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Treatment Principles for 5 of the Most Common Upper Extremity Conditions

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Objectives

- By the end of the course, the participant will be able to recognize the most common upper extremity disorders seen by occupational therapists.
- By the end of the course, the participant will be able to identify the biomechanical changes that occur for each of these conditions.
- By the end of the course, the participant will be able to recognize the appropriate therapy interventions for treatment.
Common Conditions

- 1) Distal Radius Fracture
- 2) Carpal Tunnel Syndrome
- 3) DeQuervain’s Tenosynovitis
- 4) Trigger Finger
- 5) Mallet Finger

Fine Print…but important!

- All of the following treatments are guidelines
- No such thing as a protocol
- There is no substitute for using your own clinical judgment each visit
- Some of the following suggestions are evidence based – some are not necessarily...
Distal Radius Fracture

- Most common fracture
- Usually from a FOOSH (fall on outstretched hand)
- Wrist is almost always immobilized to allow fracture healing, then therapy if needed
- Usually can keep fingers and thumb moving early on to prevent stiffness and edema
- Usually can move forearm, elbow, and shoulder early too

Evidence

Handoll et al, 2006. Systematic Review of therapy treatment following cast immobilization for distal radius fracture - 15 randomized controlled trials - over 750 patients:

"We concluded that there was not enough evidence available to determine the best form of rehabilitation for wrist fractures"
Fracture Immobilization Stage - Evaluation

- Mechanism of Injury
- Surgical/Non Surgical
- X-Rays

Fracture Immobilization Stage

- Timing of this stage depends on fracture type, fixation, and healing
Mobilization Stage

- Client education important
- Activity modification
- Active and Passive ROM as indicated
- Orthoses for protection initially but then to improve ROM if needed
- Heat usually ok
- Strengthening later on if needed

Case

- 65 year old female
- Fell 7 weeks ago - # distal radius – To urgent care. Casted until today
- Sent to therapy with a referral that says:
  - “Healed DRF” – ROM, strengthening, etc..."
Assessment Findings

- Lives alone, works in an office
- Non-dominant hand
- Minimal swelling but some stiffness in fingers
- Able to oppose D3 with thumb
- Some pain over ulnar styloid – especially with forearm rotation and gripping
- Wrist ROM 20 ext, 40 flex, 20 degrees sup, 55 degrees pro

X-rays
Treatment ideas?

- Orthosis? For comfort but also for ROM!
- AROM or PROM?
- Heat or Ice?
- Modalities?
- Strengthening?
- Functional use?

Orthoses for ROM
Things to Watch For

- Tendon Adhesions
- EPL ruptures
- Ulnar sided wrist pain
- Finger stiffness

When are we done therapy?
Carpal Tunnel Syndrome

- Most common peripheral neuropathy
- Compression of the median nerve under the flexor retinaculum
- Some evidence to suggest lumbricals cause part of the issue
- Diagnosed with Phalens, Tinels, EMG
- Often treated with surgery, but for mild cases therapy trial is often indicated

Evidence

- Plastic and Reconstructive Surgery
- Issue: Volume 133(5), May 2014, p 1234–1240
- Copyright: ©2014 American Society of Plastic Surgeons
Evidence

- Preoperative splinting and exercise can decrease symptoms for milder cases
- Corticosteroid injections can be helpful
- Surgical release provides the best symptom relief – especially with more chronic or severe cases
- Post-operatively – no evidence to suggest splinting or other therapy is beneficial unless complications occur

Treatment Options

- Orthosis?
- AROM or PROM?
- Heat or Ice?
- Modalities?
- Strengthening?
- Functional use?
DeQuervain’s Tenosynovitis

- Pain in the first dorsal extensor compartment
- Most common tendon problem in the wrist
- Usually increases with pinch
- Best clinical provocative test is Finklestein’s test
- Make sure this is not CMC OA

Treatment Options

- This condition is an “itis”
- Means increased inflammation and pain
- All treatments should initially be directed towards decreasing inflammation and pain
Evidence


- Found nearly 70% improvement with a combination of splinting and cortisone injection
- 20% complete resolution with splinting alone

Treatment Ideas?

- Orthosis?
- AROM or PROM?
- Heat or Ice?
- Modalities?
- Strengthening?
- Functional use?
Trigger Finger

- Officially a stenosing tenosynovitis
- Often locking at night
- Easily diagnosed with palpation over A1 pulley while actively flexing
- Splint in extension
- Decrease inflammation
- Injection, pulley release if conservative management is not successful

Evidence - JHT, 2008 21(4):336-43

- Effectiveness of splinting of trigger finger
- Observational Design
- 6 weeks of splinting
- “After the use of a splint, there were statistically significant improvements for 4 of the 5 chosen outcome measures”
Treatment Ideas?

- Orthosis?
- AROM or PROM?
- Heat or Ice?
- Modalities?
- Strengthening?
- Functional use?

Extensor Tendon Zones
Zone 1

- Mallet injury
- Usually a closed injury – with flexion force applied to finger while there is tension on the terminal tendon
- Sometimes an avulsion fracture on the dorsal side of DIP (bony mallet), sometimes not (soft-tissue mallet)
- Both treated similarly

Mallet

When the tendon has been pulled off, it is impossible to fully straighten the tip of the finger.
Xrays

Initial Management

- Usually conservative management – pinned DIP if greater than 30% of joint surface involved
- Otherwise, just immobilize 6-8 weeks in slight hyperextension – with NO flexion allowed
- May include PIP – but allow motion so this doesn’t get stiff
Orthosis Examples


- RCT comparing custom splinting to stack splints and alumifoam
- N=64
- Compliance increases with custom splinting and led to significantly less treatment failures
Treatment Ideas?

- Orthosis – when to DC?
- AROM or PROM?
- Heat or Ice?
- Modalities?
- Strengthening?
- Functional use?

What We’ve Covered

- 1) Distal Radius Fracture
- 2) Carpal Tunnel Syndrome
- 3) DeQuervain’s Tenosynovitis
- 4) Trigger Finger
- 5) Mallet Finger
Thank You!

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