



Parasitic myoma after laparoscopic surgery: a mini-review

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Abstract

The aim of this review is to summarize the cases of parasitic myomas after laparoscopic surgery. A literature search was performed using the PubMed database for the period of January 1997 to December 2014. We used the following keywords: “laparoscopic hysterectomy,” “laparoscopic myomectomy,” “morcellation,” “parasitic fibroids,” “parasitic myomas,” and “leiomyomatosis.” A total of 29 articles meeting the selection criteria were included in our review, describing 53 patients who underwent surgery for parasitic myomas. Parasitic myoma is a rare condition resulting from the small fibroid fragments left after morcellation and can be either asymptomatic or symptomatic. Although it is rare, patients should be informed about the risk of this condition after laparoscopic surgery. It is important for surgeons to look for small fibroid fragments during and after morcellation and make an effort to remove every piece of tissue. (J Turk Ger Gynecol Assoc 2015; 16: 181-6)

Keywords: Laparoscopic hysterectomy, laparoscopic myomectomy, morcellation, parasitic fibroids, parasitic myomas

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Parasitic myoma is a term used to describe a myoma of extrauterine nourishing. Although uterine myomas are the most common female tumors, parasitic myomas are rare pathologic structures of uncertain etiology. One theory suggests that pedunculated subserosal myomas become separated from the uterus and receive blood supply from other adjacent organs, such as the bowel, peritoneum, omentum, or mesentery (1). Peritoneal metaplasia is another theory that describes the pathogenesis of myomas in unexpected fields of abdomen. The development of multiple nodules on peritoneal surfaces is referred to as leiomyomatosis peritonealis disseminata (LPD), which was first described in 1952 by Wilson et al. (2). Different pathological mechanisms related to hormonal factors, genetic basis, pregnancy, oral contraceptive pills, and prior surgery have been described in the literature. Estrogen exposure can stimulate metaplasia and differentiation of subperitoneal mesenchymal stem cells to smooth muscle cells (3). LPD is usually considered as a premenopausal benign condition; however, malignant transformation and postmenopausal status have also been observed in exceptional cases (4, 5). A recent report showed that currently, there are approximately 200 cases of LPD (6). In the last decade, there have been increasing reports of parasitic myomas after laparoscopic surgery, which have been newly classified as iatrogenic parasitic myomas (7). These myomas are related to the small fibroid fragments left after morcellation that could have detached from the uterus and developed blood supply from adjacent organs. In this paper, we aimed to summarize and discuss the various reports of parasitic myomas after laparoscopic uterine surgery.

This systematic review was conducted in accordance with the PRISMA guidelines. Literature search was performed using the PubMed database for the period of January 1997 to December 2014. We used following keywords: “laparoscopic hysterectomy,” “laparoscopic myomectomy,” “morcellation,” “parasitic fibroids,” “parasitic myomas,” and “leiomyomatosis.” Specifically, reports written in English language and in which patients with parasitic myoma underwent laparoscopic uterine surgery were considered eligible for our review. Articles including patients who underwent laparotomy or vaginal surgery or who were operated on account of retained myoma in the initial surgery were excluded. Reports with malignant pathology results were also excluded from our review. The flow chart for the study selection process is shown in Figure 1. From the selected articles, the number, size, receptor status, location of parasitic myomas, usage of morcellator in previous surgery, and type of previous laparoscopic uterine surgery were determined.

After the initial literature search, 36 articles were identified for review. However, after screening the language, 2 reports were excluded because they were not written in English. Of the remaining 34 reports, 5 did not meet the inclusion criteria and were thus excluded (4 reports involved previous laparotomy and 1 involved retained myoma in an initial surgery). Consequently, 29 reports were finally included in our review, describing 53 patients who underwent surgery for parasitic myomas. The average age of the patients at diagnosis was 40 years (range: 24–57 years). Of the total patients selected, 31 (59%) had undergone laparoscopic myomectomy, 12 (23%)



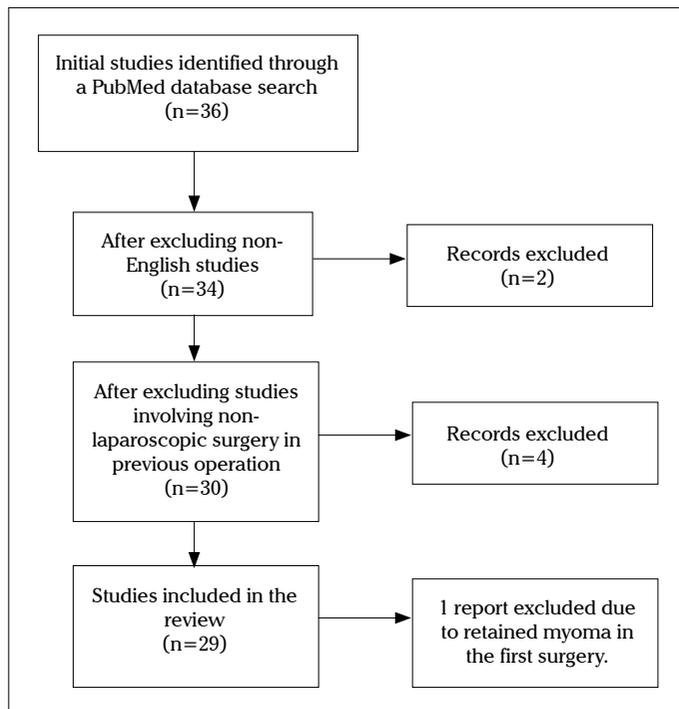


Figure 1. Flow chart of the literature search

had undergone laparoscopic subtotal hysterectomy, 6 (11%) had undergone total laparoscopic hysterectomy, 3 (6%) had undergone laparoscopic-assisted myomectomy, and 1 had undergone laparoscopic endometriosis surgery. In addition, 28 of the 53 patients (53%) had complained of abdominal pain; however, 13 of 53 patients (25%) were asymptomatic. The average time between the initial laparoscopic uterine surgery and the onset of symptoms related to parasitic myomas was 57 months (range:2–192 months). In the selected studies, parasitic myomas were most commonly found in the colon serosa and pouch of Douglas. The largest observed myoma was sized 30 cm and was attached to the omentum. Because we excluded malignant cases, all the cases reported in this review refer to a benign pathology. The list of all studies considered in this review is provided in Table 1.

In 1909, parasitic myomas were first described as rare pathologic structures believed to be pedunculated subserosal myomas that twist from the uterine pedicle and survive by neovascularization of adjacent organs such as the omentum and mesenteric vessels (1, 8). The first report describing parasitic myomas after laparoscopic surgery was published in 1997 (9). Morcellation was not performed in this case and the parasitic myoma was located near the trocar sleeve and had grown into the abdominal wall. Parasitic myomas can be found in variable locations. They are commonly reported in the pelvic region; however, Sinha et al. (10) have reported a case of parasitic myoma under the diaphragm. The degree of Trendelenburg position may be related to the location of parasitic myomas. Thus, we propose that the International Federation of Gynecology and Obstetrics (FIGO) classification system for uterine myomas and parasitic myomas should classify parasitic myomas on the basis of their locations in the mesentery, omentum, bowel wall, or peritoneum.

A retrospective study has shown a prevalence of 0.9% for parasitic myomas after laparoscopic surgery using morcellation (11). Because the symptoms of parasitic myomas are not specific, the number of case reports with asymptomatic presentation should not be underestimated (12-16). In our review, 13 of 53 patients (25%) were asymptomatic. Small and asymptomatic parasitic myomas can be overlooked at follow-up.

Our review also consisted of reports on pelvic adenomyotic masses after laparoscopic subtotal hysterectomies in the literature (17, 18). Morcellation of the uterus rather than that of the myoma could be associated with adenomyotic masses. Other issues related to uterine morcellation include the dissemination of occult malignancies including uterine sarcoma and its possible negative effect on patient prognosis. Morcellation within a surgical bag can be a safe option to prevent dissemination of undetected uterine malignancies (19) and can also prevent the scattering of small myoma fragments, which is probably the most important risk factor for iatrogenic parasitic myomas.

The literature shows variable intervals between the first surgery and the diagnosis of parasitic myomas, ranging from 2 to 192 months. Circulating hormone levels and the receptor status can affect the onset of clinical symptoms and potential growth patterns. Our literature review indicates that different descriptions are used for the pathogenesis of parasitic myomas, including disseminated peritoneal leiomyomatosis, parasitic peritoneal leiomyomatosis, multiple ectopic myomas, and peritoneal leiomyoma (12, 20-22). Disseminated peritoneal leiomyomatosis is a rare spontaneous condition that should be differentiated from iatrogenic parasitic myomas (23). Thus, we recommend the establishment of a nomenclature to eliminate the pathogenic diversity of parasitic myomas in the literature.

With advances in gynecologic laparoscopic surgery, iatrogenic parasitic myomas after laparoscopic uterine surgery became a new issue. In our review, 48 of 53 patients were reported between 2007 and 2014. Most of these cases involved a history of morcellation. Morcellation of myomas during myomectomy and morcellation of the uterus during hysterectomy appear to be risk factors for iatrogenic parasitic myomas. LaCoursiere et al. (24) reported a case of retained fragments after laparoscopic total hysterectomy, which showed endocervical fragments in the cul de sac.

In our review, 25% of patients were asymptomatic, which can be related to the size and location of parasitic myomas. On the other hand, a review of the literature showed different sizes of myomas that were located on the bowel wall. Further studies should demonstrate the necessity of surgery for the treatment of asymptomatic small parasitic myomas because these myomas can attach very firmly to the bowel or mesentery. Leren et al. (25) have reported a case of intestinal perforation during surgery for parasitic myomas measuring 5 cm. Aust et al. (26) have reported a case of parasitic myoma resembling ovarian malignancy in which surgery was performed by a gynecologic oncologist. Extensive and complicated surgery may be required for parasitic myomas. Patients should be informed about this extensive surgery. The pararectal fossa, abdominal wall trocar site, omentum, appendix, paravesical space, gastric serosa, intestinal serosa, subcutaneous tissue, lumbar region, rectus

Table 1. Literature search of articles about parasitic myomas after laparoscopic surgery

First author, Year	No of patients	Symptoms	Age of patient	Previous surgery	Morcellator use	Months since first surgery	Location	No of parasitic myomas (largest diameter)	Histo pathology Receptor	Other findings
Ostrowski et al. (9) 1997	1	Palpable mass	43	LM	No	2	Abdominal rectus muscle	1 10 mm	Leiomyoma ?	Mass had grown to 2.5x2 cm during medical treatment
LaCourse et al. (24), 2005	1	Pain, dyspareunia	36	TLH	Yes	10	Pelvic sidewall, bowel serosa, cul de sac	4 (4 mm, 5 mm, 7 mm, 7 mm)	Leiomyoma ?	Cul de sac lesions were cervical and endocervical tissues
Hilger et al. (17), 2006	1	Pain	44	LASH	Yes	12	Right ovary, cervical stump, rectovaginal septum	3 (40 mm, 40 mm, 30 mm)	Adenomyosis ?	
Paul et al. (12), 2006	1	Asymptomatic	28	LM	Yes	30	Port site peritoneum, right paracolic gutter	3	Leiomyoma ?	
Donnez et al. (27), 2006	1	Pain, dyspareunia	53	LASH	Yes	60	Pelvic mass in the pararectal fossa	1 40 mm	Adenomyosis	
Donnez et al. (18), 2007	8	Pain, dyspareunia	? (40-48)	LASH	Yes	? (24-108)	Pelvis, cervical stump	? 45 mm (20-80 mm)	Adenomyosis ?	Estrogen alone was given as hormone replacement therapy to 5 patients who had undergone bilateral oophorectomy
Sinha et al. (10), 2007	2	Pain, mass palpable	41, 48	LM, TLH, LM, LASH	Yes	36, 96	Sigmoid colon serosa, lateral pelvic wall, pouch of Douglas under the dome of the diaphragm	3, 1 (150, 80, 70-100 mm)	Leiomyoma PgR + ER +	
Takeda et al. (13), 2007	1	Asymptomatic	39	Gasless LM	Yes	72	Omentum, round ligament, pelvic peritoneum, vesicouterine, and peritoneum of Douglas pouch	Multiple (10-60 mm)	Leiomyoma PgR + ER -	
Kumar et al. (20), 2008	1	Abdominal distension, breathlessness	24	LM	Yes	9	Attached to the omentum and descending colon	6 (30-300mm)	Leiomyoma ?	Reported as disseminated peritoneal leiomyomatosis, preoperative GnRH injection relieved breathlessness
Moon et al. (28), 2008	1	Palpable mass	34	LM	Yes	36	Abdominal wall trocar site	1 32 mm	Leiomyoma ?	
Epstein et al. (29), 2009	1	Pelvic pain on pressure	30	LM	Yes	18	Omentum, sigmoid colon	2 (30 mm, 80 mm)	Leiomyoma ?	
Kho et al. (30), 2009	7	Pain (5), dyspareunia, menorrhagia	39 (32-50)	LM (6) Laparoscopic endometriosis surgery	Yes	75 (2-204)	Bowel mesentery (4), appendix, paravesical space, pararectal space, inguinal canal, rectovaginal septum, bladder wall	?	Leiomyoma ?	
Miyake et al. (31), 2009	1	Asymptomatic	36	LM (2)	Yes	72	In the peritoneal cavity at multiple sites including the gastric serosa, intestinal serosa, omentum, and cul de sac	Multiple (10-180 mm)	Leiomyoma ?	Biopsy of the gastric submucosa via endoscopy showed a smooth muscle tumor that did not originate from the gastrointestinal system
Thian et al. (32), 2009	1	Asymptomatic	35	LM	Yes	29	Pouch of Douglas, subcutaneous nodule in the anterior abdominal wall	Multiple (>50) (20-135 mm)	Leiomyoma ?	Reported as leiomyomatosis peritonealis disseminata

Table 1. Continued

Sinha et al. (33), 2009	1	Pain	42	LM	Yes	36	Pouch of Douglas, right lumbar region	2 (70 mm, 60 mm)	Leiomyoma ?	
Wada-Hiraike et al. (34), 2009	1	Palpable mass	31	LAM	No	48	Abdominal rectus muscle	1 (87 mm)	Leiomyoma ?	Grown to 105 mm after 6 months
Pezzuto et al. (22), 2010	1	Metrorrhagia	45	LM	Yes	144	Redunculated to the perirectal peritoneum	2 (30 mm, 50 mm)	Leiomyoma ?	Reported as peritoneal leiomyomas
Larain et al. (14), 2010	4	Asymptomatic, pain (2), genital bulge	49 (39-57)	LM (2), TLH (2)	Yes	99 (36-192)	Pouch of Douglas (2), presacral peritoneum, anterior vaginal wall	1 (60 mm (50-70 mm))	Leiomyoma, adenomyosis ?	
Ordlu et al. (35), 2010	1	Asymptomatic	48	LASH	Yes	84	Small bowel, abdomen, pelvis	16 (6-90 mm)	Leiomyoma	Reported as disseminated peritoneal leiomyomatosis
Aust et al. (26), 2011	1	Pain	41	TLH	?	36	Rectosigmoid colon, descending colon	2 (130 mm, 70 mm)	Adenomyoma ?	Surgery performed by a gynecologic oncologist
Cucinella et al. (11), 2011	4	Asymptomatic (2), palpable mass, and pain	40 (35-48)	LM	Yes	69 (24-108)	Pelvic parietal peritoneum, anterior parietal peritoneum, GI tract, left paracolic fossa	3 (1-5) (29 mm (4-60 mm))	Leiomyoma ?	
Sesti et al. (21), 2012	1	Palpable masses	41	Gasless LM	No	120	Abdominal rectus muscle	6 (5-38 mm)	Leiomyoma ?	Reported as multiple ectopic leiomyomas
Takeda et al. (15), 2012	1	Asymptomatic	29	Gasless LAM	Yes	24	Retrovesical peritoneum	1 (14 mm)	Leiomyoma PgR+ ER-	After 2 years of spontaneous conception, 7-cm mass at 35 weeks, excised at CS
Leren et al. (25), 2012	3	Pain (2), asymptomatic	48 (46-50)	LM	Yes	61 (42-96)	Peritoneum, abdominal wall, colon transversum, cecum, pelvic abdominal wall, rectum, cervix, and small intestine	5 (1-12) (25 mm (10-50 mm))	Leiomyoma, adenomyoma ?	Intestinal perforation in 1 case
Takeda et al. (16), 2013	1	Asymptomatic	31	LAM	Yes	84	Anterior parietal peritoneum, pouch of Douglas, omentum	Multiple ?	Leiomyoma PgR+ ER+	Case with MEN 1 syndrome and situs inversus totalis
Temizkan et al. (36), 2014	1	Abdominal pain, constipation, dyspareunia, and dysmenorrhea	35	LM	Yes	48	Colon serosa, mesentery, pouch of Douglas, bladder	5 (30-70 mm)	Leiomyoma PgR+ ER+	
Huang et al. (37), 2014	1	Asymptomatic	34	LM	Yes	84	Small intestine serosa, left tube	2 (60 mm, 20 mm)	Leiomyoma ?	
Yi et al. (38), 2014	3	Asymptomatic, pain (2)	42 (36-46)	LASH LM, TLH	?	36 (24-60)	Pouch of Douglas, trocar incision site, uterosacral ligament	1 (25 mm, 40 mm, 50 mm)	Leiomyoma ?	
Ramesh et al. (39), 2014	1	Pain	48	TLH	Yes	3	Oblique abdominal muscles	1 (60 mm)	Leiomyoma ?	

LM: laparoscopic-assisted myomectomy; LASH: laparoscopic subtotal (supracervical) hysterectomy; LM: laparoscopic myomectomy; TLH: total laparoscopic hysterectomy; PgR: progesterone receptor; ER: estrogen receptor; CS: Cesarean section; GnRH: gonadotropin-releasing hormone; MEN 1: Multiple endocrine neoplasia type 1

muscle, bowel mesentery, and uterine tube are other locations for parasitic myomas (27-39). In the case by Kumar et al. (20) preoperative gonadotropin-releasing hormone (GnRH) injection relieved breathlessness; however, it was not effective in reducing the size of the mass significantly. Medical treatment of parasitic myomas located on the bowel wall or mesentery and the clinical course of asymptomatic small parasitic myomas should be analyzed in further studies.

The receptor status was not available in most reports. Given that the receptor status and hormone levels can affect the clinical course, further studies are needed to investigate the importance of the receptor status and hormones.

Conclusion

Fibroid remnants after laparoscopic myomectomy/hysterectomy are risk factors for the growth of fibroid tissue in the peritoneal cavity with unexpected localizations. Despite its rarity, patients should be informed about this risk. It is important for surgeons to look for small fibroid fragments during and after morcellation and accordingly make efforts to remove every piece of tissue. Furthermore, of the different types of morcellators available, it is important to select the one that provides less tissue scattering. Moreover, at the end of surgery, the pelvis should be irrigated in the reverse Trendelenburg position and surgeons should be aware of the late-onset symptoms of the disease.

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