



Schwannoma and neurofibroma of the posterior tibial nerve presenting as tarsal tunnel syndrome: review of the literature with two case reports



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HIGHLIGHTS

- Long delay in diagnosing of tarsal tunnel syndrome due to peripheral nerve tumours.
- No literature with multiple neurofibroma of posterior tibial nerve presenting as a tarsal syndrome.
- Ultrasonography done in good hands can diagnosis peripheral nerve tumours.
- Good surgical outcomes with excision of both tumours.

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ABSTRACT

Background: Hallux valgus is the lateral deviation of the great toe at the MTPJ that has many attributing aetiologies. This study will aim to identify whether hallux valgus progresses over time in the oriental Chinese population in Hong Kong.

Methods: Patients with acquired symptomatic hallux valgus who presented to clinic between 2008 and 2013 were included. The deformities were analysed radiologically at presentation and pre-operative and angles were measured. These angles were analysed in relation to the waiting time from presentation to surgery.

Results: A sample of 43 cases from 38 patients (Mean age 63 years, range 48 to 80 years) were included. Forty-one cases had a hallux valgus angle (HVA) > 24° at presentation (Mean 40.4°) and all had an intermetatarsal angle (IMA) > 9°. A significant difference is seen with HVA ($p = 0.040$, $t = -2.128$) at presentation and pre-op but not IMA ($p = 0.281$, $t = -1.095$).

The average wait for surgery was 705.7 days which had shown significant correlation with progression in HVA ($p = 0.031$). No significant difference was seen between IMA and waiting time to surgery ($p = 0.195$). **Discussion:** Our findings suggests severe hallux valgus deformity does progress over time in Hong Kong. Shorter waiting times for surgery could be beneficial to this population.

Level III, retrospective comparative series.

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1. Introduction

Peripheral nerve tumours account for 10.2% of all foot and ankle tumours including schwannoma (57%), neurofibroma (29%) and

malignant peripheral nerve tumours (14%). Schwannomas and neurofibromas are benign with a slow growth rate. Although found in any nerve, they are most commonly found in the head, neck and brachial plexus. In the lower limb, the posterior tibia nerve (PTN) is commonly involved [1].

Tarsal tunnel syndrome (TTS) arises from compression of the PTN within the tarsal tunnel and its multiple causes may be intrinsic or extrinsic to the tarsal tunnel. One intrinsic cause is compression of the PTN within the tarsal tunnel by a peripheral nerve tumour

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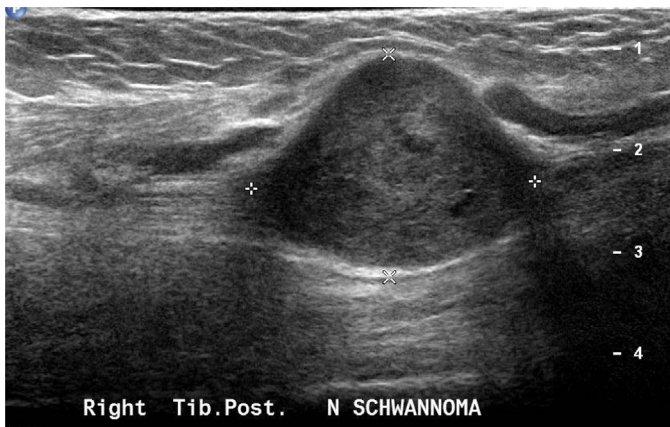


Fig. 1. Ultrasound scan showing schwannoma of the posterior tibial nerve.

[2]. Due to the slow growth rate of these tumours, a TTS diagnosis can be missed or delayed, resulting in a prolonged period of analgesia administration with no improvement and the impairment of daily activities [2–5]. Two cases of TTS secondary to peripheral nerve tumours (schwannoma and neurofibroma) of the PTN are presented.

2. Case 1

2.1. Clinical history

A 46-year-old man was referred by his physiotherapist with a 15-year history of medial ankle and foot pain, which radiated to the lateral aspect of the sole. The patient had consulted numerous physicians with no resolution of his symptoms, was repeatedly diagnosed with Achilles tendon pathology and referred for physiotherapy. His most recent physiotherapist disagreed that his symptoms were related to the Achilles tendon and referred him for an ultrasound. On presentation he reported continuous medial ankle and foot pain (worse at night) which was affecting his normal activities.

2.2. Examination

On examination, the Achilles tendon appeared normal. The patient had pin-point tenderness 2 cm above medial malleolus, midway between the tibia and the Achilles tendon with no palpable mass. He had a positive Tinel test over the PTN. The foot was sensory and motor intact with good palpable pulses. Clinically he had no features of neurofibromatosis.

2.3. Investigation

The patient ultrasound scan (Fig. 1) reported a $28 \times 20 \times 18 \text{ mm}^3$ hypoechoic mass in continuity with the PTN, suggestive of a schwannoma.

2.4. Management

Treatment options were discussed and he was advised to have the mass surgically excised for symptomatic relief and, more importantly, get a histological diagnosis. The patient was counselled regarding the surgical risks and complications, including damage to the PTN. Surgical excision was performed under general anaesthesia with no peripheral nerve block. The posterior tibial nerve was carefully exposed and a $2 \times 1.5 \text{ cm}^2$ mass was found within the neural sheath of the PTN (Figs. 2 and 3).

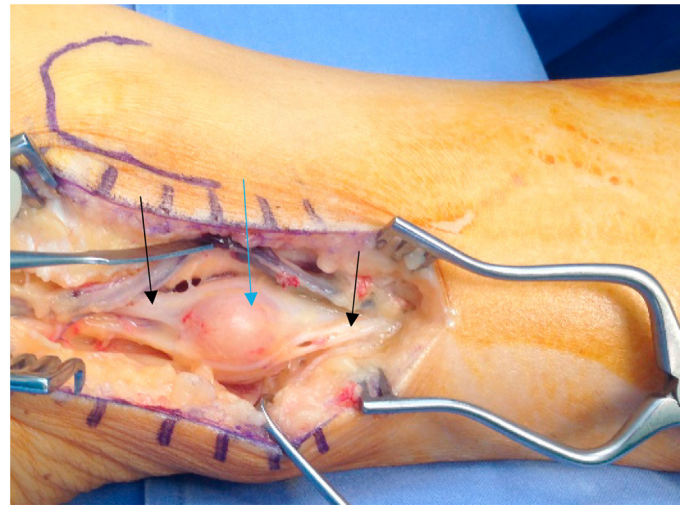


Fig. 2. Intraoperative schwannoma of the posterior tibial nerve. The black arrows indicate posterior tibial nerve and blue shows schwannoma.

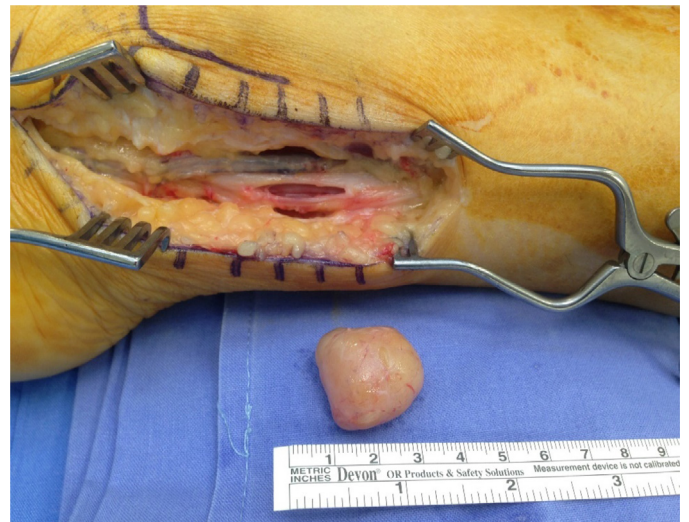


Fig. 3. Schwannoma completely removed and the posterior tibial nerve is still intact.

The mass was carefully dissected out and removed without damaging the nerve. The wound was closed and a below-knee slab applied. The mass was sent for histology and reported as being a schwannoma based on the presence of Antoni type A and type B cells and histochemistry stained positive for S-100 (Fig. 4). The slab was removed at three weeks. The wound had healed well and the foot was sensory and motor intact. He was instructed to start weight bearing as tolerated. At the eight-week follow-up, his symptoms had completely resolved with no complaints of pain or neurological symptoms. He returned to all normal activities at 12 weeks.

3. Case 2

3.1. Clinical history

A neurologist referred a 24-year-old woman with a 10-year history of left medial ankle pain radiating up the leg (Valleix phenomenon) and with electric shock-like sensations aggravated by walking and cold weather [6]. With no benefit from analgesia or physiotherapy she had undergone a tarsal tunnel release on two occasions elsewhere in 1997 and 2002 on the affected leg.

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