International Journal of Research in Medical Sciences
*Alrefai MA et al. Int J Res Med Sci. 2024 May;12(5):1706-1708*
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20241259

**Case Report**

# Surgical resection of giant pleural solitary fibrous tumor: a case report

**Mohammed A. Alrefai[1], Maryam Mirza[2], Abdullah A. Alhumud[3], Mazen Almatrudi[4], Leen Y. Alqahtany[5], Abdullah A. Alkurdi[6]***

[1]Department of Thoracic Surgery, King Fahad Hospital, Madina, Saudi Arabia
[2]Department of General Surgery, Royal Commission Medical Center, Yanbu, Saudi Arabia
[3]Department of General Practice, Qassim University, Qassim, Saudi Arabia
[4]Battarjee Medical College, Jeddah, Saudi Arabia
[5]Qassim University, Qassim, Saudi Arabia
[6]Al Rayan National College of Medicine, Madina, Saudi Arabia

**Received:** 25 March 2024
**Accepted:** 15 April 2024

***Correspondence:**
Dr. Abdullah A. Alkurdi,
E-mail: alkurdi363@gmail.com



## ABSTRACT

Solitary fibrous tumors of the pleura (SFTP) are uncommon neoplasms. We present the case of a 73-year-old male diagnosed with SFTP, exhibiting two masses measuring 20×18 cm and 9×8 cm in diameter, resulting in a notable cardio mediastinal shift towards the right side. The patient underwent successful surgical resection without experiencing any postoperative complications and was discharged in favorable condition. Although complete resection diminishes the risk of recurrence in both malignant and benign SFTP cases, long-term follow-up is necessary.

**Keywords:** Giant tumor, Pleural mass, SFPT, Giant pleural solitary fibrous tumor, Surgical resection

## INTRODUCTION

The pleura, composed of collagen, elastic fibers, lymphatics, and blood vessels, is a complex structure with a superficial layer of mesothelial cells. Primary pleural tumors can originate from any of these components.

Malignant mesotheliomas account for the majority (approximately 90%) of these neoplasms, while the remaining 10% consists of solitary fibrous tumors of the pleura (SFTP) and other less common tumors. SFTP arises from sub-mesothelial mesenchymal cells and typically presents as well-defined, pedunculated masses originating from the visceral pleura. These tumors generally exhibit a benign course and demonstrate excellent long-term survival rates when completely resected.

Benign SFTP commonly displays an ovoid or round shape with a smooth or slightly irregular external surface. Patients with SFTP are often asymptomatic, leading to the incidental detection of the majority of tumors through chest imaging.[1] Approximately half of the cases are associated with a thin, membranous capsule. In rare instances, SFTP may arise within a fissure or originate from the mediastinal, diaphragmatic, or costal portions of the parietal pleura. Tumors in these locations, as well as those infiltrating the lung or located within a fissure, often exhibit malignant behavior. Larger SFTPs originating from the parietal pleura may have a broad base, and some larger tumors may feature a vascular pedicle, indicating increased vascularity.[2]

## CASE REPORT

We present the case of a seventy-three-year-old Malian male patient who was referred to our facility with a left-sided intrathoracic mass, necessitating left thoracotomy and mass resection. The patient reported minimal dyspnea and had a medical history of Parkinsonism, hypertension, and diabetes mellitus. He was under appropriate medication for these conditions. There were no other

systemic complaints, no history of previous operations, and no known allergies.

Upon physical examination, the patient was found to be vitally stable, conscious, oriented, and breathing room air. Diminished air entry was noted on the left side during the chest examination, while other systemic physical examinations were unremarkable. Laboratory investigations were performed, and all results were within normal ranges.

A significant cardio-mediastinal shift towards the right side was observed on the posterior-anterior view of the plain chest X-ray, revealing a sizable left intrathoracic mass (Figure 1). Subsequently, a computed tomography (CT) chest was conducted, which demonstrated pleural-based masses with diameters measuring 20×18 cm and 9×8 cm, as illustrated in Figure 2.

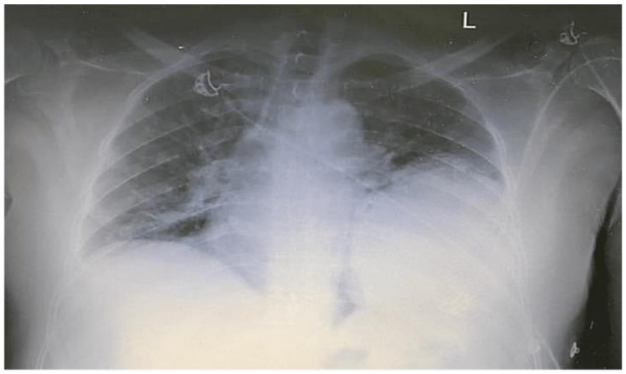


**Figure 1: Plain chest X-ray posterior- the anterior view shows a large left intrathoracic mass, causing a significant cardio-mediastinal shift toward the right side.**

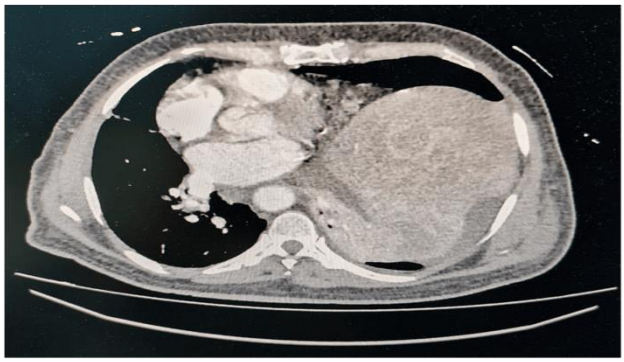

**Figure 2: The chest CT shows the left pleural mass with the mediastinal shifted to the right side. which demonstrated 20×18 cm and 9×8 cm in diameter pleural-based masses-like density.**

After appropriate preoperative management to control the patient's medical condition, the surgical procedure was carried out. The patient underwent a left thoracotomy and mass resection. The procedure was performed under general anesthesia with the patient positioned in the right lateral decubitus position. A posterolateral thoracotomy was performed, and the 6th intercostal space was opened. The pedicle supplying the masses was ligated, and both the large and medium-sized masses were excised. Two chest tubes were inserted, and the wound was closed in layers. During the procedure, the patient received two units of blood transfusion.

Following the surgery, the patient was transferred to the intensive care unit and intubated. He remained hemodynamically stable, and a postoperative chest X-ray revealed clear images of both lungs, indicating successful surgical outcomes (Figure 3). Weaning from mechanical ventilation required chest and limb physiotherapy. Laboratory investigations conducted during the postoperative period showed results within normal ranges. The patient was subsequently extubated and transferred to the general ward, where he continued to receive his regular medications. Finally, he was discharged with instructions for follow-up in the outpatient clinic.

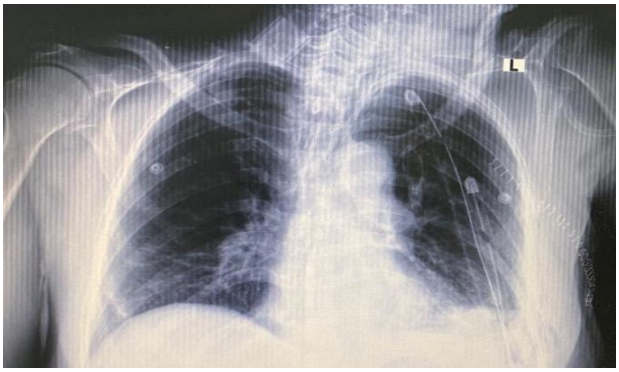


**Figure 3: Postoperative X-ray chest anterior-posterior view showed inflated both lungs with no residual mass or plural collection.**

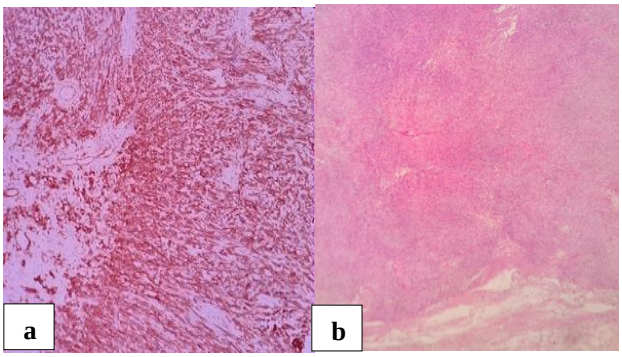


**Figure 4: (a) Immunohistochemistry CD34 stain, the tumor cell shows defined positivity by CD34 immunochemistry stain somewhat cellular in nature, consisting of fusiform to ovoid spindle cells with hazy cell boundaries, and (b) section shows moderately cellular tumor spindles composed of fusiform spindle cells with indistinct cell borders arranged in short ill-defined fascicules haematoxylin and eosin stain mitotic activity.**

Immunohistochemistry analysis of the tumor cells revealed diffuse positivity for CD34, while they tested negative for S100. "Microscopic examination of the tumor sections demonstrated a moderately cellular tumor consisting of ovoid to fusiform spindle cells with indistinct cell borders arranged haphazardly, and short, ill-defined fascicles dilated, branching, hyalinized staghorn-like (hemangiopericytoma-like) vasculature, hyalinized to collagenous stroma. Some sections showed streaming of cells between collagen and myxoid changes are present". The mitotic activity was noted to be approximately 3/10 by high-power field. No overt cytological atypia, anaplastic morphology, nuclear pleomorphism, or necrosis were observed (Figure 4a and b).

## DISCUSSION

SFTP typically arise from mesenchymal cells in the areolar tissue underlying the mesothelial-lined pleura. These tumors are predominantly benign.[1] Approximately 50% of patients with SFTP are asymptomatic, and the tumor is often discovered incidentally on a chest radiograph.[2] However, larger tumors, usually exceeding 10 or 15 cm in diameter, can cause symptoms such as dyspnea, chest pain, cough, and fatigue. These symptoms arise due to the mass occupying space and exerting pressure on adjacent thoracic structures.[3] In the presented case, the patient experienced minimal dyspnea.

The initial diagnostic test for SFTP is a chest X-ray, which helps visualize the mass and assess the cardiac and mediastinal shift. While not specific to SFTP, CT scans, and MRIs are valuable in evaluating the tumor's relationship with mediastinal structures and determining the extent of infiltration. In this case, a posterior-anterior plain chest X-ray revealed a large mass on the left side of the chest, leading to a significant shift of the heart and mediastinum towards the right side.

Immunohistochemistry plays a crucial role in differentiating SFTP from other tumors, such as mesotheliomas and sarcomas. SFTP is typically positive for vimentin and negative for keratin. CD34 is positive in most benign and malignant SFTP and remains negative in most other pulmonary tumors. Histologically, SFTP exhibits a variety of growth patterns, with solid spindle and diffuse sclerosing patterns being the major ones, often in varying proportions.[1,4] In this patient's case, the tumor specimen showed positive staining for CD34 and negative staining for S100. Microscopic examination revealed moderately cellular tumor sections composed of ovoid to fusiform spindle cells with indistinct cell borders arranged randomly in short, ill-defined fascicles.

Several surgical techniques for resecting SFTPs have been described in the literature, including thoracotomy, sternotomy (with potential hemi-clamshell extension if necessary), video-assisted thoracoscopic surgery (VATS), and robotic-assisted surgery. To prevent hemodynamic fluctuations resulting from decompressing the heart, major vessels, and airway, the patient is typically positioned in a 45° lateral decubitus posture.[5] In this case, the patient underwent a left thoracotomy with mass resection under general anesthesia, as surgical resection is the primary treatment of choice.[6] Follow-up of the patient in the outpatient department for a year showed no recurrence, which aligns with the favorable prognosis of solitary fibrous tumors. However, long-term follow-up is necessary to monitor for any potential recurrence.

## CONCLUSION

While there is a possibility of malignant transformation and recurrence, SFTPs are generally considered benign tumors. Histologic identification is essential to distinguish SFTP from other types of pleural masses, and imaging studies play a crucial role in identifying the tumors and planning the appropriate surgical resection. The primary treatment of choice for SFTPs is surgical resection.

*Funding: No funding sources*
*Conflict of interest: None declared*
*Ethical approval: Not required*

## REFERENCES

1. Fatimi SH, Inam H, Chagan FK, Choudry UK. Solitary fibrous pleural tumor. A rare and challenging case. Int J Surg Case Rep. 2020;66:346-9.
2. Mindaye ET, Tesfaye GK, Aboye AG. Intrathoracic giant solitary fibrous tumor of the pleura: Case report. Int J Surg Case Rep. 2021;85:106224.
3. Ershadi R, Rahim M, Abbasi M, Erfanian R. Giant solitary fibrous tumor of the pleura. J Surg Case Rep. 2018;2018(11):rjy270.
4. Mune S, Rekhi B, More N, Jambhekar NA. A giant solitary fibrous tumor of the pleura: Diagnostic implications in an unusual case with literature review. Indian J Pathol Microbiol. 2010;53(3):544-7.
5. Ajouz H, Sohail AH, Hashmi H, Martinez Aguilar M, Daoui S, Tembelis M, et al. Surgical considerations in the resection of solitary fibrous tumors of the pleura. J Cardiothorac Surg. 2023;18(1):79.
6. Filosso PL, Asioli S, Ruffini E, Rovea P, Sapino A, Bretti S, et al. Radical resection of a giant, invasive and symptomatic malignant Solitary Fibrous Tumour (SFT) of the pleura. Lung Cancer. 2009;64(1):117-20.

**Cite this article as:** Alrefai MA, Mirza M, Alhumud AA, Almatrudi M, Alqahtany LY, Alkurdi AA. Surgical resection of giant pleural solitary fibrous tumor: a case report. Int J Res Med Sci 2024;12:1706-8.