Nerve Compression Syndromes

- Median Nerve
  - Carpal Tunnel Syndrome
  - Pronator Syndrome
- Ulnar Nerve
  - Cubital Tunnel Syndrome
  - Ulnar Tunnel Syndrome
  - TOS

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Carpal Tunnel Syndrome (CTS)

• Definition
  Compression of the Median Nerve in the Carpal Canal
CTS Epidemiology

- Female/Male = 2:1
- No association with Keyboards
CTS Epidemiology

• Increased Incidence:
  - Diabetes
  - Thyroid
  - Inflammatory Arthritis

• Peak Age: 50 years
How to Recognize

• Symptoms
  - Numbness
  - Night Pain
How to Recognize

- Physical Examination
  - Tinel’s Sign
  - Phalen’s Test
  - Sensory and Motor Loss
How to Work Up

• EMG/NCV: Median & Ulnar nerves
  -(+) Latency > 4.0 msec
• What is Latency?
• What is Conduction Velocity?
Office Management

- Splint
- Inject
- No time loss!
When to Refer

- Persistent Symptoms
- (+) EMG/NCV (motor latency > 4.0 msec, sensory > 3.6 msec)
How We Treat It

• Carpal Tunnel Release
Rehabilitation

• Driving: 1 day postoperatively
• Writing: 1-2 weeks postoperatively
• Typing: 4-6 weeks postoperatively
• Heavy lifting: 6-8 week postoperatively
Pronator Teres Syndrome

• Definition
Compression of the Median Nerve at the Pronator Teres
Pronator Teres Epidemiology

- Male > Female
- Rare
- Associated with forearm fatigue
- Neuritis vs. compressive neuropathy
How to Recognize

• Weakness > Numbness
How to Recognize

- **Hallmark:** Anterior nerve Palsy
When to Refer

• Persistent Symptoms especially weakness

• (+) EMG/NCV (motor changes of FPL or FDP)
How We Treat It

- Pronator Teres Release
Cubital Tunnel Syndrome

- **Definition:** Compression of the ulnar nerve in the cubital tunnel
Cubital Tunnel Syndrome

• Differential
  – Cubital tunnel syndrome
  – Ulnar Tunnel syndrome
  – Thoracic outlet syndrome (TOS)
  – Cervical radiculopathy (C7,C8)
Epidemiology

• Male = Female
• Increased Incidence
  – Diabetes
  – History of elbow fracture
How to Recognize

- **Symptoms**
  - Ulnar sided numbness
  - Night Pain
How to Recognize

- Physical Examination
  - Tinel’s Sign
  - Stretch Test
How to Recognize

• Motor Examination
  – Weakness
  – Atrophy
How to Recognize

• Motor Examination
  – Weakness
  – Atrophy
How to Recognize

- Sensory Examination
  - Widened 2 pt
  - Decreased S-W monofilaments
How to Work Up

- **EMG/NCV**: Median & Ulnar nerves
  - (+) Conduction velocity < 50 m/sec
- What is Latency?
- What is Conduction Velocity?
Office Management

- Activity Modification
- Night Splints: a soft wrap around the elbow
How We Treat It

• Simple Decompression if no motor involvement
How We Treat It

- Submuscular Transposition for Motor Involvement
How We Treat It

- Submuscular Transposition for Motor Involvement
Rehabilitation: Simple Release

- Driving: 1 day postoperatively
- Writing: 1-2 weeks postoperatively
- Typing: 3-4 weeks postoperatively
- Heavy lifting: 6 weeks postoperatively
Rehabilitation: Submuscular Transposition

- Driving: 1 week postoperatively
- Writing: 2-3 weeks postoperatively
- Typing: 4-5 weeks postoperatively
- Heavy lifting: 8 weeks postoperatively
Ulnar Tunnel Syndrome

- Definition: compression of the ulnar nerve in the ulnar tunnel (Guyon’s canal).
Epidemiology

- Male = Female
- Rare
- 80% due to mass in ulnar tunnel
  - Ganglion
  - Aneurysm
How to Recognize

• Decreased sensation in palm spared dorsally
How to Recognize

- Tinel’s with ulnar nerve paresthesias

Location of fascicles for deep motor branch
How to Recognize

- Motor (Intrinsics) ± Sensory depending on the site of compression
How to Recognize

- EMG/NCV
- MRI
How We Treat

- Ulnar Tunnel Release
- Resect Ganglion
- Repair Aneurysm
Thoracic Outlet Syndrome

- Definition: TOS is compression of the brachial plexus
Epidemiology

- Female/Male = 3.5:1
- < 55 years
- Increased incidence of vascular anomalies in men
- Rare
How to Recognize

- Symptoms
  - Ulnar sided numbness
  - Fatigue with arm overhead

The lower trunk (C8,T1) most commonly affected
How to Recognize

- Tinel’s at Erb’s point
How to Recognize

• (+) Wright’s and Adson’s Test
How to Recognize

• (+) Vascular Studies
  – Doppler
  – Arteriogram
How to Recognize

• (+) EMG/NCV & SSEP
  - Cervical paraspinals (rule out cervical radiculopathy)
  - B.P. wave form
  - F wave
PT for Strengthening & Posture
  - Correct droop shoulder
  - Strengthen rhomboids and trapezius
How We Treat

- Resection of 1st rib
Rehabilitation

• Shoulder exercise: 3-4 weeks postoperatively
• Strengthening: 5-6 weeks postoperatively
• Heavy lifting: 6-8 weeks postoperatively