Carpal Tunnel Syndrome

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• General Practitioners
• Outpatient Clinics
• Occupational Health Clinics
• 5-10% Prevalence in Community

Is it common?
• Common
• Usually Females, over 55 years of age
• Often overweight
• Often Family History
• Often obvious associated reason
• Often Bilateral
• Increased incidence with age

**CTS in the Community**
What are the Causes of CTS

- Idiopathic
- Medical
- Trauma
- Occupational
- No obvious cause found
- Any age, but usually older aged groups
- Often familial association

**Idiopathic**
• Endocrinological
  ◦ Diabetes
  ◦ Hypothyroidism

• Rheumatological
  ◦ Rheumatoid arthritis
  ◦ Connective Tissue Diseases
    • Sjögrens Syndrome
    • Systemic Lupus Erythematosus
    • Sarcoid Disease

• Pregnancy related
• Renal Failure on chronic haemodialysis
• Usually post trauma around Carpal Tunnel region

Localised swelling and constriction of contents. Direct or Indirect effects
Usually acute /subacute onset with appropriate history

Usually improves rapidly over time
Confusing literature
Methodological difficulties

- Misclassification
- Differing endpoints and outcome measures for studies undertaken
- Quality of studies vary greatly
- Little consistency across many studies

Occupational related

- Population groups studied often not representative
- Often little follow up study
- Often small numbers and low power
- NIOSH Data 1977
  - Dated, often not relevant
  - Part of wider body of literature
  - Association between force and repetition.
  - Weaker association between repetition.
  - Association between forceful / awkward postures eg flexed ulnar deviation

**Occupational CTS**
- Positive association highly repetitive work
- Positive association forceful work
- Insufficient evidence for awkward postures
- Positive association hand/wrist vibration
- Strong evidence for exposure to combination of risk factors

The literature
• Hand held vibrating tools
• Little known about exact exposure required and duration of exposure

Occational Risk Factors
• Repetitive means?
  ◦ This and that
• Definition:
  ◦ Every 30 seconds or more frequently
- Forceful means...
  - This and that

- Definition.
• Power grip increases Carpal Tunnel Pressure

• Pinch grip results in greater force than power grip

Grasp
Cold conditions

- Cold +
- Repetition and load
Duration means....

Definition:
At least half of each day or 20 hours of each week.
Workers at Risk

- Fish cannery worker
- Textile workers
- Metal Casting workers
- Printing/lithography
- Frozen Food Packers
- Fish processing workers
- Poultry workers
- Quarry drillers
- Box manufacturers
- Packing house workers
- Garment workers
- Construction trade workers
- Typists
- Volar aspect of the wrist.
- Borders and boundaries of the Tunnel.
- Contents of the Carpal Tunnel
  - Nerve
  - 9 tendons
  - Associated soft tissue
- Symptom complex
- Wide variety of symptoms at times
- Symptoms may not be predictable
- Typical symptoms may not be present
- May present atypically – no std criteria
- May not be recognised

My neighbour has Carpal Tunnel Syndrome
Clinical Symptoms

- Numbness
- Tingling
- Aching
- Weakness
- Loss of sensation
- Sleep disturbance
Clinical Symptoms

- Numbness
  - Median nerve distribution
  - Thumb, Index, Middle fingers
  - Not always typical

- Sleep disturbance "waking and shaking"
  - Usually at night
  - Usually wakes them
  - Often typical relieving measures eg flick sign
Clinical Signs

- General
- Musculoskeletal
- Neurological
• Inspection of fingers
  ◦ Nailfold changes
  ◦ Arthritic changes
  ◦ Skin rash
  ◦ Thenar wasting
  ◦ Thyromegaly / goitre
  ◦ Callous formation

Swelling of volar area
Scars from surgery / trauma
Clinical examination

- Cervical spine
- Shoulders
- Elbows
- Fore-arms
- Wrists
  - Provocative testing:
    - Phalens – neg if profound
    - Reverse Phalens
    - Tinnels – as accurate as flicking a coin!!
- Fingers
Clinical examination

- **General**
  - Wasting of thenar emminence
- **Motor system**
  - Weakness
  - Reflexes
- **Sensory system**
  - Light touch
  - Pinprick
  - Vibration

Neurological
• Nerve Conduction Studies – 95% specific
• Results at one point in time
• Influenced by other factors
  ◦ Obesity, age, height, wrist ratio
• Varying threshold between symptoms and ncs findings
• Should form part of complete picture
• Prolonged sensory latency or failure to evoke an action potential on stimulation of the afferent median nerve fibres
  ◦ Specifically......
- 25% false positives
- Few of the positives have CTS clinically
  - Asymptomatic no more likely to develop symptoms than age-matched asymptomatic without median mononeuropathy
- Little correlation between history, bedside testing and symptoms.
- Not good for predicting

Nerve Conduction Studies
• Nothing
• Splints
• Steroid Injections – diagnostic / therapeutic.
• Carpal Tunnel Release Procedures
  ◦ Not as good if you have WRCTS
    • Specific indications
- Pre-operatively
  - Mild symptoms
  - Work absence
  - Exposure to hand intensive work
  - Involvement of an attorney
- Post operatively
  - Persistence of symptoms 6 months after surgery
• 58 year old Female
• Dental Nurse
• Symptoms of pain, numbness, altered sensation
• 25 year old Male
• Forestry worker
• Symptoms of numbness at times in both hands