Carpal Tunnel Syndrome
Trigger Finger
De Quervain’s Tendonitis

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Carpal Tunnel Syndrome

- Definition
- History
- Causes
- Diagnosis
- Treatment/prevention
Carpal Tunnel Syndrome (CTS) refers to a constellation of symptoms resulting from compression of the median nerve at the wrist.
History of CTS

- 1854 - Sir James Paget - post fracture
- 1880 - James Putnam - idiopathic
- 1893 - Franz Schultz - “acroparesthesia”
- 1906 - Farquhar Buzzard - corporeal rib
- 1909 - James Ramsey Hunt - motor branch
- 1913 - Pierre Marie & Charles Foix - median nerve under annular ligament
• 1933 - Sir James Learmonth - 1st surgical release of TCL - post-traumatic
• 1938 F.P. Moersch - spont comp in CT
• 1946 - Cannon & Love - 1st surgical release of TCL for spont median n comp
• 1947 - Brain, Wilkinson, & Wright - 1st paper describing CTS & op release of TCL
• 1950 - George Phalen - popularized CTS
Causes

• Anatomy of the carpal tunnel
• Underlying systemic or physiological disorders
• Patterns of use
Anatomy

- CT is an inelastic structure bounded by the arch of the carpal bones & the transverse carpal ligament
- Not a closed compartment, but often functions as a confined space
- CT transmits 9 tendons & median nerve
- Median n compression results from a discrepancy: canal size vs contents
Carpal Tunnel Syndrome
Carpal Tunnel associated diagnosis

- Diabetes
- Rheumatoid arthritis
- Hypothyroidism
- Pregnancy
- Fractures
- Obesity
Carpal Tunnel associated patterns of use

- Repetitive motion of the fingers/wrist
- Repetitive squeezing/torsion of a tool
- Vibration exposure
- Prolonged wrist flexion or extension
Diagnosis of CTS

- History of chief complaint
- Past medical history
- Review of systems
- Physical exam
- Special tests
History

- Pain or burning & numbness in the hand
- Night symptoms frequent
- Paresthesias in the radial three and one-half digits which may increase with activities
- A sense of fullness or swelling along with cramping
- Weakness or clumsiness +/- muscle wasting
Physical exam

- Cervical spine
- Examine both upper extremities
- Neurovascular exam
- Special tests

diagnosis
Electrodiagnostic studies

- Adjunct to clinical examination in the objective eval of disorders of periph n
- Help isolate the segment of n that is injured
- Assess severity of neuropathy
- However, nearly 10% incidence of false-negatives
Nerve conduction studies are more helpful in establishing the diagnosis.
Electromyographic studies are useful in determining the prognosis.
Special tests

- Compartment pressure
- X-ray
- CT
- MRI
- Thermography
- Ultrasound

diagnosis
Classification of CTS

- Acute
- **Chronic**
  - * mild (early)
  - * moderate (intermediate)
  - * severe (advanced)
Prevention in workplace

- Keep wrists straight
- Avoid fast, continuous, repetitive movements
- Use whole hand to grasp hand tool of appropriate size in good condition
- Modify work station
- Rotate job tasks
Prevention in office

• Good posture, spine against back of chair
• Wrist straight and at same level as elbow
• Rest wrist lightly on pad while typing
• Typing material and screen at eye level
• Short rest period or alternate tasks
• Exercise to improve posture, strengthen muscles, and improve circulation
Treatment of CTS

**Conservative**
- patient education
- activity modification
- splint
- NSAIDs
- Vit B6
- inject

**Surgery**
- classic open release
- small palmar incision
- endoscopic CTR
Classic open release

Pros
- “classic”
- full visualization of TCL
- contents of CT accessible
- anomalous muscle &/or nerves

Cons
- excessive tissue trauma
  * prolonged recovery
  * more scar & pillar pain
  * persistent weakness
Carpal Tunnel Surgery
Carpal Tunnel Surgery
Results of CT surgery

Classic open

- MRI: mean increase in CT volume of 24%
- up to 96% patient satisfaction & sx improv
- up to 84% return to original job
- pinch & grip strength return to nl at 6 & 12 weeks
Complications

- Injection into nerve
- Incorrect diagnosis
- Hypertrophic scar
- Severance of palmar cutaneous branch
- Severance of recurrent motor branch
- Incomplete decompression
- Median nerve injury from ECTR
Complications

- Median nerve injury from neurolysis
- Ulnar nerve injury from ECTR
- Distal neurovascular injury from ECTR
- Subcutaneous tender nerve
- Adherence of nerve to skin
- Adherence of nerve to flexor tendons & restricted tendon movement
Complications

- Hematoma
- Bowstringing of flexor tendons
- Reflex sympathetic dystrophy
In conclusion:

- Common problem
- Early intervention helpful
- Chronic, severe cases have less optimal results
- Most people very happy with surgical outcome
Trigger Finger

- Pain, locking, grinding in palm at base of digit
- Caused by tight A1 pulley over flexor tendon
- Related to CTS
Trigger Finger

Non op treatment:

- Ice
- Splint
- NSAID, PO steroid
- Injection
- OT
Trigger Finger

Op Treatment:

Open release of A1 pulley
De Quervain’s Tendonitis

- Pain over radial side (thumb side) of wrist
- Possibly grinding or grating
- Possible swelling
- Caused by pressure over 1\textsuperscript{st} dorsal wrist compartment
De Quervain’s Tendonitis
De Quevain’s Tendonitis

Non op treatment:

- Ice
- Splint
- NSAID, PO steroid
- Injection
- OT
De Quervain’s Tendonitis

- Op Treatment

Open release of 1st Dorsal wrist compartment
Thank You!

• Questions?