

WHEN IS A FOOT PROBLEM NOT A FOOT PROBLEM? A CASE REPORT

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BACKGROUND

Peroneal nerve entrapment at the fibular head is the most common site within the lower leg.¹ It has been reported that peroneal nerve entrapment can occur with inversion ankle sprains when the nerve branch is placed on stretch as it exits the muscle compartment in the lower leg.^{2,3} Compression at the lateral lower leg has also been reported as a cause for entrapment of the common peroneal nerve.^{4,5}

CASE PRESENTATION

Patient History

A 75-year-old active female patient reported left foot pain since March 2023 and presented to outpatient physical therapy on January 18, 2024 with a referral from her podiatrist for peroneal tendinopathy. She reported her mechanism of injury as sliding off her sandal with a mild ankle sprain followed up by TRX workouts in a group setting, which increased her foot and ankle pain. At the time of the evaluation, she reported sharp pain in the dorsal lateral foot that was 8/10 on the numeric pain rating scale (NPRS) at various points of the day. Her pain was reported when walking, sitting cross-legged, going stairs, and outrigger canoe paddling. She normally participated in daily exercise at her local gym, including step classes, Hula dancing, spin classes, and group walking with friends for fitness. She was placed in a tall pneumatic walking boot for 2.5 months by her podiatrist, with pain continuing throughout the entire course of wear. She had no relieving positions that she was able to identify, although the pain did come and go.

Physical Examination

An MRI on the left ankle showed a slightly increased signal and thickened appearance of the posterior fibulotalar ligament but no other evidence of ligament or tendon pathology. She presented with acute pain over the base of the 5th metatarsal and along the peroneal tendons to the posterior aspect of the lateral malleolus. Ankle ligament testing was negative, as was anterior drawer testing. Talar tilt was tender to touch but negative. She presented with symmetrical calf musculature during visual assessment. The slump test was negative. Nerve tension testing was positive in supine with hip flexion, knee extension, ankle plantarflexion, and ankle inversion. She had no apparent weakness with manual muscle testing for eversion and dorsiflexion measuring 4+/5 bilaterally. Ankle range of motion was limited on the left with dorsiflexion 5° whereas the right was 15°. Inversion and eversion active range of motion in supine was within normal limits and non-painful bilaterally. She was able to perform calf raises on a single leg but with increased pain over the lateral foot. Pain over the dorsal lateral foot was elicited with proximal fibular mobilizations but resolved immediately following mobilizations (Table 1). She reported significant pain reduction with walking immediately following fibular

mobilization, but the pain returned with single-leg balance. Her lower extremity functional scale (LEFS) at evaluation was 44/80.

Treatment

Initial treatment included manual soft tissue release to peroneal muscles, proximal and dorsal fibular mobilizations grade 2-3 to decrease pain and improve mobility, fibular repositioning tape distally with a posterior lateral glide, ankle isometrics for peroneal tendons using a yellow resistance band, nerve glides targeting the lateral dorsal cutaneous nerve focusing on ankle plantar flexion and inversion. The patient was also asked to stop crossing her legs while sitting to minimize compression of the peroneal nerve at the fibular head (Table 2).

The patient returned 7 days later and reported less sharp pains and more “gnawing” sensations throughout the lower lateral leg and foot. She was having a hard time not crossing her legs and noticed it would increase her pain very quickly if she forgot and found herself sitting with her left thigh crossed over her right. At this point, the primary therapist supplied the patient with research articles specific to lateral dorsal cutaneous nerve pain secondary to entrapment of the common peroneal nerve at the peroneal tunnel between the peroneus longus and the proximal fibular head.^{4,5} Two articles cite the cross-legged position as a positive test for entrapment of the common peroneal nerve.^{4,5} Graphical depictions of the lateral lower leg nerves were shown to the patient⁶ (Figures 1).

Outcome and Follow-up

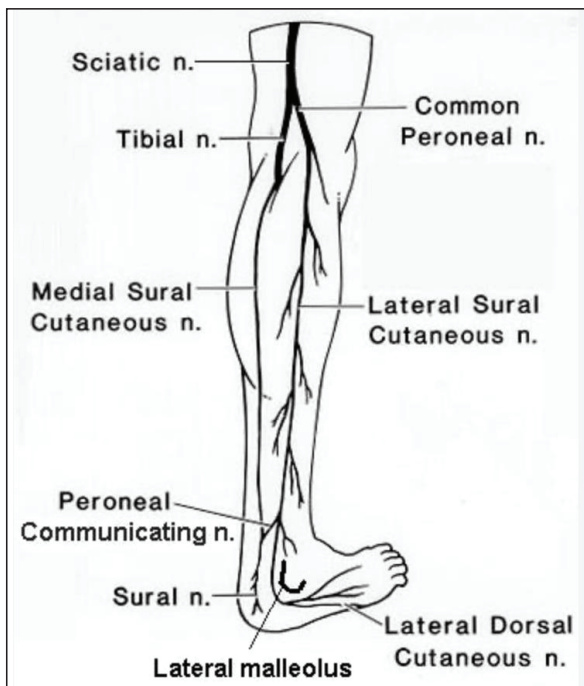
There was buy-in by the patient that the course of treatment was working, and she had already found some relief from the 10 months of pain. The following sessions included progressing bal-

Table 1. Initial Exam Findings

Initial Exam Findings
<ul style="list-style-type: none"> • Pain over the base of the 5th metatarsal • Pain along the peroneal tendons to the posterior aspect of the lateral malleolus • (-) anterior drawer testing • Symmetrical calf musculature visual assessment • (-) Slump test • (+) Nerve tension testing in supine with hip flexion, knee extension, ankle plantarflexion, and ankle inversion • No apparent weakness with manual muscle testing for eversion and dorsiflexion measuring 4+/5 bilaterally • ROM Dorsiflexion left 5°, right 15° • ROM Inversion and eversion within normal limits and non-painful bilaterally • Able to perform calf raises on a single leg but with increased pain over the lateral foot • Pain over the dorsal lateral foot was elicited with proximal fibular mobilizations

Table 2. Initial Exam Inventions**Initial Exam Inventions**

- Soft tissue release to peroneal muscles
- Proximal and dorsal fibular mobilizations grade 2-3 with a goal to decrease pain and improve mobility
- Fibular repositioning tape distally with a posterior lateral glide
- Ankle isometrics for peroneal tendons using a yellow resistance band
- Nerve glides targeting the lateral dorsal cutaneous nerve focusing on ankle plantar flexion and inversion
- Requested patient avoid crossing her legs while sitting to minimize compression of the peroneal nerve at the fibular head

Figure 1. Graphical Depictions of the Lateral Lower Leg Nerves

Reprinted with permission. Lui TH, Goralczyk A, Malinowski K, et al. Posterior knee endoscopy. In: *Endoscopy of the Hip and Knee*. Lui TH, ed. 2021:219-238.

ance from supported single leg to unsupported dynamic single leg over 2 weeks. Her pain had changed from sharp to “gnawing” pain that comes and goes. Functional movements included triple flexion on a step, squats, lunges, and step-ups, and progressed into triple flexion knee drives at a wall to simulate pushing the canoe out of the ocean (**Figure 2**). Canoe paddle postures were simulated with resistance band rows, and she reported no pain during the exercise. Her LEFS improved from 44/80 to 53/80 on February 6, 2024. At this point, she rated her global improvement rating with activities of daily living (ADLs) as 75%, strength 50%, and sports 25%. Her pain rating was 6/10 on the NPRS.

Figure 2. Triple Flexion Knee Drive at Wall

She had a successful outrigger canoe paddle practice with her club during week 3 but reported too much fitness walking later in the day with increased pain. She was taught self-care techniques to mobilize her lower extremity tissues from her glutes through her calf muscle with various size balls and she reported resolution of the pain immediately following. Special attention was placed on avoiding compression to the fibular head and peroneal muscles to minimize additional neural compression.

DISCUSSION

This patient had a peroneal nerve traction injury followed by prolonged compression during her 2.5 months of wearing a tall pneumatic walking boot. Moving forward, the plan was to incorporate more strengthening and progress with increased stability work on the left lower extremity with dual-task interventions as well as various balance surfaces. She chose to self-discharge due to other medical issues but felt she had a good handle on how to continue with independent management. Referral to a specialist would be considered if her symptoms did not fully resolve with a recommendation for diagnostic ultrasound, which could be used to identify the nerves within the lower leg compartments and diagnostic nerve blocks to determine temporary relief prior to a surgical intervention.^{3,7}

In conclusion, taking a detailed subjective history, performing a thorough examination, as well as reviewing relevant imaging reports is critical when evaluating for lower extremity pain. This patient would not have responded to a rehabilitation program targeted at peroneal tendinopathy or a lateral ankle sprain without minimizing compression and irritation to the peroneal nerve.

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AOPT PRECONFERENCE COURSES

CSM 2025 - Houston, Texas

1-day Preconference Offerings, all taking place on Wednesday, February 12, 2025:

Cultivating Success in Residency and Fellowship Programs - Establishing the Basics and Being Prepared for the Challenges Along the Pathway to Excellence

<https://apta.confex.com/apta/csm2025/meetingapp.cgi/Session/21872>

This 1-day course is designed to support residency and fellowship programs, whether developing, candidate, or accredited, by providing insights on building and sustaining success while meeting accreditation standards. Participants will gain valuable strategies for enhancing curricula, faculty, and resources, with a focus on achieving successful outcomes. The course will offer practical guidance on interpreting standards and preparing for accreditation, including the self-evaluation report and site visit. Interactive sessions, including panel and roundtable discussions, will address common challenges in the accreditation process and how to support struggling residents or fellows.

More Than Movement: An Interdisciplinary, Holistic Approach to the Screening and Treatment of Hypermobile Dancers

<https://apta.confex.com/apta/csm2025/meetingapp.cgi/Session/21564>

This preconference workshop focuses on a holistic, interdisciplinary approach to treating dancers with hypermobility, particularly those with hypermobile Ehlers Danlos Syndrome (hEDS) or hypermobility spectrum disorder (HSD). The workshop will address common issues such as muscle and joint pain, coordination and balance difficulties, and the impact of medical comorbidities on dance performance. Participants will learn to classify dancers with hEDS/HSD, discuss interdisciplinary management, and explore techniques for improving movement coordination, posture, and stability. Practical methods like breathing, posture training, and developmental positioning will be emphasized to enhance care for these dancers.

The AOPT Pain School

<https://apta.confex.com/apta/csm2025/meetingapp.cgi/Session/20859>

This course, part of a series of Pain Schools, aims to equip PT faculty and clinicians with modern, evidence-based pain management strategies for both curricula and clinical practice. The morning session, featuring keynote speaker Dr. Kathleen Sluka, will focus on evidence-based treatments for pain and future research directions, with time for group discussions and interactions with Dr. Sluka. The afternoon will include two breakout sessions: faculty will engage in teaching demonstrations and problem-solving on curriculum integration, while clinicians will focus on communication skills, pain assessment, treatment planning, and case discussions.

2-Day Preconference Offering taking place on Tuesday and Wednesday, February 11-12, 2025:

Mastering the OCS: Current Concepts 101

<https://apta.confex.com/apta/csm2025/meetingapp.cgi/Session/21548>

Preparing for the ABPTS OCS exam can be challenging due to the extensive orthopaedic knowledge required. The Academy of Orthopaedic Physical Therapy (AOPT) is offering a 2-day pre-conference course to assist exam candidates, based on the 5th Edition of the Current Concepts Independent Study Course (ISC). This course brings the 12 monographs to life, with each author presenting evidence-based content. Topics include clinical reasoning, anatomy, biomechanics, examination procedures, and optimal intervention strategies for various joints and regions. Case scenarios will be used to encourage clinical reasoning and integration of the material.