IMMANUEL KANT BALTIC FEDERAL UNIVERSITY
DEPARTMENT OF FUNDAMENTAL MEDICINE

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ANATOMY: SPLANCHNOLOGY

Methodological recommendations
for students of medicine

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The manual is prepared according to requirements of the working program of the discipline “Anatomy” and contains methodical indications for the section Splanchnology according to the existing curriculum. The manual is intended for the English-speaking students of medical faculty studying on specialties 31.05.01 “General medicine”.

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CONTENTS

Topic 1

ORAL CAVITY: TEETH, TONGUE, SALIVARY GLANDS, SOFT PALATE, PHARYNX

INTRODUCTION TO THE TOPIC

The oral cavity is the opening of the digestive tract. Its functions are numerous:

A. Mechanical processing of food. Due to the teeth and masticatory act, food bolus is exposed to munching; food particles are crushed.

B. Digestion: the oral cavity is where the first stage of digestion occurs, because the saliva contains the ptyalin enzyme (it splits polysaccharides into disaccharides).

C. Respiratory function: the oral cavity participates in breathing after physical activity or with difficulty breathing through the nose.

D. Speech.

E. Gustatory analyzer (presence of taste receptors is the specific feature of the oral cavity).

Knowledge of the soft palate anatomy is important for doctors because paralysis of its muscles can lead to abnormal food mass passage to the nasal cavity. Inflammatory process in the lymphoid tissue accumulations of the pharynx is a very common condition that causes a sore throat (angina, tonsillitis, adenoiditis).

Before the study of the topic you should know:

1. Anatomy of the mandible and maxilla.
2. The position of the pharyngeal tubercle, the sphenoidal pterygoid processes and pyramids of the temporal bones.
3. The location and functions of the suprahyoid group of the neck muscles.
4. The topography of the neck: fossae, triangles, fasciae, interfascial spaces.

SELF-STUDY GOALS

After independently studying this topic, the student should know: the oral cavity walls, topography, functions, content (salivary glands with their ducts, teeth, gums, tongue); be able to explain and demonstrate the projection of the salivary glands, position and pathway of their ducts; localization of their openings. Student should know the functioning of the muscles of the tongue, soft palate, pharynx; be able to show the tonsils of the lymphoepithelial ring (Pirogov — Waldeyer) on a natural preparations and models.

TOPIC CONTENT

- Anatomy of the vestibulum oris and cavitas oris propria.
- Anatomy of the upper and lower lips, cheeks.
- External and internal structure of teeth, anatomical dental formulae.
- External and internal structure of the tongue (divisions, grooves, papillae, tonsilla, muscles).
- Salivary glands: small glands, parotid, submandibular, sublingual (localization, characteristic, openings of their ducts).
- The structure of the soft palate: arches, muscles, places of their attachment and function.
- Structure and topography of the pharynx: divisions, structure of the walls. Pay special attention to the topography and functional significance of the lymphoepithelial ring.

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	The study of the topic is accompanied by a demonstration of structural details in a table and preparation
Revise the studied material while demonstrating the details of the structure of the organ on the preparation	When revising the topic, check the following: 1) English and Latin name of the organ; 2) its brief functional characteristics; 3) organ topography: • holotopy; • skeletopy; • syntopy. 4) external structure characteristics: parts, surfaces, margins; 5) relation to the peritoneum; 6) internal structure characteristics: • layers of a hollow organ walls, • features of the parenchyma of the parenchymatous organs, • formation and course of excretory ducts

The end of Table

Activity	Step Description
Locate the studied organ on yourself	—
Write down new Latin terms	Put down new Latin terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR SELF-CONTROL

1. How is the oral cavity bounded?
2. Where is the borderline in between the divided proper oral cavity and the vestibule?
3. What is the vestibule of the mouth bounded by?
4. Name the orifice for the oral cavity communication with the pharynx.
5. What anatomical structures are lips made of?
6. Describe the significance of the saliva.
7. Where do the ducts of the sublingual, submandibular and parotid glands open?
8. Which of the salivary gland is serous?
9. Which of the salivary gland is mucous?
10. Which of the salivary gland is mixed?
11. Give the morphological and functional characteristics of the small and large salivary glands.
12. Describe the muscles of the tongue: classification, origin, attachment, functions.
13. What function does the tongue perform?
14. Explain the parts and external relief of the tongue.
15. Give the characteristic of the tongue papillae.
16. What is the function the tongue papillae?
17. Describe the lingual tonsil location and function.
18. Where are the lingual and labial frenula located?
19. Describe the oral cavity floor: muscles, sublingual fold, caruncle.
20. Describe the hard palate relief.
21. Draw the anatomical formula of the milk and permanent teeth.
22. Name the parts of teeth.
23. What substances does a tooth consist of?
24. How are teeth classified by function?

25. Enumerate the distinctions between the incisors, canine, premolars and molars.

26. Give the characteristic of the milk teeth.

27. What muscles form the soft palate?

28. Where are the soft palate muscles attached, and what is their significance?

29. Which of the muscles can change the diameter of the auditory tube?

30. Describe the functions and location of the palatine tonsils.

31. What structures form boundaries of the fauces?

32. What is the structure of the pharynx?

33. What tonsils are part of the lymphoepithelial ring, and what is their function?

34. What is the practical importance of the adenoid?

35. What is the topography of the pharynx?

36. Describe the special features of the nasopharynx, oropharynx, laryngopharynx.

Written task:

Fill in the table.

Muscle	Points of attachment	Action
1. Tongue muscles		
2. Soft palate muscles		
3. Pharyngeal muscles		

PRACTICAL SKILLS

1. Sublingual caruncle, *caruncula sublingualis*; подъязычное мясцо.
2. Soft palate, *paltum molle*; мягкое нёбо.
3. Sublingual fold, *plica sublingualis*; подъязычная складка.
4. Palatoglossal arch, *arcus palatoglossus*; нёбно-язычная дужка.
5. Palatopharyngeal arch, *arcus palatopharyngeus*; нёбно-глоточная дужка.
6. Tonsilar fossa, *fossa tonsillaris*; миндалины.
7. Palatine tonsil, *tonsilla palatina*; нёбная миндалина.
8. Oral vestibule, *vestibulum oris*; преддверие рта.
9. Proper oral cavity, *cavitas oris proprium*; собственно ротовая полость.
10. Hard palate, *palatum durum*; твердое нёбо.
11. Fauces, *fauces*; зев.
12. Root of tongue, *radix linguae*; корень языка.
13. Terminal sulcus, *sulcus terminalis*; пограничная борозда.
14. Lingual tonsil, *tonsilla lingualis*; язычная миндалина.

15. Apex of tongue, *apex linguae*; верхушка языка.

16. Median sulcus of the tongue, *sulcus medianus*; срединная борозда.

17. Foramen caecum, *foramen caecum*; слепое отверстие.

18. Body of tongue, *corpus linguae*; тело языка.

19. Filiform papillae, *papillae filiformes*; нитевидные сосочки.

20. Fungiform papillae, *papillae fungiformes*; грибовидные сосочки.

21. Frenulum of tongue, *frenulum linguae*; уздечка языка.

22. Vallate papillae, *papillae vallatae*; желобоватые сосочки.

23. Foliate papillae, *papillae foliatae*; листовидные сосочки.

24. Conical papillae, *papillae conicae*; конические сосочки.

25. Submandibular gland, *glandula submandibularis*; поднижнечелюстная железа.

26. Parotid gland, *glandula parotidea*; околоушная железа.

27. Sublingual gland, *glandula sublingualis*; подъязычная железа.

28. Glossoepiglottic folds (median and laterals), *plica glossoepiglottica mediana et laterales*; язычно-надгортанные складки (срединная и латеральные).

29. Epiglottic valleculae, *valleculae epigloticae*; ямка надгортанника.

30. Uvula, *uvula*; язычок.

31. Canine teeth, *dentes canini*; клыки.

32. Crown of tooth, *corona dentis*; коронка зуба.

33. Incisor teeth, *dentes incisivi*; резцы.

34. Neck of tooth, *cervix dentis*; шейка зуба.

35. Root of tooth, *radix dentis*; корень зуба.

36. Premolar teeth, *dentes premolares*; малые коренные зубы.

37. Molar teeth, *dentes molares*; большие коренные зубы.

38. Enamel, *enamelum*; эмаль.

39. Dentin, *dentinum*; дентин.

40. Pulp cavity, *cavitas pulparis*; полость зуба.

41. Cementum, *cementum*; цемент.

42. Apical foramen, *foramen apicis dentis*; отверстие верхушки зуба.

43. Root canal, *canalis radicis dentis*; канал корня зуба.

44. Nasal part of the pharynx, *nasopharynx, pars nasalis pharyngis*; носовая часть глотки.

45. Torus tubarius, *torus tubarius*; трубный валик.

46. Pharyngeal fornix, *fornix pharyngis*; свод глотки.

47. Pharyngeal opening of the auditory tube, *ostium pharyngeum tubae auditivae*; глоточное отверстие слуховой трубы.

48. Oral part of the pharynx, oropharynx, *pars oralis pharyngis*; ротовая часть глотки.

49. Pharyngeal tonsil, *tonsilla paryngea*; глоточная миндалина.

50. Epiglottic cartilage, *cartilago epiglottica*; надгортанник.

51. Laryngeal part of the pharynx, laryngopharynx, *pars laryngea pharyngis*; гортанная часть глотки.

Literature

1. *Human* anatomy : 2 vol. / M. Prives, N. Lysenkov, V. Bushkovich. — 3nd ed. — Moscow : Mir Publishers, 1989. — Vol. 1: The weight-bearing and locomotor system. The science of the viscera. The science of the organs of internal secretion. — 3nd ed. — 608 p., ill. — P. 387—421.

2. *Sapin, M. R.* Textbook of human anatomy for medical students. Vol. 1 / M. R. Sapin, L. L. Kolesnikov, D. B. Nikitjuk. — 2nd ed. — Moscow : New Wave Publishing Agency, 2019. — 416 p.

3. *Sinelnikov, R. D.* Atlas of human anatomy. — Moscow : Medicine, 1996. — Vol. 2. — 463 p.

4. *Atlas* of Human Anatomy / Frank H. Netter. — 6th ed. — Philadelphia : Elsevier, 2014. — 531 p., ill.

5. *Lecture* material.

Topic 2

STRUCTURE OF THE ESOPHAGUS, STOMACH, SMALL AND LARGE INTESTINE

INTRODUCTION TO THE TOPIC

Knowledge of the structure of the esophagus and its constrictions is important, considering the fact that the alien substances may be captured here. Also the obstructions can occur locally because of acidic and alkaline burn in esophagus.

The doctors should know the location of the digestive organs and their surface projection on the abdominal wall, structure and function of the abdominal cavity organs, to understand the mechanism of diseases and correct surgical and therapeutic treatment.

The knowledge of intestine anatomy is important for doctors of all fields. The small intestine participates in delicate chemical food processing in alkaline medium, in the absorption of nutrients, which are produced in the process of the wall and cavity phases of nutrition; also its participates in passage of chyme due to peristaltic and antiperistaltic movements; neutralizes microbes by the lymphoid formations; the small intestine secretes mucus which protects the intestinal mucosa and facilitates the passage of chyme.

The large intestine actively participates in water absorption; this is the location where the fecal masses and the harmful substances (indole, skatole and so on) are formed. Meanwhile, the large intestine participates in extraction of the fecal masses, in protecting the body from bacteria with the help lymphoid formations. Enzyme of its goblet cells slows down the development of the bacterial intestinal microflora.

The anatomy and topography of the small and large intestine is essential for the treatment of the hernia, dyspeptic disorders, infectious diseases, volvulus, wounding of the gut, pathology of the mesenteric vessels, plastic surgery, etc.

Before the study of the topic you should know:

1. The structure of the abdominal cavity`s walls: anterior, posterior, laterals, superior.
2. Abdominal muscles anatomy.
3. Weak points of the abdominal walls.

SELF-STUDY GOALS

After independently studying the topic, the student should know: anatomy, topography, functions of the esophagus, its anatomical and physiological constrictions; the structure, topography, functions of the stomach, small and large intestine; be able to demonstrate abdominal organs and their parts on anatomical preparations and X-Ray films; be able to determine their projection onto the anterior abdominal wall.

TOPIC CONTENT

- Structure and topography of the esophagus. Pay attention to anatomical and physiological constrictions.
- Divisions of the abdominal cavity.
- The location of the abdominal organs in individual areas of the abdomen.
- Syntopy and skeletopy of the stomach.
- Parts of the stomach.
- The characteristic of the stomach wall coats: the tunica mucosa (glands, folds, valve); tunica muscularis (layers, sphincter); tunica serosa.
- Stomach functions.
- Shapes of the stomach (depending on body constitution type).
- Parts of the small intestine.
- Duodenum: parts, flexurae, topography, wall layers, papillae.
- The difference between the jejunum and ileum (ileum: villi and folds are less pronounced, there is an accumulation of lymphoid tissue — Peyer's patches).
- The difference between the large intestine and the small intestine (in the large intestine there is a concentration of longitudinal muscle fibers in 3 muscle strands (tenia), the presence of protrusions in the intestinal wall (haustra); protrusions of the serous membrane (processus epiploica).
- Features of the structure of the appendix (accumulation of lymphoid formations in the mucous membrane, continuous longitudinal muscle layer); its topography.
- Special features of the rectum (3 parts: pelvic (supraampular), ampular and anal); anal part mucous membrane: columna analis and anal sinuses. The rectum has an internal sphincter, which represents a thickening of the circular smooth muscle layer, and an external one — striated muscle fibers. Longitudinal muscle fibers are intertwined with the levator ani muscle).

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	The study of the topic is accompanied by a demonstration of structural details in a table and preparation
Revise the studied material while demonstrating the details of the structure of the organ on the preparation	When revising the topic, check the following: 1) English and Latin name of the organ; 2) its brief functional characteristics; 3) organ topography: • holotopy • skeletopy • syntopy 4) external structure characteristics: parts, surfaces, margins; 5) relation to the peritoneum; 6) internal structure characteristics: • layers of a hollow organ walls; • features of the parenchyma of the parenchymatous organs; • formation and course of excretory ducts
Locate the studied organ on yourself	—
Write down new Latin terms	Put down new Latin terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR SELF-CONTROL

1. What parts of the esophagus can be distinguished?
2. Describe the topography of the esophagus.
3. Where are the anatomical constrictions of the esophagus located?
4. Where are the physiological constrictions of the esophagus located?
5. What is the practical importance of the esophageal constrictions?
6. Give the characteristic of the esophageal wall coats.
7. What regions is the abdominal cavity divided into?

8. In what parts of the abdomen is the gaster located?
9. Name the parts of the stomach.
10. What organs are adjacent to the stomach?
11. What layers does the stomach wall consist of?
12. What glands are located in the gastric mucosa?
13. How are the muscular layers of the stomach organized?
14. What types of stomach shape do you know? Give the characteristic of each of the type.
15. Name the types of stomach movements.
16. What functions does the stomach perform?
17. Name the parts and curvatures of the duodenum.
18. What shapes and positions does the duodenum have?
19. Give the characteristic of the duodenum wall layers.
20. Where is location of the major and minor duodenal papillae? What ducts open into papilla duodeni major / minor?
21. How is the hepatopancreatic ampulla formed?
22. What parts is the small intestine divided into?
23. Describe the topography of the small intestine.
24. Describe the features of the small intestine wall structure.
25. Describe the distinctive features of the jejunum and ileum.
26. Describe the relations of the esophagus, duodenum, jejunum, ileum to the peritoneum.
27. What are the functions of the small intestine?
28. List the distinctive features of the large intestine.
29. Explain the position of the large intestine parts in the abdominal cavity.
30. Describe the relations of the large intestine parts to the peritoneum.
31. Where is the projection of the caecum and vermiform process to the anterior abdominal wall of a living person? Where is Lanz's point? Mc Burney's point?
32. Describe the variety of the positions of the vermiform process.
33. Describe the special features of the vermiform appendix.
34. What are the functions of the appendix vermiformis?
35. Describe the differences between the small and large intestine.
36. What parts of the rectum are distinguished?
37. What are the functions of the large intestine?
38. Describe the special features of the rectal wall. Where is the hemorroidal zone located?
39. What sphincters of the rectum do you know? Where are they?

PRACTICAL SKILLS

1. Oesophagus, *esophagus*; пищевод.
2. Fundus of stomach, *fundus gastricus*; дно желудка.

3. Anterior wall of stomach, *paries anterior*; передняя стенка желудка.

4. Cardiac part, *pars cardiaca*; кардиальная часть.

5. Cardiac notch, *incisura cardiaca*; кардиальная вырезка.

6. Cardiac orifice, *ostium cardiacum*; кардиальное отверстие.

7. Posterior wall of stomach, *paries posterior*; задняя стенка желудка.

8. Lesser curvature, *curvatura minor*; малая кривизна.

9. Angular notch, *incisura angularis*; угловая вырезка.

10. Greater curvature, *curvatura major*; большая кривизна.

11. Body of stomach, *corpus gastricus*; тело желудка.

12. Pyloric part, *pars pylorica*; привратниковая часть.

13. Gastric folds, *plicae gastricae*; складки желудка.

14. Pyloric antrum, *antrum pyloricum*; пещера привратника.

15. Pyloric canal, *canalis pyloricus*; канал привратника.

16. Pyloric sphincter, *musculus sphincter pyloricus*; привратниковый сфинктер.

17. Gastric area, *areae gastricae*; желудочные поля.

18. Pyloric valve, *valvula pylorica*; заслонка привратника.

19. Superior, descending, horizontal and ascending parts of the duodenum, *pars superior, pars descendens, pars horizontalis, pars ascendens*; верхняя, нисходящая, горизонтальная, восходящая части двенадцатиперстной кишки.

20. Ampulla (bulb) of the duodenum, *ampulla duodeni*; ампула двенадцатиперстной кишки.

21. Superior duodenal flexure, *flexura duodeni superior*; верхний изгиб двенадцатиперстной кишки.

22. Major and minor papillae of duodenum, *papilla duodeni major and minor*; большой и малый сосочки двенадцатиперстной кишки.

23. Duodenojejunal flexure, *flexura duodenojejunalis*; двенадцатиперстно-тощекишечный изгиб.

24. Circular folds of duodenum, *plicae circulares duodeni*; круговые складки двенадцатиперстной кишки.

25. Inferior duodenal flexure, *flexura duodeni inferior*; нижний изгиб двенадцатиперстной кишки.

26. Longitudinal fold of duodenum, *plica longitudinalis duodeni*; продольная складка двенадцатиперстной кишки.

27. Jejunum, *jejunum*; тощая кишка.

28. Ileum, *ileum*; подвздошная кишка.

29. Caecum, *caecum*; слепая кишка.

30. Vermiform process, *appendix vermiformis*; червеобразный отросток.

31. Ileocaecal angle, *angulus ileocaecalis*; подвздошно-слепокишечный угол.

32. Ascending colon, *colon ascendens*; восходящая ободочная кишка.

33. Right colic flexure, *flexura colica dextra*; правый ободочный изгиб.
34. Transverse colon, *colon transversum*; поперечно-ободочная кишка.
35. Left colic flexure, *flexura colica sinistra*; левый ободочный изгиб.
36. Descending colon, *colon descendens*; нисходящая ободочная кишка.
37. Sigmoid colon, *colon sigmoideum*; сигмовидная ободочная кишка.
38. Rectum, *rectum*; прямая кишка.
39. Haustrae coli, *haustrae coli*; вздутия толстой кишки.
40. Taeniae coli (free, omental, mesocolic), *libera, omentalis, mesenterica*; ленты толстой кишки (свободная, сальниковая, брыжеечная).
41. Epiploic appendices, *appendices epiploicae*; сальниковые отростки.

X-rays skills

1. Cardiac part, *pars cardiaca*; кардиальная часть.
2. Lesser curvature, *curvatura minor*; малая кривизна.
3. Angular notch, *incisura angularis*; угловая вырезка.
4. Body of stomach, *corpus gastricus*; тело желудка.
5. Greater curvature, *curvatura major*; большая кривизна.
6. Cardiac notch, *incisura cardiaca*; кардиальная вырезка.
7. Fundus of stomach, *fundus gastricus*; дно желудка.
8. Pyloric part, *pars pylorica*; привратниковая часть.
9. Pyloric antrum, *antrum pyloricum*; пещера привратника.
10. Pyloric canal, *canalis pyloricus*; канал привратника.
11. Pyloric sphincter, *musculus sphincter pyloricus*; сфинктер привратника.
12. Shapes of the stomach: hook, elongated hook and horn-shaped; формы желудка: форма крючка, форма удлиненного крючка, форма рога.
13. Superior, descending, horizontal and ascending parts of the duodenum, *pars superior, pars descendens, pars horizontalis, pars ascendens*; верхняя, нисходящая, горизонтальная, восходящая части двенадцатиперстной кишки.
14. Ampulla (bulb) of the duodenum, *ampulla duodeni*; ампула двенадцатиперстной кишки.
15. Caecum, *caecum*; слепая кишка.
16. Ascending colon, *colon ascendens*; восходящая ободочная кишка.
17. Right colic flexure, *flexura colica dextra*; правый ободочный изгиб.
18. Transverse colon, *colon transversum*; поперечно-ободочная кишка.
19. Left colic flexure, *flexura colica sinistra*; левый ободочный изгиб.
20. Descending colon, *colon descendens*; нисходящая ободочная кишка.
21. Sigmoid colon, *colon sigmoideum*; сигмовидная ободочная кишка.
22. Rectum, *rectum*; прямая кишка.

Literature

1. *Human* anatomy : 2 vol. / M. Prives, N. Lysenkov, V. Bushkovich. — 3nd ed. — Moscow : Mir Publishers, 1989. — Vol. 1: The weight-bearing and locomotor system. The science of the viscera. The science of the organs of internal secretion. — 3nd ed. — 608 p., ill. — P. 421—460.

2. *Sapin, M. R.* Textbook of human anatomy for medical students. Vol. 1 / M. R. Sapin, L. L. Kolesnikov, D. B. Nikitjuk. — 2nd ed. — Moscow : New Wave Publishing Agency, 2019. — 416 p.

3. *Sinelnikov, R. D.* Atlas of human anatomy. — Moscow : Medicine, 1996. — Vol. 2. — 463 p.

4. *Atlas* of Human Anatomy / Frank H. Netter. — 6th ed. — Philadelphia : Elsevier, 2014. — 531 p., ill.

5. *Lecture* material.

Topic 3

STRUCTURE OF THE LIVER, PANCREAS, SPLEEN. TOPOGRAPHY OF THE PERITONEUM

INTRODUCTION TO THE TOPIC

The liver is the largest gland of our body, it plays an important role in protection and neutralization of the harmful substances. It participates in all types of the metabolic processes (supports the glucose concentration in the blood, synthesis of important blood plasma proteins, plays an important role in fat and cholesterol metabolism, exchange of vitamins (A, D, K, B2 and nicotinic acid)). The bile in the intestine emulsifies fats and provides absorption of their degradation products into blood and lymph; it stimulates the peristaltic movements of the intestine. The diseases of the liver make up the great part of the abdominal pathology like cholecystitis, hepatitis, cirrhosis.

The pancreas is the gland of both, external and internal secretion. As an exocrine gland it secretes the pancreatic juice (necessary for digestion of the proteins, carbohydrates, fat). As the endocrine gland the pancreas secretes hormones (glucagon, somatostatine, insulin). Diabetes mellitus is very common type of the endocrine diseases.

Lymphopoiesis is associated with the spleen's ability to produce the immune bodies. The ability of the splenic endothelium and reticular cells to phagocytize foreign particles and microorganisms helps to protect the body from infection. A large amount of blood is deposited in the spleen. Operations on a spleen are frequent in abdominal surgery.

It is important to know the topography of the peritoneum, its inflammation — the peritonitis is one of the most serious diseases. Knowledge of the peritoneal structures is especially necessary for practical activity of therapeutists, surgeons, obstetrician-gynecologists because it allows them to understand and explain symptoms of abdominal diseases (ulcer perforation, peritonitis, etc.) and to perform the medical manipulations (puncture of the peritoneal cavity through the posterior vaginal fornix etc.).

Before the studying the topic you need to know:

1. Localization of the abdominal organs.
2. Walls of the abdominal cavity.
3. Structures and functions of the abdominal muscles.
4. Epigastrium, mesogastrium, hypogastrium: borderlines, subdivisions.
5. The topographical lines of the thorax.

SELF-STUDY GOALS

After independently studying the topic, the student should know the name, function, external and internal structure, topography of the organs being studied; be able to demonstrate the organs on natural preparations and find the projection of the boundaries of the organs being studied. The student should know boundaries of the lateral canals, mesenteric sinuses, abdominal fossae, bursae, epiploic foramen, excavations of the peritoneal cavity.

TOPIC CONTENT

Structure and topography:
a) liver;
b) pancreas;
c) spleen.

• Liver. Functions (digestive, barrier, metabolic, hormonal, hematopoietic); structure: external: surfaces (upper, lower), edges (lower, superoposterior); lobes (right, caudate, quadrate, left,); ligaments (round, falciform, coronary, right and left triangular); grooves (fissura ligament teretis, fissure ligament venosi, fossa vesicae biliaris, sulcus vena cava inferioris, porta hepatis with the proper hepatic artery, hepatic duct, portal vein, nerves, lymphatic vessels). Internal structure: lobules, ducts, vessels.

• Gallbladder — function — reservoir for bile. The structure — divisions (neck, body, fundus), layers of the wall, topography. Pathways for the secretion of bile are bile canaliculi, interlobular ducts, common hepatic duct, common bile duct.

• Topography of the liver — holotopy (right hypochondrium), skeletotopy — the superior border begins is in the 10th intercostal space on the right mediоclavicular line, rises upward and to the left, according to the projection of the diaphragm and along the right midclavicular line reaches the 4th intercostal space, then slightly above the base of the xiphoid process. The lower border begins in the same place as the upper one, goes obliquely and to the left, crosses the IX or X costal cartilage on the right, runs along the epigastric region to the left and up, intersecting with the costal arch at the level of the VII left costal cartilage and in the V intercostal space connects with the upper border. Syntopy — superiorly and to the right and partially to the left: dome of the diaphragm; in front: costal part of the diaphragm and anterior abdominal wall; behind: X and XI thoracic vertebrae, legs of the diaphragm, abdominal part of esophagus, aorta, right suprarenal gland. Inferiorly: stomach, upper part of the duodenum, right kidney, colon.

• Pancreas — weight 70—80 grams. Structure: external — divisions (head, body, tail), surfaces (anterior, posterior, lower), edges (upper, anterior, lower). Located extraperitoneally. Internal structure: has an alveolar-tubular structure, two parts: 97% (produces pancreatic juice), 3% — islets of Langerhans (releases hormones into the blood). Excretory ducts (main and accessory). Topography of the pancreas — the region of the epigastrium and in the area of he left hypochondrium 5—10 cm above the navel, skeletotopy (IX, XI ribs), syntopy.

• Spleen — topography, external structure, internal structure.

• Division of the peritoneal cavity. 3 storeys: 1. superior (from the diaphragm to the mesentery of the transverse colon); middle (from the mesentery of the transverse colon to the linea bispinata); lower (corresponding to the pelvic cavity).

• Upper storey: 3 bursae: hepatic; pregastric; omental. Foramen epeiploicum (borderlines, communications).

• The middle storey: right and left lateral canals (borderlines, communications); right and left mesenteric sinuses (borderlines, communications); recessuses (can serve as a site for the formation of retroperitoneal hernias): upper and lower duodenal (at the junction of the duodenum and jejunum); upper and lower ileocecal (at the junction of the ileum and the cecum); retrocecal; intersigmoid recess (on the lower surface of the mesentery of the sigmoid colon).

• The lower storey. Male pelvis: rectovesical pouch. Female pelvis: between the bladder and rectum there is a uterus, therefore two pouches are formed: rectouterine and vesicouterine.

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	The study of the topic is accompanied by a demonstration of structural details in a table and preparation
Revise the studied material while demonstrating the details of the structure of the organ on the preparation	When revising the topic, check the following: 1) English and Latin name of the organ; 2) its brief functional characteristics; 3) organ topography: • holotopy, • skeletopy, • syntopy;

The end of Table

Activity	Step Description
	4) external structure characteristics: parts, surfaces, margins; 5) relation to the peritoneum; 6) internal structure characteristics: • layers of a hollow organ walls, • features of the parenchyma of the parenchymatous organs, • formation and course of excretory ducts. When revising the PERITONEUM, check the following: 1) English and Latin name of the cavity formation (bursa, canal, sinus, recessus); 2) its brief description; 3) the walls that limit it, how they are formed, the functions of these structures; 4) communications of cavity formation
Locate the studied organ on yourself	—
Write down new Latin terms	Put down new Latin terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR SELF-CONTROL

1. Describe the external and internal structures of the pancreas.
2. Name the structural and functional unit of the endocrine pancreatic part.
3. Name the structural and functional unit of the exocrine pancreatic part.
4. Explain the pathway of the pancreatic ducts (main, accessory).
5. Describe the endocrine and exocrine functions of the pancreas.
6. How is the pancreas covered by peritoneum?
7. Describe the external structures of the spleen (surfaces, margins, poles).
8. Where is the hilum of the spleen? What does it contain?
9. Describe the red and white pulp of the lien.
10. What is the function of the spleen?

11. How is the spleen covered by peritoneum?

12. Explain the skeletotopy of the liver, pancreas, spleen.

13. Describe the relief of the outer surface of the liver (lobes, fissures, grooves, fossa).

14. Explain the internal structures of the liver.

15. What is the structural and functional unit of the liver? Explain its functioning.

16. List the functions of the hepar.

17. What is the porta hepatis? What does it contain?

18. How is the liver covered by peritoneum?

19. Describe the special features of the liver circulatory system.

20. Describe the pathway of the bile (elements of the bile tree).

21. Name the layers of the vesical fellea walls, functions, type of the peritoneum covering.

22. Where are located the sphincters of the hepatopancreatic system? Are the voluntary or involuntary?

23. Give the definition of the peritoneum.

24. What layers of the peritoneum do you know?

25. Describe the function of the parietal and visceral peritoneal laminae.

26. Give the definition of the abdominal and peritoneal cavities. Explain their walls.

27. Describe the reflections of the peritoneum. What are the differences between the ligaments, mesenteries, omentae?

28. Describe the location, layers, functions and of the omentum manus.

29. Describe the location, layers, functions and of the omentum majus.

30. How many storeys is the peritoneal cavity divided into? Describe their borderlines.

31. What is the extra-/retroperitoneal organ?

32. What I the mesoperitoneal organ?

33. What is the intraperitoneal organ? Are they mobile?

34. Name the intraperitoneal organs. Which of them have mesentery?

35. Name the mesoperitoneal organs.

36. Name the extraperitoneal (retroperitoneal) organs.

37. What bursae are in the superior storey?

38. Bursa hepatica; location, walls, communications.

39. Bursa pregastrica: location, walls, communications.

40. Bursa omentalis: location, walls, communications.

41. Describe the borderlines of the epiploic foramen. What does it connect?

42. What formations and in what order lie between the two layers of the hepatoduodenal ligament?

43. How are the lateral canals limited in the middle storey of the peritoneal cavity? Explain their communications.

44. What formation divides the middle storey of the peritoneal cavity into two sinuses?

45. Describe the walls and communications of the mesenteric sinuses.

46. Explain the position and significance of the superior and inferior duodenal recesses, superior and inferior ileocaecal, retrocaecal, intersigmoid recesses.

47. Describe the inferior storey: organs, folds, pouches.

48. What pouches are in the male and female lower storey?

PRACTICAL SKILLS

1. Diaphragmatic surface of the liver, *facies diaphragmatica*; диафрагмальная поверхность.

2. Right lobe of the liver, *lobus dexter*; правая доля печени.

3. Falciform ligament, *ligamentum falciforme*; серповидная связка.

4. Coronary ligament, *ligamentum coronarium hepatis*; венечная связка.

5. Triangular ligaments (right and left), *ligamentum triangulare* (*dextrum / sinistrum*); правая и левая треугольные связки.

6. Visceral surface of the liver, *facies visceralis*; висцеральная поверхность.

7. Fossa for gall bladder, *fossa vesicae biliaris*; ямка желчного пузыря.

8. Gall bladder, *vesica fellea*; желчный пузырь.

9. Fundus of the gall bladder, *fundus vesicae felleae*; дно желчного пузыря.

10. Fissure for ligamentum venosum, *fissura ligamenti venosi*; щель венозной связки.

11. Ligamentum venosum, *ligamentum venosum*; венозная связка.

12. Left lobe of the liver, *lobus sinister*; левая доля печени.

13. Ligamentum teres, *ligamentum teres hepatis*; круглая связка печени.

14. Fissure for ligamentum teres, *fissura ligamenti teretis*; щель круглой связки.

15. Notch for the ligamentum teres, *incisura ligamenti teretis*; вырезка круглой связки.

16. Cystic duct, *ductus cysticus*; проток желчного пузыря.

17. Common hepatic duct, *ductus hepaticus communis*; общий печеночный проток.

18. Quadrate lobe, *lobus quadratus*; квадратная доля.

19. Bile duct, *ductus choledochus*; желчный проток.

20. Caudate lobe, *lobus caudatus*; хвостатая доля.

21. Groove for the vena cava, *sulcus venae cavae*; борозда нижней полой вены.

22. Porta hepatis, *porta hepatis*; ворота печени.

23. Portal vein, *vena portae*; воротная вена.

24. Proper hepatic artery, *arteria hepatica propria*; собственная печеночная артерия.

25. Groove for the vena cava, *sulcus venae cavae*; борозда нижней полой вены.

26. Body of the pancreas, *corpus pancreatis*; тело поджелудочной железы.

27. Head of the pancreas, *caput pancreatis*; головка поджелудочной железы.

28. Neck of the pancreas, *collum pancreatici*; шейка поджелудочной железы.

29. Tail of the pancreas, *cauda pancreatis*; хвост поджелудочной железы.

30. Epiploic foramen, *foramen epiploicum*; сальниковое отверстие.

31. Hepatic bursa, *bursa hepatica*; печеночная сумка.

32. Lesser omentum, *omentum minus*; малый сальник.

33. Pregastric bursa, *bursa pregastrica*; преджелудочная сумка.

34. Omental bursa, *bursa omentalis*; сальниковая сумка.

35. Transverse mesocolon, *mesocolon transversus*; брыжейка поперечно-ободочной кишки.

36. Greater omentum, *omentum majus*; большой сальник.

37. Mesentery of the small intestine, *mesenterium*; брыжейка тонкого кишечника.

38. Left mesenteric sinus, *sinus mesentericus sinister*; левый брыжеечный синус.

39. Right mesenteric sinus, *sinus mesentericus dexter*; правый брыжеечный синус.

40. Right lateral canal, *canalis lateralis dexter*; правый латеральный канал.

41. Left lateral canal, *canalis lateralis sinister*; левый латеральный канал.

42. Vesicouterine recess, *excavatio vesicouterina*; пузырно-маточное углубление.

43. Rectouterine recess, *excavatio rectouterina*; прямокишечно-маточное углубление.

44. Mesoappendix, *mesoappenix*; брыжейка червеобразного отростка.

45. Rectovesical recess, *excavatio rectovesicalis*; прямокишечно-пузырное углубление.

46. Sigmoid mesocolon, *mesocolon sigmoideum*; брыжейка сигмовидной кишки.

Literature

1. *Human* anatomy : 2 vol. / M. Prives, N. Lysenkov, V. Bushkovich. — 3nd ed. — Moscow : Mir Publishers, 1989. — Vol. 1: The weight-bearing and locomotor system. The science of the viscera. The science of the organs of internal secretion. — 3nd ed. — 608 p., ill. — P. 460—480.

2. *Sapin, M. R.* Textbook of human anatomy for medical students. Vol. 1 / M. R. Sapin, L. L. Kolesnikov, D. B. Nikitjuk. — 2nd ed. — Moscow : New Wave Publishing Agency, 2019. — 416 p.

3. *Sinelnikov, R. D.* Atlas of human anatomy. — Moscow : Medicine, 1996. — Vol. 2. — 463 p.

4. *Atlas* of Human Anatomy / Frank H. Netter. — 6th ed. — Philadelphia : Elsevier, 2014. — 531 p., ill.

5. *Lecture* material.

Topic 4

RESPIRATORY SYSTEM. ANATOMY OF THE NASAL CAVITY, LARYNX, TRACHEA, BRONCHI, LUNGS, PLEURAL CAVITY AND SINUSES. MEDIASTINUM

INTRODUCTION TO THE TOPIC

It is important to know the anatomy of the upper and lower respiratory tract because the diseases of respiratory tract (rhinitis, sinusitis, bronchitis, pneumonia, pleuritic, tuberculosis, ect.) are often observed in clinical practice. Knowledge of the structure of lungs is necessary in X-ray diagnostics of the respiratory tract lesions, during a surgery on it. Depending on the character and depth of lung tissue issues, doctors remove one lung entirely, or its separate lobes or segments.

Mediastinal organs are often exposed to the following diseases: heart diseases (atherosclerosis of coronary arteries, valve problems, malformations), esophageal lesions (hernia, stenosis, tumor), lesions of the trachea (inflammation, injury, tumor). Pleura and organs of mediastinum are the subjects of conservative and surgical interventions. Therefore, the knowledge of its structure, topography, anatomical features are necessary for doctors of all fields.

Before the study of the topic you should know:

1. Muscles of the chest: classification, origination, attachment, functions.
2. Topographical lines of the chest.
3. The structure of the bony nasal cavity: walls, meatuses, paranasal sinuses.
4. The topography of the digestive organs in the neck and chest.

SELF-STUDY GOALS

After independently studying the topic, the student should know: anatomy and topography of the nasal cavity and larynx; be able to show the parts of the nasal cavity (nasal passages, conchae, communication pathways, etc.); know the function of the nasal cavity; be able to show cartilage, ligaments, muscles of the larynx, know their function; know the morphology of the bronchi, lungs, the structure of the lobule and acinus; the student should know the structure and topography of the pleura and mediastinum; be able to show and name parts of the pleura and mediastinal organs on a corpse.

TOPIC CONTENT

• Nasal cavity (structure, mucous membrane, respiratory region, olfactory region, nasal meatuses, nasal conchae, paranasal cavities, nasal cartilages).

• Larynx:

— cartilages of the larynx: cricoid, thyroid, arytenoid, cuneiform, corniculate, epiglottis;

— laryngeal syndesmoses: membrana thyrohyoidea, ligamentum hyoepoglotticum, ligamentum thyroepiglotticum, conus elasticus, membrana fibroelastica, ligamentum cricothyroideum, ligamentum vocale et vestibulare;

— articulations of the larynx: cricothyroid joints, cricoarytenoid joints;

— muscles of the larynx: — constrictors, dilators, changing the tension of the vocal cords;

— laryngeal cavity: function of the larynx; external, internal structure and topography of the larynx.

• The structure and topography of the trachea are cartilaginous semirings connected by circular ligaments. Division of the trachea (bifurcation) into two bronchi at the level of 4—5 thoracic vertebrae.

• The structure of the bronchi and lungs. Sequential division of the main bronchi into lobar, then segmental, subsegmental (bronchi of 3—7 orders). Pay attention to the concept of "lobular bronchus" (a bronchus with a diameter of 1—1.5 mm) and its further sequential division into terminal bronchioles (diameter less than 1 mm, does not contain cartilage), respiratory bronchioles, respiratory ducts and sacs. Understand the concept of "acinus".

• Principles of dividing the lungs into segments.

• External structure of the lungs: a) surface; b) parts; c) fissures; d) differences between the right lung and the left; e) the hilum of the lung, topography of the pulmonary artery, veins, bronchus at the hilum of the right and left lungs.

• The structure and topography of the pleura. Visceral layer. Attention is drawn to the dense fusion of this layer with the substance of the lung. The visceral layer extends into all the grooves of the lung, thereby separating the lobes of the lung from each other. Covering the lung on all sides, the pulmonary pleura at the root of the lung continues into the parietal pleura. The formation of the pulmonary fold is studied, which descends vertically down the inner surface of the lung and attaches to the diaphragm. You should know the functional features of the visceral layer of the pleura: blood vessels predominate over lymphatic vessels, performing mainly the function of excretion. The parietal pleura is divided into costal; diaphragmatic; mediastinal. The upper part of each pleural sac is called the dome of the pleura. It should be noted that under the costal pleura

there is a thin fibrous membrane and that the diaphragmatic layer does not cover the surface of the diaphragm in the middle part, where the pericardial sac is adjacent to the diaphragm.

- Functional features of the parietal pleura: it has specific devices for absorption from serous cavities, and the predominance of lymphatic vessels over blood vessels provides for a resorptive function.
- Pleural cavity: a slit-like space between the adjacent parietal and visceral layers. Its dimensions are clarified, it is found out what causes the negative pressure and what will happen to the lungs when the chest is opened (the lungs collapse). You should pay attention to the fact that the right pleural sac is somewhat shorter and wider. The pleural cupula protrudes 3—4 cm above the superior thoracic aperture. The pleural sinuses (spaces bounded by two parietal layers of the pleura) should be clearly imagined: costodiaphragmatic, diaphragmaticomediastinal and costomediastinal. Find out their purpose and topography.
- Mediastinum. This is a complex of organs (heart with pericardium, large vessels, trachea, esophagus, aorta, etc.) that fill the space between the mediastinal pleurae. It should be remembered that the mediastinal organs are surrounded by fiber containing complex neurovascular formations. The boundaries between the anterior and posterior mediastinum are clarified (the frontal plane drawn through the back of both roots of the lungs). It is necessary to know which organs lie in the anterior mediastinum (thymus gland, superior vena cava, ascending aorta, pulmonary veins, trachea and bronchi, phrenic nerve, lymph nodes), in the posterior mediastinum (esophagus, thoracic aorta, thoracic lymphatic duct, lymph nodes, inferior vena cava, azygos and semi-gypsy vein, vagus nerve and splanchnic nerves).

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	The study of the topic is accompanied by a demonstration of structural details in a table and preparation
Revise the studied material while demonstrating the details of the structure of the organ on the preparation	When revising the topic, check the following: 1) English and Latin name of the organ; 2) its brief functional characteristics; 3) organ topography: • holotopy, • skeletopy, • syntopy;

The end of Table

Activity	Step Description
	4) external structure characteristics: parts, surfaces, margins; 5) relation to the peritoneum; 6) internal structure characteristics; 7) layers of a hollow organ walls; 8) features of the parenchyma of the parenchymatous organs; 9) formation and course of excretory ducts
Locate the studied organ on yourself	—
Write down new Latin terms	Put down new Latin terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR SELF-CONTROL

1. What is the structure of the nasal cavity?
2. Describe the features of the nasal mucosa.
3. What functional areas of the nasal mucous membrane do you know? Where are they located?
4. What meatuses of the nasal cavity do you know? What do they communicate with?
5. Name the paranasal sinuses. How do they communicate with the nasal meatuses?
6. Explain the topography of the larynx.
7. Name the cartilages of the larynx and their features.
8. Name the laryngeal ligaments.
9. Name the joints of the larynx.
10. What groups are the muscles of the larynx divided into?
11. Name the muscles that narrow the glottis.
12. Name the muscles that dilate the glottis.
13. Name the muscles that change the tension of the vocal cords.
14. What are the walls of the larynx formed by?
15. What function does the larynx perform?
16. Describe the structure of the tracheal walls.
17. What is the tracheal bifurcation? Describe the skeletotopy of the tracheal bifurcation.

18. Describe the right and left principal bronchus: length, diameter, structure.

19. Describe the external structures of the right and left lungs: surfaces, borders, fissures, hilum.

20. What is the root of the lung? Describe the position of the elements in the right and left lung`s root.

21. List the elements of the bronchial tree: from the bronchus principalis to the terminal bronchiolus.

22. What are the differences in structure between the different types of the bronchi?

23. What is the alveolar tree?

24. What parts does the acinus include? Describe the process of the exchange of gases in the acinus.

25. Describe the skeletotopy of the right and left lung`s apex and pleural cupula.

26. Describe the skeletotopy of the right and left lung`s and pleural's inferior border along the topographical lines of the thorax (parasternal line; midclavicular line; anterior axillary line; midaxillary line; posterior axillary line; scapular line; paravertebral line).

27. What is the mediastinum?

28. How is the mediastinal cavity bordered?

29. Describe the walls of the mediastinum (anterior, posterior, laterals).

30. What lines divide the mediastinum into anterior and posterior; superior and inferior? How can the inferior mediastinum be classified? Describe the organs which are located in each part of the mediastinum.

31. What is pleura? What functions does it perform?

32. What layers does the pleura consist of?

33. What is the pleural cavity? How many pleural cavities are in the thorax? What pressure exists in the pleural cavity? What is the role of such a pressure?

34. Give the definition of the pleural sinus.

35. Name the pleural sinuses and describe their localization and function.

PRACTICAL SKILLS

1. Nasal vestibule, *vestibulum nasi*; преддверие носа.

2. Proper nasal cavity, *cavitas nasi propria*; собственно носовая полость.

3. Olfactory region, *regio olfactoria*; обонятельная область.

4. Respiratory region, *regio respiratoria*; дыхательная область.

5. Choanae, *choanae*; хоаны.

6. Inferior nasal concha, *concha nasalis inferior*; нижняя носовая раковина.

7. Inferior nasal meatus, *meatus nasi inferior*; нижний носовой ход.

8. Middle nasal concha, *concha nasalis media*; средняя носовая раковина.

9. Middle nasal meatus, *meatus nasi medius*; средний носовой ход.

10. Superior nasal concha, *concha nasalis superior*; верхняя носовая раковина.

11. Superior nasal meatus, *meatus nasi superior*; верхний носовой ход.

12. Frontal sinus, *sinus frontalis*; лобная пазуха.

13. Ethmoidal labyrinth, *labyrinthus ethmoidalis*; решетчатый лабиринт.

14. Sphenoidal sinus, *sinus sphenoidalis*; клиновидная пазуха.

15. Maxillary sinus, *sinus maxillaris*; верхнечелюстная пазуха.

16. Nasopharynx, *pars nasalis pharyngis*; носоглотка.

17. Oropharynx, *pars oralis pharyngis*; ротовая часть глотки.

18. Epiglottic cartilage, *cartilago epiglottica*; надгортанник.

19. Pharyngeal opening of the auditory tube, *ostium pharyngeum tubae auditivae*; глоточное отверстие слуховой трубы.

20. Pharyngeal fornix, *fornix pharyngis*; свод глотки.

21. Hyoid bone, *os hyoideum*; подъязычная кость.

22. Thyroid cartilage, *cartilago thyroidea*; щитовидный хрящ.

23. Laryngeal inlet, *aditus laryngis*; вход в гортань.

24. Superior thyroid notch, *incisura thyroidea superior*; верхняя щитовидная вырезка.

25. Laryngeal prominence, *prominentia laryngis*; выступ гортани.

26. Inferior horn of thyroid cartilage, *cornu inferius*; нижний рог щитовидного хряща.

27. Arythenoid cartilage, *cartilago arythenoidea*; черпаловидный хрящ.

28. Cricoid cartilage, *cartilago cricoidea*; перстневидный хрящ.

29. Inferior thyroid notch, *incisura thyroidea inferior*; нижняя щитовидная вырезка.

30. Superior horn of thyroid cartilage, *cornu superius*; верхний рог щитовидного хряща.

31. Cricothyroid ligament, *ligamentum cricothyroideum*; перстнещитовидная связка.

32. Piriform recess, *recessus piriformis*; грушевидный карман.

33. Thyrohyoid membrane, *membrana thyrohyoidea*; щитоподъязычная мембрана.

34. Vestibular ligament, *ligamentum vestibulare*; связка преддверия.

35. Elastic cone, *conus elasticus*; эластический конус.

36. Quadrangular membrane, *membrana quadrangularis*; четырехугольная мембрана.

37. Cricoarythenoid joints, *articulatio cricoarythenoidea*; перстнечерпаловидные суставы.

38. Cricothyroid joints, *articulatio cricoarythyroidea*; перстнещитовидные суставы.

39. Cricothyroid ligament, *ligamentum cricothyroideum*; перстнещитовидная связка.

40. Laryngeal vestibule, *vestibulum laryngis*; преддверие гортани.

41. Vestibular folds / false vocal folds, *plicae vestibulares*; складки преддверия.

42. Rima glottidis, *rima glottides*; голосовая щель.

43. Vocal folds, *plicae vocales*; голосовые складки.

44. Laryngeal ventricle, *ventriculus laryngis*; желудочек гортани.

45. Infraglottic cavity, *cavitas infraglottica*; подголосовая полость.

46. Transverse arythenoid muscle, *musculus arythenoideus transversus*; поперечная черпаловидная мышца.

47. Oblique arythenoid muscle, *musculus arythenoideus obliquus*; косая черпаловидная мышца.

48. Lateral cricoarythenoid muscle, *musculus cricoerythenoideus lateralis*; латеральная перстнечерпаловидная мышца.

49. Posterior cricoarythenoid muscle, *musculus cricoerythenoideus posterior*; задняя перстнечерпаловидная мышца.

50. Thyroarythenoid muscle, *musculus thyroarythenoideus*; щиточерпаловидная мышца.

51. Cricothyroid muscle, *musculus cricothyroideus*; перстнещитовидная мышца.

52. Thyroepiglottic muscle, *musculus thyroepiglotticus*; щитонадгортаная мышца.

53. Aryepiglottic muscle, *musculus aryepiglotticus*; черпалонадгортанная мышца.

54. Trachea, *trachea*; трахея.

55. Membranous wall of trachea, *paries membranaceus tracheae*; перепончатая стенка трахеи.

56. Cartilages of trachea, *cartilagines tracheales*; хрящи гортани.

57. Tracheal bifurcation, *bifurcatio tracheae*; бифуркация трахеи.

58. Annular ligaments, *ligamenta anularia tracheae*; кольцевые связки трахеи.

59. Carina of trachea, *carina tracheae*; киль трахеи.

60. Right principal bronchus, *bronchus principalis dexter*; правый главный бронх.

61. Left principal bronchus, *bronchus principalis sinister*; левый главный бронх.

62. Base of lung, *basis pulmonus*; основание легкого.

63. Apex of lung, *apex pulmonis*; верхушка легкого.

64. Anterior border of lung, *margo anterior pulmonis*; передний край легкого.

65. Medial surface of lung, *facies medialis pulmonis*; медиальная поверхность легкого.

66. Costal surface of lung, *facies costalis pulmonis*; реберная поверхность легкого.

67. Diaphragmatic surface of lung, *facies diaphragmatica pulmonis*; диафрагмальная поверхность легкого.

68. Inferior border of lung, *margo inferior pulmonis*; нижний край легкого.

69. Posterior border of lung, *margo posterior pulmonis*; задний край легкого.

70. Root of lung, *radix pulmonis*; корень легкого.

71. Cardiac notch, *incisura cardiaca*; сердечная вырезка.

72. Lingula of left lung, *lingula pulmonis sinistri*; язычок левого легкого.

73. Hilum of lung, *hilus pulmonis*; ворота легкого.

74. Oblique fissure, *fissura obliqua*; косая щель.

75. Upper lobe of lung, *lobus superior pulmonis*; верхняя доля легкого.

76. Lower lobe of lung, *lobus inferior pulmonis*; нижняя доля легкого.

77. Middle lobe of right lung, *lobus medius pulmonis dextri*; средняя доля правого легкого.

78. Horizontal fissure, *fissura horizontalis*; горизонтальная щель.

79. Parietal pleura, *pleura parietalis*; париетальная плевра.

80. Pleural cavity, *cavitas pleuralis*; плевральная полость.

81. Diaphragmatic part of parietal pleura, *pars diaphragmatica*; диафрагмальная часть.

82. Visceral pleura, *pleura visceralis*; висцеральная плевра.

83. Pleural cupula, *cupula pleurae*; плевральный купол.

84. Costal part of parietal pleura, *pars costalis*; реберная часть.

85. Mediastinal part of parietal pleura, *pars mediastinalis*; медиастинальная часть.

86. Costodiaphragmatic recess, *recessus costodiaphragmaticus*; реберно-диафрагмальный синус.

87. Mediastinum, *mediastinum*; средостение.

Literature

1. *Human* anatomy : 2 vol. / M. Prives, N. Lysenkov, V. Bushkovich. — 3nd ed. — Moscow : Mir Publishers, 1989. — Vol. 1: The weight-bearing and locomotor system. The science of the viscera. The science of the organs of internal secretion. — 3nd ed. — 608 p., ill. — P. 489—523.

2. *Sapin, M. R.* Textbook of human anatomy for medical students. Vol. 1 / M. R. Sapin, L. L. Kolesnikov, D. B. Nikitjuk. — 2nd ed. — Moscow : New Wave Publishing Agency, 2019. — 416 p.

3. *Sinelnikov, R. D.* Atlas of human anatomy. — Moscow : Medicine, 1996. — Vol. 2. — 463 p.

4. *Atlas* of Human Anatomy / Frank H. Netter. — 6th ed. — Philadelphia : Elsevier, 2014. — 531 p., ill.

5. *Lecture* material.

Topic 5

URINARY SYSTEM. MALE REPRODUCTIVE SYSTEM

INTRODUCTION TO THE TOPIC

The material of this topic is needed to study the physiology of the urinary system in normal and pathological anatomy. The knowledge of the anatomy of the urinary system is necessary for a therapist, urologist and doctors of other fields.

Knowledge of the male reproductive system structure and the structure of the male urethra is the basis for learning clinical disciplines; it is also necessary for understanding the pathology of these organs. The urology was distinguished from clinical disciplines in the independent section, which studies the pathology of the urinary system. The understanding of the structure of internal male reproductive organs is important to study surgery, endocrinology (the science that studies the disorder of the endocrine glands), sexopathology etc.

Before the study of the topic you should know:

1. Anatomy of the pelvis: bones, bone connections, muscles.
2. Anatomy of the abdominal cavity`s walls.
3. Storeys of the peritoneal cavity.
4. Anatomy of the inguinal canal.

SELF-STUDY GOALS

After self-study of the material of this topic, the student should be able to describe external, internal structures, functions, topography of the kidneys, ureters and urinary bladder, male urethra.

The student should know: location and basic principles of the structure of the internal male genitalia (testis, epididymis, spermatic cord, seminal vesicles, prostate and bulbourethral (Cooper) glands; structures and functions of the external male genitalia).

TOPIC CONTENT

- External structure of the kidney (upper and lower poles, medial and lateral margins, anterior and posterior surfaces, renal hilum, renal sinus).

- Topography of the kidneys.
- The coats of the kidneys (fascia renalis, capsula fibrosa and adiposa).
- Fixation apparatus of the kidney (renal fascia, capsula adipose, muscle bed, renal vessels, intraabdominal pressure).
- The internal structure of the kidney (cortex, medulla, renal pyramids, renal papillae, papillary openings, renal columns, radiate and convoluted parts, cortical lobule).
- The structure of the nephron (choroid glomerulus, Shumlyansky-Bowman capsule, which together form the renal corpuscle, proximal and distal convoluted tubules, loop of Henle).
- The special features of the kidney blood supplying (renal artery, upper and lower polar arteries, central artery; afferent arteriola; glomerulus; efferent arteriola; capillary network around the tubules; venules, stellate veins, interlobular veins; arcuate veins; straight veins, interlobar veins, renal vein).
- Excretory tree of the kidney: small and large renal calyces, renal pelvis.
- Ureter structures: 3 parts (abdominal, pelvic and intramural), constrictions (at the junction of the pelvis renalis with the ureter, at the border of the abdominal and pelvic parts, along the pelvic part, near the wall of the bladder), the structure of the wall (outer layer — connective tissue, middle layer — muscle, internal — mucous membrane).
- Topography of the bladder.
- Urinary bladder structures: parts (fundus, neck, apex, body), layers of the walls (Serous (intra- / mesoperitoneal type of covering), muscular: outer layer — longitudinal fibers; middle layer — circular fibers; inner layer — both fibers. All layers form a muscle the detrusor urinae muscle. The urethral sphincter is formed around the internal urethral orifice; mucous membrane: folds of the mucous membrane, vesical triangle).
- X-ray anatomy of the kidney, ureter and bladder.
- The structure of the internal male genital organs. Structure of the testis: poles, testicular coats, surfaces, edges; internal structure: sequential arrangement of convoluted, straight tubules forming the rete testis, afferent ducts, epididymal duct and vas deferens. Understand the topography of the vas deferens and spermatic cord. Study the structure of the prostate gland, seminal vesicles and Cooper glands.
- The structure of the external male genitalia. The scrotum, its layers. The penis, parts, structural features of the cavernous and spongy bodies.
- Features of the structure and topography of the male urethra — its three parts, curvatures, narrowings, expansions and sphincters.

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	The study of the topic is accompanied by a demonstration of structural details in a table and preparation
Revise the studied material while demonstrating the details of the structure of the organ on the preparation	When revising the organs, check the following: 1) English and Latin name of the organ; 2) its brief functional characteristics; 3) organ topography: • holotopy, • skeletopy, • syntopy; 4) external structure characteristics: parts, surfaces, margins; 5) relation to the peritoneum; 6) internal structure characteristics: • layers of a hollow organ walls, • features of the parenchyma of the parenchymatous organs, • formation and course of excretory ducts
Locate the studied organ on yourself	—
Write down new Latin terms	Put down new Latin terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR SELF-CONTROL

1. What poles, edges, surfaces does the kidney have?
2. Where is the renal hilum located?
3. Explain the skeletotopy, syntopy and holotopy of the kidney.
4. What coats does the kidney have?
5. How is the kidney fixed?
6. Describe the internal structures of the kidney.
7. What makes up the kidney medulla and cortex?

8. What does a nephron consist of?

9. Describe in details the functioning of the nephron.

10. What are the juxtamedullary nephrons? Describe the features of their functioning.

11. Describe the juxtaglomerular apparatus of kidneys.

12. List in series the pathway of urine beginning from collecting tubules.

13. Describe the kidney`s fornical apparatus.

14. What parts does the ureter have?

15. What narrowings does the ureter have?

16. What parts does the bladder have?

17. What layers does the bladder wall consist of?

18. What is the muscle that expels urine formed by?

19. What is a vesical triangle? What holes open in the corners of this triangle?

20. Describe the topography of the urinary bladder in males and in females.

21. Describe the relation of the kidney, ureter, urinary bladder to the peritoneum.

22. What organs are classified as internal male genital organs?

23. What organs are the external male genitalia?

24. Describe the structure and function of the testis.

25. Name the coats of the testis in order. Describe the origin of each testicular coat.

26. Describe the pathway of the sperm, beginning from the convoluted seminiferous tubules up to the external urethral orifice.

27. What is the spermatic cord? Name it parts, components and coats.

28. Describe the layers of the deferent duct`s wall. What it's parts do you know?

29. What is the structure and function of the prostate gland?

30. What are the structures and functions of the seminal vesicles, bulbourethral glands?

31. Describe the structure of the male penis and scrotum.

32. What parts does the male urethra have?

33. What curves does the male urethra have?

34. What sphincters does the male urethra have? Which of them are voluntary (involuntary)?

35. Describe the descent of the testes. Which mechanisms contribute to the descent of testes?

PRACTICAL SKILLS

1. Kidney, *ren*; почка.

2. Anterior surface of kidney, *facies anterior renis*; передняя поверхность почки.

3. Posterior surface of kidney, *facies posterior renis*; задняя поверхность почки.

4. Superior pole of kidney, *extremitas superior renis*; верхний полюс почки.

5. Lateral border of kidney, *margo lateralis renis*; латеральный край почки.

6. Inferior pole of kidney, *extremitas inferior renis*; нижний полюс почки.

7. Medial border of kidney, *margo medialis renis*; медиальный край почки.

8. Renal cortex, *cortex renalis*; корковое вещество почки.

9. Renal hilum, *hilus renalis*; ворота почки.

10. Renal medulla, *medulla renalis*; мозговое вещество почки.

11. Renal pyramids, *pyramides renales*; почечные пирамиды.

12. Renal papilla, *papilla renalis*; почечный сосочек.

13. Minor calyces, *calyces renales minores*; малые чашечки.

14. Renal sinus, *sinus renalis*; почечная пазуха.

15. Major calyces, *calyces renales majores*; большие чашечки.

16. Renal columns, *columnae renales*; почечные столбы.

17. Radiate part of cortex, *pars radiata*; лучистая часть.

18. Convoluted part of cortex, *pars convoluta*; свернутая часть.

19. Renal pelvis, *pelvis renalis*; почечная лоханка.

20. Abdominal part of ureter, *pars abdominalis*; брюшная часть мочеточника.

21. Pelvic part of ureter, *pars pelvica*; тазовая часть мочеточника.

22. Urinary bladder, *vesica urinaria*; мочевой пузырь.

23. Fundus of urinary bladder, *fundus vesicae*; дно мочевого пузыря.

24. Apex of urinary bladder, *apex vesicae*; верхушка мочевого пузыря.

25. Body of urinary bladder, *corpus vesicae*; тело мочевого пузыря.

26. Neck of urinary bladder, *cervix vesicae*; шейка мочевого пузыря.

27. Orifice of ureter, *ostia ureteres*; отверстия мочеточников.

28. Internal urethral orifice, *ostium urethrae internum*; внутреннее отверстие мочеиспускательного канала.

29. External orifice of male urethra, *ostium externum urethrae masculinum*; наружное отверстие мужского мочеиспускательного канала.

30. Trigone of urinary bladder, *trigonum vesicae*; треугольник мочевого пузыря.

31. Scrotum, *scrotum*; мошонка.

32. Raphe of scrotum, *raphe scroti*; шов мошонки.

33. Medial surface of testis, *facies medialis testis*; медиальная поверхность яичка.

34. Tunica albuginea, *tunica albuginea testis*; белочная оболочка.

35. Lateral surface of testis, *facies lateralis testis*; латеральная поверхность яичка.

36. Superior pole of testis, *extremitas superior testis*; верхний полюс яичка.
37. Anterior border of testis, *margo anterior testis*; передний край яичка.
38. Posterior border of testis, *margo posterior testis*; задний край яичка.
39. Inferior pole of testis, *extremitas inferior testis*; нижний полюс яичка.
40. Spermatic cord, *funiculus spermaticus*; семенной канатик.
41. Deferent duct, *ductus deferens*; семявыносящий проток.
42. Mediastinum of testis, *mediastinum testis*; средостение яичка.
43. Lobules of testis, *lobuli testis*; дольки яичка.
44. Epididymis, *epididymis*; придаток яичка.
45. Sinus of epididymis, *sinus epididymis*; пазуха придатка яичка.
46. Seminal vesicles, *vesuculae seminales*; семенные пузырьки.
47. Prostate, *prostate*; предстательная железа.
48. Glans penis, *glans penis*; головка полового члена.
49. Prepuce, *preputium penis*; крайняя плоть.
50. Corpus of penis, *corpus penis*; тело полового члена.
51. Root of penis, *radix penis*; корень полового члена.
52. Dorsum of penis, *dorsum penis*; спинка полового члена.
53. Crus of penis, *crus penis*; ножки полового члена.
54. Corpus spongiosum, *corpus spongiosum*; губчатое тело.
55. Spongiose part of urethra, *pars spongiosa urethrae*; губчатая часть мочеиспускательного канала.
56. Corpus cavernosum, *corpora cavernosa*; пещеристые тела.
57. Navicular fossa, *fossa navicularis*; ладьевидная ямка.
58. Bulb of penis, *bulbus penis*; луковица полового члена.
59. Prostatic part of urethra, *pars prostatica urethrae*; простатическая часть мочеиспускательного канала.

X-ray skills

1. Kidney, *ren*; почка.
2. Urinary bladder, *vesica urinaria*; мочевой пузырь.
3. Minor calyces, *calyces renales minores*; малые чашечки.
4. Major calyces, *calyces renales majores*; большие чашечки.
5. Renal pelvis, *pelvis renalis*; почечная лоханка.
6. Abdominal part of ureter, *pars abdominalis*; брюшная часть мочеточника.
7. Pelvic part of ureter, *pars pelvina*; тазовая часть мочеточника.

Literature

1. *Human* anatomy : 2 vol. / M. Prives, N. Lysenkov, V. Bushkovich. — 3nd ed. — Moscow : Mir Publishers, 1989. — Vol. 1: The weight-bearing and locomotor system. The science of the viscera. The science of the organs of internal secretion. — 3nd ed. — 608 p., ill. — P. 536—559.

2. *Sapin, M. R.* Textbook of human anatomy for medical students. Vol. 1 / M. R. Sapin, L. L. Kolesnikov, D. B. Nikitjuk. — 2nd ed. — Moscow : New Wave Publishing Agency, 2019. — 416 p.

3. *Sinelnikov, R. D.* Atlas of human anatomy. — Moscow : Medicine, 1996. — Vol. 2. — 463 p.

4. *Atlas* of Human Anatomy / Frank H. Netter. — 6th ed. — Philadelphia : Elsevier, 2014. — 531 p., ill.

5. *Lecture* material.

Topic 6

FEMALE REPRODUCTIVE SYSTEM. PERINEUM

INTRODUCTION TO THE TOPIC

The knowledge of female reproductive organs is necessary as their functions are childbearing and childbirth. Based on knowledge of the anatomy of the female reproductive organs the science of obstetrics was created. The obstetric care follows features of the anatomy of the female reproductive organs. Practical medicine faces many diseases of the female reproductive organs, diagnosis and treatment of which are studied in a special discipline, gynecology.

Perineal muscles hold the pelvic organs, create conditions for normal topography and their functioning. Sphincters of the rectum and urethra are genetically, topographically and functionally related with the muscles of the perineum. Weakness of the muscles of the perineum as a result of the involutional process and the traumatic defeats leads to a change in the position of the pelvic organs and disruption of their activities. Perineal area is a subject to surgical interventions, which aim is to restore their integrity.

Before the study of the topic you should know:

1. Anatomy of the pelvis: bones, bone connections, muscles.
2. Lower storey of the peritoneal cavity.

SELF-STUDY GOALS

After self-study of the material of this topic, the student should know: the anatomy of the female genital organs and the urethra; be able to find, name and show on anatomical preparations the external and internal genital organs, their relationship with surrounding organs.

The student should know: name, location and functional significance of the muscles and fasciae of the pelvic and urogenital diaphragm.

TOPIC CONTENT

- The structure of the internal genital organs: ovaries, its surfaces, edges and internal structure. Pay attention to the formation of the corpus luteum, which is an endocrine gland. Study the topography of the ovary, its location in relation to the uterus and the broad ligament of the uterus.

- The structure of the uterus and fallopian tubes — the structure of the uterine wall (peri-, myo- and endometrium) and its topography. Study the ligamentous apparatus of the uterus, normal position of the uterus.
- Structure of the vagina: structure of the wall, topography, relationship of the vagina to other organs.
- The structure of the external female genitalia. The structure of the labia majora and minora, the clitoris, the vestibule bulb, and the Bartholin glands.
- The muscles of the pelvic diaphragm are the levator rectus muscle and the coccygeus muscle. Pay attention to the openings in the diaphragm through which the rectum and vagina pass. External anal sphincter.
- The structure of the urogenital diaphragm: superficial transverse muscle of the perineum, bulbospongiosus and ischiocavernosus, sphincter of the urethra muscle, deep transverse muscle of the perineum.
- Fasciae of the urogenital and pelvic diaphragm.

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	The study of the topic is accompanied by a demonstration of structural details in a table and preparation
Revise the studied material while demonstrating the details of the structure of the organ on the preparation	When revising the ORGANS, check the following: 1) English and Latin name of the organ; 2) its brief functional characteristics; 3) organ topography: • holotopy, • skeletopy, • syntopy; 4) external structure characteristics: parts, surfaces, margins; 5) relation to the peritoneum; 6) internal structure characteristics: • layers of a hollow organ walls, • features of the parenchyma of the parenchymatous organs, • formation and course of excretory ducts

The end of Table

Activity	Step Description
Locate the studied organ on yourself	—
Write down new Latin terms	Put down new Latin terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR SELF-CONTROL

1. What refers to the external female genitalia?
2. What refers to the internal female genital organs?
3. What is the function of the ovaries?
4. What is the external structure of the ovary?
5. How is the ovary covered by the peritoneum?
6. Describe the internal structure of the ovary (types of the ovarian follicles). Describe the stages of the maturation of the follicles.
7. What is the corpus luteum and albicans?
8. What is the function of the corpus luteum?
9. What structure do the uterine (fallopian) tubes have?
10. What is the function of the uterine (fallopian) tubes?
11. How is the uterine tube covered by the peritoneum? What is the mesosalpinx?
12. Describe the external and internal structure of the uterus.
13. What is the function of the uterus?
14. How are the different parts of the uterus covered by the peritoneum?
15. What are the vesicouterine and recrouterine excavation?
16. Describe the ligaments of the uterus.
17. Describe the normal position of the uterus.
18. What is anteflexio and anteversio?
19. What is retroflexio and retroversio?
20. Where can the uterine orifice be found? Where is it opened?
21. What are the differences between the shape of the uterine orifice in nulliparous and parous women?
22. Describe the position of the vagina. What is the length of the vagina?
23. What are the vaginal fornices? What is their clinical importance?
24. Describe the layers of the vaginal walls. Describe the features of the vaginal mucosa (glands, folds).

25. Where is the hymen located?
26. Describe the structures and functions of the female urethra?
27. What female urethra sphincters do you know?
28. Describe the structure of the labia majors and minors pudendi.
29. What is the vaginal vestibule?
30. Describe the parts and fixation of the clitoris. What part of the penis does it correspond to?
31. What is the vestibular bulb? Describe its localization and structure. What part of the penis does it correspond to?
32. Describe the localization and functions of the major and minor vestibular glands.
33. What structures bound the perineum?
34. What is the functional significance of the perineum?
35. What muscles make up the pelvic diaphragm (origin, insertion and action)?
36. What muscles form the urogenital diaphragm (origin, insertion and action)?
37. What are the structural features of the perineal muscles in males and females?
38. What is the topography of the perineal fasciae?

PRACTICAL SKILLS

1. Fundus of uterus, *fundus uteri*; тело матки.
2. Corpus of uterus, *corpus uteri*; шейка матки.
3. Isthmus of uterus, *sthmus uteri*; перешеек матки.
4. Cervix of uterus: supravaginal and vaginal parts, *cervix uteri*; надвлагалищная и влагалищная части шейки матки.
5. External os of uterus, *ostium uteri externum*; внутреннее отверстие матки.
6. Internal os of uterus, *ostium uteri internum*; наружное отверстие матки.
7. Anterior and posterior surfaces of uterus, *facies anterior et posterior uteri*; передняя и задняя поверхности матки.
8. Anterior and posterior lips of the vaginal portion of cervix, *labium anterius at posterius*; передняя и задняя губы шейки матки.
9. Vaginal fornix, *fornix vaginae*; свод влагалища.
10. Round ligament of uterus, *ligamentum teres uteri*; круглая связка матки.
11. Broad ligament of uterus, *ligamentum latum uteri*; широкая связка матки.
12. Endometrium, *endometrium*; эндометрий (слизистая оболочка матки).
13. Myometrium, *myometrium*; миометрий (мышечная оболочка матки).
14. Perimetrium, *perimetrium*; периметрий (серозная оболочка матки).
15. Ovary, *ovarium*; яичник.
16. Free border of ovary, *margo libera ovari*; свободный край яичника.

17. Mesovarian border of ovary, *margo mesovarica ovari*; брыжеечный край яичника.

18. Uterine extremity of ovary, *extremitas uterina*; маточный конец.

19. Tubal extremity of ovary, *extremitas tubaria*; трубный конец.

20. Hilum of ovary, *hilum ovarii*; ворота яичника.

21. Tunica albuginea, *tunica albuginea*; белочная оболочка.

22. Ovarian cortex, *cortex ovarii*; корковое вещество яичника.

23. Ovarian medulla, *medulla ovarii*; мозговое вещество яичника.

24. Mesovarium, *mesovarium*; брыжейка яичника.

25. Suspensory ligament of ovary, *ligamentum suspensorium ovarii*; подвешивающая связка яичника.

26. Ovarian ligament, *ligamentum proprium ovarii*; собственная связка яичника.

27. Uterine tube, *tuba uterina*; маточная труба.

28. Uterine orifice of uterine tube, *ostium uterinum*; маточное отверстие маточной трубы.

29. Uterine part of uterine tube, *pars uterina tubae*; маточная часть маточной трубы.

30. Isthmus of uterine tube, *isthmus tubae uterinae*; перешеек маточной трубы.

31. Ampulla of uterine tube, *ampulla tubae uterinae*; ампула маточной трубы.

32. Mesosalpinx, *mesosalpinx*; брыжейка маточной трубы.

33. Infundibulum of uterine tube, *infundibulum tubae uterinae*; воронка маточной трубы.

34. Fimbriae of uterine tube, *fimbriae tubae uterinae*; бахромки маточной трубы.

35. Abdominal orifice of uterine tube, *ostium abdominalis*; брюшное отверстие маточной трубы.

36. Labia majora and minora pudendi, *labia pudendi minores et majores*; малые и большие половые губы.

37. Anterior and posterior commissures of labia majora, *comissura labiorum anterior et posterior*; передняя и задняя спайка больших половых губ.

38. Vaginal vestibule, *vestibulum vaginae*; преддверие влагалища.

39. Vaginal orifice, *ostium vaginae*; отверстие влагалища.

40. External urethral orifice, *ostim urethrae externum*; наружное отверстие мочеиспускательного канала.

41. Clitoris, *clitoris*; клитор.

42. Anus, *anus*; заднепроходное отверстие.

43. Ischiocavernosus muscle, *m. ischiocavernosus*; седалищно-пещеристая мышца.

44. Bulbospongiosus muscle, *m. bulbospongiosus*; луковично-губчатая мышца.

45. Deep transverse perineal muscle, *m. transversus perinei profundus*; глубокая поперечная мышца промежности.

46. Superficial transverse perineal muscle, *m. transversus perinei superficialis*; поверхностная поперечная мышца промежности.

47. External urethral sphincter, *m. sphincter urethrae externus*; наружный сфинктер мочеиспускательного канала.

48. Sphincter ani externus, *m. sphincter ani externus*; наружный сфинктер прямой кишки.

49. Ischiorectal fossa, *fossa ischiorectalis*; седалищно-прямокишечная ямка.

50. Levator ani muscle, *m. levator ani*; мышца поднимающая задний проход.

51. Coccygeal muscle, *m. coccygeus*; копчиковая мышца.

Literature

1. *Human* anatomy : 2 vol. / M. Prives, N. Lysenkov, V. Bushkovich. — 3nd ed. — Moscow : Mir Publishers, 1989. — Vol. 1: The weight-bearing and locomotor system. The science of the viscera. The science of the organs of internal secretion. — 3nd ed. — 608 p., ill. — P. 559—583.

2. *Sapin, M. R.* Textbook of human anatomy for medical students. Vol. 1 / M. R. Sapin, L. L. Kolesnikov, D. B. Nikitjuk. — 2nd ed. — Moscow : New Wave Publishing Agency, 2019. — 416 p.

3. *Sinelnikov, R. D.* Atlas of human anatomy. — Moscow : Medicine, 1996. — Vol. 2. — 463 p.

4. *Atlas* of Human Anatomy / Frank H. Netter. — 6th ed. — Philadelphia : Elsevier, 2014. — 531 p., ill.

5. *Lecture* material.

Topic 7

MAJOR CONTROL: SPLANCHNOLOGY

INTRODUCTION TO THE TOPIC

This lesson provides a summary and review of the studied material in digestive, respiratory and urogenital systems, helping students to improve their understanding of key concepts.

SELF-STUDY GOALS

After revising the topic material, the student should be able to complete a major computer test on LMS, know the features of the topography, external, internal structures and functions of the internal organs; be able to identify all the anatomical structures on the models and preparations. The student should know the theoretical aspects of this topic (development, anomalies, patterns of structures, etc.).

TOPIC CONTENT

REVISE:

- Topography, structural features of all organs of the digestive, respiratory, urinary and reproductive systems in accordance with the plan of the organ description.
- Stages of development of the digestive, respiratory, urinary and reproductive systems. Developmental anomalies (lecture material).
- Description of radiographs of the digestive, respiratory, urinary and reproductive systems.
- Latin terms (see the list of practical skills: Topic 1—6).

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	The study of the topic is accompanied by a demonstration of structural details in a table and preparation

The end of Table

Activity	Step Description
Revise the studied material while demonstrating the details of the structure of the organ on the preparation	When revising the organs, check the following: 1) English and Latin name of the organ; 2) its brief functional characteristics; 3) organ topography: • holotopy, • skeletopy, • syntopy; 4) external structure characteristics: parts, surfaces, margins; 5) relation to the peritoneum; 6) internal structure characteristics; 7) layers of a hollow organ walls; 8) features of the parenchyma of the parenchymatous organs; 9) formation and course of excretory ducts
Locate the studied organ on yourself	—
Write down new Latin terms	Put down new Latin terms in your notebook (see the list of Practical skills)
Revise the description of x-ray images of individual organs of the digestive, respiratory, urinary and reproductive systems	Name in English and Latin the anatomical structures that are visualized in the image and show them
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR MAJOR SPLANCHNOLOGY

1. Describe the structure of a tooth; the dental formula (of milk and permanent teeth).

2. Describe the structure of the tongue: parts, muscles, papillae, functions.

3. Describe the salivary glands: classification, location; function of saliva, the places of the excretory ducts openings.

4. Pirogov-Waldeyer's lymphoepithelial ring: structure, location and function of a tonsil.

5. Describe the soft palate: arches, muscles, functions.

6. Describe the pharynx: parts, topography, function, structure of the wall, muscles.

7. Describe the esophagus: topography, parts, function, structure of the wall, constrictions.

8. Describe the stomach: topography, parts, function, structure of the wall.

9. Describe the small intestine: parts, function, structure of the wall, features of the mucosa; relations to the peritoneum.

10. Describe the duodenum: topography, parts, features of the mucosa, relations to the peritoneum, duodenal papillae.

11. Describe the differences between jejunum and ileum.

12. Describe the large intestine: topography, parts, function, structure of the wall, distinctive features of the muscle layer and mucosa; relations to the peritoneum.

13. Describe the liver: external structures, topography, relation to the peritoneum, pathway of the bile.

14. Describe the liver: internal structures (hepatic lobule), functions.

15. Describe the structures of the pancreas: topography, divisions, functions, relation to the peritoneum, pancreatic ducts.

16. Describe the borderlines of the peritoneal cavity storeys. Describe the upper storey of the peritoneal cavity: ligaments, bursa.

17. Describe the middle and lower storeys of the peritoneal cavity: sinuses, canals, recesses, excavations.

18. Describe the nasal cavity walls, passages, communications.

19. Describe the larynx: parts, the structure of the wall, cartilages, articulations (ligaments, synovial joints).

20. Describe the laryngeal muscles: name and group them in accordance with the function.

21. Describe the trachea and principal bronchi: topography, structure of the wall; the differences between the right and the left main bronchi.

22. Describe the bronchial tree and alveolar tree: name the bronchial subdivisions, the structural features of the different bronchi, the process of exchange of gases.

23. Describe the structures and topography of the lungs.

24. Classify mediastinum, name the organs of the anterior and posterior, and superior and inferior mediastinum.

25. Name the parts of the parietal pleura. What is the pleural cavity? What is the normal volume of the pleural fluid? Define and name the pleural sinuses; describe their function and location.

26. Describe the pleura: layers, surfaces, cavity, sinuses, topography.

27. Describe the external and internal kidney structures, fixation of the kidneys.

28. Describe the structure of the nephron; the location of the nephron parts. Describe the functioning and blood supplying of the nephron.

29. Describe the fornical apparatus of the kidney: the structure and functioning. Describe the urinary tract, beginning from the collecting ducts.

30. Describe the way of sperm, beginning from the convoluted seminiferous tubules.

31. Describe the topography, structure and function of the prostate, seminal vesicles and bulbourethral glands.

32. Describe the parts of the deferent ducts; the components and parts of the spermatic cord and the formation of the ejaculatory duct.

33. Describe the parts and sphincters of the male urethra.

34. Describe the structure of the ovary and its functioning during the menstrual cycle.

35. Describe the structure of the uterine tube: parts, walls, position.

36. Describe the structure of the uterus: parts, walls, position.

37. Describe the muscles and fasciae of the urogenital and pelvic diaphragm.

Literature

1. *Human* anatomy : 2 vol. / M. Prives, N. Lysenkov, V. Bushkovich. — 3nd ed. — Moscow : Mir Publishers, 1989. — Vol. 1: The weight-bearing and locomotor system. The science of the viscera. The science of the organs of internal secretion. — 3nd ed. — 608 p., ill.

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5. *Lecture* material.

6. *List* of practical skills. Topic 1—6.

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