

A Case Report

Unexpected Uterine Leiomyosarcoma After Hysterectomy for Presumed Leiomyoma: A Case Report

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Abstract

Background: Uterine leiomyosarcoma is a rare malignant smooth muscle tumor that may remain unsuspected until definitive histopathological examination. **Objectives:** To describe diagnostic discordance between benign preoperative and gross impressions and malignant microscopic findings in uterine leiomyosarcoma. **Methods:** This case report retrospectively describes clinical presentation, computed tomography findings, surgical management, histopathological examination, and immunohistochemical results. **Results:** A 47 year old multiparous woman presented with six months of progressive abnormal uterine bleeding and abdominal enlargement. Non contrast computed tomography revealed a well circumscribed intramural uterine mass measuring $7.0 \times 6.8 \times 7.0$ cm without detectable extrauterine disease. Total abdominal hysterectomy was performed for presumed leiomyoma. Gross examination revealed a firm whorled mass without evident hemorrhage or geographic necrosis. Microscopy demonstrated moderate to severe cytologic atypia, coagulative tumor cell necrosis, and more than 10 mitoses per 10 high power fields. Strong desmin and h caldesmon positivity supported smooth muscle differentiation. The patient was referred for multidisciplinary oncologic assessment. **Conclusions:** Benign appearing imaging and gross morphology cannot exclude uterine leiomyosarcoma. Accurate diagnosis requires adequate histological sampling and integrated clinicopathological assessment.

Keywords: Histopathology; Leiomyoma; Leiomyosarcoma; Smooth muscle tumor; Uterus.

Introduction

Uterine leiomyosarcoma is an uncommon malignant smooth muscle neoplasm of the uterus and remains clinically important because preoperative distinction from leiomyoma is often difficult^{1,2}. Population based and surgical series use different denominators, so annual population incidence should not be conflated with the proportion of unexpected malignancy among operations for presumed fibroids^{3,4}. In a large retrospective surgical cohort of 26,643 procedures performed for presumed leiomyoma, unexpected uterine

leiomyosarcoma was identified in approximately 0.11 percent of patients⁴.

Clinical symptoms such as abnormal uterine bleeding, pelvic pressure, pain, or uterine enlargement overlap substantially with benign leiomyoma^{3,5}. Imaging can raise suspicion but does not provide an absolute rule out test. Magnetic resonance imaging has shown high diagnostic accuracy in pooled analyses, while individual imaging features still overlap across benign and malignant smooth muscle tumors^{6,7}.

Definitive classification therefore remains centered on histomorphology, especially

cytologic atypia, mitotic activity, and coagulative tumor cell necrosis, interpreted in the context of histologic subtype and adequate tumor sampling^{8,9}. Immunohistochemistry can support lineage assignment and selected differential diagnoses, but marker expression must be interpreted as an adjunct rather than as an independent malignancy rule^{10,11}.

This report presents an unexpected uterine leiomyosarcoma diagnosed after hysterectomy for a clinically presumed leiomyoma, with emphasis on the discordance between radiologic and gross impressions and the decisive microscopic findings^{1,8}. The case is intended to reinforce a practical diagnostic message: a benign appearing uterine mass still requires representative pathologic evaluation when removed, and smooth muscle lineage markers do not substitute for morphologic criteria^{8,10}.

The report also illustrates the value of communication between gynecology, radiology, pathology, and oncology after an unexpected malignant diagnosis, particularly when staging information, specimen integrity, and subsequent management must be reconciled^{2,12}.

Materials and Methods

Study Design

This article was prepared as a descriptive single patient case report using information documented in the clinical, imaging, operative, gross pathology, histopathology, and immunohistochemistry records available to the authors.

Sample

The report concerns one 47 year old multiparous woman who underwent total abdominal hysterectomy for symptomatic presumed uterine leiomyoma and whose definitive surgical pathology showed uterine leiomyosarcoma.

Data Collection Technique

Clinical chronology was reconstructed from the presenting symptoms, preoperative non contrast computed tomography, operative findings, gross specimen examination, hematoxylin and eosin sections, and the immunohistochemical stains documented for this patient. The available case material demonstrated strong tumor cell staining for desmin and h caldesmon. p16, p53, and Ki 67 were not documented as performed in this patient and are therefore discussed only as literature based adjunctive markers^{10,11}.

Data Analysis Technique

A descriptive clinicopathologic correlation was performed. No inferential statistical test was applicable to this single patient report. Diagnostic interpretation followed established morphologic principles for uterine smooth muscle tumors, with immunohistochemistry used to support smooth muscle differentiation^{8,9}.

Ethical Consideration

This study was conducted as a retrospective single patient case report using existing clinical and histopathological records without additional interventions. Patient confidentiality was maintained by removing personal identifiers. Formal ethical approval may be waived for individual case reports, subject to institutional regulations. Written informed consent for publication of clinical information and images should be obtained from the patient.

Result

A 47 year old multiparous woman presented with progressive abnormal uterine bleeding and gradual lower abdominal enlargement for approximately six months. She denied weight loss and constitutional symptoms, and no family history of gynecologic malignancy was recorded. Physical examination identified an

enlarged, non tender uterus corresponding to approximately 14 weeks of gestation.

Preoperative non contrast computed tomography demonstrated a well circumscribed intramural uterine mass measuring $7.0 \times 6.8 \times 7.0$ cm with relatively homogeneous soft tissue attenuation and without described extrauterine

extension. The original wording “homogeneous echotexture” was corrected because echotexture is an ultrasonographic term. Routine laboratory findings were reported within normal limits. The clinical sequence from presentation to diagnosis is summarized in Table 1⁵.

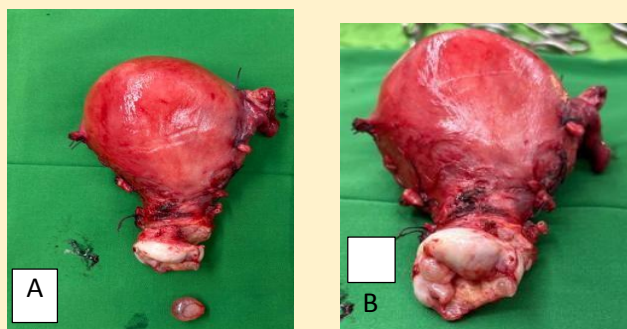


Figure 1. Showing an enlarged uterus with a well-circumscribed intramural mass displaying a homogeneous, tan-white, whorled cut surface without evident hemorrhage or necrosis

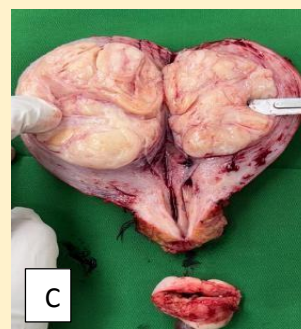


Figure 2. Uterus revealing a well demarcated intramural mass (5 x 3 x 1 cm) with a firm, homogeneous, tan-white whorled appearance compressing the surrounding myometrium.

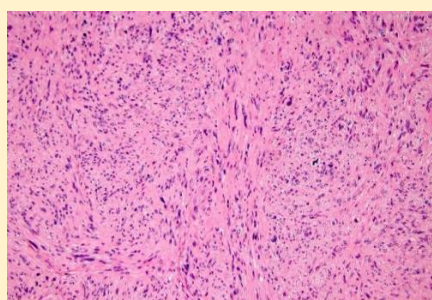


Figure 3. Tumor cells are set in long intersecting fascicles parallel and perpendicular to the plane of section (Obj. 4x)

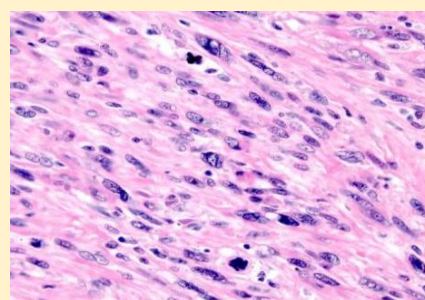


Figure 4. Tumour cell with Mitotic Activity (Obj. 40x)

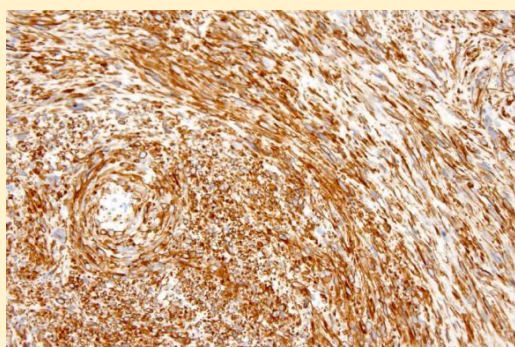


Figure 5. Immunohistochemical stain for desmin is strongly positive in tumor cells (Obj. 40x)

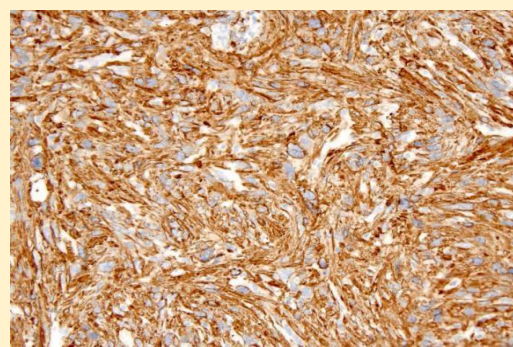


Figure 6. Immunohistochemical stain for h-caldesmon is strongly positive in tumor cells (Obj. 40x)

Table 1. Clinical and diagnostic timeline of the reported case

Clinical point	Documented finding
Presentation	Progressive abnormal uterine bleeding and lower abdominal enlargement for approximately six months.
Preoperative imaging	Non contrast computed tomography: well circumscribed intramural mass, 7.0 × 6.8 × 7.0 cm; no described extrauterine extension.
Surgery	Total abdominal hysterectomy for symptomatic presumed leiomyoma. Uterus appeared enlarged and regular in contour without visible serosal disruption or gross extrauterine extension.
Gross pathology	Firm, well defined, whorled intramural lesion without evident gross hemorrhage or geographic necrosis.
Microscopy	Diffuse moderate to severe cytologic atypia, coagulative tumor cell necrosis, and more than 10 mitoses per 10 high power fields.
Immunohistochemistry	Desmin and h caldesmon strongly positive in tumor cells, supporting smooth muscle differentiation.
Postdiagnostic course	Postoperative assessment documented no distant metastasis in the available record; the patient was referred for multidisciplinary oncologic management.

At surgery, the uterus was enlarged but grossly regular, without visible serosal disruption or gross extrauterine extension. Gross examination disclosed a firm, well defined, tan white whorled intramural lesion. Figure 1 shows the intact uterine specimen and Figure 2 shows the cut surface of the lesion. The photographed 5 × 3 × 1 cm tissue portion represents the documented gross cut section shown in the image and is not used here as the maximal tumor diameter for staging; the maximal preoperative radiologic dimension was 7.0 cm^{12,13}.

Microscopic examination showed intersecting fascicles of malignant smooth muscle cells with diffuse moderate to severe cytologic atypia, conspicuous mitotic activity exceeding 10 mitoses per 10 high power fields, and coagulative tumor cell necrosis. Figure 3 demonstrates the fascicular architecture, while Figure 4 highlights cytologic atypia and mitotic activity. These morphologic findings, rather than gross appearance alone, established the diagnosis of uterine leiomyosarcoma^{8,9}.

Immunohistochemistry showed strong cytoplasmic positivity for desmin and h caldesmon in tumor cells, as illustrated in Figures 5 and 6. These stains support smooth muscle differentiation but do not independently

establish malignant behavior^{10,14}. No patient specific results for p16, p53, or Ki 67 were available in the submitted case material; consequently, no diagnostic cutoff or algorithm based on those markers is attributed to this patient¹¹

The gross, histologic, and immunohistochemical findings are displayed in Figures 1 through 6. The previously proposed three marker immunohistochemical decision algorithm was removed because a single case cannot validate a diagnostic pathway and because p16, p53, and Ki 67 were not documented as performed in this patient^{2,11}.

The key diagnostic discordance was a clinically and grossly benign appearing intramural uterine mass followed by microscopic findings diagnostic of leiomyosarcoma. Strong desmin and h caldesmon expression supported smooth muscle differentiation, whereas the malignant classification rested on the integrated histologic features. Postoperative assessment documented no distant metastasis in the available record, and the patient was referred for oncologic evaluation. A formal FIGO stage is not retrospectively assigned in this report because the complete staging dataset and definitive

maximal pathologic tumor dimension were not available^{2,12}.

Discussion

This case demonstrates the central diagnostic problem in uterine leiomyosarcoma: clinical presentation, imaging, and gross morphology may overlap with leiomyoma, and unsuspected malignant disease may only become evident after histopathologic evaluation^{3,4,5}. The term occult is used here strictly to mean unsuspected before definitive histopathology, rather than to imply a distinct biologic subtype⁴.

The preoperative computed tomography appearance in this patient was well circumscribed and did not show described extrauterine extension. Such findings do not reliably exclude leiomyosarcoma. Magnetic resonance imaging may improve discrimination in selected patients, but systematic review data still support interpretation of imaging as probabilistic rather than definitive^{6,7}. Accordingly, growth pattern, homogeneity, and circumscription should be treated as overlapping features rather than simple benign versus malignant rules^{5,6}.

The microscopic diagnosis in this case is supported by the classic triad of diffuse moderate to severe atypia, substantial mitotic activity, and coagulative tumor cell necrosis^{8,15}. Careful distinction between coagulative tumor cell necrosis and ischemic or infarct type degeneration is essential because this distinction directly affects smooth muscle tumor classification^{8,15}. Borderline lesions and smooth muscle tumors of uncertain malignant potential require integrated review of morphology and sampling rather than reliance on one threshold in isolation^{9,16}.

In this patient, desmin and h caldesmon were strongly positive, supporting smooth muscle lineage. Published series show that these markers are useful for identifying smooth muscle differentiation, although sensitivity and

staining intensity may vary across tumor differentiation and histologic context^{10,14}. p16, p53, and Ki 67 can be useful adjuncts in selected differential diagnoses, but published data demonstrate overlap among leiomyosarcoma, atypical leiomyoma, and smooth muscle tumors of uncertain malignant potential. They should not be used as a universal stand alone decision rule^{11,17}.

Molecular studies further demonstrate that uterine leiomyosarcoma is genetically heterogeneous, with recurrent alterations involving TP53, ATRX, and other pathways^{18,19}. These data explain why immunophenotypic patterns should be interpreted in clinicopathologic context and why a p53 staining pattern is not synonymous with a molecularly confirmed TP53 mutation¹⁸.

The postdiagnostic transition from gynecologic surgery to multidisciplinary oncologic assessment is clinically important because management depends on complete surgical and staging information, including tumor size, uterine confinement, specimen integrity, and extrauterine disease^{2,12,20}. Current international guidance emphasizes complete resection without fragmentation when malignancy is suspected and multidisciplinary decision making for subsequent management². In the present report, the available postoperative record documented no distant metastasis and referral for oncology management, but a formal stage is not inferred from incomplete source data^{12,20}.

Local oncology literature also illustrates the value of integrating morphology, clinical context, and biomarker interpretation rather than treating a single marker as definitive. Studies have applied clinicopathologic correlation to endometrial neoplasia, demonstrated context dependent interpretation of p53 immunostaining in astrocytoma, and emphasized morphologic prognostic assessment in phyllodes tumors^{21,22,23}. These

reports concern different tumor types and therefore do not validate uterine leiomyosarcoma thresholds, but they support the broader diagnostic principle of contextual interpretation^{21,22,23}.

The main strength of this case is the direct demonstration of discordance between gross appearance and malignant microscopy, supported by smooth muscle immunophenotyping. Its educational value lies in showing why routine representative sampling and careful microscopic assessment remain necessary even when the specimen appears whorled and non necrotic on gross examination^{8,10}. Future case reporting should prospectively document the maximal pathologic tumor dimension, number of tumor blocks sampled, calibrated mitotic area, specimen integrity, formal stage, postoperative treatment, and longitudinal disease status to improve reproducibility and clinical interpretation^{2,8}.

Conclusion

An apparently benign uterine mass can conceal leiomyosarcoma. In this case, definitive diagnosis depended on diffuse cytologic atypia, coagulative tumor cell necrosis, and high mitotic activity, while desmin and h caldesmon supported smooth muscle differentiation. Imaging and gross appearance were not sufficient to exclude malignancy. The practical diagnostic lesson is to maintain representative histologic sampling, interpret immunohistochemistry as an adjunct to morphology, and communicate unexpected malignant findings promptly for complete oncologic staging and management^{2,8,10}.

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Conflict of Interest Statement

The author(s) declare no commercial, financial, or personal conflicts of interest related to this research. All authors approved the final manuscript and consented to its publication in *Healthy Tadulako Journal*.

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