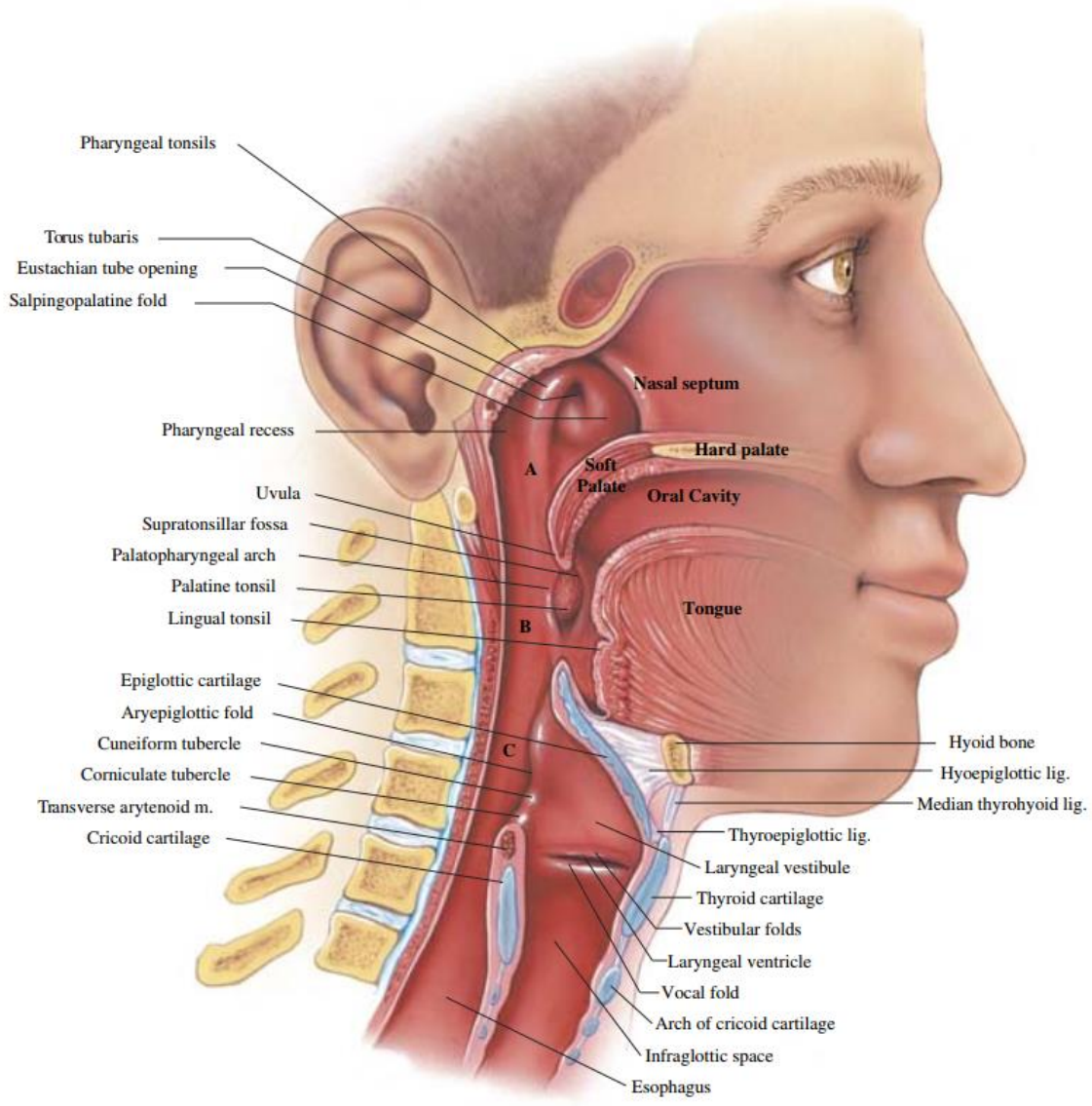
Laryngeal Anatomy

The larynx is composed of:

- 2 unpaired cartilages (thyroid cartilage, cricoid cartilage)
- 3 paired cartilages (arytenoids, cuneiform, and corniculate cartilages)

The arytenoid cartilages are attached to the true vocal folds, which is made up of squamous epithelium, 3 layers of subepithelial lamina propria, and the thyroarytenoid muscle. Within the lamina propria, extracellular matrices filled with collagen and elastin lend the vocal fold its vibratory properties. The anterior two-third of the vocal folds, known as the membranous portion, predominately functions in vibration, whereas the posterior cartilaginous portion coordinates the glottic aperture during respiration. With the lungs as the power supply for air movement, phonation occurs from the vibration of the vocal folds as they approximate each other, and this process is orchestrated by paired movements of intrinsic laryngeal muscle[1].



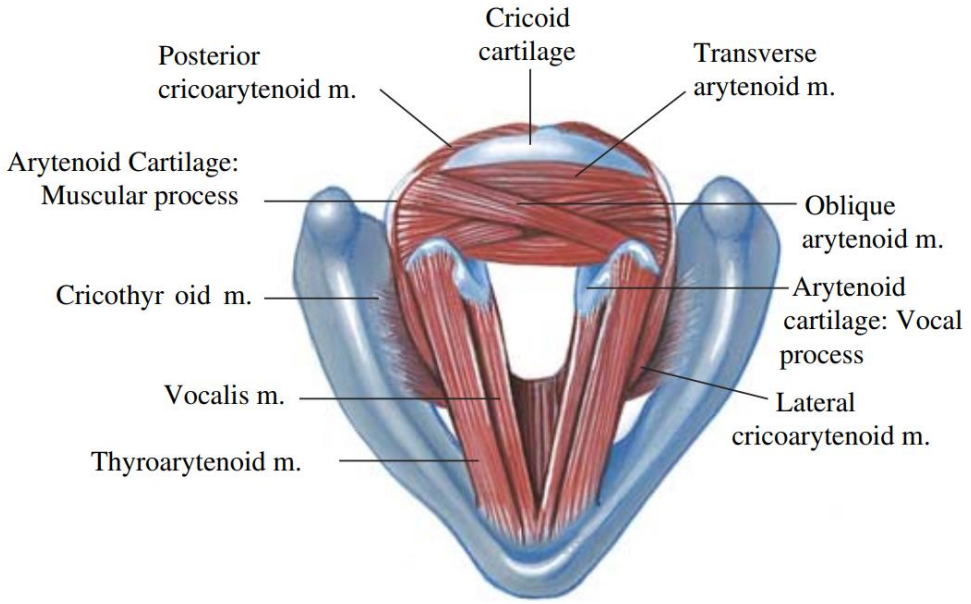
*From: Chen DW, Ongkasuwan J. Spasmodic Dysphonia. Int Ophthalmol Clin 2018; **58**: 77–87.*

The intrinsic laryngeal muscles are responsible for synchronized adduction, abduction, and tension of the vocal folds.

The muscles critical to phonation are the thyroarytenoid, lateral cricoarytenoid, interarytenoid, and the cricothyroid muscles. These muscles work in concert to adduct and tense the folds.
They are innervated by the recurrent laryngeal nerves, except for the cricothyroid muscle which is innervated by the external branch of the superior laryngeal nerves.

The thyroarytenoids are broad, thin muscles that lies parallel with and lateral to the vocal fold. They arise from in front from the lower half of the angle of the thyroid cartilage, and from the middle cricothyroid ligament. The muscle fibres pass backward and laterally, to be inserted into the base and anterior surface of the arytenoid cartilage. In addition to adduction, the thyroarytenoid increases vocal fold tension and is the muscle target for botulinum injection in adductor laryngeal dystonia.

The only abductors of the vocal folds are the posterior cricoarytenoid muscles. They are paired muscles that extend from the posterior cricoid cartilage to the arytenoid cartilages in the larynx, and abduct the vocal folds by rotating the arytenoid cartilages laterally. This is the muscle targeted for botulinum injection in abductor laryngeal dystonia.



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