Hand therapy gems for the non-hand therapist practitioner across adult practice settings.

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Disclosure/Acknowledgements

* Rhonda Powell, OTD, OTR/L, CHT
Outline

* Introduction
* Conditions:
  * Numbness and tingling
  * Pain
  * Stiffness
* Questions
Introduction
Detective Work

Puzzle pieces
- Subjective
- Objective
- Occupations
- Anatomy

Treatment
- Client education
- Occupation based interventions
- Evidence based practice
Nerves
(numbness/tingling)

* Median
* Ulnar
* Radial
Muscles (pain)

- Extrinsic
- Intrinsic
Osteology/Joints
(stiffness)

* Articulations
* Planes of movement
* Origin/insertions
Movements
Palmar Anatomy

Image: AAFP.org
Numbness/Tingling
Numbness and Tingling

* **Subjective**
  * “I am dropping things”
  * “I wake up at night”
* **Temporal**
* **Activities**

* **Observation**
  * Muscle wasting
  * Muscle dysfunction
    * Why does someone “claw”?*
  * Subluxation of nerve
Numbness and Tingling
Common Conditions: Numbness and tingling

* Carpal tunnel syndrome
* Cubital tunnel syndrome
* Ulnar tunnel
Carpal Tunnel Syndrome
CTS Etiology

- Anatomic Variation
- Tumors
- Inflammatory Disease
- Shifts in fluid balance
- Trauma
- Repetitious Use
CTS Associated Factors

* Age
* Female > Male
* Thyroid disease
* Obesity
* Diabetes
* Smoking
Evaluating for CTS

- **Subjective**
  - History

- **Objective**
  - ROM
  - Strength
  - Clinical observation
  - Sensation
  - MMT
  - Provocative Tests
Provocative Tests

- Tinels
- Phalens
  - Possible cofounding factor?
- Carpal compression (CTS)
Clinical tests for CTS: Sensitivity / Specificity

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity %</th>
<th>Specificity %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phalen’s</td>
<td>67-88 (68*)</td>
<td>32-86 (73*)</td>
</tr>
<tr>
<td>Carpal compression</td>
<td>87 (64*)</td>
<td>90-95 (83*)</td>
</tr>
<tr>
<td>Tinel’s</td>
<td>26-73 (50*)</td>
<td>55-94 (77*)</td>
</tr>
<tr>
<td>Two point</td>
<td>22-33</td>
<td>81-100</td>
</tr>
<tr>
<td>Semmes-Weinstein</td>
<td>80-91</td>
<td>80</td>
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</tbody>
</table>

Carpal Tunnel: Conservative Treatments

- Activity Modification
- Education
- Orthoses
- Nerve glides
- Core/shoulder strength
CTS: Conservative treatments

- Activity modification
  - Work ergonomic
  - Repetitive activities
  - Tight grasp
- Orthoses
CTS: Conservative treatments

* Nerve glides

Skirven, et al, Page 670
Surgical interventions

* Carpal Tunnel Release
  * Surgery
  * Post-surgical rehab
Cubital Tunnel
Evaluation

- Elbow flexion test
- Card test
- Tinel’s
Cubital tunnel: Conservative treatments

- Activity modification
  - Talking on phone
  - Leaning on chair
- Orthoses
Cubital tunnel: Conservative treatments

- Nerve glides
- Core/shoulder strength
Surgical interventions

- Ulnar nerve transposition
- Rehabilitation
Ulnar Tunnel
(Guyon’s canal)
**Bottom Line**

- Nerve entrapment
  - Education
  - Early, conservative treatment
- CTS:
  - Little consensus on superior conservative treatment
  - CTR: Most common hand surgery performed by hand surgeons

Skirven, et al, Page 657
Pain
* Common conditions
  * Tendinosis
  * Arthritis
  * Nerve compression
  * Fractures
  * Traumatic injuries
  * Shoulder Impingement
“I have elbow pain”

- Lateral epicondyle
- Medial epicondyle
- Olecranon (Ulna)
- Biceptial Tuberosity of Radius
Lateral epicondylitis

* ECRB
* Aggravating factors
“Itis” vs “osos”

Tendonitis = inflammation
Tendonosis = degeneration
- No signs of inflammation in pts with long standing lateral epicondilytis

Skirven, et al, Page 1099
Typical onset of lateral epicondylitis—

* Women
* Ages 35-55
* Tennis players account for 5% of cases
Provocative tests
3 Interventions phases for lateral epicondylitis

1. Acute phase
   * Reduce pain/rest
     * Education/Activity modification
     * Orthoses

2. Restorative
   * Build up muscle mass
     * UE
     * Eccentric exercises

3. Maintain
   * Lifelong
Activity Modification

* Supination
* Elbow bent
* Grocery bags
* Typing
* Laundry
Support/Orthoses

Counterforce brace:
   Epitrain
   Band it
   Air cast
Wrist Immobilization
Occupation Based interventions

* BTE
  * Tool # 151: stapler, gun
  * Tool #102: prescription bottle
* Theraputty
  * Bottle cap
  * Weightbearing
  * Key
Gold standard Treatment?

- Systematic reviews
  - Few RCTs
  - Studies focus on 1 or 2 treatments vs. steroid injection
  - Most studies do not include education or exercise
Operative treatment

- 12 months or more
- Lateral epicondectomy
“I have thumb pain”

Possible conditions:
- Scaphoid Fx
- UCL lig
- Trigger thumb
- CMC arthritis
- STT arthritis
- Dequervains
Dequervains

- First dorsal compartment
  - APL and EPL - radial styloid
  - Thumb abduction and wrist ulnar deviation
Demographics

* Demographics:
  * Women 4:1
  * 35-55
  * Pregnancy and post-partum

Skirven, et al
Provocative testing
What activities would commonly aggravate this?
Activity modification

- Substitute power grip for pinch
- Neutral wrist
- Sustained pinch
- Built up grasp
Orthoses/Support

- Long opponens
Kinesiotape

* No tension on bases
* Tension:
  * 50-75% for mobilization
  * “Y” strip
1. Dequervain’s Kinesiotape
Mechanical correction

Cut 2 inch kinesiotape down the center to form two “tails”
Put the base down on the thumb.

Either:
Lay the tails down lightly (pictured)
OR
Let the tails hang

2. Dequervain’s Kinesiotape

Take tail #1, and place wrist into flexion.

Take tail #2, and place wrist into extension. Position kinesiotape along Thenar compartment and up radial side of the arm.

3. Dequervain’s Kinesiotape

- Treat the pain and referred pain
- Modalities, activity modification, exercises and support
Stiffness
Stiffness

* Common conditions
  * Osteoarthritis
  * Dupuytrens
  * Trigger finger
  * Phalanx fracture
  * Frozen shoulder
  * Rotator cuff tenodonitis
Osteoarthritis

- Enlarged joints
- Chronic
- Pain with use
- Tender to palpation
Symptoms
- Pain at base of thumb
- Slipping of thumb
- Weak grip / pinch
- “Can’t open jars”
- “Can’t turn a key”
Exam

* Subjective
* Temporal
* Occupations
* Strength
* AROM vs. PROM
  * PROM > AROM = tendon or nerve issue
  * PROM = AROM = stiffness
Interventions

- Rest
- Heat
- AROM
- Gentle strengthening
- Joint protection
- Orthosis
CMC OA Interventions

* Conservative
  * NSAID s
  * Splint
  * Steroid injection
  * Therapy

* Operative
  * Arthroplasty
  * Arthrodesis
Joint Protection (Beasley, 2012)

- Respect pain
- Balance Rest and activity
- Exercise in pain free range
- Avoid positions of deformity
- Reduce Effort and Force
- Use larger/stronger joints
CMC Support / Orthoses

- Custom orthoses
- Metagrip
CMC Support/Orthoses

- CMC comfort cool
- Kinesiotape
  - 1 inch “I”
Long opponens vs. hand based spica
- Both reduced pain, neither increased strength or comfort

Neoprene vs. orthoplast
- Both decreased pain/ increased function vs. no orthoses
- Orthoplast: better then neoprene for positioning /sublux
- 72% preferred soft neoprene for long term use

Evidence: Orthoses (Weiss et al)
Activity Modification

- Built up handles
  - Foam rollers: hair rollers
    - Decrease grip
  - Dycem
Dupuytren’s
Dupuytren’s
Dupuytren’s
Interventions

* There is no conservative management that has proven efficacy in improving the condition or ROM of dupuytren’s
* When to refer to physician
  * Surgical release
  * Injection
Trigger Finger
Trigger Finger

- Conservative management
  - Education
  - Activity modification
  - Orthoses
- Physician
  - Anti-inflammatories
  - Steroid injection
  - Surgical release
Thanks for your attention!
Resources

* ASSH. *ASSH Manual of Hand Surgery*
* Donatelli. *Physical Therapy of the Shoulder*
* Jenson. *Hand Secrets*
* Fundamentals of Hand Therapy
* Hand and Upper Extremity Rehabilitation (Burke, Higgins et al)