

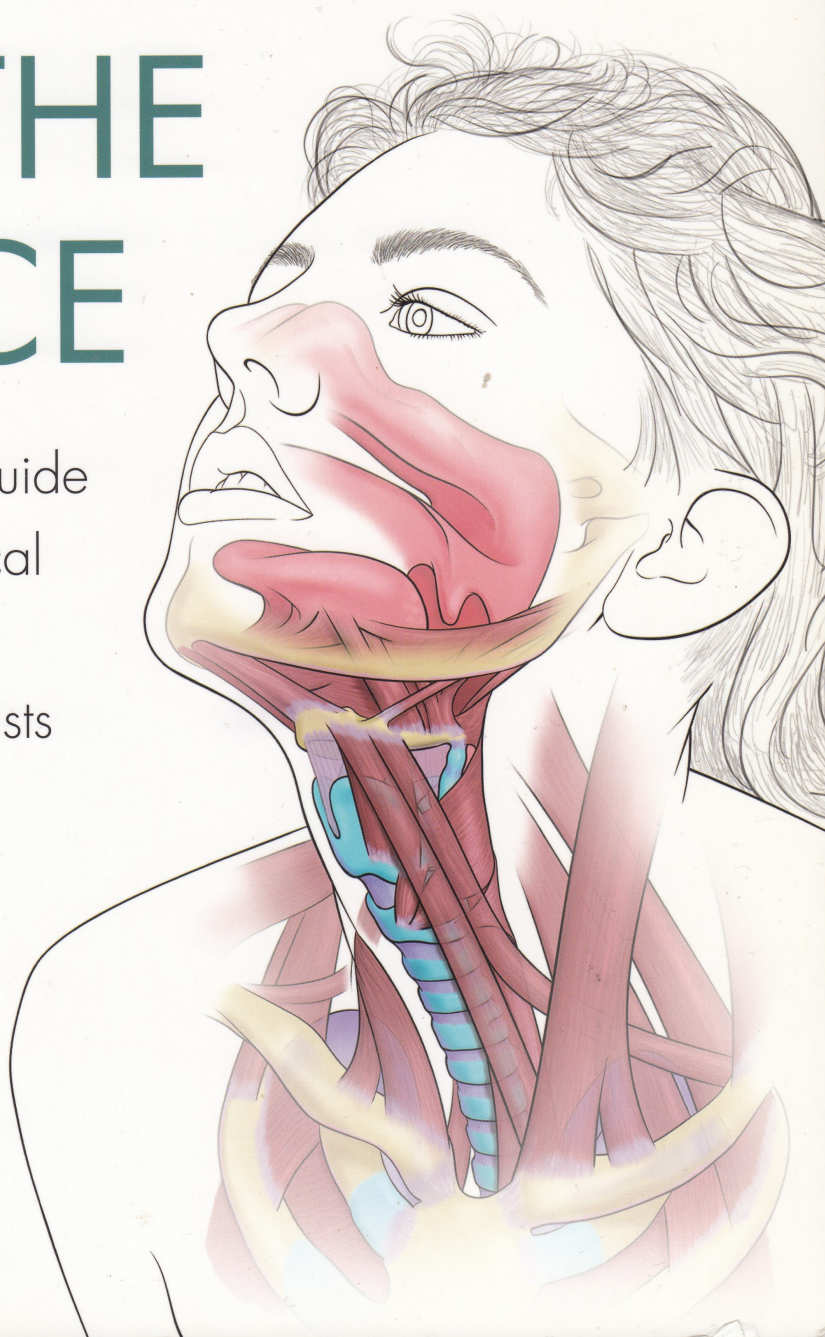
ANATOMY OF THE VOICE

An Illustrated Guide
for Singers, Vocal
Coaches, and
Speech Therapists

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The vocalis muscle originates at the inner front surface of the thyroid cartilage to either side of the thyroid angle, and inserts into the vocal process of the arytenoid cartilage (Fig. 2-12). The innermost margin of the vocalis muscle, as we have seen, is made up of a ligament that is continuous with the conus elasticus. The ligament attaches to the tip of the vocal process; the vocalis muscle itself attaches to the tip just beside the vocal ligament and laterally to the anterior surface of the vocal process (see Figs. 2-7 and 2-8).

The thyroarytenoid muscle originates at the angle of the thyroid cartilage on its upper border and, pointing slightly outward, inserts broadly into the arytenoid cartilage from the vocal process to the muscular process. It is placed laterally to the fibers of the vocalis muscle (Fig. 2-12).

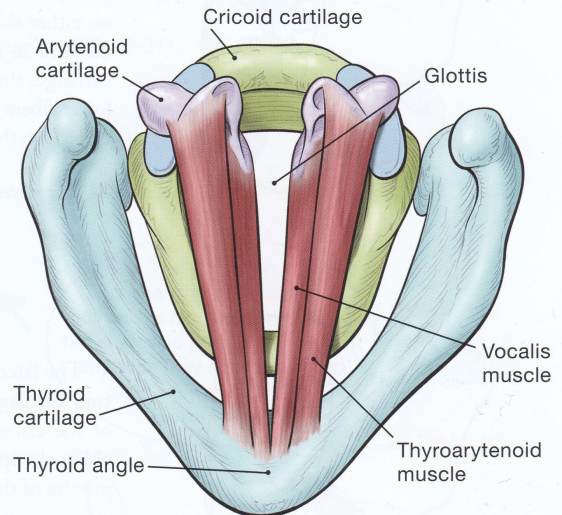


Figure 2-12. Vocalis and thyroarytenoid muscles, as viewed from above.

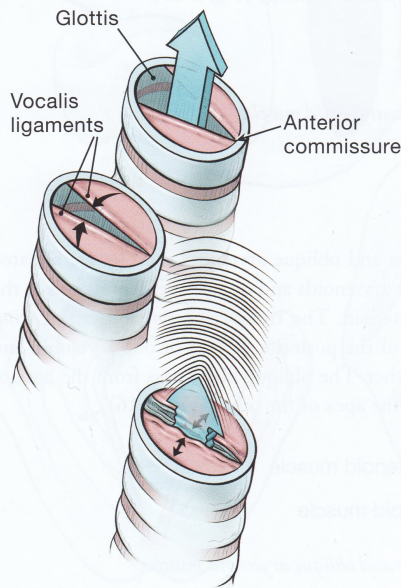


Figure 2-13. The glottis.

The glottis is the chink or aperture between the vocal folds. In men it averages 23mm in length, or just under an inch; in women, it averages 19mm in length, or about three-quarters of an inch. About three-fifths of this length, called the vocal portion, is the muscular part of the vocal fold; two-fifths is made up of the arytenoid cartilages and is called the respiratory portion. The glottis is changeable in shape, depending on whether the vocal folds are abducted or adducted; even when the folds themselves are closely approximated, as they are during phonation, there can still be a chink between the arytenoids. The acute angle of the glottis where the vocal folds attach to the thyroid cartilage is called the anterior commissure (Fig. 2-13).

The Tongue and Its Function

The tongue, or lingual region, is composed of intrinsic muscle fibers that form the body or dorsum of the tongue itself, as well as four extrinsic muscles whose fibers join with the dorsum of the tongue and move it from points outside the dorsum of the tongue (Fig. 4-9). The tongue lies at the floor of the mouth, and the hyoglossus and genioglossus muscles attach it to the hyoid bone. The tongue is divided down its midline by a fibrous septum and is made up of several layers of muscle fibers running in various directions. The superficial layer is the superior longitudinal muscle. The middle layer is composed of vertical and transverse muscles. The deepest layer is the inferior longitudinal muscle. These intrinsic muscles intermingle with the fibers of the extrinsic muscles that join into the dorsum of the tongue—in particular, the styloglossus and hyoglossus muscles on the sides of the tongue and the genioglossus muscle on its underside. This complex arrangement of intrinsic fibers makes it possible to shorten the tongue, to form it into a convex or concave shape (with the tip of the tongue turned upward), to narrow and elongate the tongue, or to flatten and broaden it. In conjunction with the extrinsic muscles that move and position the tongue, this complex arrangement of fibers also makes it possible to form the sounds of speech.

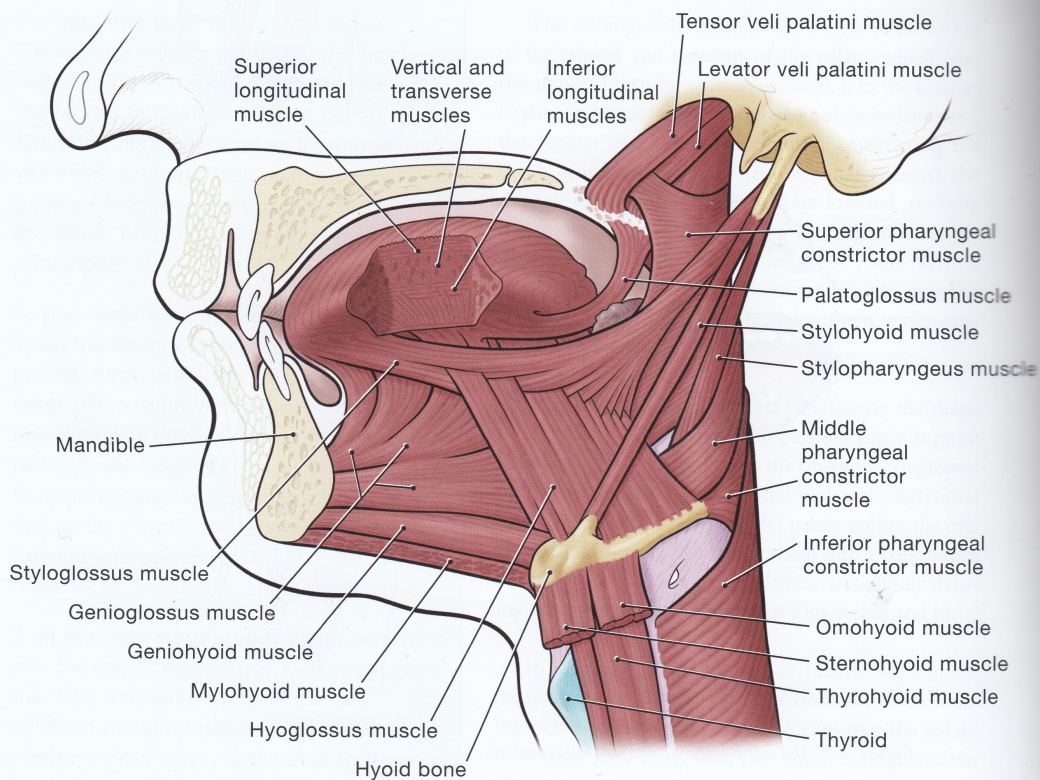


Figure 4-9. The tongue and its muscles.

CHAPTER 5 THE FACE AND JAW

Although the facial bones and muscles do not play a direct role in phonation, they nevertheless form a crucial component of the vocal instrument. There are several reasons for this. First, the facial muscles are organs of communication and expression. Second, we often "collapse" the vocal mechanism as part of losing tone in the face, sleeping with the mouth open, using the voice in a "heavy" way, collapsing the palate; as a result, many voice users develop throatiness of tone and other vocal problems over time. Toning the facial muscles is an essential component in "activating" the vocal instrument, as many singers, who maintain healthy and youthful tone in the facial muscles well into old age, know well. Third, vocal function is directly influenced by tone of the facial muscles, which have indirect reflex connections with the larynx and throat; learning to "place" the voice by toning the facial muscles can profoundly influence both the larynx and the throat.



Figure 5-1. Muscles of the face.

The facial muscles are different from other skeletal muscles because they do not attach from one bone to another but, in most cases, arise from bone or cartilage and insert into the integument, or skin tissue, often blending with the fibers of other muscles. This gives them the ability to produce facial expressions by moving the skin, to narrow or wrinkle areas of skin and tissue, and to move or contract apertures, as in the case of the area around the eyes. In particular, the areas around the mouth, the lateral region of the orbits of the eyes, and the region between the eyes are convergence points for muscles whose fibers tend to blend with one another. Because the facial muscles are often overlapping and are continuous with the fascia covering the face and neck, they form a movable sheet of connective tissue covering the entire face (Fig. 5-1).