Case Report

ANNALS OF MEDICINE & SURGERY

OPEN

# Giant sciatic nerve schwannoma: a rare case report and literature review

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**Introduction and importance:** Schwannomas are benign tumors that arise from Schwann cells commonly located in peripheral nerves. Depending on the size and location of sciatic nerve Schwannoma clinical manifestations can either varies from symptoms simulating radiculopathies such as positive Lasegue sign on the affected side, gait weakness and paresthesia or just present with pain and an associated palpable mass.

**Case presentation:** The authors present a case of a 34-year-old female patient suffering from pain, gait weakness, and a palpable mass since many months. The palpable mass was present in the posterior region of the left lower limb. Imaging studies reveal an extensive lesion measuring 35 cm × 8 cm that extends from the gluteal region to the left popliteal fossa.

**Clinical discussion:** The finding of a palpable mass during physical examination guided us towards the diagnostic suspicion and thus necessitating the direct imaging studies. When approaching such type of patients, a history of neurofibromatosis must be ruled out due to its frequent association. Surgical resection should focus on the preservation of neurovascular structures, which offers improvement of the symptoms and the quality of life of patients.

**Conclusion:** Giant sciatic nerve schwannoma if excised completely can lead to relieve of symptoms. Although recurrences are uncommon follow-up for years is necessary.

**Keywords:** neurilemmoma, plexiform schwannomatosis, sciatic nerve

## Introduction

Schwannomas are benign tumors originating from the neuroectoderm. They arise from the Schwann cells that support nerve fibers and are the most common to occur in peripheral nerves[1–6]. They represent 5–8% of soft tissue tumors[6–9]. They have a preference for large nerves having predominance in the upper limbs over the lower limbs[6]. The location in the sciatic nerve is rare with a percentage of around 1%.

Clinical manifestations can vary from some cases reported as asymptomatic to symptomatic cases mimicking as lumbar radiculopathy or lumbosciatica[9–15]. The finding of a palpable mass favors the diagnosis.

Given the diagnostic challenge due to some asymptomatic cases, the imaging support is significant. The MRI shows a fusiform mass with high intensity on T2-weighted images[15–21]. This case report was written under the Surgical Case Report criteria[2]. All the works regarding this case report has been reported in line with the Surgical Case Report 2023 criteria[2].

Here, we present a unique case of sciatic nerve shwannoma and tried to delve into the literature to find out similar cases with their overall presentations and managements. We also portray how we managed our challenging case.

### HIGHLIGHTS

- Depending on the size and location of sciatic nerve Schwannomas' clinical manifestations can either go from symptoms simulating radiculopathies such as positive Lasegue sign on the affected side, gait weakness and paresthesia or just present with pain and an associated palpable mass.
- We present the case of a 34-year-old female patient with a history of several months characterized by pain, gait weakness, and a palpable mass found on physical examination of the posterior region of the left lower limb.
- Imaging studies reveal an extensive lesion measuring 35 cm × 8 cm that extends from the gluteal region to the left popliteal fossa, surgical treatment is performed with total resection of the lesion and good strength and mobility recovery in the left lower limb.

### *Case presentation*

A 34-year-old patient presents with a 6-months history of pain [8/10 in Visual Analogue Scale scale], gait weakness, paresthesia, and a palpable mass in left thigh. An indurated mass was found

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Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

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Annals of Medicine & Surgery (2024) 86:4921–4926

Received 21 May 2024; Accepted 21 June 2024

Published online 1 July 2024

http://dx.doi.org/10.1097/MS9.0000000000002331

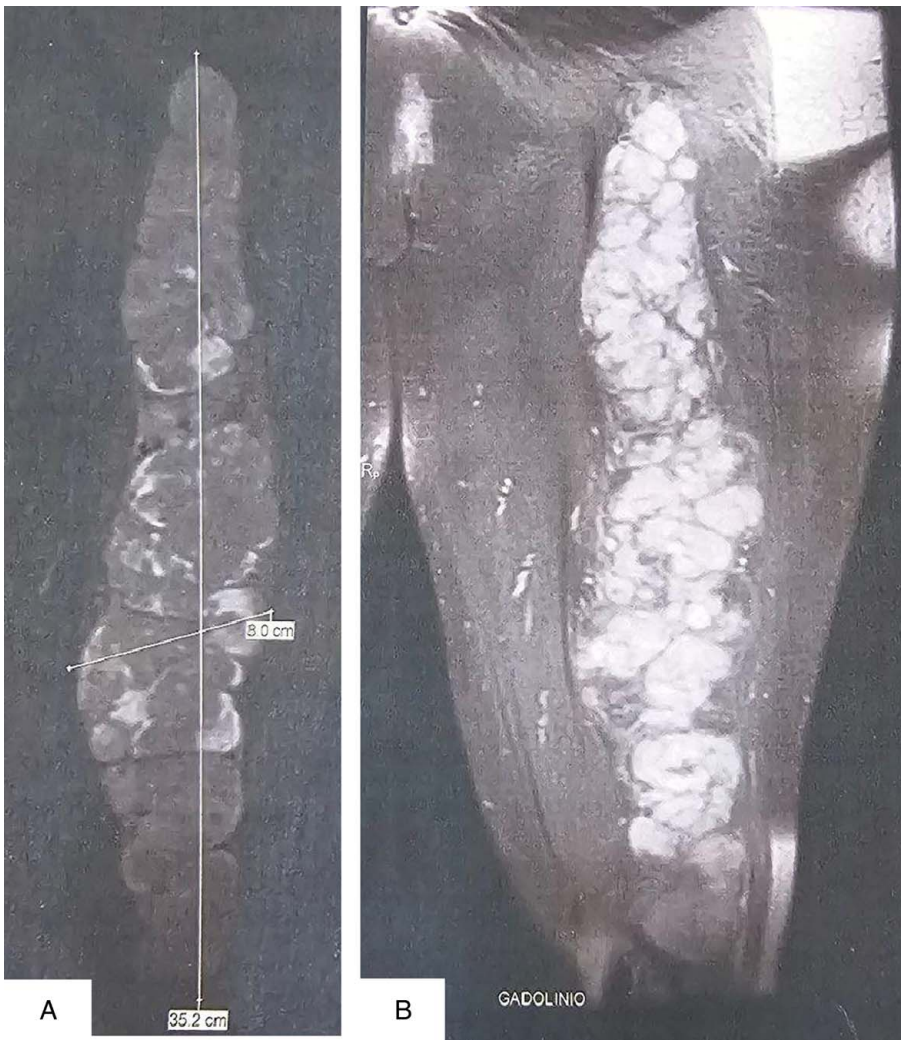


**Figure 1.** (A) Tumor measurements 35.2 cm × 8 cm (B) MRI postcontrast enhancement, multiple nodules, typical of plexiform Schwannomatosis.

upon examination in posterior left thigh going from the gluteal region to popliteal fossa which was painful to palpation and to flexion and extension maneuver, positive left Lasegue, paresthesia, and monoparesis [4/5 in Manual Muscle Testing of lower left limb. The patient had received painkiller medication without showing improvement. The computed tomography scan showed a fusiform mass with saccular morphology. The Angio-computed tomography reported extensive mass located in the posterior compartment displacing muscular and vascular structures with no signs of infiltration. Soft tissue ultrasound dismissed the adenomegalic component. A trucut needle biopsy was performed and the histopathological study revealed low nuclear grade spindle cell mesenchymal neoplasm with hyper and hypocellular areas, compatible with peripheral nerve sheath tumor compatible with Schwannoma which was later confirmed with immunohistochemistry.

In MRI the finding was a heterogeneous tumor located in the posterior region of the left thigh at the level of the midline in the topography of the sciatic nerve from its proximal third to its distal third at the level of the popliteal fossa measuring 35.2 cm × 8 cm in its longitudinal and transverse diameters respectively. The postcontrast enhancement showed compatible with Schwannoma (Fig. 1).

### *Treatment*

The surgical procedure was recommended to the patient emphasizing the risk due to the proximity to the sciatic nerve. Both the patient and her family agreed to the surgery. After sedation and spinal anesthesia, the patient was placed in the prone position. The lead surgeon made an S-type skin incision on the posterior region of the left thigh and proceeded with the dissection and separation of the plexiform tumor from the sciatic nerve (Fig. 2). Total resection was made, keeping all vascular and nervous structures near the tumor (Fig. 3).

Within 24 h from the surgery recovery was favorable with good strength and mobility. The patient was discharged 48 h after the surgery. Physical therapy and medical treatment was recommended. At 1-month postdischarge the follow-up reported remarkable symptoms and pain improvement.

Histopathology report revealed neural origin mesenchymal proliferation with spindle cells, oval nuclei forming Verocay bodies focally as well as isolated vessels with hyaline walls with

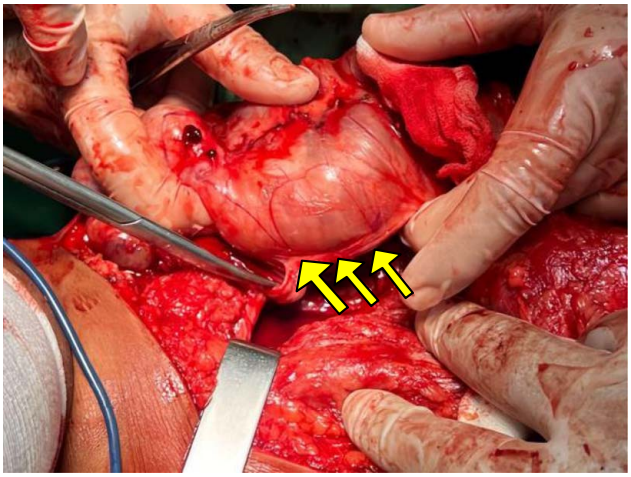

**Figure 2.** Tumor dissection from the sciatic nerve, preserving nervous and vascular structures (Yellow arrows: Left sciatic nerve).

degenerative-looking changes confirming Schwannoma of the sciatic nerve (Fig. 4).

## Discussion

Schwannomas are benign tumors arising from Schwann cells. It is typically present in peripheral nerves[22–25]. Tumors develop outside the nerve sheath, displacing the nerve fibers, which is the reason for the neurological symptoms[7]. Even though schwannomas frequently present as solitary nodules[7,13,16,17], there

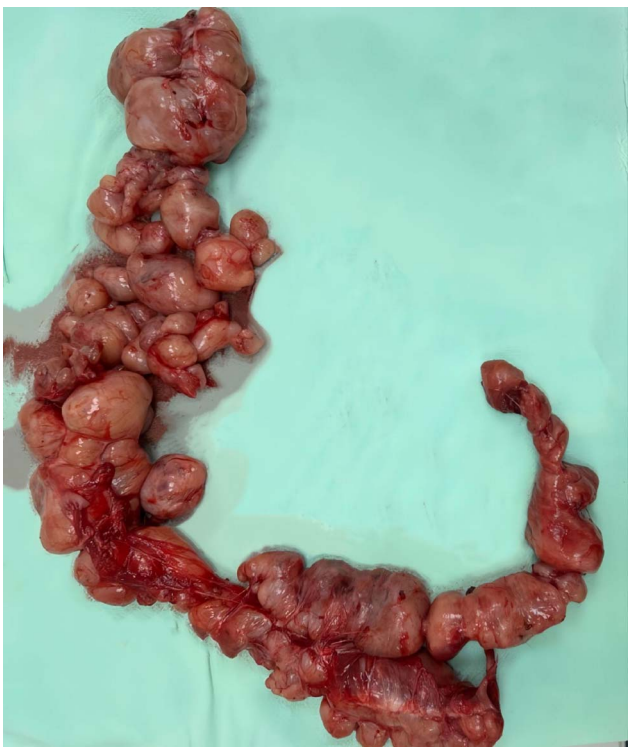

**Figure 3.** En bloc resected Schwannoma with multiple nodules.

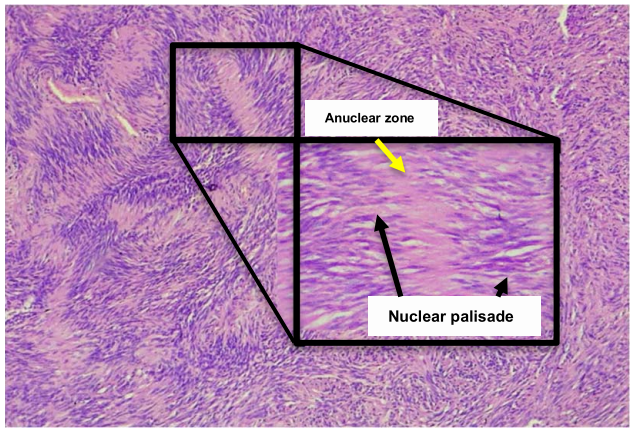


**Figure 4.** Verocay bodies: spindle cells together with oval nuclei forming nuclear palisade (black arrows) and a nuclear zone in between (yellow arrow).

are a few cases reports that show a plexiform disposition in upper and lower nerve paths[10,15,18]. There is even a case report of three solitary Schwannomas in different locations within the same patient[14]. In our case, the tumor followed the left sciatic nerve path into the popliteal fossa with multiple nodules in a rosary beads distribution.

Sciatic nerve consists of both sensory and motor fibers hence it is a mix nerve. It is originated by L4-S3 spinal nerve fibers[19]. It follows a posterior path as it leaves the pelvic region and typically arrives as a common trunk to the popliteal fossa where it divides into the common peroneal nerve and the tibial nerve[5,19].

Clinical manifestations such as paresis together with a positive Lasegue in the affected side would lead us to suspect a radicular syndrome[2,8,23–25]. In our case, there was a positive Lasegue on the left side, and the palpable mass was an important guide to the diagnosis. The images revealed the extension of the tumor following the left sciatic nerve path, matching the paresthesia symptom along the nerve's path.

The surgical approaches and patient's position depend on the location and extension of the lesion, usually the surgical incision aiming for the preservation of neurovascular structures offers a good prognosis and symptom relief[19,22]. Due to the extension and plexiform presentation in this case, the patient was placed in the prone position, and an S-type skin incision was made in the left thigh. Multiple nodules like plexiform Schwannomatosis were found and a total resection was achieved. Because of its nodular growth pattern, recurrence in plexiform Schwannomatosis has been described[19]. No recurrence was observed in the 6-month follow-up. A literature search of some the sciatic nerve schwannoma published to date has been summarized in Table 1.

## Conclusion

Giant sciatic nerve schwannoma if excised completely can lead to relieve of symptoms. Although recurrences are uncommon follow-up for years is necessary.

## Ethical approval

Ethical approval was waived for case report from our hospital.

**Table 1**

**Summery of the sciatic nerve schwannoma published in literature**

| | Patient | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Article, Name, Year** | **Age** | **Genre** | **Symptoms** | **Physical exam** | **IMAGE** | **Approach** | **Measurement of lesion** | **Histopathological report** | **Reference** |
| Unusual presentation of lateral sural cutaneous nerve schwannoma: An exceptional case report 2022 | 28 | M | Paresthesia Posterior and lateral aspect of the knee | Small oval nodule, next to the proxipal part of the lateral head of the gastrocnemius muscle, positive tinel sign | MRI: 5 mm lesion, encapsulated, hypersignal in T2, behind the proximal part of the muscular body of the lateral head of gastrocnemius | Spinal anesthesia, ventral decubitus, direct approach | 5 mm | Proliferation of spindle-shaped cells arranged in interlacing fascicles in Antoni A areas and hypocellular areas Antoni B | El Ghazoui, *et al.*[3] |
| Large schwannoma of the sciatic nerve, 2016 | 40 | F | Pain when sitting, fullness of right posterior thigh | Mobile firm lump, tender to palpation | MRI: well-defined multiloculated mass | — | 9 cm × 6 cm | — | Godkin, O *et al.*[4] |
| A Large Schwannoma of Sciatic Nerve - A Case Report, 2018 | 40 | F | Aching pain of left lower limb, aggravated when walking | Ill-defined mass at centre of popliteal fossa, no fluctuation, no sensory or motor deficit | MRI: solid, fusiform well-defined mass in left popliteal fossa, between semimembrinosus and biceps femoris muscle | S incision at popliteal fossa along vertical limb axis | 55 mm × 43 mmx 41 mm | Encapsulated spindle cell tumor with cells arranged in interlacing fascicles of spindle-shaped cells, pleomorphic fusiform nuclei with wavy eosinophilic cytoplasm | Sushil N and Ankita G al[26] |
| Chronic sciatic pain caused by sciatic nerve schwannoma | 42 | F | Stinging and shooting pain in the right big toe, | No sensory or motor deficit, range of motion preserved. The Oblong area indurated between the sacrum and trochanter | Pelvis MRI: multicystic expansive process, enhanced at T2 | | 85 mm | Numerous spindle- shaped cells arranged in coils or palisades, and the absence of a mitotic pattern | Blanchard, C et al[20] |
| An Occult Schwannoma of the Deep Peroneal Nerve Presenting with Neuralgia Mimicking Sciatica: Case Report and Review of the Literature. 2000 | 52 | M | Lancinating pain in the anterolateral aspect of the left leg, weakness of the dorsiflexion of the foot | Weak dorsiflexion of left foot, small, barely palpable swelling | MRI: Degenerative disc changes in the lumbar region and a generalized disc bulge at L4-L5 level | Small vertical skin incision, attachment to a fascicle on the deep peroneal nerve fibers, encapsulated solitary soft tumor | 6 mm × 8 mm | Benign neoplasm composed of a bundle of spindle cells with varying cellularity and nuclear palisading, no signs of mitosis or necrosis | Sharma, R. R et al[27] |
| Benign schwannoma of the sciatic nerve, about 2 cases. 2014 | 48 | — | Paresthesia and electrical discharges left the lower limb | Mass in the left popliteal fossa, adherent to deep plane | MRI: Tumor process at the expense of the sciatic nerve in T2 | Surgical excision | 4 cm | Favoring Schwannoma | Chahbouni, M et al[28] |
| | 53 | — | Paresthesia and electrical discharges towards right leg, mass in the popliteal fossa | Hard mass fixed in relation to the deep plane | MRI: Tumor at the expense of sciatic nerve | Surgical excision | 5 cm | Confirming Schwannoma | |
| A rare cause of nondiscal sciatica: Schwannoma of the sciatic nerve. 2009 | 42 | | Pain radiated from the posterior aspect of the right thigh to the lateral aspect of the leg and right foot, numbness of the right lower limb | No motor or sensory deficit, isolated oblong soft-tissue mass sensitive to percussion | MRI: ovoid expansive mass along the right sciatic nerve, heterogenous high signal intensity on T2 | Complete excision of the tumor | 50 mm | Well-encapsulated of whitish appearance, adherent to the sciatic nerve | Omezzine, S. J et al[29] |
| Sciatica in a patient with unusual peripheral nerve sheath tumors. 2006 | 58 | M | Left intermittent, sharp, stabbing pain aggravated when sitting | Tinel sign consistently elicited with the palpation of the left posterior thigh | MRI: Mass in psoas muscle embedded within leg musculature in continuity with the sciatic nerve | Patient in prone position, linear rostral-caudal incision proximal to the popliteal fossa | 3.5 cm | Diagnosed as Schwannoma | Kralick, F., & Koenigsberg, R[21] |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Plexiform schwannomas of the sciatic nerve: a case report and review of the literature. 2023 | 43 | F | Low back and left thigh pain, radiating pain in left thigh sciatic nerve distribution | Positive Lasegue's sign, tinel's sign, left thigh 8 cm thicker than the right thigh | MRI: multiple small nodules deep in the posterior aspect of the left thigh, fusiform masses with tapered ends, high signal in T2 images | Prone position, 15 cm longitudinal incision in the back of the left thigh, separation of schwannomas from the sciatic nerve | Alternating arrangement of Antoni A region rich in spindle cells. Verocay bodies, spindle cells arranged in parallel. Immunohistochemistry: diffuse positive immunostaining for S-100 protein | Yan, J et al[10] |

## Consent

Written informed consent was obtained from the patients for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.


## Source of funding

Not applicable.


## Author contribution

All the authors contributed to the investigation, development, and writing of this article.

## Conflicts of interest disclosure

The authors declare no conflict of interest.

## Research registration unique identifying number (UIN)

Not applicable.

## Guarantor

Bipin Chaurasia.

## Data availability statement

Not applicable.

## Provenance and peer review

Not commissioned, externally peer-reviewed.

## References


[1] Knight DMA, Birch R, Pringle J. Benign solitary schwannomas. J Bone Joint Surg Br 2007;89-B:382–7.

[2] Sintzoff SA Jr, Bank WO, Gevenois PA, *et al*. Simultaneous neurofibroma and schwannoma of the sciatic nerve. AJNR Am J Neuroradiol 1992;13:1249–52.

[3] El Ghazoui A, Allaoui M, El Asraoui L, *et al*. Unusual presentation of lateral sural cutaneous nerve schwannoma: an exceptional case report. Int J Surg Case Rep 2022;90:106603.

[4] Godkin O, Ellanti P, O'Toole G. Large schwannoma of the sciatic nerve. Case Rep 2016;2016:bcr2016217717.

[5] Bustamante J. Sistema nervioso periférico, En: Neuroanatomía funcional y clínica, Atlas del Sistema Nervioso Central, 4a ed. Bogotá: Editorial Médica Celsus; 2007:164–76.

[6] Traistaru R, Enachescu V, Manuc D, *et al*. Multiple Right Schwannoma. Rom J Morphol Embryol 2008;49:235–9.

[7] Jelti O, El Alaoui O, Lachkar A, *et al*. An unusual case of a giant schwannoma of the sciatic nerve: a case report with a review of literature. Cureus 2023;15:e51155.

[8] Casey E. Natural history of radiculopathy. Phys Med Rehabil Clin N Am 2011;22:1–5.

[9] Chee DWY, Peh WCG, Shek TWH. Pictorial essay: imaging of peripheral nerve sheath tumours. Can Assoc Radiol J 2011;62:176–82.

[10] Yan J, Zhou R, Liu B, *et al*. Plexiform schwannomas of the sciatic nerve: a case report and review of the literature. Heliyon 2023;9:e18020.

[11] Hamdi M, Aloui I, Ennouri K. Sciatica secondary to sciatic nerve schwannoma. Neurol India 2009;57:685.
[12] Wolock BS, Baugher WH, McCarthy EJ. Neurilemoma of the sciatic nerve mimicking tarsal tunnel syndrome. Report of a case. J Bone Joint Surg 1989;71:932–4.
[13] Trăistaru R, Enăchescu V, Manuc D, *et al*. Multiple right schwannoma. Rom J Morphol Embryol 2008;49:235–9.
[14] Martinez Algarra JC, Gastaldi Rodrigo P, Palomares Talens E, *et al*. Multiple schwannoma of the sciatic nerve. Apropos of a case. Rev Chir Orthop Reparatrice Appar Mot 1999;85:632–5.
[15] Maes R, Ledoux P, de Brouckere G. A rare cause of sciatica: sciatic nerve schwannoma. SICOT-J 2020;6:16.
[16] Telera S, Raus L, Vietti V, *et al*. Schwannomas of the sciatic nerve: a rare and neglected diagnosis. A review of the literature with two illustrative cases. Clin Neurol Neurosurg 2020;195:105889.
[17] Komuro Y, Sekiguchi J, Ohmori K. Multiple neurilemomas of the ulnar nerve: a case report. Ann Plast Surg 1997;38:536–7.
[18] Kudose S, Kyriakos M, Awad MM. Gastric plexiform schwannoma in association with neurofibromatosis type 2. Clin J Gastroenterol 2016;9:352–7.
[19] Tomaszewski KA, Graves MJ, Henry BM, *et al*. Surgical anatomy of the sciatic nerve: a meta-analysis. J Orthop Res 2016;34:1820–7.
[20] Blanchard C, Dam-Hieu P, Zagnoli F, *et al*. Sciatalgie chronique révélant un schwannome du nerf sciatique [Chronic sciatic pain caused by sciatic nerve schwannoma]. Rev Med Interne 2008;29:748–50.
[21] Kralick F, Koenigsberg R. Sciatica in a patient with unusual peripheral nerve sheath tumors. Surg Neurol 2006;66:634–7.
[22] Kakkar S, Kodeeswaran M, Priyadharshan KP, *et al*. Management of migrating spinal schwannomas: a surgeon's dilemma. Illustrative case. J Neurosurg 2024;7:CASE23689.
[23] Khan SI, Ahmed N, Mannan M, *et al*. Intercostal nerve schwannoma as a rare cause of refractory mid back pain. Int J Med Arts 2021;3:1494–9.
[24] Umana GE, Passanisi M, Chaurasia B, *et al*. Incidental craniovertebral junction schwannoma: Surgical or radiosurgical management? Clin Case Rep 2023;11:e7616.
[25] Uppal S, Saggar V, Scalia G, *et al*. Unilateral orbital schwannoma arising from the supraorbital nerve: report of a rare case. Clin Case Rep 2024;12:e8381.
[26] Sushil N, Ankita G. A large schwannoma of sciatic nerve- a case report. J Peripheral Nerve Surg 2018;2:86–9.
[27] Sharma R R, Pawar S P, Dey P. An occult schwannoma of the deep peroneal nerve presenting with neuralgia mimicking sciatica: case report and review of the literature. Ann Saudi Med 2000;20:57–9.
[28] Chahbouni M, Eloukili I, Berrady M A, *et al*. Schwannome bénin du nerf grand sciatique, à propos de 2 cas [Benign schwannoma of the sciatic nerve, report of 2 cases]. Pan Afr Med J 2014;18:252.
[29] Omezzine S J, Zaara B, Ben Ali M, *et al*. A rare cause of non discal sciatica: schwannoma of the sciatic nerve. Orthop traumatol Surg Res 2009;95:543–6.