

CASE REPORT: SURGICAL TREATMENT OF TARSAL TUNNEL SYNDROME

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ABSTRACT

The first description of tarsal tunnel syndrome is recent. Koppel in 1960 spoke of the sequelae of posterior tibial nerve damage. Keck in 1969 was the first to describe compression of the posterior tibial nerve by the internal annular ligament. It was about a young soldier who, after intensive training, presented with bilateral plantar anesthesia. The opening of the internal annular ligament had allowed a total recovery in 48 hours. Our objective here is to evoke the circumstances of the diagnosis of this syndrome, to analyze the anatomical and pathological causes, to present the types of treatments followed, in light of the literature.

KEYWORDS: Tarsal Tunnel, Neurolysis, surgery.

INTRODUCTION

Tarsal tunnel syndrome is a duct syndrome; it concerns the posterior tibial nerve, compressed behind the medial malleolus, in an osteofibrous channel made up of the tibia, talus and calcaneus and closed by the deep layer of the ligament internal annular, prolonging the leg aponeurosis. This tunnel contains, in addition to the posterior tibial nerve posterior tibial vascular bundle and the tendons of the flexor proper of the big toe, of the flexor digitorum of the toes and of the posterior tibialis.

This syndrome may be due to sequelae of trauma, varicose veins, tenosynovitis, compartment tumors or static hindfoot abnormalities. In most cases, this syndrome is idiopathic.

CASE PRESENTATION

A 36-year-old young man presents for the consultation with neurological burn-type pain accompanied by paresthesia of the inner edge of the ankle and foot.

Distant neurological examination (radiculalgia, diabetes, neuropathy) is negative.

Static examination of the hindfoot: no palpable mass in the internal retro-malleolar region, neurological irritative syndrome in the form of Tinel's sign on percussion, Kinoshita's sign is positive (back pain flexion associated with eversion of the foot prolonged 10 seconds).

A standard x-ray requested is without bone abnormalities.

The electromyogram confirms the diagnosis and shows a slowing of the speed of sensitive conduction.

Surgical treatment

It is indicated after, at least, three months of medical treatment without effect. This medical treatment must combine NSAIDs, physiotherapy, soles, or even immobilization in plaster.

The intervention takes place under general or loco-regional anesthesia. The approach is retro-internal malleolar, 6-8cm from the top of the internal malleolus following the course of the posterior tibial nerve to the internal edge of the sole of the foot (figure 1).



Figure 1: Internal retro-malleolar approach.

The leg fascia is opened continuing on the internal annular ligament and the posterior tibial nerve is located at the top of the incision. It is dissected until its termination in the internal and external plantar nerves

(figure 2 and 3), look for any expansive process that may be causing the compression.



Figure 2 and 3: The scissors shows the ligament structure that compresses the tibial nerve back near of the sole of the foot.

At this point, the deep fascia of the abductor of the big toe is open because it can be a source of compression. The neurolysis performed is exo-neurolysis, without inter-fascicular dissection because there is a risk of postoperative fibrosis. Careful bipolar coagulation is recommended and hemostasis will be checked by letting go of the tourniquet. All the fascias will be left open, only the subcutaneous and cutaneous planes will be closed. A compression bandage will be made in a posterior splint, then a plastered boot for two weeks on the fifteenth day after removal of the threads. Support was allowed at one month.

DISCUSSION

The study by Kaplan and Kernahan,^[1] found a higher frequency of compression of the lateral plantar nerve compared to the median, probably linked to its close position which seems to make it more vulnerable. The best results are obtained in compressions of the lateral plantar nerve, which surgically corresponded in the complete opening of the internal annular ligament and the complete follow-up of the dividing branches of the tibial nerve; this includes, of course, the motor nerve of the abductor of the fifth toe.

This is comparable to the observations of Valtin,^[2] who advocates a nerve release beyond the division of the nerve and in all cases the deep fascia of the abductor hallucis must be incised and insists that this must be the case in any compression of the tibial nerve or one of its dividing branches.

This recommendation is also taken up by Skalley and al.^[3] in their study of 12 cases, as well as in the study by Settanni and al.^[4] Early diagnosis is important because it guarantees better results after surgical management. The study by Kaplan and Kernahan,^[1] recommends starting treatment before the onset of muscle atrophy. Takakura and al.^[5] estimate from their study that when this delay is more than 10 months the prognosis will be disappointing.

The results of surgical treatment are variable. When a local cause is found, improvement is rapid. In contrast, neurolysis (white) generates only results in partial relief once in two, although the tinel sign disappears and postoperative EMG normalizes.

Skalley and al.^[4] In a study of 12 patients with recurrent tarsal tunnel syndrome, concluded by recommending surgical abstention for patients who received a first release of the tibial nerve and its dividing branches in a correct manner.

On the other hand, if severe symptoms persist and incomplete release of the tibial nerve and its terminal branches, he recommends recourse to a new neurolysis to reduce pain, improve activity limitations and reduce the risk of disability.

Eberhard and Millesi,^[6] propose in their work on 3 recurrences to transplant the surrounding soft tissues around the nerve in association with a skin graft to increase the dermal envelope if the postoperative fibrosis around the nerve bed has an anchorage to the skin.

CONCLUSION

Surgical treatment for tarsal tunnel syndrome should never be first-line treatment. Mainly depends on complete release of the tibial nerve and its dividing branches regardless of the area of compression, to achieve a good result. They will be more favorable if the patient is young, without static foot disorder and has mild tarsal tunnel syndrome before the operation.

Consent

The patient has given their informed consent for the case to be published.

Conflict of interests

None.

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