ECA

EMERALD

CHORAL ACADEMY

VOCAL ANATOMY 103: THE LARYNX

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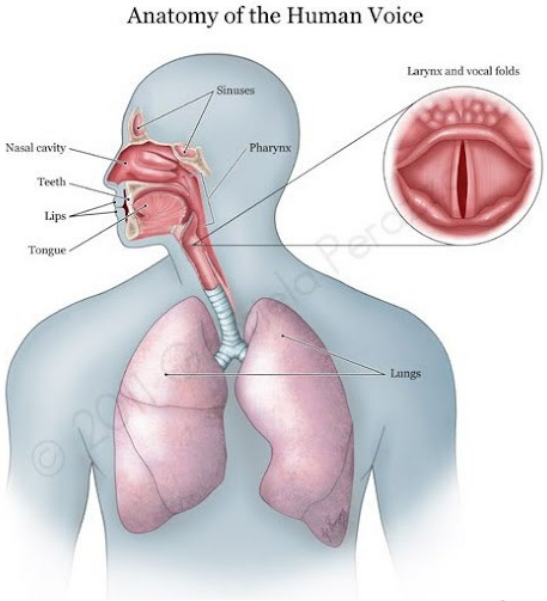
THE 5 “SYSTEMS” OF THE HUMAN VOICE

- Respiration
- **PHONATION**
- Registration
- Resonance
- Articulation

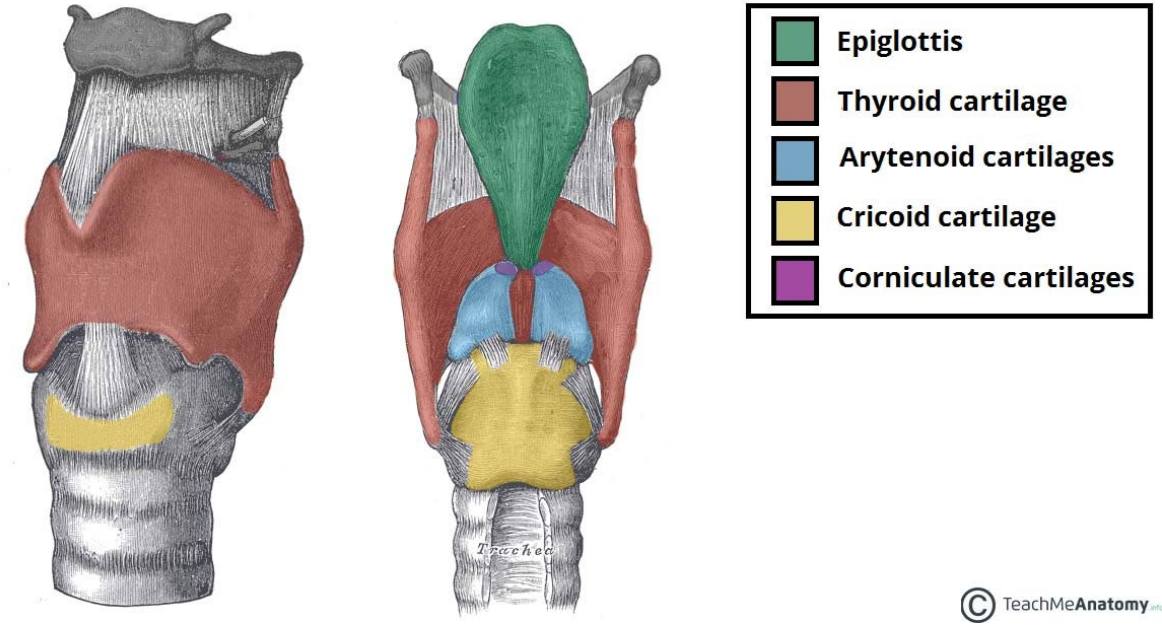


YOUR LARYNX : More than just a “voice box”

- Every musical instrument needs a power source, vibrator, and resonator
  - Oscillation/vibration creates variations in air pressure that we hear as sound
  - The voice has a unique advantage over other instruments - LANGUAGE
- Laryngeal sound is a “happy accident”
  - primary function is as a valve
    - ultimate protector of the airway
    - allows us to voluntarily block the airway to create more pressure
- Small, but mighty
  - average human male larynx = walnut
  - average human female larynx = pecan

STRUCTURE OF THE LARYNX :

Let's meet the "-oids"



Source: https://teachmeanatomy.info/neck/viscera/larynx/

FREE TO ROAM - but take care!

- The larynx is suspended from the hyoid bone
  - wishbone-shaped, just below the jaw
  - no joint connection to the skeleton
  - attachment point for the tongue
    - also muscles of the jaw and swallowing muscles

- Any incorrect posture or tension is transferred from one location to the other
  - especially true of jaw and tongue tension
  - HANDS-ON: let's try some jaw and tongue stretches

A SHIELD, A RING, AND AN “ELF HAT”

- THYROID cartilage
  - Largest cartilage in the larynx
  - not to be confused with the thyroid gland
  - small notch at anterior superior point
    - attachment of vocal folds at *anterior commissure*
- CRICOID cartilage
  - Second-largest cartilage, forms a complete circle
  - attached to thyroid through synovial joints (can pivot/slide)
- ARYTENOID cartilages
  - sit on top of the posterior superior surface of the cricoid
  - posterior point of attachment for the true vocal folds as well as connecting point for muscles that open the glottis

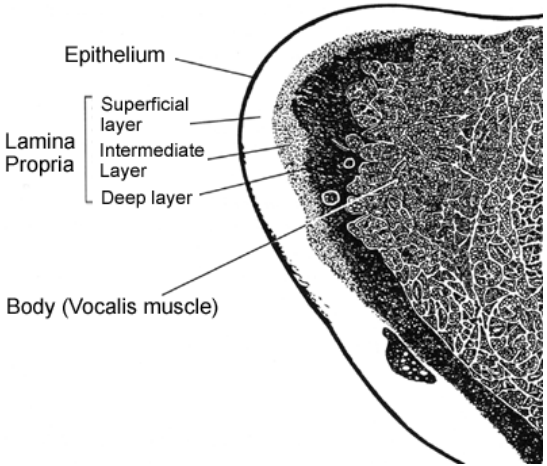
THE VOCAL FOLDS:

most definitely not “chords”

- the vocal folds are actually quite small
  - 18 mm in women and 23 mm in men (average)
  - only 12-15 mm available to vibrate
- “cords” have become “folds”
  - Small folds of tissue, rather than cords like guitar strings
  - visible as two white bands, look like the letter “V” at rest
    - point of the “V” is the front of neck/Adam’s apple
    - https://www.youtube.com/watch?v=v9Wdf-RwLcs
- true or false?
  - ventricular (false) folds lie above the true VF and usually don’t actually close
- The epiglottis: a good gatekeeper
  - prevents food from entering trachea through vocal folds

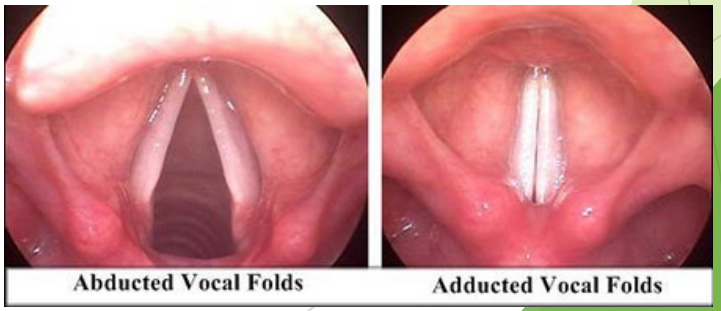
STRUCTURE OF THE VOCAL FOLDS

- Cover (epithelium) and the body (lamina propria and thyroarytenoid (TA) muscle)
  - three layers, vary in density and viscosity
  - vocal ligament runs through intermediate layer

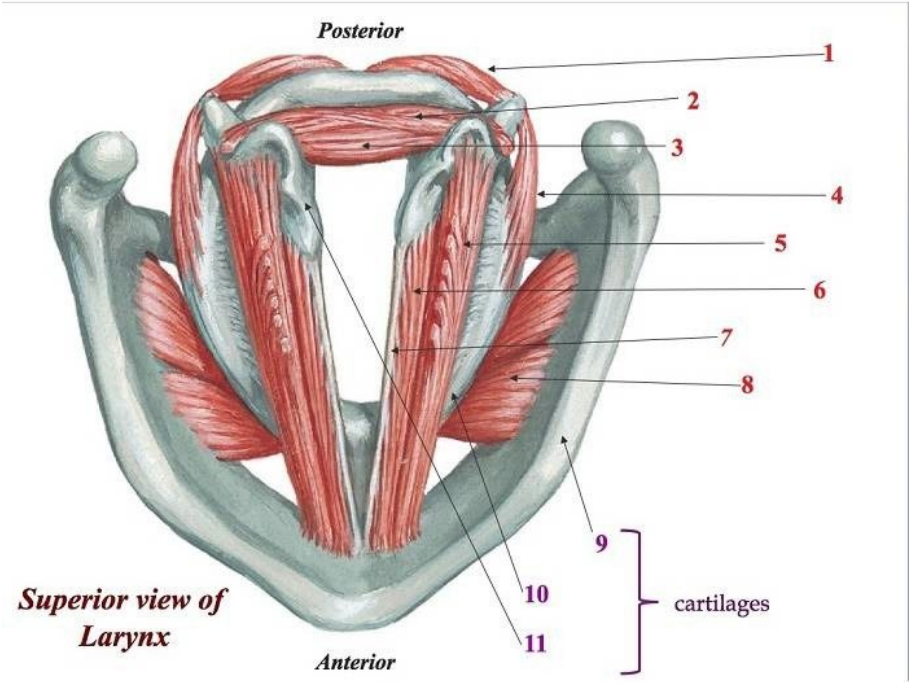


FOUR NECESSARY ACTIONS FOR PHONATION

- Vocal folds must be drawn together to close the glottis
  - Adduction
- VF must be drawn apart to open the glottis and stop phonation/aid with respiration
  - Abduction
- A way to lengthen/shorten the VF must also exist
  - thin, long folds for higher pitches
  - thick, short folds for lower pitches

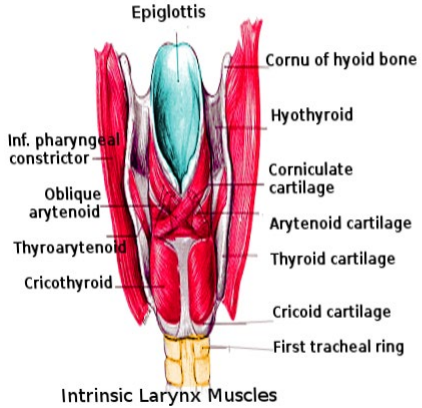


MUSCLES OF THE LARYNX

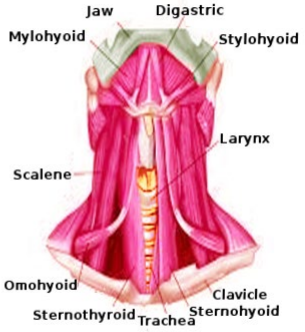


EXTRINSIC MUSCLES OF THE LARYNX

- Superior, middle, and inferior constrictor (swallowing; inferior also elevates larynx
- Laryngeal elevators
  - Stylohyoid
  - Digastric
  - Mylohyoid
  - Genioglossus
  - Hyoglossus
  - Thyrohyoid
- Laryngeal depressors
  - Sternothyroid
  - Sternohyoid
  - Omohyoid



Intrinsic Larynx Muscles



Extrinsic Larynx Muscles

ONSET AND OFFSET OF VOCAL TONE

- Three main types of vocal onset and offset
  - Glottal
  - Aspirate
  - Balanced

- Optimal tone requires union of airflow and tension
  - too much air = breathy
  - too much tension = forced/pressed
  - ‘flow’ phonation is best

CONCLUSION

- Though the larynx's main job is to protect the airway, it is capable of creating the sound required for human communication
- Knowing the anatomy and its function will not produce good singing; but allows us to focus on technique that has a physiological/scientific foundation
- Principal sources
- THANK YOU to Emerald Choral Academy