Primary Care Orthopedics: Top 5(ish) - Foot & Ankle
• No consultant arrangements
• No patents
• Nothing related to this talk
The Top 5 (ish)

1. Ankle Sprains
2. Heel Pain - Plantar Fasciitis
3. Ankle Fractures
   1. 5th Metatarsal Fractures
4. Achilles Tendon Injuries
   1. Achilles Tendonitis
5. Forefoot Pain
6. Bunions
#1 Ankle Sprains
ANKLE SPRAIN

- 25,000 sprains **daily**!
- 7-10% all admissions to ER
- 80% involve *LATERAL* ligament complex
- **IF RX**, 80-90% better @ 3 mos
- **10-20% NOT**: something else is going on
ANKLE SPRAIN

- **HX**: Usually inversion
  - Can hear/feel a ‘pop’
ANKLE SPRAIN

• When to seek care
  ○ inability to bear wt 4 steps
  ○ Significant swelling/bruising
  ○ Tenderness over inner/outer bump
Anatomy

Ankle Sprains:

- ATFL almost always involved
- CFL 50-75%
- PTFL <10%
ANKLE SPRAIN

- **Xrays** — Gold Standard

- **OTHER TESTS**: MRI, CT, BScan **ONLY @ Rx failure**!

- You **RARELY** need an MRI, **and NEVER ACUTELY**!
ANKLE SPRAIN RX

GOAL is to minimize chronic Symptoms
Severity: Graded 1 thru 3

- **Stage 1** (immediate PRICE protocol):
  - Protection (brace/crutches; SLC 2 wks if Gr 3)
  - Rest (limited WB)
  - Ice (72 hrs.)
  - Compression (initial splint 2-3 wks, or ace wrap)
  - Elevation (Minimize edema, NSAIDS)
**ANKLE SPRAIN**

- **Stage 2** (after able to WB):
  - PT program
    - G-S stretching, heel/toe walk, peroneal strengthening

- **Stage 3** (4-6 wks after injury):
  - Begin agility, endurance, proprioceptive exercise
  - Sports return: ‘The Hop Test’
    - Initial use of brace until fully rehabilitated
Treatment

- Delayed repair as efficacious as early repair
- Early mobilization
  - Positive effect on local metabolic activity
  - ? Speeds healing process
- Cost
THE SYNDROMATIC SPRAIN
“High Ankle Sprain”

- Anterior TTP well above ankle
- Positive squeeze test
- Pain with ER

PROLONGED RECOVERY
Splint/Cast, Refer
NON-OPERATIVE RX
Radiology

- Talar Tilt Stress Radiograph

20°
Heel Pain
1. PLANTAR FASCIITIS

• MOST common problem

• Posteromedial heel pain
• Inflamed fascial origin: medial tuber
• Especially: F, obese, tight GS, high arch
PLANTAR FASCIITIS

- **HX**: Worst in AM (FIRST steps) & after sitting
  - Warms up with activity (stretching)
  - Friends/family that have had it
PLANTAR FASCIITIS

- **XR**: usually negative

- **NOTE!** ‘Heel spurs’ mean **NOTHING** (50%)

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No Pain

Pain
PLANTAR FASCIITIS

- **RX**: 95% better **W/O** surgery @
- **Slow response**: *6-10 mos*
  - Plantar fascial stretch, calf stretch.
  - Cushioned shoewear (SAS)
  - Silicone heel cup, NSAIDS
  - Custom Orthotic
    - Injection
    - Shockwave treatment
    - Surgery last resort
HEEL Pad Syndrome

- **HX/PE:** *Central, plantar* pain/tenderness *w/o* pain along plantar fascia

- Heel pad *atrophy*!
  - Normal with aging process
  - Repeated injection

- Worse *with* activity/WB
**Treatment:**
- Well-cushioned shoes
- NSAIDS
- Wt loss, Activity Modification
- Heel pad
- Orthotics inserts
- Advise *against* injection
Ankle Fractures
Epidemiology

- Most common weight-bearing skeletal injury
- Incidence of ankle fractures has doubled since the 1960’s
- Highest incidence in elderly women
- Monomalleolar 68%
- Bimalleolar 25%
- Trimalleolar 7%
- Open 2%
Mortise – a usually rectangular cavity in wood, stone or other material, prepared to receive a tenon & thus form a joint
Tenon – the end of the first member
Mortise – the hole in the second member
Other Imaging Modalities

- **Stress Views**
  - Gravity stress view [Michelson CORR 2001]
  - Manual stress views

- **CT**
  - Joint involvement
  - Posterior malleolar fracture pattern
  - Pre-operative planning
  - Evaluate hindfoot and midfoot if needed

- **MRI**
  - Ligament and tendon injury
  - Talar dome lesions
  - Syndesmosis injuries
Outcome

- Position of the mortise at union and stability of talus are critical factors!

  - Obtain an anatomic reduction
  - Hold to union
  - If loss of position is noticed, re-reduce if possible
Outcome

- Stable ankle fractures without lateral talar shift treated conservatively have 90% good to excellent results.
- Operative fixation of unstable ankle fractures have 85-90% good to excellent results.
- 2 year follow up:
  - 80-90% have unlimited ability to work, walk and participate in leisure activities.
  - 20-30% report swelling or stiffness.
  - 41% have reduced dorsiflexion (Lindsjo, Clin Orthop, 1985).
Outcome

Egol JBJS 2006

• At one year following surgery, patients are generally doing well
• Most have few restrictions and little pain
• There is a significant improvement at one year compared to six months → Recovery may take up to one year, let patients know this
• Younger age, male sex, absence of diabetes, and lower ASA class are predictive of functional recovery at one year

Egol JBJS 2003

• By nine weeks, the total braking time of patients who have undergone fixation returns to the normal baseline value
Stress Testing
5th Metatarsal Fractures

- Often inversion injury
- Associated with ankle sprains

Zone 1&3 – Nonop management
- WBAT in CAM boot

Zone 2 – Jones Fx
- High rate of nonunion - ~27%
- Nonop – Cast
- Op – ORIF w IM Screw
4. METATARSALGIA
MTP synovitis

- Pain **under** MT head(s)
- Frequently **diffuse, bilateral**

- **Multiple causes (1° mechanical):**
  - High heels or arches
  - Claw toes
  - Overuse
  - Fat pad atrophy
  - Plantar keratosis (IPK)
  - Tight Achilles
**METATARSALGIA**

- **HX**: ‘feels like balled up sock in the shoe’
  - Worse with WB (walking, activity)
  - 1 joint, 2, 3 or more
  - May be due to long metatarsals
  - Often due to overuse – distance runner/walker
**METATARSALGIA**

- **RX:** *decrease pressure*
  - File down the callus
  - Well-cushioned, low heeled shoes
  - Orthotic
  - Metatarsal bar, rocker bottom shoe
METATARSALGIA

- **Treatment**: rarely required
  - Only when *focal* and *recalcitrant* after 6-8 mos
  - Surgery rare...generally not much else that can be done beyond judicious activity/shoewear
  - EDUCATE pts to avoid their frustration
2. MORTON’S NEUROMA

- Overdiagnosed
- Repetitive irritation → many causes

- Female/Male = 5/1 (?shoes)

- $\frac{3}{4}$ IS = $\frac{2}{3}$ IS

- Rare > 1 site
  - $\frac{1}{2}$ or $\frac{4}{5}$ IS
MORTON’S NEUROMA

• **History**: pain at base of toes dorsal/plantar
  - ‘Walking on pebble/marble’
  - Numbness/burning in webspace
  - Relief by shoe removal/massage
MORTON’S NEUROMA

- **XR**: exclude stress fx, MTP synovitis
- **OTHER TESTS**: MRI **NOT** useful, over-used
- **RX**: *wide* toe box shoe, *lower* heel
  - Metatarsal pad
  - NSAIDS
  - Injection @ 6 weeks (50%)
  - EtOH injection *unproven*
Achilles tendon ruptures

- Most common tendon rupture of the lower extremity
- Frequency increasing with emphasis on fitness in middle age
- Peak incidence 3rd to 5th decade
- Prodromal sx’s in 10%
Mechanism of Achilles rupture

- Direct blow to posterior ankle
- Crushing injury
- Laceration
- Indirect “overloading”
  - Unexpected or violent dorsiflexion
  - Push off with knee extended (lunge)
Other risk factors for rupture

- Intratendinuous degeneration
- Fluoroquinolones
- Steroid injections
- Inflammatory arthritis
- 2 to 6 cm proximal to calcaneal insertion
  - Proximal blood supply from muscle, distally from calcaneus
  - Decreased # and size of blood vessels in this zone (Carr, JBJS-B 1989)

- Peritendinous circulation may be disrupted by chronic tendinitis
  - Watershed zone supplied by mesotenon on ventral surface
Physical exam

- Palpable gap
- Excessive dorsiflexion
- Weak plantarflexion
- “Thompson” test
  - Calf squeeze causes passive plantarflexion
    - *J Trauma, 1962*
- Initial Dx missed 20%
Operative versus non-operative management?

- Recent evidence supporting nonoperative management
- EBM challenges expert opinion that operative tx results in better restoration of strength

I believe
- slightly higher rerupture rate in nonop
- higher complication rate in operative tx
6. ACHILLES ‘TENDONITIS’

2 kinds: insertional OR midsubstance

- **HX**: ‘pain in the back of heel’
  - Worse with stairs, after prolonged activity
  - *Night Pain*
  - May be both sides
  - Often history of overuse - running
ACHILLES TENDONITIS

- **Treatment**: can take *8-12 months* to improve
  - RICE, NSAIDS
  - PT: **DAILY** stretching, modalities
    - **NIGHTLY** DF splint
  - Shoe lift (1cm) / heels!
  - ? SLC for short period
  - **NEVER inject (in, or near)!**
Haglund’s Syndrome

- Prominent superolateral calcaneus
- Pain, pressure from shoe
5. Bunions = Hallux Valgus
5. BUNIONS

BUNIONS
If the Shoe Won’t Fit, Operate on the Foot?

Sacrificing Toes for Style

A procedure to shorten toes is usually coupled with the removal of a corn of bunion caused by wearing poorly fitting shoes.

High-heeled narrow shoes force the toes to curl against the front of the foot. The part of the longest small toe may permanently bend and rub against the middle of the shoe, causing pain.

After removing the corn, a surgeon may shorten the toe in one of several ways. Frequently, a toe and a bone are cut out whole and the ends are stitched together.

Dr. Rock Positano, of the Hospital for Special Surgery, says bunion, often a cause for foot surgery, podiatrists.

“IT’s a scary trend,” said Dr. Rock Positano, director of the nominate, foot and ankle service at the Hospital for Special Surgery in Manhattan. Dr. Positano said that his waiting room is increasing filled with women hobbled by fitted cosmetic foot procedures, those done solely to improve the appearance of the foot or help patients fit into fashionable shoes.

More than half of the 175 members of the American Orthopaedic Foot & Ankle Society have undergone cosmetic foot surgery.
HALLUX VALGUS

- Hereditary
- SHOES (F/M = 9/1!)

HX: pain/swelling @ site, worse w/ tight shoes

PE: 1st MTP swollen, impinge 2nd ray crossover
‘BUNION’

- **XR**: standing foot
  - Alignment, mechanics, arthritis, fx

- **OTHER TESTS**: no

- **RX**: *proper shoe fit*
  - *Wide* toe box
  - Heels < 1 inch
  - Soft upper, fit *end* of day
‘BUNION’

- Orthotics & Splints of high cost and ? benefit
- **Other RX**: NSAIDS, stretching, HAPAD
When to Refer a BUNION

ONLY 3 INDICATIONS TO FIX!!!!

Progressive deformity, pain, shoeability
Remember...

- **NEVER** SURGERY FOR: aesthetics, ‘prophylaxis’, implants, killer shoewear

- Worse deformity = Worse outcome
  - Longer surgery, Longer recovery
Bunions - remember

- Expectations
7. STRESS FRACTURES

- The bane of the runners’ existence
Metatarsal Stress Fracture

- Runner, athlete, dancer
- Training errors, worn out shoes
- Elevation 1st met, stress transfer to lesser
- Dancers – 2nd met due to pointe position
- Cavovarus – 5th met
Metatarsal Stress Fracture

- Localize tenderness
- Xrays, bone scan/MRI
- Rest, boot, cast
- Cross-train, pool
- Surgery
  - Non-healing with closed Tx
  - 5th metatarsal
    - IM screw
    - Varus heel – Closing wedge calcaneal osteotomy
“The human foot is a masterpiece of engineering...and a work of art.”

- Leonardo da Vinci, *The Notebooks* (c. 1508-1518)