Case Report

Abdominal Parasitic Fibroids after Laparoscopic Surgery Using a Power Morcellation: A Novel Insight from Vietnam and a Narrative Review of the Literature

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Abstract

Parasitic fibroid is a rare benign pathology that can be negotiated because of its rarity. The etiology remains unknown following prior intervention related to uterine fibroids. The assessment of this rare disease is usually based on clinical features and imaging modalities. In addition, appropriate management should be individualized where appropriate. Herein, we report an uncommon case at our center and raise proper recognition for all gynecologists. Particularly, in low-and middle-income countries such as Vietnam, where the health-care system is insufficient to follow-up the long-term postoperation. A 40-year-old woman (gravida 3, para 2) presented to the gynecologic examination room due the abdominal pain and increased size of abdominal circumference. The patient had undergone laparoscopy involving the power morcellator without a contained-bag system for myomectomy at our hospital 6 years prior. The imaging diagnostic tools showed multiple hypoechoic disseminated masses in the abdominal cavity. The laparotomy intervention and histopathological endpoints confirmed completely the diagnosis of parasitic fibroid. Although an extremely rare occurrence, parasitic fibroids should be informed to all patients after laparoscopic intervention for uterine fibroids. In addition, the diagnosis of parasitic fibroid should be warranted among the patients presenting with abdominal pain after a history of fibroid resection. The power morcellation in the contained bag, uterine extraction in hysterectomy, as well as relieving the surgical specimen of uterine fibroids should be gently performed to minimize fibroid tissue disruption.

Keywords: Laparoscopy, laparotomy, magnetic resonance imaging, parasitic fibroid, ultrasound

Learning points

- Despite rarely occurrence, parasitic fibroid should be informed to patients after a laparoscopic myomectomy
- The contained-bag power morcellation as well as extracting the surgical specimen of uterine fibroid and removal of the uterus in hysterectomy should be gently performed to minimize fibroid tissue dissemination
- The diagnosis of parasitic fibroid should be warranted among the patients presenting with abdominal pain after a history of fibroid resection
- The assessment of this rare pathology should combine the clinical features and imaging modalities
- Ultrasound and magnetic resonance imaging could be reliable in detecting parasitic fibroids
- The appropriate management should be individualized when applicable.

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Introduction

Uterine fibroid is the common benign tumor of the reproductive system and genital tract in women of reproductive age. However, the parasitic fibroid or disseminated peritoneal leiomyomatosis is rarely heard. The data were reported by case reports. Before 2016, 69 cases were summarized.[1] To date, approximately 78 such cases have been reported worldwide.

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The general incidence seems likely to be increasing due to surgical intervention and the surveillance of ultrasound (US).[2]

Parasitic fibroid is a type of fibroid that does not have any direct attachment to the uterus.[2] Some authors considered extrauterine fibroids located in the broad ligament to be parasitic fibroids. However, this definition has not yet been agreed upon. Additionally, parasitic fibroid should also be differentiated from a rarely benign condition of diffuse uterine leiomyomatosis involving inumerable smooth muscle neoplasms of the uterus.

Parasitic fibroids are spontaneously generated after torsion of a pedunculated subserosal fibroid, losing their uterine blood supply, locating beside the uterus, developing toward the neighboring organs, and receiving the blood supply.[3] The most supported theory was the dissemination of fibroid tissue following the procedure of a power morcellator, even in a plastic bag, and the implantation of uterine fragments inside the peritoneal cavity.[4-6] However, the parasitic fibroid has been recently reported following the transabdominal hysterectomy and vaginal surgery without morcellated technique.[2,3,7] Thus, the accurate mechanism of parasitic fibroid remains unclear.

The principal management is surgical intervention. However, the removal uterus or only the removal of fibroid, treatment is still controversial. The nonsurgical conservative approach can be considered an alternative therapeutic option for the parasitic fibroid in highly selected patients with multiple comorbidities.[2]

Due to lacking the practical guidelines, the management is individualized, based on the fertility desire and the clinical conditions. Herein, we report an uncommon case at our center and raise the awareness of clinicians for patients after fibroid resection. Especially, in the low-and middle-income countries, where the followed-up postsurgery is not strictly considered.

Case Report

A 40-year-old female patient was hospitalized to our tertiary referral center due to increased abdominal circumference and intermittent lower abdominal pain. The abdominal mass was detected and progressively increasing during 2 years. Fourteen years ago, the woman delivered the term pregnancy with two vaginal births and one early miscarriage. Her medical record noted fibroid resection through laparoscopy with a power morcellator 6 years ago. The fibroid mass was cut into small pieces and the uterine tissue was extracted from abdominal cavity without a contained-bag. After 4 years, she was diagnosed with recurrent fibroids. She denied to use contraceptive methods and her menstrual period was regular.

At admission, her vital signs were apparently unremarkable. Her body mass index was at 24.14 kg/m^2. No anemia symptom was present. The abdomen was exanimated with no tenderness. The speculum examination revealed the normal cervix without vaginal bleeding. The digital examination showed a large uterus, anterior position, corresponding to 12 weeks of gestation, and bilateral ovaries were normal. A solid mass was palpable close to the umbilical site.

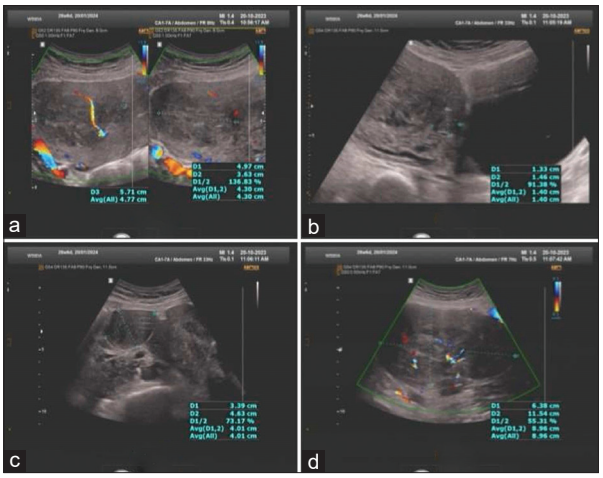

Figure 1: Ultrasound findings show as following. (a) A heteroechoic uterine intramural mass measured at 49 mm × 36 mm × 57 mm in size with the presence of Doppler signal, (b) The other disseminated masses with the same characteristics, variable diameters from 13 mm × 14 mm × 14 mm to 34 mm × 45 mm × 46 mm, (c) In the right pelvic cavity, along with the left iliac artery, some cystic solid mixed masses varied from 20 mm × 40 mm to 40 mm × 50 mm in size, (d) Above the umbilicus, a paraaortic hypoechoic mass measuring 63 mm × 93 mm × 115 mm with proliferative vascular grade 3 was found

The laboratory tests showed a negative pregnancy test and no evidence of infection. The Pap smear test revealed a normal cervix. US found a uterus with anterioposterior diameter of 61 mm, endometrial thickness of 5 mm without malignant features, and multiple fibroids without a compressed endometrium in the uterus. These fibroids were classified as the International Federation of Gynecology and Obstetrics type 3, 4, 6, and 7. Concisely, the largest size was measured at 49 mm × 36 mm × 57 mm and the other masses were measured between 13 mm × 14 mm × 14 mm and 36 mm × 46 mm × 45 mm. The color Doppler US showed mainly peripheral proliferative vessels with grades 2–3. Besides uterine fibroids, the US showed multi-hypoechogenic masses in the abdominal cavity. The right iliac fossa and left iliac artery revealed the masses with the size varied from 20 mm × 40 mm to 40 mm × 50 mm. The upper umbilical site and abdominal aorta were seen with a solid hypoechoic mass about 63 mm × 115 mm × 93 mm in diameter. However, the US result could not exclude the malignant disease-related lymph nodes and parasitic fibroids [Figure 1].

In addition, magnetic resonance imaging (MRI) made a diagnosis of the benign metastasizing fibroid. MRI revealed the multifocal masses located at the uterus, besides the abdominal aorta, posterior side of the cecum, anterior site of the psoas muscle, and before the right common iliac arteries [Figure 2]. Therefore, the patient underwent a laparotomy to remove the uterus, the parasitic fibroids, and bilateral salpingectomy through the transverse incision under general anesthesia. During surgical intervention,

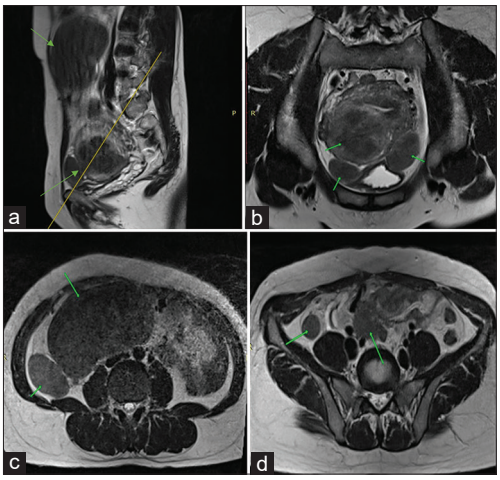

Figure 2: Magnetic resonance imaging shows the multi-focal masses (green arrow) in the abdominal cavity by sagittal plane (a), and in the uterus by transverse plane (b), besides the abdominal aorta and posterior side of the caecum (c), anterior site of psoas muscle and before the right common iliac arteries (d)

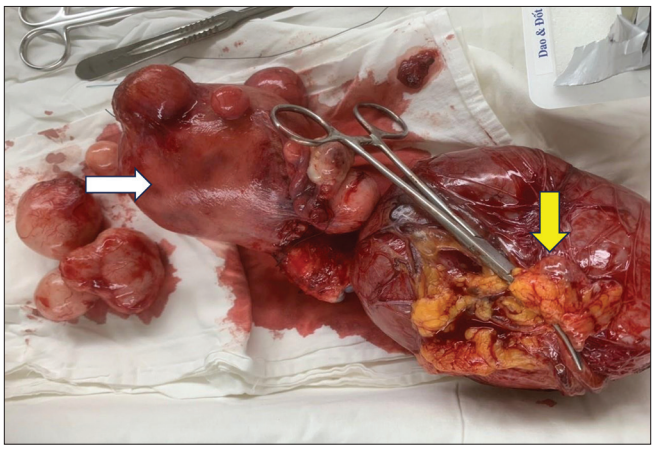

Figure 3: The whole uterus (white arrow) and multiple fibroids were completely removed by laparotomy. The largest fibroid mass was developed by the supply vessels originating from the part of a large omentum (yellow arrow). The macroscopic features of the tumor include color was pinkish-white color, a smooth surface, a regular borderline, and a round-oval shape

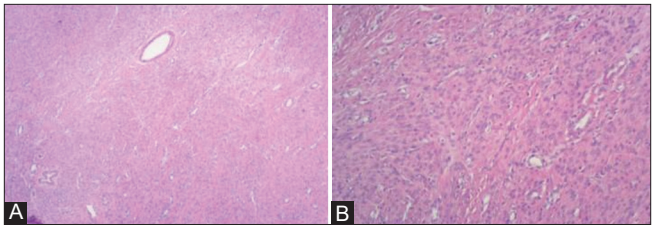

Figure 4: Microscopic examination revealed spindle-shaped tumor cells arranged in a braided pattern, characterized as benign fibroid (hematoxylin and eosin staining, x10 (A) & x 40 (B), respectively)

the surgeon observed multi-fibroid disseminated at the large omentum and adjacent to the abdominal wall about 20–150 mm [Figure 3]. A total hysterectomy with bilateral salpingectomy was performed and bilateral ovaries were left. The estimated blood loss was 100 mL. The other organs in the abdominal cavity were normal. The abdominopelvic cavity was carefully washed with 500 mL of sodium chloride 0.9% and closed. The histopathological result confirmed the benign fibroid [Figure 4]. The patient was discharged on the postoperative day 5 without complications. She continued to be followed up.

Discussion

In the present case, the patient has been diagnosed with recurrent fibroid after 4 years of the first laparoscopic intervention. The mean duration time of onset varies from 1 to 22 years.[2,7] The most rapidly growing parasitic fibroid was reported by Cho *et al*., the mass was measured at 17 cm after 7 months of abdominal myomectomy.[8] Almost all cases present with the onset symptoms similar to the primary fibroids such as lower abdominal pain, dysuria, vaginal bleeding, or menstrual disorders. Severely, acute abdominal pain due to torsion of parasitic fibroid or twisted omental pedicle (omental torsion) has been described.[8,9] In some cases, the patient may be also asymptomatic. Thus, the possibility of a fibroid within broad ligament or solid ovarian tumor should be differentiated before surgery.[7] In addition, in women of reproductive age, pregnancy-related pathologies ought to be excluded first.[10]

Clinically, the mechanism of parasitic fibroid, in this case, is suggested by prior laparoscopic myomectomy involving morcellation techniques. At this stage, uterine fibroids morcellation is a novel technique at our tertiary center. The contained-bag system was not yet applied due to the limited resource settings and lack of a strong evidence relating to parasitic uterine leiomyomas after myomectomy in the literature. This hypothesis of tiny fibroid tissue dissemination and then, processing to extrauterine smooth muscle neoplasms has been typically documented in the literature [Table 1]. The overall incidence after laparoscopic surgery with morcellation was reported to be between 0.12% and 0.95%.[1]

In general, the management is still controversial due to insufficient data. In this case, since the patient had enough children, thus, the second surgery was prioritized with hysterectomy. Because of multiple bulking fibroids, laparotomy was chosen. Regarding the other situations, the treatment should be individualized. Concisely, investigation using exploratory laparoscopy may be considered in case of dilemma diagnosis on imaging modalities.

To reduce to risk of any residual tissue fragments, morcellation should be performed in the bag, the patient should be placed in the reverse Trendelenburg position after morcellation and washing of the abdominopelvic cavity at the end of the surgery.[7,8] In a series of 692 laparoscopic myomectomies, Lagana *et al*. concluded that posterior colpotomy and in-bag transvaginal extraction can be considered a feasible option for retrieval of surgical specimens after laparoscopic myomectomy.[15] However, this study did not mention the

Table 1: The summary cases in the past - 5-year literature

The authors, published years	Gravida, parity (years old)	Medical record symptoms size of tumor	Prior intervention	Current management	Outcome
Wang *et al*. (2023)[7]	G1P1 (46)	Asymptomatic. Mass measuring 129 mm × 104 mm × 76 mm	Transabdominal hysterectomy 1 year prior	Exploratory laparoscopy and tumor resection	Good
Bruno *et al*. (2023)[2]	Multiparous (66)	Hypertension and type II diabetes mellitus. Gastroresection due to gastric cancer. Severe obesity, BMI of 44 kg/m^2	Total laparotomic hysterectomy at 44 years old	Conservative management	Good
Tong and Wu (2022)[3]	41	Lower abdominal pain and feeling of fullness for nearly 1 year	Transabdominal surgery and laparoscopic surgery with a power morcellation. Total abdominal hysterectomy	Exploratory laparotomy with MDT and removal of tumor	Good
Roh *et al*. (2022)[11]	50	Palpable mass on the left quadrant of the abdomen. Mass measuring 26 mm × 20 mm × 12 mm	Laparoscopic myomectomy using a power morcellation 6 years old	Surgical excision of the mass	Good
Hafizi and Pourhoseini (2020)[12]	25	Infertility. Spontaneous abortion. Irregular uterine bleeding, menorrhagia. Mass measuring 95 mm × 80 mm	Cesarean section	Laparotomic tumor resection	Good
Sofoudis *et al*. (2020)[9]	43	LEEP, hysteroscopic resection of endocervical polyp-abortion. Episodes of abdominal pain and constipation. Metrorrhagia	Laparoscopic resection with a morcellation 6 months prior	Laparoscopy	Good
Kai *et al*. (2020)[13]	Primigravida (30)	Menorrhagia and dysmenorrhea. Mass measuring 96 mm	Laparoscopic myomectomy with a power morcellation 7 years prior	Abdominal myomectomy for a port-site, peritoneal recurrence of the intramural fibroids	EBL at 680 mL intraoperatively. Good
Oindi *et al*. (2018)[14]	P3 (47)	Persistent menorrhagia and dysmenorrhea. Mass measuring 72 mm × 51 mm × 34 mm	CS laparoscopic myomectomy with a power morcellation 6 years old	Total abdominal hysterectomy	Good
The present case	G3P2 (40)	Lower abdominal pain. Increased abdominal circumference. Mass measuring 40 mm × 115 mm	Laparoscopic myomectomy involving a power morcellator 6 years prior	Total laparotomic hysterectomy	EBL at 100 mL intraoperatively. Uneventful postoperation

BMI: Body mass index, EBL: Estimated blood loss, MDT: Multidisciplinary team, LEEP: Loop electrosurgical excision procedure, G: Gravida, P: Parity

long-term outcome of parasitic fibroid. Meanwhile, in a retrospective observational study, Takeda *et al*. recognized that dispersion of fibroid cells was present in 20 of 24 cases (83.3%) even when careful in-bag tissue extraction of uterine fibroid.[16] Although the patient was treated with the morcellation technique in the contained bag, the parasitic fibroid could not be prevented. Furthermore, the parasitic fibroid located at the port site also occurs.[13,14] Thus, specimen extraction through the trocar port site or transabdominal wall should be gently carried out, preventing strong force, and controlling the loss of tissue fragments.

On the other hand, the recurrence of parasitic fibroid has not yet reported, but monitoring is strictly required among these patients. The caution of parasitic fibroid as a late complication ought to be recognized when performing laparoscopic myomectomy or hysterectomy involving a power morcellation technique.[11]

In conclusion, although an extremely rare occurrence, parasitic fibroids should be informed to all patients after laparoscopic intervention for uterine fibroids. The power morcellation in the contained bag, uterine extraction in hysterectomy, as well as relieving the surgical specimen of uterine fibroids should be gently performed to minimize fibroid tissue disruption. The diagnosis of parasitic fibroid should be warranted among patients presenting with abdominal pain after a history of fibroid resection. In addition, a feasible assessment should combine clinical features and imaging modalities. Particularly, the appropriate management should be individualized when applicable. More data are needed to clarify this abnormal pathology.

Ethics statement

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and its

amendments. The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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