Sesamoiditis

DR. CONNIE LEBRUN, MPE, CCFP(SEM), DIP SPORT MED, FACSM
PROFESSOR, DEPARTMENT OF FAMILY PRACTICE
FACULTY OF MEDICINE & DENTISTRY
UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
Anatomy of Sesamoids

• Sesamoid “complex” laterally on plantar aspect of foot
• Two seed-shaped bones within medial and lateral heads of flexor hallucis brevis
• Also receive attachments from adductor and abductor hallucis tendons
Function of Sesamoids

• Transfers up to 50% of body weight
• Load can reach >300% during “push-off” of run
• Sesamoid disorders account for 1.2% of running injuries
  — Boike et al., 2011
• Incidence during ultramarathon running not known
Sesamoids and Gait in Runners

- Functionally lengthen the first ray during late stance phase of gait to enable smooth lateral to medial weight transfer throughout the foot

From Kindred et al., 2011
Epidemiology of Sesamoiditis

- Runners
- Dancers (ballet)
- Gymnasts
- Catchers
- Workers such as carpenters or electricians
- High heel shoes!!
Differential Diagnosis

- Bursitis
- Chondromalacia
- Tenosynovitis of FHL
- Sesamoid fracture

- X-ray including sesamoid views (like Merchant’s or skyline view of the knee)
- Bone scan, US, CT, MRI as needed
Presentation

- Painful foot, walking on lateral plantar aspect
- Sometimes swelling or bruising, crepitus
- Plantar pain with passive dorsiflexion of the great toe
- Weakness or pain with resisted plantarflexion
Pathology

- **Sesamoiditis (30%)**
  - No radiological findings
  - Crepitus, tenderness and pain with extension of first MTP
- **Osteochondritis (10%)**
- **Acute fracture (10%)**
- **Chronic stress fracture (40%)**
  - Most commonly in tibial sesamoid (larger, more WB)
- **Bursitis (5%), OA (5%)**
- **A bipartite or multipartite sesamoid occurs in 5% to 33% of the population**
Sesamoiditis/Stress Fractures in Dancers

- Ballet
  - Readiness for “en pointe”
- Tap
- Jazz
- Hip-hop**
- Irish step dance
- Ballroom
- Competitive dance

From Wilson et al. 2015
Rehabilitation in Dancers

- “Relative rest”
- Cross-training
- Dance-specific:
  - Adequate healing, ROM, flexibility, strength & balance
- Technique:
  - Alignment, quality of movement, proper muscle recruitment, prevention of compensation habits

Reformer (foreground) used in dance rehabilitation setting

From Wilson et al. 2015
Treatment of Sesamoid Disorders

• Unload 1\textsuperscript{st} MTP
• Restrict impact type activities
• Metatarsal pad or bar or orthotic with cutout
• May need to be non-WB-ing until tenderness resolves - 6 weeks for stress fractures (high risk of non-union)
• Corticosteroid injection
• Excision
Surgery for Sesamoid Disorders

- Partial sesamoidectomy
- Complete sesamoidectomy
- Bone grafting of sesamoid nonunion
- Potential long-term biomechanical consequences

Small studies:
- 5 athletes treated with partial sesamoidectomy for nonhealing stress fractures, all RTP within 6 months
  - Biedert and Hintermann 2003
- Successful return to sport after a sesamoidectomy in a small cohort
  - Saxena and Krisdakumtorn 2003
References