Plantar Fasciitis and Metatarsalgia

Clinical presentations with practical applications.

Presented by Dr Ziv Feldman

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Dr. Ziv Feldman

Dr. Feldman is an established doctor of podiatry and surgeon and has served in the Calgary Health Region for over 18 years. While he is recognized for his expertise in all aspects of foot care, he specializes in corrective foot surgery.

Dr. Feldman cofounded Achilles Foot Clinic, which has been in operation since 1995.

Like many other Calgarians, Dr. Feldman moved to the area for its geography, outdoor recreation and quality of life. When not at work Dr. Feldman skis, plays hockey and golf, and spends time with his wife and two children.

Education
1986 Graduated from University of Toronto with a Bachelor of Science in Neuroscience
1991 Graduated from Dr. William M. Scholl College of Podiatric Medicine with Doctor of Podiatric Medicine
1993 Graduated Residency Program from Deaconess Hospital, St. Louis, Missouri

Professional Memberships
Active member of the Alberta & Canadian Podiatry Associations
Fellow, American College of Foot and Ankle Surgeons
Clinical Lecturer, Division of Podiatry, Department of Surgery and the University of Calgary’s Faculty of Medicine
American Podiatric Medical Association
Plantar Fasciitis

Approximately 15% – 20% of all foot pain is seen in the heel.

The most frequent differential diagnosis are:

- Stress fracture
- Arthropathies
- Osteomyelitis
- Planters fasciitis
Diagnosis:

- Heel pain when arising in the morning or after periods of sitting down.
- Usually worse by the end of the day
- Dull ache or pain into the arch of the foot following the course of the fascial band
- Pain on compression of heel or around outside rim of heel
- Pain upon palpation of medial calcaneal tuberosity
- Spur maybe palpable
- Bursae may be present or palpable
Pain Theories:

- Most center around the belief that pain is the result of tractional forces at the insertion of the fascial band to the medial calcaneal tuberosity.
- Consistent pull at the insertion causes tearing and detachment of the periosteum.
- Subperiosteal bleeding causes ossification and bone formation creating a spur.
- Pain from lateral plantar nerve compression.
- * Faulty rearfoot mechanics
  - RF valgus – pronation syndrome
  - FF varus
  - Midtarsal joint hypermobility
- Limb length discrepancy – single foot pain as long leg tries to shorten itself.
Surgical treatments:
  ▪ Instep fasciotomy/heel spur excision
  ▪ STJ implant
  ▪ Tarsal tunnel release

Non Surgical treatment:
  ▪ Physical therapy:
    ▪ Message
    ▪ Ice
    ▪ Ultrasound / laser
    ▪ Stretching
    ▪ Shock wave
  ▪ NSAIDS
  ▪ Cortisone cocktail
  ▪ Orthotics
  ▪ Rigid shoe

Tapping leads to proper diagnosis and temporary relief of acute symptoms.
Function: To limit eversion of the calcaneus.

Application: The J Strap is applied from the lateral aspect of the heel just superior to the lateral malleolus, proceeds downward around the plantar aspect of the heel and upward along the medial aspect of the leg. It is anchored at about the middle of the medial aspect of the leg. Use 1 ½” to 2” tape for adults.
Heel Lock

**Indication:** May be used for planter fasciitis with acute heel pain, and to relieve stress on the talonavicular articulation. Often used in conjunction with planter rest.

**Application:** Use 1” tape. Start on the lateral aspect behind the 5th metatarsal head, proceed posteriorly around the heel, along the medial aspect of the dorso-plantar border of the foot, anchoring the tape just posterior to the 1st metatarsal head.
Planter Rest

**Function:** To alleviate mild stress and tension on the plantar fascia and plantar structures.

**Note:** This orthotic dressing is usually used in conjunction with other types of dressings, such as a heel lock.

**Application:**
This consists of a series of 3 or 4 strips of 1 ½” or 2” tape running from the lateral side of the foot to the medial side. The first strip should start on the lateral side of the foot just beneath the lateral malleolus—pass down the lateral side of the foot to the plantar surface and across the plantar surface of the foot, being careful not to wrinkle the skin. It then proceeds up the medial side of the foot to a point in line with the naviculas bone.

The second strip should overlap the first strip distally by approximately 1/3 the width of the tape and parallel the course of the 1st strip. The 3rd strip should overlap the 2nd strip 1/3 the width of the 2nd and parallel the course of the 2nd. The 4th strip should overlap the 3rd, 1/3 the width of the 3rd and strip and parallel the course of the 3rd strip. Finish the taping by putting an anchor strip of 1” adhesive tape horizontally over the ends of the plantar rest dressing.
Low-dye

**Function:** Useful to alleviate stresses and tension in the mid-tarsal joint and plantar fascia, due to faulty foot function, as in pronation syndrome.

**Application:**

1. Heel lock with forefoot adducted (use 1” adhesive tape) Heel lock starts just behind the lateral aspect of the head of the 5th metatarsal—proceeds posterior along the lateral border of the foot around the heel and along the medial border to a point just behind the head of the 1st metatarsal. BEFORE ANCHORING THE TAPE AT THIS POINT, ADDUCT THE FOREFOOT SLIGHTLY. Apply 2 strips of tape in this manner, one on top of the other.
2. Plantar rest straps—1 ½” or 2” adhesive tape.

This consists of a series of 3 or 4 strips running from the lateral side of the foot to the medial side. The 1st strip should start on the lateral side of the foot just beneath the lateral malluolus—pass down the lateral side of the foot to the plantar surface and across the plantar surface of the foot, being careful not to wrinkle the skin. It then proceeds up the medial side of the foot to a point in line with the navicular bone. The 2nd strip should overlap the 1st strip distally by approximately 1/3 the width of the tape and parallel the course of the 1st strip. The 3rd strip should overlap the 2nd by 1/3 the width of the 2nd. The 4th strip should overlap the 3rd by 1/3 the width of the 3rd strip and parallel the course of the 3rd strip. Finish the taping by putting an anchor strip 1” adhesive tape horizontally over the ends of the plantar rest dressing.

Longitudinal felt is often used in conjunction with this orthotic dressing.

Note: Always instruct the patient not to bear weight on his or her feet without shoes on. Otherwise the tape has a tendency to loosen up, and its therapeutic value is greatly diminished.
High Dye

**Indication:** Plantar fasciitis with moderate to severe adduction and plantar flexion of the talus.

**Application:**
1. Apply low dye as previously described.
2. Apply 2 to 3 cross over “J” strips over the low dye as indicated by the weight of the patient and the severity of the problem
Metatarsalgia

This problem is commonly referred to as pain in the ball of the foot.

The MPJ area is a complex area composed of 5 metatarsal heads 3 independent axises, a specialized weight bearing fat pad and thick plantar skin.
First Metatarsal

- Independent axis of motion
- Strongest/propulsion
- 2 Sesmoids below head
- Complex metatarsal capsule

Common causes of pain:

- Plantar flexed 1st metatarsal
- Fractured sesmiod
- Cartilage damage
- Infection intracapsular / bone
- Overvse inflammatory response
- Bunion Hallux abductovlagus
Surgical Intervention:
- Elevation of metatarsal
- Excision of sesmoid / or planning
- Cartilage repair
- Bunion surgery

Non Surgical:
- NSAID’s / cortisone / antibiotics
- Physiotherapy
- Orthotics for off loading and ray elevation
- Padding and accommodation of 1st MPJ – float the head.
Dancers pad – 1st MPJ cutout
Metatarsalgia 2nd / 3rd / 4th

These three metatarsals function on sale axis, treatment is same for all.

Common causes of pain:
- Plantar flexed metatarsal
- Short metatarsal
- Hammertoe causing planter flexed head
- Overuse syndrome / bare feet
Surgical:
- Elevation
- Excision of head / possible implant
- Hammertoe surgery with pinning
- Condylectomy

Non Surgical:
- Main theory is to reduce inflammation and accommodate the head.
- NSAID / cortisone / Abx
- Physio
- Orthotics with metatarsal padding or cut out
- Padding for accommodation of head floating of head
2\textsuperscript{nd} metatarsal head cutout
Metatarsalgia 5th

- Independent axis
- Usually associated with curled 5th digit and callus below

Surgical:
- Elevation
- Tailors Bunionectomy
- Excision
Non Surgical

- Main theory is to treat the FF varus and pronation in RF
- NSAID / Cortisone / Abx
- Physio
- Orthotics for correction of mechanical faults
- Padding for accommodation of 5th head
5\textsuperscript{th} metatarsal with cutout
Thank you!

Dr. Ziv Feldman