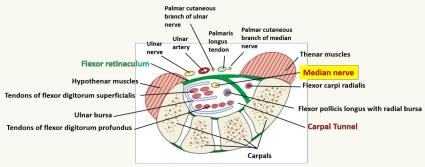
Anatomy



- Tendons of FDS, FDP, median nerve, FPL pass under the flexor retinaculum
- Palmar cutaneous branch of ulnar, PL tendon, ulnar artery and nerve and palmar cutaneous branch of median nerve pass over the carpal tunnel

Demographics

Most common nerve entrapment

- Females more likely to be affected than males
- More prevalent in white adults
- More common in dominant hand
- Rare in developing countries (work is not as repetitive)

Risk Factors

- Prolonged wrist flexion/extension
- Repetitive wrist movements
- Exposure to vibration/cold
- Diabetes
- Hypothyroidism
- RA
- Increased BMI
- Renal disease
- Thicken transverse ligament
- Short stature
- Trauma
- OA
- Pregnancy
- CONSIDER ISCHEMIA (CAD)

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Presentation

- Paraesthesia in palmar 3 1/2 fingers (median nerve)
- Night symptoms (increased hand volume) - patient complains of having to "wake up and shake it off"
- Pain over carpal tunnel
- Patients often think their whole hand is numb (poor localisation)
- Pain can refer to the elbow
- Palm symptoms indicate higher up involvement (pronator teres, TOS) as palmar cutaneous branch travels outside of the carpal tunnel
- Symptoms aggravated by gripping activities
- Hand weakness/atrophy may occur of the hand (thenar - ape hand)
- Patient complains of dropping things (decreased sensation)
- May have autonomic symptoms (tight swollen feeling, skin colour changes, hand temperature changes
- Hypertonicity of Cx, scalene, pecs, pronator and wrist flexors
- ROM may not be affected but can reproduce complaint in flexion/extension - consider lunate
- Limited active thumb abduction
- Look for cutaneous findings (ulcerations, blistering, sclerodactyly, nail dystrophy)
- +ve Tinels, Phalens , Manual Carpal compression (most sensitive)
- Numbness of 5th digit/dorsum , consider neuropathy of alternate origin
- Weakness in LOAF muscles (1st and 2nd lumbricals, Opponens pollicis, Abductor pollicis brevis, Flexor pollicis brevis) - Pinch grip
- Consider double crush - Cervical arthropath, Cx disc, TOS, Pronator syndrome
- Consider other structures - ligament of Struthers, lacertus fibrosis

Bilateral hand involvement - central cord lesion until proven otherwise (MRI)

CPR

Least 4 of the 5 findings:

Shaking hands to relieve symptoms

Wrist rate >.67 (thickness to the width)

Symptom severity scale >1.9

Diminished sensation in thumb

Age >45 years old

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Carpal Tunnel Syndrome (CTS) Cheat Sheet

by Siffi (Siffi) via cheatography.com/122609/cs/25917/

Imaging

- Imaging only needed if bony compression is suspected
- MRI can be used to determine Cx radiculopathy/soft tissue pathology
- US (more sensitive than MRI)
- EMG

DDx

- Cx radiculopathy
- TOS
- Compartment syndrome
- Diabetic neuropathy
- Lateral/medial epicondylitis
- MS
- Regional pain syndrome
- SOL - Flexor tenosynovitis/ganglions

Management

- Myofascial release of forearm, wrist and hand - pronator, wrist flexors and carpal tunnel
- Median nerve flossing
- SMT of Cx or carpal restrictions
- Kinesiotape
- Splinting (night pain)
- Home exercsies - Cx spine, scalene, pecs, pronator and wrist flexors, chin retraction, carpal tunnel mobilisation, median nerve glide and floss
- Advise rest - avoidance of repetitive wrist flexion/extension
- Vitamin B6
- Weight loss if obese
- Patients with significant motor deficits/not improving with conservative care consider referral for injections/surgery

Factors of success of conservative care:
1.Age >50 years
2. Duration >10 years
3. Constant paraesthesia
4. Stenosing flexor tenosynovitis
5. +ve Phalens test in >30 seconds
>2 factors - conservative management successful in 83% of cases
if 3 - 7% success
if 4 or 5 - 0% success

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