

# Surgical Excision of a Rare Schwannoma off the Lateral Plantar Nerve: A Case Report

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## STATEMENT OF PURPOSE:

Soft tissue tumors are frequently encountered in the foot and ankle. Schwannomas, also known as neurilemmomas, are benign tumors of the nerve sheath that are rare to the lower extremity. We report a case of a schwannoma arising from the lateral plantar nerve located near the base of the fourth metatarsal that was surgically excised. Schwannomas can present like common soft tissue tumors in the foot and should be included in the differential diagnosis.

## LITERATURE REVIEW:

Schwannomas are benign, slow growing tumors arising from the myelin sheath of peripheral nerves. These tumors rarely progress to becoming malignant. The direct cause of schwannomas is unknown, but disorders such as Neurofibromatosis are associated with them.<sup>1</sup>

Schwannomas commonly occur in individuals between the age of 20-50 and have no sex predilection.<sup>2,3</sup> The most common type of schwannoma is vestibular, with pedal incidence only reported as around 10% in the literature.<sup>4</sup> These tumors cause pain and irritation due to pressure on adjacent neurovascular structures.

Surgical excision is the principle treatment to allow pain relief.<sup>4,5</sup> With careful dissection and excision of the entire mass, damage to the adjacent nerve and recurrence is unlikely to occur.<sup>5</sup> A definitive diagnosis of a schwannoma is generally confirmed through histopathological analysis after surgical resection.

## CASE STUDY:

A 37-year-old male presented to our institution complaining of a four month duration of pain to the bottom of his left foot exacerbated with weight bearing and with activity. Past medical history was unremarkable. Upon physical exam, there was no edema to the foot and a negative tinell's sign over the posterior tibial nerve upon palpation at the tarsal tunnel. A palpable, non-translucent, firm mass was noted deep in the plantar lateral midfoot near the fourth tarsometatarsal joint, eliciting pain with direct palpation. The leading diagnosis at this time was a plantar fibromatosis.

With unremarkable radiographs, an MRI was obtained, which demonstrated a 1cm x 1cm x 1cm soft tissue mass located along lateral plantar nerve at the level of the base of the fourth metatarsal (**Fig. 1**). The mass was unilobular, and demonstrated a homogenous increase in signal intensity on the T2 weighted image. Due to continued pain and failed conservative treatment which included changes in shoe gear, offloading and massaging the area, the patient proceeded toward surgical intervention.

A 6 cm incision was made directly over the location of the mass at the base of the fourth metatarsal. Dissection was carried down through the subcutaneous fat where a 1cm x 1cm x 1cm rubber-like, opaque mass was extending from the peripheral nerve sheath of the lateral plantar nerve. The mass was excised from the sheath, while carefully preserving the attached lateral plantar nerve segment (**Fig. 2**). The tissue specimen was sent to pathology for further evaluation.

Histopathological examination revealed a benign schwannoma characterized by Antoni A and B areas (**Fig. 3**). Within the Antoni A areas, Verocay bodies are noted, composed of palisaded nuclei surrounding a central area of fibrillary cytoplasmic processes (**Fig. 4**). The Antoni B areas are composed of wispy cells with spindle to oval nuclei, loosely distributed throughout pale matrix material.<sup>6</sup> Post operatively, the patient had sutures removed and began weight bearing as tolerated at two weeks. The patient resumed all activities with no restrictions at seven weeks and reported no pain, numbness, or tingling at that time.

## FIGURES:

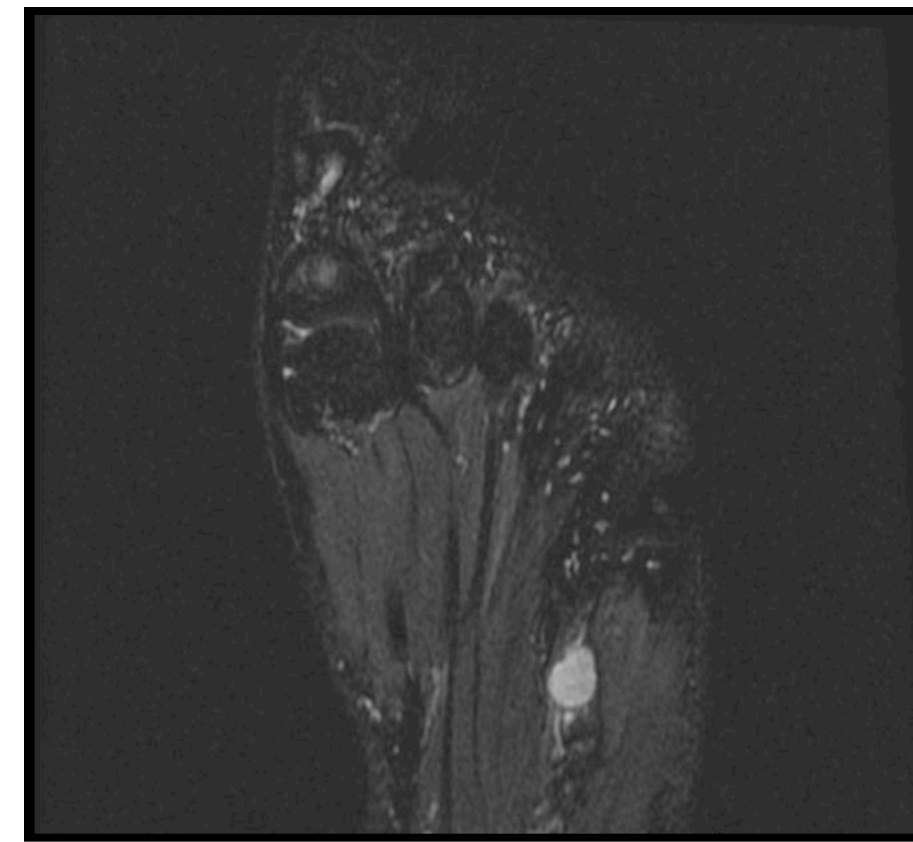


Figure 1



Figure 2

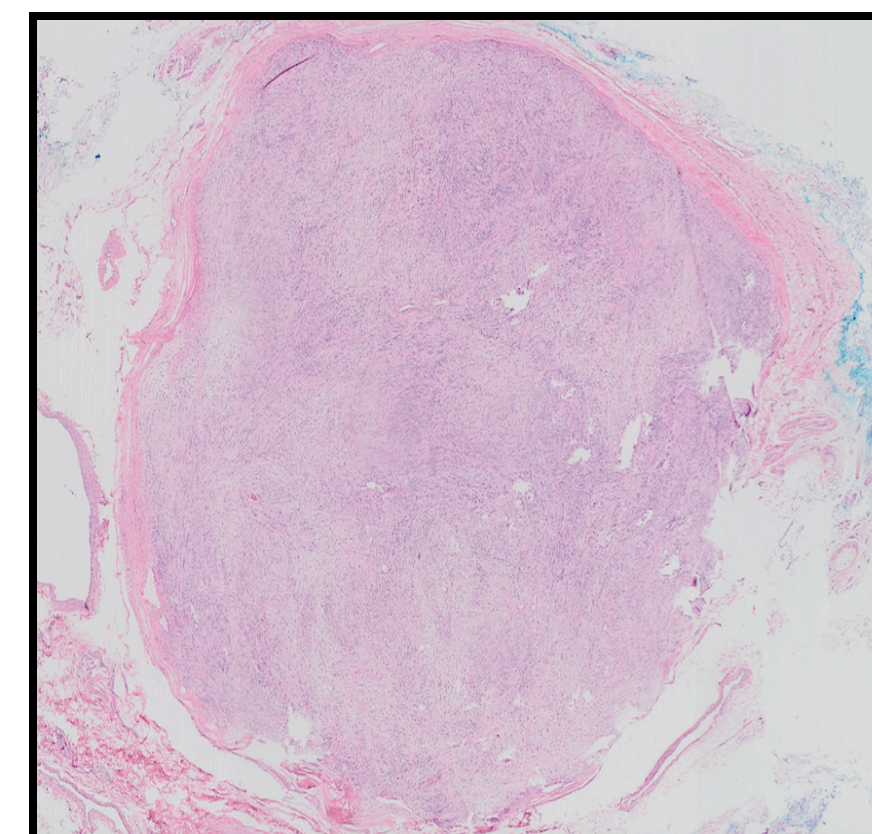


Figure 3

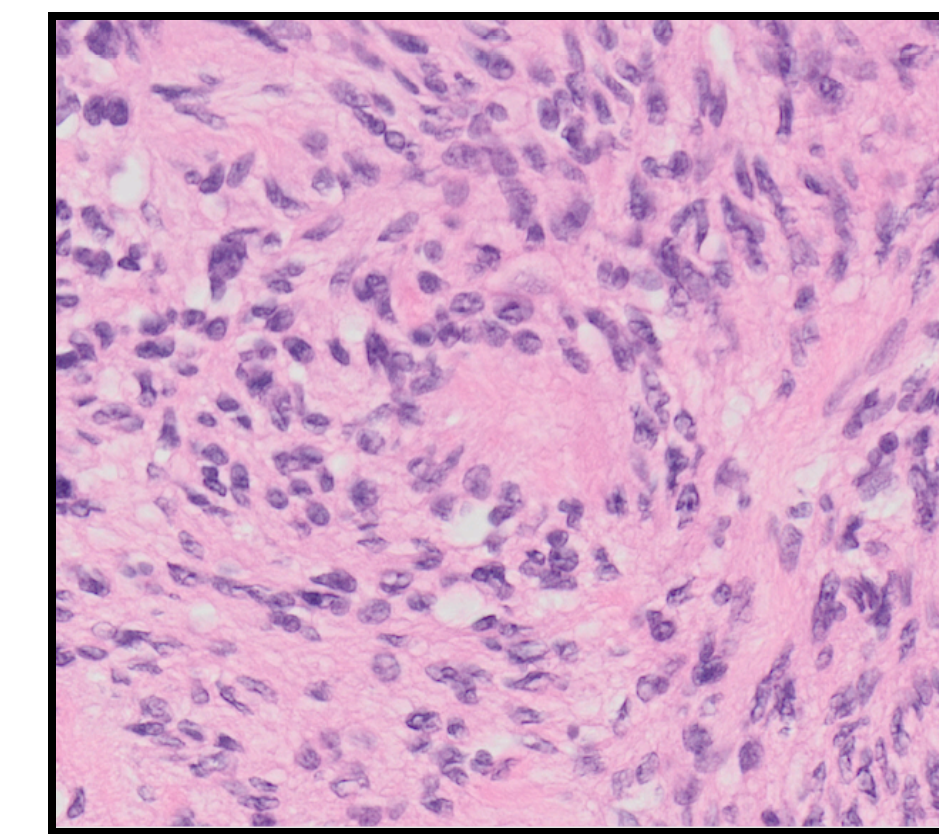


Figure 4

## ANALYSIS & DISCUSSION:

Schwannomas are benign tumors that are rare to the foot and ankle. Surgical excision is the principle treatment of these soft tissue tumors to allow pain relief and accurate diagnosis. Our patient displayed paresthesias for the first 1-2 weeks following surgery, but pain resolved shortly after and the patient was able to full weight bear at 2 weeks postop. At the current time, over 2 years following surgery, the patient continues to be without pain, restrictions in activity, or recurrence.

An article in the Annals of the Royal College of Surgeons of England in 2007 found 30 different soft tissue tumors in 101 cases of the foot and ankle and demonstrated a low diagnostic accuracy. They concluded that with any uncertainty, the mass should be confirmed through histopathological analysis.<sup>7</sup> The leading diagnosis in our patient was plantar fibromatosis, but was correctly identified as a benign schwannoma after histopathological analysis. In conclusion, although they are rare to the lower extremity, schwannomas should be included in the differential diagnosis when evaluated a plantar mass of unknown origin.

## REFERENCES:

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