

Case Report

A Large Ovarian Endometrioma Occupying the Abdominal Cavity in a Postmenopausal Patient: A Case Report

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Abstract: Endometriosis is defined by the presence of endometrial-like glands and/or stroma outside the uterus. The prevalence of endometriosis in postmenopausal women is reported to be 2.55%, which is much lower than that in reproductive-aged women. Ovarian endometriomas are the most common form of endometriosis. However, these form only 4.3% of ovarian masses in patients in the sixth decade of life. In this manuscript, we report the case of a 60-year-old patient who was referred to our department with an external diagnosis of an abdominal mass. The patient was in good general condition and asymptomatic. A computed tomography scan revealed the presence of a cystic mass originating from the right adnexa and measuring 26 cm. No signs of malignancy were observed. Due to the cyst's size, a midline laparotomy and a bilateral salpingo-oophorectomy were performed successfully. A postoperative histopathologic examination confirmed the diagnosis of an ovarian endometrioma with no signs of hyperplasia or atypia. Cases of postmenopausal large ovarian endometriomas are few. However, due to the risk of malignant transformation, an oophorectomy could be considered the treatment of choice, even in asymptomatic patients.



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1. Introduction

Endometriosis is defined by the presence of endometrial-like glands and stroma outside of the uterus [1]. Stromal endometriosis, on the other hand, is a less common manifestation of endometriosis, in which the endometriotic stroma exists without the glandular component [2]. Endometriosis is known to be an estrogen-dependent chronic inflammatory disease owing to the fact that estrogen triggers lesional growth and progression and contributes to macrophage recruitment [3]. This notion is further supported by the observation of a peak in the prevalence of endometriosis in women of childbearing age [4]. Endometriosis is reported to affect around 10% of reproductive-aged women worldwide [5] compared to 2.55% of postmenopausal women [6]. This decline is thought to be due to the hypoestrogenic environment experienced in menopause. Nevertheless, endometriosis is capable of producing estrogen locally because of its intrinsic endocrine activity [7]. Aromatase is heavily expressed in endometriosis and converts cholesterol to estrogen under the continuous stimulation of prostaglandin E2 (PGE2) [7,8]. Therefore, it is unclear whether the extrinsic hypoestrogenic milieu seen in menopause is the actual explanation of the fewer postmenopausal cases, or this could be attributed to other unknown reasons.

Ovarian endometriomas are the most common form of endometriosis [9]. These are reported to affect up to 44% of endometriosis patients [10]. In the fourth decade of life, ovarian endometriomas form around 27% of ovarian masses, and only for 4.3% in the sixth decade of life [11]. Although rare, some ovarian endometriomas can reach large sizes and extend to the upper abdomen [12]. Moreover, individual reports documented

cases of large postmenopausal endometriomas that had non-ovarian origins [13]. Despite the dilemma of whether postmenopausal endometriosis is pre-existent endometriosis or de novo lesions [14], it does not seem that large lesions with benign histology are newly formed. In this paper, we report a case of a large ovarian postmenopausal endometrioma and discuss the possible pathophysiologic mechanisms of endometriosis progression and appropriate therapy in such cases.

2. Case Presentation

A 60-year-old patient was referred to our department with the diagnosis of a large intra-abdominal mass. The patient was in good general status and did not report symptoms aside from abdominal distention. A transabdominal ultrasonographic scan demonstrated a unilocular cyst with the absence of a suspicious Color Doppler flow. A computed tomography (CT) scan revealed a unilocular cystic mass that originated from the region of the right adnexa and occupied almost the entire abdomino-pelvic cavity. The cyst measured 26 cm at its largest dimension (Figure 1). Ascites was not observed radiologically. The CT scan combined with the ultrasonography findings decreased the suspicion of malignancy.

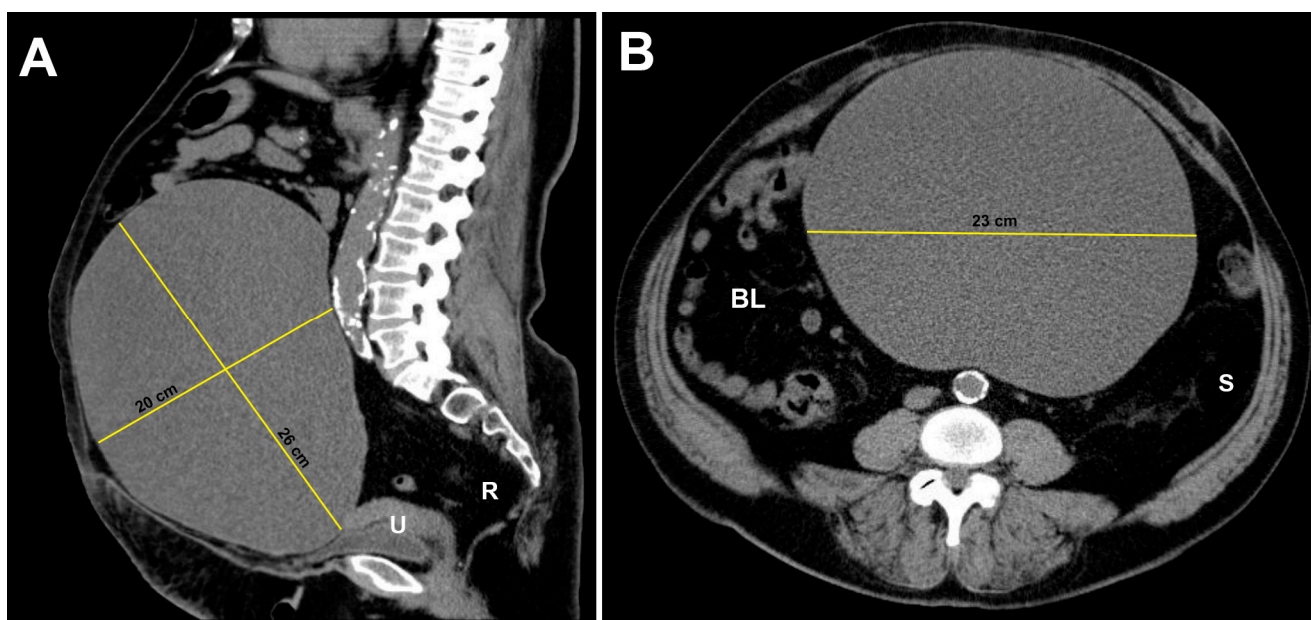


Figure 1. Computed tomography scan of the abdomino-pelvic cavity demonstrating the large extension of the ovarian endometrioma. The intestinal loops were displaced laterally to the right by the cyst. The uterus and urinary bladder were compressed. (A) Median sagittal plane. (B) Transverse plane. U: uterus; R: rectum; BL: bowel loops; S: sigmoid colon.

The laboratory results were within the normal ranges. However, the serum levels of CA-125 and CEA were 512.9 U/mL and 6.7 U/mL, respectively. The serum level of CA 15-3 was within the normal limits (17.3 U/mL). Table 1 demonstrates the complete preoperative laboratory assessment of the patient. On that basis, a borderline ovarian tumor could not be ruled out with high confidence. After appropriate patient counseling, the decision of surgical removal of both adnexae through a midline laparotomy was made. The intra-operative findings were in line with the preoperative imaging results. A large cyst originating from the right ovary was detected. The left adnexa, uterus, and peritoneum were unremarkable. A right adnexectomy was performed, and the specimen was immediately sent for a frozen section examination. The frozen section biopsy results ruled out the diagnosis of an ovarian borderline tumor and suggested ovarian endometrioma as a differential diagnosis with no signs of malignancy. Therefore, a bilateral salpingo-oophorectomy was carried out successfully. The postoperative recovery was uneventful. Upon gross examination, the cyst weighed 7630 g and had smooth surfaces without nodules or projections. A microscopic

examination of the cyst's wall confirmed the diagnosis of an ovarian endometrioma with no signs of hyperplasia or atypia (Figure 2).

Table 1. The preoperative laboratory assessment of the patient.

Leukocytes	8.1/nL
Erythrocytes	4.39/pL
Hemoglobin	13.6 g/dL
Hematocrit	41.7%
Mean Corpuscular Volume	95 fL
Mean Corpuscular Hemoglobin	31 pg
Mean Corpuscular Hemoglobin Concentration	32.6 g/dL
Thrombocytes	301/nL
CEA	6.7 ng/mL
CA 125	512.9 U/mL
CA 15-3	17.3 U/mL

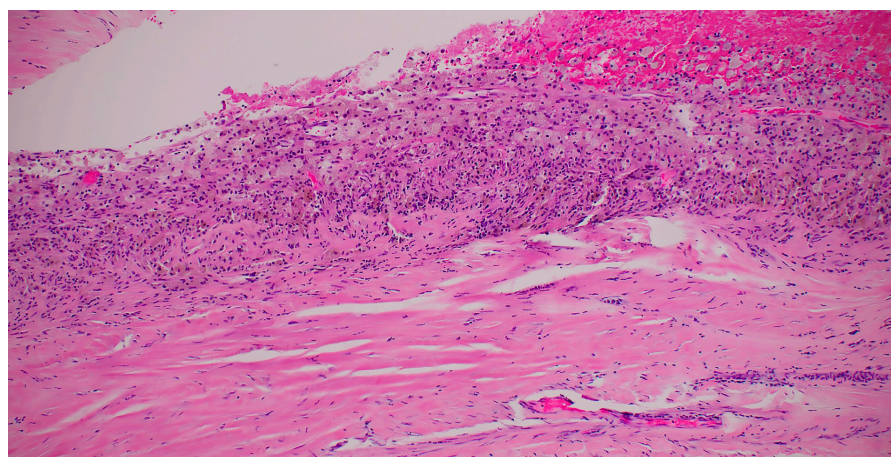


Figure 2. The microscopic examination of the endometrioma's wall.

3. Discussion

In this report, we presented a postmenopausal right ovarian endometrioma that reached a large size in an asymptomatic patient. The cyst was diagnosed with a CT scan and an ultrasound and treated surgically through a bilateral salpingo-oophorectomy. The cyst measured 26 cm and weighed around 7.5 kg. To the best of our knowledge, only few cases of similar clinical course have been reported, making this manifestation of postmenopausal endometriosis very rare. One report documented an ovarian endometrioma of 65 cm that weighed 214 kg [12]. This case is thought to be the largest ovarian endometrioma documented in the English literature [12,15]. Another report by Raju et al. [16] documented a 30 cm endometrioma in a 53-year-old patient that contained 5 L of clear, serous fluid. Yahya et al. [15] reported a case of a 30 cm ovarian endometrioma that contained 5000 mL of dark brown, cystic fluid in a 33-year-old patient. Moreover, endometriomas can be located in the abdominal cavity with remarkable adherence to the omentum but without any connection to the adnexa. In the report of Naem et al. [13], a free abdominal endometrioma reached 45 cm at its largest diameter and weighed 4.5 kg in a 67-year-old patient. All of these cases were treated surgically and had no signs of malignant transformation of the endometriosis. The risk of malignant transformation in ovarian endometriosis is reported to be 0.7–1% [17,18]. It is noteworthy that benign ovarian endometriomas have been found to harbor some cancer-associated mutations in their glandular component. These mutations

are similar to those found in endometrial cancer but with lower frequency [19,20]. Such genetic alterations (especially cancer-associated mutations, like PTEN, ARID1A1, PIK3CA, and K-RAS) are thought to control the growth, invasion, symptomatology, and probably the malignant transformation of endometriotic lesions [21]. It would be interesting to study the genomes of such large cysts to see whether they harbor higher or different types of mutations that make them reach such large sizes. It is believed that the worsening of pre-existing dysmenorrhea or dyspareunia could be related to the malignant transformation of endometriosis [22]. It is noteworthy that magnetic resonance imaging is a reliable tool to diagnose endometriosis-associated cancer when suspected [23]. This can be done through the visualization of solid components, papillary projections, and mural nodules in a cyst's wall [23].

The exact preventive measures for the progression of postmenopausal endometriomas are not known precisely yet. In addition, efficient prevention relies on a good understanding of the mechanisms leading to the progression of endometriosis. Therefore, the only recommendation to prevent such cases of large endometriomas is adhering to yearly follow-up visits to the gynecologist, with an early intervention whenever continuous or accelerating growth of ovarian endometriomas are observed. It would be useful to measure the serum levels of CA-125, CEA and CA 15-3 to investigate the chances of malignancies when lesions reach large sizes.

Although rare, surgical treatment of postmenopausal ovarian endometriomas is considered the first-line therapeutic approach to avoid the risk of malignant transformation [14], especially when a lesion is larger than 7 cm [24]. In some patients who refuse surgery or those who cannot undergo surgery, medical treatment with aromatase inhibitors could be a safe alternative to surgery [25].

4. Conclusions

Large ovarian endometriomas are a very rare form of postmenopausal endometriosis. They often present with non-specific symptoms, if any. Surgical treatment is the best option when a patient's general condition allows surgery to be performed. It would be interesting to study the genetic and epigenetic profiles of such lesions to see the types and frequencies of the harbored mutations.

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References

1. Zondervan, K.T.; Becker, C.M.; Missmer, S.A. Endometriosis. *N. Engl. J. Med.* **2020**, *382*, 1244–1256. [[CrossRef](#)]
2. Clement, P.B.; Young, R.H. Two Previously Unemphasized Features of Endometriosis: Micronodular Stromal Endometriosis and Endometriosis with Stromal Elastosis. *Int. J. Surg. Pathol.* **2000**, *8*, 223–227. [[CrossRef](#)]
3. Gou, Y.; Li, X.; Li, P.; Zhang, H.; Xu, T.; Wang, H.; Wang, B.; Ma, X.; Jiang, X.; Zhang, Z. Estrogen receptor β upregulates CCL2 via NF- κ B signaling in endometriotic stromal cells and recruits macrophages to promote the pathogenesis of endometriosis. *Hum. Reprod.* **2019**, *34*, 646–658. [[CrossRef](#)]

4. Koninckx, P.R.; Ussia, A.; Wattiez, A.; Adamyan, L.; Martin, D.C.; Gordts, S. The severity and frequency distribution of endometriosis subtypes at different ages: A model to understand the natural history of endometriosis based on single centre/single surgeon data. *Facts Views Vis. ObGyn* **2021**, *13*, 209–219. [[CrossRef](#)]
5. Meuleman, C.; Vandenabeele, B.; Fieuws, S.; Spiessens, C.; Timmerman, D.; D’Hooghe, T. High prevalence of endometriosis in infertile women with normal ovulation and normospermic partners. *Fertil. Steril.* **2009**, *92*, 68–74. [[CrossRef](#)]
6. Haas, D.; Chvatal, R.; Reichert, B.; Renner, S.; Shebl, O.; Binder, H.; Wurm, P.; Oppelt, P. Endometriosis: A premenopausal disease? Age pattern in 42,079 patients with endometriosis. *Arch. Gynecol. Obstet.* **2012**, *286*, 667–670. [[CrossRef](#)]
7. Attar, E.; Bulun, S.E. Aromatase and other steroidogenic genes in endometriosis: Translational aspects. *Hum. Reprod. Update* **2006**, *12*, 49–56. [[CrossRef](#)]
8. Noble, L.S.; Simpson, E.R.; Johns, A.; Bulun, S.E. Aromatase expression in endometriosis. *J. Clin. Endocrinol. Metab.* **1996**, *81*, 174–179.
9. Lee, H.J.; Park, Y.M.; Jee, B.C.; Kim, Y.B.; Suh, C.S. Various anatomic locations of surgically proven endometriosis: A single-center experience. *Obstet. Gynecol. Sci.* **2015**, *58*, 53–58. [[CrossRef](#)]
10. Gałczyński, K.; Józwiak, M.; Lewkowicz, D.; Semczuk-Sikora, A.; Semczuk, A. Ovarian endometrioma—A possible finding in adolescent girls and young women: A mini-review. *J. Ovarian Res.* **2019**, *12*, 104. [[CrossRef](#)]
11. Oral, E.; Sozen, I.; Uludag, S.; Demirkiran, F.; Ilvan, S.; Oncul, M.; Celik, H.G. The prevalence of endometrioma and associated malignant transformation in women over 40 years of age. *J. Gynecol. Obstet. Hum. Reprod.* **2020**, *49*, 101725. [[CrossRef](#)] [[PubMed](#)]
12. Shah, A.A.; Soomro, N.A.; Talib, R.K.; Sadhayo, A.N.; Soomro, S.A. Giant intraabdominal endometrial cyst. *J. Coll. Physicians Surg. Pak.* **2014**, *24*, 438–440. [[PubMed](#)]
13. Naem, A.; Shamandi, A.; Al-Shiekh, A.; Alsaïd, B. Free large sized intra-abdominal endometrioma in a postmenopausal woman: A case report. *BMC Womens Health* **2020**, *20*, 190. [[CrossRef](#)] [[PubMed](#)]
14. Streuli, I.; Gaitzsch, H.; Wenger, J.M.; Petignat, P. Endometriosis after menopause: Physiopathology and management of an uncommon condition. *Climacteric J. Int. Menopause Soc.* **2017**, *20*, 138–143. [[CrossRef](#)]
15. Yahya, A.; Mustapha, A.; Kolawole, A.O.; Oguntayo, A.O.; Bello, N.; Aliyu, H.O.; Adewuyi, S.A. Giant Ovarian Endometrioma: A Case Report. *J. West Afr. Coll. Surg.* **2021**, *11*, 41–44. [[CrossRef](#)]
16. Devasilpa Raju, P.D.; Lamture, Y.; Deshpande, S.G.; Gattani, R.G. Endometrial Cyst Presenting as a Vague Abdominal Lump in a Postmenopausal Woman. *Cureus* **2022**, *14*, e29807. [[CrossRef](#)]
17. Sampson, J.A. Endometrial carcinoma of the ovary, arising in endometrial tissue in that organ. *Arch. Surg.* **1925**, *10*, 1–72. [[CrossRef](#)]
18. Stern, R.C.; Dash, R.; Bentley, R.C.; Snyder, M.J.; Haney, A.F.; Robboy, S.J. Malignancy in endometriosis: Frequency and comparison of ovarian and extraovarian types. *Int. J. Gynecol. Pathol. Off. J. Int. Soc. Gynecol. Pathol.* **2001**, *20*, 133–139. [[CrossRef](#)]
19. Kyo, S.; Sato, S.; Nakayama, K. Cancer-associated mutations in normal human endometrium: Surprise or expected? *Cancer Sci.* **2020**, *111*, 3458–3467. [[CrossRef](#)]
20. Anglesio, M.S.; Papadopoulos, N.; Ayhan, A.; Nazeran, T.M.; Noë, M.; Horlings, H.M.; Lum, A.; Jones, S.; Senz, J.; Seckin, T.; et al. Cancer-Associated Mutations in Endometriosis without Cancer. *N. Engl. J. Med.* **2017**, *376*, 1835–1848. [[CrossRef](#)]
21. Laganà, A.S.; Naem, A. The pathogenesis of endometriosis: Are endometrial stem/progenitor cells involved? In *Stem Cells in Reproductive Tissues and Organs: From Fertility to Cancer*; Virant-Klun, I., Ed.; Springer: Cham, Switzerland, 2022; pp. 193–216.
22. Colarossi, C.; Picardo, M.C.; Colarossi, L.; Deiana, E.; D’Agata, C.; Fichera, C.; Aiello, E.; Giannone, G.; Memeo, L. Clear Cell Carcinoma Arising in an Abdominal Wall Cesarean Section Scar: A Case Report with Description of Pathological and Molecular Features. *Front. Surg.* **2021**, *8*, 735381. [[CrossRef](#)]
23. Tanase, Y.; Kawaguchi, R.; Takahama, J.; Kobayashi, H. Factors that Differentiate between Endometriosis-associated Ovarian Cancer and Benign Ovarian Endometriosis with Mural Nodules. *Magn. Reson. Med. Sci. Off. J. Jpn. Soc. Magn. Reson. Med.* **2018**, *17*, 231–237. [[CrossRef](#)] [[PubMed](#)]
24. Burghaus, S.; Schäfer, S.D.; Beckmann, M.W.; Brandes, I.; Brünahl, C.; Chvatal, R.; Drahoňovský, J.; Dudek, W.; Ebert, A.D.; Fahlbusch, C.; et al. Diagnosis and Treatment of Endometriosis. Guideline of the DGGG, SGGG and OEGGG (S2k Level, AWMF Registry Number 015/045, August 2020). *Geburtshilfe Frauenheilkd.* **2021**, *81*, 422–446. [[CrossRef](#)] [[PubMed](#)]
25. Polyzos, N.P.; Fatemi, H.M.; Zavos, A.; Grimbizis, G.; Kyrou, D.; Velasco, J.G.; Devroey, P.; Tarlatzis, B.; Papanikolaou, E.G. Aromatase inhibitors in post-menopausal endometriosis. *Reprod. Biol. Endocrinol.* **2011**, *9*, 90. [[CrossRef](#)] [[PubMed](#)]

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