

Extrinsic Muscles

The Anterior Triangle of the Neck, Platysma Muscle

The area of the neck that is bounded by the mandible, the sternocleidomastoid muscle and the midline is called the anterior triangle of the neck. The larynx, hyoid bone and the muscles that we are about to discuss are all located in the anterior triangle (with the exception of the inferior belly of omohyoid, which passes into the posterior triangle).

The platysma muscle is a thin muscular layer embedded in the skin of the neck. It does not attach to any bones. Its function is to tense the skin of the neck during shaving (Mother Nature thought of everything). In other animals, platysma is more extensive. It acts to move the skin to discourage flies and parasites.

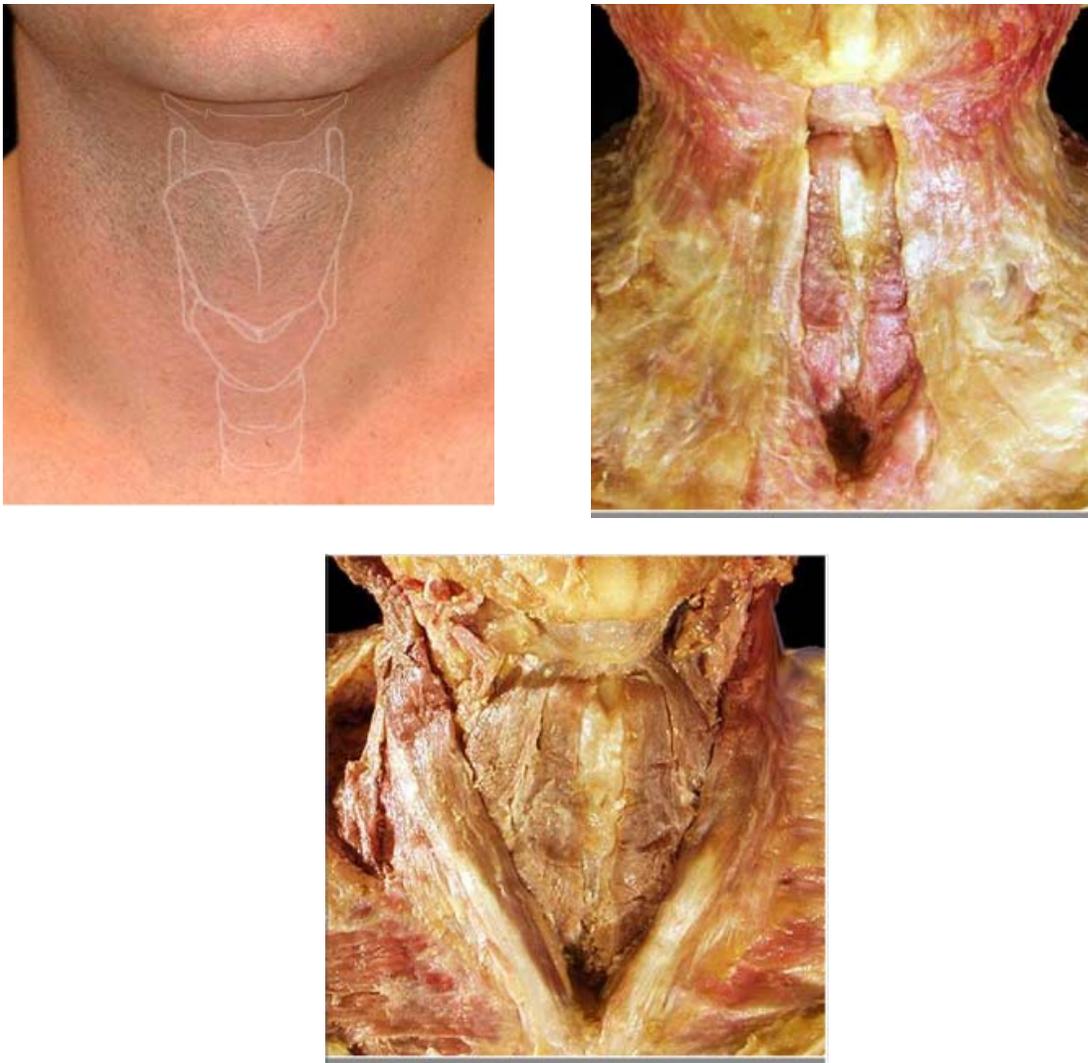


Figure 12-24 A. Outline of larynx on the surface of the neck. B. Skin removed from neck to show platysma muscle. C. Platysma removed to reveal the anterior triangle.

The Hyoid Bone

The hyoid bone is a “U”-shaped bone located high in the front of the neck just under the mandible, at the level of C3. The arms of the “U” are directed posteriorly. The hyoid bone is unique in that it is not directly attached to any other bone in the skeleton. It is held in place by a number of muscles that attach it to: a) the mandible, b) the temporal bone, and c) the thyroid cartilage and sternum. The hyoid bone is a major anchor for the tongue as well as a supportive structure for the larynx.

The hyoid is described as having a body anteriorly, two greater horns posteriorly and two lesser horns superiorly. The body is roughly quadrilateral in shape, having a slightly convex anterior surface and a pronounced concave posterior surface. A vertical ridge divides the anterior surface into right and left halves. A well-defined transverse ridge courses through the upper half.

The posteriorly directed limbs, one on either side of the body, are the greater horns. They are somewhat more flattened than the body, and diminish in size from the body backward to terminate as tubercles. The lesser horns join the hyoid at the junction of the greater horn and the body. The hyoid bone is highly variable in shape.

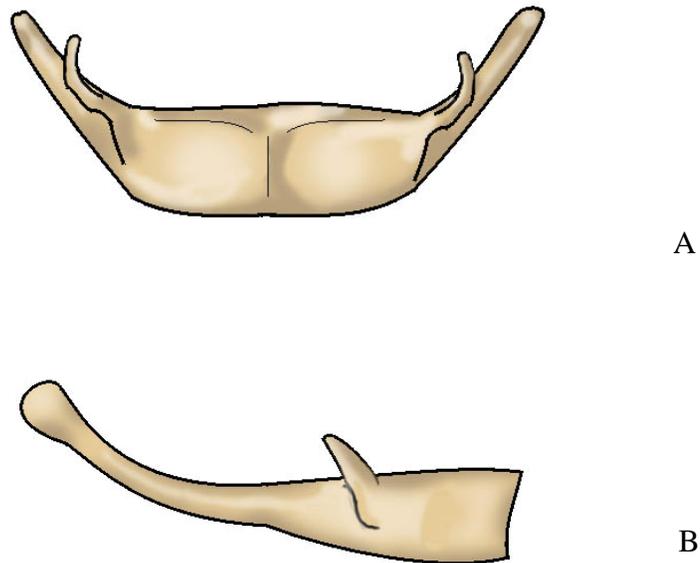


Figure 12-25. Hyoid Bone A. Anterior aspect. B. Right lateral aspect.

Muscles that attach the hyoid bone to other structures in the neck and head are divided into **suprahyoid** muscles that attach the hyoid bone to the skull and **infrahyoid** muscles that attach the hyoid bone to the larynx and sternum

Suprahyoid Muscles

The Anterior Belly Of The Digastric Muscle

- Description:** the digastric muscle has bellies at each end and a tendon in the middle. The intermediate tendon loops through a connective tissue sling, which is attached to the hyoid bone at the junction of the lesser horn and the body.
- Origin:** the digastric fossa on the internal surface of the mandible
- Insertion:** see posterior belly (intermediate tendon)
- Action:** acting with its posterior belly, this muscle raises the hyoid bone and supports it during swallowing.
- Innervation:** trigeminal nerve (CN V), motor branch, via a branch of the nerve to mylohyoid.

The posterior belly of the digastric muscle

- Origin:** see anterior belly (intermediate tendon)
- Insertion:** the mastoid notch on the medial side of the mastoid process of the temporal bone
- Action:** acting with its anterior belly, this muscle raises the hyoid bone and supports it during swallowing. With other muscles of mastication relaxed, digastric opens the mouth (depresses the mandible)
- Innervation: the facial nerve (CN VII).**

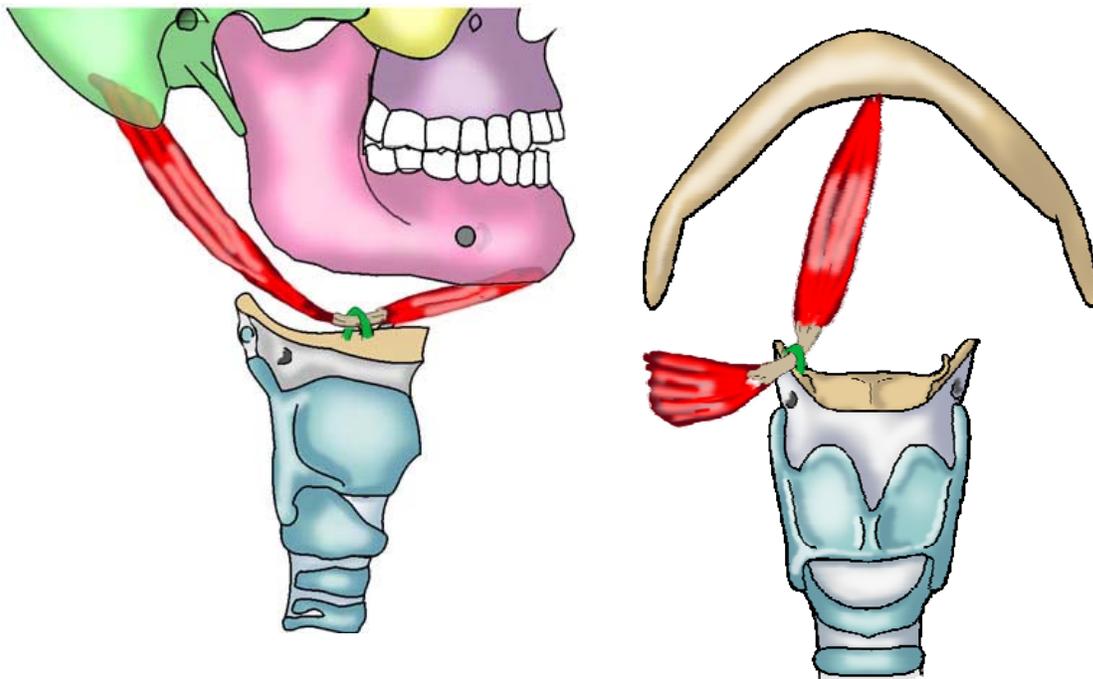


Figure 12-26. Digastric Muscle. A. Right lateral aspect. B. Anterior aspect, posterior belly cut.

The Mylohyoid Muscle

Description: the mylohyoid muscles are thin, flat muscles that form a sling inferior to the tongue supporting the floor of the mouth.

Origin: from the mylohyoid line on the medial aspect of the mandible.

Insertion: on the body of the hyoid bone

Action: elevates the hyoid bone, tenses the floor of the mouth

Innervation: trigeminal nerve (CN V), motor branch (nerve to mylohyoid)

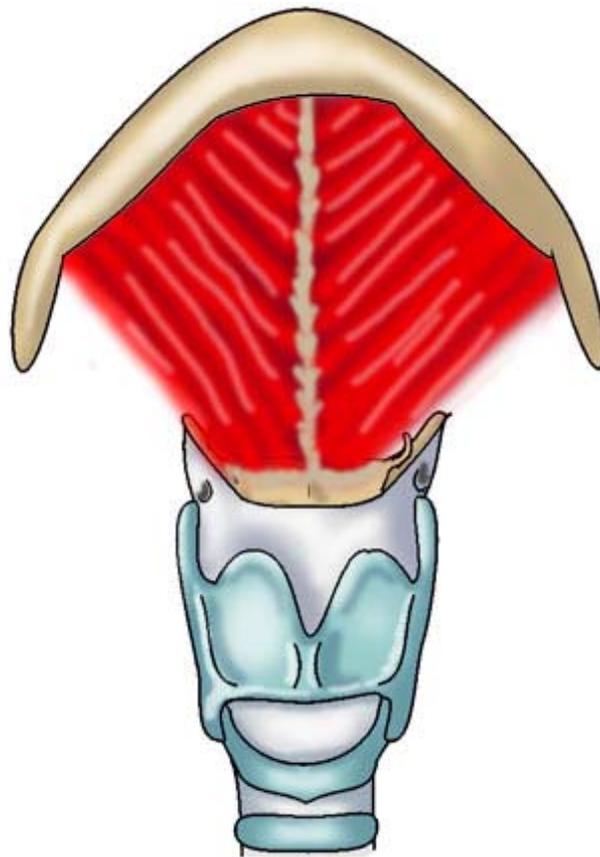


Figure 12-27. Mylohyoid muscle

The Geniohyoid Muscle

- Description: Short, narrow muscles that contact each other in the midline. They lie superior to the mylohyoid muscle.
- Origin: Inferior mental spine of the mandible
- Insertion: body of the hyoid bone
- Action: pulls the hyoid bone anterosuperiorly, shortening the floor of the mouth and widening the pharynx during swallowing.
- Innervation: C1 via the hypoglossal nerve.

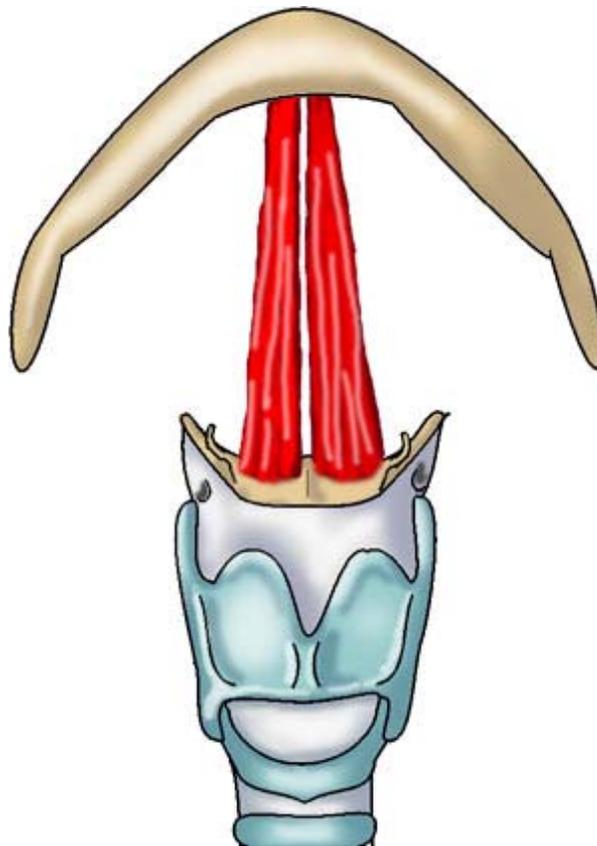


Figure 12-28. Geniohyoid muscle

The Stylohyoid Muscle

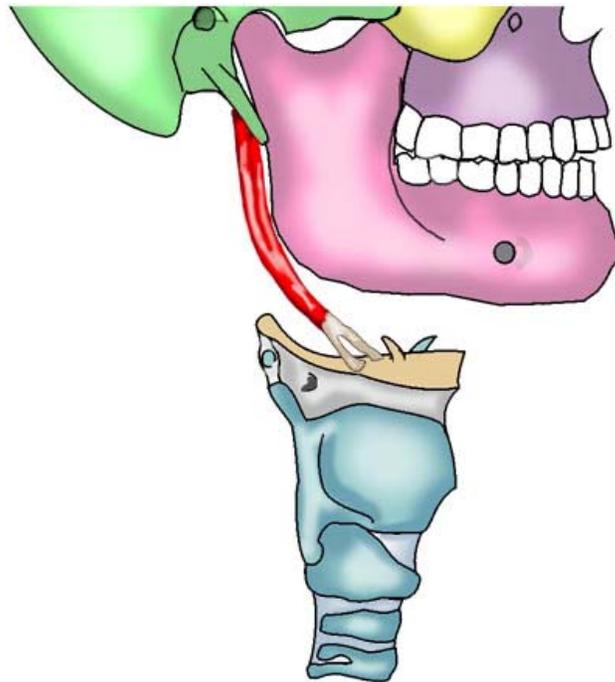
Description: long, thin muscle that is nearly parallel with the posterior belly of the digastric muscle.

Origin: the styloid process of the temporal bone

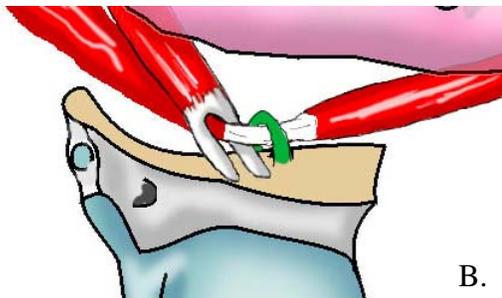
Insertion: the body of the hyoid bone

Action: elevates and retracts the hyoid bone, elongating the floor of the mouth during swallowing

Innervation: facial nerve (CN VII)



A



B.

Figure 12-29. A. Stylohyoid Muscle. B. Relationship of insertion to digastric muscle.

Infrahyoid Muscles. Because of their characteristic shape, the infrahyoid muscles are referred to as the “strap” muscles.

The Thyrohyoid Muscle

Description: a thin, strap-like muscle

Origin: the oblique line of the thyroid cartilage

Insertion: inferior border of the body and greater horn of the hyoid bone

Action: draws the hyoid bone and thyroid cartilage towards each other

Innervation: C1 via the hypoglossal nerve

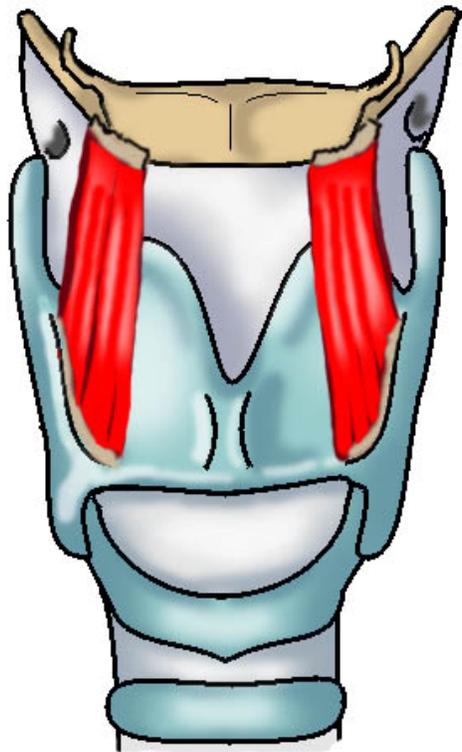


Figure 12-30. Thyrohyoid muscle.

The Sternohyoid Muscle

Description: an thin, strap-like muscle

Origin: posterior surface of the manubrium sterni and the medial end of the clavicle.

Insertion: inferior border of the body of the hyoid bone

Action: depresses the hyoid bone and larynx

Innervation: C1-C3 via the ansa cervicalis.

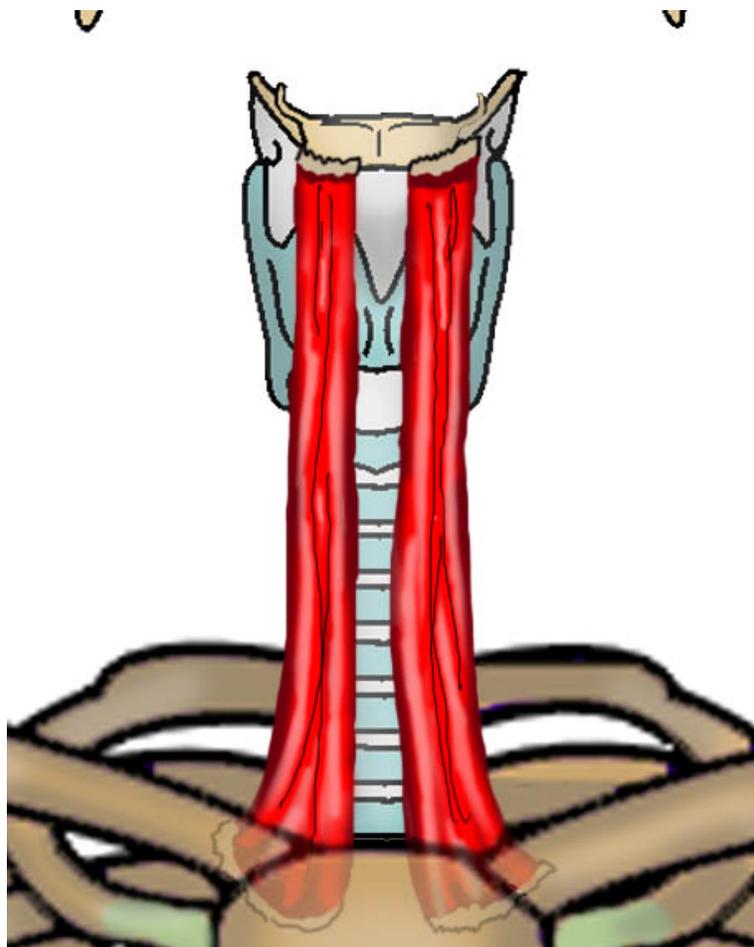


Figure 12-31. Sternohyoid muscle.

The Omohyoid Muscle

Description: a long, slender muscle similar to the digastric muscle in that it has an intermediate tendon. The tendon passes through a fascial loop arising from the clavicle.

Origin: superior border of the scapula near the suprascapular notch

Insertion: inferior border of the hyoid bone

Action: depresses, retracts and steadies the hyoid bone in swallowing and speaking

Innervation: C2 & C3 from the ansa cervicalis.

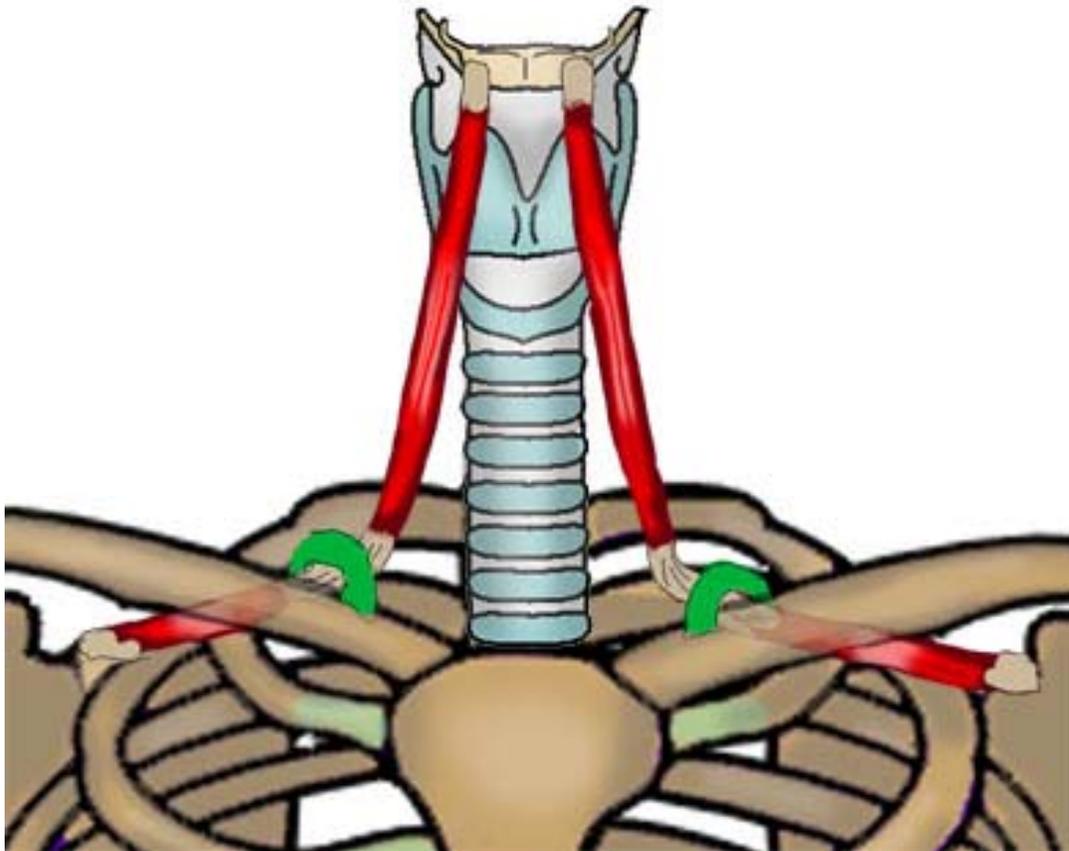


Figure 12-32. Omohyoid muscle.

The Sternothyroid Muscle

- Description: A thin, strap-like muscle
Origin: posterior surface of the manubrium sterni
Insertion: oblique line of the thyroid cartilage
Action: depresses the larynx (and hyoid)
Innervation: C1 - C3 from the ansa cervicalis.

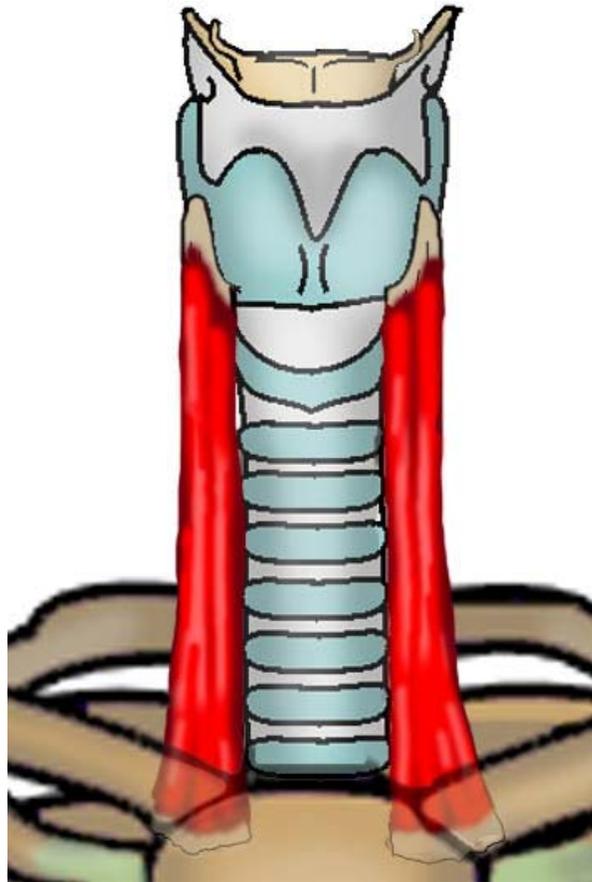
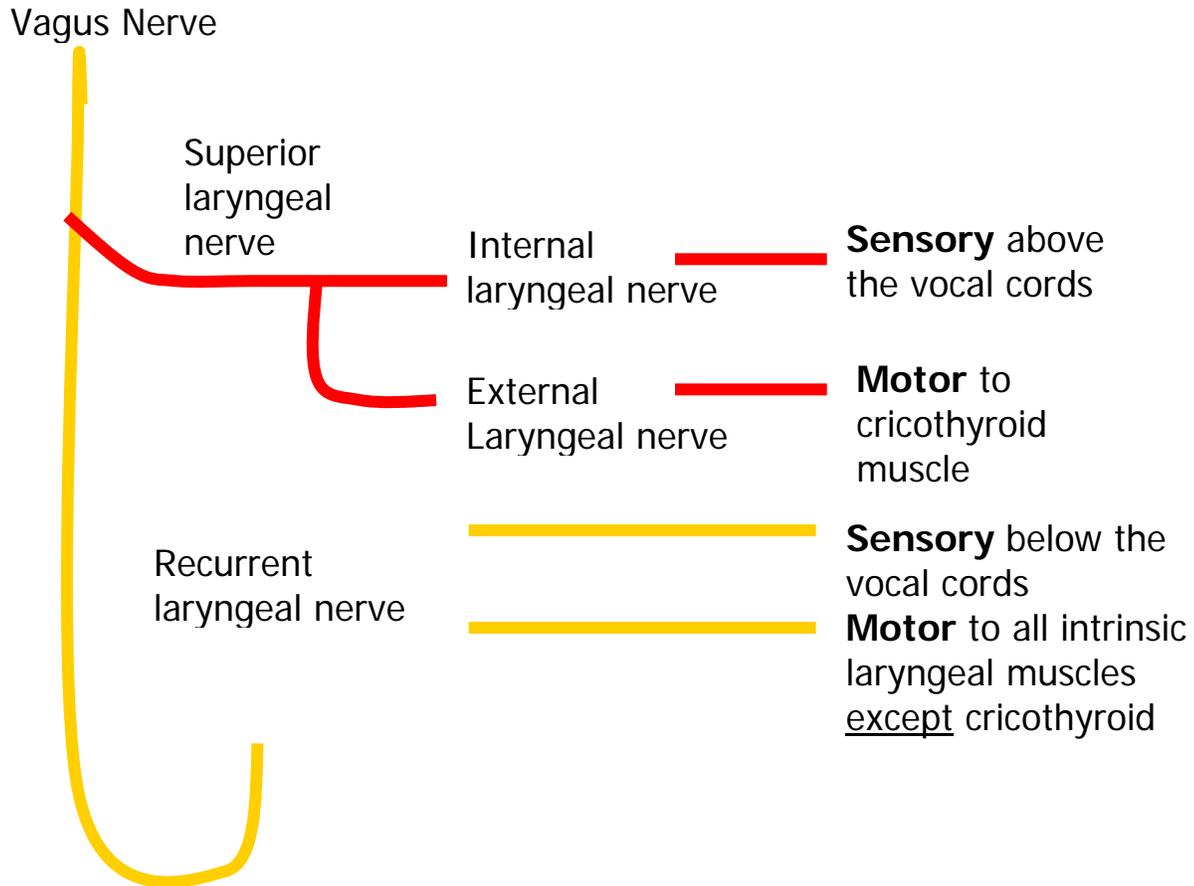
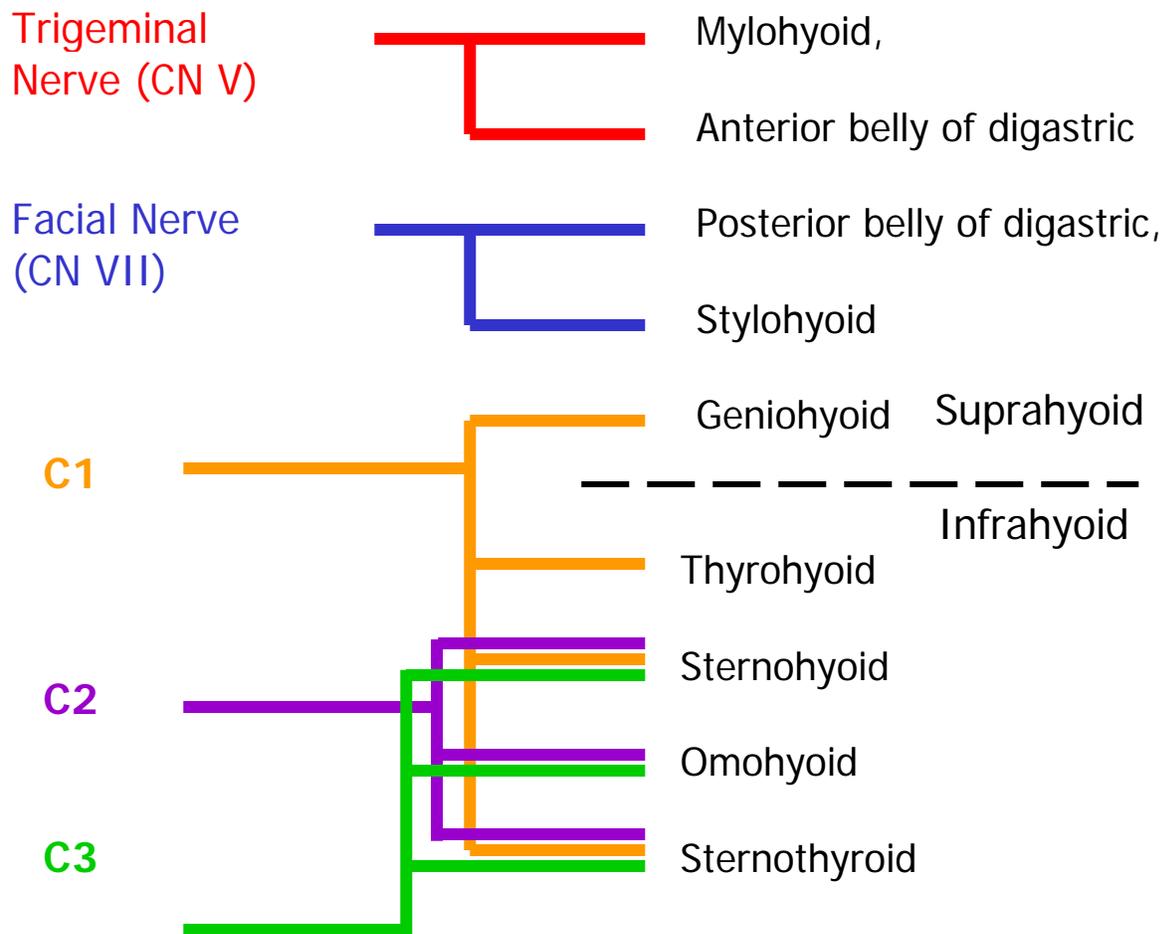


Figure 12-33. Sternothyroid muscle.

Summary Of Innervation Of The Larynx Including The Intrinsic Muscles.

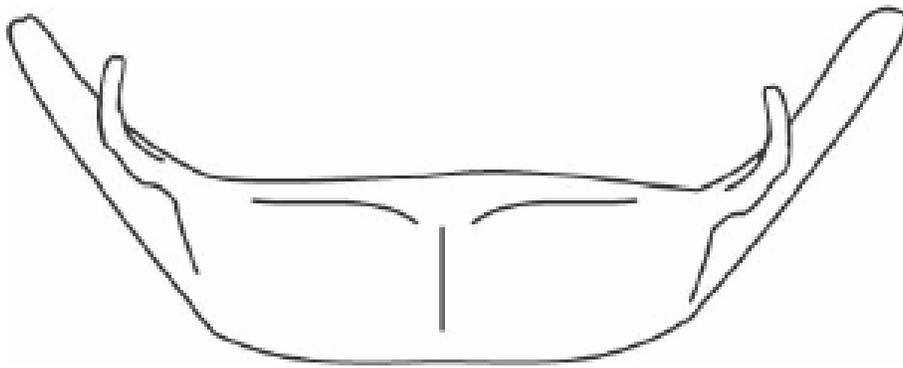


Summary Of The Motor Innervation Of The Extrinsic Muscles Of The Larynx.



Helpful exercise

Print out several copies of the hyoid bone. Draw on and label the muscle attachments.



Still More Helpful. Exercises.

Print several copies of this page. Draw on and label the extrinsic muscles of the larynx.

