

STRUCTURAL BASIS OF MEDICAL PRACTICE

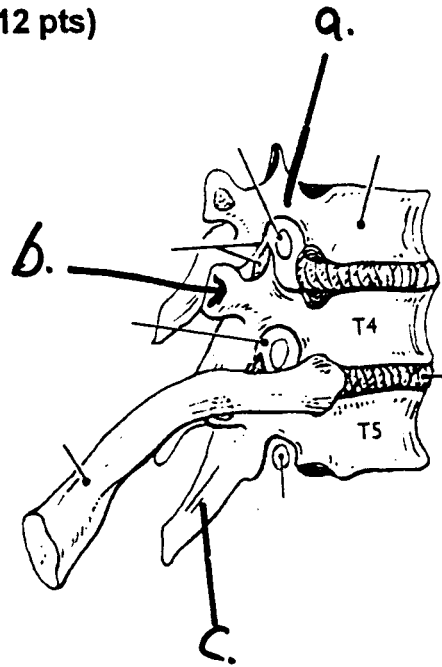
EXAMINATION I

August 31, 2001

**PART I. Answer in the space provided. (12 pts)**

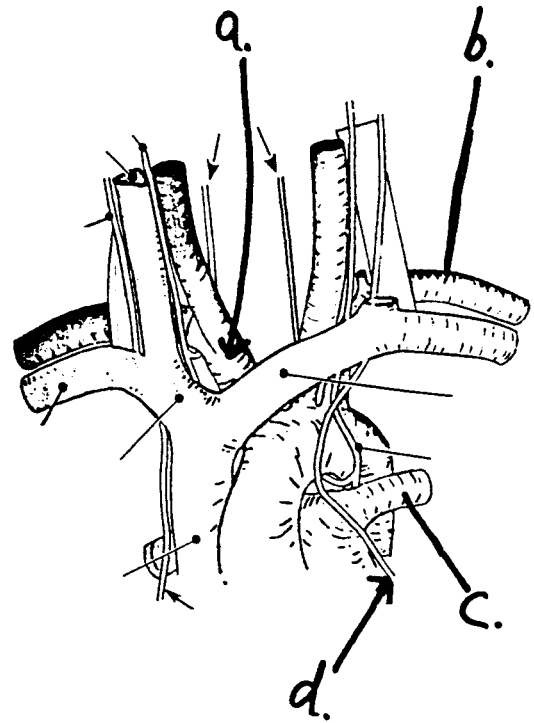
1. Identify the structures. (1.5 pts)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_



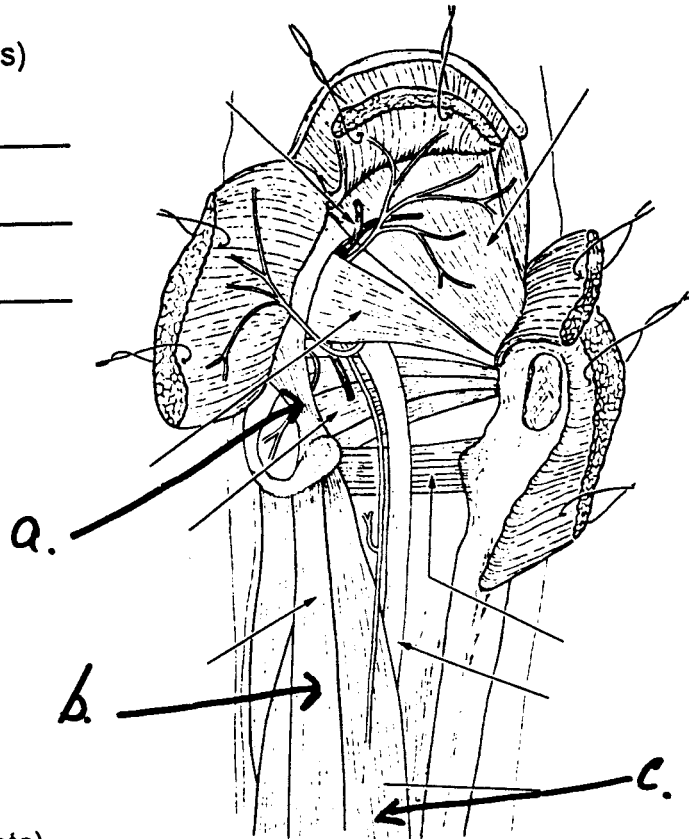
2. Identify the structures. (2 pts)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_



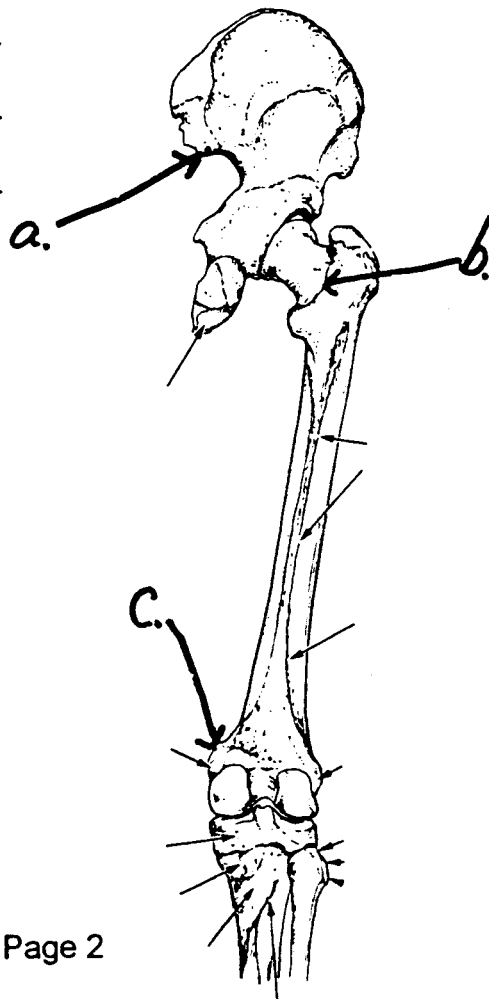
3. Identify the structures. (1.5 pts)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_



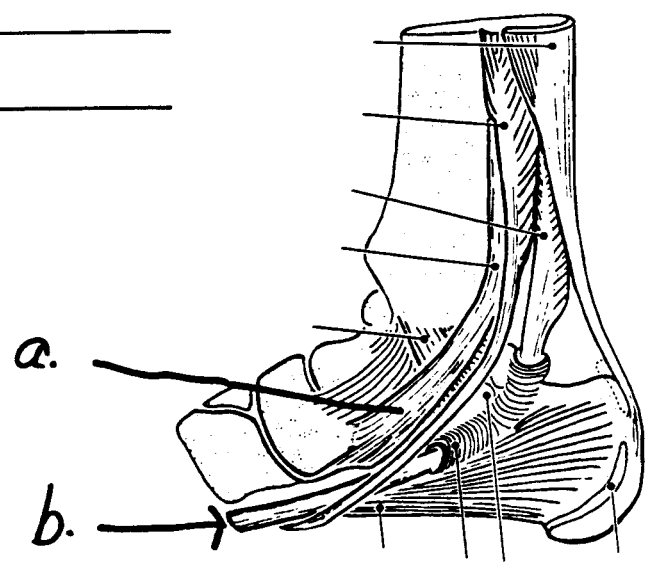
4. Identify the structures. (1.5 pts)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_



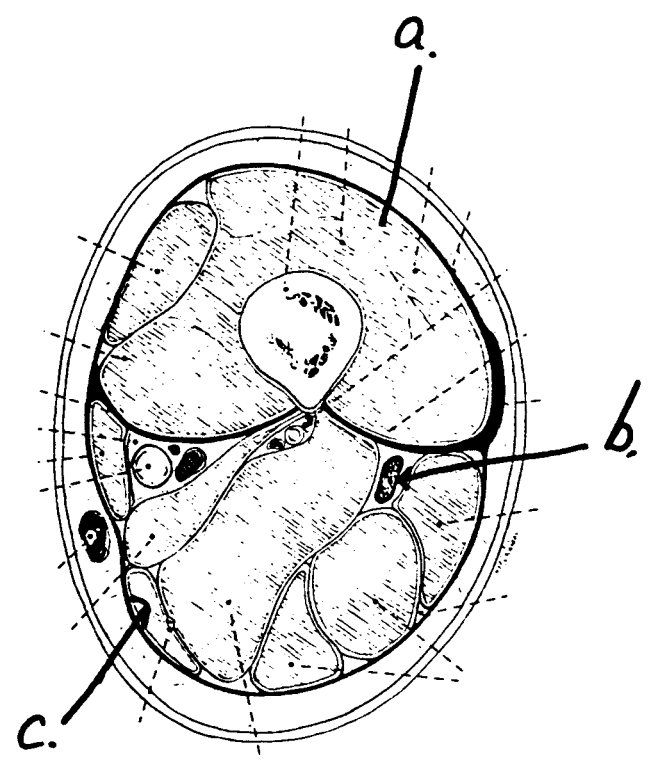
5. Identify the structures. (1 pt)

- a. \_\_\_\_\_
- b. \_\_\_\_\_



6. Identify the structures. (1.5 pts)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

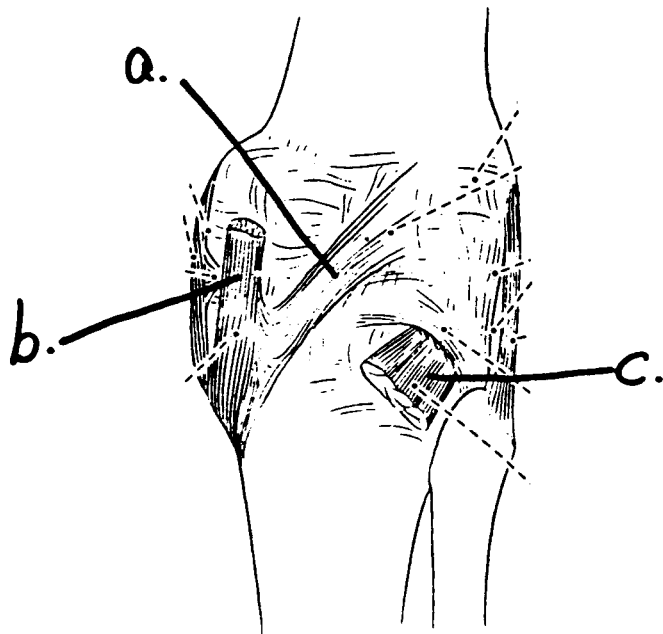


7. Identify the structures. (1.5 pts)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

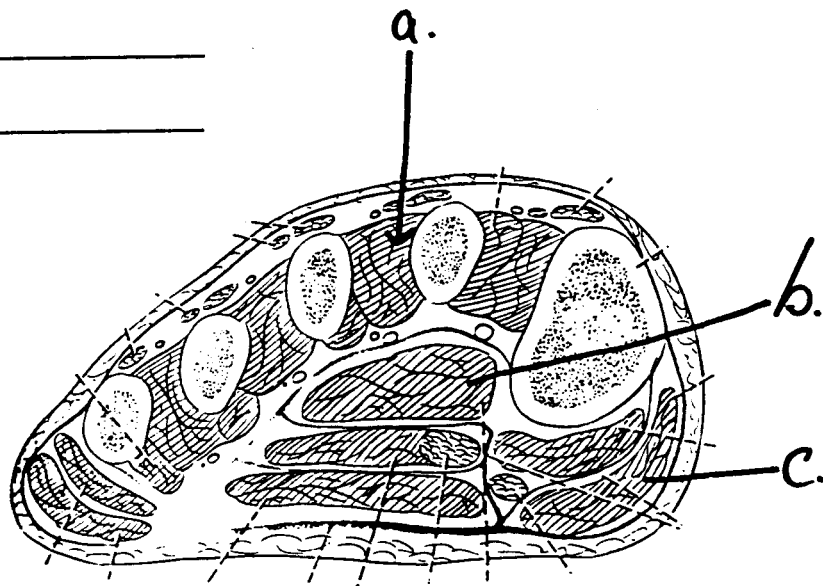


8. Identify the structures. (1.5 pts)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_



**Part II. Circle the correct answer. All, none, or some may apply. (36 pts)**

1. With respect to the respiratory system:

- a. You can identify bronchi associated with a bronchopulmonary segment because they have no cartilage.
- b. The pump-handle movement involves the articulation of the body of the vertebra with the head of the rib.
- c. The inferior border of the parietal pleura in the midaxillary plane is at the 10th rib
- d. The bucket-handle movement of respiration expands ribs 1-6 in the anterior-posterior diameter.
- e. The right bronchial artery arises from the right internal thoracic artery.

2. In regard to the respiratory system:

- a. The root of the left lung lies superior to the aortic arch.
- b. The left bronchus is smaller in diameter but almost twice as long as the right bronchus.
- c. The carina is located in the trachea, and lies between the right and left bronchi.
- d. The trachea bifurcates at the level of the T2/3.
- e. There is an impression of the esophagus on the right lung.

3. In the leg:

- a. The tibialis anterior lies against the medial surface of the tibia.
- b. The extensor digitorum longus inserts into the distal phalanx of digits 2-5, whereas the extensor digitorum brevis inserts into the middle phalanx of digits 2-5.
- c. The peroneal artery gives rise to the posterior lateral malleolar artery.
- d. The superior peroneal retinaculum extends from the lateral malleolus to the calcaneus.
- e. The common peroneal nerve gives rise to the lateral sural cutaneous nerve.

## 4. In the leg:

- a. The line of gravity passes in front of the tibia.
- b. The superficial peroneal nerve courses laterally around the tibia and innervates the peroneus longus, peroneus brevis, and peroneus tertius.
- c. The head of the fibula and the common peroneal nerve can be palpated.
- d. The extensor hallucis longus crosses the anterior tibial artery.
- e. Muscles in the superficial posterior compartment invert the foot.

## 5. With regard to the heart:

- a. The nodal artery is derived from the left coronary artery and provides blood to the sinoatrial (SA) node.
- b. The great cardiac vein drains into the coronary sinus.
- c. A crista terminalis can be found in both the right and left atria.
- d. Blood flow in the coronary artery occurs during diastole.
- e. The anterior papillary muscle is derived from pectinate muscles.

## 6. In the heart:

- a. The apex of the heart is positioned superiorly, posteriorly, and to the right.
- b. The fossa ovalis is the remnant of a connection between the right and left atria.
- c. The superficial cardiac plexus can be found in the concavity of the aortic arch.
- d. The chordae tendinae extend from the papillary muscle to the undersurface of the semilunar valves.
- e. The arterial mesocardium is associated with the aorta and the pulmonary artery.

7. In the subinguinal region:

- a. Femoral hernias occur inferior and lateral to the pubic tubercle.
- b. The femoral vein lies in the femoral canal.
- c. The pectineus lies lateral to the adductor longus.
- d. The femoral nerve can be found in the muscular lacuna.
- e. The superficial external pudendal artery is a branch of the femoral artery.

8. In the foot:

- a. The 1st dorsal interosseous muscle is innervated by the lateral plantar nerve.
- b. The lateral tarsal artery is the termination of the peroneal artery.
- c. The plantar arterial arch is derived from the lateral plantar artery.
- d. The tendons of the plantar interosseous muscles contribute to the extensor expansion associated with the lateral 4 toes.
- e. The lumbricals extend the metatarsophalangeal joint and flex the interphalangeal joints.

9. In the foot:

- a. The extensor digitorum brevis divides into 4 tendons to the lateral four toes.
- b. The lateral plantar nerve innervates the adductor hallucis muscle.
- c. The flexor digitorum brevis flexes the middle phalanges of the lateral 4 toes and assists in metatarsophalangeal flexion of the same digits.
- d. The transverse tarsal joint extends from side to side across the foot and is composed of the talonavicular articulation medially and the calcaneocuboid joint laterally.
- e. The heads of the metatarsals do not contribute to the transverse arch.

10. In regard to vessels and muscles in the thorax:

- a. The greater splanchnic nerve lies lateral to the sympathetic trunk.
- b. The external intercostal muscles are innervated by the phrenic nerve.
- c. The motor innervation of the diaphragm is the subcostal nerve.
- d. There are gray rami communicans at the level of T12.
- e. The thoracic duct drains lymph into the right internal jugular vein.

11. In the thorax:

- a. The 1st and 2nd anterior intercostal arteries are derived directly from the subclavian artery.
- b. There are 12 pair of external intercostal muscles.
- c. The 8th anterior intercostal artery branches directly from the musculophrenic artery.
- d. The azygous vein drains into the subclavian vein.
- e. The right 5th posterior intercostal vein drains into the azygous vein.

12. With respect to the hip joint:

- a. The ligamentum capitis femoris is intracapsular.
- b. The pubofemoral ligament becomes tight in extension and also limits abduction.
- c. The iliofemoral ligament attached to the intertrochanteric crest.
- d. The cruciate anastomosis is formed in part by the superior gluteal artery.
- e. The synovial membrane lines all parts of the interior of the joint, except where there is cartilage.



13. In the lower extremity:

- a. The saphenous nerve exits through the adductor hiatus.
- b. The lesser saphenous vein terminates in the great saphenous vein.
- c. The tensor fascia lata is innervated by the superior gluteal nerve.
- d. The quadratus femoris and the superior gemellus originate from the ischial spine.
- e. The vastus lateralis extends the knee but does not flex the hip joint.
- f. The gracilis muscle is innervated by the obturator nerve.
- g. The lateral inferior genicular artery passes across the popliteus muscle.

14. In the lower extremity, hybrid muscles (innervation by two different nerves) includes:

- a. Pectineus
- b. Adductor magnus
- c. Biceps femoris
- d. Adductor longus
- e. Gastrocnemius

**Part III. Answer in the space provided (including the back of the page for each question. (52 pts)**

1. A 63-yr old man with a long history of smoking visits a physician to have his yearly checkup. The patient has a productive cough and you find malignant tumor cells in the sputum. You suspect bronchogenic carcinoma that arises in the mucosa of the large bronchi. **Review the lymphatic drainage of the lung. (5 pts)**

2. You are a resident in the army and preparing a presentation on war injuries, with an emphasis on shrapnel damage to the posterior compartment of the thigh. **Discuss the anatomy of the posterior compartment of the thigh, including function, boundaries, relationships, innervations, and vascularization, along with a definition of the hamstring muscles.** (10 pts)

3. An intramuscular injection of drugs into the gluteal region results in abnormal gait, and you suspect involvement of structures in the vicinity of the piriformis muscle with the likelihood of damage to the right superior gluteal nerve. **Discuss the anatomical relationships of the piriformis muscle. Furthermore, describe the course of the superior gluteal nerve in the gluteal region, and the functional deficits and compensation(s) resulting from injury. (10 pts).**

4. A 43-yr old female with ovarian cancer presents with metastasis to the bones of the vertebral column in the thorax. Visualization with a mediastinoscope reveals compression of the contents of the posterior mediastinum. **Define the posterior mediastinum and discuss its contents.** (10 pts).

5. A 55-yr old male presents with an infection of the pericardial cavity that erodes laterally into the pleural cavity. **Discuss the fascial barrier separating the pericardial cavity from the pleural cavity. What structures would be vulnerable to damage in this area? (5 pts)**

6. A 17-yr old female comes to the clinic with damage to the knee as a result of a skiing accident. **Discuss the anatomy of the knee joint. Include bones, cartilage, ligaments, muscles, bursa, vascular supply, innervation, stabilization, center of gravity, and locking/unlocking of the knee joint. (12 pts)**