The Neck

Overview

- Transitional area between base of cranium and clavicles.
- Slender with flexibility necessary to position the head to maximize use of sensory organs point sensory structures where they need to go.
- Many important and vulnerable structures are crowded into a small area.
- Vital structures lack bony protection.
- Superior Thoracic Aperature: highway

Neck divided into regions: lateral, anterior, posterior and other SCM

Superficial: Platysma (thin, sheet like muscle, fascial expression, tightens neck, muscles, and fascia)

Atypical Cervical Vertebrae

- CA, chapter 4, chapter 8, p. 984
- C1 (atlas)- kidney shaped, ring-like, lacking a spinous process or body.
- Superior articular facets support the occipital condyles.
- Cruciate ligament (transverse ligament of atlas and longitudinal bands).
- C2 (axis)- strongest cervical vertebra
- Tooth-like dens (odontoid process) extends superiorly from body for rotation of cranium and
 - Peg that superior section of heat transition on, rotates around
- Large bifid spinous processf trideep in the nuclea Pove.
 Most st perior the you can feel

Craniovertebral Joints- 2 sets (not specific questions, just sense of how it is set up)

- Atlanto-occipital joints- C1 (atlas) and occipital condyles. Synovial condyloid. Permits flexion/extension and sideways tilting of head.
- Atlanto-axial joints- 3 joints total
 - 2 (right and left) lateral joints formed by inferior facets of lateral masses of C1 and superior facets of C2. Gliding synovial joints.
 - o 1 median formed between the dens of C2 (atlas) and anterior arch of C1 (axis).
 - All three working together: rotation of head (cranium and C1 rotate on C2).
- See CA p. 468 for visual of connective tissues (apical lig., post. long. lig.- tectorial membrane, anterior long. lig.- anterior membrane, ligamentum flavum- posterior membrane.

Bones of Neck

- Hyoid Bone- unique among bones, does not articulate with any other bone.
 - Suspended in anterior neck at C3 level; between mandible and thyroid cartilage.
 - Stylohyoid ligaments from styloid processes firmly anchored to thyroid cartilage = holds hyoid in place

• Serves as attachment for anterior neck muscles and aids in airway maintenance

Clinical Aspects

- Injury to cervical verterbrae- with articular facets oriented in a more horizontal manner, cervical vertebrae are "stacked like coins" → require less force to dislocate than to fracture → with possible facet jumping
 - Facet joints unlock and cervical vert. get stuck; potential damage to cord
- Fracture/dislocation of atlas: occur with vertical forces compressing the lateral masses, fracturing the ant./post. arches (Jefferson burst fracture). Spinal cord is more likely to be injured if transverse ligament is ruptured (Steele's Rule of Thirds).
 - \circ $\,$ Jefferson: diving into a pool, can bi in a car crash, whenever you directly land on your head







- Arytenoid cartilages- pyramidal cartilages articulating with laterosuperior surface of cricoid at cricoarytenoid joints (allows approximating, tensing, and relaxing vocal folds).
 - Corniculate and cuneiform- small nodules in posterior part of ary-epiglottic fold.
- **Epiglottic** heart-shaped elastic cartilage covered with mucous membrane. Forms the superior part of the anterior wall and superior margin of the laryngeal inlet.
 - Broad superior end is free, tapered stalk is attached to the thyroid laminae by the thyro-epiglottic ligament. Attached to the hyoid by the hyo-epiglottic ligament.



Interior of Larynx

- Laryngeal cavity: Extends from laryngeal inlet to inferior border of cricoid cartilage.
 - Vestibular fold- superior to vocal fold, formed from quadrangular membrane and vestibular ligament.
 Protective in function.
 - Vocal ligaments (vocal folds)- extend from the laminae of thyroid cartilage to the vocal processes of the arytenoid cartilages. The glottis controls sound production and with complete adduction of folds, prevents entry of air.

Muscles of Larynx

- Extrinsic- previously discussed.
- Intrinsic- alter the length and tension of vocal folds, size and shape of rima glottidis.
 - Everything but cricothyroid (superior laryngeal) supplied by recurrent laryngeal nerve (branch of CN X).



Posterior view.

Table 39.8		Levels of the larynx		
Level	Space		Extent	
I	Suprag (laryng	lottic space eal vestibule)	Laryngeal inlet (aditus laryngis) to vestibular folds	
II	Transgl (interm larynge	ottic space Jediate Pal cavity)	Vestibular folds across laryngeal ventricle (lateral evagination of mucosa) to vocal folds	
ш	Subglo (infragl	ttic space ottic cavity)	Vocal folds to inferior border of cricoid cartilage	

Straight

Oblique part

Crico-

thyroid

part

Table 39.7	Actions	ctions of the laryngeal muscles		
Muscle		Action	Effect on rima glottidis	
 Cricothyroid m.* 		Tightens the vocal	None	
 Vocalis m. 		folds	None	
③ Thyroaryteno	id m.	Adducts the vocal folds	Closes	
④ Transverse ar	ytenoid m.			
⑤ Posterior cricoarytenoid m.		Abducts the vocal folds	Opens	
⑥ Lateral cricoa	rytenoid m.	Adducts the vocal folds	Closes	

* The cricothyroid is innervated by the external laryngeal nerve. All other intrinsic laryngeal muscles are innervated by the recurrent laryngeal nerve.