

# Endometriosis on the surface of the uterus mimicking a malignant tumor

## A case report with literature review

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### Abstract

**Rationale:** The purpose of this case report was to raise awareness regarding endometriosis on the surface of the uterus mimicking malignant tumor and thus manage it accurately.

**Patient concerns:** A 40-year-old Asian woman with a 2-year history of lower abdomen pain was admitted to our department with elevated serum cancer antigen (CA) 125 level, weight loss, and pelvic mass from 20 days previously. Magnetic resonance imaging revealed a high volume of effusion in the pelvic cavity, an irregular occupying lesion on the surface of the fundus of the uterus, and multiple nodules.

**Diagnoses:** Postoperative pathology confirmed the diagnosis of endometriosis.

**Interventions:** Diagnostic laparoscopy revealed large crunchy tissue and soft nodules on the surface of the posterior wall of the uterus and approximately 2000 mL of bloody ascites. The result of the frozen-section analysis of the tissue on the surface of the uterus indicated endometriosis. The surgical procedure was converted to laparotomy due to bleeding after biopsy.

**Outcomes:** The patient's recovery was uneventful. Three months after the operation, the patient had a good general state without periodic pain, and the CA125 level returned to normal.

**Lessons:** A large mass occurring in the pelvic cavity could be indicative of endometriosis, especially if accompanied by a history of period pain. Preoperative positron emission tomography may increase the accuracy of the diagnosis.

**Abbreviations:** CA = cancer antigen, MRI = magnetic resonance imaging, PET = positron emission tomography.

**Keywords:** ascites, endometriosis, malignant tumor, uterus

## 1. Introduction

Endometriosis is a gynecological disease characterized by ectopic growth of endometrial glands and stroma outside the uterus.<sup>[1]</sup> It affects 10% of women of childbearing age,<sup>[2]</sup> and the malignant transformation rate of endometriosis is as high as 0.8% to 1.0%.<sup>[3,4]</sup> Although the endometrial tissue can implant anywhere, the condition is most commonly seen in some pelvic sites such as the ovaries, broad ligaments, uterosacral ligaments, pelvic peritoneum, and Douglas pouch with minor lesions

without detectable mass.<sup>[5]</sup> Mass-like endometriosis on the surface of the uterus has not been documented thus far.

We report a unique case of ectopic endometriosis on the surface of the uterus in a patient preoperatively diagnosed with advanced ovarian cancer. This case is important because of the unusual location and the gross morphology of endometriosis similar to that of a malignant tumor. The aim of this case report was to raise awareness about endometriosis on the surface of the uterus mimicking a malignant tumor.

## 2. Case report

The patient was a 40-year-old perimenopausal woman, gravida 1, para 0, who presented with lower abdomen pain and a pelvic mass. Her menstruation was regular in the past but began to be irregular 1 year ago. Her dysmenorrhea became increasingly serious, with visual analog scale score varying from 3 to 9, and she had secondary infertility. On physical examination, she had a large uterus with size similar to that at 14 weeks of gestation, a palpable 7-cm solid mass on the left side of the pelvis, and tenderness upon palpation of the posterior cervix fornix. Transvaginal ultrasonography revealed the pelvic mass to be solid, measuring 6.8 × 4.7 cm, with abundant blood flow signal, and is located near the body of the uterus and left ovary; soft nodules, with the largest measuring 1.2 × 0.6 cm, were found on the peritoneum. Pelvic magnetic resonance imaging (MRI) also revealed a high volume of effusion in the pelvic cavity, an irregular occupying lesion on the surface of the fundus of the

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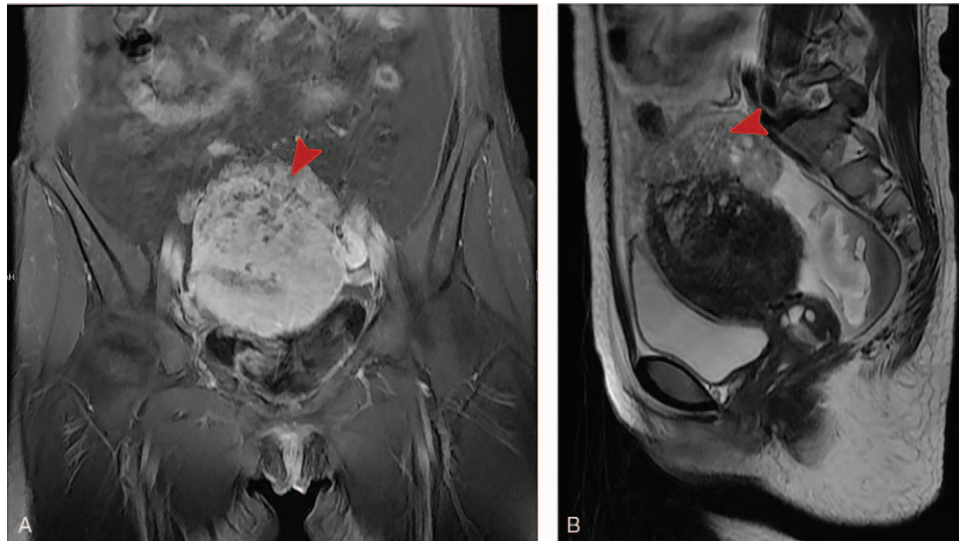
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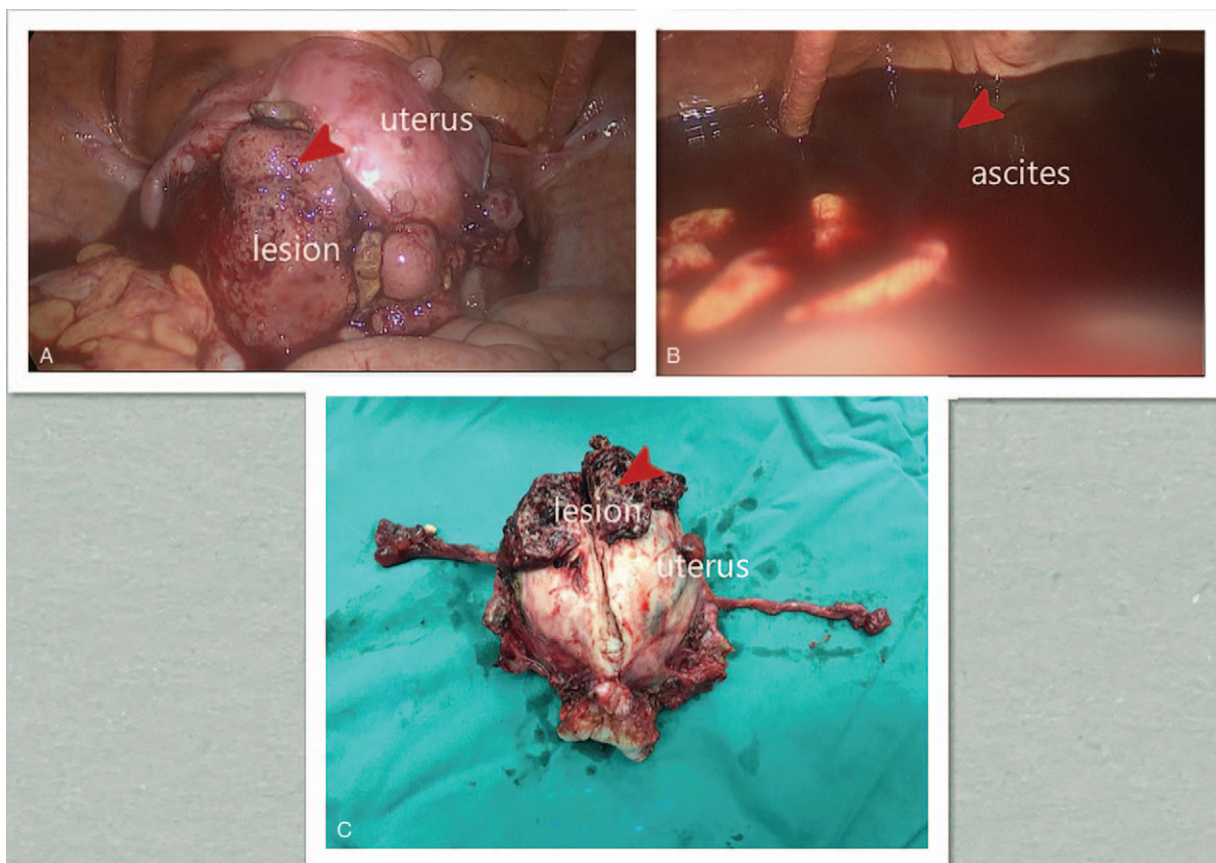


**Figure 1.** Magnetic resonance imaging showing the irregular occupying lesion (arrow) on the surface of the fundus of the uterus. (A) Coronal T2-weight image. (B) Axial T2-weighted image.

uterus, and multiple nodules around the lesion; hence, a malignant tumor was suspected (Fig. 1A and B). Preoperative laboratory studies revealed no abnormalities. Tumor marker cancer antigen (CA) 125 was 372.4 U/mL. With the impression of

advanced-stage ovarian cancer with massive ascites, diagnostic laparoscopy was performed.

Diagnostic laparoscopy revealed a large mass of crunchy tissue and some soft nodules on the surface of the posterior wall



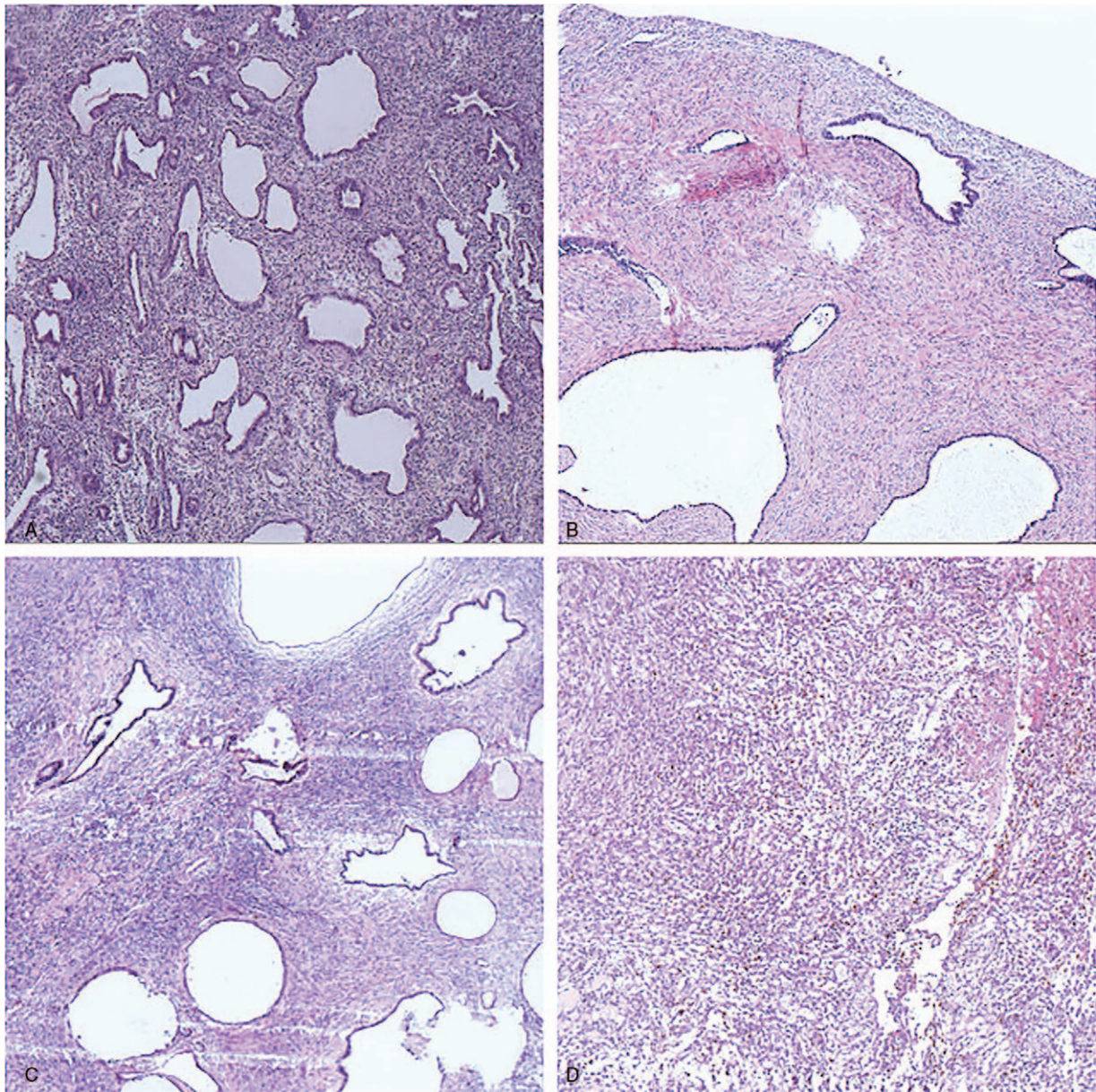
**Figure 2.** Photographs of the operation. (A) Crunchy tissue and some soft nodules on the surface of the posterior wall of the uterus. (B) Bloody water in the hepatic region. (C) External appearance of the soft tissue on the surface of the uterus.

of the uterus (Fig. 2A), some vesicular tissues on the surface of the bilateral ovaries and the right broad ligament, and 2000 mL of bloody ascitic fluid (Fig. 2B). A small part of the tissue on the uterine surface was removed and sent for frozen-section analysis, which indicated endometriosis. After biopsy, the surface of the mass began to bleed, which cannot be stopped by repeated bipolar electrocoagulation. The surgical procedure was promptly changed into laparotomy with hysterectomy, bilateral salpingectomy, bilateral ovarian biopsy, and excision of the mass of the right broad ligament. To rule out malignant transformation, the biopsy tissues of the bilateral ovaries and right broad ligament were repeatedly sent for frozen-section analysis during the operation, and the results revealed endometriosis. The patient's recovery was uneventful.

On gross pathologic examination, the grayish brown nodular mass measuring  $9.2 \times 6.2$  cm was noted on the posterior wall of the serous surface of the uterus (Fig. 2C). The external surface of the mass was rough. Microscopic examination revealed that the mass was covered with a monolayer of normal-looking endometrial glands and stroma (Fig. 3A–D), consistent with ordinary endometriosis.

No further adjuvant treatment was needed. Three months after the operation, the patient had a good general state without periodic pain, and the CA125 level decreased to 7.8 U/mL.

This study was approved by the Ethics Committee of Peking Union Medical College Hospital of the Chinese Academy of Medical Sciences and the ethical code was S-K719. Informed written consent was obtained from the patient for publication of this case report and accompanying images.



**Figure 3.** Microscopic pictures of the endometrial glands and stroma. (A) Endometriosis on the surface of the uterus. (B) Right ovary. (C) Left ovary. (D) Broad ligament.

### 3. Discussion

Mass-like endometriosis on the surface of the uterus has not been reported until now. The condition may be mistaken for a malignant tumor during preoperative and intraoperative assessment. The clinical symptoms of endometriosis include dysmenorrhea and infertility. The presence of a solid mass, ascites, and elevated CA125 may lead to a diagnosis of malignant tumor. In the present case, the patient not only had the typical clinical manifestations of endometriosis such as dysmenorrhea and infertility, but also had manifestations indicating malignancy, such as solid mass, ascites, and elevated CA125. Despite our preoperative diagnosis of ovarian carcinoma arising from endometriosis based on the MRI findings of solid nodules and the clinical manifestations, the final pathologic diagnosis proved to be endometriosis. This is the first reported case on mass-like endometriosis.

When identifying benign and malignant tumors using different types of preoperative examinations is difficult, laparoscopic surgery should be performed. Frozen-section analysis should be performed during the surgery due to the possibility of malignancy associated with endometriosis on the surface of the uterus. Intraoperative pathologic assessment of benign ovarian tumors during laparoscopic surgery is reliable.<sup>[6]</sup> Therefore, frozen-section analysis is of great importance in differentiating between benign and malignant diseases to a certain extent. However, gynecologists should recognize that it is possible to make an incorrect diagnosis in some cases and should exercise caution accordingly. In case of malignant transformation, multipoint biopsy should be performed, which can increase the accuracy of diagnosis. In the present case, multipoint biopsy from different pelvic sites was performed during the surgery, and the final results of the pathologic analysis indicated endometriosis. Therefore, multipoint biopsy is essential when differentiating between benign and malignant tumors is difficult.

Endometriosis, a common and benign condition, affects 10% of premenopausal women.<sup>[2]</sup> The pathogenesis of endometriosis is complicated and has not yet been fully elucidated.<sup>[7]</sup> The sites of endometriosis, in this case, include the surface of the uterus, the surface of the bilateral ovaries, and the right broad ligament. The phenomenon was in accordance with the doctrine of menstruation back-flow planting.<sup>[8]</sup> The mass-like endometriosis on the surface of the uterus differs from common endometriosis, but its molecular mechanism may be similar with that of polypoid endometriosis.<sup>[9]</sup> Polypoid endometriosis is a rare type of endometriosis that can mimic malignancy due to its presentation as a mass.<sup>[10]</sup> The disease may involve various pelvic and peritoneal sites, and the rectosigmoid colon has been reported to be the most frequent site of involvement, followed by the ovary.<sup>[11]</sup> However, the specific mechanism needs to be further explored and studied.

Massive bloody ascites caused by endometriosis is unusual, with only 10 reports in the literature around the world. Endometriosis-associated with ascites is commonly mistaken for ascites caused by ovarian neoplasms.<sup>[12]</sup> The reason why massive ascites may occur in association with endometriosis is unknown.<sup>[13]</sup> It is possible that the rupture of endometriotic cysts causes peritoneal irritation and production of reactive exudates.<sup>[13]</sup> In this case, the large bloody ascites may have been caused by the periodic hemorrhage of the ectopic endometrium and the exfoliative endometrium gradually stimulated the peritoneum to exude.

Noninvasive diagnosis of endometriosis remains challenging. Some studies have shown that positron emission tomography (PET) was a useful tool for distinguishing between endometriosis and malignant tumor preoperatively.<sup>[14]</sup> However, the value of [<sup>18</sup>F]-fluorodeoxyglucose PET uptake in endometriosis has not yet been extensively reported<sup>[14]</sup> and PET is very expensive, which limit the use of PET in preoperative assessment. In the present case, examination using PET was not performed before surgery. We need additional studies to evaluate the value of PET in assessing the presence of endometriosis and how to diagnose endometriosis with the help of PET.

In conclusion, it is important for both gynecologists and oncologists to be aware that endometriosis may mimic ovarian malignancy. PET before surgery, multipoint biopsy, and frozen-section analysis during surgery may increase the accuracy of diagnosis and treatment.

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### References

- [1] Horne AW, Saunders PTK, Abokhrais IM, et al. Endometriosis priority setting partnership steering group. Top ten endometriosis research priorities in the UK and Ireland. *Lancet* 2017;389:2191–2.
- [2] Anglesio MS, Papadopoulos N, Ayhan A, et al. Cancer-associated mutations in endometriosis without cancer. *N Engl J Med* 2017;376:1835–48.
- [3] Benoit L, Arnould L, Margarot A, et al. Malignant tumours arising in extraovarian endometriosis: three case reports and review of the literature. *Ann Chir* 2004;129:376–80.
- [4] Benoit L, Arnould L, Cheynel N, et al. Malignant extraovarian endometriosis: a review. *Eur J Surg Oncol* 2006;32:6–11.
- [5] Rei C, Williams T, Feloney M. Endometriosis in a man as a rare source of abdominal pain: a case report and review of the literature. *Case Rep Obstet Gynecol* 2018;2018:1–6. 2083121.
- [6] Takemoto S, Ushijima K, Kawano R, et al. Validity of intraoperative diagnosis at laparoscopic surgery for ovarian tumors. *J Minim Invasive Gynecol* 2014;21:576–9.
- [7] Patel BG, Lenk EE, Lebovic DI, et al. Pathogenesis of endometriosis: interaction between endocrine and inflammatory pathways. *Best Pract Res Clin Obstet Gynaecol* 2018;50:50–60.
- [8] Izumi G, Koga K, Takamura M, et al. Involvement of immune cells in the pathogenesis of endometriosis. *J Obstet Gynaecol Res* 2018;44:191–8.

- [9] Jaiman S, Gundabattula SR, Pochiraju M, et al. Polypoid endometriosis of the cervix: a case report and review of the literature. *Arch Gynecol Obstet* 2014;289:915–20.
- [10] Tham WP, Busmanis I, Tan WC, et al. Polypoid endometriosis of post vaginal fornix: utility of MRI imaging of pelvis with diffusion weighted imaging for diagnosis. *Med J Malaysia* 2016;71:144–6.
- [11] Gezer NS, Secil M, Ulukus EC, et al. Polypoid endometriosis presenting as a mass at the pouch of Douglas. *J Obstet Gynaecol* 2015;35:861–2.
- [12] Akinola RA, Akinola OI, Alakija A, et al. Widespread endometriosis mimicking ovarian malignancy: a case report. *Niger Postgrad Med J* 2012;19:46–9.
- [13] Goumenou A, Matalliotakis I, Mahutte N, et al. Endometriosis mimicking advanced ovarian cancer. *Fertil Steril* 2006;86:219 e223–15.
- [14] Jeffry L, Kerrou K, Camatte S, et al. Endometriosis with FDG uptake on PET. *Eur J Obstet Gynecol Reprod Biol* 2004;117:236–9.