



PATRICIA SIEGEL OTD, OTR/L, CHT;
OCCUPATIONAL THERAPY GRADUATE PROGRAM

Why do my hands hurt?

AND WHAT CAN I DO ABOUT IT?

Agenda

A little anatomy (so we all speak the same language)

Common nerve disorders

A bit about bone

Tendinopathies

Anatomy

The Humerus

Only bone in the upper extremity

At the end of the bone (elbow) are the lateral & medial epicondyles



Radius/Ulna

Bones rotate over each other which allows us to carry a bowl of soup (supination) or turn the bowl over to pour the soup out (pronation)



The wrist and carpal bones

Wrist Flexion/Extension

Finger (and thumb) flexion/extension

Thumb opposition



Carpal Tunnel Syndrome

The most common peripheral neuropathy (nerve problem) treated by hand surgeons



Factoids

Affects about 3% of the **worlds population** at any one time but only about half will seek medical attention

Of those who seek medical attention, only half end up having surgery

Etiology is mostly unknown, but some conditions increase risk (wrist fractures, arthritis, diabetes, vascular disease, pregnancy)

Cause may be related to elevated pressure/inflammation within the carpal tunnel

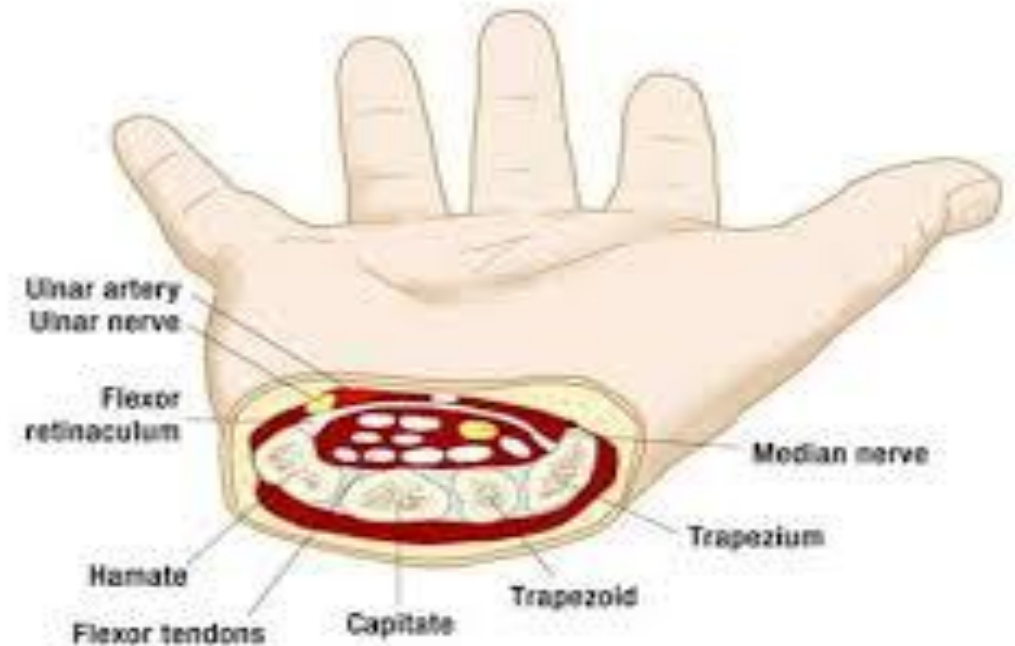
Carpal Tunnel

Formed by carpal bones and the transverse carpal ligament

Nine flexor tendons and the median nerve

Rigid borders that don't allow for change in volume

Increased pressure and compression of the **median nerve** in the carpal tunnel



What does the median nerve do?

SENSORY



MOTOR



Carpal Tunnel Symptoms

SENSORY

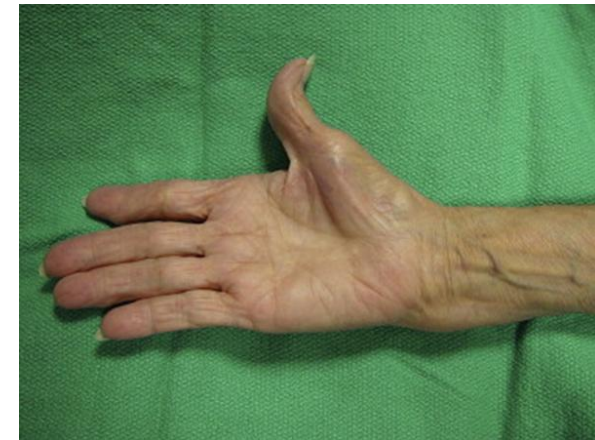
Pain (aching) and paresthesia (pins and needles) in the thumb, index & middle fingers

Diminished sensation – mostly at the tips of the above fingers

MOTOR

Weakness and difficulty manipulating small objects

Wasting of thenar (thumb) muscles (late stage)



Diagnosis

Provocative test (Phalen's)

Sensory test (Semmes Weinstein)

Electrodiagnostic (EMG)

Non surgical (conservative) management

If you have thumb muscle (thenar) wasting, conservative management may not be for you

Night Splinting

Nerve Glides

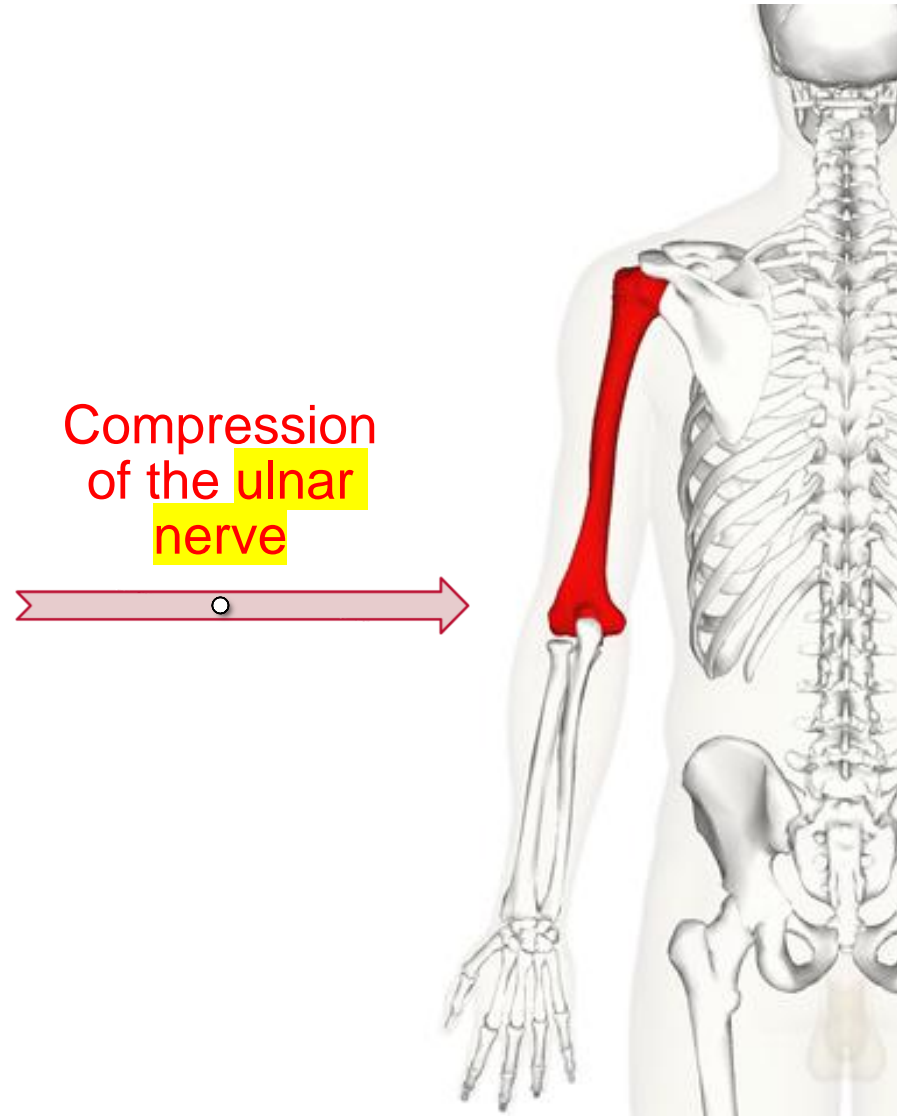
Contrast Baths

Modalities

NSAIDS/Injection

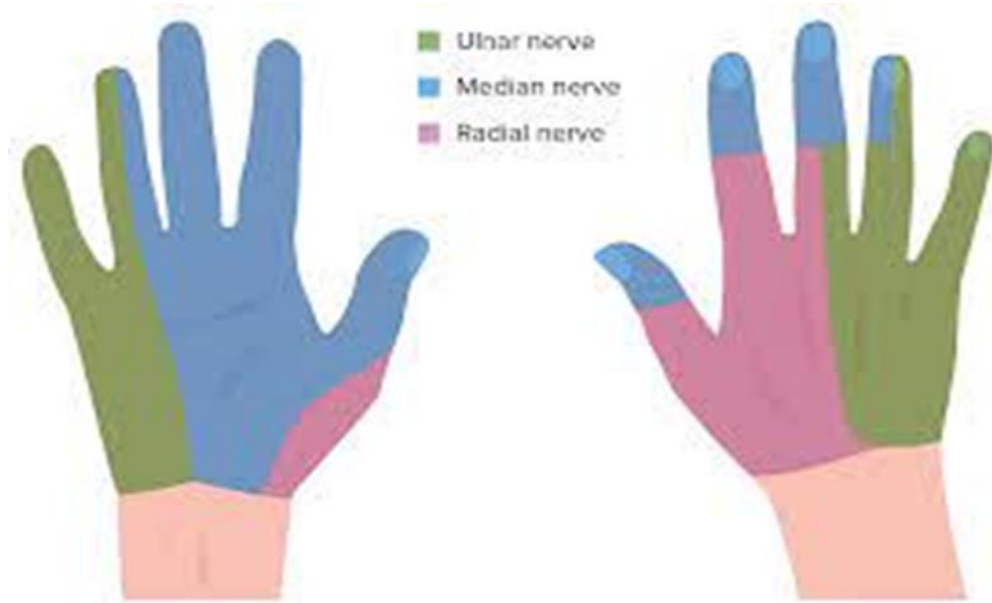
Cubital Tunnel

The second most common neuropathy in the upper extremity



What does the ulnar nerve do?

Sensory



Motor



Symptoms

- ❖ Sharp or aching pain at the elbow which radiates above and below the elbow
- ❖ Numbness and tingling to the ring and small fingers
- ❖ Weakness of grip and the small finger
- ❖ Usually worse at night and with flexion of the elbow

Causes

Prolonged or repeated pressure or trauma to the very superficial nerve

Prolonged elbow flexion

Bone spurs



Non-Operative Treatment

- Up to 80% of patients with mild cubital tunnel respond well to non-operative treatment
- Education: Activity modification (remove the offender)
- Positioning for night (Heelbo)
- Protect the elbow (Heelbo)
- Perhaps visiting a therapist for physical agent modalities such as ultrasound

HeelBo



The HeelBo is designed to reduce pressure and protect the elbow

If you have Cubital Tunnel, avoid:

- Leaning on your elbow
- Putting pressure on the inside of your arm
- Resting your arm on a chair armrest
- Bending your arm for long periods of time
- Sleeping with your elbows in a bent position

Osteoarthritis

More than 50% of the population affected making it the most prevalent joint disorder in the US



The Hand. Twenty nine bones.

Joints most commonly affected by OA:

- Carpal Metacarpal or the base of the thumb
- Proximal interphalangeal or the middle joint of your finger
- Distal interphalangeal or the joint at the end of your finger



Thumb (CMC) Arthritis. Who knew?

The thumb provides for 40% of hand function

During key pinch, there is a 12-fold increase on pressure seen at the CMC joint making the thumb joint prone to degenerative changes

By age 80, around 40% of women and 33% of men will have CMC arthritis



Therapy Interventions



Splint
(Rest)

Stability Exercises

Joint Protection

(Easy) Physical
Agent Modalities

Splint



Joint Protection

- Respect Pain – Rest
 - Maintain strength and ROM
- Use joint in the correct plane
 - Avoid positions of deformity
- Use the largest/strongest joint
 - Avoid prolonged positions
- Balance rest and activity
 - Reduce force (adaptive aids)

Easy Modalities

Paraffin Wax:

Wax heated at 125°-130° Fahrenheit

In vivo studies: Increase the temperature of the joint by 7.5° Celsius (45.5° F) and the muscle by 4.5° Celsius (40° F)

RCTs found that compared with a control group, paraffin reduced pain at rest and with activity in people with OA



Chip clip



OA of the Digits



Splint to stabilize affected joint

SILVER RING SPLINTS



Photo from the Silver Ring Splint Company

OVAL EIGHT



Keeping your hands healthy 😊



Weekend Warriors

Tendinopathies



Tendinopathies

Tennis Elbow
(Lateral
epicondylitis)

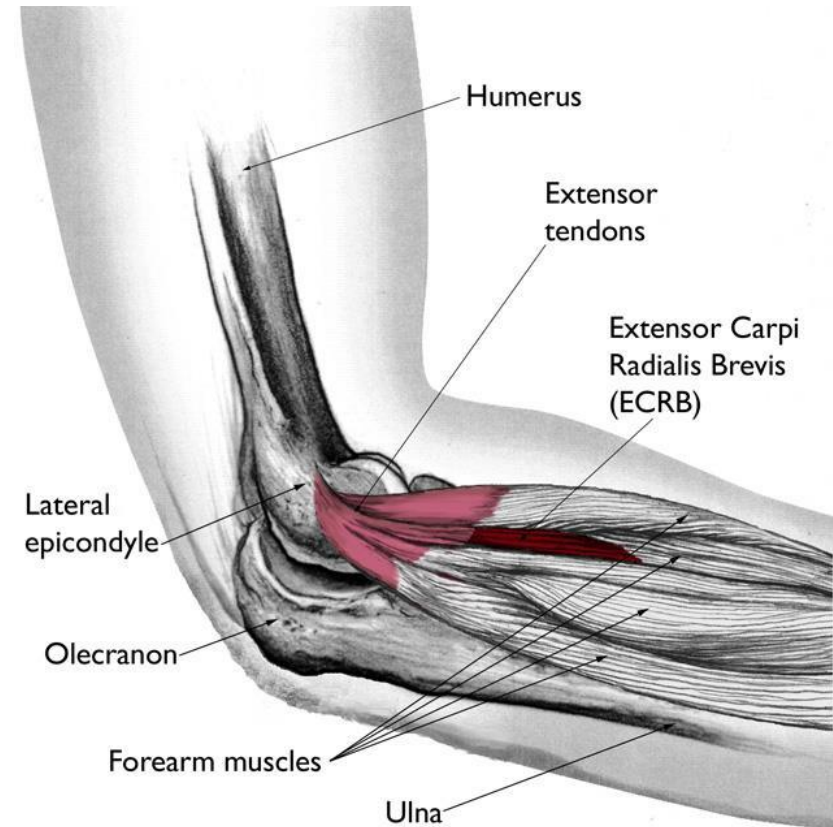
Golfers Elbow
(Medial
epicondylitis)

I don't play
tennis either..



Lateral Epicondylitis (Tennis elbow)

Swelling or tearing (micro-tears) of the tendons that move your wrist into extension



Symptoms

- Pain or burning on the outer part of your elbow (at the lateral epicondyle)
- Weak grip strength

What causes it?

- ❖ Overuse
- ❖ Specific event (Weekend warrior)
- ❖ Incidence greatest from 35-55 yoa
- ❖ ECRB tendon rubbing against lateral epicondyle
- ❖ Tendinitis/Tendinosis

What can I do
about it?

REMOVE THE
OFFENDER!



What to do....

- Figure out what's causing the problem and modify the activity
- Counterforce brace
- Massage
- Eccentric Exercises
- Heat or Ice

Medial Epicondylitis (Golfers elbow)

Pain/swelling/micro-tears at the medial epicondyle thought to be caused by the wrist flexors/pronators



What to do....

- Similar to lateral epicondylitis, the first thing to do is to attempt to remove the offender (find and eliminate the cause)
- Counterforce brace on the flexor side
- Ice and Heat

A few references

Borrel, RM, Parker R, Henley EJ, Masley D, Repinecz, M. Comparison of in vivo temperatures produced by hydrotherapy, paraffin wax treatment and fluidotherapy. *Phys Ther.* 1980;60:1273-1276.

Dilek B, Gozum MJ, Sahin E, et al. Efficacy of paraffin bath treatment in hand osteoarthritis: a single-blinded randomized controlled trial. *Arch Phys Med Rehabil.* 1958;39:219-227.

Beasley J & Lunsford D. The arthritic hand: Conservative management. In T. Skirven, A.L. Osterman, J. Fedorczyk, P. Amadio, S.Feldscher & E. Shin (Eds) *Rehabilitation of the Hand and Upper Extremity, 7th Ed.*

Fedorczyk J, Day J, Lucando A, Vincent, J. Therapy Management of Lateral Elbow Tendinopathy. In T. Skirven, A.L. Osterman, J. Fedorczyk, P. Amadio, S.Feldscher & E. Shin (Eds) *Rehabilitation of the Hand and Upper Extremity, 7th Ed.*

Image credit for thenar wasting/slide 11: Peripheral Entrapments of the upper limb access through ClinicalKey. Winterton, Robert I.S.; Farnell, Robert. Published April 1, 2013. Volume 31, Issue 4. © 2013

Credit: Google and Bing Images and the University of NM Hospital Radiology for the deidentified X-rays of normal hand and CMC arthritis

Tennis elbow: Strengthening and stretching exercises <https://www.ncbi.nlm.nih.gov/books/NBK506995/>

Golfers elbow: Strengthening and stretching exercises <https://www.ncbi.nlm.nih.gov/books/NBK507006/>