Manual Circumlaryngeal Techniques in the Assessment & Management of Voice Disorders

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“Primary” Muscle Tension Dysphonia (pMTD)

- A voice disorder in the absence of visible structural or neurological laryngeal pathology.
- Excess or dysregulated activity of the intrinsic and extrinsic laryngeal muscles is the primary (proximal) cause of the voice disturbance.
- Larynx is often suspended high in the neck & the entire hyoid-laryngeal sling is stiff.
Symptoms of Excess Laryngeal Muscle Tension

- Laryngeal tenderness, soreness, pain, tightness which intensifies with extended voice use
- Unilateral symptoms are more common
- Pain radiates to one or both ears
- Vocal fatigue, increased effort, “swellings”
- Dynamic range restricted
“All patients with voice disorders, regardless of the etiology should be tested for excess musculoskeletal tension, either as a primary or secondary cause of the dysphonia”
Muscle Tension Voice Disorders

- Manual Circumlaryngeal Techniques serve as powerful diagnostic and treatment tools…
  - Focal Palpation
  - Manual Laryngeal Reposturing Maneuvers***
  - Circumlaryngeal Massage

- Determining the contribution of excess or dysregulated laryngeal muscle activity is critical to proper diagnosis and the selection of appropriate treatments.

- Avoid unnecessary medical or surgical management
Effects of Manual Circumlaryngeal Techniques

- Pre-/Post-Treatment Samples (Rainbow Passage)
- Single Treatment Session
Pre-/Post Rx Case Examples

Muscle
Tension
Dysphonia

Pre & Post-Rx
Single Session
Assay the Signs of Excess Musculoskeletal Tension

- Focal Palpation to determine:
  - Tenderness &/or Pain
  - Mobility of the Larynx
  - Presence of muscle nodularity or taut m. bands
  - Extent of Laryngeal Elevation

- “Jump” Sign
Focal Palpation of the Laryngeal Area

- Pressure is directed over the:
  - Major horns of the hyoid
  - Superior border of the thyroid cartilage
  - Anterior border of SCM
  - Suprahyoid musculature

- Determine size of the thyrohyoid space

- At Rest and During Phonation
Assess the Voice Effect of Laryngeal Reposturing/Repositioning

- Brief manual displacement, sustained pressure &/or downward traction applied to the larynx can reveal valuable information re: potential for improved voice (i.e., voice stimulability testing).
- While the patient vocalizes, repositioning or stabilizing the larynx can interfere with habituated patterns of muscle misuse.
- Brief “moments” of voice improvement can be identified, shaped and reinforced with digital cueing.
- Digital Cues faded, patient relies on vibrotactile, kinesthetic, and auditory feedback to maintain improved voice, muscle balance and laryngeal positioning.
Observe the Voice Effect of Three Laryngeal Resposturing Maneuvers

1. Digital compression in posterior direction within region of the hyoid bone.
   - Hyoid “Push-back technique”.
   - Vary height and pressure, i.e., suprathyroid (BOT), hyoid, infrathyroid, T-H space, thyroid notch, and thyroid prominence.
“Push-Back” Maneuver (#1)
Observe Voice Effect of Laryngeal Reposturing (#2)

2. Impede laryngeal elevation by applying downward traction over the superior border of the thyroid cartilage.
“Pull-Down” Maneuver (#2)
Observe Voice Effect of Laryngeal Reposturing (#3)

3. Medial Compression and downward traction with most pressure directed over posterior aspect of thyroid cartilage (& within the thyrohyoid space).

- Non-adducted hyperfunction.
Case Illustrations

- Patients free of structural or neurological pathology (MTD).
- “Multiple” Cases- Single Session (treatment effects not isolated to a small number of patients).
- Diverse perceptual attributes (i.e., severity and quality)
- Observe the voice effect of laryngeal reposturing maneuvers…

Voice Samples—
- pre-reposturing,
- During reposturing (trial & error),
- post-reposturing, with digital cues faded.
Manual Laryngeal Reposturing

Case Illustrations

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Negative Practice (Self-Efficacy)

- Patient quickly alternates between disordered voice and normal voice.
- Instills a sense of mastery.
- Clinician provides anchoring techniques to reestablish normal voice.

Pre Rx

Negative practice (flip!)
Manual Laryngeal Tension Reduction (a.k.a Circumlaryngeal Massage)
Circumlaryngeal Massage (CLM)

- Circular motion over the tips of the hyoid bone.
- Thyrohyoid space
- Posterior border of the thyroid c.
- Medial and lateral suprahyoid m.
Basic Principles of CLM

- Locate sites of focal tenderness, nodularity, tautness.
- Progress from superficial to deep pressure.
- Vary according to tolerance of patient.
- Patient vocalizes concurrently.
- Increase complexity of voice stimuli.
Indications of Improvement (Single Session)

- Voice quality
- Pain reduction/relief
- Normalized laryngeal height & mobility (Roy & Ferguson, 2001).
- Reduced muscle nodularity
Case Illustrations: MTD

Case Number 1

- 46 y.o. female
- 5 month hx of persistent dysphonia
- Numerous life stresses concerning financial, marital and family relations.
- Videolaryngoscopy revealed complete supraglottic constriction.
Case Number 1

Pre-Treatment

Post-Treatment
Circumlaryngeal Massage

Circumlaryngeal Massage

Case Illustrations
Response to Treatment (Severity Ratings) 
Roy et al., JOV, 1997, n=25.

- Improvement (post 1- at least 1 scale value less severe than pre-treatment rating) = 96%
- Improvement (post 1- at least 2 scale values less severe than pre-treatment rating) = 80%
- Normal or mildly dysphonic following treatment (post 1- < or = 2 on severity rating scale) = 64%
- Relapse (post 2 or post 3- at least 1 scale value more severe than post 1- rating) = 25%
- Further improvement following discharge (post 2 or post 3- at least 1 scale value less severe than post 1) = 17%
RELAPSE? – Interview Results

- Long-term follow-up, 68% report some evidence of recurrence of dysphonic symptoms.
- Recurrence is partial, rather than complete.
- Occurs within 2 mos. following treatment.
- Less than 4 days in duration; self-limiting (i.e., resolves spontaneously).
Dysphonia Severity (n=111)

N = 111, p < .001
Recent Evidence: pMTD and MCT’s
Recent Research on MTD & MCT’s


Hyolaryngeal Position in pMTD

Position of the Hyoid and Larynx in People with MTD (Lowell et al., 2012)

10 MTDs (pre-treatment) vs. 10 normophonics
Lateral Cephalogram

- Anterior-inferior hyoid
- Inferior thyroid cartilage
Results

- Both hyoid and laryngeal positions were significantly higher “during phonation” for people with MTD than for people without voice disorders.
- Laryngeal Elevation during phonation in MTD ~10 mm (normals ~2mm)
- No differences at rest (as normalized to swallow-hold maneuver). Differences observed only during muscular activation during phonation.
Discussion

• Palpation scales and treatment approaches that focus on laryngeal manipulation during phonation seem essential/critical.

• CL Massage and Laryngeal Reposturing without phonation seem less likely to produce desirable effects.

- 10 patients with pMTD (4F, 6M)
- Each patient received a single treatment session of a two-staged treatment:
  - Stage (1): Abdominal Breath Support Training for Phonation (45 minutes).
  - Stage (2): MCT (45 minutes).
- Used the DSI to assess treatment outcomes before and after each stage.
- DSI= Dysphonia Severity Index (DSI)- a multiparameter, weighted combination of MPT, Highest Fo, Lowest Io, and jitter.
Results

Significant improvement in DSI only after the 2\textsuperscript{nd} stage of treatment (i.e., after MCT)
Discussion

• 45 minutes of MCT is more effective than the same amount of time spent on abdominal breath support.
• First study to compare MCTs against an alternate treatment approach.

- 16 music students with perceptually normal voices (5M, 11F) were randomly assigned to (1) 20 minutes of MCT or (2) control (vocal rest).
- Dysphonia Severity Index (DSI)- a multiparameter, weighted combination of MPT, Highest Fo, Lowest Io, and jitter.
- DSI significantly improved in MCT group only after 20 minutes.
- 75% of MCT subjects reported improvement in speaking or singing voice.
- Role of MCT in warm-up of singers?
- Duration of Effect?
Manual Circumlaryngeal Techniques (including Larynx Reposturing probes)

- Determine the contribution of laryngeal and extralaryngeal muscle dysregulation to the dysphonia.
- “unloading” the larynx provides a distilled version of the dysphonia.
- Assures proper diagnosis and management.
References


Van Lierde, K., Delay, S., Clement et al. (2004). Outcome of laryngeal manual therapy in four Dutch adults with...


