

Liposarcoma of the Thoracic Wall: Report of an Unusual Case

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ABSTRACT

Liposarcoma of the thoracic wall is a rare malignant soft tissue neoplasm characterized by the proliferation of atypical adipose cells. It poses diagnostic and therapeutic challenges due to its low incidence and the anatomical complexity of the region. We report the case of an adult patient with a progressively enlarging thoracic mass, without systemic symptoms, diagnosed by imaging studies and confirmed by biopsy as a well-differentiated liposarcoma. Treatment consisted of complete surgical resection of the tumor with negative margins, resulting in a favorable postoperative course without complications. Histopathology confirmed the absence of high-grade features, predicting a relatively good prognosis. This case highlights the importance of a multidisciplinary approach and close follow-up to prevent recurrence, emphasizing that although uncommon, thoracic wall liposarcoma can be successfully managed surgically in specialized centers.

KEYWORDS: Liposarcoma, thoracic wall, soft tissue tumor, surgical resection, well-differentiated tumor, clinical case, thoracic sarcoma

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INTRODUCTION

Liposarcoma is a malignant tumor of mesenchymal origin derived from adipose tissue, accounting for approximately 15% to 20% of all soft tissue sarcomas in adults. It is characterized by variable clinical behavior depending on histology and anatomical location. Although liposarcomas can originate in various parts of the body such as the extremities and retroperitoneum, involvement of the thoracic wall is extremely rare and represents a diagnostic and

therapeutic challenge due to the anatomical complexity of the region and proximity to vital structures.^{1,2}

Epidemiologically, liposarcomas predominate in middle-aged and elderly adults, with no clear sex preference. The overall incidence is low, estimated at about 2.5 cases per million people per year, and localization in the thoracic wall constitutes a minimal proportion of these cases. Clinical presentation is often insidious, characterized by slow and asymptomatic growth in early stages, potentially delaying

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diagnosis. Patients typically present with a palpable mass or symptoms related to compression of thoracic structures such as pain, respiratory difficulty, or movement limitation.³

Diagnosis of liposarcoma in this location requires a multidisciplinary approach including detailed imaging studies such as computed tomography (CT) and magnetic resonance imaging (MRI), which allow assessment of tumor extent, relationships with adjacent organs and structures, and possible malignant features. Definitive diagnosis depends on histopathological examination, which is also crucial for subclassifying the histologic subtype, a key factor in prognosis and treatment planning.⁴

The main treatment for thoracic wall liposarcomas is complete surgical resection with negative margins, due to a high rate of local recurrence and metastatic potential. In some cases, radiotherapy and chemotherapy may be considered as adjuvant or palliative treatments depending on histologic subtype and tumor stage. However, evidence regarding their efficacy in this specific location is limited by the tumor's rarity.^{5,6}

This report describes an unusual case of thoracic wall liposarcoma in an adult patient, emphasizing clinical presentation, diagnostic tools used, surgical approach, and postoperative follow-up. Additionally, a brief literature review is provided to contextualize this case within the current management landscape of these rare tumors.

CLINICAL CASE

A 55-year-old male patient with no relevant medical history presented with a progressively enlarging painless mass on the right lateral thoracic wall, which had been growing over the past 12 months. The patient reported local pressure sensation and difficulty performing intense physical activities but denied systemic symptoms such as fever, weight loss, or night sweats.

Physical examination revealed a firm, mobile mass approximately 12 cm in diameter in the right lateral thoracic region, without inflammatory signs or skin involvement. No regional lymphadenopathy was detected.

Chest CT showed a well-defined soft tissue lesion with heterogeneous areas and signs of invasion into superficial muscle planes, without bone or pleural involvement. MRI confirmed the mass characteristics and excluded involvement of major vascular structures.

A core needle biopsy guided by imaging yielded a histopathological diagnosis consistent with low-grade liposarcoma, demonstrating proliferation of atypical adipose cells with moderate pleomorphism, presence of lipoblasts, and a fibrous stroma, without tumor necrosis or significant mitotic activity.

The patient underwent wide and complete surgical resection of the liposarcoma, including affected muscle and surrounding tissue, achieving negative margins confirmed by definitive histopathology, which corroborated initial findings and ruled out vascular invasion or margin compromise. No intraoperative complications were reported.



Figure 1, 2: Thoracic wall liposarcoma.

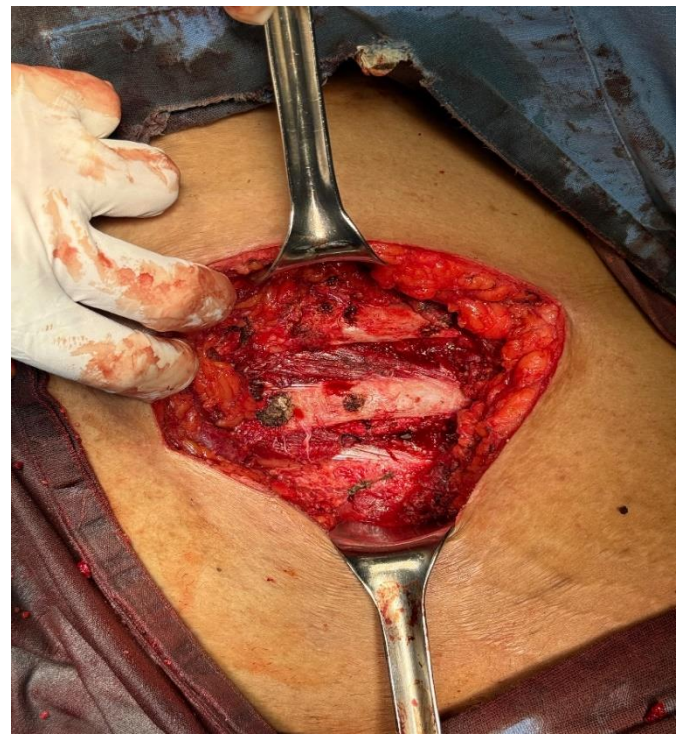
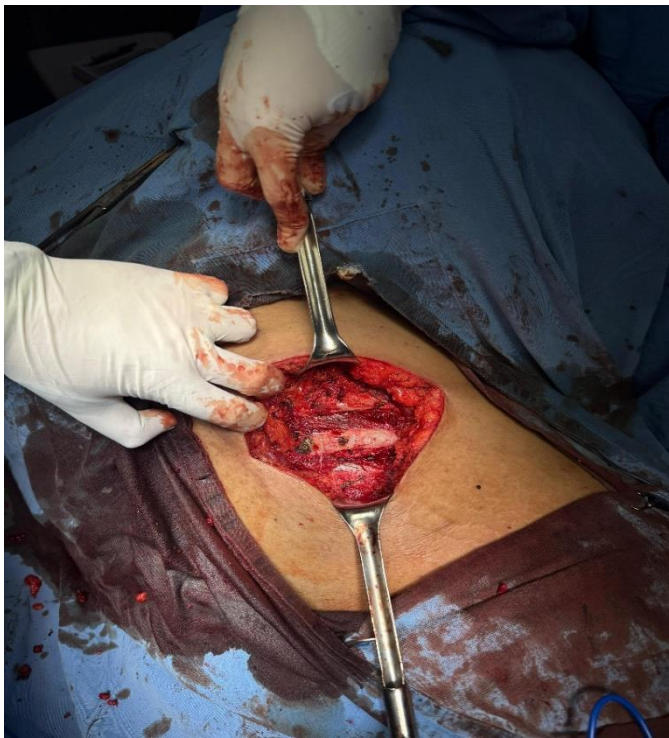


Figure 3,4: Thoracic wall with tumor-free margins.

At six months postoperatively, the patient showed proper wound healing, no clinical or radiological recurrence, and complete functional recovery.

DISCUSSION

Liposarcoma is a malignant soft tissue tumor originating from adipose cells, accounting for about 15-20% of adult soft tissue sarcomas. While relatively common in areas such as extremities and retroperitoneum, thoracic wall involvement is rare and presents diagnostic and therapeutic challenges. The thoracic wall's complex anatomy and limited space, combined with proximity to vital organs such as the lungs, heart, and large vessels, complicate complete resection and increase the risk of complications.⁷

Histologically, liposarcomas are classified into several subtypes—well-differentiated, myxoid, pleomorphic, and dedifferentiated—each with distinct biological behavior and prognosis. Low-grade subtypes, as in this case, usually exhibit slow growth and cause symptoms mainly from mass effect. This silent progression often delays diagnosis, resulting in large tumors, especially in expandable body regions. However, in the thoracic wall, limited space tends to produce symptoms earlier, facilitating timely medical consultation.^{8,9}

In our patient, the mass was detected after one year of progressive growth, causing local pressure but no pain or systemic symptoms, typical of well-differentiated liposarcomas. The lack of systemic signs such as fever or weight loss reflects the tumor's indolent nature and underscores the need for suspicion in patients with persistent painless thoracic masses to avoid delayed diagnosis.¹⁰

Imaging plays a key role in diagnosis and surgical planning. CT and MRI provide detailed information on tumor location, extent, relation to adjacent structures, and internal features. Here, CT revealed a well-defined heterogeneous soft tissue lesion with superficial muscle invasion, while MRI excluded vascular or pleural involvement, enabling planned complete resection with free margins and minimizing risks such as organ invasion or bone involvement.¹¹

Definitive diagnosis relies on histopathology, which in this patient revealed low-grade liposarcoma with atypical adipocytes, lipoblasts, and fibrous stroma, without necrosis or significant mitosis. This diagnosis has important prognostic implications as well-differentiated liposarcomas have low metastatic potential but may recur locally if incompletely resected. Core needle biopsy is indispensable to confirm tumor nature and guide treatment planning.¹²

Surgery remains the cornerstone of treatment for thoracic wall liposarcomas, aiming for wide and complete resection with negative margins to minimize recurrence risk. Resection must include affected muscle and adjacent tissues, potentially impacting thoracic function but essential for local tumor control. In this case, surgery was successful with negative margins and favorable postoperative outcome.¹³

The role of radiotherapy and chemotherapy in low-grade thoracic wall liposarcomas is unclear. They are generally reserved for high-grade tumors, unresectable cases, recurrences, or metastatic disease. Evidence suggests radiotherapy may reduce local recurrence but must be balanced against potential toxicity to neighboring lungs and heart. In patients with well-differentiated tumors and complete resection, as here, adjuvant therapy is usually unnecessary.¹³

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Postoperative follow-up is critical due to the risk of local recurrence, which may occur years after surgery. Regular clinical evaluations and imaging studies, especially MRI or CT, are recommended to detect recurrence early. The patient in this report remains asymptomatic and without recurrence at six months, but long-term monitoring is essential for good prognosis.¹³

This case underscores the need to consider liposarcoma in the differential diagnosis of thoracic masses, even when rare, and highlights the importance of a multidisciplinary approach involving oncology, surgical oncology, radiology, and pathology to optimize management and improve outcomes. It also emphasizes early detection and complete surgical treatment to prevent complications and reduce recurrence in anatomically complex regions.

CONCLUSION

Liposarcoma of the thoracic wall is a rare neoplasm posing diagnostic and therapeutic challenges due to its low incidence and anatomical complexity. Despite its rarity, it should be included in the differential diagnosis of thoracic masses, particularly in adults presenting with palpable masses or symptoms of local compression. This case illustrates that low-grade liposarcoma may grow slowly and manifest clinically only once sizeable, highlighting the importance of timely medical evaluation for persistent masses.¹⁴

Accurate diagnosis relies heavily on a combination of imaging studies and histopathological confirmation, with biopsy being fundamental to determine tumor subtype and guide appropriate treatment. CT and MRI are essential tools to define tumor extent, relations with adjacent structures, and facilitate appropriate surgical strategy.¹⁴

Complete surgical resection with negative margins is the cornerstone of treatment and the most important prognostic factor in thoracic wall liposarcomas. In this case, surgery allowed total tumor removal without complications, contributing to a favorable prognosis. Functional preservation and morbidity minimization are secondary but equally relevant goals in managing these patients.¹⁵

Although evidence on adjuvant therapies like radiotherapy or chemotherapy in low-grade liposarcomas is limited and controversial, long-term clinical and radiological follow-up is indispensable due to the risk of local recurrence, which can occur years after surgery. Careful monitoring enables early detection and timely treatment of recurrence.¹⁵

In conclusion, successful management of thoracic wall liposarcoma requires a multidisciplinary approach, including early diagnosis, meticulous surgical planning, and prolonged follow-up. This case reaffirms that although unusual, liposarcoma in this location can be effectively treated surgically, ensuring good quality of life and a satisfactory prognosis for the patient.¹⁵

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