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Synovial sarcoma of the thigh: A case report

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Abstract
Introduction: Synovial sarcoma is a rare malignant soft-tissue tumor that commonly arises in the extremities and may present as a slowly growing mass.
Case Report: We report the case of a 62-year-old woman with a synovial sarcoma of the posterior thigh presenting with pain radiating along the sciatic nerve. The patient underwent limb-sparing surgical excision, revealing a high-grade monophasic synovial sarcoma with close margins. Adjuvant radiotherapy was administered following multidisciplinary discussion. At 2-year follow-up, there was no evidence of local recurrence, and functional outcome was satisfactory.
Conclusion: This case highlights the importance of individualized, multidisciplinary management of synovial sarcoma, balancing oncologic control with functional preservation, particularly in the setting of close surgical margins.

Keywords: Synovial sarcoma, soft-tissue sarcoma, posterior thigh tumor

Introduction
Synovial sarcoma is a rare malignant soft-tissue tumor that typically affects young adults and commonly arises in the vicinity of large joints, particularly around the knee and thigh. It often presents as a slowly enlarging, painless mass, which may delay diagnosis. When the tumor increases in size, symptoms such as pain, swelling, joint stiffness, and limited range of motion may occur, especially if adjacent neurovascular structures are involved. Diagnosis relies on imaging, most commonly magnetic resonance imaging (MRI), followed by histopathological confirmation via biopsy. The mainstay of treatment is wide surgical excision with negative margins, frequently combined with adjuvant radiotherapy to optimize local control and preserve limb function [1, 2].

Clinical Case
A 62-year-old female patient with a medical history of dyslipidemia and depression, treated with atorvastatin, venlafaxine, and trazodone, was referred to the orthopedic outpatient clinic for evaluation of a slowly enlarging mass in the posterior aspect of the right thigh, noted over a three-month period. Family history was significant for a father who died of colon cancer. The patient reported localized pain with radiation along the sciatic nerve distribution and recent mild unintentional weight loss. On physical examination, no clearly palpable mass was identified. An initial ultrasound examination revealed a heterogeneous solid perimuscular nodule measuring approximately 4.4 cm in diameter.
A biopsy was performed, suggesting metastatic disease from an occult sarcoma, although the findings were inconclusive. A whole-body MRI was subsequently obtained and demonstrated no evidence of a primary tumor elsewhere, aside from the posterior thigh lesion. The patient underwent surgical excision with excisional biopsy of the mass. Intraoperatively, the lesion was well circumscribed but closely adherent to the lateral border of the semimembranosus muscle, as shown in Figures 1-4.
Histopathological examination confirmed the diagnosis of monophasic synovial sarcoma, grade 3, with the following immunohistochemical profile: vimentin+, EMA+, CK AE1/AE3+, synaptophysin+, CK7+ (focal), TLE1+; and negative for CD68, CD99, CD10, CD34, STAT6, CD117, DOG1, INI1, WT1, CK8/18, CK20, TTF-1, napsin A, thyroglobulin, GATA3, ER, PR, CDX2, PAX8, racemase, CD56, SOX10, S100, smooth muscle actin, desmin, and chromogranin. The mitotic count was 5 mitoses per 10 high-power fields. The tumor measured 3.5 cm in maximum dimension and was unifocal, with no evidence of lymphovascular or perineural invasion. No lymph nodes were involved. Surgical margins were reported as close, with a minimum clearance of 1 mm.

Following discussion at the multidisciplinary tumor board, and considering the close margins and aggressive biological behavior of the tumor, adjuvant radiotherapy was recommended. The patient underwent intensity-modulated radiotherapy with image guidance (IMRT-IGRT) to the tumor bed, receiving a total dose of 66 Gy in 33 fractions. Treatment was completed without complications.

At the most recent follow-up, 2 years post-treatment, the patient shows no evidence of local recurrence on imaging and has achieved good functional recovery. Thoracic CT surveillance revealed stable, nonspecific pulmonary micronodules measuring 3 mm in the middle lobe and 2 mm in the right lower lobe, without progression.

The patient completed a tailored physiotherapy program, achieving full recovery of strength and range of motion without residual functional deficits. Mild hyperpigmentation and localized discomfort on scar palpation were noted.

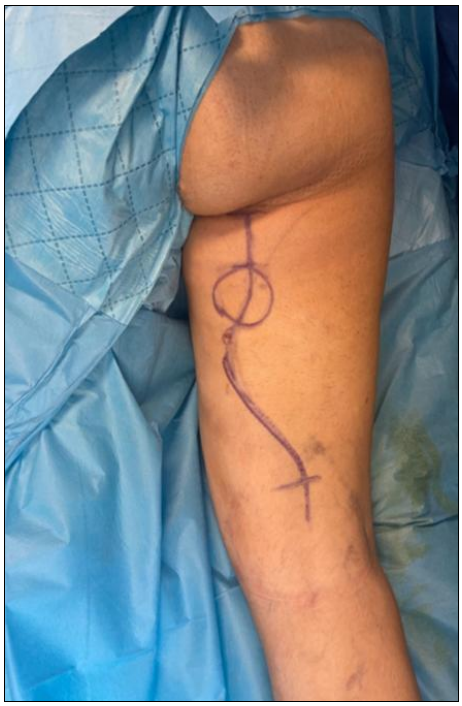

Fig 1: Planned incisions

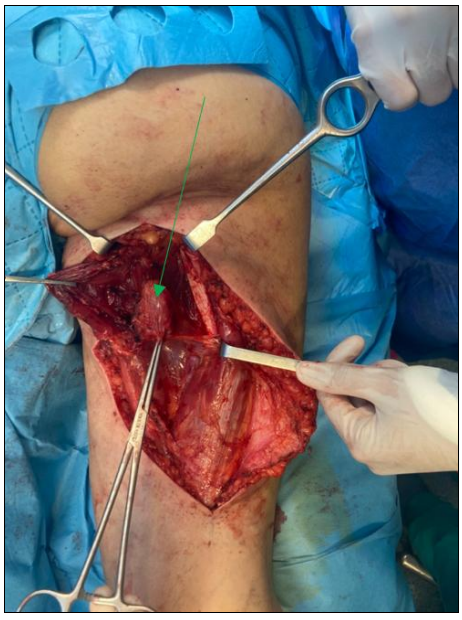

Fig 2: Synovial sarcoma

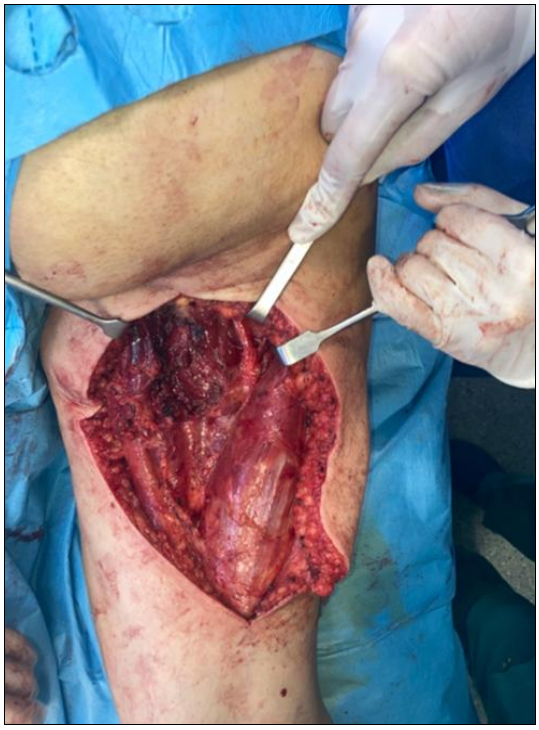

Fig 3: Posterior compartment of the thigh after excision

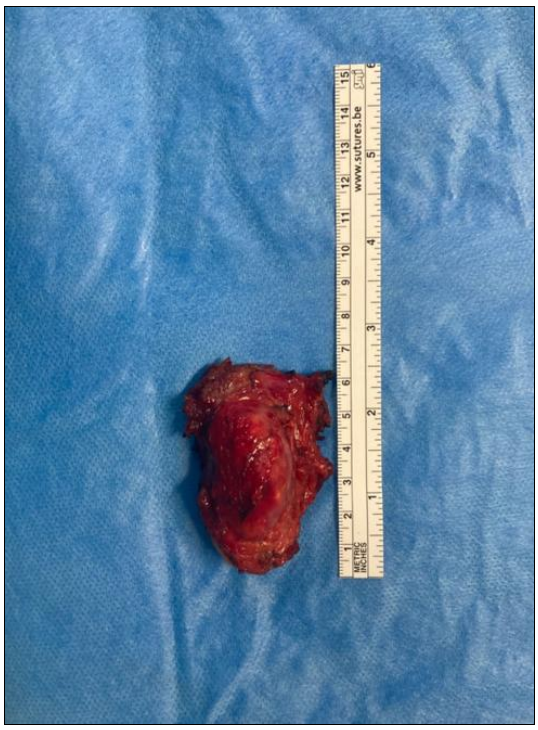

Fig 4: Size of tumour

Discussion

The diagnosis of synovial sarcoma is confirmed through histopathological evaluation, most commonly obtained via core needle biopsy, fine-needle aspiration, or surgical biopsy [2]. Prognosis depends on multiple factors, including tumor size, histological subtype, grade, completeness of surgical excision, and use of adjuvant radiotherapy [3].

Synovial sarcoma is rare and may present as a small, slow-growing lesion, frequently leading to misdiagnosis as a benign mass. Consequently, unplanned or non-oncologic excisions are relatively common and are associated with higher rates of local recurrence [4]. Optimal management

involves wide surgical excision with negative margins, frequently combined with radiotherapy, and long-term surveillance due to the risk of late local recurrence and distant metastases [3, 4].

Tumor size and anatomical location are well-established prognostic factors in synovial sarcoma. Lesions measuring less than 5 cm and those arising in the extremities have been shown to be associated with improved local control and overall survival when compared with larger tumors and those located in axial or truncal regions [3, 5]. In addition, histological subtype and tumor grade significantly influence prognosis. Monophasic histology and high-grade (G3) tumors have been associated with increased risks of local recurrence and distant metastasis [5, 6].

In the present case, despite the presence of adverse prognostic features-including monophasic histology, high tumor grade, and close surgical margins-the tumor was small, localized to the limb, and showed no evidence of distant disease or lymphovascular or perineural invasion. Given these factors and the achievement of a negative albeit close margin (1 mm), re-excision to obtain wider margins was not pursued. Instead, following multidisciplinary tumor board discussion, adjuvant radiotherapy combined with close clinical and radiological surveillance was considered the most appropriate strategy to optimize oncologic control while preserving limb function.

Conclusion

Synovial sarcoma of the thigh is a rare malignancy that may present as a slowly enlarging mass. This case underscores the importance of accurate diagnosis, multidisciplinary management, and individualized treatment. Limb-sparing surgery followed by adjuvant radiotherapy achieved good oncologic and functional outcomes despite high-grade histology and close margins. Long-term surveillance remains essential due to the risk of recurrence.

Conflict of Interest

Not available

Financial Support

Not available

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