Causes of Hand/Wrist Pain

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Outline

• Carpal Tunnel Syndrome
• Trigger Finger
• Tendinitis
• Arthritis
• Fractures
Carpal Tunnel Syndrome

• Known as a “compression neuropathy”
  – Nerve compression (median nerve) is what causes symptoms
• Most common compression neuropathy
• One million adults in the U.S. are diagnosed with carpal tunnel syndrome each year
What is it?

• Compression of the median nerve, typically by the transverse carpal ligament

• Nerve compression leads to symptoms of numbness/tingling, pain, weakness/clumsiness (advanced)
  – Symptoms are primarily in the thumb, index finger, long finger, and ½ of the ring finger
Why does it occur?

• The “why” is not entirely understood
• Predisposing factors include: diabetes, hypothyroidism, excessive alcohol use, obesity, tobacco use, female sex, pregnancy, rheumatoid arthritis, repetitive motion activities
How is it diagnosed?

• Clinical examination: symptoms reproduced by maneuvers performed by examiner – tapping on the wrist, compressing the wrist, hyperflexion of the wrist

• Nerve studies: quantify the extent of damage to the nerve fibers
How is it treated?

• Conservative measures: steroid injection, night splints (not definitive treatments)

• Surgery: Carpal tunnel release
  – Either through an incision in the palm (open) or an endoscopic technique
Open vs Endoscopic Techniques

Incision site
Trigger Finger

- “Stenosing tenosynovitis” - tendon entrapment (stenosis)
- Mechanical impingement of the flexor tendons as they pass through a narrowed pulley (tunnel)
• Entrapment leads to symptoms of painful catching or popping
• In severe cases, the finger will “lock” in flexion and require manipulation of the finger into extension
Why does it occur?

- Inflammation has been cited; exact “cause” is disputed
- Predisposing factors include: female sex, age 55-60 years, diabetes, gout, kidney disease, rheumatoid arthritis
How is it diagnosed?

• Clinical examination demonstrating pain over the **A1 pulley region** and or catching/locking of the finger(s) with flexion/extension
How is it treated?

• Steroid injection (cortisone) into the A1 pulley
  – Literature suggests roughly 70% success rate with steroid injection

• Splinting
  – Can splint the MCP joint (first knuckle) in 15 degrees of flexion or splint the DIP joint (last knuckle) in complete extension
• Surgery: release of the A1 pulley
Tendinitis of the Wrist

• Continuum of *stenotic* conditions
  – Tendons become inflamed and *entrapped*
DeQuervain’s Disease

- **Stenosing tenosynovitis of the first dorsal compartment** – tendon entrapment
• More common in women
• Peaks in childbearing years and perimenopausal years
• Associated with pregnancy, diabetes
• Leads to pain on the thumb-side of the wrist
How is it diagnosed?

• Tenderness with touch over the thumb-side of the wrist, swelling

• Pain with
How is it treated?

- Conservative measures: anti-inflammatory medications, activity modification, thumb spica splint/brace, steroid injection (cortisone)
• Surgery: release of the inflamed tendons
Extensor Carpi Ulnaris (ECU) Tendinitis

- “Wrist extensor” tendinitis
- One of the most common causes of tendinopathy ("diseased" tendon)
- Leads to pain on the ulnar side (small finger side) of the wrist
Typically occurs after a twisting injury, which is followed within 24-48 hours by pain and swelling.

Night pain is common.

Pain is increased with all motions of the wrist:
- Resisted wrist extension (and ulnar deviation) particularly painful.
Flexion

Extension

Radial Deviation

Ulnar Deviation

Pronation

Supination
How is it treated?

• Conservative measures: ice, extension splinting or casting, anti-inflammatory medications, steroid injections
• Surgery: incision of the tendon sheath to release the tendon
Flexor Carpi Radialis (FCR) Tendinitis

- “Wrist flexor” tendinitis
- Causes pain at the wrist crease
- Pain with resisted wrist flexion
- “Overuse” injury?
• Typically affects people in 5th to 6th decade
• More common in women
How is it treated?

• Conservative treatment (mainstay): splinting, ice, anti-inflammatory medications, cortisone injection

• Surgery: release of tendon sheath, removal of any prominent bone
Arthritis

- Degradation of joint **cartilage** (surface that lines the joints)
Thumb Base Arthritis

• **Basal joint** arthritis
• Extremely common
• Pain at the base of the **thumb metacarpal**
• Pain with pinch, turning keys, turning a door knob, opening jars
• More common in women
X-ray Appearance
How is it treated?

• Conservative: splinting, anti-inflammatory medications, cortisone injections

• Surgery: either fusion (younger patients) vs removal of arthritic bone and filling of space with tendon
Fusion
Bone excision, tendon interposition (Basal Joint LRTI)
Finger Arthritis

• Diffuse pain and stiffness throughout the finger joints (knuckles)
• Gradual “wear and tear” over the years
• Inflammatory – rheumatoid arthritis, psoriatic arthritis
How is it treated?

• Conservative: splinting, anti-inflammatory medications, steroid injections, activity modification

• Surgery: joint fusion, joint replacement
Fractures = Broken Bones

- Metacarpal (knuckle)
- Scaphoid (hand bone close to the wrist)
- Distal radius (wrist fracture)
Boxer’s Fracture

• Fracture of the small finger metacarpal neck (just below the knuckle)
• Typically treated with splinting or casting
• If there is too much displacement/angulation, surgery is performed
Scaphoid Fracture

- Typically caused by a fall on outstretched hand/wrist
- Commonly mistaken for a “wrist sprain” – pain but “x-rays are negative”
  - Acute fractures can be very difficult to see on x-ray
- Pain is located in the anatomic snuff box
How is it treated?

• In younger patients, and patients with very distal (far down) fractures, casting may be employed

• For most fractures, surgical treatment is required
Distal Radius Fracture

• “Wrist fracture”
• One of the most common fractures of the musculoskeletal system
• Typically caused by a fall onto an outstretched hand/wrist
X-ray appearance
How is it treated?

• In younger patients, and in fractures without much **displacement** or **angulation**, manipulation and casting may be employed.
• If manipulation fails or there is too much displacement/angulation, surgery is required
Questions?
Thank You