

# A Case of an Abscessed Cystic Endometriotic Lesion in the Vesico-uterine Pouch after Oocyte Retrieval

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## Abstract

A 31-year-old nulliparous Japanese woman visited the clinic due to worsening dysmenorrhea. A cystic endometriotic lesion was found in the vesico-uterine pouch. Laparoscopic surgery was chosen due to the severe dysmenorrhea. Her first oocyte retrieval attempt was performed at *in-vitro* fertilization clinic before the planned surgery. However, she complained of abdominal pain on day 6 after the retrieval. We diagnosed her with peritonitis with an abscessed cystic endometriotic lesion in the vesico-uterine pouch. Conservative treatment was ineffective. Therefore, laparoscopic surgery was performed. The cysts in the vesico-uterine pouch were drained of pus. No adhesions or lesions of endometriosis in the uterus, bilateral adnexa, or pelvic peritoneum were found. Although cystic endometriotic lesions in the vesico-uterine pouch are rare, they can form abscesses after oocyte retrieval. The possibility of abscesses formation risk must be considered. Moreover, following the management of endometrioma, sufficient medication should be administered to prevent this formation.

**Keywords:** Abscess, endometriosis, fertilization *in vitro*, laparoscopy, oocyte retrieval

## INTRODUCTION

Endometriotic lesions can develop in various sites. However, they rarely form cystic regions other than in the ovary. To date, there has been only one other report of cystic endometriotic lesions in the vesico-uterine pouch.<sup>[1]</sup> We report a case of peritonitis with an abscessed cystic endometriotic lesion in the vesico-uterine pouch after oocyte retrieval.

## CASE REPORT

Herein, we describe a 31-year-old nulliparous Japanese woman with no remarkable past medical or family history. She attained menarche at 12 years old. She presented with dysmenorrhea when she was 16 years old and had been taking low-dose estrogen progestin ever since then. She was married at 29 years old and began receiving infertility treatment at 30 years of age.

She visited a nearby clinic due to exacerbated dysmenorrhea when she was 31 years old. A cystic lesion was detected in the vesico-uterine pouch. She was referred to our department for close observation, diagnosis, and treatment.

The Visual Analog Scale Score of her menstrual pain was 10/10. However, she had no complaints of hematuria or increased frequency of urination during menstruation. A goose-egg-sized anteverted and anteflexed uterus was observed by internal examination. Uterine mobility was low, and she had pain due to pressure on the uterus. CA125 was elevated to 36.9 U/mL. Transvaginal ultrasonography revealed a cystic lesion (3 cm in diameter) in the vesico-uterine pouch. Magnetic resonance imaging (MRI) revealed a cystic lesion (3 cm in diameter) that appeared similar to an endometrioma in the vesico-uterine pouch, with low intensity on T1-weighted images and high intensity on T2-weighted

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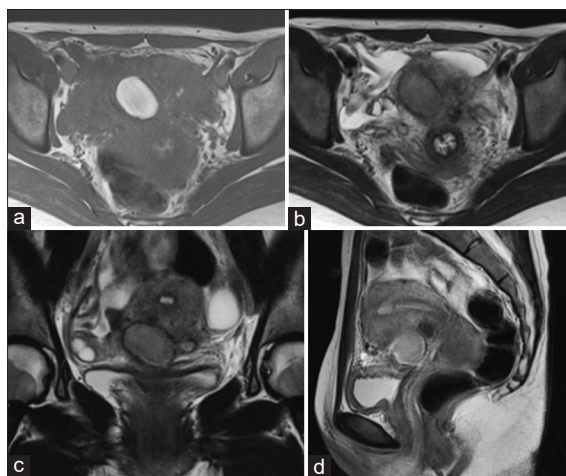
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images [Figure 1]. A diagnosis of a cystic endometriotic lesion in the vesico-uterine pouch was established. We planned to perform a laparoscopic surgery due to severe dysmenorrhea.

Her first oocyte retrieval attempt was performed at an *in vitro* fertilization clinic prior to this planned laparoscopic surgery. Four follicles were harvested. Six days after the retrieval, she visited our department complaining of severe abdominal pain.

Her vital signs were: Blood pressure, 112/73 mmHg; heart rate, 96 bpm; and body temperature, 37.1 degrees Celsius. Rebound tenderness pain was observed throughout her abdomen. Her white blood cell (WBC) count was 16,800/ $\mu$ L, and C-reactive protein (CRP) level was elevated to 21.8 mg/dL. Transvaginal ultrasonography detected an enlarged cystic lesion (4 cm in diameter) in the vesico-uterine pouch. Contrast-enhanced computed tomography revealed a low-absorbing mass that appeared similar to an abscess in the vesico-uterine pouch. Direct bacterial culture of vaginal discharge grew only resident bacteria. Tests for gonorrhea and Chlamydia were negative. Therefore, a diagnosis of peritonitis with an abscessed cystic endometriotic lesion in the vesico-uterine pouch was established.

We started a conservative treatment with sulbactam/ampicillin at 12 g/day. Blood cultures on the 1<sup>st</sup> day of hospitalization were negative. A blood test performed on hospitalization day 3 showed a WBC count of 15800/ $\mu$ L and CRP serum levels of 17.0 mg/dL. In addition, the patient had sustained fever and abdominal pain. Therefore, conservative treatment was judged difficult, and ineffective and laparoscopic surgery was performed.

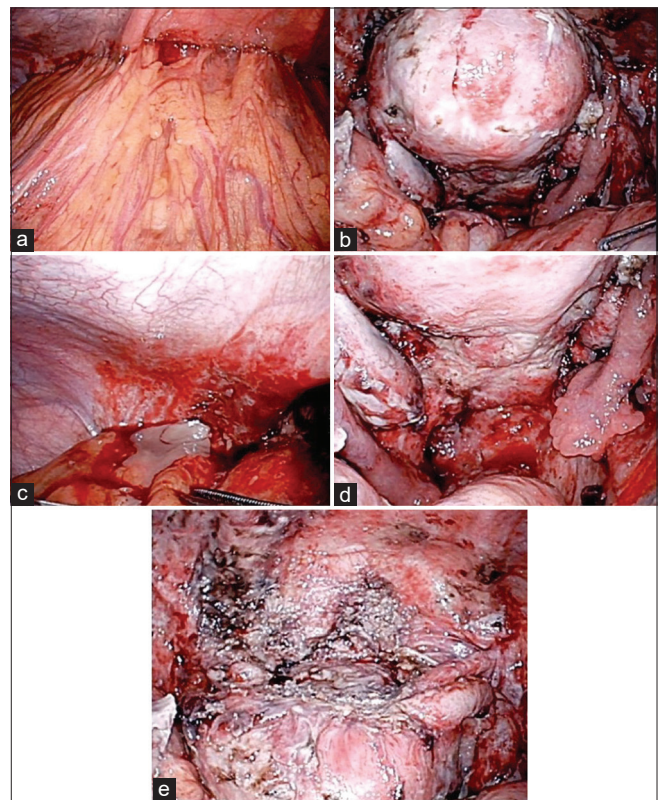


**Figure 1:** Enhanced diagnostic magnetic resonance imaging scans of the pelvis. (a) Horizontal T1-weighted magnetic resonance imaging image. (b) Horizontal T2-weighted magnetic resonance imaging image. (c) Coronal T2-weighted magnetic resonance imaging image. (d) Sagittal T2-weighted magnetic resonance imaging image. A cystic lesion, 3 cm in diameter, is detected in the vesico-uterine pouch

Severe adhesions of the greater omentum obscured the vesico-uterine pouch. When these adhesions were released, the cysts on the surface of vesico-uterine pouch could be drained of pus [Figure 2a and b]. No abnormal findings such as endometriotic lesions in the uterus, bilateral adnexa, or pelvic peritoneum were found except for acute inflammation on their surfaces. The absence of bilateral blocked Fallopian tubes was confirmed by Fallopian tube water flow inspection. No obliteration was observed in the pouch of Douglas [Figure 2c and d]. A bacterial culture from the pus grew *Prevotella bivia*. Since the cystic wall was thin and weak, it was not possible to remove the cystic region. Drainage of the abscess and ablation of the cystic lesion were performed [Figure 2e]. The operative time was 2 h and 18 min.

Biopsy tissue from the site of the cyst revealed smooth muscle fibers and partial glandular structures with proliferation of intimal stromal cells. The cyst was diagnosed with a cystic endometriotic lesion. Infiltration of neutrophils and histiocytes was seen throughout the biopsied ligament, indicating inflammation.

Blood tests on the postoperative day 6 showed a WBC count of 10,600/ $\mu$ L and CRP serum levels of 2.4 mg/dL. She was



**Figure 2:** Laparoscopy images. (a) The greater omentum conceals the vesico-uterine pouch. (b) The pus drained out of the cysts on the surface of the vesico-uterine pouch. (c) The uterus. (d) The Douglas pouch. (e) The vesico-uterine pouch after drainage of the abscess and ablation of the cystic lesion

discharged to home on that same day. Two months after surgery, CA125 was normalized to 36.9 U/mL. The first embryo transfer was performed 3 months after surgery at another hospital, resulting in pregnancy.

## DISCUSSION

In this case, our findings indicated that a cystic endometriotic lesion could exist in the vesico-uterine pouch. In addition, a solitary cystic lesion that differed from typical pelvic peritoneal endometriosis was present. Regarding origins of pelvic peritoneal endometriosis, implantation theory has been reported. Pelvic peritoneal endometriosis is characterized by multiple nodular peritoneal lesions. However, cystic lesions are not characteristic of this condition. Moreover, regarding sites of cystic lesions, Hamaguchi *et al.* reported a case of cystic endometriotic lesion in the vesico-uterine pouch and suggested that its origin was the remnant of Müllerian duct.<sup>[1]</sup> To the best of our knowledge, there have been no other reports of cystic endometriotic lesions in the vesico-uterine pouch. Of note, there was no endometriotic lesion other than the isolated cystic region in our patient, suggesting an origin other than that suggested by the implantation theory. Aberrant portions of the remnant of the Müllerian duct were thought to be an origin because the Müllerian duct can remain on the vesico-uterine pouch embryologically.<sup>[2]</sup>

An implantation theory has also been advocated to explain the extrinsic type of bladder endometriosis. Bladder endometriosis is typically accompanied by the symptoms such as hematuria, increased urinary frequency and urgency during menstruation, and upper pubic symptoms.<sup>[3]</sup> However, the extrinsic type can exist without these symptoms.<sup>[4]</sup> Moreover, it may often be asymptomatic as in this case. MRI findings of bladder endometriosis typically reveal uterine adenomyosis-like solid lesions with no cystic lesions.<sup>[5]</sup> Laparoscopic partial excision of the bladder is the standard treatment of bladder endometriosis. It is characterized by the presence of endometrial glandular cells with intimal stroma in the partially excised bladder muscle layer. However, excision of the bladder was not performed in this case.

Moreover, there was no pathological consideration regarding the origin of the lesion. Immunohistochemical staining is often performed for pelvic endometriosis to detect its origin. For example, the estrogen receptor and progesterone receptor are expressed in endometriotic lesions implanted of the endometrium *in situ*<sup>[6]</sup> and calretinin is expressed in endometriotic lesions originally from the ovarian surface epithelium or peritoneal epithelium.<sup>[7]</sup> In this case, the biopsy specimen size was too small to perform immunostaining. The risk of recurrence of cystic lesions persists because cystectomy was not performed. However, the patient became pregnant immediately after embryo transplant surgery.

Our findings also showed that endometriotic cysts present in the vesico-uterine pouch could form an abscess after oocyte retrieval. Ovarian abscess presenting as acute peritonitis occurs in 0.2%–0.3% of cases of oocyte retrieval.<sup>[8]</sup> In addition, the presence of an endometrioma could be a risk factor for developing ovarian abscesses.<sup>[9]</sup> This may relate to the presence of endometriosis. Small pools of old blood acts as a medium for growth of the bacteria that has transvaginally inoculated at the time of oocyte retrieval. These bacteria can easily grow in the cyst and cause pelvic abscesses. In this case, *P. bivia*, anaerobic Gram-negative bacillus that typically causes bacterial vaginitis,<sup>[10]</sup> was detected by bacterial culture of the pus.

Cystic endometriotic lesions existing on the surface of the vesico-uterine pouch are rare and might result in abscesses after oocyte retrieval. Physicians must be aware of that risk and administer enough medications to prevent it as is done for endometrioma.

## Ethical review

The ethical approval of this study is exempted by the Institutional Review Board of Nippon Medical School Hospital. The patients provided informed consent to use the clinical results for our research. This study is in accordance with the Helsinki Declaration of 1975, as revised in 2013.

## Declaration of patient consent

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 name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

Prof. Toshiyuki Takeshita, an editorial board member at *Gynecology and Minimally Invasive Therapy*, had no role in the peer review process of or decision to publish this article.

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