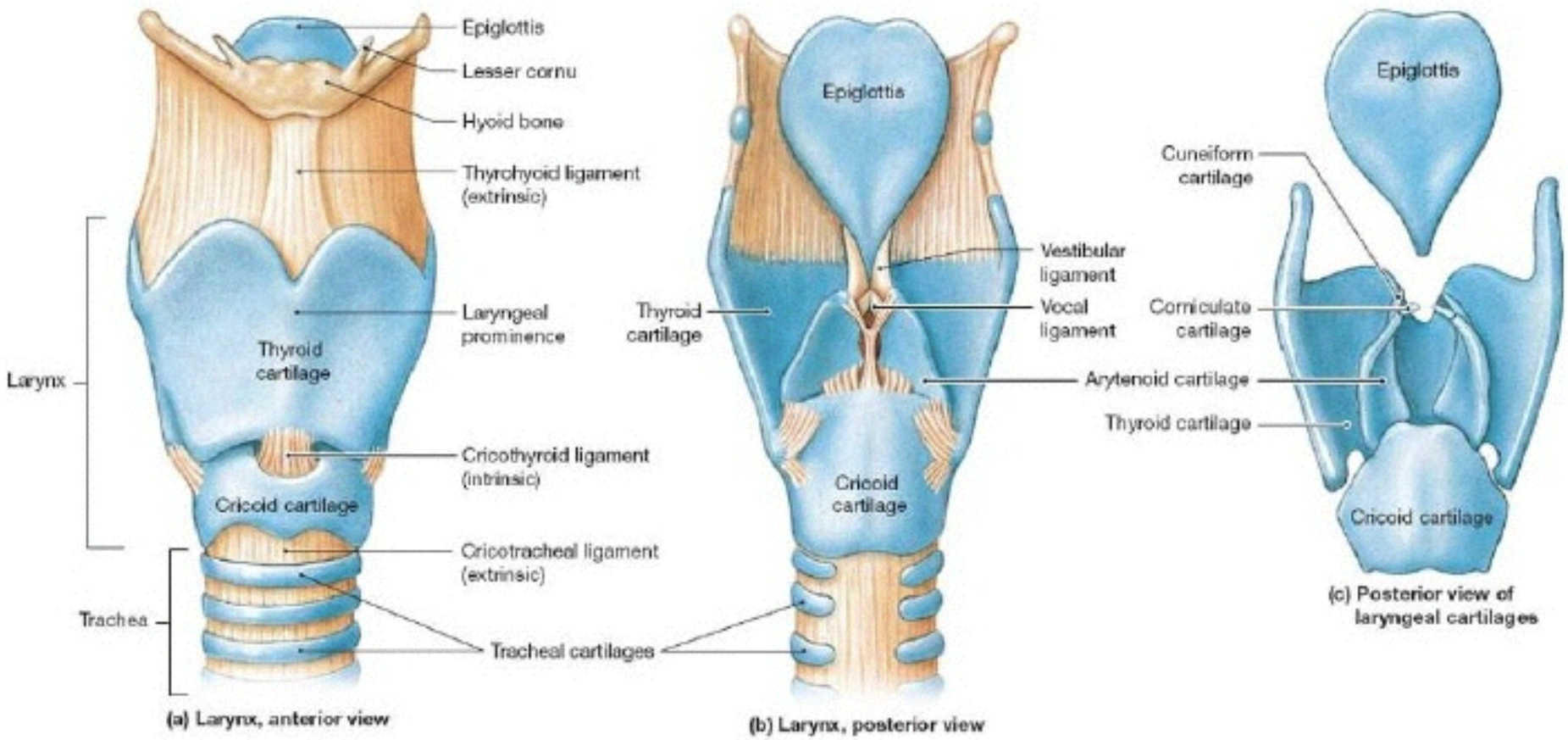
Class Voice

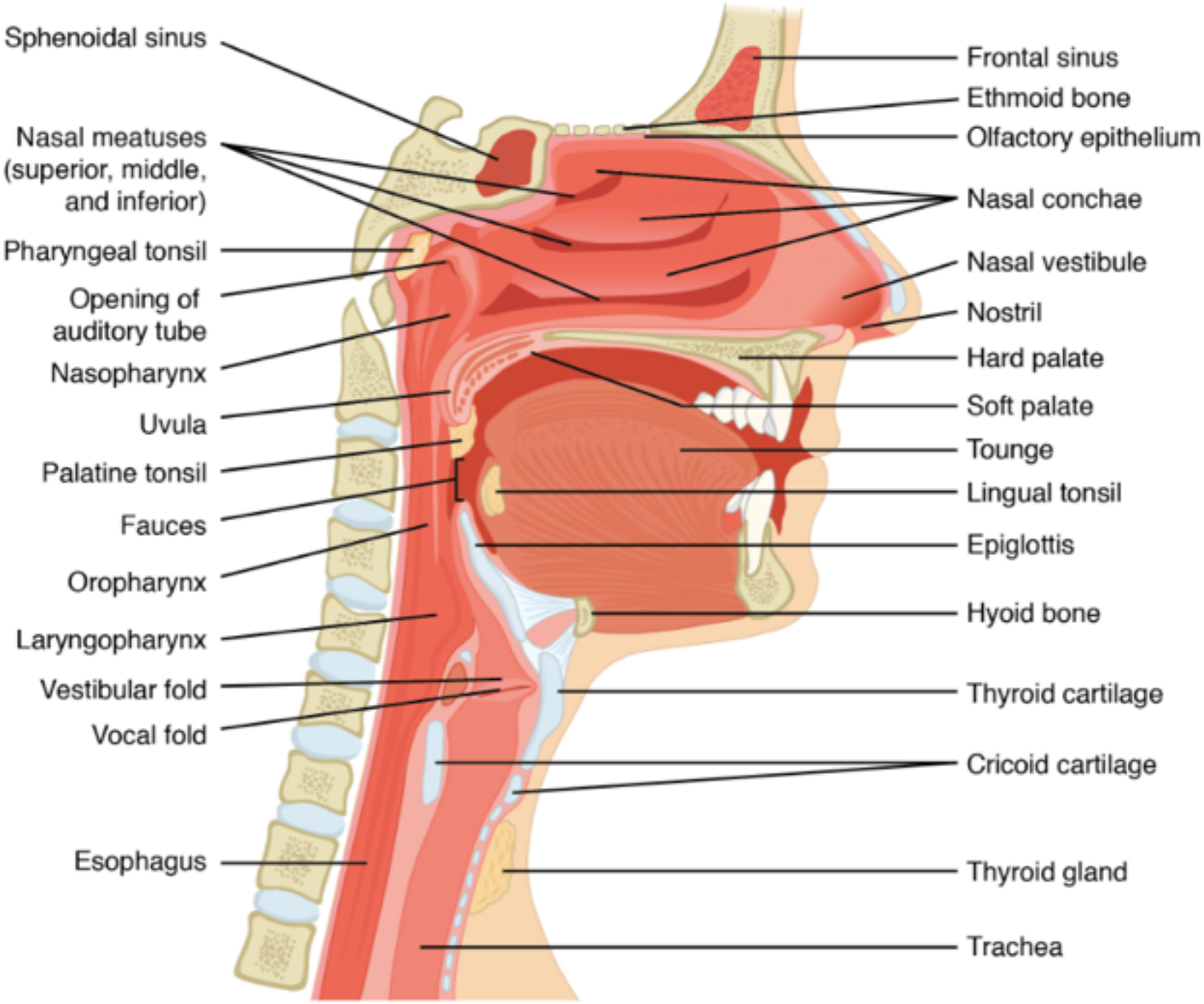
Review of Chapter Nine:

Making Sound



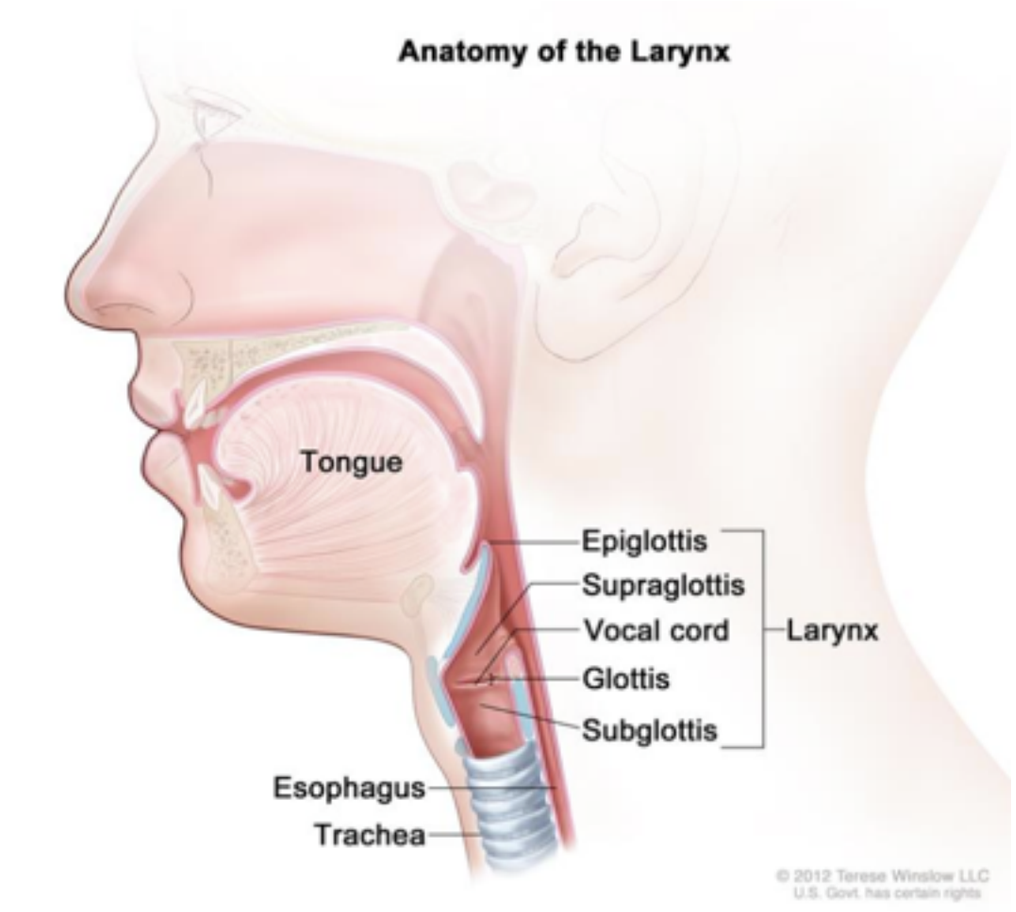
1

- Sound is made and amplified in the **<u>vocal tract</u>**, which consists of the voice box (**<u>larynx</u>**) and throat area all the way up to the **<u>soft palate</u>** (and the nose, for nasal sounds).



2

- The initiation of the voiced sounds we make comes from the vibration of two **folds** of muscle, housed in the larynx (**Adam's Apple**) that sits on top of the windpipe (**trachea**). These folds are commonly and incorrectly) known as the "vocal cords."



NOTE:

- Memorize Figs. 9.1 and 9.2.

- To really learn this, you must watch the videos on my blog: https://gemmell-posts.com/2017/03/03/the-anatomy-of-the-larynx-videos/

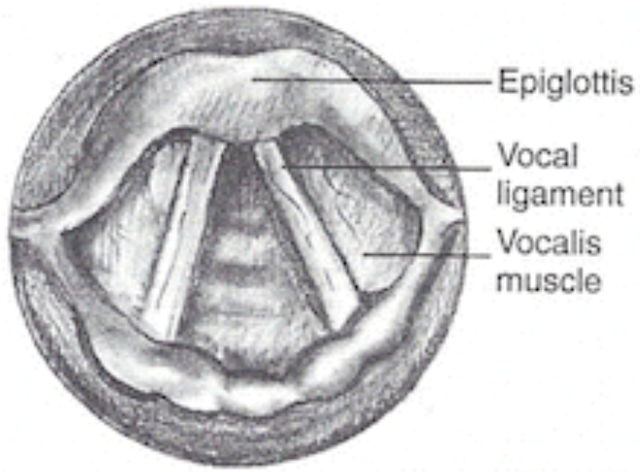


FIGURE 9.1
Vocal folds viewed from above

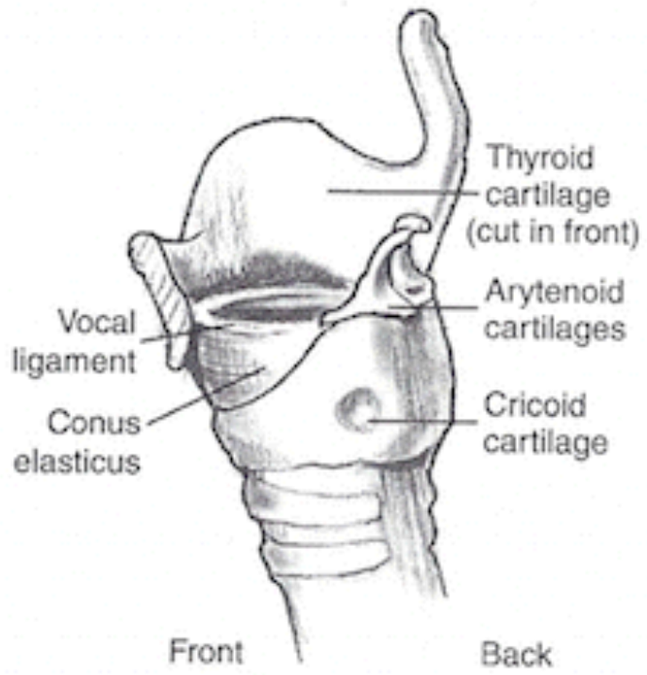
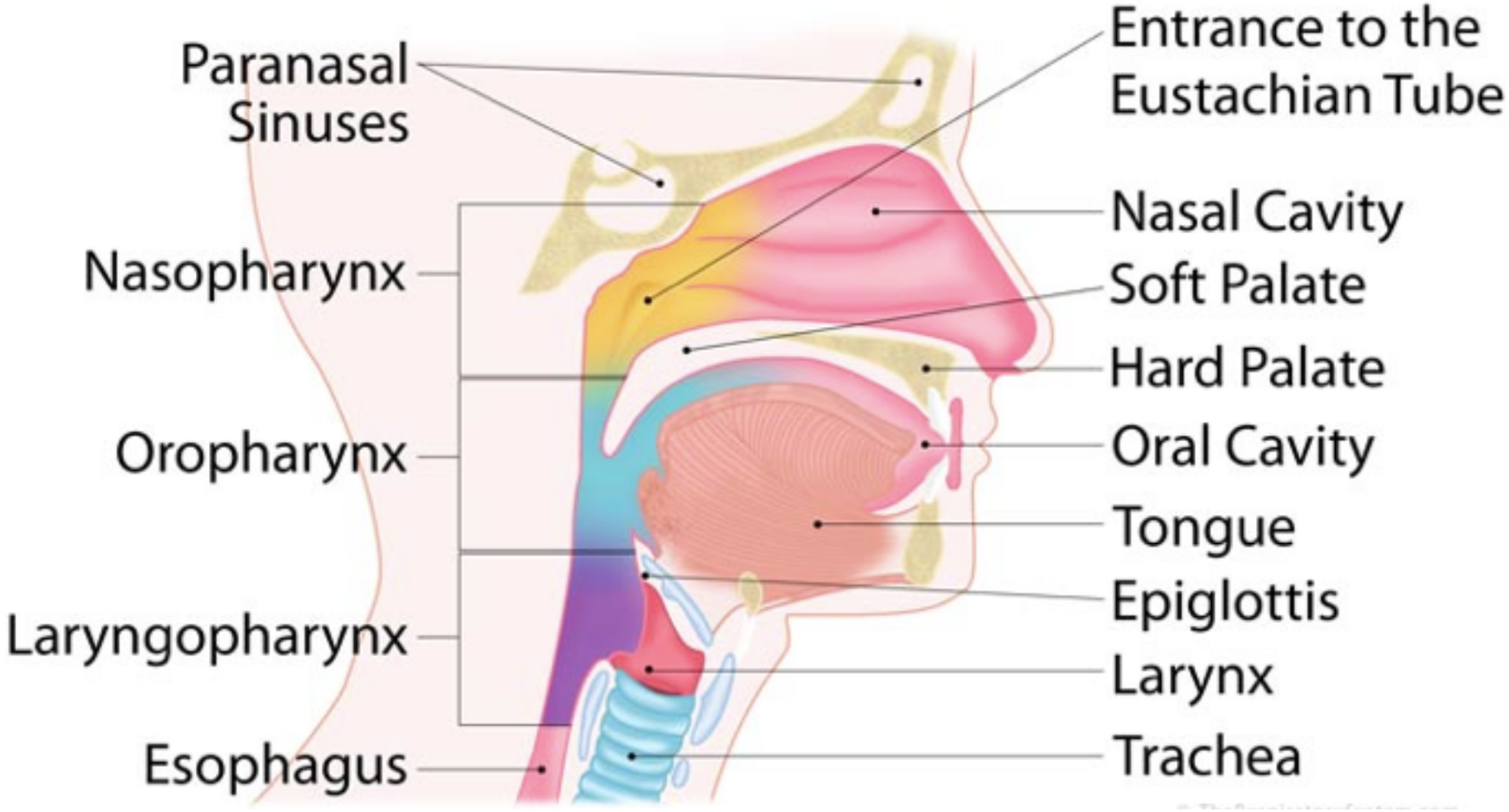


FIGURE 9.2
Cartilages of the larynx

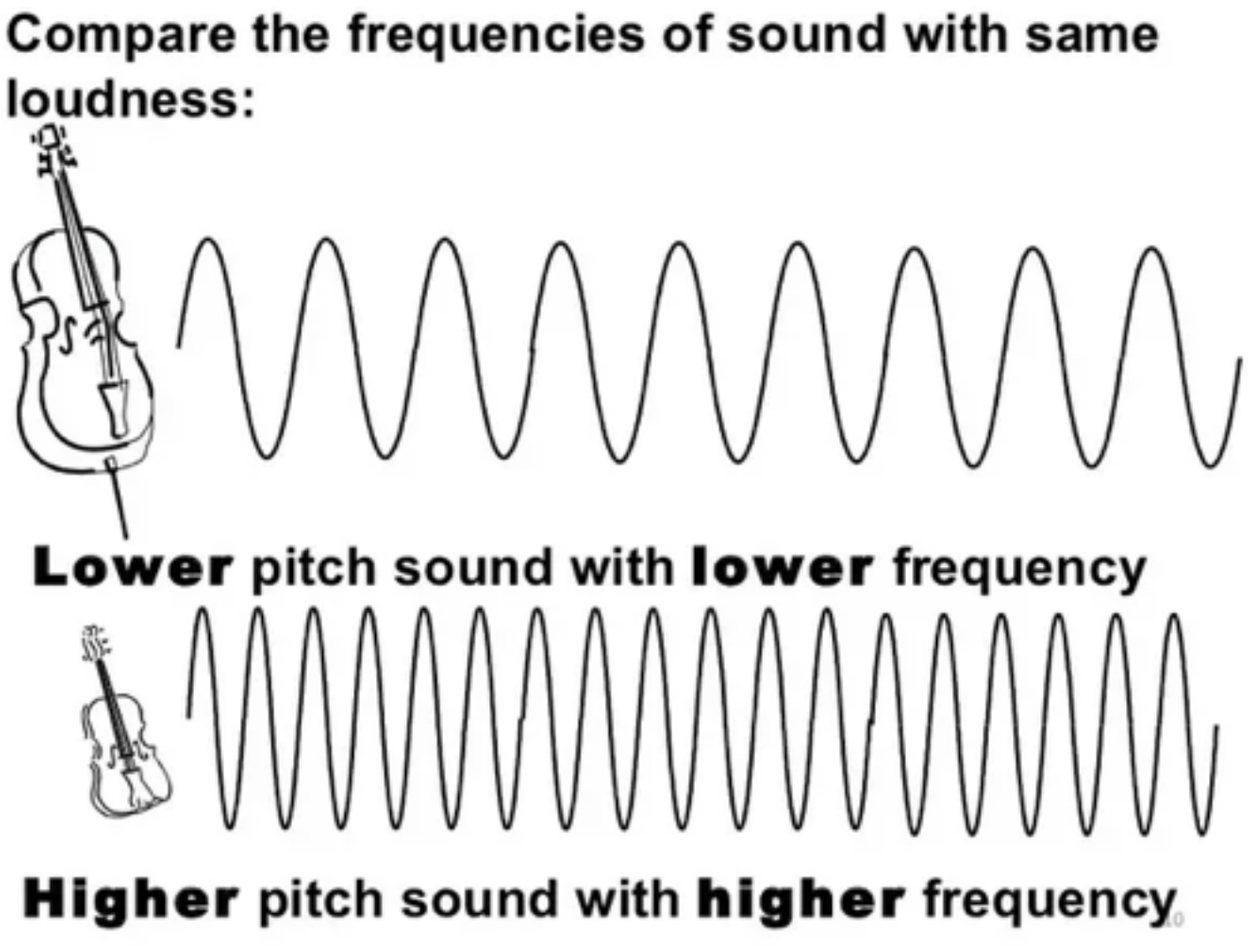
3a

- The larynx consists of several **cartilages** and is a housing for the vocal folds that are **activated** by **airflow** from the lungs. The sound is then modified and **amplified** by **resonating** in the "vocal tract" (the **pharynx** or throat and mouth). . . .



3b

- The number of times the vocal folds vibrate per second determines **pitch**. For example, for A 440 (the note A immediately above middle C), the folds vibrate 440 times [or cycles] per second [or “cps”].



4

- The larynx is suspended and supported in the neck from in front, behind, above and below by groups of **paired muscles**. (See Fig. 9.3) It is able to move **freely** when we swallow and speak. The connections of the larynx and how it operates involves a complex relationship with the throat (**pharynx**), soft **palate**, tongue, jaw, neck, and **chest**. The interaction of all these factors contribute to laryngeal efficiency and **tone quality**.

Extrinsic Muscles of the Larynx

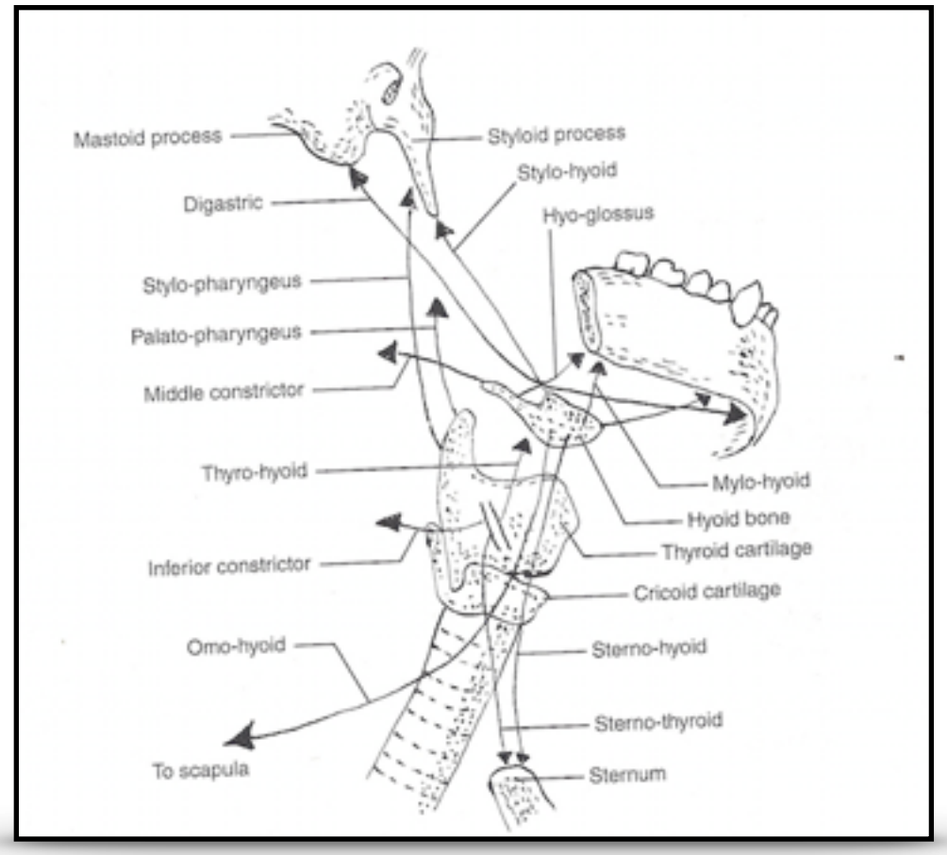
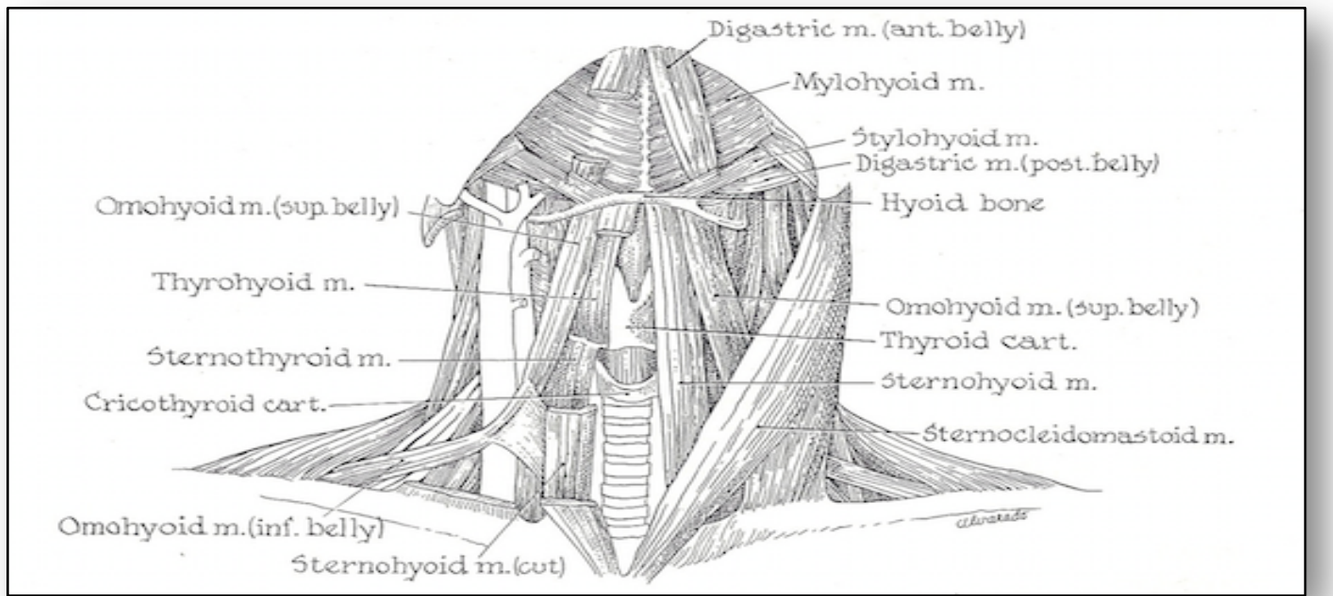


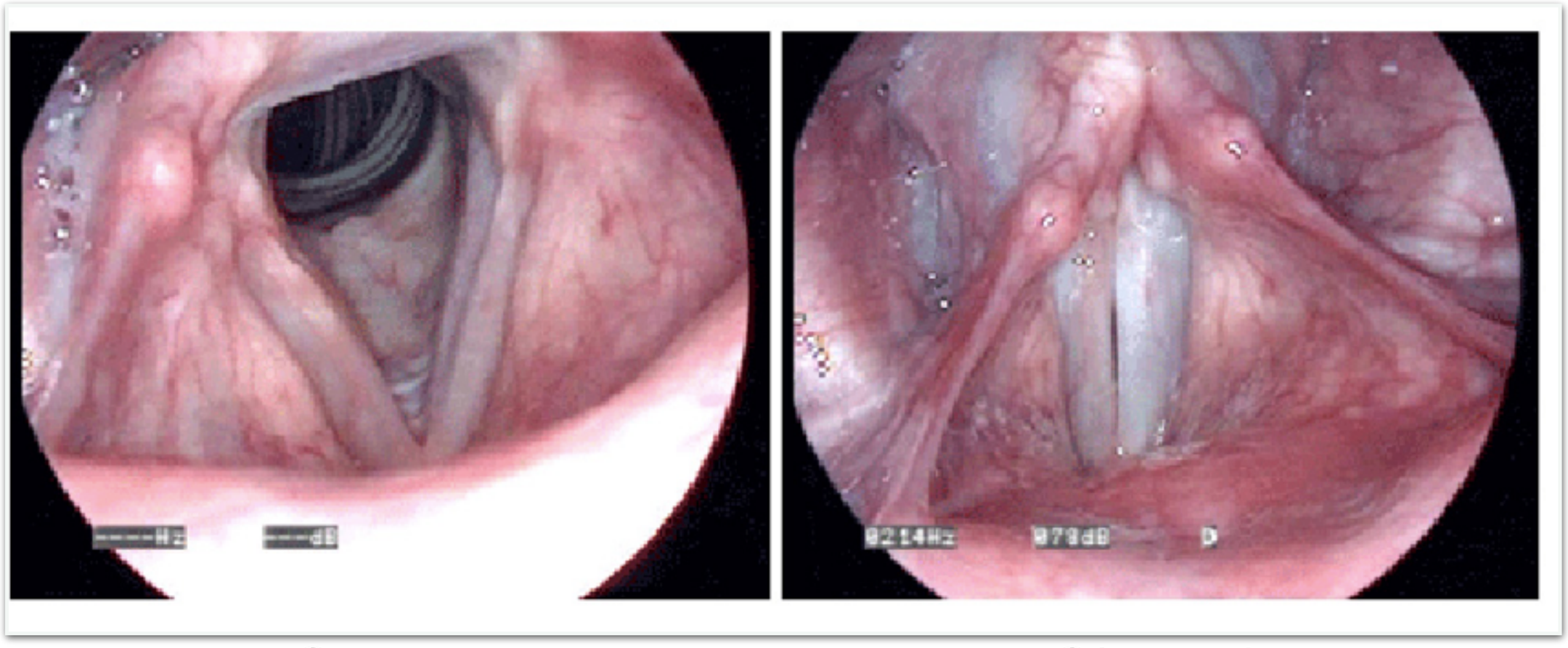
Fig. 9.3. Diagram of muscles suspending the larynx



Front view of strap muscles more as they actually appear.

5

- The vocal folds act as a sensitive **valve** and guardian for preventing foreign material from entering the lungs. Read about how they function on pp. 273-274.



Open

Closed

6

Main structure of the larynx consists of FOUR cartilages and ONE bone:

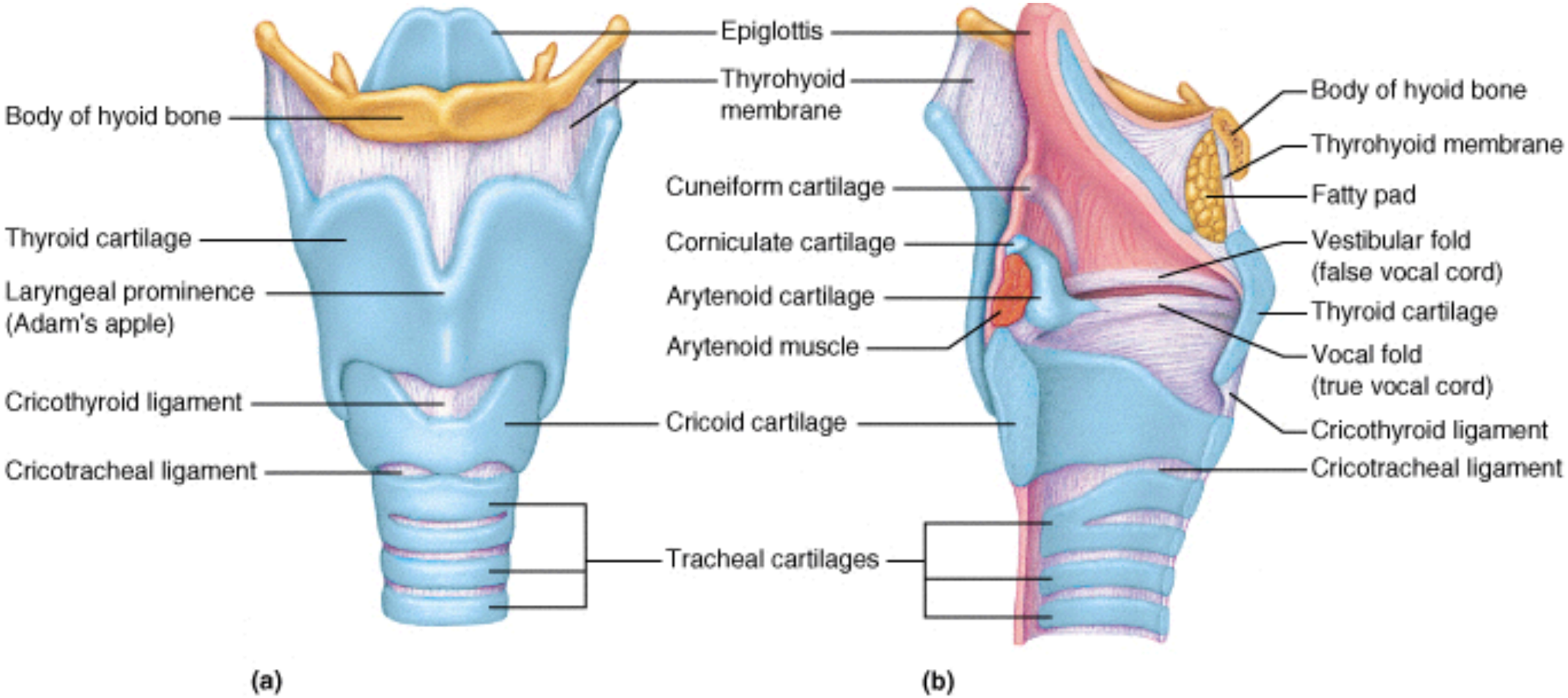
a. **Cricoid** cartilage — p. 273

b. Two **Arytenoid** carriages — p. 273.

c. **Thyroid** cartilage — p. 274

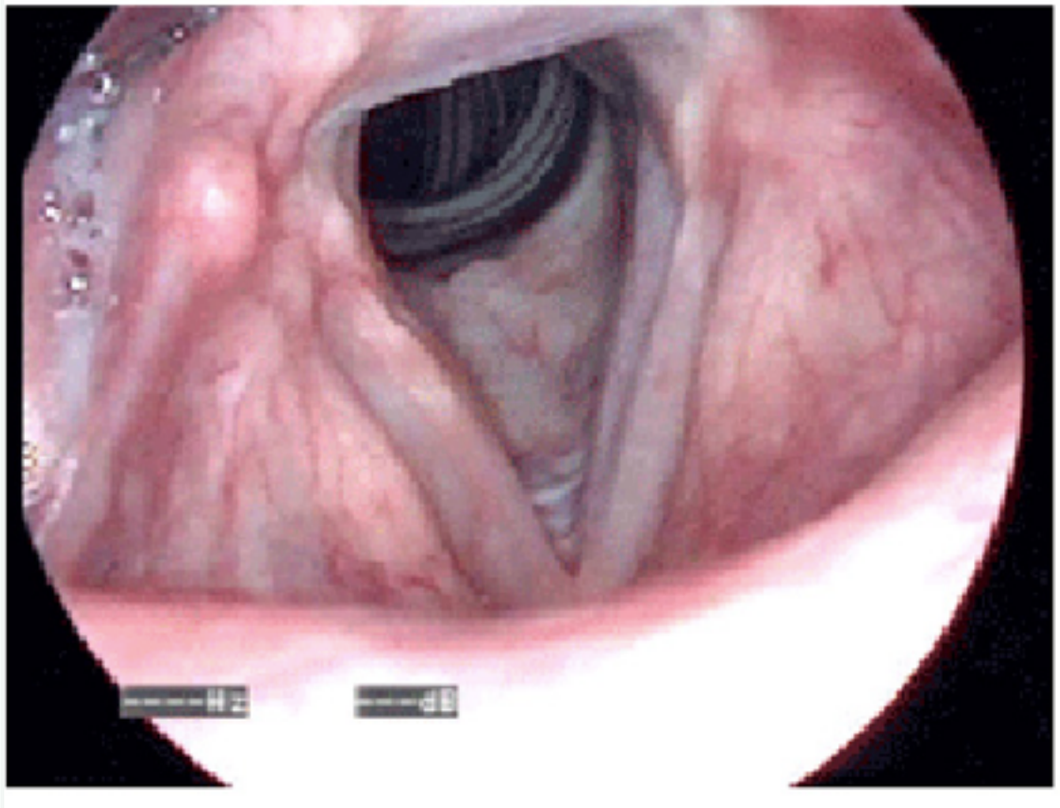
d. **Hyoid** bone — p. 274

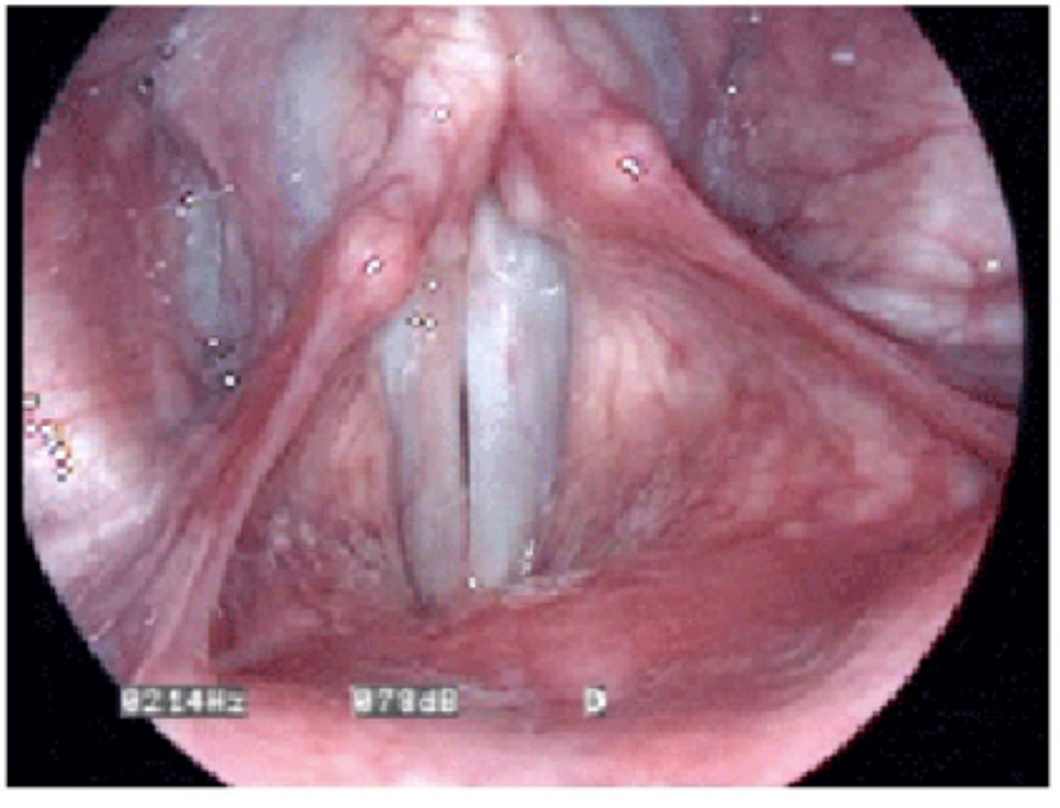
Skeleton of the Larynx



7a

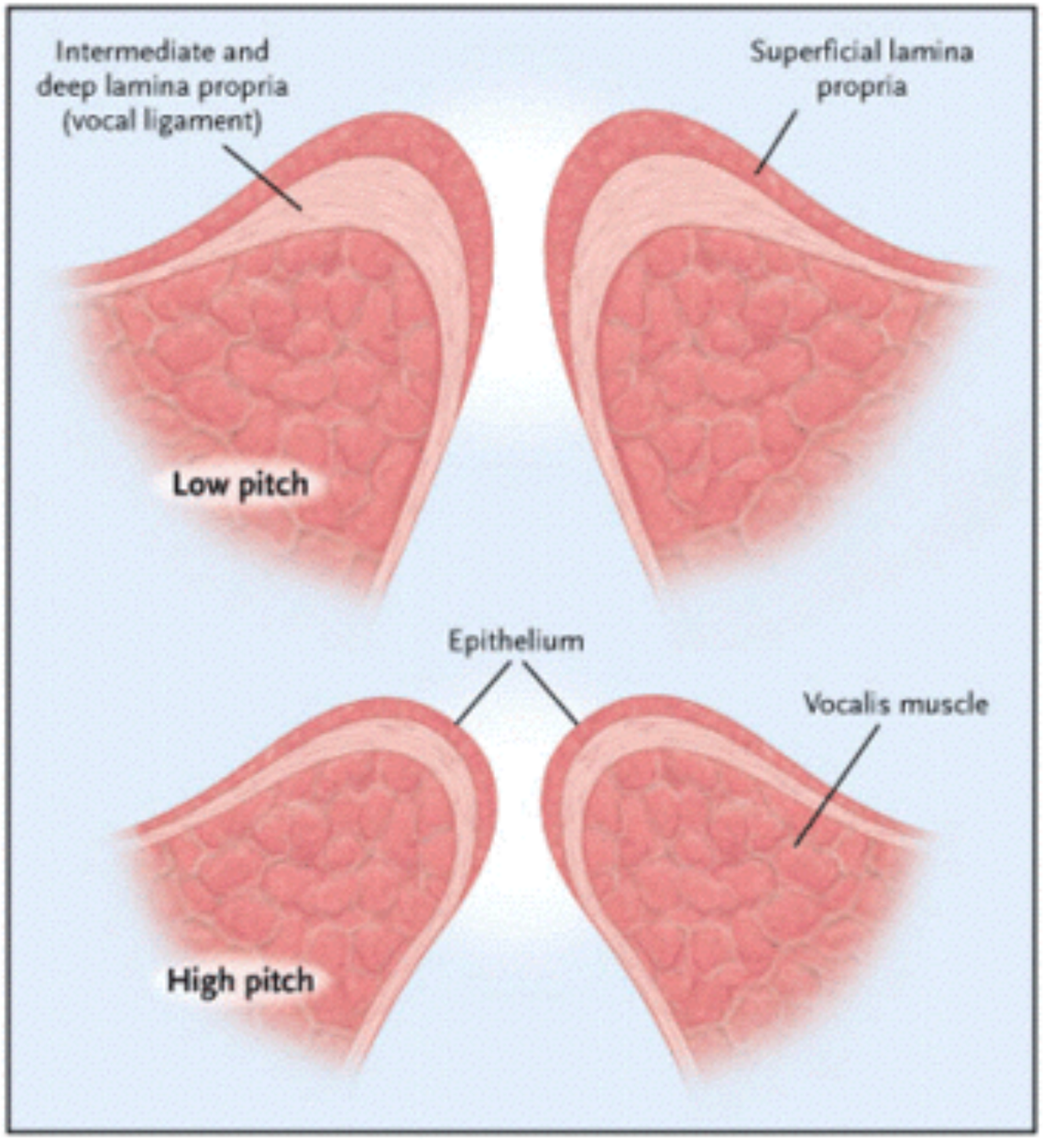
- **Muscles of Phonation**. To make sound, the vocal folds need to **come together** *[adduct]*. To breathe they need to **open** *[abduct]*. To create higher pitches, the vocal folds must be able to stretch. To accomplish all of this some small muscles do a lot of work without our having to think much about it.



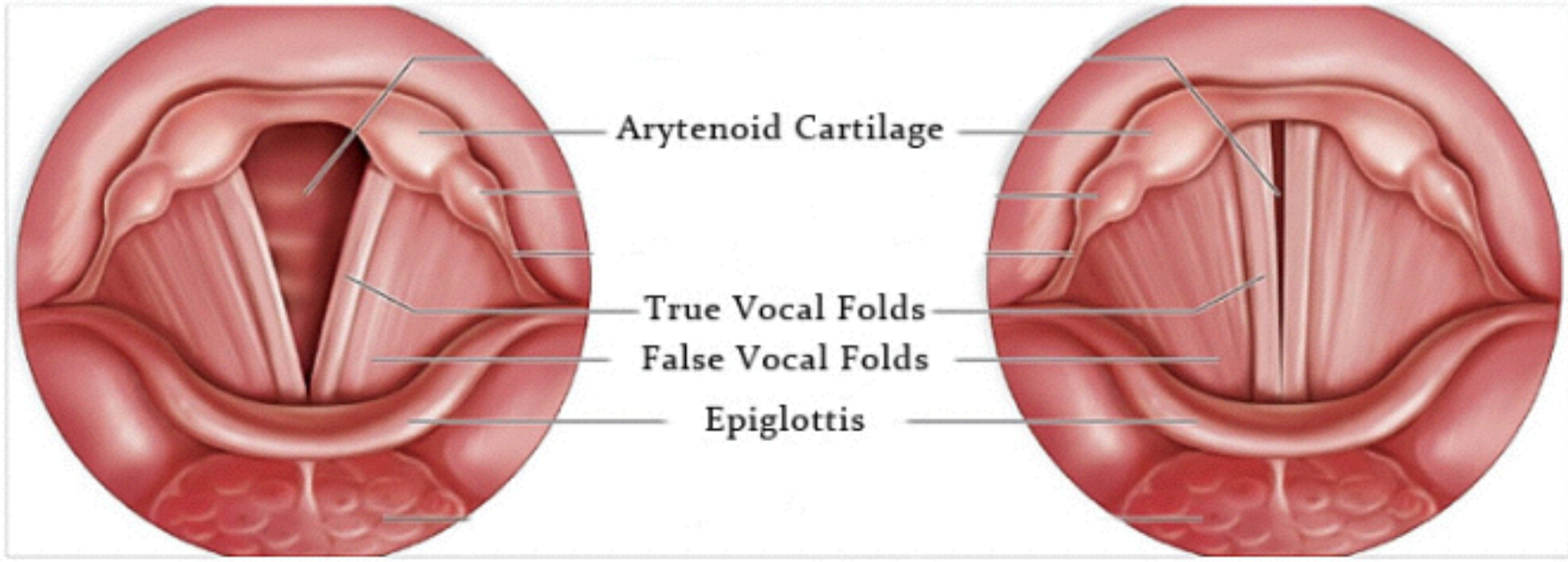


7b

- A vocal fold consists of a muscle: *Vocalis* or *Thyro-arytenoid*. The muscle is covered with mucous membrane and there is a ligament on the inside edge of each fold known as the **<u>vocal ligament</u>**. . . . Generally speaking, the vocal folds are **<u>thick</u>** and **<u>loose</u>** when relaxed or singing low notes; they are **<u>stretched</u>** as you move higher in pitch. [Again, please see videos on blog!!!]

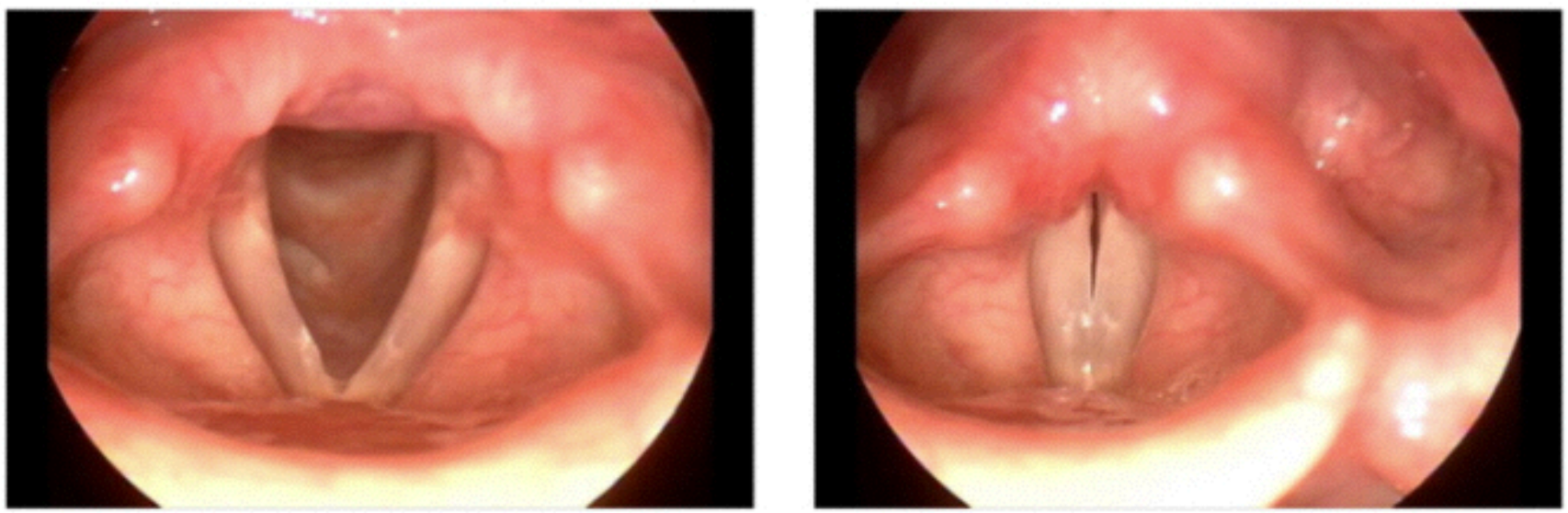


BACK



FRONT

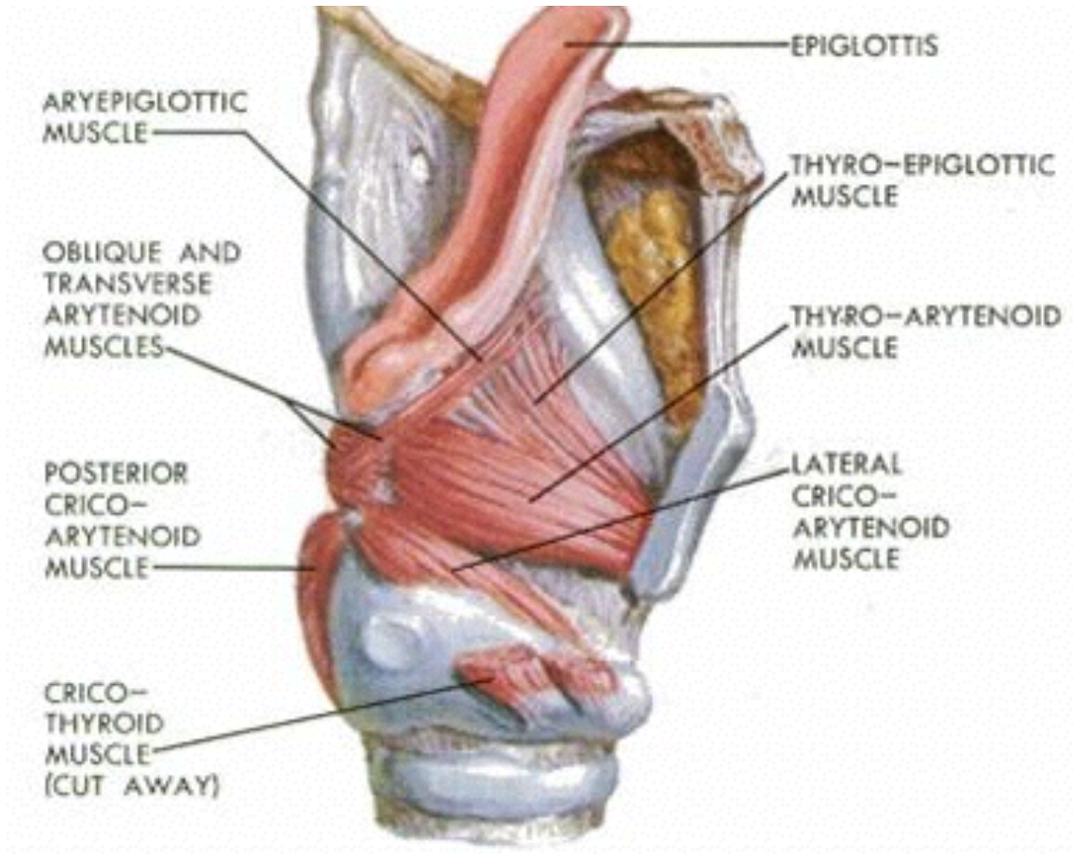
BACK



FRONT

8

- On the back of the cricoid cartilage are two muscles that **move the vocal folds apart** (**<u>abduct</u>** them) for breathing. . . . They are called *posterior crico-arytenoids* (See Fig. 9.5). When these muscles contract, they **<u>swing</u>** the arytenoids wide taking the folds with them.



9

- It takes two sets of muscles to **fully close** (**<u>adduct</u>**) **the vocal folds** for phonation. . . . These muscles are called *lateral crico-arytenoids*. When they contract they swing the front of the arytenoids (vocal processes) together causing the vocal folds to **<u>meet</u>** in the center. However, the meeting is not complete; this leaves a small chink between the arytenoid cartilages where air can escape. To complete the process and secure a clear, clean sound, the arytenoids must slide toward each other and **<u>close</u>** the **gap**. The muscles that contract to do this are a group called the *interarytenoids* — all very logical.

10a

- The vocal folds are **<u>relaxed</u>** for the lowest pitches and are **<u>lengthened</u>** to create higher pitches. Muscles are in place to cause the thyroid and cricoid cartilages to move apart and create the stretch. The **<u>pair</u>** of muscles that perform this task are the *cricothyroids*, running from the front of the cricoid to the thyroid. When they contract they tilt the thyroid cartilage forward and cricoid backward a little, creating a pull on the vocal folds. . . .

10b

- When the vocal folds are not stretched, they are thick. This produces the low, heavier sounds (sometimes called “**chest**” voice). When the folds are stretched, the sounds are higher and lighter (often called “**head**” voice). It is when you sing the high notes with a very heavy sound that “muscular arguments” (**antagonism**) can occur and create uneven changes in the sound.

11

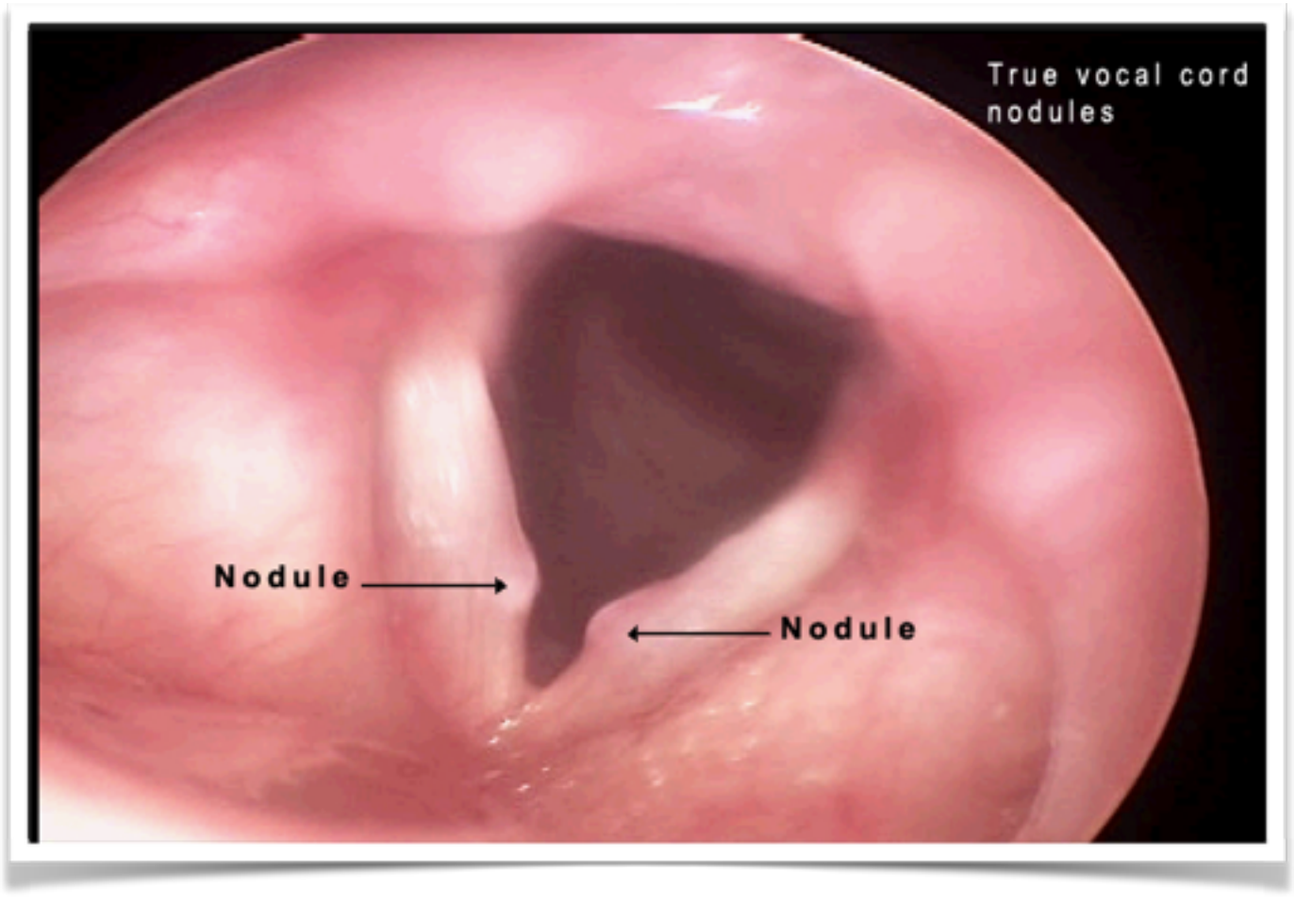
- Read, learn and digest the next section very carefully, “A Note About Pitch.”

12a

- The initiation of vocal sound is called the **onset** or **attack**. For a clear sound, the vocal folds need to touch each other **cleanly** and **gently**. This happens when the muscles of **breathing**, the **airflow**, and the **onset** of sound are **well coordinated**.

12b

- When the folds close with a lot of pressure, they can beat on each other and create little explosions of sound **(glottal attacks)**. The sound this makes is usually tight and irritating to the ears. Continual abuse like this can cause growths on the folds called **nodules**.



13

- Inefficient coordination can also cause the sound to be too **breathy**. This happens when the folds do not close well and air leaks out. It is all right to make a deliberately breathy sound for some popular styles, but a consistently breathy sound is indicative of poor vocal balance. And do not confuse breathiness and hoarseness (see chapter on vocal health).

14

- Read carefully the next sections: “Quality Within the Vocal Range,” “Vibrato,” and “Straight Sound.” Be ready for any questions regarding this material.