

Case Report

Incidental finding of pre-peritoneal leiomyoma during laparoscopic hysterectomy: a case report and literature review

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Abstract: Pre-peritoneal leiomyomas are extremely rare, and only a few case reports had been published in recent years. They are often misdiagnosed preoperatively as subserous leiomyomas or ovarian tumors and found intraoperatively to be pre-peritoneal masses. We here describe a case of a 47-year-old woman with no history of surgery or hormonal therapy who presented with menostaxis and progressively worsening menorrhagia. Preoperative transvaginal sonography suggested multiple uterine leiomyomas and laparoscopic hysterectomy was scheduled. During the laparoscopy, the gynecologist discovered a pre-peritoneal leiomyoma on the right pelvic that had no connection with her uterus and resected it laparoscopically. Histological examination showed that the abdominal mass was a leiomyoma with no features of malignancy, consistent with the uterine findings. The successful outcome in this case demonstrates that the abdominopelvic cavity should be thoroughly inspected during laparoscopic surgery to avoid delayed diagnoses and forestall second operation. It also shows that laparoscopic resection of pre-peritoneal leiomyomas is feasible when they are located between the peritoneum and muscularis layer. Similar published cases are also briefly reviewed.

Keywords: Pre-peritoneal leiomyoma, multiple uterine leiomyomas, laparoscopic resection, thorough inspection

Introduction

Pre-peritoneal leiomyomas, which are rare, have been attributed to seeding after resection of fibroids [1-3], exogenous hormonal therapy or major disturbances in glucose and/or lipid metabolism [4, 5]. There are few published reports of solitary pre-peritoneal leiomyomas with none of these predisposing factors. A search of published reports up to May 2017 using the keywords “extra-uterine leiomyoma” or “pre-peritoneal leiomyoma” yielded only six cases [6-11]. Here, we present an unusual case of a solitary pre-peritoneal leiomyoma located between the peritoneum and muscularis layer, which coexisted with multiple uterine leiomyomas. It was discovered by thorough inspection during a laparoscopic hysterectomy (LH) and successfully treated by laparoscopic resection. Moreover, we briefly review similar published case reports and our experience of diagnosing and treating such cases.

Case report

Written consent from the patient for the use of clinical materials for research purposes and approval from the Institutional Ethics Board of the First Affiliated Hospital of Sun Yat-sen University were obtained.

A 47-year-old female patient, gravid 3, para 1, presented to our outpatient gynecology department with menostaxis and progressively worsening menorrhagia for 3 months. She had a body mass index of 23.0 and no history of trauma, surgery, hormone therapy, or smoking. Her obstetric history included one successful pregnancy with a normal spontaneous vaginal delivery and two miscarriages. Laboratory findings revealed moderate anemia, her hemoglobin (Hb) concentration being 64 g/L. Transvaginal sonography (TVS) showed a 6.5×5.5 cm leiomyoma in the uterine fundus, a 2.7×2.6 cm leiomyoma in the posterior wall and a 1.5×1.0 cm

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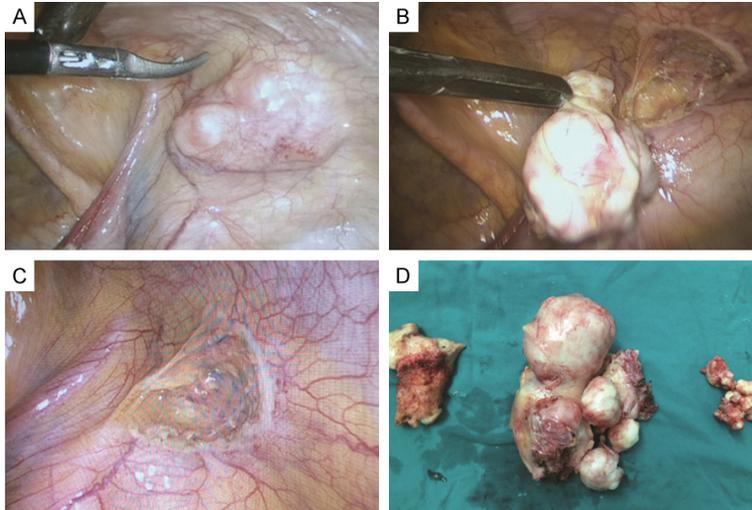


Figure 1. The laparoscopic appearance and gross specimen of the pre-peritoneal leiomyoma. A. Laparoscopic appearance of the pre-peritoneal leiomyoma in the right pelvic cavity adjacent to the round ligament. B. The pre-peritoneal leiomyoma (3.0×2.5 cm) had an irregular surface and was enucleated from its capsule. C. After the mass had been removed, a thin layer of peritoneum was exposed to the pelvic cavity, rather than the musculature of the pelvic wall. D. The gross specimens of the uterine cervix (left), uterus (middle) and pre-peritoneal leiomyoma (right).

leiomyoma in the anterior wall of the uterus and a 2.6×2.3 cm submucous leiomyoma. Serum concentrations of tumor markers, including carcinoembryonic antigen, cancer antigen 19-9 (CA19-9) and CA125, were all within their normal ranges. A chest X-ray study showed no abnormalities.

The patient underwent oral iron supplementation and blood transfusion, which increased her Hb concentration to 78 g/L, at which stage LH was recommended. A pneumoperitoneum was established and the uterus found to be about a 12-week size and irregular; her ovaries appeared normal. Additionally, when the abdominopelvic cavity was carefully checked during the procedure by the gynecologist, a 3.0×2.5 cm mass was found on the right pelvic wall adjacent to the round ligament. This extraperitoneal mass had an irregular surface, which was located between the peritoneum and muscularis layer and was not connected with the ovaries (**Figure 1A**). There was no evidence of leiomyomatosis peritonealis disseminata or endometriosis in the peritoneal cavity. The pelvic mass was removed laparoscopically by incising the peritoneum which overlaid on the mass and enucleating it from its capsule (**Figure 1B**). Removal of the mass exposed a thin layer of peritoneum to the pelvic cavity,

rather the abdominal wall musculature (**Figure 1C**). The gynecologist then performed the LH and removed both the uterus and pre-peritoneal mass (**Figure 1D**) through the vagina. Histological examination of the pelvic mass revealed leiomyoma with no features of malignancy; this was consistent with the findings in the uterine specimen. Thus, this patient had a solitary peritoneal leiomyoma on the right pelvic wall coexisting with multiple uterine leiomyomas and moderate anemia. She was discharged on the fourth postoperative day without any complications.

Discussion

Leiomyomas, the most common benign tumor of the reproductive tract, are clinically apparent in 70% of white women and more than 80% of black women over 50 years of age. Approximately 200,000 hysterectomies and 30,000 myomectomies are performed annually in the USA for uterine leiomyomas [12, 13]. They most frequently arise from the uterus but can also rise in extra-uterine sites such as the broad ligament, ovaries, omentum, vagina, retroperitoneum [14-17] and rarely the pre-peritoneum. Moreover, with the advent of morcellation in laparoscopic myomectomy or hysterectomy, more cases of pre-peritoneal leiomyoma are now being reported; these likely result from implantation of uterine leiomyoma fragments in the abdominal wall incision [1-3]. There are very few published reports of pre-peritoneal leiomyomas without any history of surgery; patients usually present with lower abdominal distension, pain or frequent urination [7, 8, 10, 11]. Approximately seven cases of pre-peritoneal leiomyoma without any history of gynecological surgery, including this case, have been reported. Two of these cases had co-existing uterine leiomyomas, one had co-existing broad ligament leiomyoma, two had a history of abdominal surgery, two with type 2 diabetes and two had primary peritoneal leiomyomas without a history of surgery or coexistence of a uterine leiomyoma (**Table 1**). Several theories regarding the origin of pre-peritoneal leiomyo-

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Table 1. Review of the published reports on preperitonealleiomyomas with no history of gynecological surgery

First author [ref.], year	Age, yr	Patient country	Symptoms at presentation	Association	Previous surgery	Coexisting with leiomyoma	Size of the mass	Type of operation
Lalor [6], 2005	67	USA	Periumbilical pain	Type 2 diabetes	Appendectomy, cholecystectomy	No	18×13.5×2 cm	Laparotomy
Grimbizis [7], 2006	40	Greece	Lower abdominal pain and frequent urination	No	No	No	5.8×2.44×3.15 cm	Laparoscopic resection
Vasconcelos [8], 2007	48	Portugal	Abdominal distension	No	No	No	36 cm	Laparotomy
Ono [9], 2010	37	Japan	Progressively worsening menorrhagia	No	No	Yes	3.2×2.3 cm	Laparoscopic resection
Feng [10], 2011	51	China	Lower abdominal distension	No	No	Yes	20×15×15 cm	Laparotomy
Al-Wadaani [11], 2012	45	Kingdom of Saudi Arabia	A mass three years duration	Type 2 diabetes	Cholecystectomy	No	20×20 cm	Laparotomy
This case, 2017	47	China	Menostaxis and progressively worsening menorrhagia	No	No	Yes	3.0×2.5 cm	Laparoscopic resection

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mas have been postulated: they may originate from the smooth muscle cell of the abdominal wall, the uterus [9, 11] or vessel walls [18].

The uniqueness of this case is that the pre-peritoneal leiomyoma was discovered by thorough inspection during a LH. General speaking, TVS is considered a convenient and easy mean of diagnosing uterine leiomyoma [19]. In previously published reports, gynecologists have determined the location of the masses relative to the peritoneal cavity by imaging studies, including abdominal ultrasound, computed tomography and magnetic resonance image. In our case, no imaging investigations other than TVS were requested because of the highly distinctive characteristics of the uterine masses on TVS and the patient did not have lower abdominal pain or frequent urination. Thus, ultrasound specialist and gynecologist were not alerted to the presence of the pre-peritoneal leiomyoma and concluded that the main presenting symptom of progressively worsening menorrhagia was probably attributable to the multiple uterine leiomyomas. This case demonstrates that, especially in the presence of multiple uterine fibroids, thorough radiographic imaging is necessary to avoid missing lesions. Additionally, the successful outcome of this case also shows that it is important to thoroughly inspect the abdominopelvic cavity during laparoscopic surgery to prevent second operation.

The treatment of pre-peritoneal leiomyomas depends mainly on the patient's symptoms and the size and location of the lesion(s). In 1994, Kruczynski et al [20] reported the first case of minimally invasive surgery in a woman with peritoneal leiomyoma on the right pelvic wall. We have identified and reviewed all articles published from 1994-2017 on pre-peritoneal leiomyomas that are listed on the PubMed electronic database. Six patients with pre-peritoneal leiomyomas have been successfully treated by laparoscopic resection [1-3, 7, 9, 20]. In our case, because the leiomyoma was extraperitoneal and located between the peritoneum and muscularis layer, the peritoneum overlying the mass could be incised and the mass could be enucleated from its capsule. Removal of the mass resulted in exposure of a thin layer of peritoneum to the pelvic cavity, rather than the musculature of the abdominal wall. Thus, we

can safely conclude that laparoscopic surgery is a feasible, effective and minimally invasive approach, with less tissue damage and blood loss than open procedures, for pre-peritoneal leiomyomas. It is therefore important for gynecologists to be aware of the differential diagnosis of pre-peritoneal leiomyomas.

In conclusion, the abdominopelvic cavity should be thoroughly inspected during laparoscopic surgery to avoid delayed diagnoses. Laparoscopic resection is an appropriate means of treating pre-peritoneal leiomyomas located between the peritoneum and muscularis layer, thus forestalling second operation.

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Disclosure of conflict of interest

None.

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