

## 12 Larynx

### Learning Objectives

By the end of this topic you should be able to:

- Identify the cartilages, membranes, muscles and nerves of the larynx.
- Describe the attachments of the larynx to other structures in the neck.
- Explain the anatomical and functional relationship of the larynx to the respiratory and digestive systems.
- Describe the functions of the larynx in phonation.

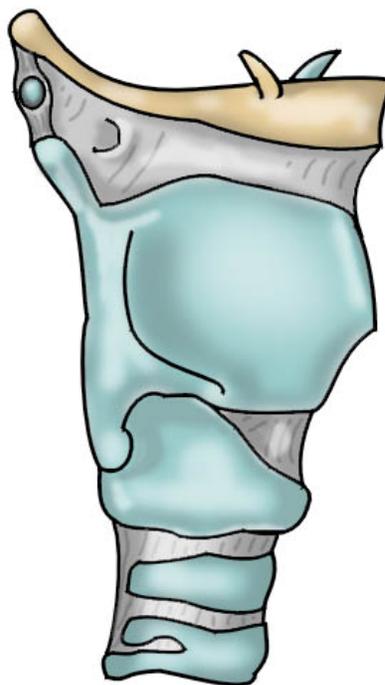
<http://www.bmc.med.utoronto.ca/anatomia/>

### I - Cartilages

#### Skeleton of the Larynx

The skeleton of the larynx is composed of eleven cartilages. From the top of the larynx moving upwards, they are:

- The Cricoid cartilage (1)
- The Thyroid cartilage (1)
- The Arytenoid cartilages (2)
- The Epiglottis (1)
- The Corniculate cartilages (2)
- The Cuneiform cartilages (2)
- The triticial cartilages (2)

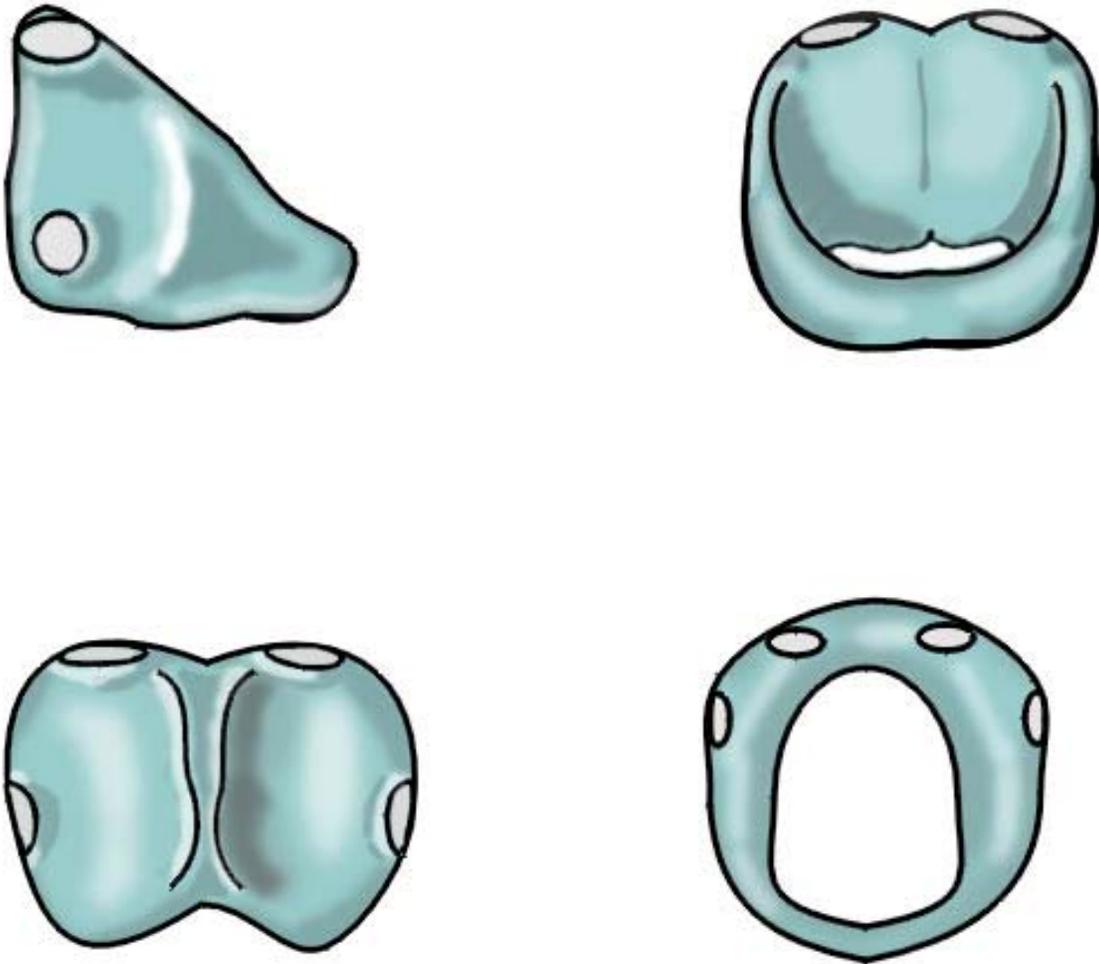


**Figure 12-01** Right lateral aspect of the larynx and hyoid bone.

## The Cricoid Cartilage

The cricoid is shaped like a **signet ring**, with the narrow part facing anteriorly and the larger part facing posteriorly. It is related inferiorly with the uppermost ring of the trachea to which it is attached by the cricotracheal ligament.

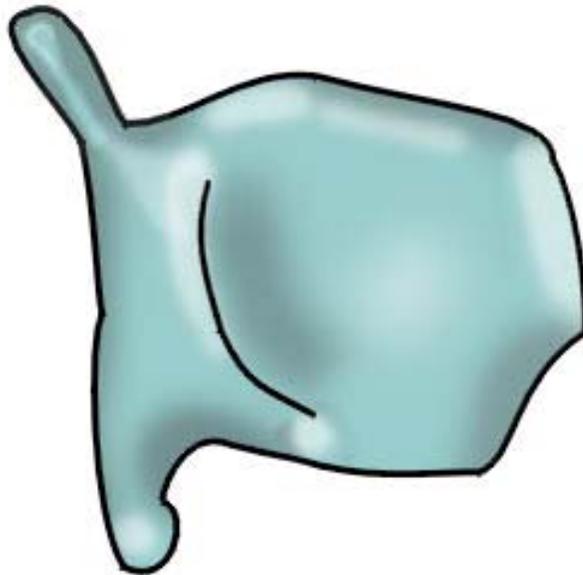
It articulates (forms joints with) the **thyroid cartilage** and with both **arytenoid cartilages**.



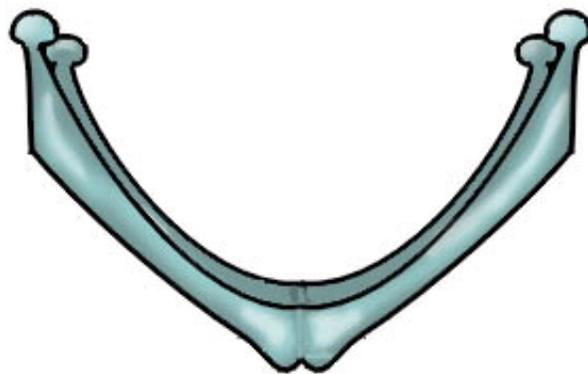
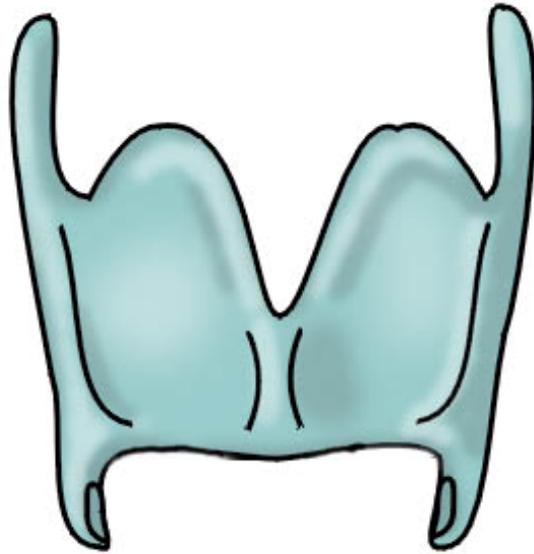
**Figure 12-2.** Four aspects of the cricoid cartilage.

## The Thyroid Cartilage

The thyroid cartilage is the largest of the laryngeal cartilages. It is composed of two thyroid laminae, which meet in the midline anteriorly. The point of junction is called the angle of the thyroid. Incomplete fusion of the two laminae superiorly results in the V-shaped thyroid notch. The thyroid notch and laminae create a distinct prominence in the neck called the laryngeal prominence or Adam's apple. The thyroid laminae meet at an angle of 80 degrees in males and 90 degrees in females. The posterior border of each lamina is prolonged upward and downward as the superior and inferior thyroid horns. The superior thyroid horns are directed somewhat medially and posteriorly. They attach to the hyoid bone via a ligament. The inferior thyroid horns are shorter and somewhat thicker than the superior horns. They are directed downward and slightly medially, and they articulate with the cricoid cartilage. The articular facets are located on the medial aspect of the tip of each inferior horn.



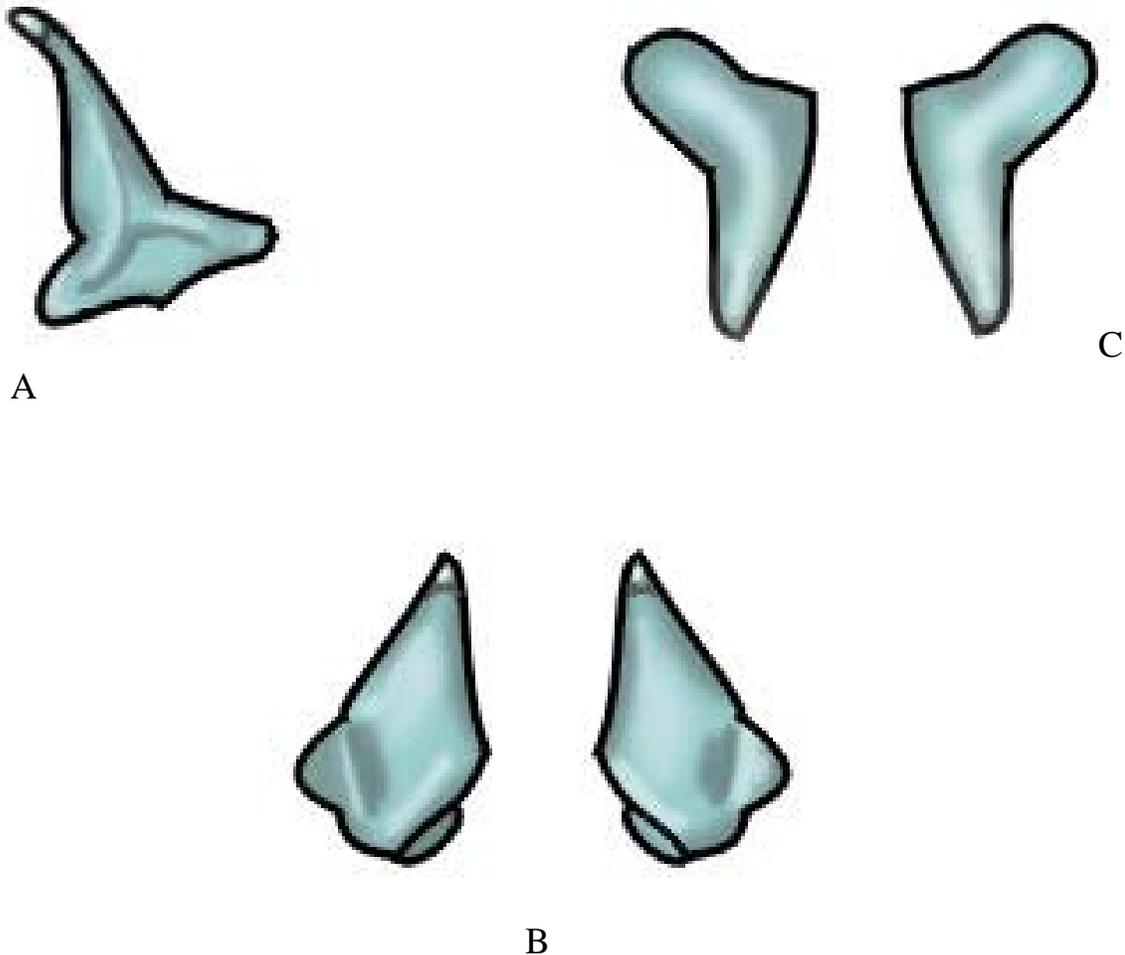
**Figure 12-3.** A. right lateral aspect of the thyroid cartilage. Parts B and C. on next page



**Figure 12-3, continued.** B. Anterior aspect of thyroid cartilage. C. Superior aspect of the thyroid cartilage.

## Arytenoid Cartilages

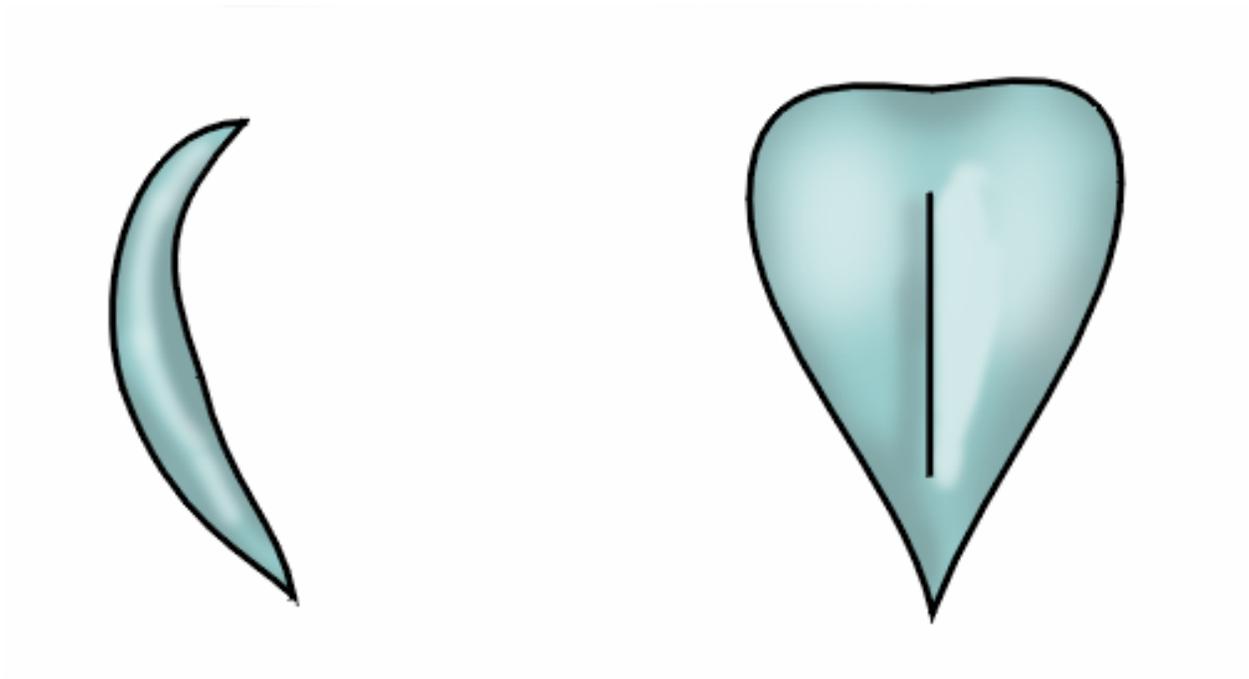
The paired arytenoid cartilages are shaped roughly like a pyramid. They are described as having a base inferiorly, and an apex superiorly. Each arytenoid cartilage has two important processes, a laterally-directed muscular process, and an anteriorly directed vocal process. The muscular process provides a point of attachment for two of the intrinsic muscles of the larynx. The vocal process provides a point of attachment for the vocal ligament, and intrinsic part of the vocal fold. Each arytenoid cartilage has an articular facet on its base of the body and muscular processes. They articulate with the cricoid cartilage. The crico-arytenoid joint is a complex, saddle shaped joint that permits the arytenoid cartilages to rotate around a vertical axis, and to slide along the top of the cricoid lamina.



**Figure 12-04.** Views of the arytenoid cartilage A. right lateral aspect. B. Posterior aspect. C. Superior aspect.

## Epiglottis

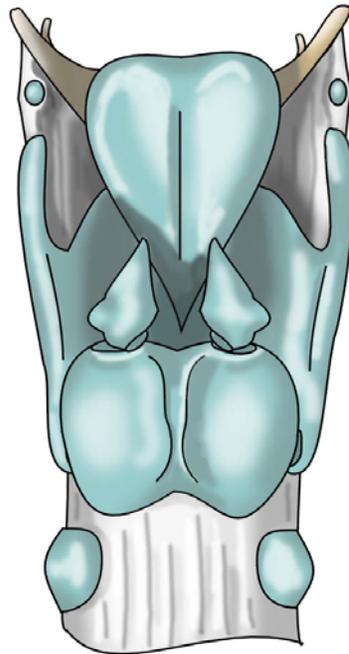
The epiglottis is a flexible, leaf-shaped cartilage. The stem of the leaf (the petiolus) is attached to the thyroid cartilage on the internal surface of the thyroid angle, just inferior to the thyroid notch, by the thyroepiglottic ligament. The broadest portion of the leaf is attached to the hyoid bone by the hyoepiglottic ligament. The upper portion of the epiglottis is attached to the back of the tongue by means of one median and two lateral glossoepiglottic ligaments. Two pits, the valleculae, are formed between the epiglottis and the tongue.



**Figure 12-05.** A. Right lateral aspect of the epiglottis. B. Posterior aspect of the epiglottis.



**Figure 12-06.** Right lateral aspect of the larynx and hyoid bone showing the positions of the arytenoid and epiglottal cartilages.



**Figure 12-07.** Posterior aspect of the larynx showing positions of the cartilages relative to the hyoid bone and trachea.