EXAM NUMBER_____

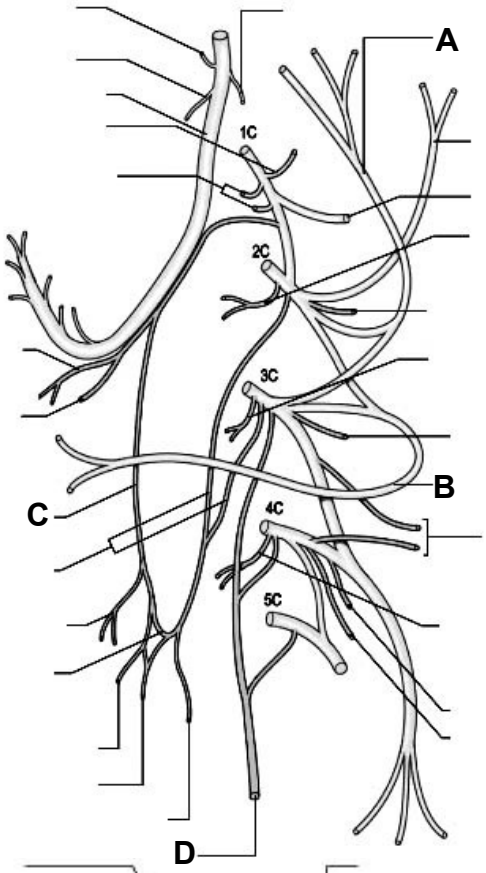
STRUCTURAL BASIS OF MEDICAL PRACTICE

EXAMINATION 7

October 26, 2007

PART I. Answer in the space provided. (8 pts)

1. Identify the structures. (2 pts)



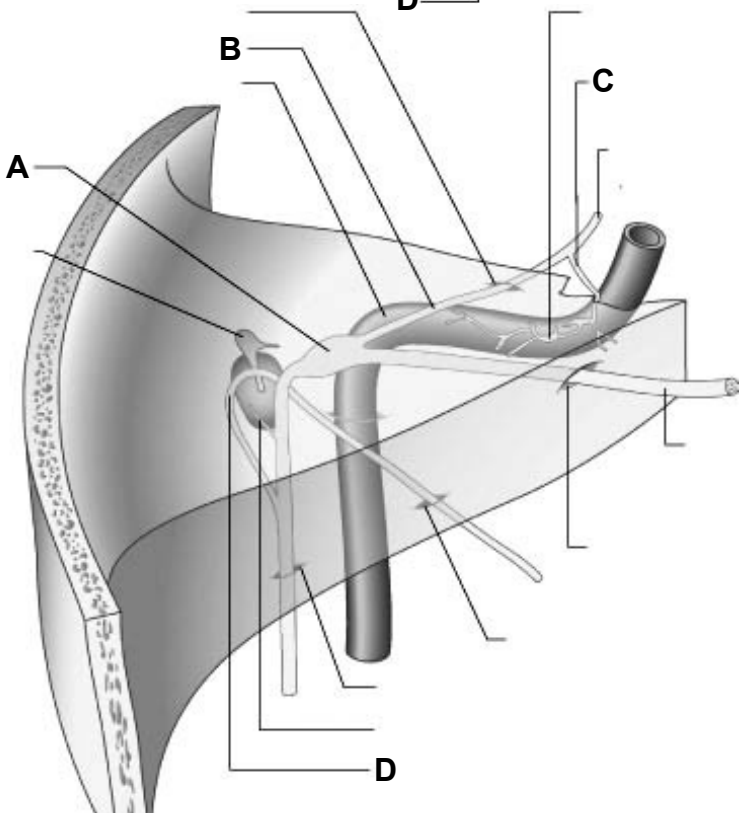
A. _____

B. _____

C. _____

D. _____

2. Identify the structures. (2 pts)



A. _____

B. _____

C. _____

D. _____

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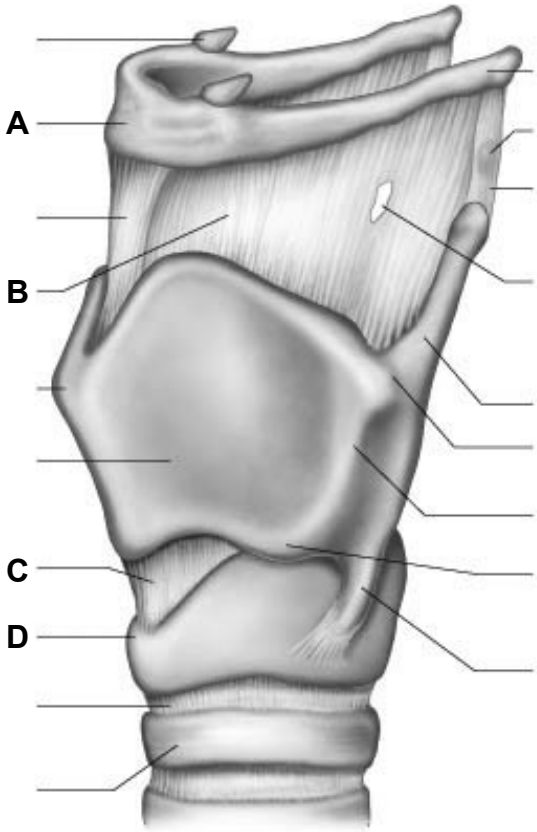
3. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



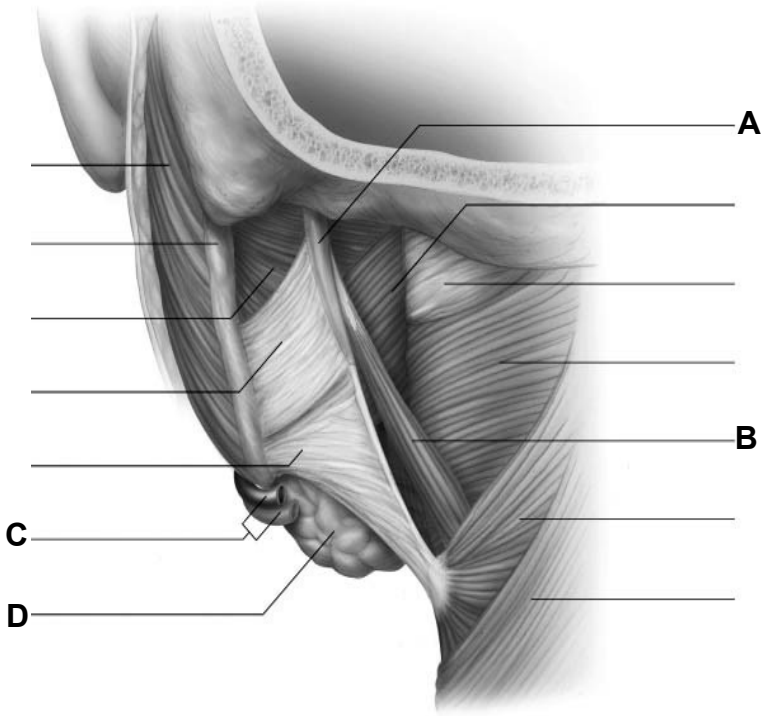
4. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



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

1. With regard to the skull, face, and scalp:

    a. The pterion overlies the posterior branch of the middle meningeal artery making this arterial branch susceptible to injury and epidural hematoma.

    b. The buccinator muscle receives SVE innervation from the buccal branch of the facial nerve.

    c. The masseter muscle receives SVE innervation from the buccal nerve, a nerve derived from the mandibular division of the trigeminal nerve.

    d. The parotid duct pierces the masseter muscle to enter to oral cavity at the lower second molar.

    e. The pterygoid venous plexus communicates with the cavernous sinus by way of an emissary vein.

    f. The vestibulocochlear nerve exits the posterior cranial fossa by way of the external auditory meatus.

    g. The mandibular branch of the trigeminal nerve exits the middle cranial fossa by way of the foramen ovale.

    h. The infraorbital nerve enters the face deep to the levator labii superioris muscle.

2. With regard to the cranial nerves:

    a. The olfactory fascicles pass through the cribriform plate of the ethmoid bone to enter the nasal cavity.

    b. A hypophyseal tumor is expected to disrupt peripheral vision.

    c. A lesion of the inferior division of the oculomotor nerve at the annulus tendineus is expected to cause a constricted pupil.

    d. A lesion of the internal carotid nerve is expected to cause a constricted pupil.

    e. The afferent limb of the corneal blink reflex is mediated by the SSA component of the optic nerve.

    f. The efferent limb of the corneal blink reflex is mediated by the GSE component of the oculomotor nerve.

    g. The optic nerve leaves the middle cranial fossa to enter the orbit by way of the optic canal.

    h. The lacrimal, frontal, and trochlear nerves do not typically pass through the annulus tendineus (of Zinn).

    i. A lesion of the abducens nerve causes the globe to be abducted.

    j. The anterior ethmoidal nerve leaves the orbit by passing through the anterior ethmoidal foramen and then the nerve passes directly into the nasal cavity.

k. The external nasal nerve enters the region of the face directly from the nasal cavity.

l. The sphenoid sinus receives GSA innervation from the posterior ethmoidal nerve.

m. The short ciliary nerves are followed (hitchhikers) by postganglionic sympathetic fibers and preganglionic parasympathetic fibers.

n. Sympathetic dennervation (Horner's syndrome) of the orbit is expected to cause conjunctival injection (red eye), a constricted pupil, and a mild ptosis (droopy eyelid).

o. The greater superficial petrosal nerve contributes to tearing of the eye.

p. The lacrimal gland empties secretions into the inferior conjunctival fornix.

q. The nasolacrimal sac extends superior to the level of the medial palpebral ligament.

r. The nasolacrimal duct empties into the middle nasal meatus.

s. A lesion of the glossopharyngeal nerve at the jugular foramen is expected to disrupt taste sensitivity from the anterior two-thirds of the tongue.

t. Postganglionic GVE fibers following the zygomaticofacial nerve form a communicating branch to the lacrimal nerve.

u. Postganglionic GVE fibers following the auriculotemporal nerve from a communicating branch to the facial nerve.

v. The trigeminal ganglion is located in a depression of the petrous portion of the temporal bone known as the trigeminal cave.

w. Pain from the hypopharynx and the oropharynx is often referred to the external auditory meatus.

x. The tympanic nerve, a branch of the chorda tympani nerve, provides GVA innervation to the middle ear.

3. With regard to the anterior and posterior triangles of the neck:

a. The ansa cervicalis is derived from cervical levels of the spinal cord whereas the ansa subclavia is derived from thoracic levels of the spinal cord.

b. The phrenic nerve is deep to the prevertebral fascia and anterior to the anterior scalene muscle.

c. The nerve to geniohyoid travels, in part, with the hypoglossal nerve.

d. The nerve to mylohyoid passes along the inferior surface of the mylohyoid muscle; between it and the posterior belly of the digastric muscle.

e. The superior laryngeal nerve passes through the thyrohyoid membrane with the superior laryngeal artery.

f. The glossopharyngeal nerve and the lingual artery cross the medial surface of the hyoglossus muscle.

g. The cricothyroid muscle, when fully contracted, raises the pitch of the voice.

4. With regard to the parotid region, temporal fossa, and the infratemporal fossa:

a. The inferior alveolar nerve passes through the mandibular foramen.

b. The buccal nerve passes the lateral aspect of the masseter muscle.

c. A lesion of the chorda tympani nerve is expected to decrease sensitivity of touch to the posterior 1/3 of the tongue.

d. The lingual nerve is joined by the chorda tympani nerve.

e. The medial pterygoid muscle arises from the medial pterygoid plate whereas the lateral pterygoid muscle arises from the lateral pterygoid plate.

f. The lingula of the mandible is a site of attachment for the sphenomandibular ligament.

g. A lesion of the lingual nerve at the foramen ovale is expected to disrupt touch (GSA) but not taste (SVA) to the anterior 2/3 of the tongue.

h. Deep temporal nerves, arteries, and veins pass the squamous portion of the temporal bone deep to the temporalis muscle.

i. A lesion of the lesser superior petrosal nerve is expected to cause a salivary deficit.

j. The hamulus of the medial pterygoid plate provides a pulley for the tendon of tensor veli palatini.

k. The mouth may be stuck open if the articular disc of the temporomandibular joint slips anterior to the articular tubercle.

l. The cervical branch of the facial nerve innervates the platysma muscle.

5. With regard to the pharynx:

a. The afferent limb of the gag reflex is mediated by GVA fibers of the glossopharyngeal nerve.

b. The afferent limb of the cough reflex is mediated by GVA fibers of the vagus nerve.

c. The stylopharyngeus muscle is the sole SVE innervation of the vagus nerve.

d. A lesion of the glossopharyngeal nerve at the jugular foramen would weaken depression of the larynx during swallowing.

e. The nasopharynx receives GVA innervation by the pharyngeal nerve.

6. With regard to the larynx:

a. The ventricle is inferior to the false vocal fold and superior to the true vocal fold.

b. Lesions of both recurrent laryngeal nerves may cause the vocal folds to be adducted.

c. The external laryngeal nerve carries SVE fibers to the cricothyroideus muscle and possibly to the cricopharyngeus muscle.

d. The recurrent laryngeal nerves pass in the tracheoesophageal groove.

e. The muscular process of the arytenoid cartilage is anterior and lateral to the belly of the lateral cricoarytenoideus muscle.

f. The true vocal fold is at the superior free edge of the conus elasticus.

g. The piriform recesses begin immediately inferior to the lateral glossoepiglottic folds.

h. The vestibular fold is at the inferior boundary of the quadrangular membrane.

7. With regard to the temporal bone and ear:

a. A lesion of the facial nerve distal to the greater superficial nerve branch and proximal to the stapedial nerve branch will cause hyperacusis (SVE) but will not disrupt taste (SVA) and salivation (GVE) to the anterior two-thirds of the tongue.

b. A lesion of the lesser superficial petrosal nerve is expected to reduce salivation.

c. The umbo of the malleus attaches to the oval window.

d. The tympanic nerve enters the tympanic cavity by way of the tympanic canaliculus.

e. A lesion of the deep petrosal nerve at the lacerate foramen will cause decreased lacrimation from the ipsilateral side but will not cause nasal congestion.

f. The aditus and auditory tube form a continuous airway that communicates between the mastoid air cells and the nasopharynx.

g. The tragus is anterior to the antitragus.

h. A lesion of the facial nerve at the stylomastoid foramen will cause paralysis of unilateral facial musculature but is not expect to affect taste.

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Part III. Indicate your understanding of the following. Answer in the space provided. (20 pts)

1. Articular disk of the temporomandibular joint: Movements, attachments, immediate relationships, and significance. (4 pts)

2. Hiatus semilunaris: Boundaries, relationships, and significance. (4 pts)

3. Hyoglossus muscle: Immediate relationships, innervation, and movement. (4 pts)

4. Posterior cricoarytenoid muscle: Innervation, attachments, and significance. (4 pts)

5. Superior cervical sympathetic trunk ganglion: Relationships, plexuses, and significance. (4 pts)

Part IV. Answer in the space provided (including the back of the page or the additional pages for each question). (36 pts)

1. A 48 year old male presents to the emergency department with complaints of a severe headache. He recently underwent root canal therapy for a periapical abscess on his left maxillary canine. He awoke today with a severe left sided headache, 10/10 in intensity, and he states it feels like it is "sitting behind my eye." On exam, you note mild proptosis and fixed adduction of the left eye. **Discuss the anatomy of the cavernous sinus. Include boundaries, contents, relationships and functional components of nerves. What symptoms are caused by damage to each structure within the cavernous sinus? (12 pts).**

2. A 72 y.o.m. comes to your office with complaints of hoarseness. He has noticed it for three weeks. He thinks he has "allergies" causing some post nasal drip that has resulted in his hoarseness. His only other complaint is some blurred vision. On exam, you note the distinct smell of tobacco. He has lid lag of the left eye and the exam of the pupil is unequal – the left being smaller than the right. **Discuss the anatomy of the vertebral triangle. Include boundaries, contents, relationships, fascial specializations, vascularization, innervation, lymphatic drainage, and significance. (12 pts)**

3. A 45 y.o. female comes to your office because she is concerned that she has a “tumor in her jaw.” She began to note swelling on the buccal and labial aspects of her left mandible approximately 2 weeks ago. It initially was painful but over the last few days that has resolved. However, she now has a very “sour” taste in her mouth. On examination, the patient has an obvious facial swelling in the mid aspect of the body of her left mandible. She also has associated enlargement and tenderness of her submandibular lymph nodes. Intraoral exam displays a very poor dentition with gingival erythema, loss of contour, multiple dental caries and a fetid odor. Lectures by Drs. Fornadley, Bollard, Goldenberg, Kanekar and Fedok highlighted that cervical infections may become widely dispersed. **Discuss the spaces defined by the cervical fasciae. Include boundaries, contents, relationships, and significance. (12 pts)**