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**Viewer discretion is advised:** Some medical content is graphic and may not be suitable for all viewers.
Osteology:
Foramen magnum (N 8) - opening in base of skull for spinal cord, two vertebral aa., two spinal accessory nerves
Occipital condyles (N 8) - projections around foramen magnum
Jugular foramen (N 6,8) - two openings for jugular vein, anterior to hypoglossal canal
Hypoglossal canal (N 6,8) - directly lateral to condyle, transmits hypoglossal nerve
Carotid canal (external opening) (N 8) - opening for internal carotid aa and plexus of nerves; anterior to jugular foramen
Styloid process (N 4,8) - needle like projection from skull, posterior to mandible, anterior to mastoid process
First rib
Grooves for subclavian a. & v. (N 186)
Transverse foramina of cervical vertebrae (N 18)

Muscles:
Anterior, middle, posterior scalene mm. (N 28,30,32) - elevate ribs and flex and laterally bend neck
Anterior - from ant tubercles of C3-C6 to scalene tubercle of first rib; C5-C7
Middle - from post tubercles of C2-C7 to upper surface of first rib behind subclavian artery; C3-C8
Posterior - from post tubercles of C5-C7 to lateral surface of second rib; C7-C8
Prevertebral & scalene fascia (N 35)
Interscalene triangle (N 30) - btwn anterior and middle scalene muscles; trunks of brachial plexus

Carotid sheath (review):
Common carotid artery
Carotid bifurcation (N 69,136)
External carotid artery (N 69,136) - supplies upper neck, face and scalp
Ascending pharyngeal a. (N 69,136) - supplies pharynx, arises close to bifurcation
Internal carotid artery (N 69,136) - brain, eye, forehead; primary blood supply to brain; anastomoses w/ vertebral aa.
Carotid sinus (N 130,136) - dilation near bifurcation; contains baroreceptors; site of plaques
Carotid body (N 130,136) - cluster of chemoreceptors near bifurcation
Internal jugular vein (N 74) - drains into brachiocephalic; brain, skull, viscera of neck
Pharyngeal plexus of veins (N 73) - drains pharynx

Vagus n. (X): (N 126) - refer to anterior triangle lab
Superior laryngeal n. (internal and external branches) (N 74,76)
Cardiac brs. (seen previously) (N 124)

Nerves:
Recurrent laryngeal n. (right & left) (N 75,232) - refer to anterior triangle lab
Accessory n. (XI) (N 71,127) - cranial and spinal roots; proprioceptive SCM and trapezius; CN XI; passes through jugular foramen; motor only
Phrenic n. (N 30,193) - VPR C3-C5; innervates diaphragm, pericardium, pleura; crosses anterior to anterior scalene
Cervical plexus (N 71,128) - see anterior triangle lab
Roots (C1-4) (N 71,128) -
Cervical sympathetic trunk -same as every other sympathetic trunk, runs along scalene muscles post to int carotid/common carotid
Superior cervical ganglion (N 129,130) - thickened part of sympathetic trunk near C1
Middle cervical ganglion (N 129) - near C5/C6 trunks
Carotid nn. (internal & external, plexus) (N 130) - from superior cervical ganglion; distribute along cartoid artery branches to VSM, arrector pilli muscles, sweat glands, dilator pupillae (internal)

Brachial plexus (N 30,430)
Roots (C5-T1)
Trunks: C5+C6 = superior; C7 = middle; C8+T1 = inferior
Suprascapular n. (N 424,430,477): comes off superior trunk; supplies supra/infraspinatus
Dorsal scapular n. (N 430,477): comes off superior trunk (C5 fibers only); supplies rhomboids and levator scapulae; passes through middle scalene mm.
Long thoracic n. (N 185 ,430): C5+C6+C7; supplies serratus anterior; prevents winging

**Arteries:**
Subclavian a. (N 33,136) - from brachiocephalic on right, aortic arch on left; posterior to ant. scalene, divides it into three parts
Vertebral a. (N 33,136) - from 1st part of subclavian; supplies deep neck, cervical spinal cord, hindbrain; anastomoses w/ int carotid in cerebral arterial circle through transverse foramina of C1-C6
Internal thoracic a. (N 33,136) - from 1st part of subclavian; supplies anterior chest wall, intercostal spaces
Thyrocrural trunk (N 33,136) - 1st part of subclavian; short thick turnk
Inferior thyroid a. (N 33,136) - supplies thyroid, lower larynx, upper trachea, esophagus and neck muscles
Transverse cervical a. (N 33,184) - supplies trapezius and surrounding tissues; may give off dorsal scapular a.
Suprascapular a. (N 33,427) - supra/infraspinatus, shoulder joint; anastomoses w/ circumflex scapular, dorsal scapular and deep br of transverse cervical.
Costocervical trunk (N 33,130) - 2nd part of subclavian; supplies muscles of neck posteriorly; located in interscalene triangle
Dorsal scapular a. (N 33,410)- end of 3rd part; supplies levator scapulae, rhomboids

**Veins:**
Brachiocephalic v. (N 70,74) - union of subclavian and int jugular, vertebral, thymic, int thyroid, int thoracic, 1st post intercostal, left sup intercostal; drains into SVC; drains head, neck, upper limb, ant chest wall; at origin, left brachiocephalic receives thoracic duct; right recieves right lymphatic duct
Subclavian v. (N 70,75): follows subclavian a.

**Lymphatics:**
Deep cervical lymph nodes (superior & inferior groups) (N 72)
Thoracic duct (N 238,239,264)

**Clinical Terms:**
Subclavian "stick"/central venous line catheterization: rt subclavian pt of entry to venous system for central line; nutrition and CVP; insert needle along inf surface of middle part of clavicle and moves medially toward jugular notch; may tear vein and parietal pleura; too far posteriorly may enter artery
Thoracic outlet syndrome - compromise of blood vessels or nerve fibers between the armpit (axilla) and base of the neck
Cervical rib - a rib which arises from the seventh cervical vertebrae (above the normal first rib). Occurs in only about 0.5% of people. May cause nerve and artery problems
Scalenus anticus syndrome - a syndrome in which the nerves and vessels (lower brachial plexus and subclavian artery) passing between the anterior scalene muscle and a cervical rib are compressed causing pain over the shoulder and radiating down the arm or over the back of the neck.
Subclavian steal syndrome - aortic arch syndrome, also referred to by many as vertebral-basilar artery disease, carotid artery occlusive syndrome; characterized by signs and symptoms secondary to abnormalities in the major arteries which extend off of the aortic arch; most often secondary to the effects of atherosclerosis, blood clots, trauma or a congenital abnormality.
Symptoms of this condition include various neurologic symptoms, reduction in pulse and changes in blood pressure. Virchow's node - also called a signal node. An enlarged supraclavicular lymph node, usually on the left side, which is often the first sign of an abdominal tumor (such as stomach cancer). Radical neck dissection - the most commonly performed major operation for head and neck malignancies, most of which are squamous cell carcinomas. The neck is opened laterally, the majority of the sternocleidomastoid muscle is removed, as are the regional cervical lymph nodes, the jugular vein, the spinal accessory nerve, the submaxillary gland and most of the parotid gland. There are several modifications.

Carotid stenosis & endarterectomy - carotid stenosis is a result of atherosclerotic thickening of the intima of the carotid artery. Partial occlusion of this artery may cause transient ischemic attack - a sudden focal loss of neurological function (e.g., dizziness and disorientation) that disappears within 24 hours. Arterial occlusion can also lead to a minor stroke - loss of neurological function such as weakness or sensory loss on one side of the body that exceeds 24 hours but disappears within 3 weeks. The symptoms resulting from carotid stenosis depend on the degree of bloodflow obstruction. To help the situation endarterectomies are performed in which part of the athersclerotic plaque on the intima is stripped off. The common site for this procedure is the internal carotid artery just superior to its origin. Drugs are administered after the procedure to inhibit clot formation. Cranial nerve injury can occur during this procedure to the following nerves: glossopharyngeal, vagus, accessory, hypoglossal, and superior laryngeal nerves.

Horner's syndrome - nerve condition which involves a drooping eyelid (ptosis), constricted pupil (miosis), enophthalmos and lack of sweating on one side of the face. Often seen in association with injury (for example neck fracture, penetrating injury) to the cervical sympathetic nerve trunk in the neck or a Pancoast tumor (tumor of the cupula region) involving both the upper and lower brachial plexus.