

CASE REPORT

**Bilateral posterior tarsal tunnel syndrome caused by  
accessory flexor digitorum longus; Case report and  
surgical technique<sup>☆</sup>**



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**KEYWORDS**

Tarsal tunnel;  
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**Abstract**

*Objective:* To present a case report of bilateral posterior tarsal tunnel syndrome (PTTS) caused by an accessory flexor digitorum longus (AFDL), including the surgical technique and a review of the literature.

*Materials and methods:* Twenty-nine year old male diagnosed with bilateral PTTS, refractory to conservative management, with 53 points on the preoperative AOFAS score. MR of both ankles showed an AFDL within the tarsal tunnel, in close relationship to the posterior tibial nerve. Bilateral tarsal tunnel decompression and AFDL resection was performed.

*Results:* There were no post-operative complications. At 6 months after surgery, the patient had no pain and had 87 points on the AOFAS score.

*Discussion:* The PTTS is an entrapment neuropathy of the posterior tibial nerve or one of its terminal branches. A rare cause is the presence of an AFDL, and its resection is associated with good clinical results. Careful scar tissue resection and neurolysis is recommended. Knowing the normal pathway and anatomical variability of the posterior tibial nerve and its branches is essential to avoid iatrogenic injury. In our case report, MR and intraoperative findings identified a bilateral FDLA in close relationship to the common flexor digitorum, an unusual finding, with few reports in current literature.

*Conclusions:* Careful tarsal tunnel decompression and AFDL resection in our patient with bilateral symptomatic PTTS has good clinical results and no complications, particularly when diagnosed and treated early.

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**PALABRAS CLAVE**

Túnel del tarso;  
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longus accesorio;  
Resección quirúrgica

## Síndrome del túnel del tarso posterior bilateral por músculo flexor digitorum longus accesorio; reporte de un caso y descripción de técnica quirúrgica

**Resumen**

**Objetivo:** Describir un caso de síndrome de túnel del tarso posterior (STTP) bilateral causado por un tendón flexor digitorum longus accesorio (FDLA), la técnica de resección quirúrgica y una revisión de la literatura.

**Materiales y métodos:** Reportamos el caso de un paciente varón de 29 años con diagnóstico de STTP bilateral, refractario al manejo conservador con una puntuación AOFAS de 53 puntos. Se solicitó una RM de ambos tobillos encontrándose la presencia del músculo FDLA dentro del túnel tarsiano, en íntima relación con el nervio tibial posterior. Se realiza una descompresión bilateral del túnel tarsiano resecando el músculo FDLA que producía un conflicto de espacio con el nervio tibial posterior.

**Resultados:** El paciente no presentó complicaciones postoperatorias. A los 6 meses de cirugía, presentaba una puntuación final AOFAS de retropié de 87 puntos.

**Discusión:** El STTP consiste en una neuropatía por atrapamiento del nervio tibial posterior o una de sus ramas terminales. Una de sus causas es la presencia FDLA, y su resección está asociada a buenos resultados clínicos. Se recomienda la neurólisis del tejido cicatricial y adherencias alrededor del nervio. Conocer la anatomía normal y su variabilidad para liberar el nervio tibial posterior y sus ramas es fundamental para evitar lesiones iatrogénicas. En nuestro caso clínico, la RM identificó un FDLA bilateral, que al ser resecado se encontraba en íntima relación con el flexor digitorum común, hallazgo poco común en la literatura.

**Conclusiones:** La descompresión cuidadosa del túnel del tarso en un paciente con STTP bilateral sintomático por un FDLA se asocia a buenos resultados, particularmente en aquellos pacientes con diagnóstico y tratamiento precoz.

**Nivel de evidencia:** IV.

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**Introduction**

Posterior tarsal tunnel syndrome (PTTS) consists of a neuropathy due to entrapment of the posterior tibial nerve or one of its terminal branches (the medial plantar n. or the lateral plantar n.) at the level of the said tarsal tunnel. It must not be confused with anterior tarsal tunnel syndrome, which is a neuropathy due to entrapment of the deep peroneal nerve under the extensor retinaculum in the upper part of the ankle.

The first description of PTTS was by Kopell and Thompson<sup>1</sup> in 1960, and it was subsequently ratified by Keck and Lam<sup>2</sup> in 1962 and 1967, respectively. The tarsal tunnel is a fibre and bone structure limited by the flexor retinaculum medially and posteriorly, the tibial malleolus anteriorly and the posterior process of the astragalus and the calcaneus laterally. Havel et al.<sup>3</sup> described the anatomical relationships of the posterior tibial nerve, which enters the channel proximally and in 93% of cases divides into three terminal branches; the medial plantar nerve, the lateral plantar nerve and the medial calcaneal nerve. The medial calcaneal nerve emerges from the posterior face of the tibial nerve in 75% of cases, and the lateral plantar nerve does so in the remaining 25% of cases. The medial calcaneal nerve terminates in 79% of cases in a single branch, and in multiple branches in 21% of cases. The calcaneal branches originate in 39% of cases proximal to the tarsal tunnel, in 34% of cases within this and in 16% of cases distal to the tunnel.<sup>3</sup> Nevertheless, there is wide anatomical variation in the origin

of the terminal branches.<sup>4</sup> The cadaveric study of 85 origins found that the medial plantar nerve was the origin of the medial calcaneal nerve in 46% of cases; and that 37% of the specimens had a single one, 41% had two, 19% had three and 3% had four.<sup>5</sup>

It is possible to identify the cause of compression of the tibial nerve in from 60% to 80% of cases.<sup>6,7</sup> The most common causes include ganglions, lipomas, exostosis of the tibia and calcaneus, and medial tarsal talocalcaneal coalition. A smaller percentage may be post-traumatic or idiopathic, and these cases have a poorer prognosis with surgical treatment.<sup>6</sup> The diagnosis of PTTS is clinical. Electromyography and conduction velocity studies of the abductor digiti quinti or abductor hallucis nerves are useful diagnostic tools in the case of diagnostic doubt. Imaging studies such as ultrasound scans or magnetic resonance imaging (MRI) make it possible to identify the cause of entrapment, and the latter is the technique of choice.<sup>8</sup>

An infrequent cause of posterior tibial nerve compression is said to be the presence of an accessory digitorum longus flexor tendon (ADLF), as a finding in MRI in asymptomatic subjects or cadaveric studies.<sup>8-16</sup> This tendon is present in 12% of patients with PTTS.<sup>10</sup> It corresponds to an accessory muscle that may originate in the medial edge of the tibia, the fascia of the deep posterior compartment of the leg, or from the lateral edge of the peroneus, distal to the origin of the flexor hallucis longus (FHL).<sup>12</sup> The ADLF tendon descends posterior and superficial to the tibial nerve, passes under the flexor retinaculum through the tarsal tunnel, and

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