Federal State-Funded Educational Institution of Higher Education
"Kemerovo State Medical University"
Ministry of Healthcare, RF

APPROVE
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(signature)
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DEPARTMENT OF MORPHOLOGY AND FORENSIC MEDICINE

SUBJECT HUMAN ANATOMY

GENERAL MEDICINE 31.05.01

GPC-1, GPC-7, GPC-9

LIST OF QUESTIONS TO PREPARE FOR THE EXAM

for the 2nd year students of the General Medicine
the III semester of the 2024-2025 academic year

General-theoretical questions

1. The subject and content of anatomy. Its place is among the biological subjects. Significance for medical practice.
2. Modern methods of anatomical research. Radiological anatomy, its significance for clinical specialties.
3. Axes and planes in anatomy. Projection lines of the chest and the anterior abdominal wall, their significance for the projection of organs on the skin.
4. Methodological principles of anatomy (dialectical development, unity of structure and function, levels of organization, integrity of the organism and interrelation of its parts, etc.).
5. Individual variability of the organism. The concept of variants of the norm, anomalies and deformities in the structure of organs and the body in general. Body types (somatotypes).

Anatomy of the musculoskeletal system

6. Bone as an organ: its macro- and microscopic structure. Classification of bones. Bone functions.
7. Stages of development, types of bones ossification, bone growth in thickness and length. Chemical composition and properties of bones.
8. Vertebrae: structure in various parts of the vertebral column, variants and anomalies; connections between vertebrae. Atlantooccipital and atlantoaxial joints, structure, movements in these joints.
9. The vertebral column in general: curvatures, their formation. The muscles that produce the movement of the vertebral column, their blood supply, venous drainage and nerve supply.
10. Ribs and sternum: their structure, variants and anomalies. Junction of ribs with vertebrae and sternum. Thorax as a whole, its content, apertures, individual, age-related and typological peculiarities. Muscles that perform rib movements, their blood supply, venous drainage and nerve supply.

11. Development of the cranium in ontogenesis. Individual, age and gender characteristics of the cranium. Anomalies of the cranium.
12. The first (mandibular) and the second (sublingual) visceral arches, their derivates. Anomalies of development of visceral arches.
13. Bones of the visceral cranium. Orbit, the structure of its walls, foramina, their significance.
14. Temporal bone: its parts, foramina, canals and their significance.
15. Sphenoid bone: its parts, foramina, their significance.
16. Pterygopalatine fossa: its walls, foramina and their significance.
17. The nasal cavity, structure of its walls, communications. Paranasal sinuses, their purpose.
18. The external surface of the cranial base; its foramina and their significance.
19. The internal surface of the cranial base: the boundaries of the anterior, middle and posterior cranial fossae, canals, foramina, fissurae, their content.
20. Anatomical and biomechanical classification of bone junctions. Examples of continuous bone junctions.
21. Discontinuous bone junctions. The structure of the joint. Classification of joints by features of structure and functions. Types of movements in the joints. Factors that determine joint range of motions.
22. Junctions of the cranial bones: types of sutures, examples. Temporomandibular joint: structure, blood supply, venous drainage, nerve supply, shape, movements. Muscles, affecting this joint. Junctions of the cranial bones in a newborn and an adult.
23. Bones and joints of the shoulder girdle. The muscles that move the shoulder blade and clavicle, their blood supply, venous drainage and nerve supply.
24. Shoulder joint: structure, shape, types of movements; blood supply, venous drainage, nerve supply. Muscles, acting on this joint, their blood supply, venous drainage, nerve supply.
25. Elbow joint: structure, shape, movements; blood supply and nerve supply of the joint. Movements in the joint; muscles acting on this joint, their blood supply, venous drainage and nerve supply.
26. Joints of the hand: structure, shape, movements. Muscles acting on the joints of the hand, their blood supply, venous drainage and nerve supply.
27. The junction of the bones of the antebrachium with the hand, their anatomical and biomechanical features in comparison with the joints of the bones of the shin and foot.
28. Pelvic bones and their junctions. Pelvis as a whole: lesser and greater pelvis. Age-related and sex-related peculiarities. The size of female pelvis.
29. Acetabulofemoral joint: structure, shape, movements; blood supply, venous drainage, nerve supply. Muscles acting on this joint, their blood supply, venous drainage, nerve supply.
30. Knee joint: structure, shape, movements; blood supply, venous drainage, nerve supply. Muscles acting on this joint, their blood supply, venous drainage, nerve supply.
31. Knee joint: ligaments; synovial plicae and bursae; blood supply, venous drainage, nerve supply.
32. Talocrural joint: structure, shape, movements; blood supply, venous drainage, nerve supply. Muscles acting on this joint, their blood supply, venous drainage, nerve supply.
33. The bones of the foot: their juctions, types of movements in them. Characteristics of the foot arches. Passive and active “tightening” of the foot arches.
34. General anatomy of muscles. The structure of the muscle as an organ. Classification of skeletal muscles by shape, structure, location, etc. Anatomical and physiological diameter of muscles.
35. Auxiliary apparatus of muscles: fascia, bone-fibrous canals, synovial sheaths and bursae, trochleas, their structure and purpose. P.V. Lesgaft’s views on the interrelation between work and the structure of muscles and bones.
36. Muscles-synergists and antagonists. Functions and work of muscles. Types of levers.
37. Muscles of the back, their division into groups, functions, blood supply, venous drainage and nerve supply. Lumbar triangle: topography, structure, significance.

38. Thoracic muscles and fasciae, their topography, structure, functions, blood supply, venous drainage, nerve supply. The triangles of the anterior wall of axillary fossa, their practical significance.
39. Muscles and fasciae of abdomen, their topography, functions, blood supply, venous drainage, nerve supply. The rectus abdominis sheath. Linea alba abdominis. Specify the weak areas of the abdominal walls.
40. Inguinal canal, its walls, deep and superficial ring; content of the canal, gender features.
41. Diaphragm, its parts, topography, function, blood supply, venous drainage, nerve supply, development, abnormalities.
42. Muscles of the neck, division into groups, their functions, blood supply, venous drainage and nerve supply.
43. The mimetic muscles. Their development, structure, topography, functions, blood supply, venous drainage, nerve supply.
44. The masticatory muscles. Their development, structure, topography, functions, blood supply, venous drainage, nerve supply.
45. Muscles and fascia of the shoulder girdle: their structure, topography, functions, blood supply, venous drainage, nerve supply. Axillary fossa, its walls, content. Triangular and quadrilateral foramen of axillary fossa, their walls and content.
46. Muscles and fascia of the shoulder: their structure, topography, functions, blood supply, venous drainage, nerve supply. Sulci of the shoulder, canalis humeromuscularis, cubital fossa, their content.
47. Muscles and fasciae of antebrachium: their structure, topography, functions, blood supply, venous drainage and nerve supply.
48. Sulci of antebrachium, their content; retinacula and canals in the area of the radiocarpal joint, their content.
49. Muscles and fascia of the hand. Their structure, topography, functions, blood supply, venous drainage and nerve supply.
50. Pelvic muscles: their structure, topography, functions, blood supply, venous drainage and nerve supply.
51. The foramina and canals in the pelvic walls, their purpose.
52. The anterior muscles and fasciae of femur: topography, functions, blood supply, venous drainage and nerve supply. Lacuna musculorum and lacuna vasorum. Femoral triangle.
53. Medial and posterior muscles and fasciae of femur: their structure, topography, functions, blood supply, venous drainage and nerve supply. Adductor canal. The walls and contents of the adductor canal, its communications.
54. Muscles of the shin: their structure, functions, blood supply, venous drainage and nerve supply.
55. Popliteal fossa and crural canals, their walls and content.
56. Muscles of foot: their structure, topography, functions, blood supply, venous drainage and nerve supply, foot grooves, their contents.

Anatomy of internal organs
The digestive system

57. Development of the digestive system. Differentiation of the primary digestive tube. Foregut, midgut, hindgut and their derivatives. Interrelation of the stomach and intestines with the peritoneum at different stages of ontogenesis (dorsal and ventral mesentery of the stomach and intestines).
58. Development of visceral arches and pharyngeal pouches. Anomalies of their development.
59. Oral cavity. The vestibule of the mouth and the oral cavity proper: the structure of their walls, hard and soft palate, diaphragm of mouth. Their functions, blood supply, venous drainage and nerve supply.

60. Temporary and permanent teeth, their structure, replaceability. Dental arch, formula of temporary and permanent teeth. Blood supply, venous drainage and nerve supply of teeth.
61. Tongue: development, structure, functions, its blood supply, venous drainage, nerve supply.
62. Major salivary glands (parotid, sublingual, submandibular): topography, structure, excretory ducts, blood supply, venous drainage, nerve supply. List the lesser salivary glands.
63. Pharynx: topography, structure, blood supply, venous drainage and nerve supply. Pirogoff tonsillar ring.
64. Esophagus: parts, their topography, structure, blood supply, venous drainage and nerve supply.
65. Stomach: structure, topography, blood supply, venous drainage and nerve supply.
66. The small intestine, its parts, their topography, relation to the peritoneum, the structure of the wall, functions.
67. Duodenum: its parts, wall structure, topography, relation to the peritoneum, blood supply, its intersystemic vascular anastomoses, venous drainage, nerve supply.
68. The mesenteric part of the small intestine (jejunum and ileum), topography, relation to the peritoneum, wall structure, blood supply, venous drainage, nerve supply.
69. The colon: its parts, their topography, relation to the peritoneum, wall structure, blood supply, venous drainage, nerve supply.
70. Caecum: structure, relation to peritoneum, the topography of vermiform appendix. Blood supply, venous drainage, nerve supply of the caecum and vermiform appendix. Variants and anomalies of the position of intestine and vermiform appendix.
71. Rectum: topography, relation to the peritoneum, wall structure, blood supply, venous drainage and nerve supply.
72. Liver: structure, topography, blood supply, venous drainage and nerve supply.
73. Pancreas: structure, excretory ducts, functions, topography, blood supply, venous drainage, nerve supply.

Respiratory system

74. The development of organs of the respiratory system, congenital defects.
75. External nose. The nasal cavity. Paranasal sinuses. Their structure, blood supply, venous drainage and nerve supply.
76. Larynx: cartilages, their junctions. Elastic cone of the larynx. Relief of the internal surface of the laryngeal mucous membrane (plicae, parts of the cavity).
77. Larynx: topography, blood supply, venous drainage, nerve supply.
78. The muscles of the larynx, their classification, functions.
79. Trachea and main bronchi. Their structure, topography, blood supply, venous drainage and nerve supply.
80. Lungs: external and segmental structure. Bronchial and alveolar apparatus, acinus, their composition. The structure and topography of roots of the right and left lungs. The margins of lung.
81. Blood supply, venous drainage (lesser and greater circulation), nerve supply of lungs.
82. Pleura, its leaves, topography of the divisions of the parietal pleura, margins; pleural cavity, pleural sinuses.
83. The parietal pleura: blood supply, venous drainage, regional lymph nodes, nerve supply, functional significance.
84. Mediastinum: its boundaries, parts, their topography; mediastinal organs.

Urogenital system

85. Development and abnormalities of the urinary system organs.
86. Kidneys, external and internal macroscopic structure. The structure of cortical and

juxtamedullary nephrons.

87. Topography of kidneys, their blood supply, venous drainage and nerve supply.
88. Excretory kidney apparatus: topography, structure, varieties.
89. Ureter and urinary bladder. Their structure, topography, blood supply, venous drainage, nerve supply.
90. Male and female urethra: topography, parts, sphincters, curvatures, narrow areas.
91. Testicle, epididymis. Their structure, topography, blood supply, venous drainage and nerve supply. Testicular membranes. Development and lowering of the testicle.
92. Prostate gland, seminal vesicles, bulbourethral glands: their structure, topography (relation to the urethra). Blood supply, venous drainage, nerve supply.
93. The spermatic cord, its topography, its components. Male external genital organs, their topography, structure, age-related changeability; blood supply, venous drainage, nerve supply.
94. Ovaries, their topography, structure, relation to the peritoneum; blood supply, venous drainage, nerve supply, cyclic and age-related changes.
95. Parovarium, its origin, topography, relation to the peritoneum.
96. Development and abnormalities of internal female genital organs.
97. Uterus: structure, topography, ligaments, relation to the peritoneum; blood supply, venous drainage, nerve supply.
98. Fallopian tube: topography, structure, relation to the peritoneum; blood supply, venous drainage, nerve supply.
99. Vagina: topography, structure, relation to the peritoneum; blood supply, venous drainage, nerve supply.
100. External female genital organs: structure, blood supply, venous drainage, nerve supply.
101. Development and abnormalities of external female genital organs.
102. Muscles and fascia of the male and female perineum. Their blood supply, venous drainage and nerve supply.
103. The course of the peritoneum in male and female pelvic cavities. Its relation to the rectum, urinary bladder, uterus and other organs located in the pelvic cavity.

Anatomy of the cardiovascular system organs

104. General anatomy of blood vessels, patterns of their walls structure. Major, extraorganic and intraorganic vessels. Characteristics of the microcirculation.
105. General anatomy of blood vessels, patterns of their location and branching. Angiological laws of P.F. Lesgaft, examples illustrating them.
106. Arterial intrasystemic and intersystemic anastomoses, examples.
107. Venous plexuses, their topography and significance. Intrasystemic and intersystemic venous anastomoses (cava-caval, porto-cava-caval, porto-caval), their topography and significance.
108. The peculiarities of fetal blood supply and changes in the circulatory system after birth. The causes of peculiarities and restructure of hemodynamics after birth.
109. Heart: topography, projection of cardiac margins and valves onto the anterior thoracic wall.
110. Cardiac chambers, their structure, the relief of the internal surface, communications with the vessels of the system of circulation.
111. The fibrous skeleton of heart, its composition and functions. Cardiac valves, their structure.
112. The structure of cardiac wall. The peculiarities of the structure of the myocardium atria and ventricles. The conductive system of heart.
113. Blood supply, venous drainage from heart. The nerve supply of heart.
114. The pericardium, its structure, topography, blood supply, venous drainage, nerve supply.
115. Development of the heart and cardiac anomalies.
116. The vessels of the pulmonary circulation (general characteristic). The laws of artery and vein distribution in lungs.
117. Aorta, its portions. The branches of aortic arch, their topography, areas of ramification (blood

supply).

118. External carotid artery, its branches and areas of their blood supply, intersystemic and intrasystemic anastomoses.
119. Internal carotid artery, its branches and areas of their blood supply, intersystemic and intrasystemic anastomoses.
120. Subclavian artery, its branches and areas of their blood supply, intersystemic and intrasystemic anastomoses.
121. Common, external, and internal iliac arteries, their branches, areas of ramification, intersystemic and intrasystemic anastomoses. Arteries of the lower limb.
122. Arteries of the brain. Arterial (Willis) circle of the base of the brain. Sources of blood supply of the brain regions.
123. Axillary and brachial arteries: branches and areas of blood supply. Blood supply of the shoulder joint.
124. Arteries of antebrachium and hand. The blood supply of elbow and wrist. The arterial palmar arches, their topography and branches.
125. Arteries of the lower limb. Blood supply of the knee joint.
126. The branches of the thoracic aorta (parietal and visceral): topography, regions of ramification.
127. Parietal and visceral (paired and unpaired) branches of the abdominal aorta: peculiarities of ramification, intersystemic anastomoses.
128. The superior vena cava, the sources of its formation, its collector. Azygos and hemiazygos veins, their tributaries and anastomoses.
129. Internal and external jugular veins: tributaries, anastomoses, collectors.
130. Venous sinuses of the dura mater, their significance. Emissary and diploic veins. Connection of venous tiers and venous systems of the cranium.
131. The inferior vena cava, sources of its formation and topography. The tributaries of the inferior vena cava and their anastomoses.
132. Portal vein, its roots and tributaries, ramification of the portal vein in the liver. Anastomoses of the portal vein and its tributaries.

Organs of the lymphatic system, the immune system

133. Principles of the structure of the lymphatic system (capillaries, postcapillaries, vessels, trunks and ducts, their general characteristics). Lymph drainage tracts from the body regions into the venous bed.
134. The thoracic duct, its formation, tributaries, topography, variants of drainage into the venous bed.
135. The right lymphatic duct, its formation, topography, site of drainage into the venous bed.
136. The lymph node as an organ (structure, functions). Classification of lymph nodes.
137. Lymphatic vessels and regional lymph nodes of the head and neck, their topography and areas of lymph drainage.
138. Lymphatic vessels and regional lymph nodes of upper and lower limbs, their topography and areas of lymph drainage.
139. Lymph drainage tracts from the mammary gland; topography of its regional lymph nodes.
140. Lymphatic vessels and regional lymph nodes of the abdominal cavity, their topography and regions of lymph drainage.
141. Lymphatic vessels and regional lymph nodes of the pelvis, their topography and regions of lymph drainage.
142. Central organs of the immune system: bone marrow, thymus. Their topography, development, structure in people of different ages.
143. Immune organs of the mucous membranes: tonsils, single lymph nodules, aggregated lymphoid nodules (Peyer's patches) of the small intestine; their topography and structure.
144. Spleen: topography, structure, relation to the peritoneum, functions, blood supply, venous

drainage, nerve supply.

Anatomy of the central nervous system

145. Classification of the nervous system, interrelation and significance of its segments. Embryogenesis of the nervous system.
146. Spinal cord: external structure, its segments, ganglia and roots, their position in the spinal canal. Internal macroscopic structure.
147. Internal microscopic structure of the spinal cord. The nuclei of the gray matter of the spinal cord, their purpose. Localization of conductive pathways in the white matter of the spinal cord.
148. Spinal cord: meninges, intermeningeal spaces and their content. Blood supply and venous drainage from the spinal cord.
149. Development of the cerebrum: cerebral vesicles, their derivatives. Formation of the cerebral ventricles.
150. Interrelation of gray and white matter in the hemispheres of the brain. Topography and functions of the basal nuclei, location and functional significance of the conductive pathways in the internal capsule.
151. Sulci and gyri of the dorsolateral surface of the cerebral hemispheres. The location of projection and associative centers in the cerebral cortex.
152. Sulci and gyri of the medial and basal surfaces of the cerebral hemispheres. The location of projection and associative centers in the cerebral cortex.
153. The structure of the cerebral cortex and associative conductive pathways of the cerebral hemispheres, their topography.
154. Structure and topography of the lateral ventricles of the brain, their walls. Choroid plexuses of the ventricles of the brain. Areas of production, drainage tracts and areas of cerebrospinal fluid absorption.
155. Structure and topography of the rhinencephalon: its central and peripheral divisions.
156. Structure and topography of the diencephalon, its divisions, internal structure and functions.
157. Structure and topography of the mesencephalon, its parts, their internal structure. The position of the nuclei and conductive pathways in the mesencephalon.
158. The structure and topography of the pons, its parts, internal structure. The position of the nuclei and conductive pathways in the pons.
159. The cerebellum, its structure, the nuclei of the cerebellum; the peduncles of the cerebellum, their fiber composition (conductive pathways and their functions).
160. Cerebellum: sources of blood supply, venous drainage tracts.
161. Structure and topography of the medulla oblongata. The position of nuclei and conductive pathways in the medulla oblongata.
162. Topography of the rhomboid fossa, its relief. Projection of cranial nerve nuclei on the surface of the rhomboid fossa and their functional significance.
163. Structure and topography of the IV ventricle of the cerebrum, its walls. Communications of the IV ventricle.
164. Conductive pathways of exteroceptive types of sensitivity. The position of the pathways of pain, temperature and tactile sensitivity in various regions of the spinal cord and cerebrum.
165. The extrapyramidal system, its conductive pathways.
166. Conductive pathways of proprioceptive sensitivity (unconscious) of cerebellar direction; their position in various regions of the spinal cord and cerebrum.
167. Conductive pathways of proprioceptive sensitivity (conscious) of cortical direction; their position in various regions of the spinal cord and cerebrum.
168. The medial lemniscus: tracts, forming it, their functions, their position in various regions of cerebrum.
169. Motor conductive pyramidal pathways; their functions and position in various regions of the spinal cord and cerebrum.

170. Reticular formation of the cerebrum and spinal cord and its composition, position in various regions of cerebrum, functions.
171. Meninges and intermeningeal spaces of the cerebrum. Their structure and content.
172. Sinuses of the dura mater of the cerebrum, their structure, topography, functional significance.

Anatomy of the peripheral nervous system

173. Spinal nerve, its formation, branches. The posterior branches of the spinal nerves and their distribution areas. Sources of spinal nerves plexuses formation.
174. Cervical plexus, its formation, topography, nerves; areas of nerve supply.
175. Brachial plexus, its formation, topography. Branches of the supraclavicular part of the brachial plexus; areas of nerve supply.
176. The branches of subclavian portion of brachial plexus, areas of nerve supply.
177. Nerve supply of skin of the upper limb: origin and topography of nerves.
178. Nerve supply of muscles of the upper limb: origin and topography of nerves.
179. Thoracic spinal nerves: sources of their formation, branches and regions of their nerve supply.
180. Lumbar plexus, its formation and topography; nerves, areas of nerve supply.
181. Sacral plexus, its formation and topography; nerves, areas of nerve supply.
182. Nerve supply of the skin of the lower limb: origin and topography of the cutaneous nerves.
183. Nerve supply of muscles of the lower limb: origin and topography of nerves.
184. Olfactory nerve, its structure and topography, conductive pathways of the olfactory analyzer.
185. The optic nerve, its structure and topography. Conductive pathway of the optic analyzer.
186. Oculomotor, trochlear and abducent nerves, their structure and topography. The conductive pathways of the pupillary reflex. Nerve supply areas of III, IV, VI nerves.
187. Тройничный нерв, его ветви, их строение, топография, области иннервации. Trigeminal nerve, its branches, their structure, topography, areas of nerve supply.
188. Лицевой нерв, его ветви, их строение, топография, области иннервации. Facial nerve, its branches, their structure, topography, areas of nerve supply.
189. Glossopharyngeal nerve, its branches, their structure, topography, areas of nerve supply.
190. Vagus nerve, its regions; branches, topography and nerve supply areas.
191. Accessory and sublingual nerves; their branches, structure, topography, areas of nerve supply.
192. Parasympathetic division of the autonomic nervous system. General characteristics, features of the reflex arch; centers and peripheral part (ganglia, distribution of branches).
193. Sympathetic division of the autonomic nervous system. General characteristics, features of the reflex arch; centers and peripheral part (ganglia, distribution of branches).
194. Cervical part of the sympathetic trunk: topography, ganglia, branches, areas of nerve supply.
195. Thoracic part of the sympathetic trunk: topography, ganglia, branches, areas of nerve supply.
196. Lumbar and sacral parts of the sympathetic trunk: topography, ganglia, branches, areas of nerve supply.
197. Sympathetic plexuses of the abdominal cavity and pelvis (celiac, mesenteric, hypogastric). Sources of formation, ganglia, branches.

Anatomy of sensory organs

198. The external ear, its parts and their functions, age-related peculiarities. Blood supply and nerve supply.
199. Middle ear, its parts (tympanic cavity, auditory ossicles, auditory tube, mastoid cavities), anatomical characteristics, blood supply and nerve supply.
200. Internal ear: bony and membranous labyrinths, auditory part, its anatomical characteristics. Conductive pathways of the auditory analyzer.
201. The internal ear: osseous and membranous labyrinths, vestibular portion, its anatomical characteristic. The conductive pathways of vestibular analyzer.

202. The organ of vision. Eyeball: layers, their structure and functions. The mechanism of accommodation.
203. Refractive media of the eyeball: cornea, fluid of the eye chambers, eye lens, vitreous body, their anatomical characteristics.
204. The auxiliary apparatus of the eye, its parts, their structure and functions.
205. Anatomy of the skin and its derivatives. Skin functions.
206. Mammary gland: topography, structure, blood supply, venous drainage, regional lymph nodes (by sectors), nerve supply.

Anatomy of the endocrine glands

207. Classification of the endocrine glands by origin, their general characteristics.
208. Thyroid, parathyroid glands, their topography, development, structure, functions, blood supply, venous drainage, nerve supply.
209. Pineal gland: topography, structure, development, functions, blood supply, venous drainage.
210. Pituitary gland, its topography, development, structure, functions, place in the system of endocrine glands, blood supply, portal system of the pituitary gland.
211. Group of endocrine glands of the adrenal system: chromaffin bodies (paraganglia): paraaortic, carotid, coccygeal, sympathetic. Their development, structure, topography, functions.
212. Suprarenal glands, their development, topography, structure, functions, blood supply, venous drainage, nerve supply.
213. The endocrine part of the pancreas, reproductive glands; their topography, structure, blood supply, venous drainage, nerve supply.
214. Thymus: functions, topography, structure, blood supply, venous drainage, nerve supply.