Case Report

Trauma-induced Soft Tissue Perineurioma on the Thumb of a Filipino Female

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Abstract

Perineurioma (PN) is an uncommon benign tumor originating from the peripheral nerve sheath and composed solely of perineurial cells. Most PNs occur sporadically and are typically described as painless masses. This report presents an atypical case of extraneural or soft tissue PN (ESTP) in a 37-year-old Filipino female with a history of trauma. The patient presented with a 5-month history of a gradually enlarging nodule on her right thumb accompanied by localized dull pain. Physical examination revealed the presence of an ill-defined, slightly erythematous, firm, movable, and tender nodule. Histopathological analysis demonstrated characteristic features of ESTP, including spindled cells arranged in a whorled pattern. Immunohistochemical staining for epithelial membrane antigen was positive, while S-100 staining was negative, which confirmed the diagnosis. The nodule was successfully excised without any complication. There was no recurrence observed during the 4th month postexcision. This case highlights the importance of considering ESTP as a potential diagnosis for painful masses following trauma and suggests a possible association between ESTP and trauma. Surgical excision remains the preferred treatment option for ESTP, and recurrences are infrequent.

Keywords: Extraneural perineurioma, perineurioma, soft tissue perineurioma

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Submitted: 19-05-2025, **Revised:** 09-10-2025, **Accepted:** 21-10-2025, **Published:** 20-12-2025.

Introduction

Perineurioma (PN) is a benign peripheral nerve sheath tumor that was first described by Lazarus and Trombetta through ultrastructural identification.[1] There are two forms of PN: (1) intraneural and (2) extraneural or soft tissue. Intraneural PN (IPN) presents with a swollen major nerve and signs of neuropathy while extraneural or soft tissue PN (ESTP) presents as a firm nodule without any signs of neuropathy.[2-4]

While the majority of reports indicate that PN occurs sporadically and is often linked to abnormalities of chromosome 22,[1] our findings suggest that trauma could be a possible cause for the development of ESTP. A thorough literature review of published cases on soft tissue PN was done comparing similarities and differences to our case. Due to the scarcity of information, this report aims to contribute to the limited information about the condition.

Access this article online	
Quick Response Code:	Website: https://journals.lww.com/jpds
	DOI: 10.4103/JPDS.JPDS_25_25

Case Report

This is a case of a 37-year-old right-handed Filipino female who sought consultation due to a painful nodule

How to cite this article: Lahoz AC, Flores ZG, Coo ER. Trauma-induced soft tissue perineurioma on the thumb of a Filipino female. J Philipp Dermatol Soc 2025;34:83-8.

on her right thumb. The history began 6 months prior to consultation, when the patient accidentally punctured the palmar side of the right thumb on a sharp piece of wood. This resulted in sharp pain and minimal bleeding that resolved within a week. One month after the injury, she noted a deep-seated skin-colored papule with a central punctum on the skin surface, accompanied by intermittent localized dull pain. Over the course of 5 months, the papule gradually progressed to a slightly erythematous nodule with persistence of intermittent localized dull pain. The pain was aggravated by palpation but not affected by exposure to cold temperature. The patient denied swelling, warmth, purulent discharge, ulceration, or hematoma formation in the thumb involved. There were no sensory changes such as paresthesia, hypoesthesia/anesthesia, hyperesthesia, or radiating pain in the affected digit or forearm. The patient also denied muscle weakness, limited range of movement, and disruption of daily activities involving the affected hand. The review of systems was generally unremarkable. The patient had no previous history of fracture or similar lesions on the affected finger. There were no lesions on other parts of the body. There were no known familial syndromes or history of malignancy in the family.

Dermatologic physical examination revealed a solitary, ill-defined, slightly erythematous, circumscribed, firm, movable, tender, deep-seated nodule on the palmar side of the distal phalanx of the right thumb that measured 1 cm × 2 cm. There was no decreased range of motion, muscle atrophy, or sensory deficit on the affected finger and hand. Clinical differential diagnoses included fibroma of the tendon sheath, glomus tumor, foreign body granuloma, traumatic neuroma, and schwannoma. Ultrasound and radiograph were requested; however, the patient opted to have the lesion removed on the day of consultation. An elliptical excision biopsy under local anesthesia was performed, with removal of a well-circumscribed, rubbery, solid, oval, white mass measuring 1 cm × 1.5 cm. There were no postoperative complications. There was no recurrence of the lesion during the 4th month of follow-up. Informed consent for publication was obtained from the patient.

Histologic examination revealed a well-circumscribed, nonencapsulated tumor which consisted of spindled cells with tapered ends and elongated wavy nuclei, some arranged in a whorled pattern surrounded by collagenous stroma [Figure 1] with hypercellular and hypocellular areas on hematoxylin and eosin stain. There was no evidence of foreign body reaction. Epithelial membrane antigen (EMA) was positive highlighting the spindled cells [Figure 2] while S-100 was negative. The diagnosis of soft tissue PN was made based on the histopathological findings.

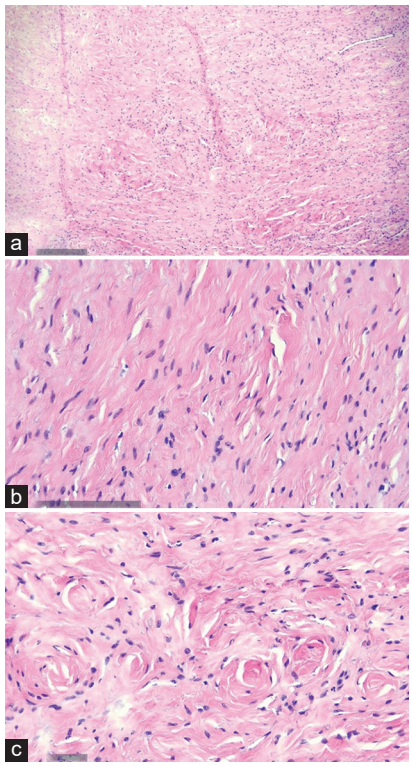

Figure 1: (a) Cells are spindle-shaped and some are arranged in a whorled pattern surrounded by collagenous stroma (×10); (b) Spindle-shaped cells with elongated wavy nuclei. No mitotic cells and atypia were observed (×40); (c) Concentric layers of cells around entrapped collagen bundles forming a whorled pattern (×40)

Discussion

PN is a rare benign tumor that exclusively consists of perineurial cells and accounts for fewer than 1% of peripheral nerve sheath tumors.[1,2,5-9] This condition tends to affect middle-aged individuals (mean age of 44.6 years) and females.[5,6,10-12] However, our case falls outside the age group mentioned earlier for PN.

There are two variants of PN which are intraneural type and extraneural or soft tissue type.[2,10] IPN is often associated with abnormalities in chromosome 22[2,5,11,13-15] and may also result from reactive process of nerve degeneration.[10] Instances of IPN developing after trauma are rarely reported.[16] While the majority of case reports of ESTP have occurred sporadically and did not attribute trauma as a potential trigger, there is one documented case where a previous traumatic event, specifically a bite, resulted in the formation of a nodule on the tongue.[7] In our case, we propose that trauma played a role in the development of ESTP. A summary of previously reported cases is presented in Table 1.

Table 1: Review of demographic profile, clinical features, treatment, and outcome of patients with soft tissue perineurioma reported in the literature

Author (year)	Origin	Age/sex	Site	Duration	Size (cm)	Trauma	Clinical presentation	Symptom/s	Treatment	Follow-up	Recurrence/ complications
Tsang *et al.* (1992)[6]	Hong Kong	29/female	Right anterior neck	4 months	4×1×1	None	Deep-seated nontender firm mass	Painless	Excision	15 months	None
		66/male	Right upper chest wall	N/A	3.5	None	Round hard subcutaneous mass	Painless	Excision	12 months	None
Bégin (1998)[5]	Canada	50/female	Palmar aspect of distal interphalangeal joint – Left index finger	N/A	1.9×1.1×0.8	None	Nontender, mobile nodule without epidermal alteration	Painless	Excision	10 months	None
Senghore *et al.* (2001)[14]	United Kingdom	70/female	Right alar base	Several years	1.5	None	Smooth, flesh-colored, polypoid, soft nodule	Painless	Excision	N/A	N/A
Balarezo *et al.* (2003)[27]	United States	14/female	Retroperitoneal mass	N/A	14.8×8.8×5.6	N/A	Large retroperitoneal mass	Asymptomatic	Excision	4 years	None
Rankine *et al.* (2004)[18]	Australia	34/female	Thigh, subcutaneous	N/A	Max 1.9	N/A	Firm, nodular, or lobulated masses	N/A	N/A	34 months	None
		58/male	Calf, subcutaneous	N/A	Max 3.2	N/A		N/A	N/A	N/A	None
		32/male	Shoulder, Intramuscular	N/A	Max 1.8	N/A		N/A	N/A	1 month	None
		30/female	Knee, subcutaneous	N/A	Max 3	N/A		N/A	N/A	2 months	None
Thomas *et al.* (2005)[10]	United States	13/female	Dorsal mid phalanx of the right third finger	7 years	N/A	None	Smooth-surfaced, rubbery firm reddish yellow nodule	Painless	Excision	14 months	None
		54/female	Dorsal distal phalanx of the left fifth finger	3–4 years	0.4	None	Firm, skin-colored, smooth-surfaced papule	Painless	Excision	N/A	N/A
Hornick and Fletcher (2005)[7]	United States	10–79 years (mean 46 years) Female - 43 Male - 38	Lower limb/limb girdle (36) Upper limb/limb girdle (15) Finger (4) Trunk (15) Head and neck (7) Retroperitoneum (3) Paratesticular (1)	Few weeks to 10 years (mean 21 months)	0.3–20 (mean 4.1)	Biting trauma (1)	N/A	Painless mass (36) Painful mass (14) Pain alone (2) Vague discomfort (2) Otalgia (1) Sore throat (1) Incontinence and dysuria (1)	Excision (57)	Mean 41 months	None (41) Recurrence (2)
Pitchford *et al.* (2006)[24]	United States	30/male	Left thigh	9 months	10×5	None	Mass	Asymptomatic	Resection	N/A	N/A
Ausmus *et al.* (2007)[23]	United States	29/female	Left lateral chest wall	Uncertain	4	None	Firm, nonmobile ovoid mass	Painless	Excision	7 months	None
Miyake *et al.* (2008)[20]	Japan	48/male	Left groin	3 years	3.5×3	None	Well-delineated, elastic, hard, nontender mass without radiating pain	Vague discomfort	Excision	1.5 years	None
Kim *et al* (2009)[15]	Korea	54/female	Right lower leg	6 months	2×2×1.5	None	Movable, rubbery soft mass	Painless	Excision	26 months	None
Yasumoto *et al.* (2010)[16]	Japan	63/male	Anterior portion of the pancreatic body	N/A	4	N/A	N/A	High blood pressure	Tumor excision with distal pancreatectomy and splenectomy	16 months	None
Azevedo *et al.* (2011)[19]	Brazil	58/female	Lower buccal fold adjacent to the left first molar	N/A	0.5	None	Fibroelastic, well-defined mobile submucosal nodule	Painless	Excision	12 months	None
Xiao *et al.* (2014)[17]	China	46/female	Tip of tongue	3 years	1.1×1.1×1	None	Well-delineated, elastic, hard, nontender mass	Painless	Excision	24 months	None
Nishio *et al.* (2014)[22]	Japan	43/male	Dorsum of the right foot	2 years	6	None	Rubbery, immobile, nontender mass	Painless	Marginal excision	3 months	None

Contd...

Table 1 : Contd...

Author (year)	Origin	Age/sex	Site	Duration	Size (cm)	Trauma	Clinical presentation	Symptom/s	Treatment	Follow-up	Recurrence/ complications
Duhan *et al*. (2016)[8]	India	3/female	Scalp	~6 months	6.5×4×1.5	None	Well-circumscribed, firm, nontender mass	Painless	Excision	N/A	None
Ma *et al*. (2021)[9]	China	49/female	Left kidney	Incidental	5.7×4	None	N/A	N/A	Laparoscopic left partial nephrectomy	66 months	None
		42/male	Left flank	1 month	10	None	Hard mass	Abdominal discomfort	Left partial nephrectomy	24 months	None
Wilson *et al*. (2022)[26]	United States	15/male	Right-sided neck	10 months	2	None	Mobile nontender mass	Painless	Excision	N/A	N/A
Ammar *et al*. (2022)[3]	Morocco	54/male	Back	Several months	1	None	Firm movable nodule with smooth and pink overlying surface	Painless	Excision	2 years	None
Ferraz de Arruda *et al*. (2022)[4]	Brazil	29/male	Bladder	3 weeks	N/A	None	None	Painless macroscopic hematuria	Cystoscopy and transurethral resection of the bladder	6 months	None
Present case	Philippines	37/female	Palmar side of the distal phalanx of the right thumb	5 months	1×1.5	Superficial puncture by a wood	Solitary, ill-defined, circumscribed, firm, movable, tender, slightly erythematous deep-seated nodule	Localized dull pain	Excision	4 months	None

N/A: Data not available

PNs present as a discrete nodule or mass with a predilection on the legs and trunk but may also be seen in deep soft tissue areas.[2,5-7,10-12,14] IPN presents as a fusiform expansion of a major nerve with associated neuropathy.[2-4,10,13] On the other hand, ESTP arises in soft tissue as a painless solitary nodule or mass[2,3,7,8,13,14,17] without nerve involvement.[3,6,8,10,15] Only a limited number of ESTP cases have been reported in the fingers, with the sizes of the lesions ranging from 0.4 to 1.9 cm in maximum dimension. Moreover, the majority of these cases were described as painless.[5,7,10] However, our case stands out since it falls within the same size range mentioned earlier, but it presents with a localized dull pain which is an uncommon finding.

Grossly, ESTPs typically demonstrate a well-circumscribed and nonencapsulated appearance, characterized by a firm or rubbery consistency with no relation to a nerve.[1,2,6-8,13-15,18,19] The gross characteristics of ESTPs align closely with the presentation observed in our case.

Microscopically, ESTPs often display hypocellular features and consist of spindled cells with elongated, slender bipolar cellular processes and elongated or tapered nuclei. These spindled cells may arrange themselves in a lamellar or whorled pattern.[3,4,6-10,13,14,17-20] The stroma of ESTPs can be collagenous or myxoid.[7,8,13,20] Additionally, the mitotic activity within ESTPs is typically very low or absent.[4,7,8,13] Immunohistochemistry staining and, if available, electron microscopy are necessary to establish the diagnosis. Positive reaction to EMA and no reactivity to S-100 protein strongly supports the diagnosis of PN.[2-9,13-15,17,20,21] The histologic and immunohistochemical features of our case are compatible with the diagnosis of ESTP despite the unavailability of electron microscopy. The following immunohistochemical stains have also demonstrated positive reactivity for PN and can be helpful adjuncts in the diagnostic process: CD34,[2,7,9,10,13,14,17] claudin-1,[2,4,7,9,10,15,19] GLUT1,[2,4,9,15,19,20] vimentin,[5,13,20] collagen type IV,[4,13,19] and laminin.[4,13,19]

Additionally, cytogenetic studies conducted on other case reports have revealed a potential link between ESTP and chromosomal abnormalities, including monosomy of chromosome 22,[9,15] loss of chromosome 13,[11,15] rearrangement of chromosome 10q24[15,22] as well as isolated occurrences in individuals diagnosed with neurofibromatosis type 1[23] and type 2.[24]

Computed tomography or magnetic resonance imaging is useful in localizing and delineating PN, but the results are typically nonspecific.[16,20] The imaging appearance of ESTP may differ from that of IPN. ESTP presents as a

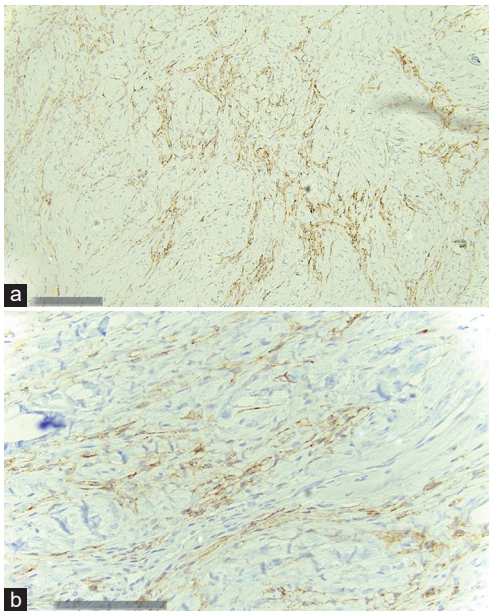

Figure 2: Epithelial membrane antigen stain highlighting spindled cells: (a) ×10, (b) ×40

round or ovoid soft tissue mass without signs of muscular denervation and without an apparent nerve of origin.[25] Given the nonspecific nature of the imaging findings, a histopathologic examination is recommended to establish a definitive diagnosis.

ESTP generally follows a benign clinical course, and surgical excision of the mass is curative.[2-8,10,13-15,17,25-27] Recurrences after excision are rare.[3,4,6,7,15,17,25-27]

In summary, while it is frequently reported that ESTP occurs sporadically and predominantly manifests as a painless mass, ESTPs can be part of the differential diagnoses when confronted with a painful mass following an injury, as observed in our case. Moreover, trauma could potentially be associated with ESTP. Thorough history taking, comprehensive physical examination, and performing histopathologic examination are imperative steps in establishing a definitive diagnosis, as ESTPs may exhibit similar presentations to other benign conditions. Notably, surgical excision is curative in the majority of cases, with recurrences being a rare occurrence.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Lazarus SS, Trombetta LD. Ultrastructural identification of a benign perineurial cell tumor. Cancer 1978;41:1823-9.
2. Sewon K, Amagai M, Bruckner A, Enk A, Margolis D, McMichael A, *et al*. Fitzpatrick's Dermatology. 9th ed. New York: McGraw-Hill Education; 2019.
3. Ammar N, Meziane M, Benzekri L, Znati K, Senouci K. Extraneural soft tissue perineurioma: A case report. J Dermatol Res Ther 2022;8:118.
4. Ferraz de Arruda GJ, Dametto DR, Antoniassi TD, Ferraz de Arruda JG, Facio FN. A rare case of bladder perineurioma. Cureus 2022;14:e25938.
5. Bégin LR. Perineurioma of the finger: Case report of a rare peripheral nerve sheath neoplasm of pure perineurial cell lineage. J Hand Surg Am 1998;23:342-7.
6. Tsang WY, Chan JK, Chow LT, Tse CC. Perineurioma: An uncommon soft tissue neoplasm distinct from localized hypertrophic neuropathy and neurofibroma. Am J Surg Pathol 1992;16:756-63.
7. Hornick JL, Fletcher CD. Soft tissue perineurioma: Clinicopathologic analysis of 81 cases including those with atypical histologic features. Am J Surg Pathol 2005;29:845-58.
8. Duhan A, Rana P, Beniwal K, Parihar D. Perineurioma of scalp in an infant: A case report with short review of literature. Asian J Neurosurg 2016;11:70-1.
9. Ma TS, Zhou L, Zhou Q, He XL, Zhao M. Soft tissue perineurioma involving the kidney: A report of two cases with an emphasis on differential diagnosis. Diagn Pathol 2021;16:87.
10. Thomas C, Yousefi M, Pride H, Maroon M, Tyler W. Soft tissue perineurioma of the finger: Expanding the differential diagnosis of a soft tissue tumor presenting on a digit. Cutis 2005;75:233-7.
11. Mott RT, Goodman BK, Burchette JL, Cummings TJ. Loss of chromosome 13 in a case of soft tissue perineurioma. Clin Neuropathol 2005;24:69-76.
12. Robson AM, Calonje E. Cutaneous perineurioma: A poorly recognized tumour often misdiagnosed as epithelioid histiocytoma. Histopathology 2000;37:332-9.
13. Macarenco RS, Ellinger F, Oliveira AM. Perineurioma: A distinctive and underrecognized peripheral nerve sheath neoplasm. Arch Pathol Lab Med 2007;131:625-36.
14. Senghore N, Cunliffe D, Watt-Smith S, Hollowood K. Extraneural perineurioma of the face: An unusual cutaneous presentation of an uncommon tumour. Br J Oral Maxillofac Surg 2001;39:315-9.
15. Kim JM, Choi JH. Soft tissue perineurioma: A case report. Korean J Pathol 2009;43:266-70.
16. Yasumoto M, Katada Y, Matsumoto R, Adachi A, Kaneko K. Soft-tissue perineurioma of the retroperitoneum in a 63-year-old man, computed tomography and magnetic resonance imaging findings: A case report. J Med Case Rep 2010;4:290.
17. Xiao WL, Xue LF, Xu YX. Soft tissue perineurioma of the tongue: Report of a case and review of the literature. World J Surg Oncol 2014;12:11.
18. Rankine AJ, Filion PR, Platten MA, Spagnolo DV. Perineurioma: A clinicopathological study of eight cases. Pathology 2004;36:309-15.
19. Azevedo RS, Seraphim PA, Moreira MM, Cantisano MH, de Almeida OP, León JE, *et al*. Extraneural soft tissue perineurioma of the oral mucosa. J Oral Maxillofac Surg 2011;69:1678-82.
20. Miyake M, Tateishi U, Maeda T, Arai Y, Seki K, Sugimura K. Computed

tomography and magnetic resonance imaging findings of soft tissue perineurioma. Radiat Med 2008;26:368-71.
21. Ariza A, Bilbao JM, Rosai J. Immunohistochemical detection of epithelial membrane antigen in normal perineurial cells and perineurioma. Am J Surg Pathol 1988;12:678-83.
22. Nishio J, Iwasaki H, Hayashi H, Nabeshima K, Naito M. Soft tissue perineurioma of the foot with 10q24 rearrangements: Unique MRI features with histopathologic correlation. Skeletal Radiol 2014;43:1017-22.
23. Ausmus GG, Piliang MP, Bergfeld WF, Goldblum JR. Soft-tissue perineurioma in a 20-year-old patient with neurofibromatosis type 1 (NF1): Report of a case and review of the literature. J Cutan Pathol 2007;34:726-30.
24. Pitchford CW, Schwartz HS, Atkinson JB, Cates JM. Soft tissue perineurioma in a patient with neurofibromatosis type 2: A tumor not previously associated with the NF2 syndrome. Am J Surg Pathol 2006;30:1624-9.
25. Broski SM, Littrell LA, Howe BM, Folpe AL, Wenger DE. Extraneural perineurioma: CT and MRI imaging characteristics. Skeletal Radiol 2020;49:109-14.
26. Wilson T, Wang S, Bolshom B, Stanisce L, Vimawala S, Ahmad N, *et al*. Pediatric soft tissue perineurioma in the head and neck. Ear Nose Throat J 2022;103:693-5.
27. Balarezo FS, Muller RC, Weiss RG, Brown T, Knibbs D, Joshi VV. Soft tissue perineuriomas in children: Report of three cases and review of the literature [corrected]. Pediatr Dev Pathol 2003;6:137-41.