Orthopedics: Hand and Foot
Ted Parks, MD
Financial Disclosures
• Carpal Tunnel Syndrome
• Trigger Finger
• DeQuervaine’s Syndrome
• Thumb basal joint arthritis (1st CMC OA)

• Morton’s Neuroma
• Plantar Fasciitis
• Bunions and Hammertoes
• Ankle Sprains and Fractures
Flexor Tendons
Tendons

• High content of:
  - collagen fibers
  - connective tissue matrix

• Low content of:
  - cells
  - blood vessels
  - nerves

• Low metabolic rate
Nerve

- Axons
- Schwann cells (myelin)
- Complex micro vascular system
- High metabolic rate
Carpal Tunnel Symptoms

Pain
Numbness
Tingling

In the
Median Nerve Distribution!
Carpal Tunnel Syndrome is Not:

- Wrist pain
- Glove like distribution of symptoms
- Symptoms on the dorsal side of the hand
- Symptoms in the small and ring finger
- Symptoms that radiate up the arm
Tinel’s Test
Phalen’s Test
Thenar Muscle Atrophy
Etiology

- Trauma
- Ergonomics
- Arthritis
- Pregnancy
- Thyroid dysfunction
Non- Surgical Treatment

Eliminate the source of nerve compression

• NSAIDs
• Braces
• Cortisone injections
Non-Surgical Treatment

• NSAIDs
• Braces
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Non-Surgical Treatment

• NSAIDs
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Non-Surgical Treatment

• NSAIDs
• Braces
• Cortisone injections
Injection Site: Midline, 2cm distal to the distal wrist crease
Possible Results of Injection:

• Patient is permanently better

• Patient gets no relief at all

• Patient gets better, but symptoms return in more than 4 months

• Patient gets better, but symptoms return in less than 4 months
Surgery
Trigger Finger
Trigger Finger

- Finger locks in the flexed position

- Painful flexor tendon nodule
Finger Anatomy
Finger Anatomy
Finger Anatomy

Flexor Tendon Pulleys
Treatment Options

- Extension splint
- NSAIDs
- Cortisone Injection
Cortisone Injection Technique:
Inject midline, 2cm proximal to the MCP joint crease
Surgery

• Safe
• Simple
• Effective
A₁ Pulley Release

Resolution of Nodular Tendonitis
THUMB PAIN

De Quervain’s tendonitis

vs

1\textsuperscript{st} CMC joint arthritis
Finklestein’s Test
Third Dorsal Compartment Tendon

First Dorsal Compartment Tendon
Third Dorsal Compartment Tendon

First Dorsal Compartment Tendon
Arthritis at the Base of the Thumb

AKA: Basal joint arthritis, 1st CMC arthritis, Trapezio-metacarpal joint arthritis
1st CMC joint
Injection Technique

1. Feel for the metacarpal bone of the thumb

2. Keeping the needle perpendicular to the bone, pull the thumb to open the joint, try until you fall into the joint
Surgery

Carpometacarpal joint (CMC)

Arthritic changes

Tendon replaces trapezium bone
Orthopaedics: Foot Problems
Anatomy
Anatomy

- Talus
- Calcaneus
Anatomy

- Tibia
- Fibula
- Medial Malleolus
- Lateral Malleolus
Anatomy

- Tibia
- Medial Malleolus
- Lateral Malleolus
- Ankle Joint
- Fibula
Common Foot and Ankle problems

• Morton’s Neuroma
• Plantar Fasciitis
• Bunions and Hammertoes
• Ankle Sprains and Fractures
Morton’s Neuroma
Morton's Neuroma
Morton’s Neuroma: Symptoms

- **Pain:**
  - may radiate to toes
  - “feels like a pebble”
  - worse with high heeled shoes

- **Numbness**

- **Most Common = 3rd webspace**
Morton’s Neuroma: Exam

• Splayed toes, fullness
• Palpable plantar mass
• Metatarsal shift test
• Loss of sensation
Morton’s Neuroma
Morton’s Neuroma: other tests

- X-rays
- EMGs, NCS
- MRI
Treatment: Conservative

Shoe modification

- Wide
- Soft
- Low heel

Metatarsal supports

Cortisone injections
Treatment: Conservative

Shoe modification

- Wide
- Soft
- Low heel

Metatarsal supports

Cortisone injections
Cortisone Injection
Cortisone Injection

• Inject from dorsal side
• 1 cm proximal to web crease
• Between the metatarsal heads
• Go about 1 cm deep
• 1 cc steroid, 1 cc lidocaine
Treatment: Surgery
Plantar Fasciitis

Plantar Fascia
Plantar Fasciitis

Plantar Fascia
History

• Most common ages 40 – 70
• More common in men than women
• Running/Impact sports

Symptoms

• Plantar heel pain
• Often worse in AM
Physical Exam

• Tender to palpation **plantar** heel

• r/o calcaneal stress fracture with “squeeze test”
X-rays: The Bone Spur

Plantar heel spur
Bone Spur
Treatment

NSAIDs
Treatment

Calf stretches
Treatment

Heel pads
Treatment

Plantar massage
Treatment

Night splints
Treatment: Conservative

Short leg walking cast
Treatment (controversial)

Cowboy boots
Treatment (controversial)

E.S.W.T.
(extracorporeal shock wave treatment)
Cortisone Injection

• Don’t inject the bottom of the foot
• Go medial, aim for the front edge of the calcanoeus, touch the bone
• 1cc steroid, 1cc lidocaine
• This shot hurts!
Surgery

- Inflamed area of plantar fascia
- Bone spur
- Removal of bone spur
- Release of plantar fascia
Treatment

• Calf stretches
• Night splints
• NSAIDS
• Casting
• **Cortisone injections are NOT recommended**

• Surgical debridement (rare)

• Not associated with tendon rupture **(unless injected)**
Bunions, Hammertoes and Corns
Bunions
Hammertoes

Normal toes

Hammer toes
Corns

Callus

Corn
Corns
Bunions, Corns and Hammertoes

• Very common
• Often asymptomatic
• Only need to treat if:
  - pain
  - skin breakdown
Conservative Treatment: Devices

- Stick on pads (bunions and hammertoes)
- Toe spacers
- Medial bunion pad
- Abduction braces
Conservative Treatment

Orthopedic Shoes

- Wide, roomy toe box
- Soft
- Low heels
- Usually ugly
Surgery

- Pain
- Skin breakdown
Ankle Injuries:

Sprains vs Fractures
Ankle Sprain

Inversion - foot turns inward (medially)

Eversion - foot turns outward (laterally)
Ankle Sprain

Inversion Sprain (most common)
Ankle Sprain

Treatment

• R.I.C.E. (rest, ice, compression, elevation)
• Air cast (full time 4 weeks, sports 4 weeks)
• Crutches (if needed for comfort)
• Cast (3-6 weeks for severe cases)
• Wt bearing as tolerated
Ankle Sprain

- Created ligament injuries in rodents
- Compared immobilization to motion
Motion

Immobilization
When sprains don’t get better...

• Expect some degree of pain, stiffness and swelling for 6 - 12 weeks

• If symptoms persist, consider:
  - calcaneus anterior process fracture
  - chondral injury to talus
  - failure of the ligaments to heal
When sprains don’t get better...

Calcaneus anterior process fracture
When sprains don’t get better...

Chondral injury of the talus
When sprains don’t get better...

Inversion stress x-ray showing failure of lateral ligaments to heal
Ankle Fractures
Ankle Fracture
Ankle Fracture
Ankle Fracture
Sprain vs Fracture
Should we get an x-ray?
The Ottawa Rules

- Hx of trauma and malleolar ankle pain
  and any one of:
  - Age greater than 55
  - Inability to bear weight
  - Tender over posterior 6cm of medial or lateral malleolus

Ankle Injury

Ottawa Rules

Positive for fracture
- Non wt bearing, splint
  - Cast
  - Surgery

Negative for fracture
- R.I.C.E
- Air cast
- Crutches (PRN)
- Cast (PRN)
- Wt bearing as tolerated
Corticosteroid Injections

Corticosteroid
(Kenalog, Aristacort)

Lidocaine
1% without epi
Syringe and Needle

22 gauge 1 1/2 inch needle

Syringe with Luer-Lock (screw-on) tip
Prep

- Betadine
- Alcohol
- Gloves
- Lidocaine
- Cold Spray (ethyl chloride)

Infection rate=1:15,000

Clin Fam Prac, Vol 7, 2: 2005
Injections

Morton’s Neuroma

- 1.5 cm proximal to the webspace
- In the “valley” between the metatarsals
- Inject from the dorsal side
- Go deep (1-2 cm)
Injections

Plantar fascia

• Inject from medial side (not plantar)

• Needle should hit the front edge of the calcaneus

• This shot hurts!
Injections

Ankle joint

• Find the high spot on the lateral malleolus
• Go 2 cm medial, find the “soft spot”
• Hold the needle parallel to the joint line, aim for the center of the joint
ACP National Meeting
Pre-course on Orthopedics

- shoulder
- elbow
- wrist
- hand
- hip
- knee
- ankle
- foot

Chicago
April 27th
8am - 5pm
Thank You!

Ted Parks, MD
(303)321-1333