

# Incidence of Varicosities Encountered During Surgical Decompression of the Tarsal Tunnel

## STATEMENT OF PURPOSE

Tarsal tunnel syndrome (TTS) is commonly thought to be compression from the flexor retinaculum over the posterior tibial nerve. It has been noted that even small amounts of compression in the area can produce a nerve lesion in the tarsal tunnel. The retrospective study aimed to assess the incidence of varicosities in the tarsal tunnel encountered upon surgical decompression as a source of compression to the posterior tibial nerve.

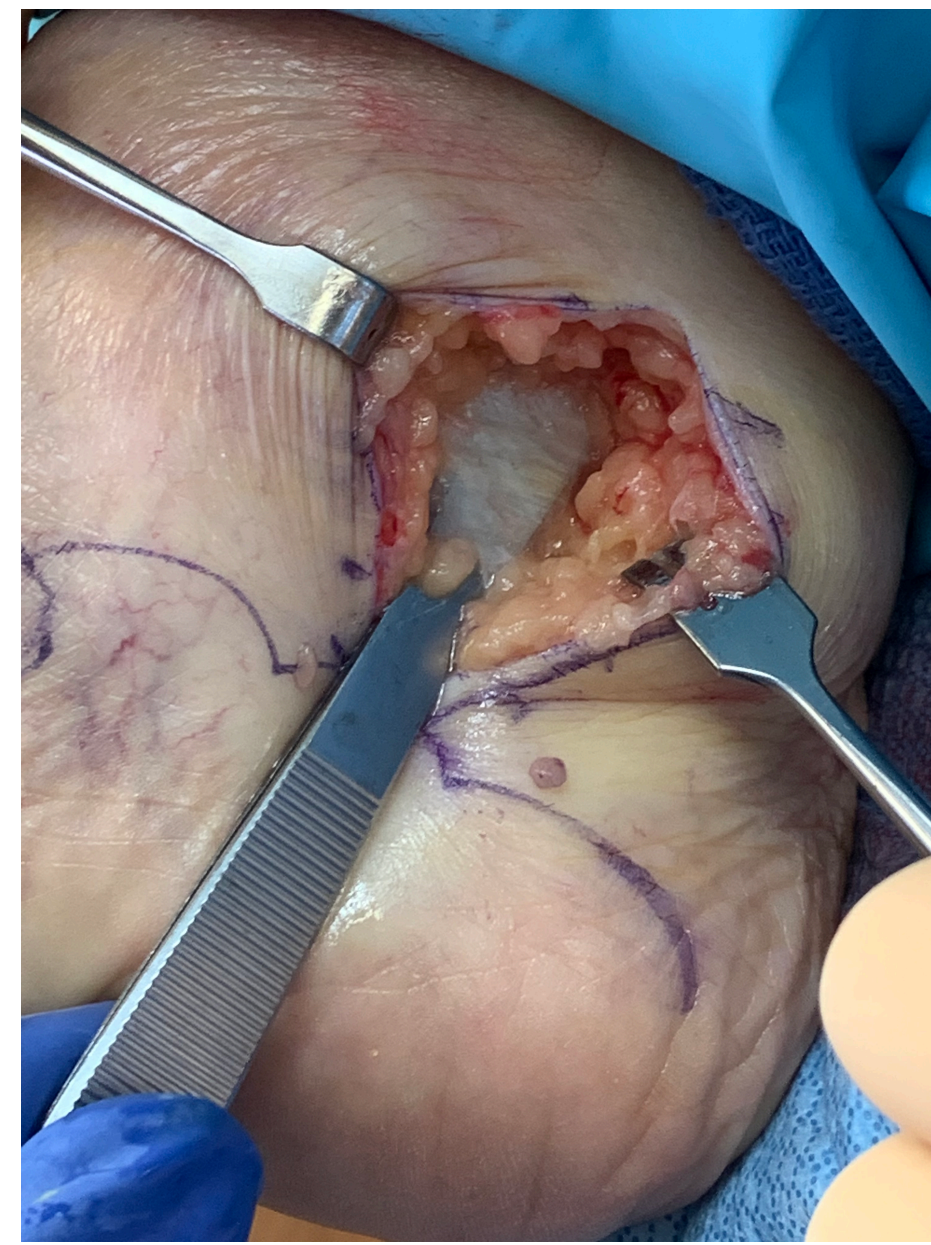


Image 1: Intraoperative photograph of flexor retinaculum overlying tarsal tunnel



Image 2: Varicosities noted in the tarsal tunnel intraoperatively

## METHODOLOGY/PROCEDURE

A retrospective review was performed on 90 feet from a total of 83 patients who underwent tarsal tunnel decompression procedures between July 2017 and May 2019. The procedures were performed at Bethesda Hospital and performed by four different surgeons. The analysis included 23 male and 60 female patients who had a tarsal tunnel decompression performed.

Parameters for inclusion included patients who underwent surgical decompression of the tarsal tunnel region. Medical records, operative reports and post-operative documentation were reviewed through electronic medical records to assess intraoperative findings of varicosities and treatment. All patients who underwent tarsal tunnel decompression were noted to have symptoms including, but not limited to: paresthesias, tenderness, numbness along the course of the nerve distribution, and possible swelling in the tarsal tunnel region.

Demographic information reviewed included patient age and gender. Operative reports determined the incidence of varicosities upon surgical decompression and descriptions varied from mild to significant and clinically described as tortuous in nature.

## LITERATURE REVIEW

The earliest description of tarsal tunnel syndrome was accredited to Kopell and Thompson in 1960 and the syndrome was named by Keck in 1962, with his original description noting tortuous veins surrounding the nerve.<sup>1,2</sup> Tarsal Tunnel syndrome is commonly defined as entrapment of the posterior tibial nerve and commonly diagnosed with the presence of dysesthesia, positive Tinel's sign, and paresthesias in the tarsal tunnel region and along the distribution of the medial and lateral plantar nerves and calcaneal branch.<sup>3</sup>

The anatomy of the tarsal tunnel is noted to be the flexor retinaculum as the roof the tarsal tunnel and a fibro-osseous tunnel created anteriorly by the tibia and posterior process of the talus and laterally the calcaneus. The posterior tibial nerve travels in the deep posterior compartment of the leg and branches into the medial and lateral plantar nerve and calcaneal branch in the area of the tarsal tunnel. Branching occurs in the tarsal tunnel in 93% of dissections.<sup>4</sup>

Intrinsic compression is a noted factor for symptomatic tarsal tunnel syndrome with space occupying lesions including, but not limited to, ganglions, lipomas, neurilemmomas, and varicosities having been noted to apply pressure to the area of the tarsal tunnel causing symptoms.<sup>3</sup> Gould and Alvarez discussed the mass effect of the tarsal tunnel especially in dependency, and in one study by Srinivasan 25% of cadaveric specimens noted varicosities surrounding the nerve.<sup>5,6</sup>

## RESULTS

Of the 83 patients (90 total feet), who underwent a tarsal tunnel decompression, 85.5% of the surgical sites were noted to have varicosities in the tarsal tunnel, adding pressure to the area and a possible increase in incidence of symptoms. Only 13 out of 90 surgical procedures, did not show varicosities adding compression to the tarsal tunnel.

The cohort consisted of 23 male and 60 female patients. The mean age was 50.6 years, with a range of 14 to 76 years of age. Out of these patients 59 out of 83 patients, or 71%, were referred for further vascular work up and/or referral to vascular physician or had vascular work up and/or consult prior to surgical decompression of the tarsal tunnel.

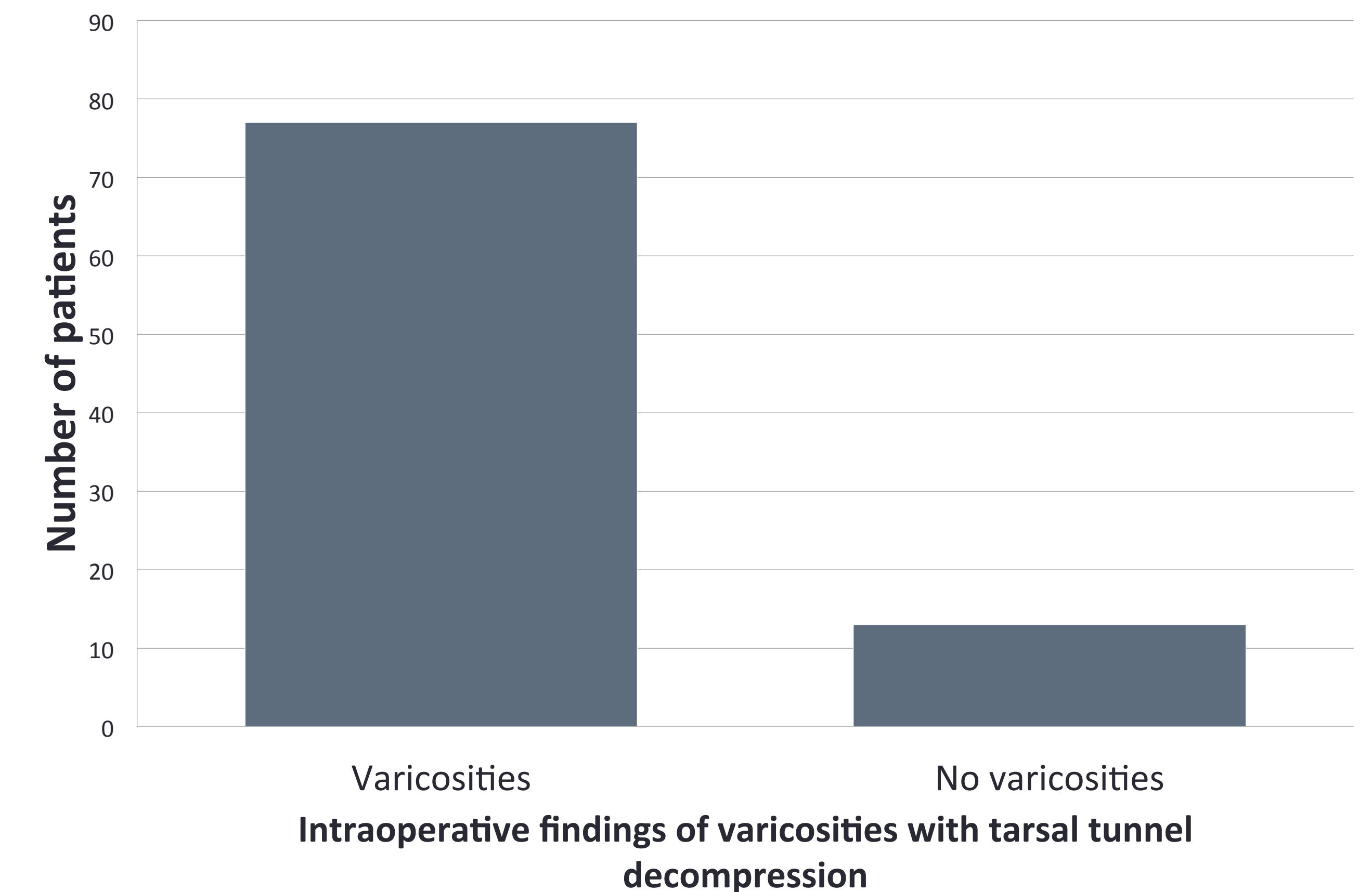


Figure: Intraoperative findings showed incidence rate of varicosities noted in 77 out of 90 procedures performed.

## DISCUSSION & CONCLUSION

Currently, most authors note surgical decompression for treatment of symptomatic tarsal tunnel syndrome. As commonly discussed, pressure from the flexor retinaculum and swelling in the tarsal tunnel region can lead to compression of the posterior tibial nerve and to tarsal tunnel syndrome. It is of importance to note that space occupying lesions such as varicosities contribute to tarsal tunnel symptoms and compression of the neurovascular bundle. Patients with space occupying lesions are less likely to respond to conservative measures and treatments.<sup>3</sup> During an examination and treatment of patient with tarsal tunnel syndrome, adding a complete vascular workup to a patient with tarsal tunnel is effective to clinical outcomes.

## REFERENCES

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