



Mid Atlantic Regional Chapter of the American College of Sports Medicine

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Deep Peroneal Neuropathy: Sequela of a Missed Acute Exertional Compartment Syndrome

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History:

A 26-year-old male presented to University of Rochester Sports Medicine clinic for evaluation of persistent right foot and ankle weakness. The patient was initially seen in the Emergency Department – seven months prior – due to worsening right foot and ankle pain one day after playing soccer. He was thought to have an ankle sprain and was subsequently treated conservatively with splinting, nonsteroidal anti-inflammatory medication, and crutches. The patient's pain improved; however, his loss of function has remained.

Physical Exam:

The patient's physical exam was remarkable for atrophy of the right extensor digitorum brevis muscle, negligible ankle dorsiflexion (0/5), preserved plantar flexion (5/5)/inversion (5/5)/eversion (5/5), negligible extension of the great toe or second through fifth digits, decreased sensation to light touch in the deep peroneal region, and a notable steppage gait.

Differential Diagnosis:

Acute compartment syndrome, acute exertional compartment syndrome, chronic exertional compartment syndrome, entrapment neuropathy, vasculitis, myositis

Tests & Results:

Right three view foot and ankle Xrays – no evidence of fractures or subluxation

MRI without contrast of right ankle – negative for ligamentous, tendinous, or osseous injury

MRI of right tibia/fibula/calf – diffuse edema of the tibialis anterior and extensor digitorum muscles

Electromyography completed by Physiatry – severe right deep peroneal neuropathy, decreased electrical activity of the anterior tibialis muscle

Repeat Electromyograph/Nerve Conduction Study completed by Neuromuscular specialists – severe complete right deep peroneal neuropathy with sparing of the superficial and proximal common peroneal innervated muscles

Neuromuscular ultrasound – fibrosis and decreased size of the right tibialis anterior muscle

Compartment Pressure Testing at rest – elevated anterior compartment pressures at 81mm Hg and 92mm Hg

CBC, ESR, CRP, ANA, TSH, CK – within normal range



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Final Diagnosis: Missed acute exertional compartment syndrome with subsequent deep peroneal neuropathy

Treatment & Outcomes:

Initial treatment focused on AFO bracing and physical therapy with no improvement in demonstrated weakness. The patient has recently been cleared for posterior tibial tendon transfer and midfoot release surgery.