Vocal Fold Lesions and Response to Voice Therapy

SARAH L. SCHNEIDER, MS, CCC-SLP
UCSF VOICE AND SWALLOWING CENTER

Utility of Videostroboscopy

- Traditional laryngoscopy can identify a vocal fold lesion
- Stroboscopy must be used to identify the vocal fold vibratory parameters and how they are altered by the lesion

Treatment of Benign Vocal Fold Lesions

Options

1. Voice Therapy
2. Phonomicrosurgery

Utility of Videostroboscopy

- Vibratory parameters aid in differentiating lesions
- Inform decision making
  1. Predict response to therapy
  2. Potential timing of surgical intervention
Benign Vocal Fold Lesions

- **Nodules**
  - Bilateral symmetric lesions
  - Mucosal / superficial
  - Physiologic Effect - Mucosal wave is present

- **Polyps**
  - Unilateral or bilateral
  - Gelatinous vs. fibrotic vs. vascular
  - Sessile vs. pedunculated
  - Physiologic Effect - Mucosal wave is present

- **Cysts**
  - Unilateral or bilateral
  - Submucosal lesion
  - Physiologic Effect - Mucosal wave is reduced/absent over the lesion

Treatment of Nodules

- **Voice therapy**
  - Consensus opinion - 91% of respondents
    - First mode of treatment for nodules is voice therapy (Sulica and Behrman, 2003)
  - Purpose
    - To reduce phonotrauma – voice hygiene
    - Improve airflow and oral resonance

Treatment of Polyps/Cysts

- **Consensus on treatment does not exist** (Sulica and Behrman, 2003)

- **Cohen and Garrett (2007)**
  - 435 patients diagnosed with polyps and cysts
  - 49.1% experienced vocal improvement following voice therapy regardless of diagnosis
  - Polyps – those with gelatinous polyps were more likely to experience improvement with voice therapy
  - Limitations: stroboscopic findings used for diagnosis although improvement was based on patient report
Voice Therapy Methods

- **Indirect Voice Therapy**
  - Vocal hygiene

- **Direct Voice Therapy – rebalancing voice production**
  - Resonant Voice Therapy
  - Flow Phonation
  - Vocal Function Exercises

Empirical Effects of Direct Voice Therapy

  - Prospective study
  - Direct voice therapy was superior to indirect voice therapy

Theoretical Effects of Direct Voice Therapy

- **Verdolini (1998)**
  - Vocal folds approximate to .5-1mm prior to the onset of phonation
  - The release of airflow adducts the musculomembranous portion of the vocal folds

- **Gray et al**
  - Suggest that vocal fold vibratory frequencies effect mRNA expression
  - Regular, efficient vibration of the vocal folds may promote favorable mRNA expression and better healing
    - i.e. Voice therapy

Case Study #1

- 46 year old female
- Mother of three, untrained singer, sings and very active at church, leads children's choir
- Intermittent voice problems throughout her life that she always pushed through
- Onset of current problems x 3 three months when she began leading a children's choir
- Diagnosed in another practice with bilateral vocal fold nodules
- One month of complete voice rest
- Diagnosed with vascular mass and surgery was recommended
- Presents to our clinic for a second opinion
- Primary complaints: vocal roughness, fatigue and strain with use and the loss of her singing voice
Pre-therapy

Voice Therapy

- Number of sessions –
  - Evaluation and 3 therapy sessions
- Time span –
  - 2 months
- Therapy Techniques -
  - Vocal hygiene, Laryngeal massage
  - Resonant voice therapy
- Patient perception –
  - Improved quality, Decreased vocal fatigue, Intermittent periods of vocal strain
- She has resumed normal voice use at home although is still not participating in her usual church activities

Post-Therapy

Case study #2

- 39 Year old female
- Professional actor, avocational singer
- Previous excision of vocal fold nodule 20 years ago
- Onset of voice of current voice x4-5 months with reduced vocal range and vocal instability – insidious onset
- Diagnosed in another office with edema/erythema and placed on 40 days voice rest
  - Improvement but not back to baseline
  - Inflammation returned after resuming normal voice use
- Presents to our clinic for further evaluation
- Primary complaints: persistent hoarseness, decreased vocal range, increased vocal effort and vocal fatigue
Pre-therapy

Voice Therapy

- Number of sessions -
  - Evaluation and 4 therapy sessions
- Time span –
  - 7 weeks
- Techniques –
  - Vocal hygiene, Laryngeal massage
  - Stretch and Flow phonation, Resonant Voice Therapy
- Patient perception – voice improving, decreased vocal recovery time, difficulty varying pitch
- Exam with reduced vocal fold edema surrounding lesion
- Patient continued voice therapy and worked professionally for one year

Post-Therapy

Case Study #3

- 59 year old female
- Professional singer – primarily rock
- Onset of voice problems x3 months with a cold/persistent cough
- Prior to this she would often experience hoarseness for 1 day following performance and take 1 day to recover; currently longer recovery time and does not return to baseline
- Primary complaints: hoarseness and vocal fatigue after performances, decreased range, burning sensation with prolonged speaking
Pre-therapy

Voice Therapy

- Number of sessions –
  - Evaluation and 1 therapy session
  - Reevaluation 4 weeks s/p evaluation with MD showing decreased size of lesions
  - 4 additional therapy sessions
- Time span –
  - 2.5 months
- Techniques –
  - Vocal Hygiene, Laryngeal massage
  - Flow phonation, Resonant voice therapy
- Patient perception –
  - Patient reports that her voice is better now that prior to her voice problems

Post-Therapy

Highpoints of Therapy

- Eliminate or reduce ongoing vocal trauma
  - Day of evaluation through week 1
  - Consider voice rest (complete silence)
  - Patient ‘buy in’ – feeling or hearing balanced voice production and identifying the difference

- Establish balanced voice production techniques
  - First follow-up therapy visit from evaluation through week 6
  - Typically requires 4 sessions
### Expectations of Therapy

**4-6 weeks following initial evaluation**

- **Perceptual Voice Evaluation**
  - Confirm more balanced voice production
  - Reduced vocal roughness

- **Physical Examination**
  - Reduced lesion size
  - Improved vibratory parameters

### Further Treatment Options

- Accept improved voice production
- Continue behavioral intervention
- Re-evaluate continued improvement
- Consider need for surgical intervention
  - Lack of structural change in patients who demonstrate compliance
  - Patients who have reached maximum vocal benefit but are unable to maintain reasonable/realistic vocal demands

### Conclusions

- Lesions that respond to behavioral voice change
  - Nodules – high consensus
  - Polyps – no consensus
  - Cysts - no consensus
- Therapy requires use of:
  - Vocal hygiene/elimination of voice abuse (phonotrauma)
  - Establishing balanced voice production using eclectic therapy techniques
- Changes are observable within 4-6 weeks in compliant patients
- If no changes are observed is it due to
  - Lesion characteristics
  - Inability to accurately judge patient compliance

### References