



Compression of the medial branch of the deep peroneal nerve, relieved by excision of an os intermetatarsium. A case report

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The authors report a case of direct compression of the medial branch of the deep peroneal nerve by an os intermetatarsium in a 52-year-old female patient who was referred to their Institution because of pain over the dorsum of her left foot associated with paraesthesias in the first web space. Examination disclosed a positive Tinel sign over the dorsal aspect of the first metatarsal bone. Plain radiographs revealed a small, irregular accessory ossicle on the dorsum of the left foot, between the medial cuneiform and first and second metatarsals. At operation, the os intermetatarsium was found to impinge on the medial branch of the deep peroneal nerve. Excision of the os intermetatarsium and nerve decompression was performed. After four years, the patient has normal function and is completely relieved of her symptoms.

INTRODUCTION

The deep peroneal nerve is one of the branches of the common peroneal nerve. It passes through the anterior compartment of the leg, between the tibialis anterior and extensor digitorum longus muscles proximally and the extensor digitorum longus and extensor hallucis longus muscles distally. About one centimeter above the ankle joint it divides under the superior oblique fibers of the inferior extensor retinaculum into lateral and medial branches. The medial branch continues distally between the extensor digitorum longus and extensor hallucis brevis tendons and provides sensation to the first web space (1).

Entrapment of the medial branch of the deep peroneal nerve can occur as the nerve passes under

the extensor hallucis brevis tendon. Other causes include compression against dorsal osteophytes on the talonavicular joint, tumours, and the presence of a ganglion (1).

The authors describe a case of direct compression of the deep peroneal nerve by an os intermetatarsium, successfully treated by excision of this accessory bone.

CASE REPORT

A 52-year-old female was referred to our Institution because of pain over the dorsum of her left foot associated with paraesthesias over the first web space. Local symptoms had been present for 10 years, but suddenly worsened over the last three

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Fig. 1. — Plain radiographs revealed a small, irregular accessory ossicle on the dorsum of the left foot, between the medial cuneiform and the first and second metatarsal.



Fig. 2. — At surgery the os intermetatarsale (just aside the nerve between the first and second metatarsal bone) was found to impinge on the medial branch of the deep peroneal nerve.

months, after an ankle sprain. She could not wear closed shoes.

Physical examination revealed paraesthesias over the first web space and a positive percussion sign (Tinel) over the dorsal aspect of the first metatarsal bone. Plain radiographs revealed a small, irregular accessory ossicle on the dorsum of the left foot, between the medial cuneiform and first and second metatarsals (fig 1). No electromyographic and nerve conduction velocity studies were performed. No other image investigation was carried out.

At operation, the os intermetatarsale was found to impinge on the medial branch of the deep peroneal nerve (fig 2). Excision of the symptomatic ossicle and nerve decompression was performed. Gross examination showed an 8 by 10-millimeter bony fragment. Although the patient had a good recovery with prompt relief of pain, numbness over the first web space persisted for almost six months after the operation.

On examination at four years the patient is asymptomatic, able to wear any sort of shoe, and she works with no kind of compensation.

DISCUSSION

Anterior tarsal tunnel syndrome is a well described clinical condition in which the deep peroneal nerve or a branch of that nerve becomes entrapped under the inferior extensor retinaculum at the ankle

or in the area of its distribution at the foot (1). Although many causes of anterior tarsal tunnel syndrome have been described, to the best of our knowledge entrapment of the medial branch of the deep peroneal nerve by an os intermetatarsale has been poorly reported so far. Indeed, the occurrence of this accessory bone is infrequent, with its incidence varying from 1.2 to 14% in the literature (2, 3, 5, 6). Gruber first described it in 1877 (4), but it was Pfitzner in 1896 who performed the most extensive anatomic investigation on this issue (6). In his report of 520 cadaver dissections, 39 (12.5%) had an os intermetatarsale (6).

Clinically there is frequently a history of local trauma, dorsal pain increasing with plantar flexion, a positive Tinel sign, and dysaesthesias distal to the compression site. Some authors report weakness of extension of the hallux. Tight shoes, ganglions, ankle instability, and cavus feet are common predisposing factors and must be ruled out (1). In addition to the presence of a space-occupying lesion, our patient sustained an ankle sprain just before a sudden worsening of her symptoms.

Proper treatment of this lesion requires a perfect understanding of the causative incident. Non-surgical management should be carried out first and include shoe wear modifications and local corticosteroid injections. Failure to relieve pre-existing symptoms indicates surgical treatment. In the case reported here, the patient primarily had an operation

due to the direct impingement on the medial branch of the deep peroneal nerve by an os intermetatarsium. At surgery, the accessory bone was excised and the nerve was decompressed. Her pain promptly disappeared following the surgery, with the dysaesthesias disappearing by six months post-surgery. She is totally asymptomatic at four years.

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