Role of Speech-Language Pathology and RRP

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Three Subsystems of Voice

- Respiratory System
- Vibratory System
- Resonating System
Respiratory System

- Lungs
- Diaphragm
- Chest Muscles
- Abdominal Muscles
Vibratory System = Larynx ("Voice Box")

• Role in Sound Production, Breathing, and Airway Protection

• Key Components
  – Cartilages
  – Muscles
  – Houses Vocal Folds
  – Nerves
Laryngeal Cartilages

• **Thyroid**
  – Largest
  – 2 Plates Form Angle, Which Determines the Prominence of the “Adam’s Apple”

• **Cricoid**
  – Sits on Top of Trachea
  – Ring-Shaped Base of Laryngeal Framework

• **Arytenoids**
  – Vocal Ligaments and Intrinsic Muscles Attach to These
  – Open and Close Vocal Folds

• **Corniculates**
• **Cuneiforms**
• **Epiglottis**
Laryngeal Muscles—Intrinsic

Adductors
- Intra-Arytenoid
- Lateral Cricoarytenoid
- Cricothyroid
  - Increases Pitch
- Thyroarytenoid
  - Decreases Pitch
  - Main Muscle of Vocal Folds

Abductor
- Posterior Cricoarytenoid
  - Only Muscle that Brings Vocal Folds Away From Midline
Laryngeal Muscles—Extrinsic

• One Attachment to Laryngeal Structure and One Outside Larynx

• Known as the Strap Muscles

• Raise or Lower Larynx for Swallowing, Pitch Changes, and Singing

• Suprahyoid
  — Above Larynx
  — Raise Larynx

• Infrahyoid
  — Below Larynx
  — Pull Larynx Down
Vocal Folds

• 5 Layers
  – Epithelium
  – Lamina Propria
    • Superficial
    • Intermediate
    • Deep
  – Vocalis Muscle

• Vocal Folds Vibrate in a Wave-Like Motion
• Pressure Builds Up Below the Folds = Vocal Folds Forced Open
• Drop in Pressure and Recoil Forces = Vocal Folds Forced Closed
vf = vocal folds
• Growths in Anterior Aspect (Front)
  • Can Significantly Impact Voice due to V-Shape Structure of Vocal Folds

• Growths in Posterior Aspect (Back)
  • Might Be Asymptomatic
  • Might Not Affect Voice If Small
Resonating System

• Vocal Tract Modulates Vibration of Vocal Folds
  – Pharynx
  – Mouth
  – Nasal Passages

• Provides Individual Quality of Voice

• Articulators Modify Sounds Into Words
  – Tongue
  – Soft Palate
  – Lips
Nerve Input

- Superior Laryngeal Nerve
- Recurrent Laryngeal Nerve
Papilloma Above Level of Vocal Folds—No Voice Symptoms

Anterior Laryngeal Web From Repeated Surgeries

Papilloma Above Level of Vocal Folds—No Voice Symptoms

Thickening of Interarytenoid Space, Suggestive of Reflux

My Larynx With Papilloma

Arytenoid Cartilages Open and Close Vocal Folds
Role of Speech-Language Pathologist
• Perform Videostroboscopy in Conjunction with ENT
• Complete Comprehensive Voice Evaluation
  – Perceptual and Acoustical Data
• Identify Vocal Misuses/Abuses and Provide Alternatives
• Recommend Environmental Modifications (Work or Home)
• Educate Regarding Vocal Hygiene
• Reinforce Medical Management of Reflux/Allergies
• Direct Voice Therapy
Direct Voice Therapy

• Respiratory Support Exercises
• Vocal Function Exercises
  – To Balance 3 Sub-Systems of Voice
• Resonance Exercises
  – To Minimize Hyperfunction/Phonotrauma
• Laryngeal Relaxation Exercises
  – Easy Onset/Yawn-Sigh/Open Mouth Approaches
• Extra-Laryngeal Relaxation Relaxation Exercises
  – Neck/Shoulder/Chest/Oral-Motor Stretches
• Circumlaryngeal Massage/Myofascial Release