



JOHNS HOPKINS  
M E D I C I N E

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# Vocal Cord Paresis: Background and Case Reports

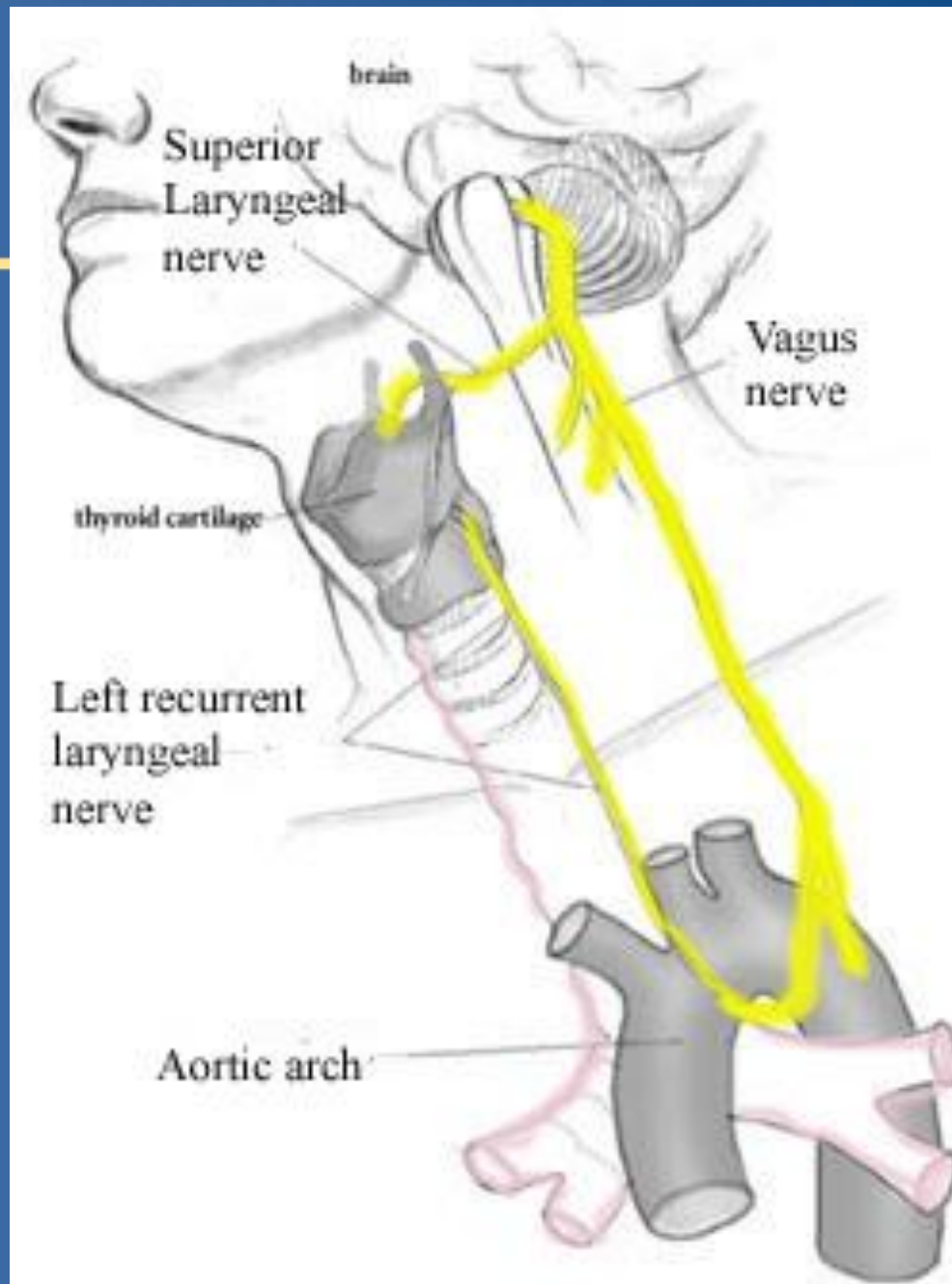
The Greater Baltimore Medical Center,  
The Johns Hopkins Voice Center at GBMC  
Stroboscopy Grand Rounds

# Definitions:

- **Paralysis:** No movement
- **Paresis:** Hypomobility
- **Synkinesis:** Aberrant regrowth of the laryngeal nerves.

# Anatomy/Nerves:

- **Recurrent Laryngeal Nerves:** Different Course...
- -Right-Loops behind R subclavian artery (nonrecurrent possible)
- -Left-Passes inferoposteriorly to aortic arch

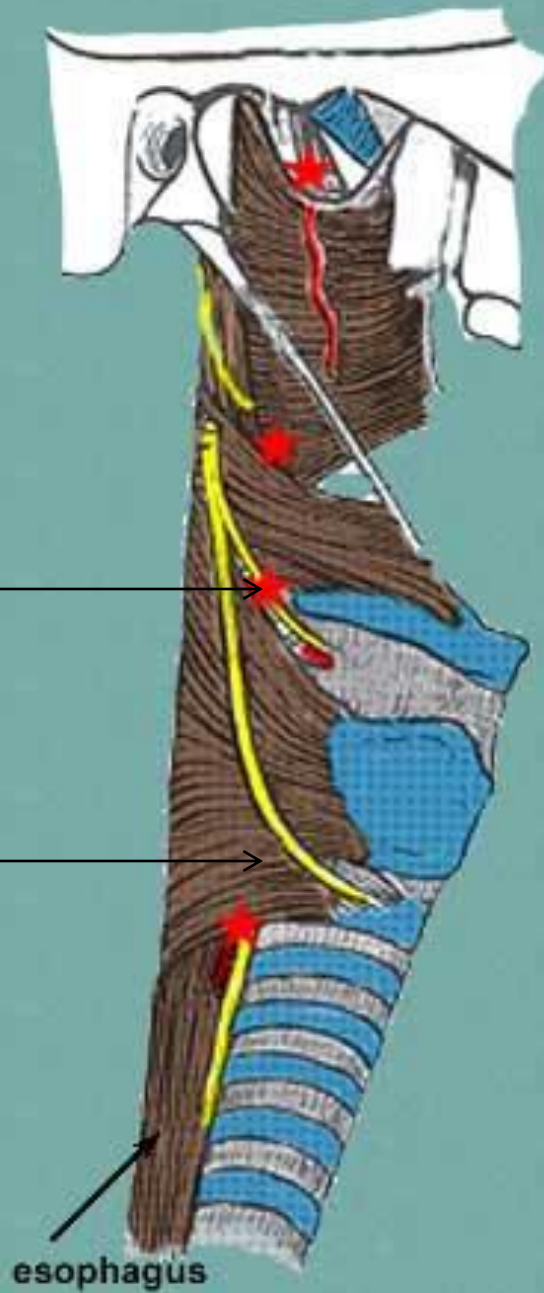


# Anatomy/Nerves:

- **Superior laryngeal nerve:** Travels inferiorly, medial to carotid artery. Splits into 2 branches at hyoid. Internal SLN penetrates thyrohyoid membrane with laryngeal a., external division provides motor innervation to cricothyroid m.
- Note: Find external SLN 1 cm superior to superior pole of thyroid.

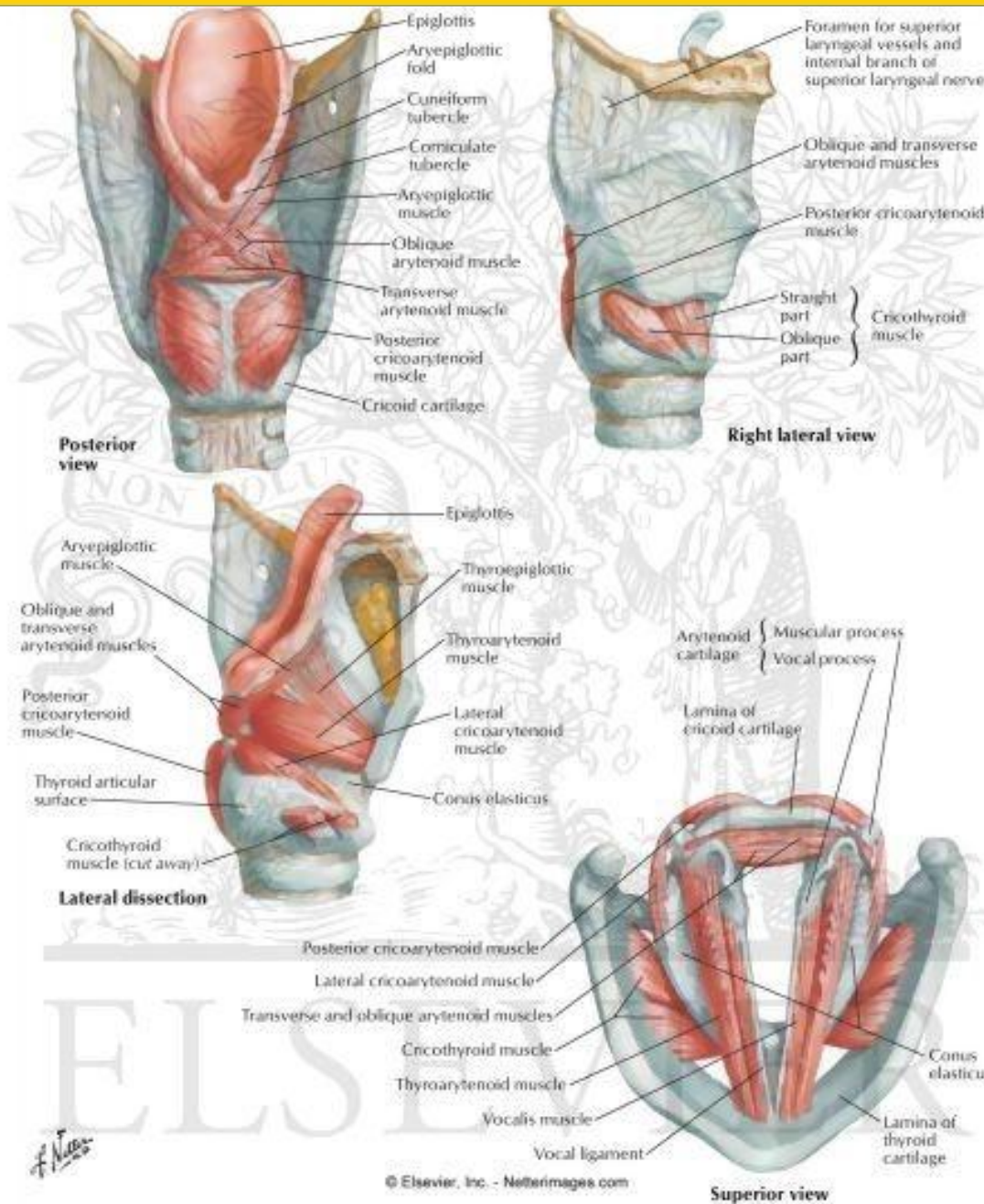
Internal b. SLN

External b. SLN

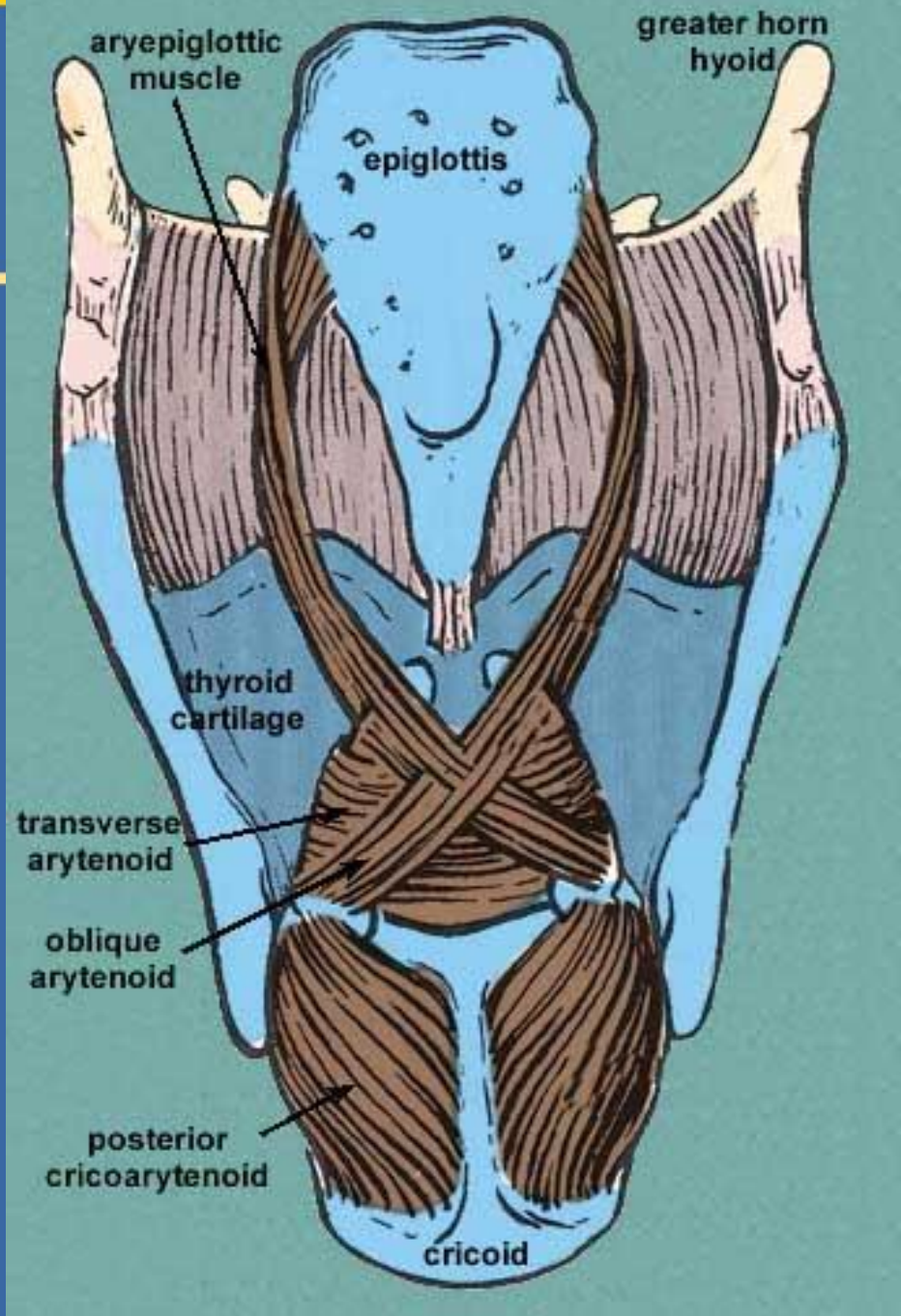


# Anatomy/Muscles:

- RLN Innervates 4 muscles
- Adductors: Thyroarytenoid, lateral cricoarytenoid
- Abductor: Posterior cricoarytenoid
- Interarytenoid m-adduction and closure of posterior glottis







# Occurrence:

- Highly variable depending on cause:
- Iatrogenic-seen in thyroid surgery
- Idiopathic: unknown
- Large number likely unidentified

# Causes:

- **Many causes:** iatrogenic, idiopathic, trauma, neurologic ds (MS, ALS, MG, Guillain-Barre, Parkinson ds), local tumor infiltration (thyroid cancer, LN spread, Pancoast tumor), infection (Lyme), collagen-vascular ds, CVA, CNS tumors

# Presentation:

- **VC Paresis:** VC hypomobility due to neurologic injury
- **Presents as:** dysphonia, loss of upper register of voice, hoarseness, breathiness, choking, decreased vocal stamina

# Sunderland Classification:

- First thru Fifth Degrees of Injury
- First usually with complete recovery, fifth with more permanent changes

# Synkinesis:

- **Crumley Classification System:**
- I-normal voice/airway
- II-spastic VC that twitches w/o control
- III-tonic adduction of VC, compromised airway
- IV-tonic abduction of VC, breathy voice and risk of aspiration

# Evaluation:

- History
- Physical Exam-mirror exam, laryngoscopy, videostroboscopy
- EMG

# EMG:

- Stimulate cells to produce action potential
- Innervation ratio (of motor unit)
- Electrodes placed
- Measure muscle fiber action potential
- Inserted into CT, PCA/LCA, Vocalis, TA
- Insertion, rest, min contract, max contract



# EMG:

- Mild-decrease in recruitment 1-30%
- Moderate 31-60%
- Severe 61-99%
- Paralysis-No observable recruitment

# EMG:

- Abnormal Findings:
- -increased insertional activity:  
myopathic and neurogenic
- -repetitive discharges: neuropathic  
process

# Treatment

- Voice therapy
- VC injection
- Thyroplasty medialization
- Laryngeal pacing (FES)

# Case 1: female vf paresis & presbylarynges

- 69 yo female
- R VC paresis and presbylarynges
- Multiple injections (saline, radiessse gel, and calcium hydroxylapatite)

# Case 1 Video: female vf paresis & presbylarynges



[CLICK HERE for video](#)

# Case 2: female, right tvf paresis

- 56 yo female
- R VC paresis
- Also w/ supraglottic hyperfunction and phonotraumatic nodules

# Case 2 Video: female, right tvf paresis



# Case 2 Video: female, right tvf paresis



[CLICK HERE for video](#)



# Case 2 Video: female, right tvf paresis, injection radiesse



[CLICK HERE for video](#)

# Case 3: male, left tvf paresis

- 54 yo male
- L VC paresis
- \*Transcervical injection augmentation

# Case 3 Video: male, left tvf paresis



# Case 4: female, right tvf paresis & presbylarynges

- 83 yo female
- R VC paresis and presbylarynges
- Previous bilateral Radiesse gel injections

# Case 4 Video: female, right tvf paresis & presbylarynges



# The END

**Questions: call 443-849-8451**  
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