

# Parasitic Leiomyoma of the Greater Omentum

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## Abstract

Parasitic leiomyoma is an uncommon manifestation characterized by ectopic implantation in the abdominal cavity. It is most commonly thought to arise as a rare complication caused by residual fibroid fragments following surgical removal. Parasitic leiomyomas may closely mimic malignant conditions. Magnetic resonance imaging remains the best tool for differential diagnosis. We report the case of a 40-year-old nulliparous woman who presented with a history of constipation and dyspareunia. Magnetic resonance imaging revealed an enlarged heterogeneous mass that seemed unconnected with the uterus and ovaries and was then excised by laparotomy and the final histologic examination revealed parasitic leiomyoma.

## Keywords

Parasitic Leiomyoma, Omentum, Magnetic Resonance Imaging, Diagnosis, Histopathology

## 1. Introduction

Uterine leiomyomas, the most common benign pelvic neoplasms, are noncancerous monoclonal tumors that consist of smooth muscle and connective tissue. Uterine fibroids are reported to occur in about 70% of females and become more common with increasing age. Black women have a two- to three-fold higher risk than white women [1]. Although most cases are asymptomatic, common symptoms of leiomyomas include infertility, pelvic pain and/or pressure, and abnormal uterine bleed-

ing. Uterine leiomyomas are generally classified as subserous, intramural, or submucous, depending on their location in the uterus. However, the International Federation of Gynecology and Obstetrics categorizes leiomyomas as submucosal, hybrid (both submucosal and subserosal), or “other”. A parasitic leiomyoma falls under “other” and is also referred to as type I leiomyoma [2] [3].

Parasitic leiomyoma, first described by Paul E. Steiner in 1939, is an uncommon manifestation characterized by ectopic implantation in sites such as the omentum, mesentery, peritoneum, and organs of the abdominal cavity, as well as autonomous growth of smooth-muscle tissue with an independent blood supply [4] [5]. The pathogenesis is unknown so far. However, according to the present literature, it is thought to be a rare complication caused by residual fibroid fragments left after they are surgically removed [5]. Parasitic leiomyomas may closely mimic malignant conditions such as peritoneal carcinomatosis and can cause diagnostic challenges [6]. The actual clinical prevalence of parasitic leiomyomas is not known but is presumed to be higher than official rates due to the limitations of case reports. The present report describes a rare case of parasitic leiomyoma in the greater omentum, which was diagnosed in a nulliparous woman with no previous surgery who complained of constipation and dyspareunia.

## 2. Case Report

- **General presentation**

A 40-year-old nulliparous woman presented with a history of constipation and dyspareunia for the past two years. Upon further inquiry, she reported no other complaints and no significant medical or surgical history.

- **Clinical and laboratory findings**

The patient was overall healthy. Her pulse rate was a normal 86 beats/min, and her blood pressure was 110/70mmHg. The rest of her hemodynamic parameters were within the normal range. Abdominal examination revealed no pain, guarding, or rebound in any region. In a pelvic examination, the vulva, vagina, and cervix appeared normal. However, the uterus exhibited an increased size and irregular shape in the antevert position; there was no abnormality in the bilateral adnexa. No nodularity was found in the Douglas pouch, and the cervix was mobile, with no pain. Based on the above clinical history and physical examination, we reached a differential diagnosis of myoma uteri and endometriosis due to the symptoms, including particularly dyspareunia but excluded them by using further imaging methods, including MRI. Initial tests revealed a normal complete blood cell count. Renal and liver function tests were normal. Serum levels of CA-125 and CA-19-9 were in the normal range.

- **Imaging**

Transabdominal and gynecologic transvaginal ultrasound (TVUSG) revealed the following:

- 1) Multiple weakly echogenic nodules with a maximum diameter of 2 cm in the parenchyma of the uterus, indicating a possible myoma;

2) A heterogenous soft tissue mass with a diameter of  $6 \times 6 \times 5$  cm in the abdominal cavity above the uterus, indicating a possible subserous myoma;

3) No abnormal imaging in the bilateral adnexa or Douglas pouch.

Pelvic enhancement magnetic resonance imaging (MRI) revealed an enlarged heterogeneous mass that seemed unconnected with the uterus and ovaries and exhibited a low signal intensity similar to that of smooth muscle in T2-weighted images (**Figure 1, Figure 2**). The size and close location of the mass to the bowels and the probable pressure effect were thought to cause the constipation and dyspareunia.



**Figure 1.** Sagittal T2-weighted magnetic resonance imaging of the parasitic leiomyoma.



**Figure 2.** Axial T2-weighted magnetic resonance imaging of the parasitic leiomyoma.

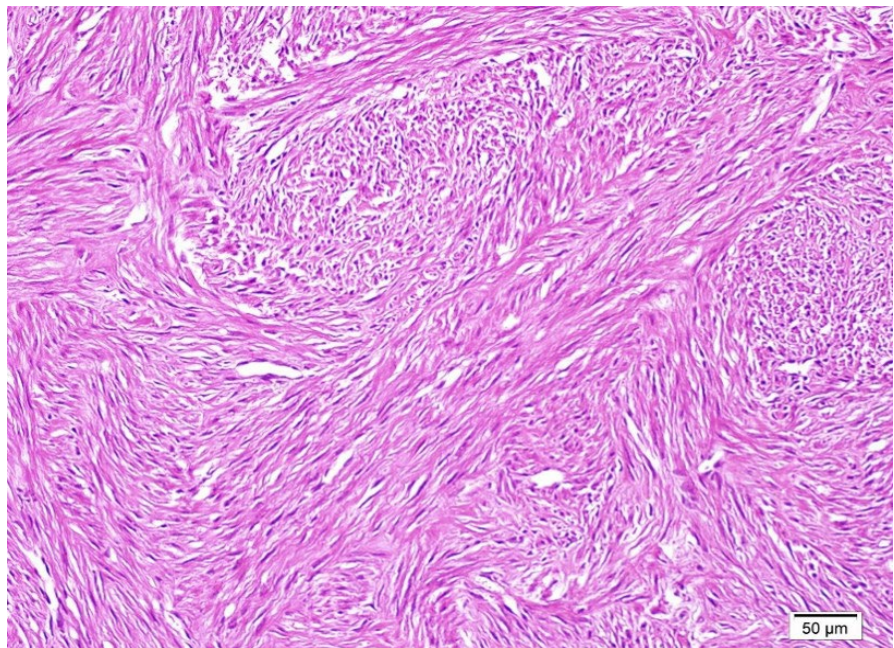
### • Management and surgical findings

The patient was admitted to the hospital for surgery. Routine basic investigations, including complete blood counts, renal function tests, chest X-ray, and electrocardiogram, were performed and deemed normal. On the second day of admission, the patient was informed regarding both laparotomic and laparoscopic approaches in terms of all features, including complications, and she had desire

for laparotomy. Therefore, the patient underwent laparotomy under general anesthesia. A mass adherent to the greater omentum was found, with no connection to the uterus. Adhesiolysis was performed, and the mass was excised and sent for intraoperative pathological investigation. Three nodular masses consistent with leiomyoma in the posterior wall of the uterus were also excised. The frozen section revealed no atypical cells or mitosis. The investigators reported that the mass was benign and that disseminated peritoneal leiomyomatosis should be evaluated via differential diagnosis. Following surgery, the patient was transferred to the ward. The peri- and post-operative periods were uneventful. On the second post-operative day, the patient was discharged.

- **Histological findings**

A final pathologic examination revealed a benign parasitic leiomyoma with no significant mitosis or nuclear atypia (**Figure 3**). No further immunohistochemical studies were performed or required.



**Figure 3.** Histopathological examination of the parasitic leiomyoma.

### 3. Discussion

Parasitic leiomyomas are benign smooth-muscle tumors with an independent blood supply. They develop at an ectopic site separated from the uterus, such as the abdominal wall or the gastrointestinal system. As Kelly and Cullen first discovered, pedunculated subserosal leiomyomas may become parasitic due to events such as torsion and then separation from the uterus, forming a new blood supply. The omentum plays a major role in this transformation by rapidly increasing the number and size of blood vessels, while the bladder, intestines, fallopian tubes, abdominal wall, broad ligament, or mesenteric vessels can also provide the fibroid with its main blood supply [7].

Parasitic leiomyoma can also represent an iatrogenic complication of laparoscopic myomectomy, with an incidence of 0.12% - 1.2%; in such situations, small leiomyoma tissue fragments are detached during morcellation and adhere to surrounding tissues, giving rise to what is called “iatrogenic seeding” [8] [9]. To prevent this complication, various operative techniques have been developed, such as transvaginal retrieval after laparoscopic myomectomy and in-bag manual morcellation. In the latter operation, the excised myoma is placed in a specimen retrieval bag and manually morcellated with a knife or scissors via small abdominal wall incisions [10] [11].

In the present case, the parasitic myoma was attached to the greater omentum, which seemed to be the blood supply. However, the patient had no previous morcellation surgery that could have caused iatrogenic seeding.

Studies have shown that the effects of sex hormones lead to fluctuations in leiomyoma formation, including parasitic leiomyomas, during women’s reproductive years. It has been reported that estrogen can stimulate subcutaneous mesenchymal cells to proliferate and differentiate into myoblasts, fibroblasts, and even decidual cells. Subsequently, progesterone is activated and may promote cell proliferation, blood vessel formation, and the maintenance of a blood supply to leiomyomas [12] [13]. This case reports a 40-year-old woman who was in her active reproductive period and may have been affected by sex hormone fluctuations.

The symptoms of parasitic myomas depend on where they are located. Although abdominal pain and pelvic pressure are the most common complaints, patients can present with constipation, ureteral hydronephrosis, frequent micturition, incomplete intestinal obstruction, and even intestinal perforation [9]. In our case, the patient had constipation and dyspareunia, which seemed unrelated to the mass in the upper abdominal cavity and indicative of endometriosis. However, no clinical or pathological findings supported this suspected diagnosis.

Transvaginal ultrasound has a sensitivity of 99% and specificity of 91% in identifying parasitic myoma and leiomyomas; the sensitivity and specificity of MRI for detecting malignancy are 100% and 94%, respectively [14] [15]. In MRI, the lesions typically demonstrate T1-isointensity and T2-hypointensity with heterogeneous postcontrast enhancement. Computed tomography or FDG-PET/CT can be used to diagnose leiomyomas and distinguish parasitic myomas from other intraperitoneal pathologies, such as peritoneal carcinomatosis [16]. We used TVUSG and then MRI to diagnose the abdominal mass before surgery and planned to perform laparotomy and frozen section examination for the resected mass due to the potential for malignancy.

Although no research has reported specific serum markers of PL, mild elevations in CA-125 and CA 19-9 may occur secondary to peritoneal irritation and do not imply malignancy [17]. However, unexpected lesions, such as leiomyosarcomas, are possible. Therefore, awareness and intraoperative caution during morcellation are key to prevention. In this case, the tumor markers were in normal ranges.



Parasitic leiomyomas can be easily misdiagnosed as teratoma, leiomyosarcoma, chocolate cyst, peritoneal carcinomatosis, gastrointestinal stromal tumor, lymph node sarcoidosis, scar endometriosis with peritoneal implants, abdominal wall desmoid tumor, or disseminated peritoneal leiomyomatosis [17]. In the present case, pathological examination revealed that disseminated peritoneal leiomyomatosis should be kept in mind as a differential diagnosis. However, no other mass compatible with the suspected diagnosis was discovered when the peritoneal cavity was carefully detected.

The mainstay of treatment for parasitic leiomyomas is complete surgical resection via laparoscopy or laparotomy [16]. To account for the possibility of iatrogenic seeding, the abdominopelvic cavity should be washed and carefully inspected after the procedure [18]. Following surgery, histopathological evaluation should be performed to confirm a benign origin for the smooth muscle and exclude the possibility of malignancy. In this case, we surgically excised the mass without washing the abdominal cavity and requested a frozen section, which confirmed a benign leiomyoma. Medical therapy, including hormonal suppression, is generally considered adjunctive or suitable for patients unfit for surgery. Conservative management can be initiated depending on the clinical and imaging findings [19].

#### **4. Conclusion**

Parasitic leiomyoma should be suspected in reproductive-age women who are diagnosed with peritoneal or abdominal wall masses and are prepared to undergo laparoscopic myomectomy involving morcellation. MRI is the best diagnostic tool, as it identifies characteristic features that help differentiate this condition from malignant disease.

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#### **Ethics Statement**

Written informed consent was obtained from the patient for the publication of this case report and any accompanying images.

#### **Data Availability Statement**

The data that support the findings of this study are available from the corresponding author upon reasonable request.

#### **Conflicts of Interest**

The authors declare no conflicts of interest regarding the publication of this paper.

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