COMMON FOOT & ANKLE CONDITIONS

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Conflict of Interest Disclosure

I have no conflicts and nothing to disclose

Foot & Ankle Conditions

- Forefoot
- Rearfoot
- Skin, Nail Pathology
- Medical Conditions
Forefoot Pathology

- Bunions
- Hallux rigidus/limitus
- Metatarsalgia
- Morton's neuroma
- Hammer toes
- Bunionette (Tailor's bunion)

Bunions

- Valgus deformity of the great toe
- Prominent 1st met head medially
- A progressive disorder
  - Pain often begins in the late stage
- Caused by faulty biomechanics

Bunions

Conservative Treatments
- Activity modification
- Change shoe gear
- Padding
- Medications
- Ice
- Injections
- Orthotics
- Surgical Correction
Bunionectomy

Hallux Limitus/Rigidus

- Limited rom at 1st MPJ
- Normal - 65°
- Secondary to OA, anatomical variations
- Bone spur, dorsal 1st met head
- Joint space narrowing, jamming at joint

Conservative Treatments
- Stiff-soled shoes
- Modified orthotics
- Cortisone injections
- NSAIDS

Surgical Treatments
- Joint preserving
- Joint destruction
Hallux Limitus/Rigidus

- Plantar forefoot pain, 2nd met head
- Worsens with standing, walking barefoot
- Etiology
  - Overuse
  - Certain foot type
  - Excessive weight
  - Ill-fitting shoe gear

Metatarsalgia

- Plantar forefoot pain, 2nd met head
- Worsens with standing, walking barefoot
- Etiology
  - Overuse
  - Certain foot type
  - Excessive weight
  - Ill-fitting shoe gear

Plantar Plate Rupture

- Strapping, NSAIDs, Cushioned shoes
- Immobilization in CAM boot
Stress Fracture

- Pain near the ball of the foot, between the 3rd and 4th toes, caused by thickened nerve tissue
- “Pebble in my shoe”
- Tingling, burning, numbness
- Injections
- Cortisone or Alcohol
- Metatarsal pads
- Surgical excision

Morton’s Neuroma

- Pain near the ball of the foot, between the 3rd and 4th toes, caused by thickened nerve tissue
- “Pebble in my shoe”
- Tingling, burning, numbness
- Injections
- Cortisone or Alcohol
- Metatarsal pads
- Surgical excision
Hammertoes

- Clawing or buckling of the toes
- Shoes with a deeper toe box
- Accommodative padding
- Surgical correction
  - Tendon lengthening
  - Toe alignment

Bunionette/Tailor’s Bunion

- Lateral/plantar 5th met head pain
- 5th MPJ instability
- Padding, wider shoe gear
Rearfoot Pathology

- Plantar Fasciitis
- Achilles Tendinitis
- Retrocalcaneal Exostosis
- Posterior Tibial Tendinitis
- Pes Cavus
- Ankle Arthritis

My Heel Hurts

- Inferior Heel
  - Plantar Fasciitis
- Posterior Heel
  - Achilles Tendinitis
  - Retrocalcaneal Exostosis
  - Haglund's Deformity

Plantar Fasciitis

- Inflammation of plantar fascial ligament
- Post-static dyskinesia
- Bone spur, may or may not be present
- Conservative treatments 90% successful
Plantar Fasciitis

- Conservative Treatments
  - Stretching Exercises
  - NSAIDS
  - Cortisone Injection
  - Arch Support, Athletic Shoes

Achilles Tendinitis

- Tendon sheath, watershed zone
- Young, active patients
- Repetitive stress
- Thickening of mid-portion

Retrocalcaneal Exostosis

- Thickening, prominence
- Post-static dyskinesia, worsens with activity
- Tight Achilles tendon
- Bone spur on x-ray
Haglund’s Deformity

+ Bony enlargement at posterior heel
+ “Pump Bump”
+ High arch, tight Achilles

Conservative Treatments

+ Rest/Immobilization
+ Ice
+ NSAIDS, topical
+ Physical Therapy/Stretching Exercises
+ No Cortisone Injections

Surgical Treatment

+ Resection of heel spur
+ Debridement of tendon

Posterior Heel Pain

+ Chronic, overuse
+ Posterior-medial ankle pain
+ Pain with heel raises, supination
+ Progression leads to adult acquired flat foot

Posterior Tibial Tendinitis
Posterior Tibial Tendinitis

- Ice
- Anti-inflammatory medication
- Shoe Modification
- Immobilization
- Orthotics or Braces
- Physical Therapy
- Surgical Correction

Surgical Correction

Ankle Sprain

- Most common ankle injury
- Stretching or tearing of the ankle ligaments
- Associated with many other injuries in the foot
Ankle Sprain

- RICE
- Immobilization – 7 days
- Early ROM
- Physical therapy
  - Proprioception
  - Muscle strengthening
- Bracing – 6 months

Peroneal Tendinitis

- Posterior-lateral ankle, 5th met base pain
- Pain with ankle eversion
- Acute or chronic condition
- Conservative
  - Immobilization
  - NSAIDS
  - Physical therapy

5th Metatarsal Fracture

- Avulsion
- Jones
- Metatarsal Shaft
Ankle Arthritis

- Activity & shoe modifications
- Orthotics or Bracing
- Anti-inflammatory medications
- Injections
- Surgical Correction
  - Joint “Clean-up”
  - Joint Fusion
  - Joint Replacement

Skin/Nail Pathology

- Plantar’s Wart
- Callus
- Corn
- Onychomycosis
- Ingrown Toenail
- Tinea Pedis
- Psoriasis

I Have a Plantar’s Wart

- Plantar Wart
- Corn
- Callus
Plantar Warts

- HPV viral infection
- Capillary budding, obliterates skin lines
- Painful with medial to lateral compression

Plantar Warts

- Liquid Nitrogen
- Salicylic Acid
- Cantharidine (Cantharone)
- Antiviral Creams (Aldara)
- Cimetidine (Tagament)
- Surgical Excision

Callus

- More spread out
- Appear with increased friction
Corn

- Look cone-shaped, point into the skin
- Form on pressure points from poorly fitted shoes or a bone spur

Callus & Corn Treatments

- Debridement or "Shaving"
- Off-loaded padding
- Surgical Correction of the Underlying Problem
  - Hammertoe correction
  - Bone spur removal

Onychomycosis

- Thick, discolored
- Medications
  - Topical
  - Oral
- Nail Removal
- LASER
Ingrown Toenails

- Ingrowth of toenail into the skin
- Conservative Treatments
  - Soaking
  - Antibiotic ointment
  - Open toed shoe
- Partial Nail Avulsion
  - Chemical matrixectomy

Ingrown Toenails

- Nerve Block
  - 3cc 1% lidocaine plain
  - 3 injections, 4 nerves
- Digital Tourniquet
- Chemical Matrixectomy (Phenol)
  - 3 applications – each 30 secs

Tinea Pedis

- Fungus infection of the skin. Common in warm, damp environments...South East!
- Itchy, dry, scaly skin on the soles of the feet and in between the toes
- Antifungal treatment for 2-4 weeks
  - Ketoconazole q12h topical 4 weeks
  - Terbinafine 250mg PO 2 weeks
Psoriasis

- Skin biopsy
- No debridement
- Topical steroids
- Referral to Rheum/Derm for systemic treatment

Medical Conditions

- Diabetes
- Gout
- Rheumatoid Arthritis

Diabetes

- Diabetes is the leading cause of amputation in the lower limbs
- 75% of DM wounds are preventable
- Affects the nerves, arteries, and immune system
  - Can't feel minor injuries to the skin
  - Poor blood flow delays wound healing
  - Poor immune system can't fight infection
Diabetic Foot Exam

- ROS related to DM (eye, kidney, nerve, vascular)
- Prior history of foot ulcers or amputation
- Gait Exam
- General Appearance
- Derm
- Vascular
- Ortho
- Neuro
- Inspection of Footwear

Diabetic Foot Exam

- Derm
  - Absence of hair
  - Skin thin, shiny
  - Calluses
  - Ulcers
  - Toenails

- Vascular
  - Pedal pulses
  - Capillary Fill Time
  - Edema
  - Temperature
  - Varicosities

Table 5: Wagner Classification System

<table>
<thead>
<tr>
<th>Grade</th>
<th>Lesion</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>No open lesions: may have dryness or sores</td>
</tr>
<tr>
<td>1</td>
<td>Subfascial ulcer</td>
</tr>
<tr>
<td>2</td>
<td>Deep ulcer on tendon or joint capsule</td>
</tr>
<tr>
<td>3</td>
<td>Deep ulcer with abscess, osteomyelitis, or joint synovitis</td>
</tr>
<tr>
<td>4</td>
<td>Local gangrene – footbed sores</td>
</tr>
<tr>
<td>5</td>
<td>Gangrene of entire foot</td>
</tr>
</tbody>
</table>

Diabetic Foot Exam

- Neurological Exam
  - Protective sensation
    - Semmes-Weinstein Monofilament
  - Muscle strength
Peripheral Neuropathy

- Assessed at least annually
- 10-g monofilament testing (protective)
- Tuning fork (large fibers)
- Pinprick/temperature (small fibers)

Treatment
- Optimized glucose control
- Pregabalin or duloxetine for initial treatment

Diabetic Foot Exam

- Orthopedic
  - Bunion
  - Hammertoes
  - Acquired flat foot
  - Charcot deformity

At Risk Foot Care

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Definitions</th>
<th>Recommended Treatment</th>
<th>Suggested Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No loss of pressure sensitivity, no PGO, no foot deformity</td>
<td>Patient education including advice on proper footwear</td>
<td>Annually</td>
</tr>
</tbody>
</table>
| 1             | Loss of pressure sensitivity with or without foot deformity | - Consider specialized footwear  
- Consider surgery if deformity cannot be managed with shoes  
- Continue patient education | Every 3-6 months |
| 2             | Loss of pressure sensitivity and PGO | - Consider specialized footwear  
- Consider vascular consultation for combined follow-up | Every 2-3 months (with a specialist) |
| 3             | History of ulcer or amputation | - See risk category 1  
- Consider vascular consultation for combined follow-up if PGO is present | Every 1-2 months (with a specialist) |
DM Foot Care Tips
- Check your feet daily
- Wash feet in warm (not hot) water
- Moisturize your feet, dry between the toes
- Don’t trim calluses (pumice stone, emery board)
- Inspect shoes before wearing; clean, dry socks
- Don’t walk barefoot
- Manage your glucose
- Don’t smoke
- Get periodic foot checks

Diabetic Foot Infections
- Wound culture
- Probe to bone test
- Polymicrobial
- Staph and Strep
- Empiric Therapy
- Maintain moist environment
- Off-load area
- MRI
- Measure wound size
  - > 50% area reduction in 4 weeks
- Good wound care
  - Daily dressing changes, sharp debridement, control infection, off-load

- Every 20 secs an amputation occurs in the world as an outcome of diabetes.
  - Journal of Vascular Surgery

DM Shoes
- Patients with
  - Neuropathy
  - Increased plantar pressures
  - Bony deformities
  - Amputations
- Shoes
  - Wider
  - Extra depth
  - Tall toe box
  - Plastazote insole
Gout
- A build up of uric acid in the joints
- Intense pain, redness, and swelling
- Often at night, or first arising
- No fever
- Medication
- Uric acid level
- Synovial fluid analysis
- Diet restrictions
- Immobilization

Rheumatoid Arthritis
- Certain cells in the immune system malfunction and attack healthy joints
- Causes pain, swelling, redness, and warmth around joints
- Shoes, Orthotics, Injections, and Surgery
LE Edema

- Venous insufficiency
- DVT
- CHF
- Renal failure
- Lymphedema
- Medication side effects
  - Diuretic compliance
  - Compression stockings
  - Education

Peripheral Arterial Disease

- Symptoms:
  - Intermittent claudication
  - Rest pain
  - Non healing wounds
- NIVS – ABIs, ultrasound, MRA
  - ABIs at 50 yrs old
- Anticoagulants
- Referral to Vascular
References

- Microvascular Complications and Foot Care: Standards of Medical Care in Diabetes. Diabetes Care 2018;41(Suppl. 1):S16-S18.