Potpourri of Common Foot and Ankle Disorders

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Anatomy of the Foot & Ankle
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- The foot and ankle contain:
  - 26 bones (One-quarter of the bones in the human body are in the feet)
  - 33 joints
  - more than 100 muscles, tendons (fibrous tissues that connect muscles to bones), and ligaments (fibrous tissues that connect bones to other bones)
  - a network of blood vessels, nerves, skin and soft tissue
- These components work together to provide the body with support, balance, and mobility
- A structural flaw or malfunction in any one part can result in the development of problems elsewhere in the body
  - Abnormalities in other parts of the body can lead to problems in the feet

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Anatomy of the Foot & Ankle

- **Foot bones**

![Diagram of foot bones]
Anatomy of the Foot & Ankle

- Ankle bones
  - Ankle bones
  - Sprained ankle bones
  - Common foot abnormalities
    - Forefoot
      - Paronychia, Hallux rigidus, hallux valgus, digital deformity, metatarsalgia, Tailor’s bunions and Morton’s neuroma, stress fractures, and verruca
    - Midfoot
      - Posterior tibial tendon dysfunction, OA
      - Peroneal tendon dysfunction
    - Hindfoot
      - Insertional achilles tendonitis, Haglund’s, tarsal tunnel, plantar fasciitis
Paronychia (Dx 681.11)

- **Definition:** Infection of the fold of skin at the edge of the nail
- **Acute**
  - Cellulitis
  - Pain
  - Tx → ABX.
- **Chronic**
  - Drainage/granulation tissue
  - Tx → ABX. I+D, local wound care and possible x-ray

I+D Technique

- **Code 10060:** Incision & drainage of abscess (eg, carbuncle, suppurative hidradenitis, cutaneous or subcutaneous abscess, cyst, furuncle, or paronychia); simple or single
- **Code 10061:** complicated or multiple
- Administer local block
- May culture if has been chronic
- X-ray if concern for osteo.
- Abx. and local wound care
Nail Avulsion

- Definition: excision of the body of the nail plate from its primary attachments
- Code 11730: Avulsion of nail plate, partial or complete, simple; single
- Code + 11732: each add'l nail plate
- Nail root, known as the matrix and found beneath the cuticles, is left alone, which allows the nail to grow back
- This procedure requires:
  - local injection
  - specially designed nail splitter to separate the nail from the nail bed
  - small clamp to remove the nail

Nail Root Ablation Procedure

- Code 11750: Excision of nail and nail matrix, partial or complete (eg, ingrown or deformed nail), for permanent removal;
- Code 11752: with amputation of tuft of distal phalanx
- Chemical or Surgical procedure to destroy nail matrix
Verruca (078.12)

- Definition: Harmless, warty sore on the skin caused by a virus, aka “Plantar wart”
- Treatment
  - Destruction (CPT® 17110)
    - Acids
    - Cryosurgery
    - Laser
  - Excision (CPT® 11420-11426)
  - Immunotherapy (CPT® 11900)
    - Injection of warts with antigens

Hallux Rigidus (Dx 735.2)

- Definition: Condition in which there is stiffness in the metatarsophalangeal joint of the big toe
- Evaluation
- Clinical/X-ray
  - Dorsiflex
  - Joint space
  - Dorsal osteophyte
  - OCD
  - Painful ROM
Hallux Rigidus (Dx 735.2)

Hallux Rigidus - Treatment

- **Conservative**
  - Extra depth shoes to prevent dorsal impingement and irritation of the medial dorsal cutaneous nerve
  - Rocker bottom sole
  - Orthotics NSAIDS/steroid injection (20600)

- **Surgical**
  - Dorsal cheilectomy (28289) – stage 1 and 2 disease
  - 1st MPJ Arthrodesis (28750)
  - Keller bunionectomy (28292)
  - Implant arthroplasty (28293)
Hallux Rigidus - Treatment

Hallux Abducto Valgus (HAV) - Bunion deformity Dx -735.0

- HAV Pathomechanics
  - shoe wear, heredity, hyperpronation, neuromuscular
  - Lateral deviation hallux and medial deviation 1st metatarsal
  - Juvenile HAV
    - associated with a long first metatarsal, metatarsus adductus, and pes plantus
  - X-rays
    - AP, Lat and sesmoid views
    - Wt. bearing
HAV – Bunion deformity (Dx 735.0)

HAV - Treatment

- Conservative
  - Footwear with wide toebox and good insole padding and orthotics to support the longitudinal arch
- Surgery intervention
  - Simple bunionectomy (28290)
  - Bunionectomy with osteotomy (28296)
  - Lapidus bunionectomy (28297)
HAV- Pre-op and Post-op

Hallux Abducto Valgus Procedures
Lesser-Toe Deformities

- Hammer toe is a contracture (bending) of one or both joints of the second, third, fourth, or fifth (little) toes
- Hammer toe Dx 735.4
  - Can be associated with corns
  - Lesions on bony prominences caused by abnormal pressure
  - Usually symptomatic
- Treatment
- Shoe with wide toebox
  - Sx for hammer toe (28285)

Metatarsalgia (Dx 726.70)

- Metatarsalgia classically refers to nonspecific pain in the ball of the foot
- Differential Diagnoses
  - mechanical, arthritic, neurologic, idiopathic or neoplastic
- Eval – Hx of symptoms
- PE – location of pain. Plantar head pain/articular metahead tenderness, flexible vs. rigid, angulatory deviation, fat pad atrophy or migration
- Tx Conservative/Surgical – DMO 28308
Metatarsalgia – Sx DMO 28308

Metatarsalgia (Dx 726.70)

2nd metatarsal stress fx (733.94)

www.myfootshop.com
Freiberg’s Infraction (Dx 732.5)

- **S/S**
  - Occurs most commonly 2nd MTP
  - Onset adolescence
  - More common in females
- **Tx**
  - Acute phase protection and reduce inflammation
  - Adult – joint arthroplasty

Morton’s Neuroma (Dx 355.6)

- **S/S**
  - Burning pain into 3rd & 4th toes 80% -90% of cases.
  - +Mulder’s sign – pain w/ plantar pressure 3rd interspace
- **Treatment**
  - Conservative
    - Accommodative footwear, metatarsal pads, orthotics and steroid injections 64455
- **Sx**
  - Excision of the interdigital nerve 28080
Ganglions Dx 727.41, 727.42

- Degeneration of joint capsule or tendon sheath
- 70% recurrence after aspiration (CPT® 20605)
- Treatment
- Sx excision (CPT® 28090)

Heel Pain

- Plantar fasciitis (Dx 728.71)
- Retrocalcaneal bursitis (Dx 726.79)
- Tarsal tunnel (Dx 355.5)
- Achilles tendonitis (Dx 726.71)
- Calcaneal stress fracture (Dx 733.95)
Plantar Fasciitis

- Pain subcalcaneal, insidious onset, pain in morning or after period of inactivity
- Precipitating factors – Shoes, training, change in sport and biomechanical factors
  - Cavus foot
  - Hyperpronated foot

Treatment
- Replace sports shoes, NSAIDs, heel cups orthotics, plantar fasciitis night splint
- Steroid injection for recalcitrant cases (20550)
- Sx options
  - Endoscopic plantar fasciotomy release (29893)
  - Open plantar fascial release with spur excision (28119)
Tarsal Tunnel (Sx 28035)

- Compression of the tibial nerve or one branch beneath the flexor retinaculum
- CC
  - pain and paresthesias medial side of heel or foot
  - May be caused by overpronation

Treatment
- NSAIDs, activity modification, orthotics, steroid/local anesthetic injection
- For persistent cases tibial nerve decompression
Retrocalcaneal Bursitis (Dx 726.79)

- **Dx**
  - Pain at insertion of Achilles tendon
  - Tight shoes or calcaneal protuberance Haglund’s deformity will cause bursitis

- **Treatment**
  - Open back shoe or shoe with well padded counter and appropriate shoe fit
  - Accommodative padding to foot
  - PT and Cam Boot
  - Surgical (28120)

Achilles Tendonitis (Dx 726.71)

- **Treatment**
  - Inflammation – rest, NSAIDs, ice, heel lifts, low impact cross-training activity
  - Cast or walking boot for recalcitrant cases
  - Rest extremity for at least 1 week past resolution of symptoms
    - Correct biomechanical factors
    - Restore strength and flexibility

- **Sx**
  - Intervention may rarely be needed for individual that fail 4-6 months of nonoperative Tx
  - Exostectomy calcaneus  (CPT® 28120)
  - Achilles suture bridge
Posterior Calcaneal Exostosis with Insertional Achilles Tendonitis

S/S:
- Increase pain, heel pain with jogging, weight bearing
- Pain with med/lat compression of calcaneus

Imaging
- X-ray + in 10 days – 2 weeks (sclerotic line)
- Bone scan

Treatment
- Refrain from sports
- SLC vs. surgical shoe

Calcaneal Stress Fracture (Dx 733.95)
Posterior Tendon Dysfunction (PTTD) (DX 726.72)

- In middle aged patients the tibialis posterior is one of the foot tendons most at risk for tenosynovitis or possible rupture
  - S/S
    - Pain medial side of ankle and foot
    - Aching discomfort along the medial longitudinal arch of foot
    - Unable to perform single heel raise on affected foot

Posterior Tibial Tendon Dysfunction (PTTD)

- Treatment
  - TPD orthotics, refrain from sports, cast
  - Recalcitrant cases – Sx
Surgical Decompression of PTTD

- Calcaneal Osteotomy (CPT 28300)
- Decompression PTTD (CPT 28238)
- FDL transfer with Tenodesis (CPT 27690)
- Gastroc. Recession (CPT 27687)

Posterior Tendon Dysfunction (PTTD)
Diabetic Lower Extremity Problems

- Diabetic Foot Infections and Ulcers
  - Diabetic Neuropathy (Dx 250.6)
  - Lower Extremity – PVD (Dx 443.9)
  - Charcot Foot (Dx 250.6, 713.5)

Conditions Accepted for HBOT at St. Vincent Hospital

- Wound care
  - Chronic diabetic wounds
  - Treatment of compromised skin grafts or flaps
  - Acute peripheral arterial insufficiency
  - Acute traumatic peripheral ischemia
  - Crush injuries
    - reattachment of severed limbs
- Delayed radiation injury
  - Osteoradionecrosis
  - Soft tissue radionecrosis
- Infections
  - Chronic refractory osteomyelitis
  - Progressive necrotizing infections
Diabetic Lower Extremity Problems

- Diabetic Foot Infections and Ulcers
- Diabetic Neuropathy
- Lower Extremity- PVD
- Charcot Foot

Wound Healing Society: 2006 Guidelines for Treatment of Diabetic Ulcers

Adjuvant Agents

Diagnosis
Infection Control
Wound Bed Preparation
Surgery
Prevention of Recurrence
Treatment Categories
Dressings
Off-loading

Diabetic Ulcer NBLD

Debridement of Ulcer and Integra
STSG vs. Apligraf

STSG

Apligraf

Diabetic Neuropathic Ulcer

- Wagner III Diabetic Ulcer with Osteomyelitis
- Dx 250.8_, 707.15
Diabetic Ulcer with Osteo

Diabetic Ulcer with Osteo.
TMA Foot Amputation

- Transmetatarsal amputation - 28805

Charcot Foot

Charcot joint showing deformity and advanced degeneration of the foot.

Charcot joint showing deformity and advanced degeneration of the ankle.

www.footcaredirect.com
Charcot Foot

- 0.4 – 9% of patients with Diabetic neuropathy will develop Charcot Foot
- 20 – 50% will remember precipitating event
- 25% will become bilateral
- Acute phase can mimic cellulitis or less commonly DVT

Charcot Foot

- Sites
  - Lisfanc joint most common, initially medial column fragmentation
- Incidence
  - 70% midfoot, 15% rearfoot, 15% forefoot
  - 44% associated with a plantar ulcer
- Atropic vs. hypertropic
Venous Stasis Ulcer (Dx 454.0)

Puncture Wound with Foreign Body

- Foreign body
  - Dx 729.6
  - 28190 Subcutaneous
  - 28192 Deep
  - 28193 Complicated
Foreign Body

Trauma of Foot

- Fractures and dislocations of foot
  - Metatarsal fx
  - Jones 5th metatarsal fx
    - Dx 825.25
    - 30% nonunion rate
  - Tx medical management NWB cast 6-8 weeks protected weight bearing x 3 weeks bone stimulator
- Sx tx
  - ORIF with screw (28485)
ORIF Nonunion 2\textsuperscript{nd} Metatarsal Fx. (Dx 825.25) (CPT® 28485)

Multiple Metatarsal Fractures
Jones Fx (28485)

Trauma

- Dislocations
  - IPJ (Interphalangeal joint)
  - MPJ (Metatarsophalangeal joint)
  - Lis Franc
  - Chopart’s
  - Ankle
ORIF Open Toe Dislocation (28296)

ORIF Tarsal Metatarsal Dislocation (28615)
Calcaneus Fx. (Dx 825.0, 825.1) (28415)

Flatfoot, Coalitions, Foot Arthritis

- Evans procedure
  - Rear foot fusions
  - Medializing calcaneal osteotomy
Evans Flat Foot Procedure 28300

Rear foot Fusions (28725-STJ, 28730-TN)
Thank You