

Giant Ganglion Cyst of the Proximal Tibiofibular Joint with Peroneal Nerve Palsy: A Case Report

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Learning Point of the Article:

Ganglion cyst may sometimes present with pressure effects on adjacent vital structures especially due to its size and locations. It requires urgent surgical decompression to avoid complications.

Abstract

Introduction: Ganglion cysts are benign cystic tumors of musculoskeletal structures which have variable clinical presentations, however, compression neuropathies due to ganglion cyst are much less common in the lower extremity and only a couple of cases have been described in the literature. Hence, in the current case report, we describe a patient with a giant ganglion cyst causing peroneal nerve palsy which was managed surgically.

Case Report: A 50-year-old female presented with a 2-month history of progressive left foot drop with a gradual development of swelling over the left fibular head. Imaging suggested ganglion cyst-induced peroneal nerve palsy. Initial conservative treatment failure warranted surgical excision which confirmed extraneural origin on histopathological examination. An immediate clinical improvement was observed postoperatively and full recovery occurred within 6 months. There was no recurrence at 2 years follow up

Conclusion: The ganglion cyst-induced compression neuropathies are uncommon in lower limbs, especially in a skeletally mature person. Our case was an extraneural cyst which is the rare comparatively. The possibilities of other differentials should be excluded through imaging due to non-specific presentations. Surgical management is the preferred mode of treatment with 10% recurrences which can be reduced by complete excision including stalk.

Keywords: Giant ganglion cyst, peroneal compression neuropathy, skeletally mature patient.

Introduction

Ganglion cysts are benign cystic tumors of musculoskeletal structures. Although the exact pathogenesis of ganglion cysts in the body is not certain. They can either arise as a simple extraneural cyst by synovial herniation (the articular theory) or due to the fusion of small degenerative cysts arising from the joint capsules, bursae, or tendon sheath (degenerative theory) [1,2]. Some authors have suggested that peroneal nerve ganglion cysts represent cystic degeneration of the nerve sheath itself. However, it is believed that peroneal nerve ganglion cysts arise from the synovial capsule of the proximal tibiofibular joint more commonly. Symptomatology varies a lot depending on

the local adjacent neurovascular compression or cosmetically ill appearance. Compression neuropathies due to ganglion cyst are much less common in the lower extremity and very few cases are described in the literature since the first case described by Sultan in 1921 [3]. Hence, in the current case report, we describe a patient with a ganglion cyst causing peroneal nerve palsy which was managed surgically.

Case Report

A 50-year-old female presented with a 2-month history of progressive left foot drop and mild tenderness over the left fibular head, with the gradual development of swelling in the

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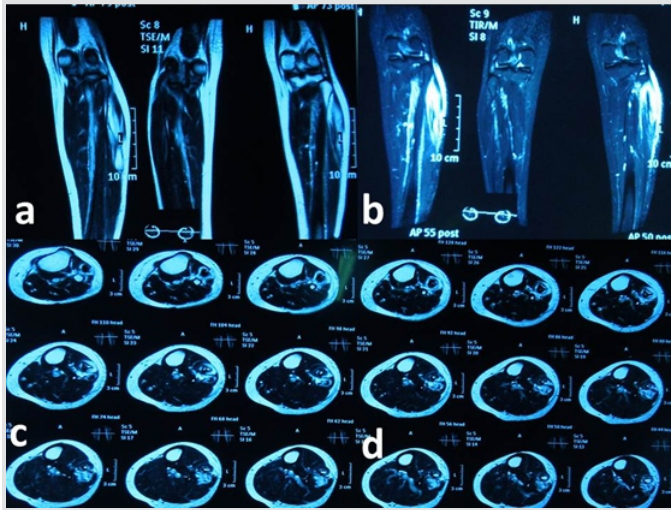


Figure 1: Pre-operative magnetic resonance imaging scan sagittal T2-weighted image (a), short-tau inversion recovery image (b), and axial images (c and d) showing cystic lesion.

area. On examination, there was a soft to firm, poorly defined swelling in the area below the fibular head. There was a weakness in foot eversion and dorsiflexion, particularly of the great toe. Foot plantar flexion and inversion were normal. The swelling was screened with an ultrasound, which showed a hypoechogenic cystic mass. Nerve conduction study showed delayed latency and decreased conduction velocity compared to the contralateral limb. An electromyogram was done which demonstrated a denervation potential the right tibialis anterior and extensor digitorum longus muscles. The patient was diagnosed with peroneal nerve palsy and was initially conservatively managed with ankle-foot orthosis for protection and expectant spontaneous recovery. The symptoms did not resolve, and subsequent magnetic resonance imaging (MRI) showed an elongated tubular, cystic-appearing mass near the fibular neck extending down till the middle third of the leg (Fig. 1). The cyst was excised using an incision starting just posterior to fibular head. The fascia of the posterior compartment was incised, and the peroneal nerve was identified just beneath the cyst (Fig. 2). The nerve was traced distally as well as proximally to prevent any inadvertent injury while cyst excision. The cyst was followed distally till its stalk and removed in toto (Fig. 3). Loop magnification was used to prevent any injury to the fine branches arising from nerve along its course. The mass measured approximately 13.0 cm×2.0 cm×2.0 cm. It was then

explored for its proximal extension and removed, which measured 2.0 cm×2.0 cm×2.0 cm (Fig. 4, 5, 6). The peroneal nerve was inspected and found to be completely intact. The specimen was sent for histopathology which confirmed the diagnosis of a ganglion cyst (Fig. 7). There was an immediate clinical improvement in motor function within the 1st week. Repeat electromyography (EMG) showed long-duration polyphasic motor unit potentials in tibialis anterior and extensor digitorum and clinical recovery of foot drop. At 6-month follow-up, the patient reported full clinical recovery (Fig. 8), there were no signs of recurrence on ultrasonography (USG) even at 24-month follow-up.

Discussion

Most peroneal nerve compression neuropathies may be either due to mechanical compression causes occurring at fibro-osseous or fibrous tunnel or due to dynamic causes due to nerve injury at specific limb positions like prolong squatting [4, 5, 6]. The compression neuropathies due to ganglion cyst are not common in lower limbs, especially in a skeletally mature person [3]. These can be either extraneural or intraneural in location [7,8]. Out of these two intraneural locations are more common. Our case was due to extraneural cyst which is the rarer variety. The peroneal nerve compression neuropathy due to ganglion cyst most commonly presents as foot drop with or without pain radiating to lateral malleolus [9, 10, 11]. The presentation as a proximal tibiofibular joint swelling is less common. The compression neuropathy of peroneal nerve due to ganglion cyst was initially described by Sultan in 1921 [3]. Ganglion cysts are benign mucin-filled cyst which has an outer fibrous coat and an inner synovial lining. They contain a clear, colorless gel-like material. During our case, we also have found similar suggestive findings. These are confirmed with the classical histological finding and the presence of hyaluronic acid in its core [12]. Due to non-specific symptoms, the possibilities of other differentials such as synovial sarcoma, chondrosarcoma, and venous or an arterial aneurysm should be excluded.

The ultrasound is a simple and cost-effective screening test, however, it lacks specificity [13]. MRI is more specific and shows hypointense fluid-filled cyst on T1 and hyperintense on



Figure 2: Intraoperative image showing nerve exploration and ganglion cyst compressing the left peroneal nerve.



Figure 3: Intraoperative image showing distal excision of the ganglion cyst up to its stalk.

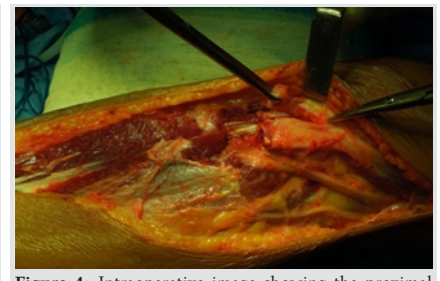


Figure 4: Intraoperative image showing the proximal dissection of the cyst up to its base from superior tibiofibular joint so as to decrease the chances of recurrence.



Figure 5: Intraoperative image showing the complete excision of the ganglion cyst and peroneal nerve decompression.



Figure 6: Gross image of the excised ganglion cyst which was sent for histopathological reporting.

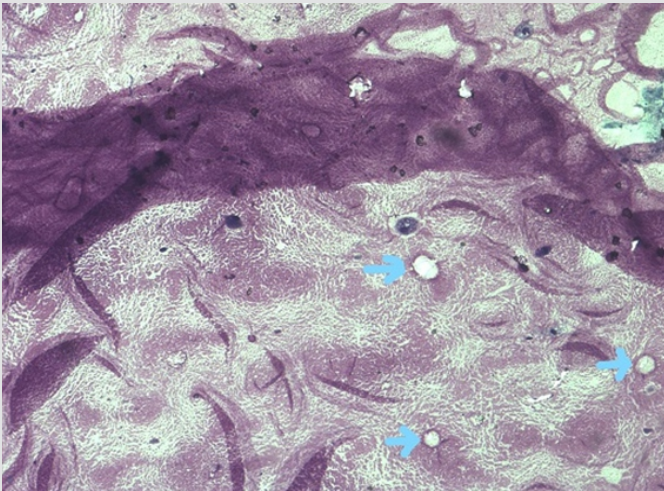


Figure 7: Histopathological picture showing ganglion cyst with synovial cells lining (marked with arrows) under $\times 10$.



Figure 8: Clinical image at 6-month follow-up showing complete recovery from foot drop and the patient was able to dorsiflex completely.

T2. An electrophysiological test can help in distinguishing the cause and the location of the lesion responsible for neurological complaints. In our case, we have done USG, MRI, and EMG. USG showed a hypoechoic lesion. MRI showed a cystic lesion and the EMG showed decreased motor potential amplitude and loss of conductivity in the complaint region.

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Management of ganglion cyst of the proximal tibiofibular joint is mainly surgical. Aspiration can be a diagnostic modality before surgical excision. Surgical management with excision has shown good results with recurrence in about 10% of cases [14]. For prevention of recurrence, the complete excision of the stalk and the base in the tibiofibular joint

should be done [15]. We have done a complete excision of the cyst including its stalk and the base. Literature reports the role of chemical neurolysis with local steroids in compression neuropathies [16, 17]. We have not done chemical neurolysis with local steroids in the present case. There was an immediate symptomatic improvement and the patient could dorsiflex the foot at 6 months of follow-up. There was no recurrence till 24 months after the surgery.

Conclusion

Although ganglion cysts are one of the most common tumors of the musculoskeletal system and have a variable presentation depending on the site of cyst. Still, peroneal compression neuropathy due to these in a skeletally mature patient is yet rare, especially due to an extraneural cyst. The management demands precise diagnosis with USG, MRI, and EMG for exact location and confirmation of neural involvement. Surgical excision is the method of choice with about 10% recurrence. We advocate the complete excision of cyst including its base and stalk to minimize any recurrence.

Clinical Message

Lower extremity giant ganglion cyst causing compression neuropathy in a skeletally mature patient is very rare. The surgical management is of utmost importance for optimal recovery. The type of surgery depends on the tumor size, location, and severity of neurological involvement.

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