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CASE REPORT

FIVE YEARS OF SILENT GROWTH – AN ANTERIOR ABDOMINAL WALL SPINDLE-CELL NEOPLASM SUGGESTIVE OF SYNOVIAL SARCOMA: A CASE REPORT

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Five Years of Silent Growth – An Anterior Abdominal Wall Spindle-Cell Neoplasm Suggestive of Synovial Sarcoma: A Case Report

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Abstract

Synovial sarcoma is an uncommon malignant soft-tissue neoplasm, and primary involvement of the anterior abdominal wall is exceptionally rare. We report a 53-year-old man presenting with a slowly enlarging, painless midline epigastric swelling of approximately five years' duration. Ultrasonography demonstrated a well-defined, lobulated, heterogeneously hypoechoic lesion with mild internal vascularity. Contrast-enhanced computed tomography revealed a heterogeneously enhancing mass involving both rectus abdominis muscles, predominantly on the right, without intraperitoneal extension or thoracic metastases. Wide local excision with mesh reconstruction was performed. Histopathological examination revealed a malignant spindle-cell neoplasm with predominantly fascicular and focal herringbone architecture, classified as FNCLCC grade 2. Immunohistochemistry showed diffuse TLE1 positivity, with additional CD117 and S100 positivity. The combined findings were suggestive of synovial sarcoma; however, molecular confirmation of the SS18::SSX fusion was unavailable. All microscopic margins were negative, with the closest measuring 1 mm. The patient received six cycles of ifosfamide monotherapy followed by postoperative radiotherapy (50 Gy in 25 fractions). At clinical review five days after radiotherapy, he was doing well without new complaints; surveillance imaging was planned. This case highlights the diagnostic challenges of an unusual presentation and the importance of histopathological and immunohistochemical correlation, while recognising the limitations of diagnosis without molecular confirmation.

Keywords: Synovial sarcoma; abdominal wall neoplasms; soft-tissue sarcoma; spindle-cell neoplasm; immunohistochemistry; computed tomography.

Figure 1

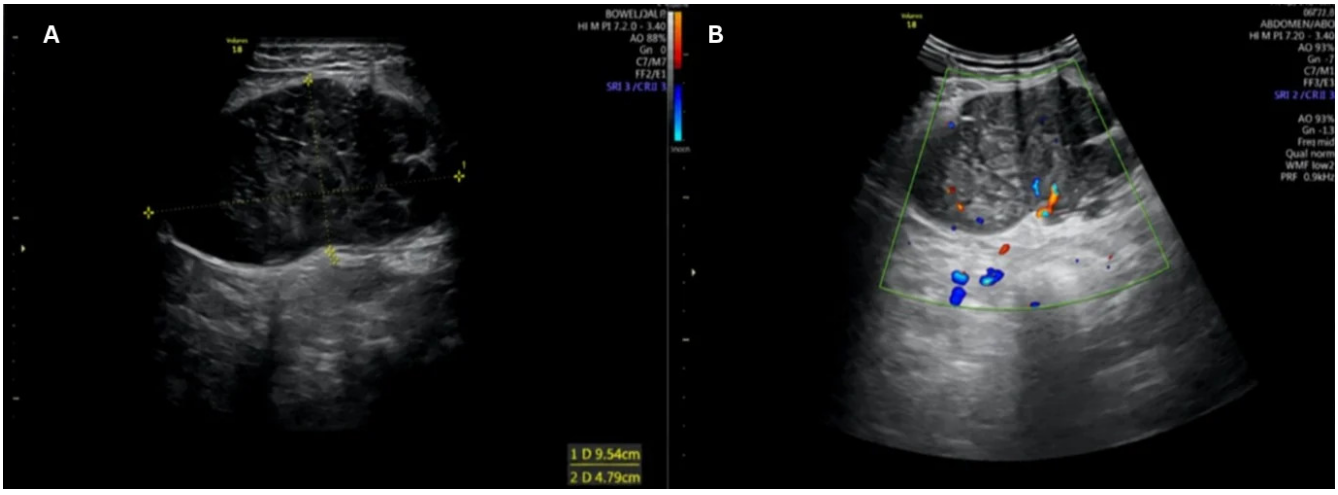


Figure 1. Ultrasonography of the anterior abdominal wall. (A) B-mode image showing a well-defined, lobulated, heterogeneously hypoechoic soft-tissue lesion. (B) Colour Doppler image demonstrating mild internal vascularity. Examination was performed using a GE Voluson S8 system with a 2–5 MHz transducer. The recorded lesion dimensions were 9.5 × 4.7 × 6.4 cm; the third dimension is not displayed in the selected images.

1. Introduction

Synovial sarcoma is an uncommon malignant soft-tissue neoplasm that predominantly affects adolescents and young adults, most frequently involving the extremities. Despite its name, it does not arise exclusively from synovial tissue and may occur at extra-articular sites. Primary involvement of the anterior abdominal wall is exceptionally rare, with only a limited number of cases reported in the literature. [1,2]

The clinical presentation is often nonspecific, typically involving a slowly enlarging soft-tissue mass. Imaging helps define the lesion's extent and relationship with adjacent structures; however, the appearances are variable and may overlap with those of other abdominal wall tumours. Histopathological examination, supported by immunohistochemistry and molecular testing for the characteristic SS18::SSX fusion, is essential for diagnostic evaluation. [8,9]

We report a case of a 53-year-old man with a slowly progressive, painless anterior abdominal wall mass, demonstrating morphological and immunohistochemical findings suggestive of synovial sarcoma. This case highlights the diagnostic challenges associated with this rare anatomical presentation.

2. Case Presentation

A 53-year-old man with no significant known comorbidities presented with a progressively enlarging swelling in the midline anterior abdominal wall, in the epigastric region just superior to the umbilicus. He reported that the swelling had been present for approximately five years, initially small but gradually increasing in size. There was no associated pain or discharge. He denied weight loss and had no history of previous anterior abdominal wall surgery.

Ultrasonography performed on 8 March 2026 demonstrated a well-defined, solid, lobulated, heterogeneously hypoechoic mass in the anterior abdominal wall, measuring 9.5 × 4.7 × 6.4 cm, with mild internal vascularity. No definite deeper extension was identified. The initial sonographic differential diagnoses included desmoid tumour and atypical lipomatous tumour. Further evaluation with cross-sectional imaging and/or histopathological examination was recommended (Figure 1).

Contrast-enhanced CT of the abdomen performed on 11 March 2026 revealed a heterogeneously enhancing mass measuring 9.7 × 6.0 × 7.5 cm (transverse × AP × craniocaudal). The lesion involved both rectus abdominis muscles, predominantly on the right, and crossed the midline. It extended anteriorly into the deep subcutaneous plane and posteriorly to the preperitoneal fat plane. A few small internal non-enhancing areas were present. No macroscopic fat, calcification, haemorrhagic component, overlying skin thickening, surrounding fat stranding or adjacent collection was identified. There was no definite intraperitoneal extension (Figure 2). CT of the thorax showed no evidence of pulmonary or other thoracic metastases.

Figure 2

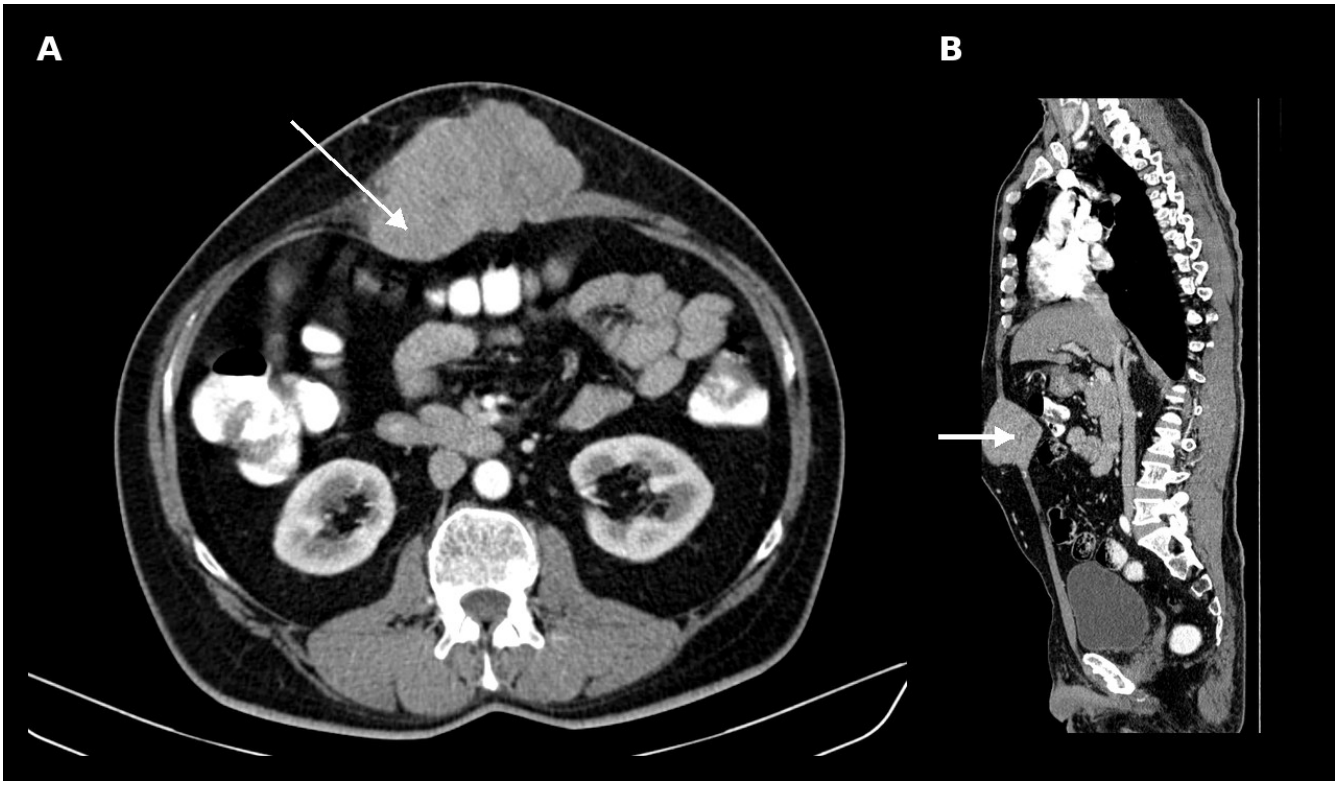


Figure 2. Contrast-enhanced computed tomography of the abdomen. Axial (A) and sagittal (B) arterial-phase images obtained using a 16-slice Siemens multidetector CT scanner demonstrate a lobulated soft-tissue mass centred in the midline anterior abdominal wall. The lesion involves both rectus abdominis muscles, predominantly on the right, and extends across the midline, anteriorly into the deep subcutaneous plane and posteriorly to the preperitoneal fat plane. Heterogeneous enhancement with small internal non-enhancing areas is noted, without definite intraperitoneal extension.

MRI was considered for further assessment but could not be performed because of financial and logistical constraints.

A preoperative core needle biopsy was not performed, as the lesion was considered suitable for primary surgical excision by the treating team. The patient underwent wide local excision of the anterior abdominal wall mass, including the involved portions of both rectus abdominis muscles and the anterior abdominal wall fascia. The resulting defect was reconstructed using polypropylene mesh. The postoperative course was uneventful, with no documented immediate complications (Figure 3).

Figure 3

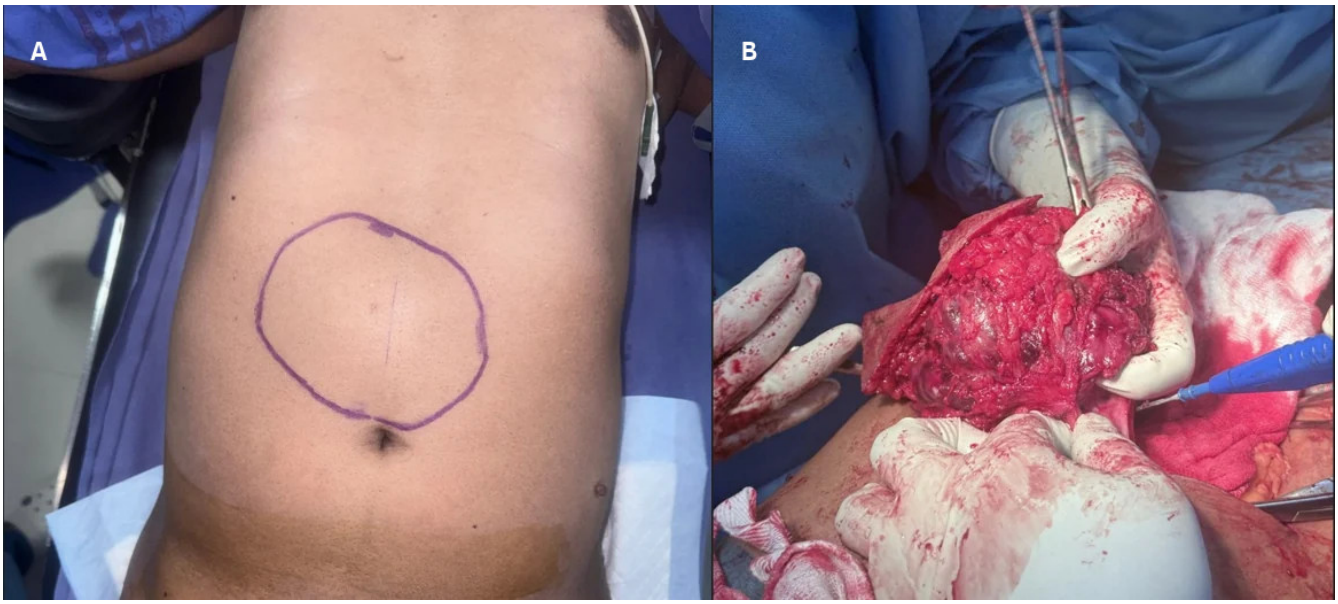


Figure 3. Clinical and intraoperative photographs. (A) Preoperative photograph showing the palpable swelling in the midline epigastric region. (B) Intraoperative photograph showing the tumour after mobilisation during surgical dissection, prior to excision.

Gross examination revealed an excised specimen measuring 15 × 11 × 6 cm, containing an irregular, grey-white, lobulated tumour measuring 10.5 × 10 × 4 cm. Microscopic examination demonstrated a malignant spindle-cell neoplasm arranged predominantly in fascicles and bundles, with focal herringbone architecture (Figure 4). The tumour cells had oval-to-blunt nuclei and scant cytoplasm. The mitotic count was approximately 1–2 per high-power field in the more cellular areas; the corresponding microscopic field area was not documented in the original histopathology report. Focal myxoid change and infiltration into adjacent stroma and adipose tissue were also observed. No tumour necrosis or vascular invasion was identified.

The tumour was assigned an FNCLCC differentiation score of 3, mitotic score of 2 and necrosis score of 0, yielding a total score of 5 and an overall grade of 2, as documented in the original histopathology report. The closest microscopic resection margin was the inferior margin, measuring 1 mm. On gross examination, the tumour was 2 cm from the superior margin, abutted the inferior and deep margins, and was 0.4 cm and 2 cm from the lateral and medial margins, respectively. The distance from the skin margin was 1.5 cm. Microscopic examination showed that all surgical margins were free of tumour. The treating surgical team considered the initial excision adequate, and no further resection was undertaken. Histopathological examination was performed by the institutional pathologist, without independent review by a specialist soft-tissue pathologist.

Figure 4

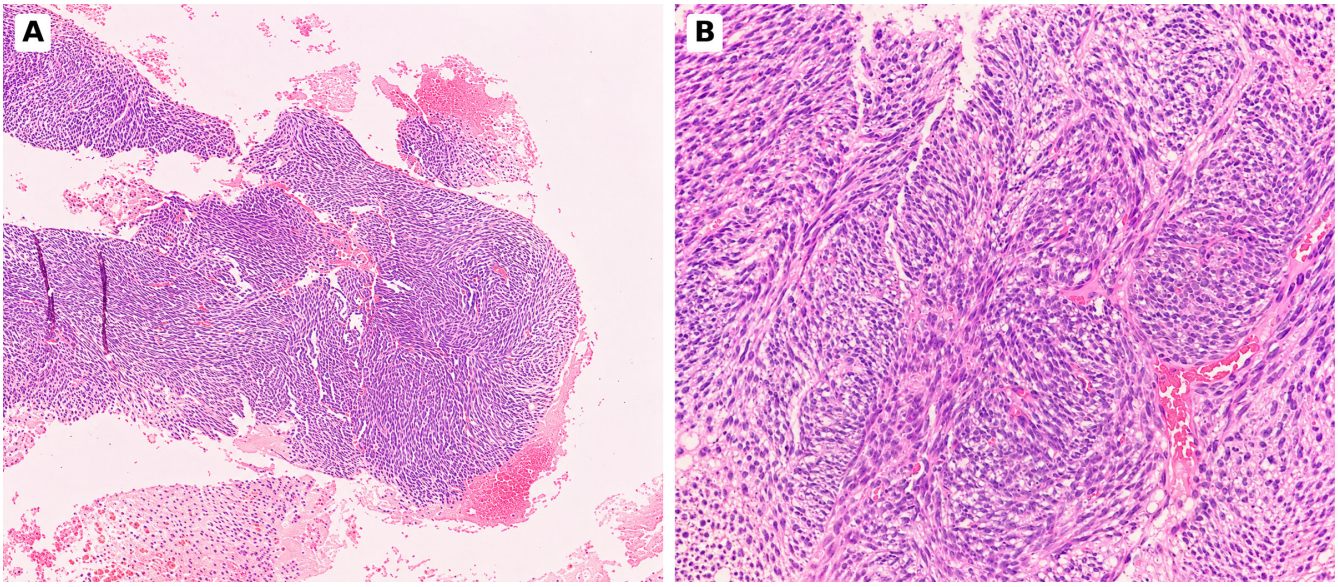


Figure 4. Histopathological examination (haematoxylin and eosin staining). (A) Low-power photomicrograph (×4 objective) demonstrating the overall tumour architecture, with intersecting fascicles and bundles of spindle cells. (B) High-power photomicrograph (×40 objective) showing spindle-shaped tumour cells with oval-to-blunt nuclei and scant cytoplasm, arranged in intersecting fascicles.

Immunohistochemical analysis, performed at an external diagnostic laboratory, demonstrated diffuse TLE1 positivity, a Ki-67 proliferation index of approximately 20%, and positivity for S100 and CD117 (Figure 5). The tumour was negative for CD34, desmin, smooth muscle actin (SMA), epithelial membrane antigen (EMA), DOG1 and MDM2. These findings were considered alongside the histomorphological features. Although CD117 and S100 positivity raised consideration of other spindle-cell neoplasms, the negative DOG1 result did not support gastrointestinal stromal tumour, while the absence of desmin and SMA expression argued against smooth-muscle differentiation. Diffuse TLE1 positivity provided supportive evidence for synovial sarcoma; however, this marker is not entirely specific and cannot independently establish the diagnosis. Cytokeratin expression was not reported. SS18 rearrangement/fusion testing and fusion-specific SS18–SSX immunohistochemistry could not be performed because of financial constraints. Accordingly, the integrated morphological and immunohistochemical findings were considered suggestive of synovial sarcoma, without definitive molecular confirmation.

Figure 5

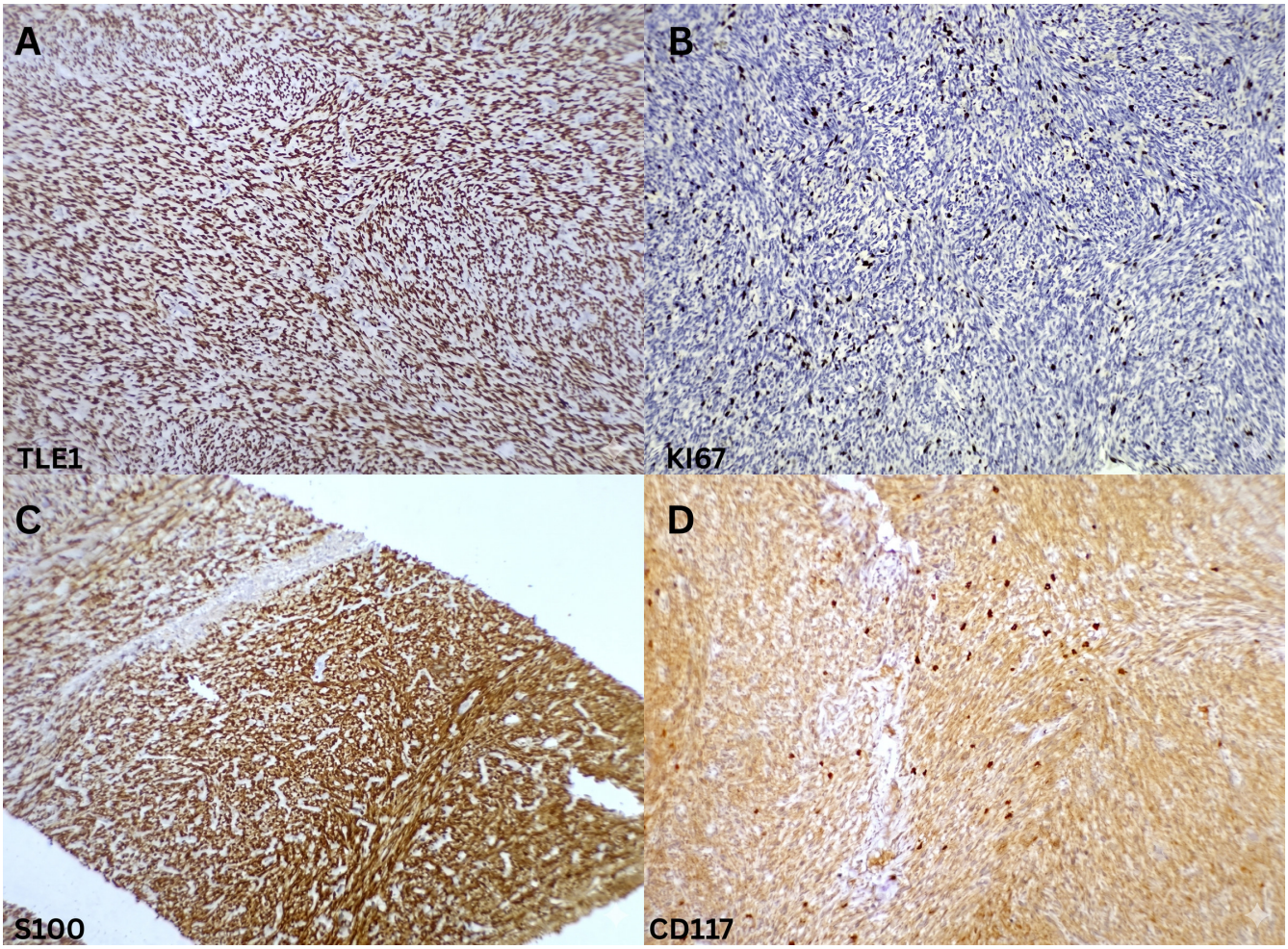


Figure 5. Immunohistochemical profile of the abdominal wall spindle-cell neoplasm. (A) Diffuse nuclear positivity for TLE1. (B) Ki-67 labelling index of approximately 20%. (C) Positive immunoreactivity for S100. (D) Positive immunoreactivity for CD117.

Adjuvant systemic chemotherapy was initiated on 15 May 2026. In view of the tumour size (>5 cm), deep rectus involvement and histological grade, the patient received six cycles of ifosfamide monotherapy. Doxorubicin was omitted to avoid cumulative cardiotoxicity. Following completion of chemotherapy, postoperative external beam radiotherapy was delivered to the surgical bed, to a total dose of 50 Gy in 25 fractions, and was completed on 10 October 2026. No additional radiation boost was administered, given the negative microscopic margins and the aim of minimising morbidity to the adjacent musculofascial structures. No high-grade chemotherapy- or radiation-related toxicities were documented. The exact per-cycle chemotherapy doses were unavailable.

The patient was reviewed on 15 October 2026, five days after completing radiotherapy. He was reportedly doing well, with no new complaints. As he resided outside the region, continued follow-up was planned at another healthcare facility. Surveillance imaging of the operative site and chest was advised after three months but had not been performed at the time of reporting. Consequently, radiological assessment for local recurrence or distant metastasis following completion of treatment was unavailable.

The clinical course, including the diagnostic work-up, surgical management, adjuvant treatment and follow-up, is summarised in Figure 6.

Figure 6

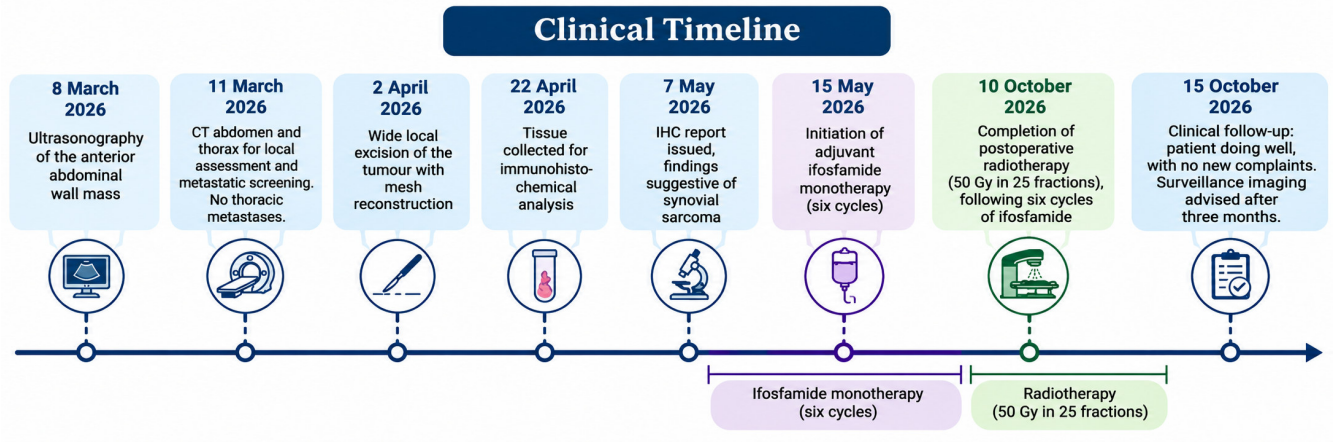


Figure 6. Clinical timeline illustrating the diagnostic work-up, surgical excision, immunohistochemical evaluation, adjuvant ifosfamide chemotherapy, postoperative radiotherapy and clinical follow-up.

3. Discussion

Primary synovial sarcoma of the anterior abdominal wall is exceptionally rare. Reported cases have described tumours arising from the external oblique muscle, rectus sheath, musculofascial structures and subcutaneous tissues. [3,4] These cases demonstrate considerable variation in age, sex, tumour size and anatomical location. In a retrospective cohort of 154 malignant abdominal wall lesions, Bashir et al. identified six cases of synovial sarcoma (3.9%), highlighting its rarity among malignant abdominal wall tumours in a specialist referral population. [5]

Our case is notable for the patient's age, prolonged clinical history and tumour location. At 53 years, he was older than the typical age group affected by synovial sarcoma, although middle-aged patients have been described in previous abdominal wall reports. The patient reported a slowly progressive, painless swelling over approximately five years. McNeill and Nguyen described a patient who presented with persistent haemoptysis and bilateral pulmonary metastases, with an abdominal wall mass identified during clinical examination. This illustrates that metastatic disease may be the initial clinical presentation of abdominal wall synovial sarcoma. [1] Prolonged clinical histories have also been reported, including the eight-year history described by Katyal and Patel. [11] The absence of pain or constitutional symptoms in our patient did not exclude an underlying malignant soft-tissue neoplasm.

The differential diagnosis of an anterior abdominal wall mass is broad and includes desmoid-type fibromatosis, lipomatous tumours, haematoma and other soft-tissue sarcomas. Desmoid-type fibromatosis was considered initially in our patient because of the lesion's location and involvement of the rectus abdominis muscles. Atypical lipomatous tumour was also included in the sonographic differential. However, CT demonstrated no macroscopic fat or identifiable haemorrhagic component. Previous reports have described abdominal wall synovial sarcomas initially mistaken for haematoma or hydatid disease, illustrating the potential overlap in clinical and imaging appearances. [3,10,12]

Ultrasonography in our patient demonstrated a well-defined, lobulated, heterogeneously hypoechoic lesion with mild internal vascularity. CT further characterised the mass as a heterogeneously enhancing soft-tissue lesion involving both rectus abdominis muscles, predominantly on the right, with extension into the deep subcutaneous and preperitoneal planes. Small internal non-enhancing areas were also noted. Although these findings helped define the tumour's anatomical extent, they were not specific for synovial sarcoma. Synovial sarcomas may demonstrate heterogeneous enhancement and variable cystic or haemorrhagic components. [8] Abdominal wall case reports have similarly described variable CT and MRI appearances, underscoring the limitations of imaging in establishing the histological diagnosis. [9]

MRI could have provided additional soft-tissue characterisation and a more detailed assessment of the tumour's relationship with the surrounding musculofascial structures. However, it could not be performed in our patient because of financial and logistical constraints. CT nevertheless demonstrated the principal anatomical extent of the lesion. The characteristic imaging features and areas of overlap among the principal differential diagnoses of anterior abdominal wall masses are summarised in Table 1. [5,8,9,12]

Histopathological examination in our case demonstrated a malignant spindle-cell neoplasm arranged predominantly in fascicles, with focal herringbone architecture and myxoid change. The morphology was compatible with a monophasic spindle-cell pattern, although definitive classification requires correlation with immunohistochemical and molecular findings. Synovial sarcoma may occur in monophasic, biphasic and poorly differentiated forms, with variable proportions of spindle-cell and epithelial components. [8] Similar monophasic spindle-cell morphology has been described in abdominal wall cases reported by Khaladkar and Waghmode and by Fertani et al. [7,14] The tumour in our case was classified as FNCLCC grade 2, without necrosis or vascular invasion.

Immunohistochemistry demonstrated diffuse TLE1 positivity, with additional CD117 and S100 positivity. The tumour was negative for CD34, desmin, SMA, EMA, DOG1 and MDM2. Although TLE1 expression supports the possibility of synovial sarcoma, it is not independently diagnostic. Immunohistochemical profiles may also vary between cases. Karadag et al. reported EMA positivity with negative cytokeratin staining, whereas Alsaif described vimentin positivity in a biphasic tumour. [2,4] Mistarihi et al. reported an intra-abdominal synovial sarcoma arising from the jejunal mesentery with a different immunohistochemical profile, further illustrating this variability at unusual anatomical sites. [13]

The characteristic molecular alteration in synovial sarcoma is the t(X;18) translocation, resulting in an SS18::SSX fusion. Molecular testing provides important diagnostic confirmation, particularly when morphological and immunohistochemical findings are suggestive but not definitive. [1,8] In our case, molecular testing was recommended but could not be performed. Therefore, the diagnosis remains suggestive of synovial sarcoma based on the available morphological and immunohistochemical findings, rather than molecularly confirmed.

Wide local excision with negative surgical margins is the principal treatment for localised abdominal wall synovial sarcoma. Reported cases have involved resection of the affected abdominal wall musculature or fascia, with mesh reconstruction when required. Adjuvant chemotherapy and radiotherapy have also been used in selected patients. Jayaraman et al. reported postoperative radiotherapy (50 Gy) and six cycles of ifosfamide, a regimen similar to that received by our patient. Karadag et al. described a planned regimen of ifosfamide and doxorubicin, together with planned radiotherapy to 60 Gy, although treatment completion was not reported. [2,3] Dady et al. reported adjuvant doxorubicin following en bloc resection, while Trigui et al. described postoperative chemotherapy and radiotherapy without specifying the regimens in the available report. [6,10] More extensive resections may require complex abdominal wall reconstruction, as demonstrated by Fertani et al., who used a free latissimus dorsi flap with prosthetic mesh. [14] These reports illustrate the variation in treatment approaches, with decisions influenced by tumour extent, histological grade, resection margins and metastatic status.

Prognosis in synovial sarcoma is influenced by tumour size, histological grade, resection margins and the presence of metastatic disease. The lungs are the most frequent site of distant metastasis, and both local recurrence and distant disease may develop after initial treatment. [1,8] Follow-up data in published cases of anterior abdominal wall synovial sarcoma remain limited. Trigui et al. reported no recurrence at three months following surgery and adjuvant treatment, whereas Dady et al. reported postoperative pleural recurrence, although the interval to recurrence is inconsistently described across different sections of their report. Fertani et al. reported distant chest-wall recurrence nine months after resection despite the absence of local recurrence. [6,10,14] These reports highlight the potential for delayed recurrence and support prolonged surveillance. In our case, the patient was clinically reviewed five days after completion of postoperative radiotherapy and was reportedly doing well, with no new complaints. Surveillance imaging of the operative site and chest was advised after three months but had not been performed at the time of reporting. The short follow-up period limits assessment of treatment outcome.

The present case adds to the limited literature on anterior abdominal wall synovial sarcoma. Its occurrence in a 53-year-old man, prolonged history of slow progression and involvement of both rectus abdominis muscles highlight the clinical and anatomical variability of this rare tumour. It also illustrates the diagnostic limitations of imaging and immunohistochemistry when molecular confirmation is unavailable.

4. Conclusion

Synovial sarcoma arising in the anterior abdominal wall is an exceptionally rare presentation that may pose diagnostic challenges because of its nonspecific clinical and imaging features. Histopathological and immunohistochemical correlation is essential, although molecular testing remains important for definitive diagnosis. This case highlights the need to consider malignant soft-tissue neoplasms in the differential diagnosis of slowly enlarging abdominal wall masses and the importance of prolonged surveillance following treatment.

Table 1. Imaging and histopathological features of selected anterior abdominal wall masses

Lesion	Key imaging features	Characteristic histopathology
Desmoid-type fibromatosis	US: Solid, usually hypoechoic mass with variable vascularity. CT: Soft-tissue mass arising from the rectus or adjacent musculofascial structures. MRI: Low-to-intermediate T1 signal, variable T2 signal and sometimes low-signal fibrous bands.	Long, sweeping fascicles of relatively uniform spindle cells in collagenous stroma, with infiltrative growth into adjacent tissues.
Atypical lipomatous tumour	US: Heterogeneous echogenic fatty mass, sometimes with thick septa. CT: Predominantly fat attenuation with thickened septa or non-fatty nodules. MRI: Fat signal with thick septa and enhancing non-fatty components.	Mature adipocytes showing variation in cell size, with atypical hyperchromatic stromal cells, often within fibrous septa.
Haematoma	US: Variable appearance depending on the age and organisation of blood products. CT: Variable attenuation, generally without internal enhancement. MRI: Signal characteristics vary with the stage of blood degradation.	Blood products at different stages of organisation, with possible hemosiderin-laden macrophages, granulation tissue and fibrosis.
Synovial sarcoma	US: Heterogeneous hypoechoic or mixed solid-cystic mass with variable vascularity. CT: Heterogeneously enhancing soft-tissue mass; haemorrhagic, cystic or calcific components may occur. MRI: Heterogeneous signal, often T2 hyperintense, with possible cystic or haemorrhagic components.	Monophasic spindle-cell or biphasic spindle-cell and epithelial patterns; poorly differentiated areas may occur. SS18::SSX fusion provides molecular confirmation.
Abscess	US: Complex fluid collection with internal debris and possible peripheral hyperaemia. CT: Fluid-attenuation collection, often with rim enhancement; gas may be present. MRI: T2-hyperintense collection with peripheral enhancement and surrounding inflammation.	Suppurative inflammation with neutrophils and necrotic debris, often accompanied by granulation tissue.

Abbreviations: US, ultrasonography; CT, computed tomography; MRI, magnetic resonance imaging.

Declarations

Ethics approval: This report was prepared in accordance with the ethical principles of the World Medical Association Declaration of Helsinki. Formal review by the Institutional Ethics Committee was not sought, as this report describes an isolated clinical case and was not conducted as a research study. No formal exemption or waiver determination was issued.

Author contributions: Afreed Nayeem: Data curation, resources. Aravindharaj Tamilselvan: Conceptualisation, data curation, formal analysis, supervision, validation, visualisation, writing – review and editing. Surendar Ramamoorthy: Formal analysis, resources, writing – review and editing. Prasanna Rajagopal: Formal analysis, writing – review and editing. Rakesh Ruban Chandrakannan: Writing – original draft, writing – review and editing.

Use of artificial intelligence: ChatGPT (OpenAI) was used to assist with language refinement, manuscript editing and the design of the clinical timeline figure. The authors reviewed and verified all AI-assisted content and take full responsibility for the accuracy and integrity of the final manuscript. AI tools were not used for patient management, clinical image interpretation, data generation or diagnostic decision-making.

ICMJE statement: The authors state that they meet the applicable authorship criteria of the International Committee of Medical Journal Editors (ICMJE), approved the final version for publication, and agree to be accountable for all aspects of the work, including the accuracy and integrity of its content.

Consent for publication: Written informed consent was obtained from the patient for publication of the clinical information and accompanying images, including the clinical and intraoperative photographs. Patient anonymity has been protected.

Competing interests: The authors declare no competing interests.

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Data availability: The clinical and imaging findings relevant to this case are described in the article. No separate research dataset was generated.

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