the left lung
b) Inferior lobe of the right lung
c) Middle lobe of the right lung
d) Middle lobe of the left lung
e) Superior lobe of the left lung

Answer: C

Explanation:

- In the right lung there are two fissures-oblique & horizontal.
- The horizontal fissure, which may be represented by a line drawn horizontally along the fourth costal cartilage to meet the oblique fissure in the midaxillary line
- **Above the horizontal fissure lies the upper lobe and below it lies the middle lobe**

- Below and posterior to the oblique fissure lies the lower lobe.



Ref: Snell Clinical Anatomy/ 9th / P-55

07. The most commonly herniated viscus through for the foramen of Morgagni is?

a) Duodo-jejunal flexure
b) Hepatic flexure of colon
c) Transverse colon
d) Splenic flexure of colon
e) Stomach

Answer: C

Explanation:

The foramen of Morgagni- a hernia in the anterior part of the diaphragm with a defect between the sternal and costal attachments. The most commonly involved viscus is the transverse colon.

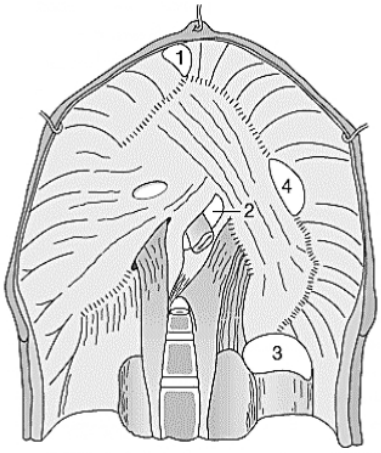


Figure 55.30 Diagram of sites of hernias. The usual sites of congenital diaphragmatic hernia: 1, foramen of Morgagni; 2, oesophageal hiatus; 3, foramen of Bochdalek (pleuroperitoneal hernia); 4, dome.

25. Which statement is false regarding the thoracic duct?

a) Is the largest lymphatic vessel in the body
b) Formed as the continuation of cisterna chyli
c) It is situated in the superior & posterior mediastinum
d) It has a beaded appearance due to the presence of many valves in its lumen
e) Enters the thorax through the venacaval opening of the diaphragm.

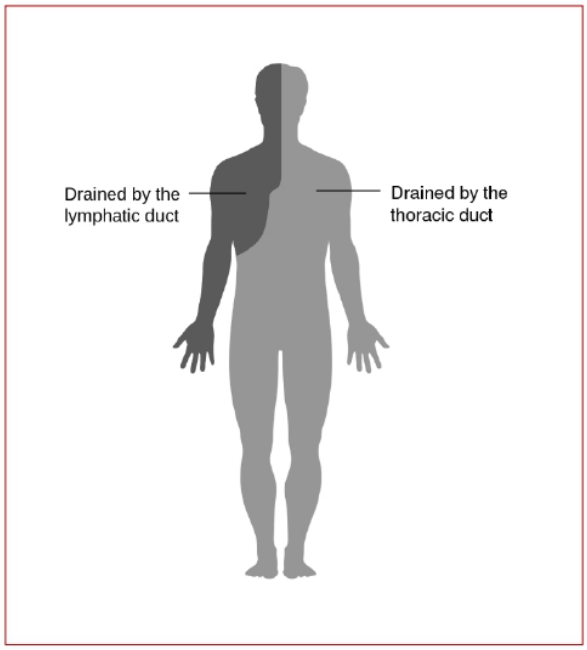
Answer: E

Explanations:

The **thoracic duct** is the largest lymphatic vessel in the body. It is formed as the continuation of cisterna chyli at the lower border of the 12ththroracic vertebra.

Situation: It is situated in the superior & posterior mediastinum
Extension: It extends from the upper part of the abdomen to the lower part of the neck.
Length: 45cm (38-45) **Breadth:** 0.5 cm
Appearance: It has a *beaded* appearance due to the presence of many valves in its lumen
Course:

a) The thoracic duct begins as a continuation of the upper end of the cisterna chyli near the lower border of the **12th** thoracic vertebra and enters the thorax through the aortic opening of the diaphragm.
b) It passes upward in the posterior mediastinum behind the esophagus. At the level of **T5 vertebra** if gradually turns to the left, enters to the superior mediastinum and then ascends to the thoracic inlet along the left border of the esophagus and reaches the neck.
c) At the root of the neck, it arches laterally opposite the **transverse process of C7** and finally terminates in the angle formed by the junction of left internal jugular and left subclavian veins



Termination: It terminates by opening into the angle of junction between the left subclavian & left internal jugular vein. (Left brachiocephalic vein)
Tributaries:

- Right & left lumbar trunks
- Intestinal lymph trunk
- Bilateral descending thoracic lymph trunks
- Bilateral ascending thoracic lymph trunks
- Upper intercostal trunks
- Mediastinal trunk
- Left subclavian trunk
- Left jugular trunk
- Left broncho-mediastinal trunk
- Area of drainage: It receives lymph from both halves of the body below the diaphragm, the left half above the diaphragm

*Draining area: whole body except right side of head & neck, right upper limb, right half of heart.

Ref: Snell clinical anatomy/ 9th / P-98/ AK Datta anatomy/ 10th / P-

02. During the Hernioplasty operation the surgeon opened the inguinal region & found a hernial sac just above the inguinal ligament medial to the inferior epigastric vessels. The hernia was diagnosed as:

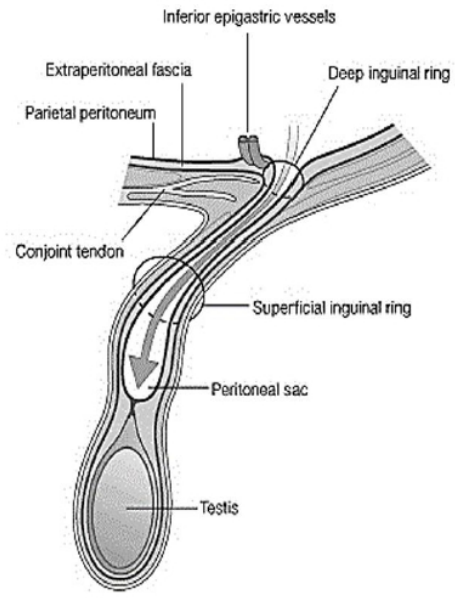
a) Congenital inguinal hernia
b) Direct inguinal hernia
c) Femoral hernia
d) Incisional hernia
e) Indirect inguinal hernia

Answer: B

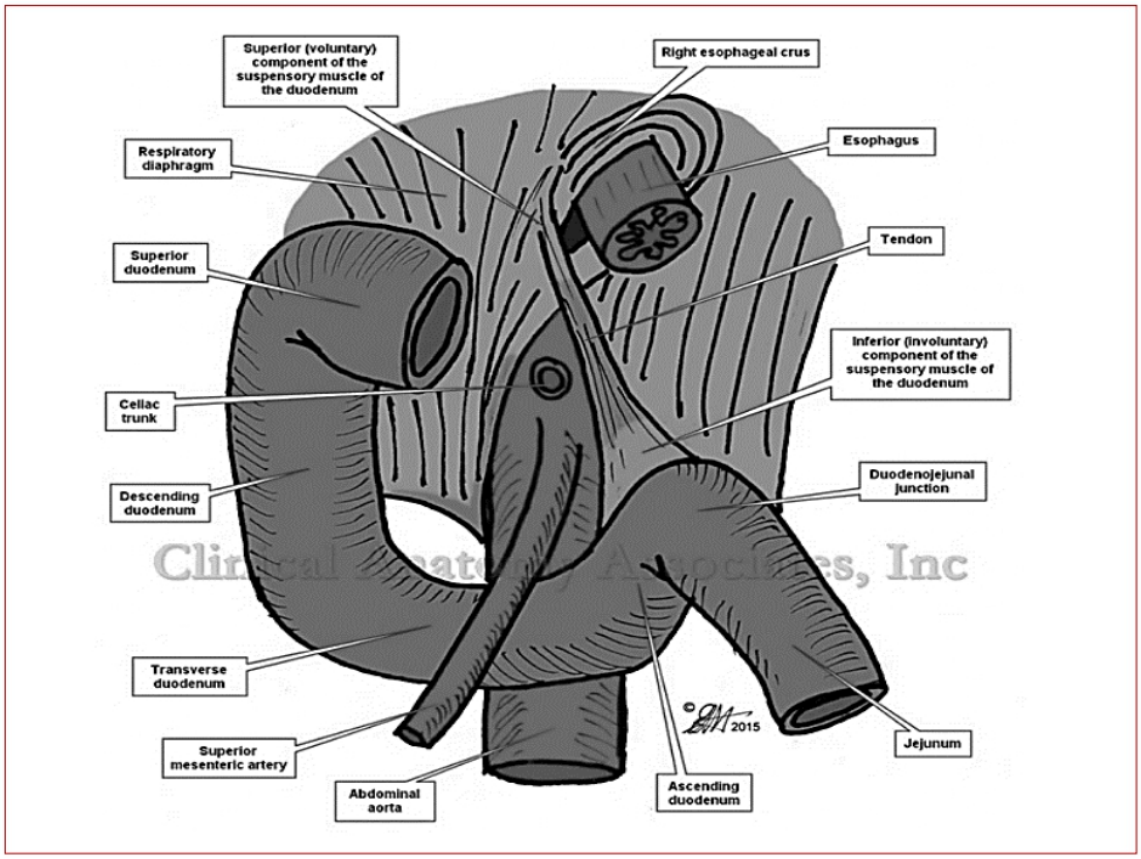
Explanations:

Indirect versus direct inguinal hernias

Indirect inguinal hernia	Direct Inguinal hernia
Pass through inguinal canal.	Bulge from the posterior wall of the inguinal canal
Can descend into the scrotum.	Cannot descent into the scrotum.
Lateral to inferior epigastric vessels.	Medial to inferior epigastric vessels.
Reduced: upward, then laterally and backward.	Reduced: upward, then straight backward.
Controlled: after reduction by pressure over the internal (deep) inguinal ring.	Not controlled: after reduction by pressure over the internal (deep) inguinal ring.
The defect is not palpable (it is behind the fibers of the external oblique muscle).	The defect may be felt in the abdominal wall above the pubic tubercle.
After reduction: the bulge appears in the middle of inguinal region and then flows medially before turning down to the scrotum.	After reduction: the bulge reappears exactly where it was before.
Common in children and young adults.	Common in old age.



Ref: BD Chaurasia/ 7th/ P-237



06. Main arterial supply of rectum:

a) Superior rectal artery
b) Middle rectal artery
c) Inferior rectal artery
d) Sigmoid artery
e) Inferior mesenteric artery

Answer: A

Explanation:

- The superior rectal artery is the direct continuation of the inferior mesenteric artery and is the main arterial supply of the rectum.
- The middle rectal artery arises on each side from the internal iliac artery and passes to the rectum in the lateral ligaments.
- The inferior rectal artery arises on each side from the internal pudendal artery as it enters Alcock's canal.

11. Which artery does not supply 1st part of duodenum?

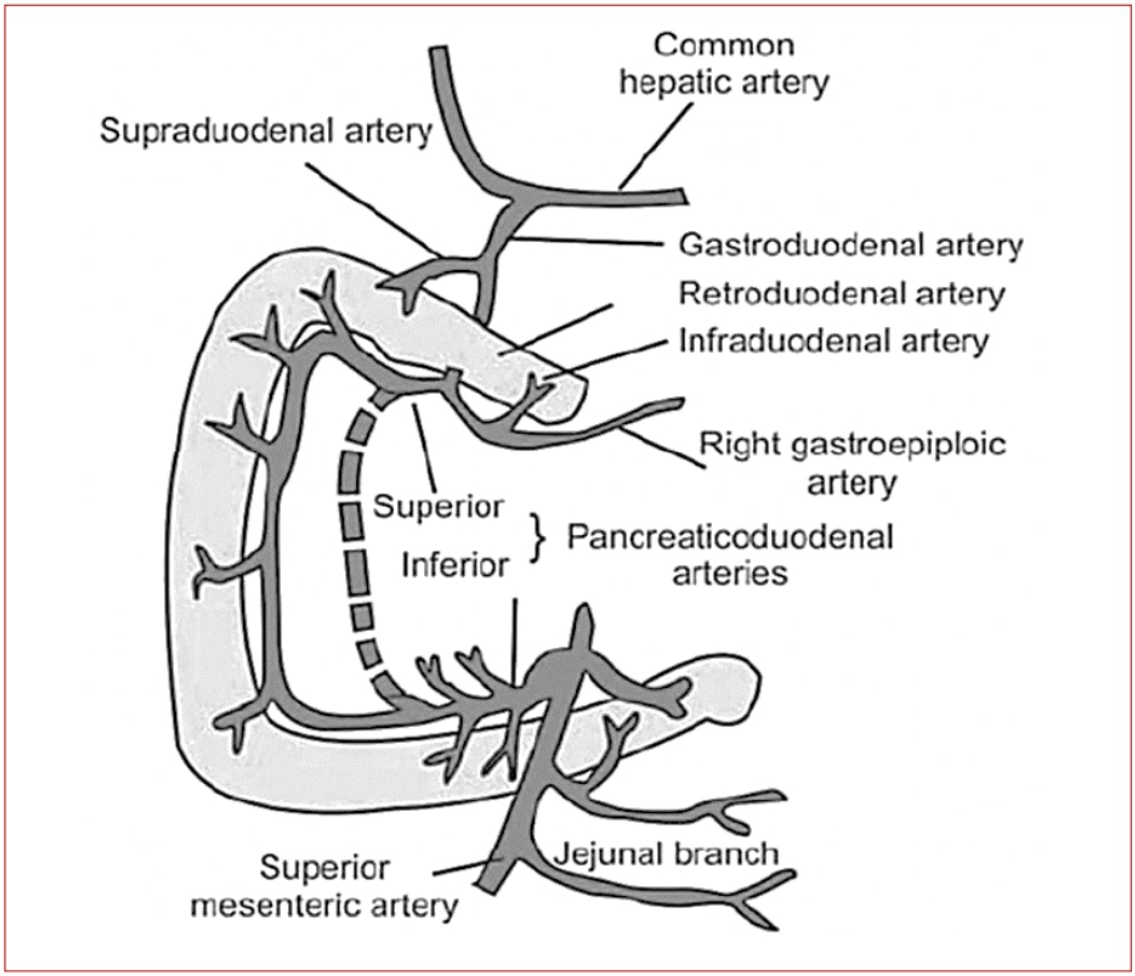
a) Supra duodenal artery
b) Superior pancreatico-duodenal artery
c) Right gastric artery
d) Gastro duodenal artery
e) Hepatic artery

Answer: E

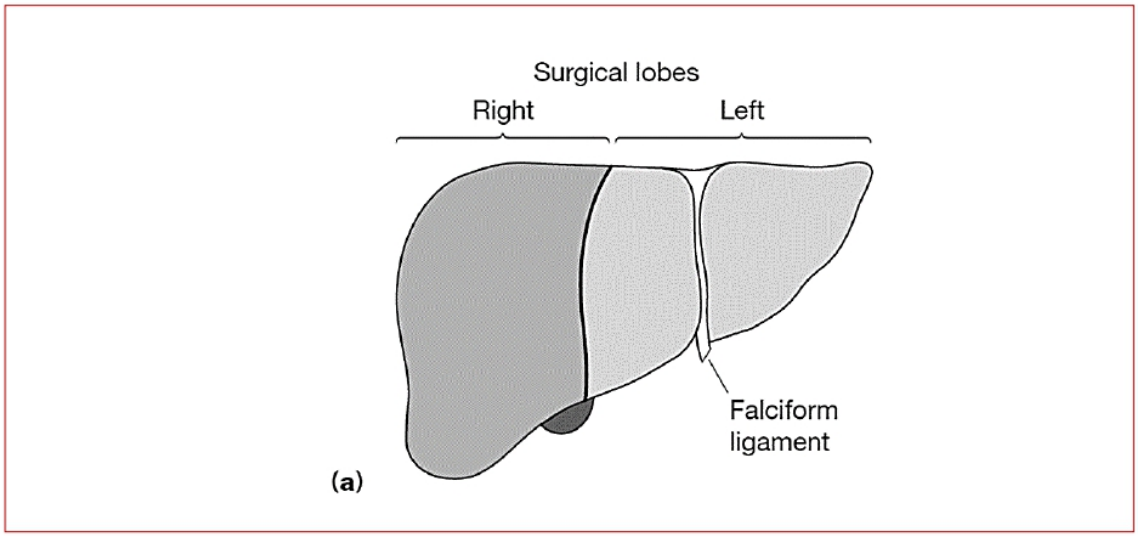
Explanation:

Artery supply: 1st part of duodenum
Main supply from Superior pancreatic duodenal artery
Additional supply-

a) Right gastric artery
b) Supra duodenal artery which is a branch of common hepatic artery
c) Retro duodenal artery—branch of gastro duodenal artery
d) Some branch of gastroepiploic artery



Ref: BD Chaurasia/ 7th/ P-288



Ref: Bailey-Love's/27th/P-1154

24. Which statement is true for Meckel's diverticulum?

a) Is present in 20 per cent of the population
b) Arises from the mesenteric border of the jejunum
c) Usually found 2 feet proximal to ileocecal valve
d) Is present only in males
e) Is a diverticulum of the bladder

Answer: C

Explanation:

Meckel's Diverticulum

Rule of 2's

- 2% of the population have one
- 1/2 of symptomatic lesions usually present before the age of 2 years old, others most commonly in the first 2 decades of life
- Diveriticuli in adult patients only become symptomatic in about 2%
- 2 times more common in males than females
- Usually found within 2 feet of the ileocecal valve
- Usually are about 2 inches in length
- 1/2 contain heterotrophic mucosa (usually gastric, occasionally pancreatic)

Ref: BD Chaurasia/ 7th/ P-290

25. A middle aged male patient Presented to emergency dept. with Abdominal pain along with hematemesis & melaena, after proper investigations, pt. has been diagnosed as peptic ulcer bleeding. Which is the most common vessel to get involved with?

a) Gastroduodenal artery
b) Rt. Gastric artery
c) Supraduodenal artery
d) Gatroepiploic artery
e) Gastro omental artery

Answer: A

Explanation:

- Gastroduodenal artery most commonly involved in Duodenal ulcer perforation.
- Splenic artery most commonly involved in body of stomach ulcer perforation.

55. A 60-year-old man attends the urology clinic as part of his routine follow-up for metastatic prostate cancer. Examination reveals a grossly distended, ascitic abdomen. A hard, non-tender, ulcerated nodule is noted to arise from the umbilicus. The nodule demonstrates no overlying erythema, warmth, or palpable cough impulse, and is not reducible. Which of the following options is this nodule most likely to represent?

a) Umbilical hernia
b) Fluid-filled urachal sinus
c) Para-umbilical hernia
d) Sister Mary Joseph nodule
e) Caput medusae

Answer: D

Explanation:

The urachus is a connection between the urinary bladder and umbilicus. It usually involutes but may present in later life as a result of increased pressure in the bladder usually due to prostatic hypertrophy. The cause of obstruction should be dealt with initially, but if the problem persists then surgical excision of the patent urachus might be considered. If tumour presents at the umbilicus it is most probably due to spread from the internal organs along internal ligaments, from the liver along the falciform ligament. A malignant mass at the umbilicus is called a Sister Joseph's nodule. It usually indicates very advanced malignant disease and surgery probably has little to offer. Malignancy at the umbilicus is rare; however, primary squamous carcinoma may occur and malignancy may develop in a urachal remnant. Local excision is required

(Ref: Bailey & love-28th 1080)

56. A 45-year-old boy presents with a 'band like' across her upper abdomen, at the level of L1. While examining her abdomen, the surgical trainee attempts to remember all the organs found at this level. Which one of the following structures is not found in this plane?

a) Neck of the pancreas
b) Pylorus of the stomach
c) Origin of the coeliac trunk
d) Fundus of the gallbladder
e) Origin of the superior mesenteric artery

Answer: C

Explanation:

The transpyloric plane is an imaginary transverse plane often referred to in anatomical descriptions. Anteriorly, it passes through the tips of the ninth costal cartilages; and posteriorly, through the lower part of the body of the first lumbar vertebra. This plane lies midway between the suprasternal notch and the pubic symphysis. It is roughly a hand's breadth below the xiphisternal joint. It passes through pylorus of stomach, hila of the kidneys, fundus of gallbladder, neck of pancreas, origin of coeliac axis and superior mesenteric arteries.

(Ref: BD-(Vol 2)-234)

57. A male patient undergoes an elective open inguinal hernia repair. The surgeon opens the spermatic cord to identify the hernia sac. Which structure is is unlikely to be found within the spermatic cord?

a) Artery to the vas deferens
b) Genital branch of the genitofemoral nerve
c) Ilioinguinal nerve
d) Testicular artery
e) Vas deferens

Answer: C

Explanation:

Constituents of the Spermatic Cord

These are as follows.

1 The ductus deferens
2 The testicular and cremasteric arteries, and the artery of the ductus deferens.
3 The pampiniform plexus of veins.
4 Lymph vessels from the testis.
5 The genital branch of the genitofemoral nerve, and the plexus of sympathetic nerves around the artery to the ductus deferens and visceral afferent nerve fibers.
6 Remains of the processus vaginalis.

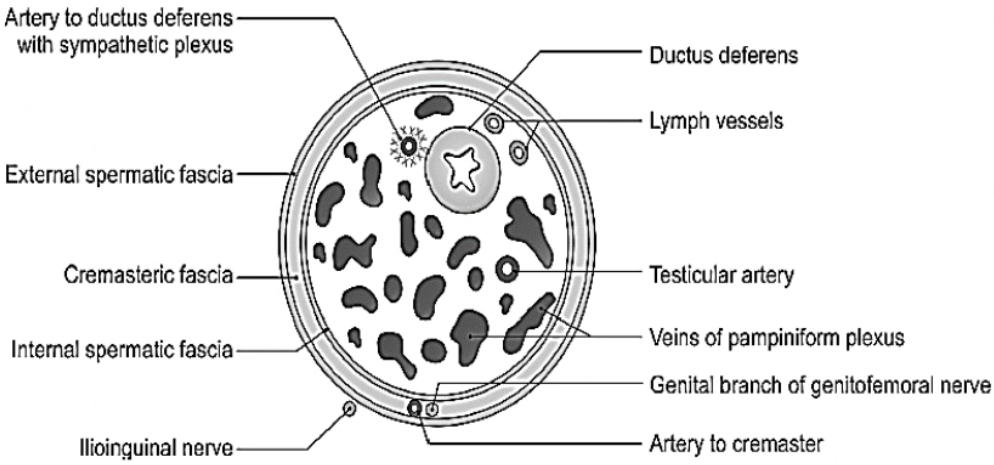


Fig. 16.27: Transverse section through the spermatic cord

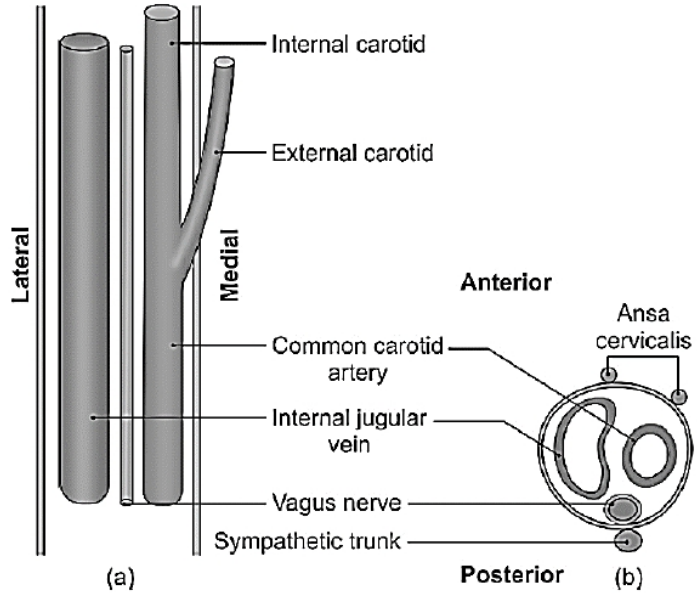
(Ref: BD-(Vol 2)-251)

27. Which one of the following structures lies parallel and immediately deep to the carotid sheath in the neck?

a) Vagus nerve
b) Recurrent laryngeal nerve
c) Scalenus anterior
d) Trachea
e) Sympathetic trunk

Answer: E

Explanation:



Figs 3.8a and b: Right carotid sheath with its contents: (a) Surface view; (b) Sectional view

(Ref: BD-(Vol-3)-90)

28. An adolescent boy is seen in the Emergency Department after experiencing a sharp pain in his throat after eating bony fish. The ENT surgical registrar on call manages to retrieve the fish bone non surgically but is unsure if there may have been damage to the mucosa of the piriform fossa. Which nerve constitutes the afferent (sensory) supply to the piriform fossa?

a) External laryngeal nerve
b) Glossopharyngeal nerve
c) Hypoglossal nerve
d) Internal laryngeal nerve
e) Recurrent laryngeal nerve

Answer: D

Explanation:

The *lateral wall* presents a depression called the *piriform fossa*, one on each side of the inlet of the larynx The fossa is bounded medially by the aryepiglottic fold, and laterally by the thyroid cartilage and the thyrohyoid membrane. Beneath the mucosa of fossa, there lies the internal laryngeal nerve. Removal of foreign bodies from the piriform fossa may damage the internal laryngeal nerve, leading to anaesthesia in the supraglottic part of the larynx

(Ref: BD (Vol 3, 4)-262)

08. A 35 yrs smoker male patient who is hypertensive, diabetic and occasional alcoholic, came for an abdominal surgery. He has previous history of DVT. What is risk factor which will cause defective ciliary motility of his respiratory tract, which will cause delay in recovery.

a) Hypertension
b) Alcoholism
c) Diabetes
d) DVT
e) Smoking

Answer: E

Explanation:

Other factors are: genetic deficiency like cystic fibrosis, environmental factors. They suffer from recurrent lung infection.

Ref: Ganong/ 26th/P-623

09. A 49 yrs old female is taking ACE inhibitor daily for her HTN. She is suffering from dry cough. The problem is arising from lack of angiotensin converting enzyme activity. Lack of inactivation of which substance below causing such problems?

a) Serotonin
b) Angiotensinogen
c) Bradykinin
d) Norepinephrine
e) Arginine

Answer: C

Explanation:

This enzyme inactivates bradykinin. Lack of inactivation causes dry cough.

Ref: Ganong/26th/P- 628

10. A severely malnourished, uncontrolled asthmatic patient is having TPN before surgery for optimization. In his TPN glucose content was 80%. Suddenly he developed confusion, coma with respiratory depression. His ABG shows acidosis. Cause of his condition is?

a) Hypercapnia
b) Hypoxia
c) Hyperventilation
d) Respiratory alkalosis
e) Anxiety

Answer: A

Explanation:

TPN containing more glucose will cause release of more CO2. That will increase the respiratory quotient. As pt is asthmatic so he can't cope up with the condition and developed hypercapnia and respiratory acidosis.

Ref: Ganong/ 26th /P- 635

11. Surfactant helps to prevent pulmonary edema without surfactant how much pressure will be created in alveoli which will cause pulmonary edema?

a) 25mmHg
b) 20mmHg
c) 50mmHg
d) 45mmHg
e) 100mmHg

Answer: B

Explanation:

Without surfactant there will be 20mmHg force in alveoli which will cause fluid transport from blood to alveoli.

Ref: Ganong/26th /P- 619

12. Which of the following provides air in the alveoli to areate the blood even between the breaths and thus prevents sudden rise and fall in O2 and CO2 conc in blood?

a) Vital capacity
b) FRC
c) Tidal volume
d) Residual volume
e) FEV1

Answer: D

Explanation:

It is the volume of air remaining in the lungs after most forceful expiration and its 1200ml. it prevents collapse of the lung and above-mentioned function.

Ref: Ganong/25^{6h}/P- 617

13. What percentage of CO2 is transported in the form of HCO3-?

a) 7%
b) 70%
c) 50%
d) 23%
e) 98%

Answer: B

Explanation:

CO_2 transported by: 1) in dissolved state- 7%, 2) by forming HCO3-70%, 3) carbamino compound 23%

Transport of O2 in the blood:

0_2 is transported in the blood in two forms-

In the form of O-Hb: About 97 % of O2 is carried in the form of O-H b) 4 O2 molecules bindreversibly with 4 iron atoms of a Hb molecule by the process of oxygenation and formoxy-hemoglobin (O-Hb) which is transported in the blood)

In dissolved state: Remaining 3% ofO, is transported in the dissolved state in the water of plasma and cells.

Forms of CO2 in the blood: In the blood CO2 is carried in the following forms-

1. In the dissolved state- 7 %
2. In the form of HCO -70 %
   a) KHCO3 in RBC
   b) NaHCO3 in plasma
3. In combination with Hb & plasma proteins forming carbamino compounds-23%
   a) Carbamino-Hb in RBC
   b) Carbamino-Protein in RBC & plasma

Ref: Ganong/ 26th/P- 631

14. The decrease in O2 affinity of hemoglobin when the ph of blood falls is known as?

a) Bohr effect
b) Haldane effect
c) Chloride shift
d) Hamburger shift
e) P50 of blood

Answer: A

Explanation:

This helps increase oxygenation of pulmonary blood and also increase oxygen delivery in tissues.

Ref: Ganong/ 26th /P- 631

15. Spontaneous respiration ceases after?

a) Transection of brainstem above pons
b) Transection of brainstem at the caudal end of medulla
c) Bilateral vagotomy
d) Bilateral vagotomy with Transection of brainstem above pons
e) Transection of spinal cord at the level of the first thoracic segment

Answer: B

Explanation:

Respiratory control pattern generator responsible for automatic respiration are located in medulla

Ref: Ganong/ 26th /P- 645-46

16. Which of the following has the greatest effect on the ability of blood to transport oxygen?

a) Capacity of blood to dissolve oxygen
b) Amount of hemoglobin in blood
c) Ph of plasma
d) CO2 content of RBC
e) Temperature of blood

Answer: B

Explanation:

98% O2 transported by binding with hemoglobin. Remainder in dissolved state.

Ref: Ganong/ 26th/P- 629

17. Which of the following is associated with reduced lung compliance?

a) Older age
b) Emphysematous type COPD
c) Decline in pulmonary blood flow
d) Adopting vertical posture
e) Adjusting a ventilator to maintain high lung volume

Answer: E

Explanation:

Lung compliance is the measure of the ease of expansion of the lungs and thorax, determined by pulmonary volume and elasticity. In older age and COPD there is increase lung compliance due to loss of elasticity. Decreased lung compliance is seen in atelectasis, pulmonary fibrosis, pneumonia, lack of surfactant. In these cases, greater change in pressure is required for a given change in volume.

Ref: Ganong/26th/P-619- 620

18. During vigorous cough probably the only muscle that is relaxed is?

a) Sternocleidomastoid
b) Trapezius
c) Diaphragm
d) Intercostal muscle
e) Scalene group of muscle

Answer: C

Explanation:

Coughing to clear sputum is an essential part of recovery from surgery. During vigorous cough probably the only muscle that is relaxed is diaphragm.

Ref: Bailey and love's, 27th /P-915

19. Normal Tidal volume (TV) of lung is?

a) 1100ml
b) 3000ml
c) 500ml
d) 4600ml
e) 1000ml

Answer: C

Explanation:

Lung volumes

Types	Definition	Normal value
tidal volume (TV)	It is volume of air inspired or expired with each normal breath	500MI
Inspiratory reserve volume (IRV)	It is the maximum extra volume of air that can be inspired forcefully after completing a normal tidal inspiration	3000MI
Expiratory reserve volume (ERV)	It is the maximum extra volume of air that can be expired by forceful expiration after the end of a normal tidal expiration	1100MI
Residual volume (RV)	It is volume of air remaining in the lungs after the most forceful expiration	1200MI

Ref: Ganong/ 26th /P- 617

20. The forced vital capacity is

a) The amount of air that normally moves into (or out of) the lungs with each respiration.
b) The amount of air that enters the lungs but does not participate in gas exchange.
c) The amount of air expired after maximal expiratory effort.
d) The largest amount of gas that can be moved into and out of the lungs in 1 min.

Answer: C

Explanation:

The TLC can be broken down into alternative capacities that help define functioning lungs. The **vital capacity** (VC,~3.5 L) refers to the maximum amount of air expired from the fully inflated lungs, or maximum inspiratory level (this represents TV + IRV + ERV). The **inspiratory capacity** (IC, ~2.5 L) is the maximum amount of air inspired from the end-expiratory level (IRV + TV). The **functional residual capacity** (FRC;~2.5 L) represents the volume of the air remaining in the lungs after expiration of a normal breath (RV + ERV).

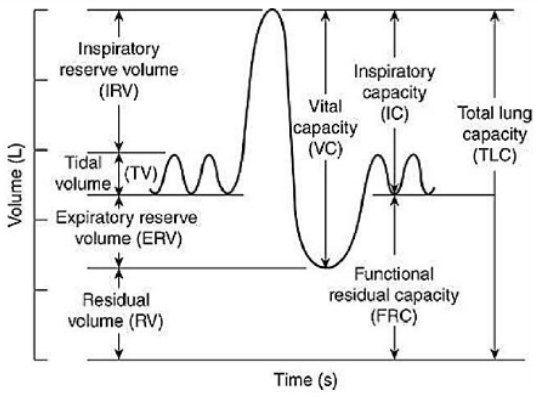


FIGURE 34-8 Lung volumes and capacity measurements.

Ref: Ganong/ 26th /P- 617

21. The tidal volume is

a) The amount of air that normally moves into (or out of) the lungs with each respiration.
b) The amount of air that enters the lungs but does not participate in gas exchange.
c) The amount of air expired after maximal expiratory effort.
d) The amount of gas that can be moved into and out of the lungs in 1 min.

Answer: A

22. Which of the following is responsible for the movement of O2 from the alveoli into the blood in the pulmonary capillaries?

a) Active transport
b) Filtration
c) Secondary active transport
d) Facilitated diffusion
e) Passive diffusion

Answer: E

23. Airway resistance

a) Is increased if the lungs are removed and inflated with saline.
b) Does not affect the work of breathing.
c) Is increased in paraplegic patients.
d) Is increased following bronchial smooth muscle contraction.
e) Makes up 80% of the work of breathing.

Answer: D

24. Surfactant lining the alveoli

a) Helps prevent alveolar collapse.
b) Is produced in alveolar type I cells and secreted into the alveolus.
c) Is increased in the lungs of heavy smokers.
d) Is a glycolipid com

Answer: A

Explanation:

The alveoli are lined by two types of epithelial cells. **Type I cells** are flat cells with large cytoplasmic extensions and are the primary lining cells of the alveoli, covering approximately 95% of the alveolar epithelial surface area. **Type II cells (granularpneumocytes)** are thicker and contain numerous lamellar inclusion bodies. Although these cells make up only 5% of the surface area, they represent approximately 60% of the epithelial cells in the alveoli. Type II cells are important in alveolar repair as well as other lung cellular functions. One prime function of the type II cell is the production of **surfactant**.

Typical **lamellar bodies,** membrane-bound organelles containing whorls of phospholipid, are formed in these cells and secreted into the alveolar lumen by exocytosis. Tubes of lipid called **tubular myelin** form from the extruded bodies, and the tubular myelin in turn forms a phospholipid film. Following secretion, the phospholipids of surfactant line up in the alveoli with their hydrophobic fatty acid tails facing the alveolar lumen. This surfactant layer plays an important role in maintaining alveolar structure by reducing surface tension (see below).

Surface tension is inversely proportional to the surfactant concentration per unit area. The surfactant molecules move further apart as the alveoli enlarge during inspiration, and surface tension increases, whereas it decreases when they move closer together during expiration. Some of the protein-lipid complexes in surfactant are taken up by endocytosis in type II alveolar cells and recycled

Ref: Ganong/ 26th /P- 617

01. After resection of terminal ileum which of the following vitamin will be well absorbed?

a) vit-A
b) Vit-D
b) Folic acid
d) Vit-E
e) Vit-B12

Answer: C

Explanation:

Terminal ileum resection leads to less absorption of bile salt and vitamin-B12, as absorption of this substances occurs here) Bile salts asses with stool which leads to bile salt deficiency. Deficiency of bile salt leads to less absorption of fat soluble vitamins: vit- A,D,E,K.

Absorption of	Small Intestine			
	Upper[6]	Mid	Lower	Colon
Sugars (glucose, galactose etc)	++	+++	++	0
Amino acids	++	++	++	0
Water-soluble and fat-soluble vitamins except vitamin B12	+++	++	0	0
Betaine, dimethylglycine, sarcosine	+	++	++	?
Antibodies in newborns	+	++	+++	?
Pyrimidines (thymine and uracil)	+	+	?	?
Long-chain fatty acid absorption and conversion to triglyceride	+++	++	+	0
Bile acids	+	+	+++	+
Vitamin B_{12}	0	+	+++	0
Na^+	+++	++	+++	+++
K^+	+	+	+	Sec
Ca^{2+}	+++	++	+	?
Fe^{2+}	+++	+	+	?
Cl^-	+++	++	+	+
SO_4^{2-}	++	+	0	?

Na+ is absorbed throught the gut and k+ is secreted in the colon and saliva.

02. 45 years old male is diagnosed with carcinoma of the head of pancreas. He reports that his stool sticks to the commode and will not flush away. Loss of which of the following enzyme is most likely to be responsible for problem?

a) Lipase
b) Amylase
c) Trypsin
d) Elastase
e) None of above

Answer: A

Explanation:

Loss of lipase or deficiency of lipase results in steatorrhoe a) So this is the clinical condition developed in this patient from steatorrhea due to fat malabsorption.

Ref: Ganong/ 26th/P- 474-475

07. Neurotransmitters and hormones that cause increased feeding are?

a) Insulin
b) Motilin
c) Leptin
d) CCK
e) Peptide YY

Answer: B

Explanation:

- **Anorexogenic:**
- It induces satiety center (medial hypothalamus)

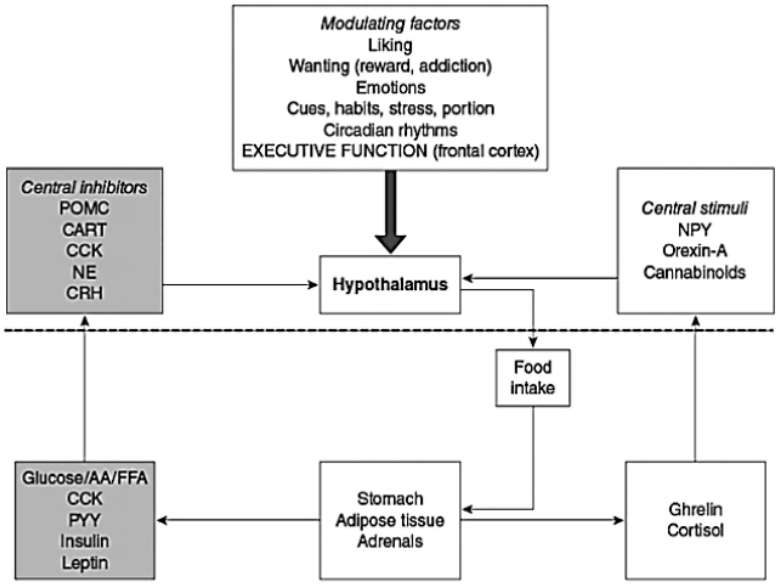
Hormones that stimulate satiety center

- Leptin
- Polypeptide YY
- Pancreatic polypeptide
- Insulin
- GLP-1
- Oxymodulin

- **Orexogenic hormone:**
  - Increases appetite
  - By stimulating lateral hypothalamus

Hormones that inhibit satiety

- Ghrelin
- Neuropeptide YY
- Motilin



Ref: Ganong/ 26th/P-460

08. A 44 years old woman is diagnosed with Zollinger – Ellison syndrome. Which of the following findings is consistent with the diagnosis?

a) ↓serum gastrin level
b) ↑serum insulin level
c) ↑ absorption of dietary lipid
d) ↓ parietal cell mas
e) Peptic ulcer diseases.

Answer: E

Explanation:

Zollinger–Ellison syndrome-

This syndrome is mentioned here because the gastrin producing endocrine tumor is often found in the duodenal loop, although it also occurs in the pancreas, especially the head. It is a cause of persistent peptic ulceration. Before the development of potent gastric antisecretory agents, the condition was recognized by the sometime fulminant peptic ulceration.

Ref: Ganong/26th/P- 446

09. A 38 years old male patient with a duodenal ulcer is treated successfully with drug cimetidine. The basis for cimetidine's inhibition of gastric H+ secretion is that it-

a) Blocks muscarine receptors on parietal cells.
b) Blocks H2 receptors on parietal cell
c) ↑ intracellular cAMP levels
d) Blocks H+,K+ - ATPase
e) Enhances the action of acetylcholine (ACh) on parietal cells.

Answer: B

Explanation:

Cimetidine is H2 receptor blocker. It blocks histamine to bind with its receptor in parietal cell of stomach and inhibits gastric acid secretion.

Ref: Ganong/ 25th/P- 450

10. Which of the following is characteristics of saliva?

a) Hypotonicity relative to plasma
b) A lower Hco3-conc than plasma
c) Presence of proteases
d) Secretion rate that is increased by vagotomy
e) Modification by salivary ductal cells involves reabsorptions of k+ & HCO3.

Answer: A

Explanation:

Saliva is hypotonic to plasma and has higher bicarbonate content. There is secretion of K+ and HCO3- in saliva

Ref: Ganong/ 26th/P-447

11. A 49-year-old male patient with sever crohn's disease has been unresponsive to drug therapy and undergoes ileal resection. After the surgery he will have steatorrhea because?

a) The liver bile acid pool increase
b) Chylomicron do not form in the intestinal lumen.
c) Micelles do not form in the intestine
d) Dietary triglycerides cannot be digested
e) Pancreases does not secrete lipase

Answer: C

Explanation:

Due to the terminal ileum resection, there will be no enterohepatic circulation of bile, that will result in reduced fat absorption and steatorrhe a Bile helps to micelle formation and emulsification of fat, thus fat digestion and absorption.

Ref: Ganong/26th/P-474-475

12. Cholecystokinin inhibits?

a) Gastric emptying
b) Pancreatic HCO3 secretion.
c) Pancreatic enzyme secretion
d) Contraction of gallbladder
e) Relaxation of sphincter of ODDI.

Answer: A

Explanation:

Function:

- Stimulate contraction of gall bladder (cholegague)
- Relaxation of sphincter of oddi
- Stimulate pancreatic ecbolic secretion (enzyme rich)
- Regulate pancreatic growth

Explanation:

There is no anatomical sphincter in LOS. There is a physiological sphincter.

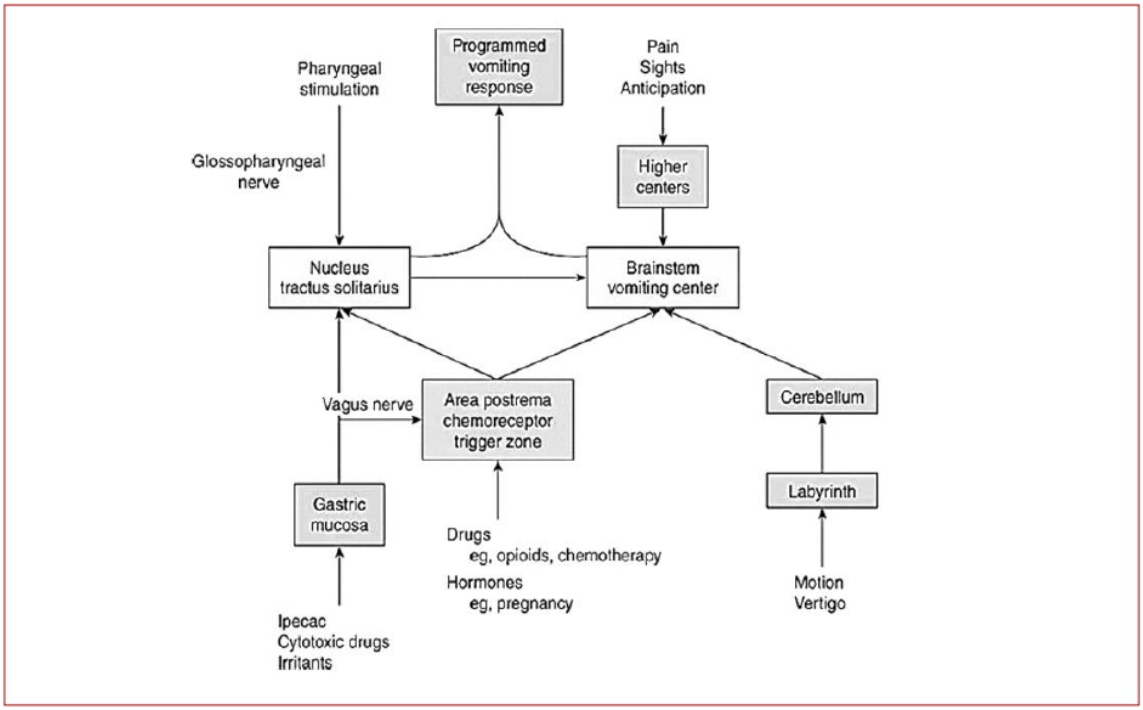


Fig- vomiting center

Ref: Ganong/ 26th/P- 490

14. Liver is the principal site for?

a) Synthesis of Angiotensin – II
b) Storage of Vit – c
c) Synthesis of immunoglobulin
d) Synthesis of vitamin – B12
e) Storage of iron

Answer: E

Explanation:

Liver is the principal site for synthesis of angiotensinogen, storage of vit A,D,B12 in large amount and Vit-K, folic acid in smaller amount. storage of iron, copper. Detoxification of toxic metabolites.

Functions of liver:

Protein synthesis	• Albumin • Coagulation factors • Complement factors • Haptglobin • Ceruloplasmin • Transferrin • Protease inhibitors
Nutrient metabolism	• Carbohydrates • Proteins • Lipids
Storage	• CHO, Glycogen • Iron, Copper • Vitamin-A, D,K and B12
Excretion	• Bile salts

	• Bilirubin
Haemopoiesis	• Formation of RBC if fetal life • RBC destruction in adult life
Detoxification	

Ref: Ganong/ 26th/P- 500

15. Which of the following occurs during defecation?

a) Internal Anal sphincter is relaxed
b) External Anal sphincter is contracted
c) Rectal smooth muscle is relaxed
d) Intra – abdominal pressure is lower them when at rest
e) Starts when rectum is > 50% full with stool.

Answer: A

Explanation:

Internal as well as external sphincter relaxes during defecation.
Intraabdominal pressure increases.
First urge to defecate occurs when rectum is full with its 25% capacity.

Ref: Ganong/26th/P-494

16. Which one of the following is false?

a) Vit – B12 and folate absorption Na+- dependent
b) If pancreatic enzyme leaks, it causes less absorption of Vit – A, D, E, K
c) Thiamin is absorbed Na+- dependent
d) K+ is absorbed throughout small intestine
e) K+ is secreted in colon.

Answer: A

Explanation:

Vit – B12 and folate absorption Na+- independent. Vit-B12 absorption occurs in terminal ileum.
Vit-B12 deficiency results in megaloblastic anemia

Absorption of vitamins	Absorption of mineral
Fat soluble vitamins: **A, D, E & K=Upper intestine** **Water soluble vitamins:** All in upper intestine except B12 which is in terminal ileum. **Na+ dependant transport occurs for-** 1. Glucose, 2. Galactose 3. Bile salt 4. All water-soluble absorption is Na dependent except B12 and folic acid which are Na independent 5. AA- Na dependent (secondary active transport) 1.Neutral amino acid 2. Phenylalanine 3. Methionin 4. Amino acid	Iron and calcium: absorption occurs in duodenum **Potassium:** is secreted form intestine

Ref: Ganong/ 25th/P- 483

	(procarboxypeptidase B)			
	Carboxypeptidase B (procarboxypeptidase B)	Trypsin	Proteins and polypeptides	Cleave carboxyl terminal amino acids that have basic side chains
	Colipase (procolpase)	Trypsin	Fat droplets	Binds pancreatic Epase to cil droplet in the presence of bile acids
	Pancreatic lipase	-----	Triglycerides	Monoglycerides and fatty acids
	Chelesteryl ester hydrolase	---	Cholesteryl esters	Cholesterol
	Pancreatic α-amylase	CI	Starch	Same as salivary α-amylase
	Ribonuclease	-----	RNA	Nucleotides
	Phospholipase A_2 (pro-phospholipase A^1)	Trypsin	Phospholipids	Fatty acids, lysophospholipids
Intestinal mucosa	Enteropeptidase	----	Trypsinogen	Trypsin
	Aminopeptidases	---	Polypeptides	Cleave amino terminal amino acid from peptide
	Carboxypeptidases	---	Polypeptides	Cleave carboxyl terminal amino acid from peptide
	Endopeptidases	---	Polypeptides	Cleave between residues in midportion of peptide
	Dipeptides	---	Dipeptides	Two amino acids
	Maltase	--	Maltose, maltotriose	Glucose
	Lactase	----	Lactose	Galactose and glucose
	Sucrase1	---	Sucrose-also maltotriose and maltose	Fructose and glucose
	Isomaltase1	---	A Limit dextrin's, maltose Maltotriose	Glucose
	Nuclease and related enzymes	----	Nucleic acids	Pentoses and purine and pyrimidine bases
Cytoplasm of mucosal cells	Various peptidases	--	Di-tri- and terapepcides	Amino acids

Ref: Ganong/ 26th/P- 451

33. A 45 yrs old pt having complaints of bulky, oily, pale, foul smelling stool which is difficult to flush. The cause of this symptoms is one of the following except?

a) Lack of pancreatic lipase
b) Gastrin hypersecretion
c) HCl hypersecretion
d) Defective reabsorption of bile acid in terminal ileum
e) Lack of carboxypeptidase enzyme

Answer: E

Explanation:

Patient is having steatorrhea. The cause of this are:

a) Lack of pancreatic lipase
b) Gastrin hypersecretion
c) HCl hypersecretion,
d) Defective reabsorption of bile acid in terminal ileum.
Carboxypeptidase helps in protein digestion.

Ref: Ganong/26th /P- 472

34. The normal lower oesophageal sphincter pressure is?

a) 5-10 mmhg
b) 10-25 mmhg
c) 50-100mmhg
d) 25-30 mmhg
e) 40-50mmhg

Answer: B

Explanation:

LOS has a length of 3-4cm and has a pressure of 10-25mmhg.

Ref: Bailey and love 28th/P-1068

35. In Liver function test, which indicates impaired biliary excretion?

a) PT
b) ALT
c) ALP
d) AST
e) Albumin

Answer: C

Explanation:

The serum alkaline phosphatase (ALP) is particularly elevated with cholestatic liver disease or biliary obstruction. It is important to note that routine laboratory analysis of ALP is not isoform-specific and so alkaline phosphatase from a skeletal source may also lead to elevation

Ref: Bailey and love 28th/P-1194

36. Liver function test is accurately assessed by-

a) Prothombin time
b) Plasma albumin
c) ALP
d) Serum bilirubin
e) Serum gamma glutyl transfer age.

Answer: A

Explanation:

The synthetic functions of the liver are reflected in the ability to synthesise proteins (albumin level) and clotting factors (prothrombin time). The standard method of monitoring liver function in patients with chronic liver disease is therefore serial measurement of bilirubin, albumin and prothrombin time.

Ref: Bailey and love 28th/P-1194

37. Which one is not protective to stomach?

a) Mucous
b) Pepsin
c) Bicarbonate
d) Mucosal blood flow
e) Prostaglandin

Answer: B

Ref: Ganong/26th/P-449