Common Ailments of the Foot
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Plantar fasciitis

Symptoms:
- Stabbing sensation in the heel
- Pain worse in the morning when getting out of bed or after prolonged seating and decreases after the first several steps.
- Limping, tenderness, swelling, stiff sensation
- Can be caused by prolonged standing

Plantar fasciitis
Plantar fasciitis

One of the most common causes of heel pain.
Caused by inflammation, micro tearing of the fascia.

Risks
- Obesity
- Working long hours on hard surfaces
- Age
- Exercise with repetitive stress to the heels
- Foot mechanics i.e. Pes planus, pes cavus

Can get xray but will commonly see a heel spur. These are common and often blamed for plantar fascial symptoms but can also be seen on x-rays in people who do not have plantar fasciitis.
- Stress fracture
- Pinched nerve
Plantar fasciitis

Differential diagnosis
1. Pinched nerve
2. Calcaneal stress fracture

Plantar fasciitis treatment

- Anti-inflammatories
- Physical therapy
- Night splints
- Orthotics
- Steroid shots
- ECSWT, Tenex, etc
- Surgery

Plantar fasciitis treatment continued

- Weight loss
- Supportive shoe gear, changing shoes frequently if a runner
- Changing exercises
- Icing
- Stretching
Freidberg’s
- Avascular necrosis of the metatarsal head. Most commonly affects the 2nd metatarsal head.
- Can be difficult to diagnose on plain radiographs
- Diagnosis primarily made on H& P

Freidberg’s symptoms
- Swelling
- Pain upon ROM of the 2nd MPJ
- Pain with compaction of the MPJ
- Pain with ambulation
Freiberg’s diagnosis
- X-ray: may not show anything initially but can eventually see osteopenia in the metatarsal head, flattening of metatarsal head, loose bodies, arthritic changes
- MRI: can be used to diagnose in the early stages will show increase signal intensity on T-2 images

Freiberg’s treatment
- Conservative: immobilization in boot or cast with or without crutches for 4-6 weeks, or until symptoms resolve then gradual return to normal activity.
  Orthotics, shoes modifications.
- Surgical: cleaning up the joint, cartilage replacement, implants, resection of the metatarsal head.

Hallux limitus definition
Hallux limitus: A degenerative process of the joint characterized by decreased Range of Motion of the Hallux. Over a period of time this jamming forms a dorsal bump on the head of the 1st Metatarsal and is often referred to as a dorsal bunion. Eventually can lead to joint ankyloses and loss of motion.
Hallux limitus

- Several etiologies including Biomechanical, Neuromuscular,iatrogenic, traumatic, metabolic, anatomic/structural. Four common factors is 1) Systemic dz (Gout, RA), 2) Injury to the joint (turf toe, jamming etc.) 3) Metatarsus primus elevatus 4) Long 1st metatarsal

Hallux limitus

- Stage I – No symptoms to vague joint pain, decreased dorsiflexion of the 1st MPJ. X-rays show no changes, can show mild dorsal enlargement. One or more etiologic factors.

Hallux limitus

- Stage II – Decreased dorsiflexion, pain with end ROM, increased frequency of pain. X-ray finding such as subchondral sclerosis, mild joint space narrowing with asymmetry, mild dorsal exostosis.
Hallux limitus

- Stage III: Inflammatory arthritis, pain with activity, Limited ROM which is very noticeable. Impingement with nerve type symptoms with shoe gear. Increased dorsal exostosis, subchondral cyst, irregular narrowing with practical obliteration.
Hallux limitus

- Stage IV: Significant pain with attempted ROM of the joint to no pain within the joint just with bony protrusions of joint. Joint is enlarged. X-ray findings can show flattening of the joint with surrounding spurring of the joint to ankyloses with no joint space visible.
Hallux limitus
- STAGE I - Orthotics with reverse morton’s extension or padding, rigid rocker bottom type shoes

Hallux limitus / Hallux rigidus

Plantar warts
- Caused by Human papillomavirus (HPV) which enters the body via tiny abrasions in the skin. These can cause discomfort and pain.
Plantar warts
- Black pinpoints which are small clotted vessels
- Disrupts normal lines and ridges of the skin in the foot.

Treatment:
- Most clear up on their own but laser therapy, cryotherapy, acid treatments (Salicylic acid, cantharone) surgical excision. No single treatment is 100% effective
- Imiquimod
- 5-Flurouracil
- Bleomycin sulphate
- Candida antigen
- Interferon-alpha

Oral medication (Retinoids, Cimetidine, Diindolymethane)
- Laser
- Surgical excision
Onychomycosis

- A fairly common disease of the toenail.
  
  The two most common causes of Onychomycosis are Trichophyton mentagrophytes and Trichophyton rubrum. Less commonly it can be caused by molds or yeast as well. Some families have a genetic predisposition for T. rubrum.

Onychomycosis

Test that can be ordered to confirm onychomycosis are Periodic acid-Schiff (PAS), KOH, PCR. Fungal cultures are more difficult to obtain, hard to culture and takes weeks to grow cultures.
Tinea pedis is linked to onychomycosis. Onychomycosis often starts as Tinea pedis. Important that you treat both of these. If you only treat tinea pedis and patient has onychomycosis, onychomycosis can re-infect the skin.

Onychomycosis is more common in diabetic than those who are non-diabetic.

Lasers: has become quite popular very little data to determine if this is effective. The FDA approved it because it can cause "temporary improvement of the appearance of the toenail" and not actually labelled for treatment of Onychomycosis.

Controlling recurrence
- Use maintenance regimens of antifungal agents (Limits growth of fungi on nails)
- Discard old shoes (removes fungal reservoir)
- Alternate wearing different pairs of shoes (allows shoes to dry, reduces fungal load in footwear)
- Wash feet regularly (minimizes fungal presence on the feet)
- Alert provider at first sign of infection (minimizes progression of infection)
Onychomycosis (treatment)
- Topical (Efinaconazole - 53-55% effective)
- Oral (Itraconazole 54%, Terbinafine 70%)

% of Mycologic cure

Stress fractures
- Overuse injury of bone. The more the load the more calcium will be placed at the site. Increased overloads can overwhelm repair and small cracks can occur within the bone structure.

Stress fracture
Stress fracture - Symptoms

- Pain
- Swelling
- Inability to bear weight

Stress fracture diagnosis

- Plain film may not initially show fracture and should plan to treat as a fracture and see patient back in 2 weeks to repeat x-rays.
- MRI
- CT Scan

Stress fracture (treatment)

- Rest, Ice, compression, elevation
- Immobilize (cast or boot) sometimes for at least 6-8 weeks depending on bone fractured.
- PT once healing has occurred and in athletes to try and prevent future injury.
Plantar plate injury

- Common in over pronators and in middle aged women.
- Plantar plate is a thick ligament which inserts into the base of the phalanges plantarly. It protects the head of the metatarsal from pressure and prevents over extension of our toes also spreading or splaying.

Plantar plate symptoms

- Swelling under the ball of the foot extending into the toes seen commonly in the 2nd MPJ and sometimes on the dorsum of the foot.
- Sensation of walking on bones
- Positive Lachman’s test
- Splaying of toes and clawing
Plantar plate injury diagnosis
- Careful history
- X-rays
- Diagnostic ultrasound
- MRI

Plantar plate injury treatment
- Conservative (anti-inflammatories, strapping of toe, offloading padding, altering activity, changing shoe gear, determining biomechanical cause, orthotics)
- Surgical (plantar plate repair, osteotomy)

Can take 3-4 months to improve symptoms in some cases.

Intermetatarsal neuroma
- Commonly occurring between the 3rd and 4th metatarsals called “Morton’s neuroma”
- Thickening/enlargement of the nerve as a result of irritation of the nerve
Intermetatarsal Neuroma

Causes:
1. Compression from shoe gear
2. Activities such as running, court sports, any activity that involve repetitive irritation to the ball of the foot.

Symptoms:
1. Pain
2. Feeling of “bunched up sock”
3. Feeling of a “pea”
4. Burning numbness, tingling sensation
Intermetatarsal neuroma

- Treatment:
  1. Activity modifications
  2. Padding
  3. Anti-inflammatories, icing
  4. Orthotics
  5. Wide toe box shoes
  6. Injection therapy – cortisone, injections, alcohol sclerosing injection therapy

References:

- Photos: Myfootshop.com, fdafac.com
- Video: www.drglass.org http://www.youtube.com/watch?v=3gPcoRVuF9I

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