Current Diagnosis and Treatment of Superficial Fibular Nerve Injuries and Entrapment

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KEYWORDS

• Ankle • Epineurium • Leg • Nerve sheath • Neurolysis • Nerve repair • Neuroma

KEY POINTS

- Identification and treatment of entrapment of the SFN are important topics of discussion for foot and ankle surgeons, because overlooking the diagnosis can lead to permanent nerve damage.
- Some patients present with symptoms localized in their feet and, unless the examining clinician takes the time and makes the effort to look more proximal, the diagnosis may be missed if it is related to an SFN entrapment.
- Early diagnosis and treatment are crucial to avoidance of permanent nerve damage.
- Depending on the pathology, either decompression or, in cases of nerve trauma, neurectomy with implantation of the affected nerve into muscle with or without a nerve allograft is indicated. For this reason, peripheral nerve surgeons have to understand the rationale for and the technical maneuvers required to execute external neurolysis, nerve excision, and endoneurolysis, each of which is a fundamental element of basic peripheral nerve surgery.
- With the proper tools and skills, surgeons are able to help patients with symptomatic SFN entrapment, patients who often present in some degree of desperation, with the peripheral nerve surgeon as a last resort.

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Much has been written on the diagnosis and treatment of superficial peroneal nerve (SPN) entrapment. The SPN is now known as the superficial fibular nerve (SFN). This article uses the abbreviation SFN to represent both. This commentary attempts to provide insight into this often misdiagnosed and certainly underdiagnosed lower extremity pathology. Some tips and pearls also are presented to aid in the diagnosis and treatment of SFN entrapment or injury. Some patients present with symptoms localized in their feet and, unless an examining clinician takes the time and makes the effort to look more proximal, the diagnosis may be missed if it is related to an SFN entrapment.

Depending on the pathology, either decompression or, in cases of nerve trauma, neurectomy with implantation of the affected nerve into muscle with or without a nerve allograft is indicated. For this reason, peripheral nerve surgeons have to understand the rationale for and the technical maneuvers required to execute external neurolysis, nerve excision, and endoneurolysis, each of which is a fundamental element of basic peripheral nerve surgery. It is also important for surgeons to become skilled in the art of diagnostic blocks, to intimately know the anatomy of peripheral nerves in the lower extremity, and to identify and treat entrapment of the SFN (or any other named, anatomic nerve) inferior to the knee. With the proper tools and skills, surgeons are able to help patients with symptomatic SFN entrapment, patients who often present in some degree of desperation, with the peripheral nerve surgeon as a last resort.

To the authors' knowledge, Kernohan and colleagues,[1] in 1985, were the first to publish an article describing entrapment of the SFN, where they referred to Henry's 1945 publication, entitled "Extensile Approach." Styf,[2] in 1989, stated that the incidence of SFN entrapment causing anterior lateral leg pain was probably higher than suggested in the literature at that time. Donovan and colleagues[3] also stated that entrapment neuropathies of the knee, leg, ankle, and foot were often underdiagnosed, because clinical and electrodiagnostic evaluation was not always reliable. The nomenclature of the SPN has gradually become to be known as the SFN. This change in nomenclature was made by the anatomists and more or less has been adopted by most investigators.

A patient with peripheral nerve pathology can be treated surgically or nonsurgically, depending on the specific diagnosis, and appropriate surgical management may involve a neurectomy or a decompression of 1 or more nerves. There are a variety of conservative treatment options, of which nerve gliding or nerve flossing (another term for nerve gliding) is the most commonly used and most effective.[4] This involves specific maneuvers usually performed by a physical therapist that places a stretch on the entrapped nerve and also involves techniques to break up any adhesions of the surrounding fascia or scar tissue. The patient is given a specific home exercise program that incorporates these specific techniques. The concept of decompression of a peripheral nerve, and not those localized to the lower extremity, still seems controversial. The peer-reviewed literature pertaining to nerve entrapment of the upper extremity is voluminous. As the population becomes more obese and the diagnosis of diabetes mellitus more prevalent, symptomatic peripheral nerve conditions will concomitantly increase in frequency, and timely and accurate diagnosis and subsequent treatment of these peripheral nerve entrapments have become ever more important because a delay in treatment can lead to permanent nerve damage. Donovan and colleagues[3] stated that if the symptoms of nerve entrapment persist for 2 to 3 months, then surgical decompression is usually required to prevent permanent nerve damage. This statement accentuates the importance of early diagnosis and early intervention. This also reinforces the idea that clinicians using nonsurgical