Role of Physical Therapy in Treatment of Voice Disorders

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Neck Pain in Voice Disorders

>3x odds of chronic dysphonia among patients with cervicalgia

Who are these patients?

- Singers
- Performers
- Athletes
- Exercise with weights
- Heavy computer & phone users
- Teachers

Etiologies of Cervicalgia

- Stress
- Posture
- Temporomandibular Joint Disorders
- Breath support
- Neck injury
- Surgery
- Fibromyalgia
- Chronic fatigue

Predisposing Factors
- Stress
- Posture
- TMJ
- Breath Support
- Neck Injury
- Surgery
- Fibromyalgia
- Chronic Fatigue

Cervicalgia

Muscle Tension Dysphonia

MTD Manifestations
- Inappropriate muscle tension
  - Ventricular fold compression - AP, lateral
  - Suprahyoid, infrahyoid, cricothyroid space, tongue base
  - Manifest in head, neck and shoulder region
  - Abdomen - Diaphragm
- Popular compensation tools:
  - Jaw
  - Tongue base
  - Strap muscles

Treatment
- Optimize Laryngeal Environment
- Voice Therapy
- Alternative Approaches

Team Approach
- Laryngologist
- Speech Pathologist
- Vocologist/Vocal Pedagogue
Goals of Therapy

Eliminate compensatory muscle tension and extraneous muscular effort

Holistic Approach

- Perhaps voice disorder manifestation of greater problem?
- Perhaps more systemic therapy indicated?
  - Psychological
  - Muscular
  - Pulmonary

Myopia?

Alternative Approaches

- Circumlaryngeal Massage
- Feldenkrais Technique
- Stretching
- Alexander Technique
- Yoga
- Qigong/Taoist Techniques
Team Approach

- Laryngologist
- Speech Pathologist
- Vocologist/Vocal Pedagogue

Manual Therapy

- 1981 – Gu & Fan studied effects of traditional massage on glottic insufficiency in singers
- 1990 - Aronson - circumlaryngeal massage
- 1991 - Chen - massage for treatment of voice d/o
- 1993, 1997 - Roy - circumlaryngeal massage
  - efficacious for all voice users
  - especially those with compensatory muscle behavior


Team Approach

- Laryngologist
- Speech Pathologist
- Vocologist/Vocal Pedagogue
- Physical Therapist?

Myofascial Release

- [Image of a figure performing myofascial release]
Myofascial Release

- 1904 Proposed by Stockman
- Fibrosis and excessive collagen adhesions in fascia
- Direct mechanical stimulation potentially reverse
- Theoretically breaks up excessive collagen adhesions through soft-tissue release techniques
- Slow, sustained pressure effects fascial changes

Myofascial Release

- Science NOT well-understood
- Focus is fascial system

Fascial Layers

- Deep Cervical Fascia
- Superficial Layer
  - Strap
  - Trapezius
  - SCM
- Prevertebral Layer
  - Longus colli
  - Longus capitis
  - Scalenes
  - Deep cervical m.
### Myofascial Release

- Vanderbilt Program integrated for 5 years
- Physical Therapist
- Two 1-hour sessions/week for 4 – 6 weeks
- Manual therapy (3 - 5 min manipulations)
- Incorporates:
  - Relaxation techniques
  - Stretching
  - Circumlaryngeal Massage
  - Posture

### Dayani Program

<table>
<thead>
<tr>
<th>Visit #</th>
<th>Manual Technique</th>
<th>Exercise</th>
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<tbody>
<tr>
<td>1</td>
<td>Evaluation</td>
<td>Relaxation</td>
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<tr>
<td></td>
<td></td>
<td>Laryngeal massage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cervical Stretches</td>
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<td></td>
<td></td>
<td>Ergonomics, Posture</td>
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<tr>
<td>2</td>
<td>Circumlaryngeal massage SCM and scalene</td>
<td>Review above</td>
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<tr>
<td>3</td>
<td>Suprahyoid &amp; infrahyoid release</td>
<td>Yoga poses for cervical extension stretch</td>
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<tr>
<td>4</td>
<td>Pectoralis release</td>
<td>Pectoralis corner stretch</td>
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<tr>
<td></td>
<td>Sternal Glides</td>
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<td>Diaphragm release</td>
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<tr>
<td></td>
<td>Rib cage release</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Posterior thoracic</td>
<td>Theracane, tennis ball</td>
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<tr>
<td></td>
<td>Scapula</td>
<td></td>
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<td></td>
<td>Posterior neck (trapezius)</td>
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<tbody>
<tr>
<td>6</td>
<td>Intra- &amp; extra-oral TMJ</td>
<td>Intra-oral release</td>
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<tr>
<td></td>
<td>Intra- &amp; extra-oral masseter</td>
<td>Masseter release</td>
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<td></td>
<td>Palatal muscles</td>
<td>Tongue stretches</td>
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<tr>
<td>7</td>
<td>Circumlaryngeal massage</td>
<td>Scapula strengthening</td>
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<tr>
<td></td>
<td>Suprahyoid &amp; infrathyroid release</td>
<td>Core strengthening</td>
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<td>Cervical traction</td>
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<tr>
<td></td>
<td>Suboccipitals</td>
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<tr>
<td>8</td>
<td>Pelvis including psoas</td>
<td>Stress management</td>
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<tr>
<td>9</td>
<td>Thyroid cartilage shifts</td>
<td>Discuss massage therapy for maintenance</td>
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<td>Thyrohyoid space release</td>
<td></td>
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<tr>
<td>10</td>
<td>Any scar massage PRN</td>
<td>Self scar massage PRN</td>
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<tr>
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<td>Hamstring, psoas, etc PRN</td>
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</tr>
<tr>
<td>11</td>
<td>Repeat #7</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Repeat #6</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Directed based on patient need</td>
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### Patient Instructions

- Practice exercises at home
  - Hold continuous pressure for 90 seconds
- Massage for back PRN during therapy
  - 1 – 2-times per month afterward for maintenance
    - Focused primarily on lower trapezius m.
Experience

- Spring 2010 – September 2011
- Inclusion: Completed PT regimen

Outcome: Patient specific functional scale (PSFS)
- Rate 3 tasks, scale 0 – 10 (normal):
  - Singing
  - Singing upper range
  - Talking loudly
  - Taking deep breath
  - Swallowing


Experience

- N= 78
- PSFS improvement (Mean ± SD):
  - 2.19 ± 1.36
- Trends:
  - Fibromyalgia need longer course of therapy
  - Scalenes > Strap muscles > others
  - Patient compliance improves results

Scalenes?

- Accessory muscles?
- Fight or Flight?
- Postural?
- Anxiety?
Accessory Muscles

Dyscoordinated Diaphragmatic Breathing
Accessory Muscle Recruitment
Reliance increases tension:
1. Scalenes
2. Trapezius
3. Strap muscles
   Cervicalgia
   Voice Disturbance

Conclusions

- Myofascial release is ONLY an adjunct to voice therapy
- Program adapts approaches from other alternative therapies
- Focus on full body and postural aspects
- Promising results: decreased muscle tension & improved voice
- Send to PT who does myofascial release technique

Acknowledgements

- C. Gaelyn Garrett, MD
- Carey Tomlinson, PT
- Barbara Jacobsen, PhD
Feldenkrais Technique

- Moshe Feldenkrais
- “Awareness through movement” (ATM)
- Multitude of exercises designed for different areas of body that tend to carry tension
- Helps reduce excessive muscle tension
- Increases awareness of holding tension
- Optimize posture thereby improving breathing and connection to voice production

Alexander Technique

- Acting – Voice Technique
- Famous orator – Alexander – kept losing voice on stage
- Used mirrors to analyze technique to figure out what was barriers vocally
- Unlearning behaviors or postures that produce tension
- Releases unwanted tension through increased awareness of postural alignment with relationship to spine
- Observed neck muscles tighten up prior to phonation resulting in lowered voice and disrupted posture
- Hudson reviewed role in improving respiration