

# A rare case of concurrent penile and spinal schwannomas

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**Abstract** Schwannoma of the penis is extremely rare. This is the case of a young male who presented with pain on sexual intercourse, multiple lumps on the dorsal shaft of his penis, as well as a temporal headache. He was subsequently diagnosed with schwannoma affecting both his penile region and cauda equina. This clinical finding has not been previously described in the literature. Hence, its presentation is unique to our specialty.

**Key Words:** Penis, schwannoma, spine, urology

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## INTRODUCTION

Schwannomas are encapsulated nerve sheath tumors which occur sporadically or with neurofibromatosis. They are slow growing tumors originating from Schwann cells, and may be present for years prior to diagnosis. Such tumors can occur throughout the peripheral nervous system and may cause various clinical effects, depending on the location. Patients with penile schwannoma generally present with painless nodules, although in rare cases, they may present with penile pain. There are few documented cases in the literature. Hence, little is known about this condition.

It is important during the investigation of penile lesions to have a high index of suspicion for schwannoma, despite its rarity, due to its malignant potential, and association with other pathology. Simple excision is advocated, particularly if the patient is symptomatic. Further studies are required to address its long-term clinical course and recurrence rate.

## CASE REPORT

A 43-year-old male presented with penile pain during sexual intercourse. The patient also reported months of intermittent temporal type headache with no neurological deficits. He was otherwise a healthy man with no past medical history. There was no significant family history, particularly that of neurofibromatosis. On examination of the genitalia, there were three superficial lesions (of approximately 18 mm, 23 mm, and 28 mm diameter) on the dorsal shaft of his penis. The penis was otherwise unremarkable. Systemic examination, including neurological examination, was normal. The lesions were subsequently excised. Histopathology revealed circumscribed, encapsulated, nodular lesions consisting of swirled fascicles of spindle cells, with alternating hyper and hypocellular areas [Figure 1]. Immunoperoxidase stains showed the cells to be positive for vimentin and S-100. These features were consistent with a diagnosis of penile schwannomas [Figure 2].

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Neurology consult was sought for investigation of a temporal headache. Clinical assessment detected no neurological deficits, and a magnetic resonance imaging (MRI) of the brain and spine was subsequently performed. This showed a 6 mm well-circumscribed small nodule at the superior aspect of the cauda equina (filum terminale) at the level of L1–L2, with enhancement in its vertical length [Figure 3]. The lesion appeared to arise from the nerve root at this site. The rest of the MRI examination of the brain and spine was otherwise normal. Characteristics of the lesion were in keeping with a spinal schwannoma. Ongoing radiological surveillance was decided upon due to the size of the lesion, and the unobtrusive nature of the symptoms our patient was experiencing. The patient continued to be observed 2 years following initial diagnosis. The lesion remained stable, and the patient did not report any new symptoms.

## DISCUSSION

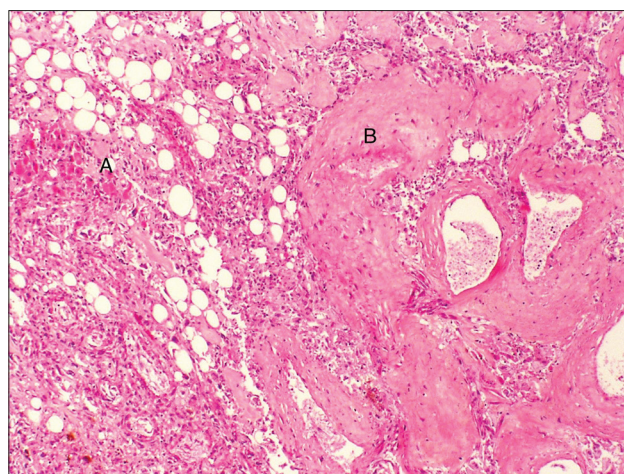
Schwannomas are encapsulated peripheral nerve tumors arising from neural crest-derived Schwann cells, which form the neural sheath. Such tumors are slow growing and often asymptomatic.<sup>[1]</sup> They are most commonly located on the head, neck, or flexor surfaces of upper and lower extremities.<sup>[1,2]</sup> About 90% of schwannomas are sporadic, but they can also be associated with multiple meningiomas, neurofibromatosis 2, and schwannomatosis.<sup>[3]</sup>

Schwannomas of the penis are rare. There have only been 27 cases reported in the literature since first described in 1968.<sup>[1,4]</sup> Similarly, spinal schwannomas are also considered an uncommon neoplasm with reported annual incidence of 0.3–0.4/100,000.<sup>[5,6]</sup> To our knowledge, this is the first case of concurrent schwannomas affecting the penis and the spine.

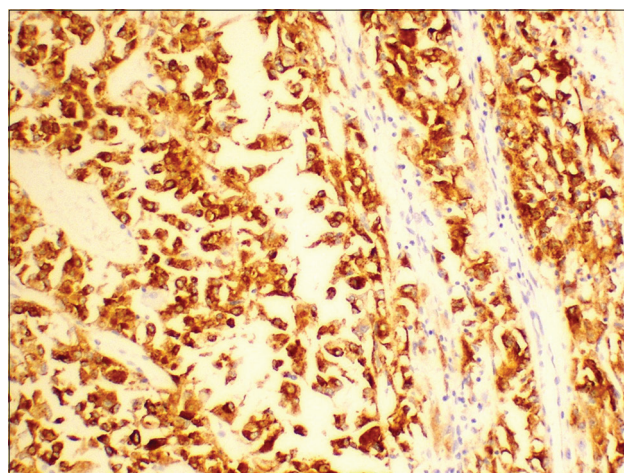
Penile schwannomas typically present as painless nodules most commonly occurring on the dorsal penile shaft, the location of the penile dorsal nerve.<sup>[7]</sup> However, there have been documented cases where the tumor has infiltrated the glans and prepuce.<sup>[8]</sup> Differential diagnoses to consider in such instances include other soft tissue tumors of the penis, such as leiomyomas and neurofibromas. Schwannomas of the penis are usually benign, but malignant variants have been reported and are often associated with neurofibromatosis Type I (von Recklinghausen's disease).<sup>[1]</sup>

Complete surgical excision is the recommended treatment for penile schwannomas, with low recurrence rates.<sup>[1,2,8]</sup> Our patient recovered well with no signs of recurrence 2 years postoperatively.

Schwannomas of the spine are benign neoplastic lesions that represent approximately one-third of all primary spinal



**Figure 1:** Typical cellular Antoni A areas. (a) Less cellular Antoni B areas (b)



**Figure 2:** Immunoperoxidase stains showed the cells to be positive for S-100



**Figure 3:** T1-weighted magnetic resonance imaging sagittal image showed a 6 mm lesion at the level of L1–L2 in the superior aspect of the cauda equina, with moderate enhancement (arrow)

tumors.<sup>[6]</sup> Patients often present with local pain and signs of compression of adjacent neural structures.<sup>[6,9]</sup> Liu et al.<sup>[10]</sup>

studied the radiological features of 92 spinal meningiomas and found they most commonly occur in the lumbar region. Spinal meningiomas tend to have a signal intensity equal to or less than that of the spinal cord on T1-weighted images, and mild to marked hyperintensity on T2-weighted images.<sup>[10]</sup> Complete excision of the tumor is the recommended treatment, and high recurrence rates have been observed in subtotal excisions.<sup>[6]</sup>

Histopathologically, the hallmark of a schwannoma is the mixed pattern of Antoni A and B areas. Antoni A areas are composed of compact spindle cells with indistinct cytoplasmic borders, arranged in interlocking cellular fascicles. Nuclear palisading is a common feature. Antoni B areas are characterized by loose Schwann cell proliferation.<sup>[2,8]</sup> Immunohistochemically, the S-100 protein is strongly expressed by most tumor cells of schwannomas.<sup>[8]</sup>

## CONCLUSION

Penile schwannoma is an important clinical entity. Despite its rarity, penile schwannoma should be considered as a differential diagnosis of soft tissue tumors of the penis. Complete surgical excision is important to minimize recurrence rate.

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## Conflicts of interest

There are no conflicts of interest.

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