Case Report

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Oncology Section

Liposarcoma in the Caecum: A Case Report

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ABSTRACT

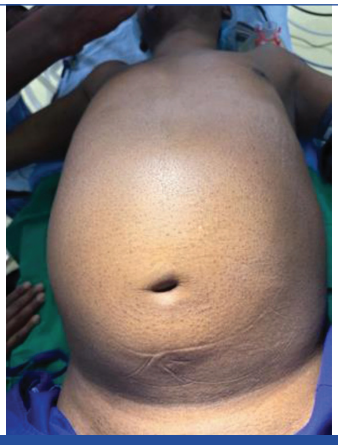
Liposarcoma of the caecum is a very rare and unusual form of soft-tissue sarcoma characterised by malignant transformation of adipose tissue. Although liposarcomas typically develop in the deep soft tissues of the extremities or the retroperitoneum, they are extremely rare in the gastrointestinal tract, especially in the caecum, which presents significant diagnostic and treatment challenges. This case report describes the clinical presentation and treatment of caecal liposarcoma in a 45-year-old man. The patient presented with vague abdominal discomfort and intermittent right lower quadrant pain, symptoms that often mimic more common gastrointestinal disorders such as appendicitis or colitis. Due to its rarity and nonspecific presentation, diagnosis is often delayed. The size, location, depth of invasion, and relationship of the lesion to surrounding structures are determined by imaging modalities, particularly Magnetic Resonance Imaging (MRI) and Contrast-Enhanced Computed Tomography (CECT). Thus, imaging plays a crucial role in its diagnosis. Total excision provides the best chance of long-term survival, and surgical resection remains the cornerstone of treatment. The size of the tumour, histological subtype, and completeness of the surgical margins are among the factors that affect prognosis. In certain high-grade or recurrent cases, adjuvant therapies may be considered. Because caecal liposarcoma is so uncommon, prompt diagnosis requires a high index of suspicion. For these uncommon and aggressive tumours, early intervention and appropriate surgical management are essential for better outcomes.

Keywords: Abdominal mass, Atypical lipomatous tumour, D3 radical hemicolectomy, Histopathology of liposarcoma, Large bowel tumour, Right hemicolectomy, Uncommon caecal tumours, Well-differentiated liposarcoma

CASE REPORT

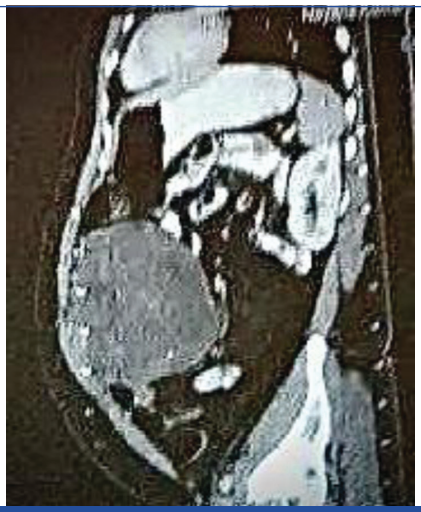
A 45-year-old male presented to the surgical oncology department with subacute intestinal obstruction characterised by intermittent, colicky right-sided abdominal pain for one month, associated with abdominal distension and constipation. He denied a history of vomiting, obstipation, fever, rectal bleeding, or urinary symptoms. He had no notable weight loss, cough, jaundice, or bone pain. He had no comorbidities or significant family history. Despite using over-the-counter medications for pain, the patient reported persistent symptoms without relief.

On examination, the abdomen was distended with fullness in the right hypochondrium, right lumbar region, and right iliac fossa. On palpation, a firm-to-hard abdomino-pelvic mass was identified spanning these quadrants, extending to the epigastrium and umbilical region, crossing the midline. No inguinal or left supraclavicular lymphadenopathy was noted. Digital rectal examination identified a firm anterior mass without signs of bleeding [Table/Fig-1]. Routine laboratory tests were within normal limits. Tumour markers such as Carcinoembryonic Antigen (CEA) and Cancer Antigen (CA)19-9 were not measured.



[Table/Fig-1]: Pre-operative photograph showing a diffuse abdominal mass.

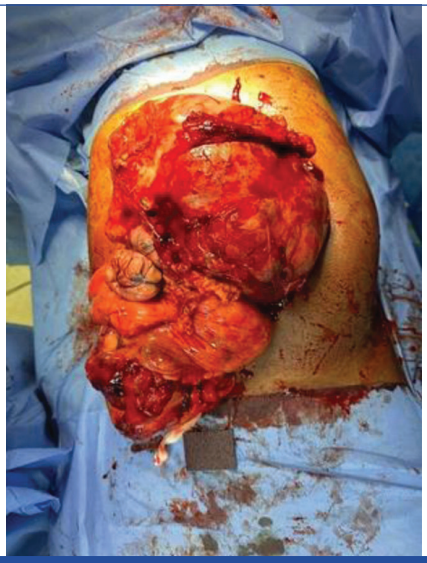
CECT identified a large, well-defined mixed-density lesion (20×20×24 cm) in the right and central abdomen. The lesion demonstrated soft-tissue components with fat attenuation and minimal heterogeneous enhancement; multiple septations were noted within the lesion. It abutted the anterior abdominal wall, displaced the hepatic flexure and ascending colon, compressed the right ureter, and displaced small bowel loops and the transverse colon. The lesion also extended to the pelvis along the iliacus muscle, suggesting a neoplastic etiology with liposarcoma as a differential diagnosis [Table/Fig-2]. Colonoscopy identified no evidence of caecal abutment or intraluminal masses.



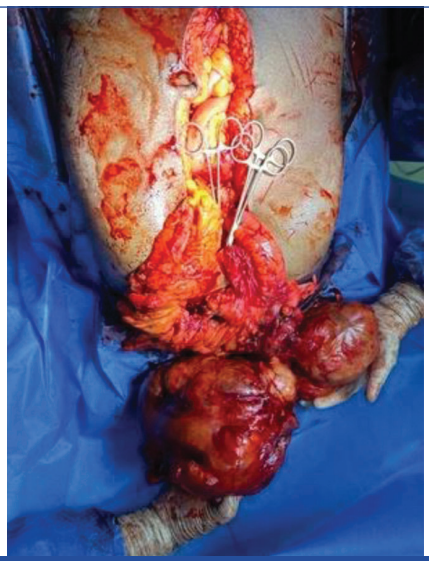
[Table/Fig-2]: CECT Image showing well defined large mixed density lesion occupying the right quadrants of the abdomen and the central abdomen with fat attenuation and soft-tissue components causing mass effect.

Following comprehensive discussion within a multidisciplinary tumour board, and based on radiological findings indicative of a sarcoma amenable to primary surgical intervention, consensus was to proceed with immediate surgical intervention.

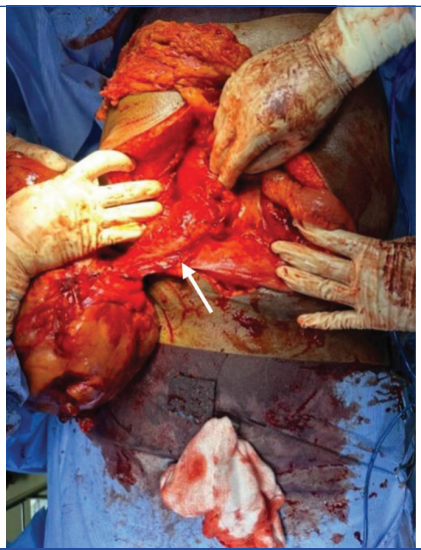
Exploratory laparotomy identified a multilobulated lipomatous tumour (30 × 30 cm) arising from the caecum, with adhesions to the omentum and peritoneum. The tumour was excised along with a D3 radical haemicolectomy, including the resection of multiple satellite lipomatous tumours from the retroperitoneum. No other organs were involved, and an ileotransverse anastomosis was performed [Table/Fig-3-6].



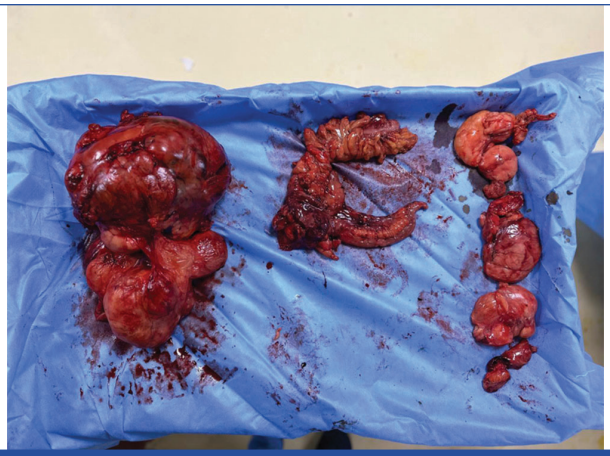
[Table/Fig-3]: Intraoperative photograph: Huge intra-abdominal lipomatous tumour.



[Table/Fig-4]: Intraoperative photograph showing the tumour arising from caecum.

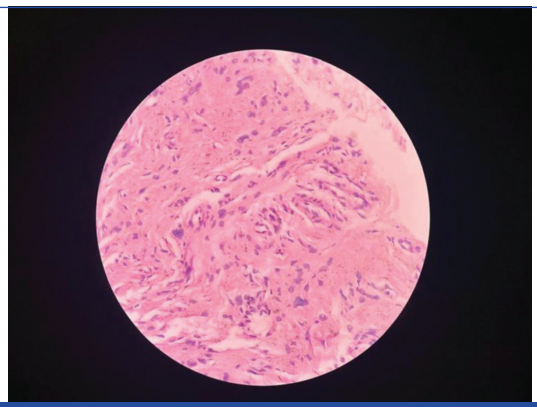


[Table/Fig-5]: Intraoperative photograph showing the tumour arising from caecum (white arrow: pointing towards caecum, showing tumour arising from the caecum).

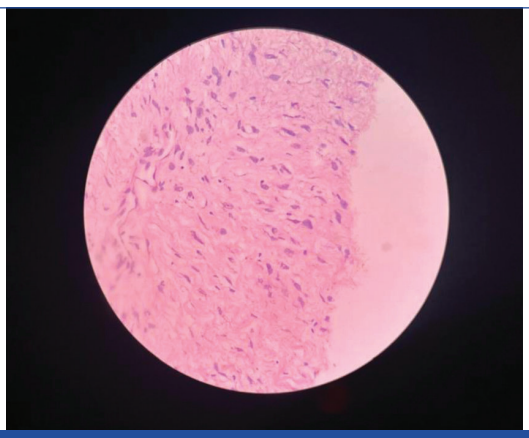


[Table/Fig-6]: Postoperative photograph showing the resected mass, right hemicolon, and satellite lipomatous tumour.

Histopathology confirmed a well-differentiated, low-grade liposarcoma, with adipocytes of varying sizes, tissue necrosis, and no lipoblasts or evidence of dedifferentiation. The resected right hemicolectomy specimen included 12 cm of ileum, 5 cm of appendix, and 26 cm of colon, in which a caecal bulge was noted. On cut section, a grey-yellow tumour measuring 4×4×3 cm extended up to the serosa but with a normal mucosa. Ascending colon and ileum were unremarkable. Satellite tumours were lipomatous. Haematoxylin and Eosin (H&E)-stained sections showed tumour cells in scattered single cells. Individual cells were pleomorphic with vesicular nuclei and moderate cytoplasm [Table/Fig-7,8]. The patient received no postoperative therapy and is currently stable and recovering, 11 months post-surgery, under regular monitoring. The patient is planned for regular follow-up as per soft-tissue sarcoma recommendations, as caecal liposarcoma is uncommon and there are no monitoring guidelines tailored exclusively for it. Follow-up is planned every three months for the initial two years, then biannually until five years, and annually thereafter.



[Table/Fig-7]: Histopathology slide (40x magnification) H&E stained section showing tumour cells in singles. Individual cells are pleomorphic with vesicular nucleus and moderate cytoplasm.



[Table/Fig-8]: Histopathology slide (high power magnification) H&E stained section.

DISCUSSION

Abdominal liposarcoma is a rare malignant tumour originating from fat cells within the abdominal cavity [1]. It is a subtype of soft-tissue sarcoma and can occur in areas such as the retroperitoneum or visceral fat. Liposarcomas are categorised into five main types:

- Well-differentiated/atypical lipomatous tumour
- Dedifferentiated liposarcoma
- Myxoid liposarcoma
- Pleomorphic liposarcoma
- Myxoid pleomorphic liposarcoma [1,2]

Liposarcomas of the large intestine typically present with nonspecific gastrointestinal symptoms such as bleeding, obstruction, diarrhoea, abdominal pain, and weight loss, making them challenging to distinguish from other types of colon cancer [3]. Endoluminal masses often present with obstruction, intussusception, or haematochezia, while exophytic masses may cause abdominal pain or the formation of a palpable abdominal lump [3]. Dumbbell-shaped masses can also occur. Given that the abdomen and retroperitoneal space are deep, expandable areas, slow-growing tumours often remain asymptomatic until they have reached a considerable size, presenting with increased abdominal girth, a palpable mass, or symptoms from visceral compression [1].

A review of the literature reveals only two reported cases of caecal liposarcoma, both in elderly patients without significant comorbidities, similar to the current case. One case presented with intussusception and abdominal pain, diagnosed as a dedifferentiated variant [4], while another case from Mexico presented with right iliac fossa pain radiating to the inguinal region and ipsilateral testicle and was a pleomorphic subtype of liposarcoma in the caecum.

Numerous uncommon instances of colonic liposarcoma have been reported, providing important context for understanding its diverse presentation and treatment. In a case of ascending colon liposarcoma presenting with pain in the lower right quadrant, Sawayama H et al., found that the tumour was well-differentiated with areas of dedifferentiation. The patient underwent ongoing surveillance after a right hemicolectomy without adjuvant therapy [5]. An uncommon endoluminal growth pattern that differs from the exophytic presentation seen in the present study was highlighted by D'Annibale M et al., where a liposarcoma manifested as an intraluminal mass causing intestinal obstruction [4]. Fitzgerald K et al., also reported a middle-aged patient with weight loss and vague abdominal symptoms who had a dedifferentiated liposarcoma of the transverse colon. Surgery was used to manage the tumour [6].

A detailed radiological assessment plays a pivotal role in preoperative planning and in differentiating subtypes, to enable accurate diagnosis and optimal management [Table/Fig-9] [7].

Resection of adjacent organs is often considered in extensive surgeries; however, current evidence suggests that more aggressive resections do not necessarily lead to improved long-term survival [8]. Retrospective studies indicate that while removing adjacent uninvolved organs may reduce local recurrence rates in retroperitoneal sarcomas, it does not enhance overall survival and can lead to increased postoperative morbidity. Furthermore, studies reviewing nephrectomy in such cases show that while the kidney is frequently resected, actual tumour invasion is rare, suggesting that unnecessary organ removal should be avoided unless there is definitive clinical or radiological evidence of involvement [9]. In line with these principles, we undertook a D3 radical haemicolectomy with resection of multiple satellite lipomatous tumours, ensuring complete oncological clearance while carefully preserving uninvolved organs. Our approach balanced oncological safety with the need to minimise morbidity, avoiding unnecessary resections that do not contribute to improved survival or patient outcomes.

Well-differentiated liposarcomas are more likely to recur locally than metastasise distantly and are often multifocal in nature. Outcomes are also location-dependent: liposarcomas in the extremities tend to recur locally without causing mortality, while retroperitoneal liposarcomas may recur repeatedly and result in death due to uncontrolled local effects or even dedifferentiation and subsequent metastasis [8].

Computed Tomography (CT) features:	Magnetic Resonance Imaging (MRI) features:	Positon Emission Tomography (PET)-Computed Tomogaphy (CT) features: Increased Fluorodeoxyglucose (FDG) uptake: Higher metabolic activity in dedifferentiated components can help distinguish liposarcoma from benign lipomatous tumours. Size >5 cm, thick septa, and non-adipose soft-tissue components favour a diagnosis of liposarcoma over lipoma. Rapid growth or infiltration into adjacent structures is concerning for malignancy. In colonic liposarcomas, these imaging findings, particularly heterogeneous fat composition with thickened septa and soft-tissue enhancement, should raise suspicion for sarcoma and guide further diagnostic evaluation.
• Heterogeneous mass: typically appears as a large, well-defined but infiltrative mass with varying fat content. • Fat attenuation: presence of fat density areas within the tumour often mixed with soft-tissue components. • Septations and nodularity: thickened, irregular septa (>2 mm) and nodular soft-tissue components raise suspicion of malignancy. • Infiltrative margins: unlike benign lipomas, liposarcomas may show irregular, ill-defined margins suggesting local invasion. • Contrast enhancement: soft-tissue components enhance variably with contrast administration.	• T1-weighted imaging: hyperintense signal due to fat content, with areas of intermediate or low signal corresponding to solid tumour components. • T2-weighted imaging: heterogeneous signal intensity; myxoid components may appear hyperintense. • Fat suppression sequence: Fat signal suppression with residual non-fatty enhancing tissue suggests liposarcoma rather than a benign lipoma.	

[Table/Fig-9]: Radiological features of colonic liposarcomas [7].

The biological behaviour of liposarcoma subtypes varies. Well-differentiated liposarcomas, though locally aggressive, are typically slow-growing and rarely metastasise. These neoplasms are composed of mature adipocytes exhibiting significant variation in cell size and nuclear atypia. Well-differentiated liposarcomas can further be classified into four distinct morphological subtypes: adipocytic (lipoma-like), sclerosing, inflammatory, and spindle cell [2]. Soft-tissue sarcomas are assigned a histological grade. The French Federation of Cancer Centres Sarcoma Group (FNCLCC) is the most commonly used methodology [Table/Fig-10] and is preferred by the American Joint Committee on Cancer (AJCC) [10]. This system assesses tumour differentiation, mitosis, and necrosis and assigns a score for each characteristic [11].

Histologic type	Score
Well-differentiated liposarcoma	1
Myxoid liposarcoma	2
Round cell liposarcoma	3
Pleomorphic liposarcoma	3
Dedifferentiated liposarcoma	3
Fibrosarcoma	2
Myxofibrosarcoma (MFS)	2
Pleomorphic sarcoma Not Otherwise Specified (NOS), with giant cell or inflammatory cells	3
Well-differentiated leiomyosarcoma	1
Conventional leiomyosarcoma	2
Poorly differentiated, pleomorphic or epithelioid leiomyosarcoma	3
Biphasic or monophasic synovial sarcoma	3
Poorly differentiated synovial sarcoma	3
Pleomorphic rhabdomyosarcoma	3
Mesenchymal chondrosarcoma	3
Extraskeletal osteosarcoma	3
Ewing sarcoma	3
Malignant rhabdoid tumour	3
Undifferentiated (spindle cell and pleomorphic) sarcoma	3
Tumour mitosis	Score

0-9 mitoses per 10 high-power fields	1
10-19 mitoses per 10 high-power fields	2
Greater than 19 mitoses per 10 high-power fields	3
Tumour necrosis	Score
No tumour necrosis	0
Less than 50% tumour necrosis	1
50% or more tumour necrosis	2
FNCLCC grading of soft-tissue tumours	
Grade 1	2-3 points
Grade 2	4-5 points
Grade 3	6-8 points

[Table/Fig-10]: Scoring parameters for the FNCLCC grading system.

The malignant behaviour of well-differentiated and dedifferentiated liposarcomas is linked to amplification of chromosome 12q13-15, which leads to upregulation of Mouse Double Minute 2 (MDM2) and CDK4 [12,13]. While no specific guidelines exist for managing colonic liposarcoma, surgical resection remains the cornerstone of treatment, with local control being crucial for cure [14]. Postoperative treatment is controversial. Adjuvant radiotherapy may reduce the risk of local recurrence [14], but it has not been shown to improve survival and often results in severe side effects, particularly damage to surrounding normal tissues, such as the small bowel. Well-differentiated liposarcomas are generally resistant to chemotherapy and radiotherapy, making adjuvant therapy largely unnecessary [1,15].

A phase 3 randomised trial comparing Eribulin to dacarbazine in patients with extremity or retroperitoneal liposarcomas found that Eribulin significantly improved overall survival (15.6 vs 8.4 months), leading to its approval as a palliative treatment [15]. Targeting MDM2 or CDK4 in well-differentiated and dedifferentiated liposarcomas has shown promise, particularly for advanced or unresectable cases [16]. Follow-up guidelines from the transatlantic RPS Working Group recommend evaluations every three to six months for the first five years, followed by annual monitoring, as the median time to recurrence of high-grade retroperitoneal sarcoma is typically under five years after definitive treatment. For patients who have undergone incomplete resections, lifelong monitoring is recommended [17].

In this case report, we documented a six-month follow-up period during which the patient remained disease-free. We acknowledge that this duration is relatively short for malignancies, and longer follow-up is necessary to assess the risk of recurrence accurately. Consequently, commenting on the long-term likelihood of recurrence is beyond the scope of this report and represents a limitation of our study.

CONCLUSION(S)

Caecal liposarcomas are rare, with each reported case presenting unique clinical features and histological findings. As a result, optimal therapeutic strategies remain undefined. Management decisions should be made by a multidisciplinary team, with surgery being the preferred approach when feasible. However, further longitudinal studies are needed to establish clear management guidelines for primary colonic liposarcoma.

REFERENCES

[1] DeVita VT, Lawrence TS, Rosenberg SA, editors. DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology. 11th ed. Philadelphia: Wolters Kluwer; 2019.
[2] WHO Classification of Tumours Editorial Board. Soft-tissue and bone tumours. In: WHO classification of tumours series, 5th ed. Vol 3. Lyon: IARC Press; 2020.
[3] Gajzer DC, Fletcher CD, Agaimy A, Brcic I, Khanlari M, Rosenberg AE. Primary gastrointestinal liposarcoma: A clinicopathological study of 8 cases of a rare entity. Hum Pathol. 2020;97:80-93. doi:10.1016/j.humpath.2019.12.004.
[4] D'Annibale M, Cosimelli M, Covello R, Stasi E. Liposarcoma of the colon presenting as an endoluminal mass. World J Surg Oncol. 2009;7:78. doi:10.1186/1477-7819-7-78.
[5] Sawayama H, Yoshida N, Miyamoto Y, Uchihara T, Toihata T, Yagi T, et al. Primary colonic well-differentiated/dedifferentiated liposarcoma of the ascending colon: A case report. Surg Case Rep. 2017;3:96. doi:10.1186/s40792-017-0373-4.
[6] Fitzgerald K, Slama EM, Bernescu I. Dedifferentiated liposarcoma of the transverse colon. Am Surg. 2022;88(4):790-92. doi:10.1177/00031348211054524.
[7] Grist TM, Hichwa RD, Bluth EI. Liposarcoma: Radiologic-pathologic correlation. Radiographics. 1992;12(5):1051-68. doi:10.1148/radiographics.12.5.1407551.
[8] Weitz J, Antonescu CR, Brennan MF. Localized extremity soft-tissue sarcoma: Improved knowledge with unchanged survival over time. Ann Surg. 2001;234(2):215-22. doi:10.1097/00000658-200108000-00011.
[9] Rachman Y, Hardja Y. Giant retroperitoneal liposarcoma: A case report. Int J Surg Case Rep. 2022;97:107465. doi:10.1016/j.ijscr.2022.107465.
[10] Coindre JM, Terrier P, Guillou L, Le Doussal V, Collin F, Ranchère D, et al. Prognostic factors in soft-tissue sarcomas: A study of 546 patients from the French Federation of Cancer Centers Sarcoma Group. J Clin Oncol. 1996;14(3):869-77. doi:10.1200/JCO.1996.14.3.869.
[11] Demicco EG, Wang WL, Lazar AJ. Dedifferentiated liposarcoma: Histologic spectrum and prognostic factors. Am J Surg Pathol. 2012;36(9):1213-21. doi:10.1097/PAS.0b013e3182576c74.
[12] Lavernia J, Claramunt R, Romero I, López-Guerrero JA, Llombart-Bosch A, Machado I. Soft-tissue sarcomas with chromosomal alterations in the 12q13-15 region: Differential diagnosis and therapeutic implications. Cancers (Basel). 2024;16(2):432. doi:10.3390/cancers16020432.
[13] Crago AM, Singer S. Clinical and molecular approaches to well-differentiated and dedifferentiated liposarcoma. Curr Opin Oncol. 2011;23(4):373-78. doi:10.1097/CCO.0b013e328348d824.
[14] Gronchi A, Miah AB, Dei Tos AP, Abecassis N, Bajpai J, Bauer S, et al. Soft-tissue and visceral sarcomas: ESMO-EURACAN-GENTURIS Clinical Practice Guidelines for diagnosis, treatment and follow-up. Ann Oncol. 2021;32(11):1348-65. doi:10.1016/j.annonc.2021.07.006.
[15] Wang D, Zhang Q, Blay JY, Tap WD, Demetri GD, Ray-Coquard I, et al. Dacarbazine versus eribulin in patients with advanced liposarcoma or leiomyosarcoma (SELECT): A randomised, open-label, multicentre, phase 3 trial. Lancet. 2016;387(10028):1629-37. doi:10.1016/S0140-6736(15)01283-0.
[16] Zhou MY, Bui NQ, Charville GW, Ganjoo KN, Pan M. Treatment of de-differentiated liposarcoma in the era of immunotherapy. Int J Mol Sci. 2023;24(11):9571. doi:10.3390/ijms24119571.
[17] Gronchi A, Strauss DC, Miceli R, Bonvalot S, Swallow CJ, Hohenberger P, et al. Variability in patterns of recurrence after resection of primary retroperitoneal sarcoma (RPS): A report of a multi-institutional series from the Transatlantic RPS Working Group. Ann Surg. 2016;263(5):1002-09. doi:10.1097/SLA.0000000000001577.

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