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Uterine Sarcomas and Fibroids: At the Heart of a Complex and Challenging Diagnostic Dilemma – Two Case Reports

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ABSTRACT

Uterine fibroids are common benign smooth muscle tumors, whereas uterine sarcomas are rare but aggressive malignant mesenchymal neoplasms, and distinguishing between them remains a diagnostic challenge because of overlapping clinical presentations and imaging characteristics. We describe two cases illustrating this difficulty. The first case involved a seventy-five-year-old postmenopausal woman presenting with chronic pelvic pain; magnetic resonance imaging showed features concerning for a malignant uterine mass, yet histopathological examination confirmed benign fibroids. The second case involved a sixty-eight-year-old woman with mild metrorrhagia and a cervical mass; imaging findings were suspicious for malignancy, and biopsy revealed granulocytic sarcoma. These cases demonstrate that symptoms such as pelvic pain, abnormal uterine bleeding, and mass effect may be encountered in both benign and malignant uterine tumors, complicating the initial diagnostic approach. Magnetic resonance imaging, particularly when including diffusion-weighted sequences, can improve the assessment of tumor characteristics, but radiologic evaluation alone remains insufficient for confident discrimination between fibroids and uterine sarcomas. Definitive diagnosis continues to rely on histopathological analysis, which guides appropriate therapeutic decisions. While fibroids may be managed conservatively or surgically depending on symptoms, uterine sarcomas require prompt radical management, often including total hysterectomy with consideration of adjuvant therapy. These cases highlight the importance of clinical vigilance and the need for careful interpretation of imaging findings when evaluating uterine masses, particularly in postmenopausal women, in whom the risk of malignancy is higher. Early and accurate diagnosis is essential to ensure optimal patient outcomes.

KEYWORDS

uterine sarcoma, granulocytic sarcoma, uterine fibroid, leiomyoma, pelvic pain, magnetic resonance imaging, case report

MAIN ARTICLE

INTRODUCTION

Uterine fibroid is a common benign tumor found in 20-40% of women of reproductive age and 70-80% of women in perimenopause. It is asymptomatic in 50-80% of cases but may present with pelvic pain and/or mild metrorrhagia, and occasionally with uterine rupture [1,2].

In contrast, uterine sarcoma is a rare malignant tumor, representing 3-7% of malignant uterine tumors, mostly found in postmenopausal older women. It usually presents with pelvic pain and/or moderate metrorrhagia but can also be asymptomatic. Histopathological profile is particularly rich [3].

Imaging, especially MRI, is useful to describe and differentiate benign fibroids from uterine sarcomas [4]. Due to overlapping features, histopathology is essential for diagnosis.

Treatment of uterine sarcoma is primarily surgical, often with adjuvant radiotherapy; chemotherapy is reserved for metastatic disease. Fibroid treatment is less invasive. Prognostic factors include tumor stage, grade, and patient age. Local recurrence is estimated at 50-70% with metastatic progression up to 70%, usually pulmonary, giving sarcomas a poor prognosis.

We report two cases, one of a 75-year-old patient with chronic pelvic pain without metrorrhagia and one of a 68-year-old patient with mild metrorrhagia.

PATIENTS AND OBSERVATION

Case 1 :

A 75-year-old woman, postmenopausal for 20 years, with no history of oral contraceptive use. Her past medical history included type 2 diabetes mellitus managed with oral hypoglycemic agents and hypertension under treatment. She had no relevant family history of malignancy and was independent in daily activities. The patient reported a one-year history of pelvic pain and low-grade fever, without metrorrhagia. On examination, the cervix appeared healthy with no bleeding or leukorrhea, and the uterus was of normal size.

Diagnostic Assessment

- Ultrasound: Multiple well-defined uterine nodules compatible with fibroids.
- MRI: Anterior corporeal lesion suspicious for sarcoma (Figures 2-4); additional typical fibroids identified (Figure 1).

Case 2 :

A 68-year-old woman with a history of hypertension and type 2 diabetes mellitus, both medically managed. No relevant family history of malignancy. She presented with mild metrorrhagia persisting for one year, without pelvic pain or general health deterioration. Vaginal examination revealed a hard, irregular, friable cervical mass that bled upon contact.

Diagnostic Assessment

- MRI: Well-circumscribed cervical mass with high suspicion for malignancy (figures 5-7).
- Biopsy: Histopathology confirmed granulocytic sarcoma of the cervix.

DISCUSSION

Uterine fibroid is the most common benign uterine tumor, found in 20–40% of women of reproductive age and 70–80% of perimenopausal women [2,3,4].
Uterine sarcoma, on the other hand, is a rare malignant tumor with a rising incidence, most commonly observed in older women. However, it may occur in females from puberty to postmenopause, with a typical onset between 50 and 65 years of age, and extremes ranging from 15 to 85 years [1,2,3]. It arises from the smooth muscle or endometrial stroma of the uterine corpus [1].

The most frequently encountered histologic types are **leiomyosarcoma** (in younger patients) and **carcinosarcoma** (in older patients), although the latter has been reclassified as a metaplastic variant of endometrial carcinoma [1,4,5]. Three major histologic types of uterine sarcoma are described in order of frequency: leiomyosarcomas (≈70%), endometrial stromal sarcomas (also known as chorionic or cytogenic sarcomas), and mixed Müllerian sarcomas (homologous or heterologous types) [1,2,3,4]. The WHO classification also identifies a fourth type: **unclassifiable sarcomas**, which are typically of high-grade malignancy [1].

High-grade uterine sarcomas are associated with certain **predisposing factors**, such as prior pelvic irradiation and the use of **Tamoxifen** in breast cancer treatment [1,4,9]. Hormonal stimuli—including oral contraceptives, pregnancy, and ovarian tumors—may accelerate mesenchymal differentiation into sarcomatous tissue [6].

Uterine fibroids and sarcomas share very similar **clinical characteristics** [2,7].
The clinical presentation of fibroids usually includes **pelvic pain, subfertility, menometrorrhagia, dyspareunia, dysuria, or urinary incontinence**, though they remain asymptomatic in 50–80% of cases [2,6].
Similarly, the symptoms of uterine sarcoma are nonspecific and often mimic those of fibroids, typically presenting with **menometrorrhagia (45–86% of cases)** and **pelvic pain (20–50% of cases)**, as observed in our patient [1,2,3,4,8]. In some cases, uterine sarcomas may manifest through **serious complications** such as uterine rupture or hypovolemic shock [7,8].

Imaging plays a crucial role in distinguishing uterine fibroids from sarcomas due to the significant differences in prognosis and management between these two entities [2,6]. It enables accurate diagnosis, tumor staging, and assessment of therapeutic efficacy [2].

Pelvic ultrasound, performed via suprapubic or transvaginal routes, remains the **first-line imaging modality** for diagnosing and monitoring myometrial uterine pathology, although it has limitations [7].
On ultrasound, a typical non-degenerated fibroid appears as a **well-circumscribed, hypoechoic mass**, often containing calcifications. Degenerated fibroids and sarcomas may share morphological similarities, including **heterogeneous appearance, central necrosis, and increased vascularity** on color Doppler imaging, though fibroids generally exhibit higher resistance indices [2,7]. However, when an atypical fibroid is detected, further imaging is warranted to rule out sarcoma [1]. Ultrasound may also help identify **distant metastases**, particularly in the **liver and peritoneum**, sometimes associated with ascites [6].

CT scan has limited specificity for distinguishing between sarcoma and necrobiotic fibroid [1]. Nevertheless, it is useful for detecting **calcifications**, evaluating **complications** (such as torsion of subserosal fibroids), establishing **pre-therapeutic staging**, and detecting **distant metastases** (lungs, liver, bones, peritoneum), as well as for **post-treatment follow-up** [2,6,7].

MRI is the **imaging modality of choice** for differentiating **leiomyoma** from **leiomyosarcoma** and is particularly helpful in evaluating atypical uterine masses or assessing local tumor spread [1,6,7].

On MRI, a **typical uterine fibroid** appears as a **single or multiple, well-defined mass**, ranging from 10 mm to 20 cm in size, with **low signal intensity on T1- and T2-weighted sequences**, primarily due to their high smooth muscle content [2,6,7].
High T1 signal areas may correspond to **fatty degeneration or hemorrhage** [2,6], making **fat-suppressed T1** and **subtraction sequences** valuable for differentiating hemorrhage from enhancement.
On **diffusion-weighted imaging (DWI)**, fibroids typically exhibit **high ADC values**, though cystic or myxoid degeneration can lower ADC below that of sarcomas [8].
Enhancement patterns vary: **hypercellular fibroids** enhance **early, intensely, and heterogeneously**, while **degenerated fibroids** enhance **mildly and heterogeneously** [2,6,7].
The endometrium remains intact [6].

Atypical fibroids show specific MRI features such as **edematous areas** or **degenerative changes**, often seen in fibroids larger than 5 cm [6].
Degeneration types include:

- **Hyaline:** intermediate T1, low T2, minimal enhancement
- **Cystic:** low T1, high T2
- **Myxoid:** low T1, high T2, moderate enhancement
- **Hemorrhagic:** high T1, low T2, no enhancement [6].

In contrast, **uterine sarcomas** are typically **poorly defined, heterogeneous masses** of variable size (table 1).
On T1-weighted images, the signal may be low or intermediate (similar to fibroids), but **foci of high T1 signal** indicate **hemorrhage or necrosis** [2,6,7].
On T2-weighted sequences, they may show **high or intermediate signal intensity**.
On DWI, sarcomas generally have **lower ADC values** than degenerated fibroids, with a **threshold around 1.7** [7,8].
After gadolinium injection, sarcomas show **early, heterogeneous enhancement**, often **iso- or hyperintense** compared to the myometrium, with **non-enhancing central necrotic**

areas—a hallmark of malignancy [2,6].
The endometrium may appear **thickened or directly invaded** by the tumor [6].

The diagnosis of uterine sarcoma is difficult and should be suspected in cases of rapid uterine enlargement or rapid recurrence of a fibroid [1,3,6].

It is essential to differentiate fibroids from uterine sarcomas before defining an appropriate management plan [2].
Fibroids may be treated conservatively, including medical therapy, conservative surgery (hysteroscopic myomectomy), or uterine artery embolization [2,6].

In contrast, for uterine sarcomas, adjuvant chemotherapy is generally not indicated, while radiotherapy may be used selectively when complete resection cannot be achieved or in locally advanced pelvic tumors [3].
The standard surgical procedure is total hysterectomy with bilateral salpingo-oophorectomy if the tumor is confined to the uterus [1,3,4,5,7].
In carcinosarcomas, the presence of extra-uterine spread, particularly lymph node and peritoneal involvement, warrants omentectomy and pelvic lymphadenectomy [1,3]. Surgery may also be considered for rectal, bladder, peritoneal, or distant metastatic involvement.
Chemotherapy is recommended in specific circumstances—particularly in younger patients, high-grade tumors (FIGO III), or advanced stages—without delaying radiotherapy [1,4].

Today, the prognosis of uterine sarcomas remains poor, even when confined to the uterus, with a five-year survival rate estimated between 6% and 42% after surgery [2,3,4].
Histologic subtypes with the worst prognostic outcomes include carcinosarcomas, followed by leiomyosarcomas, then endometrial stromal sarcomas [1,2].
Tumors larger than 10 cm generally carry a worse prognosis [2,4].
The recurrence rate, estimated between 50% and 70%, also remains high.

CONCLUSION

Uterine sarcoma is a rare malignant tumor, with an incidence that has been increasing over recent years. Its clinical presentation is varied and largely nonspecific, sharing common features with benign tumors such as fibroids. Imaging, particularly magnetic resonance

imaging (MRI) and especially diffusion-weighted sequences, plays an increasingly important role in differentiating sarcomas from uterine fibroids, although there is still no clear consensus regarding the diagnostic accuracy of MRI alone for this distinction.

Given the very poor prognosis of uterine sarcomas, an accurate diagnosis is essential to avoid delaying appropriate therapeutic management and to improve patient outcomes. Histopathological analysis remains crucial to confirm the diagnosis with certainty and to determine the most suitable treatment approach.

Surgical treatment with total hysterectomy and clear margins represents the gold standard, often combined with adjuvant radiotherapy to reduce the risk of recurrence, while chemotherapy is particularly indicated for cases presenting with metastases at diagnosis [1,3]. However, due to the wide histopathological diversity of uterine sarcomas, a personalized, multidisciplinary therapeutic approach for each case is preferable. Other treatment modalities—such as vaginal vault brachytherapy, targeted therapy, and hormone therapy—are also being explored.

FIGURES:

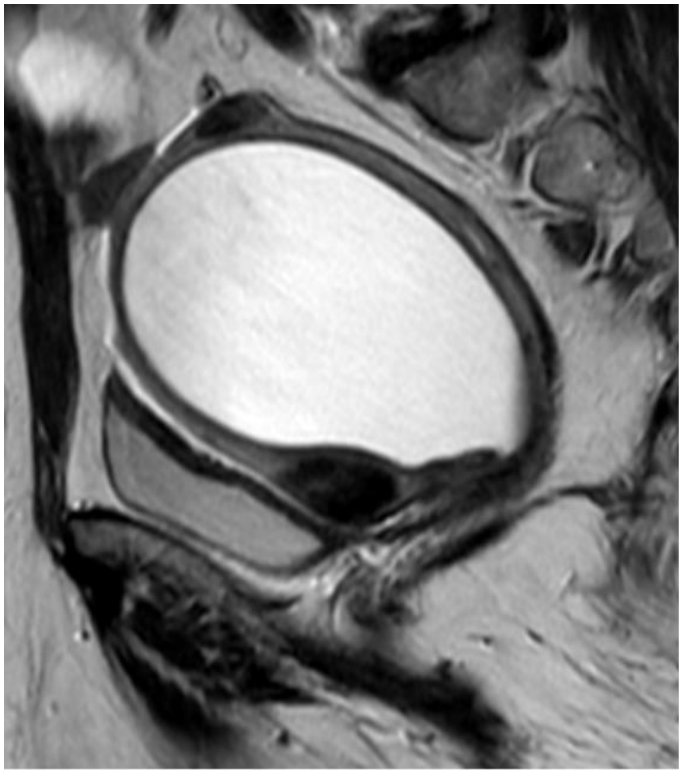

Figure 1: *Sagittal T2-weighted MRI demonstrating a uterus with multiple low–T2-signal lesions and hematometra (Case 1).*

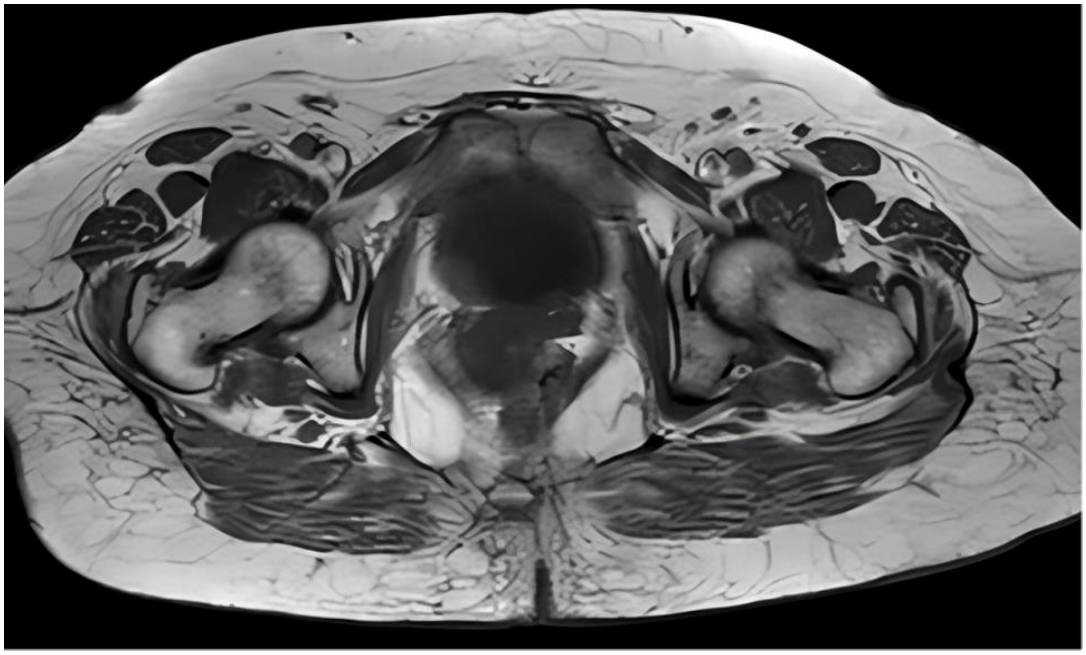

Figure 2: *Axial T2-weighted MRI sequence showing a well-defined uterine mass with regular contours and homogeneous low T2 signal intensity (Case 1).*

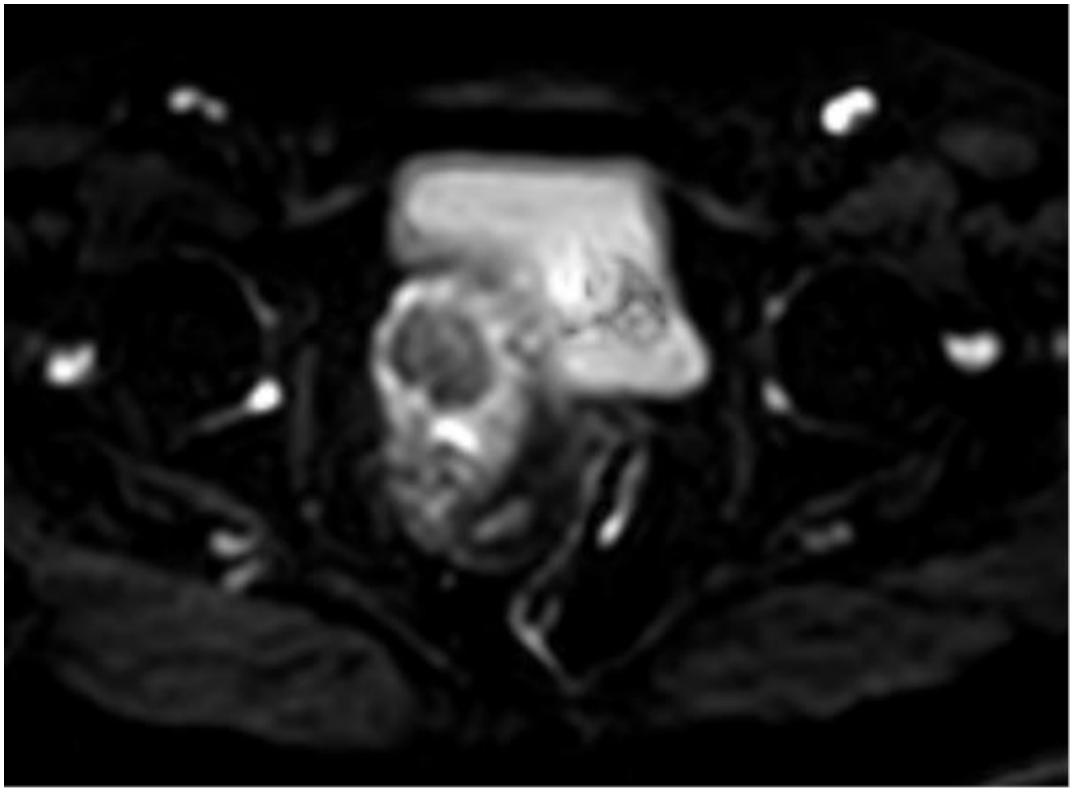

Figure 3: *Axial diffusion-weighted MRI sequence demonstrating slight diffusion hyperintensity (Case 1).*

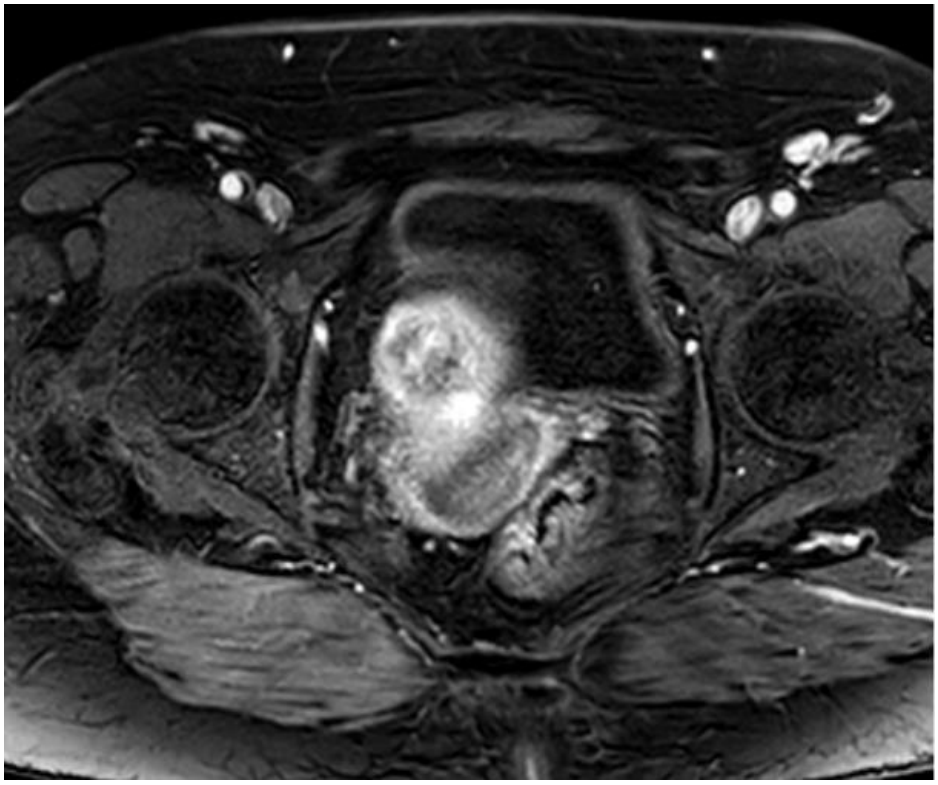

Figure 4: *Axial contrast-enhanced MRI sequence showing heterogeneous enhancement of the lesion (Case 1).*

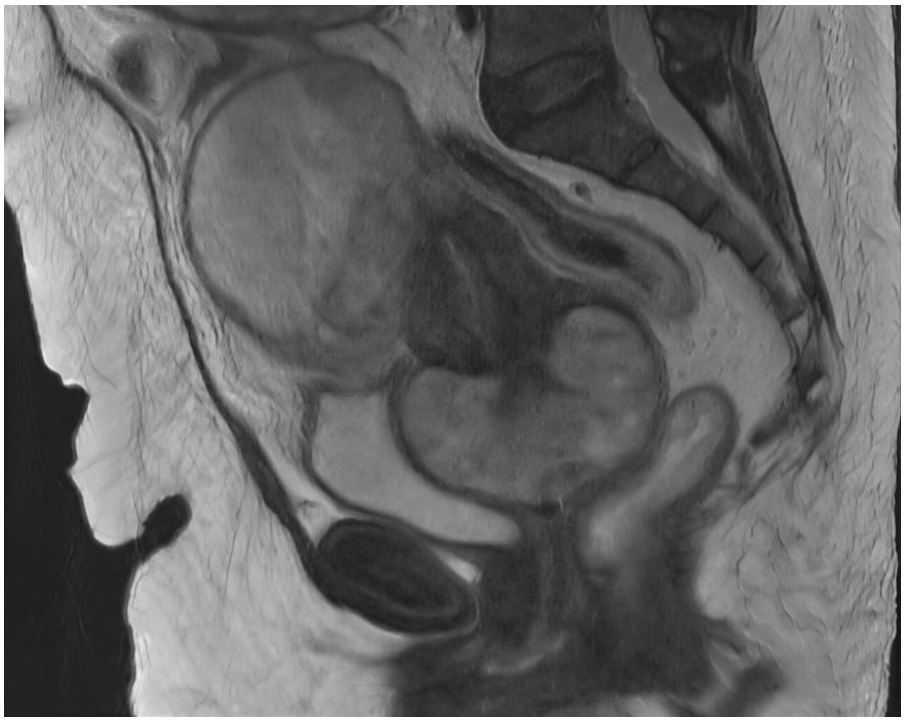

Figure 5 : *Sagittal T2-weighted MRI demonstrating a cervical mass with heterogeneous signal intensity, along with a large fundal uterine mass (Case 2).*

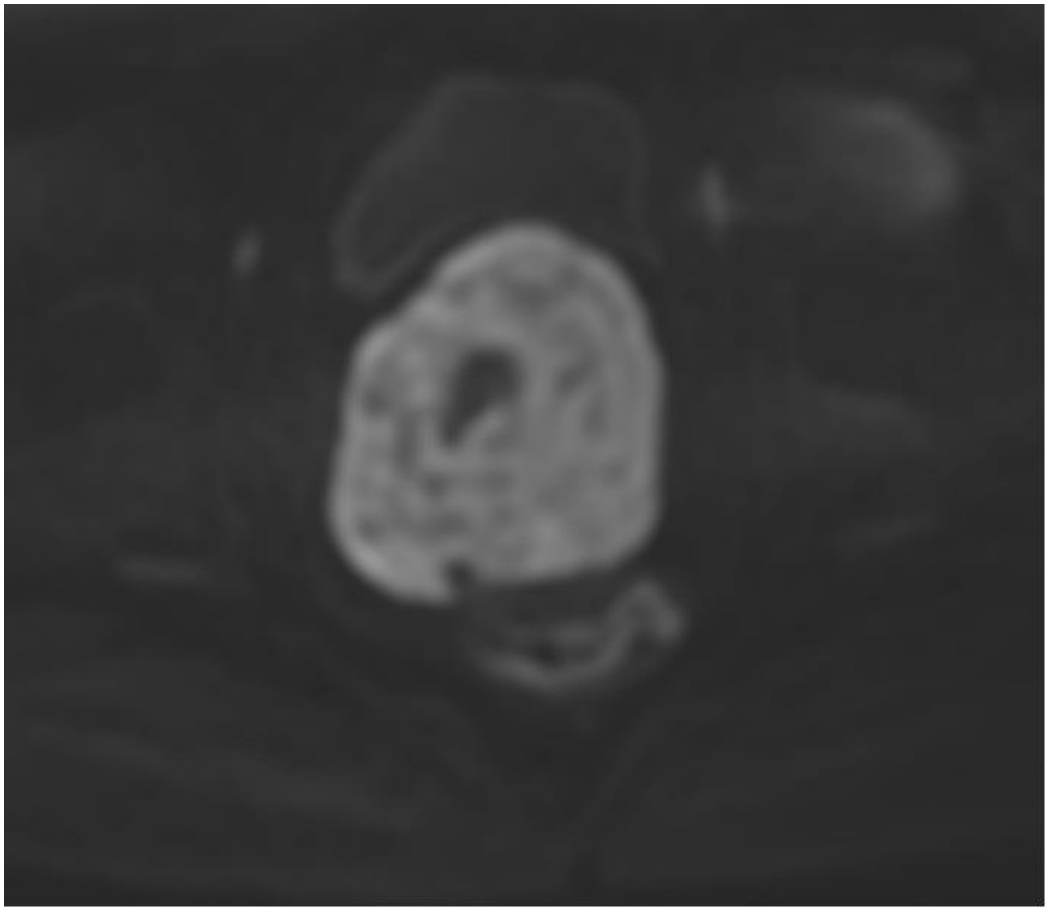

Figure 6 : *Axial diffusion-weighted sequence demonstrating pronounced diffusion hyperintensity (Case 2).*

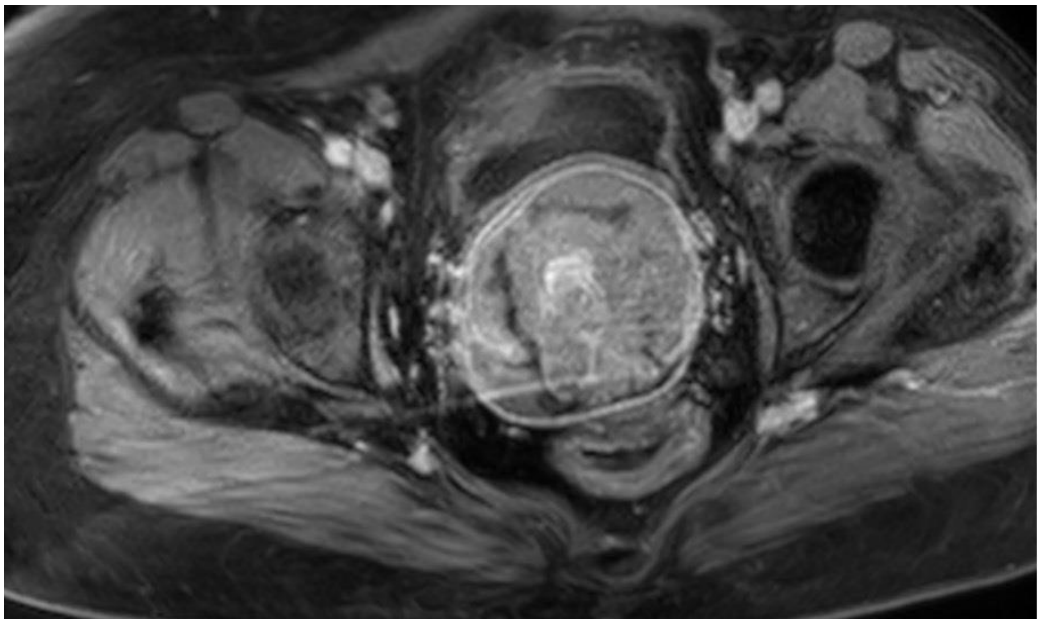

Figure 7 : *Axial contrast-enhanced MRI sequence demonstrating a cervical mass with heterogeneous enhancement (Case 2).*

TABLES :

Table 1 : *Comparison between Uterine Fibroids and Uterine Sarcomas.*

Feature	*Uterine Fibroid (Leiomyoma)*	*Uterine Sarcoma*
Definition	*Benign smooth muscle tumor of the uterus*	*Malignant mesenchymal tumor of the uterus (smooth muscle or stromal origin)*
Epidemiology	*Common (20–40% reproductive-age women; up to 80% perimenopausal)*	*Rare (≈3–7% of uterine malignancies); more frequent in postmenopausal women*
Risk Factors	*Family history, estrogen/progesterone exposure, obesity, multiparity, oral contraceptives*	*Pelvic irradiation, Tamoxifen, hormonal therapy, Li-Fraumeni syndrome*
Clinical Presentation	*Asymptomatic or abnormal bleeding, pelvic pain, infertility*	*Abnormal bleeding, pelvic pain, rapid growth, weight loss, uterine rupture*
Ultrasound	*Well-defined, homogeneous, hypoechoic mass; may calcify*	*Heterogeneous, irregular, necrotic areas, infiltrative*
MRI	*T2 hypointense, well-circumscribed, high ADC*	*T2 hyperintense, heterogeneous, low ADC, necrosis, invasion*
Histology	*Uniform spindle cells, minimal atypia*	*Marked atypia, high mitotic index, necrosis*
Treatment	*Medication, myomectomy, or hysterectomy*	*Total hysterectomy ± adjuvant therapy*
Prognosis	*Excellent; very low recurrence*	*Poor; high recurrence and metastasis*

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