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Uterine Leiomyosarcoma Presenting as a Large Abdominopelvic Mass: A Case Report

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Case Report

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Abstract

Background

Uterine leiomyosarcoma (uLMS) is a rare and aggressive malignancy, accounting for approximately 1% of all gynecological malignancies and 1–2% of uterine tumors. It is frequently diagnosed at an advanced stage, contributing to its poor prognosis. Preoperative differentiation from benign uterine leiomyomas remains challenging, as no imaging modality has proven sufficiently reliable to exclude malignancy.

Case Presentation:

We report a case of a 69-year-old grand multiparous postmenopausal woman who presented with postmenopausal bleeding and pelvic pain. She had previously undergone exploratory laparotomy six months earlier, during which a retroperitoneal mass causing compression of the iliac vessels was biopsied. Histological analysis revealed a spindle-cell mesenchymal proliferation with immunohistochemical features consistent with smooth muscle differentiation. Pelvic MRI demonstrated a large left-lateralized abdominopelvic mass measuring 17×15×15 cm. She subsequently underwent total hysterectomy with bilateral salpingo-oophorectomy. Final pathological examination confirmed a uterine leiomyosarcoma measuring 19 cm, with tumor necrosis, vascular emboli, and full-thickness myometrial infiltration. Ki-67 proliferation index was 40%.

Conclusion

This case highlights the diagnostic and therapeutic challenges posed by uterine leiomyosarcoma presenting as a large retroperitoneal mass. Total hysterectomy without ovarian conservation remains the cornerstone of treatment. Multidisciplinary collaboration and long-term oncological follow-up are essential in the management of this rare and aggressive neoplasm.

BACKGROUND

Uterine fibroids, or leiomyomas, are the most common benign tumors of the female genital tract, arising from the myometrium with variable growth patterns. They may be intramural, submucosal, or subserosal in location [1, 2]. Clinically, they manifest as menstrual irregularities, anemia, lower abdominal pain, dyspareunia, and compressive symptoms affecting adjacent organs such as the bladder or rectum when of significant size [3]. Risk factors include age, obesity, ethnicity, early menarche, use of hormonal contraceptives, and family history [4, 5].

Uterine sarcomas represent approximately 1% of all gynecological malignancies and 3–7% of all uterine cancers. They are classified into carcinosarcomas, leiomyosarcomas, endometrial stromal sarcomas, and undifferentiated sarcomas. Leiomyosarcoma is the most common histological subtype of uterine

sarcoma and generally affects women over 40 years of age. The most frequent presenting symptoms are abnormal uterine bleeding (56%), a palpable pelvic mass (54%), and/or pelvic pain (22%).

Uterine leiomyomas may undergo various forms of degeneration, including hyalinization, cystic degeneration, sarcomatous transformation, and calcification. Approximately 1 in 800 women presumed to have a leiomyoma is found to harbor a sarcoma on final pathological examination [6, 7]. Despite its rarity, uterine sarcoma carries a poor prognosis, and current preoperative workup — including ultrasound and positron emission tomography — does not reliably differentiate benign from malignant smooth muscle tumors.

CASE PRESENTATION

A 69-year-old grand multiparous woman presented to our institution with pelvic pain and postmenopausal uterine bleeding. Her medical history was otherwise unremarkable, and she had no known familial history of gynecological malignancy.

Six months prior to the current presentation, she had undergone exploratory laparotomy at an outside facility for the same complaints. Intraoperative exploration revealed a large retroperitoneal mass filling the pelvis and exerting a mass effect on the iliac vessels, precluding complete surgical resection at that time. A biopsy was performed, which demonstrated a spindle-cell mesenchymal proliferation on histological analysis. Immunohistochemistry of the biopsied specimen confirmed smooth muscle differentiation of the neoplastic cells, with absent expression of estrogen and progesterone receptors.

Pelvic MRI performed after the initial surgery demonstrated a large left-lateralized abdominopelvic mass measuring 17×15×15 cm, occupying the entire pelvic cavity.

Given the tumor size and clinical evolution, we opted for re-intervention by median laparotomy. The procedure consisted of a total hysterectomy with bilateral salpingo-oophorectomy (non-conservative). There were no intraoperative complications. Surgical margins were clear on macroscopic assessment.

Final histopathological and immunohistochemical analysis confirmed the diagnosis of uterine leiomyosarcoma measuring 19 cm in greatest dimension. The tumor displayed extensive tumor necrosis and lymphovascular invasion. Infiltration involved the full thickness of the uterine wall, the isthmus, the cervix, the parametria, the right adnexa, and the left uterine cornu. Surgical margins were negative.

Immunohistochemical profile of the tumor showed: absent expression of anti-CK (cytokeratin) and anti-CD10 antibodies; positive cytoplasmic expression of anti-Desmin and anti-H-Caldesmon antibodies, confirming smooth muscle lineage; and a Ki-67 proliferation index of 40%, indicative of high-grade malignancy.

The case was discussed at a multidisciplinary tumor board. The patient was referred to the oncology department for postoperative assessment and consideration of adjuvant therapy. She was enrolled in oncological follow-up with regular clinical and imaging surveillance.

DISCUSSION

Uterine leiomyosarcoma is a rare but highly aggressive malignancy for which preoperative diagnosis remains a significant clinical challenge. The symptomatology — postmenopausal bleeding, a pelvic mass, and pain — overlaps substantially with that of benign leiomyomas and other uterine pathologies, making clinical differentiation unreliable. Current imaging modalities, including pelvic ultrasound, MRI, and PET-CT, have limited sensitivity and specificity in distinguishing benign uterine smooth muscle tumors from their malignant counterparts. In this case, the diagnosis was ultimately established by histopathological and immunohistochemical analysis.

Total hysterectomy without ovarian conservation represents the gold standard treatment for all uterine malignancies, including uterine sarcoma [8, 9]. Fertility-sparing management may be considered only in highly selected patients with a strong desire for future pregnancy who agree to strict oncological surveillance [10, 11]. Lymph node dissection is not routinely recommended unless there is clinical or imaging suspicion of peritoneal carcinomatosis; however, existing evidence on the role of pelvic lymphadenectomy in uterine sarcoma remains limited [12, 13, 14].

The use of containment systems for specimen extraction following laparoscopic morcellation [15] has extended the applicability of minimally invasive surgery to uterine pathologies, reducing the risk of tumor cell dissemination in cases of occult uterine sarcoma [16]. Nevertheless, open laparotomy retains a primary role, particularly in settings with limited resources, given its low cost and technical accessibility [17, 18, 19, 20].

The management of advanced or recurrent uterine leiomyosarcoma remains controversial. Available data suggest that surgical cytoreduction at the time of initial diagnosis offers the best outcomes in terms of morbidity and mortality [21, 22, 23, 24]. Adjuvant therapy — including chemotherapy and radiotherapy — has not demonstrated a clear survival benefit in disease confined to the uterus, and there is currently no level-I evidence supporting its routine use [25, 26, 27]. The role of molecular and genomic profiling in identifying patients at high risk of recurrence is an area of active investigation. Ongoing research into immune checkpoint inhibitors and targeted therapies may offer future therapeutic options for this aggressive neoplasm.

CONCLUSION

Uterine leiomyosarcoma is rare and poses significant preoperative diagnostic challenges. No single clinical, imaging, or intraoperative finding reliably excludes malignancy in the context of a uterine mass. Complete surgical excision with clear margins, achieved through total hysterectomy, remains the cornerstone of treatment. In cases requiring re-intervention following incomplete initial surgery, en bloc resection should be prioritized to avoid tumor dissemination. Any suspicious intraoperative finding should prompt immediate frozen-section analysis. Inadvertent morcellation of an undiagnosed uterine sarcoma and unnecessary re-operations secondary to diagnostic delay should be avoided whenever

possible. Multidisciplinary management and long-term oncological follow-up are essential in the care of these patients.

Declarations

Ethics approval and consent to participate: Written informed consent was obtained from the patient for publication of this case report and any accompanying clinical data. A copy of the written consent is available for review by the Editor-in-Chief.

Consent for publication: Written informed consent for publication was obtained from the patient.

Availability of data and materials: All data supporting the findings of this case report are contained within the manuscript.

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Authors' contributions: [To be completed: e.g., A.B. and C.D. performed the surgical procedure; E.F. conducted the histopathological analysis; A.B. drafted the manuscript; all authors read and approved the final version.]

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