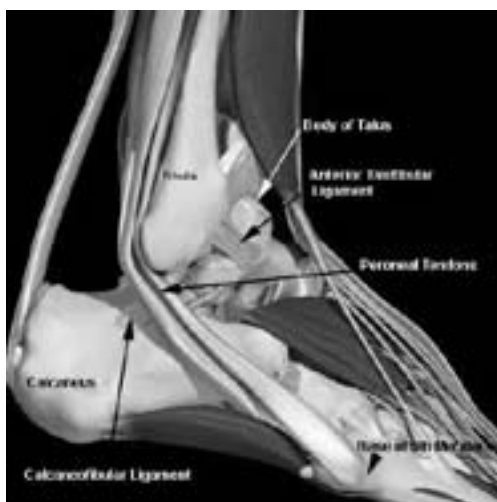


CASE STUDY:

Peroneal Tendinopathy

By Dr. Douglas Richie, Jr., DPM

Peroneal tendinopathy appears to be increasing in incidence. In general, tendon injuries of the foot and ankle appear to be on the rise for a number of reasons. Presumably, this is due in part to the fact that the "at risk" population (> 50 years) has increased and will continue to grow over the next 15 years. The risk factors for tendinopathy (i.e. obesity and diabetes) have also become more prominent over the past 20 years. Lastly, a drug risk associated with exposure to quinolone antibiotics may lead to an increase in the incidence of tendinopathy.



Introduction

Injuries to the peroneal tendons can be the result of mechanical overload causing eventual tendinopathy. Trauma can cause both acute and chronic tears as well as peroneal tendon subluxation with associated tears of the superior peroneal retinaculum. Anatomical abnormalities can cause malfunction of the peroneal tendons when there is an abnormal shallow retromalleolar groove or when there is a low lying muscle belly which impinges thru the canal under the superior peroneal retinaculum (SPR). Finally, fractures and necrosis can occur in the Os Peroneum as a result of trauma or mechanical overload.

Populations at Risk

Brandes and Smith (2000) found a high correlation of peroneal tendon injuries with pre-existing hindfoot varus deformity. Several other studies showed a close link between the condition of chronic ankle instability and peroneal tendinopathy. In patient's with chronic lateral ankle instability, Di Giovanni et al. (2000) reported that 75% had peroneal tendonitis, 50% had attenuation of the SPR and 25% had evidence of longitudinal tears.

Diabetes, hyperparathyroidism, calcaneal fracture, rheumatoid arthritis and psoriatic arthritis have all been associated with peroneal tendinopathy. Also, exposure to quinolone antibiotics has been associated with increased risk of tendon rupture and tendinopathy.

Imaging

Plain radiographs are essential in the evaluation of patients with peroneal tendon pain. Detection of a "flake fracture" running linear along the distal lateral malleolus which can indicate a tear of the superior peroneal retinaculum. A hypertrophied peroneal tubercle has been associated with tendon injury and can be detected with plain radiographs. Also, fracture of an os perineum should be ruled out with radiographs. A stress fracture of the distal fibula can mimic the pain of acute peroneal tendonitis. MRI can detect tendinosis and longitudinal tears. However, some studies have suggested that MRI may underestimate the extent of tendon injury. Ultrasound has been shown to have slightly greater accuracy in detecting peroneal tendon pathology, although such studies are greatly dependent upon the skill of the examiner.

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CASE STUDY:

Peroneal Tendinopathy (cont'd)

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CASE STUDY

A 53 year old female presented to the clinic complaining of "*pain on the side of my foot*". She had been training for a half marathon for the past 6 months and her foot pain had started three weeks previous. Pain presented with running but had progressed and became moderate-to-severe with daily ambulation.

Clinical Exam: The patient's left foot and ankle demonstrated mild 1+⁴ edema along the distal fibula and lateral aspect of the calcaneus. Palpation revealed exquisite tenderness along the posterior aspect of the distal fibula. Resisted eversion of the foot reproduced pain along distal fibula. Dorsiflexion and eversion showed no evidence of peroneal tendon subluxation with palpation. Provocative tests for peroneus brevis tendon injury were both positive: patient performs runners stretch forcing ankle to extreme dorsiflexion, examiner stresses ankle with anterior drawer. Both maneuvers cause pain along retromalleolar groove of fibula.

X-Ray Exam: Negative for fracture of fibula. No os perineum visible.

Biomechanical exam revealed an uncompensated rearfoot varus: subtalar range of inversion was 30°, eversion was minus 5°. Forefoot to rearfoot alignment was 8° valgus. Ankle joint range of motion revealed maximum dorsiflexion of 5° with the knee extended. Relaxed calcaneal stance position was 5° inverted.

Assessment: Acute peroneus brevis tendinopathy.

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Plan

Implement P.R.I.C.E. (protection, rest, ice, compression and elevation) for five days. Immobilize with compression tape wrap or a unna boot wrap. Prescribe NSAIDS as needed for pain relief and reduction of inflammation.

Follow up in five days for biomechanical exam and casting for custom functional foot orthoses. High-dye ankle taping applied and left intact for five more days until orthosis dispensal. Patient to begin cardiovascular exercise via stationary bike or elliptical trainer.

Functional Foot Orthosis Prescription Criteria

- Neutral suspension cast technique
- Intrinsic cast correction of forefoot valgus
- Shell thickness reduced to provide flexibility
- Allow for pronation
- No rearfoot post
- Added 2° EVA to sulcus forefoot wedge
- Applied medial flange to the footplate*



Figure 1: Medial flange

* The medial flange (Figure 1) will not supinate the foot, but will possibly keep the orthosis from slipping medially in the shoe which could cause the foot to slip lateral and then supinate. Medial flanges tend to abduct the midfoot while lateral flanges tend to adduct the midfoot, thus medial flanges are preferred for peroneal tendinopathy.

Bracing Considerations for Peroneal Tendinopathy

The Richie Brace can be an excellent tool for long term management of peroneal tendinopathy. This modality should be considered when there is documented evidence of tearing of a tendon or when there is significant degeneration or tendinopathy.

The restricted hinge (fixed ankle) Richie Brace is preferred for peroneal tendinopathy (Figure 2). Maintaining the foot in a dorsiflexed position at the ankle joint helps prevent foot inversion and reduces demand on the peroneal musculature during terminal stance.



Figure 2: Restricted-hinge Richie Brace

Other Treatment Options

Patients with peroneal tendon disorders almost always present with balance and proprioception deficits. Referral of these patients for proper rehabilitation is critical for full recovery and prevention of further injury. Evaluation of footwear for cause and prevention of peroneal tendon injury is also important. Shoes with soft midsoles can cause excessive lateral breakdown and lead to overload of the peroneal tendons. Athletic shoes with medial posting of the midsole can cause supination moment to the rearfoot in some patients varus deformity. In general, neutral athletic shoes with stable shank construction are preferred for patients with peroneal tendinopathy.