

Benign Multicystic Peritoneal Mesothelioma Complicating Fertility Preservation

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A 32-year-old nulliparous woman was diagnosed with left breast cancer and was referred to our gynecology department soon after diagnosis for preserving fertility before neoadjuvant chemotherapy. Egg collection and cryopreservation were considered, but we identified multiple cysts in the rectouterine pouch by transvaginal ultrasonography. The cyst was not palpable by pelvic examination, and she had no complaint of any symptoms about the cysts. It was considered to be difficult to approach the ovaries transvaginally with avoidance of the cysts. There was no elevation of tumor markers (CEA, CA125, and CA19-9) in the blood test. MRI showed multiple cysts filling the rectouterine pouch, which did not lead to a definitive diagnosis, although malignancy was not strongly suspected [Figure 1]. We counseled her on fertility preservation techniques and told her that there

were two options: egg retrieval and cryopreservation, and ovarian tissue freezing with pelvic cystectomy at the same time. We informed her that the cysts needed to be penetrated for transvaginal egg retrieval, but it was difficult to make a definitive diagnosis of whether the cysts were benign or malignant in advance. Furthermore, the breast cancer doctor did not like the hormonal stimulation for ovulation and the several weeks' delays of chemotherapy for egg retrieval. Finally, she chose pelvic cystectomy and ovarian tissue freezing. We decided to perform a laparoscopic approach for the multiple cysts and ovarian tissue freezing. Laparoscopic observation revealed dense cysts of various shapes attached to the posterior surface of the uterus [Figure 2a]. The right ovary was excised and frozen, and the pelvic cysts were completely resected with an ultrasonic coagulation device, and the

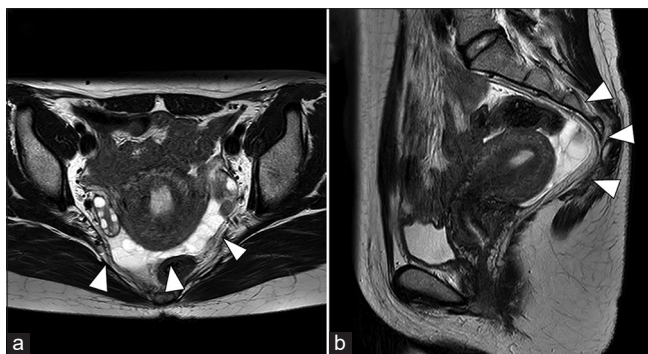


Figure 1: Magnetic resonance images of the pelvic cysts. T2-weighted magnetic resonance images of the sagittal (a) and axial planes. (b) Triangles show multiple cysts of the rectouterine pouch

Article History:

Submitted: 13-Apr-2021

Revised: 28-Sep-2021

Accepted: 23-Dec-2021

Published: 04-May-2022

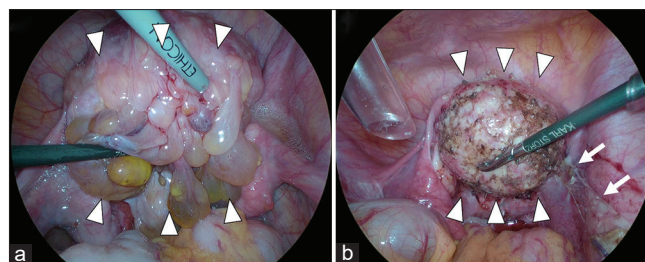


Figure 2: Laparoscopic findings of the pelvic cysts. (a) Pelvic cysts of various shapes originated from the posterior wall of the uterus. (b) After resection of the cysts and cauterization of the posterior wall of the uterus (triangle). The right ovary was also resected and frozen for preservation (arrow)

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How to cite the article: Shikanai S, Mariya T, Iwasaki M, Saito T. Benign multicystic peritoneal mesothelioma complicating fertility preservation. *Gynecol Minim Invasive Ther* 2022;11:137-8.

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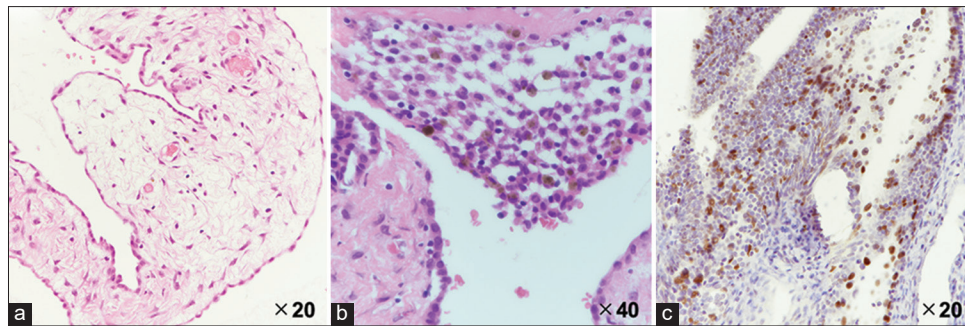


Figure 3: Histopathological findings of the resected cysts and right Fallopian tube. (a) Cysts lined by flattened mesothelial cells without atypia. (b) Endometrial stroma-like lesion with hemosiderin-laden macrophages. (c) Right Fallopian tube immunohistochemically stained by a p53 antibody. Highly stained fimbria of the tube was diagnosed as a p53 signature

posterior wall of the uterus was cauterized [Figure 2b]. There was sufficient ovarian tissue volume for freezing. The pathological diagnosis of the cyst being consistent with results of multiple histology was benign multicystic peritoneal mesothelioma [BMPM; Figure 3a] and endometrial cyst [Figure 3b]. She was discharged from the hospital 4 days after the surgery without any complications and smoothly started neoadjuvant chemotherapy the next week.

Although BMPM is generally considered to be benign because no cellular or nuclear atypia is seen by histological examination,^[1,2] the local recurrence rate has been reported to be high.^[3,4] It was reported that the timing of recurrence of BMPM ranged from early to late (from 1 month to 36 years) after surgical treatment.^[5,6] BMPM is sometimes accompanied by endometriosis like our case, and some reports suggested that chronic pelvic inflammation with endometriosis is one of the causes of endometriosis.^[7] There are some reports of egg retrieval and cryopreservation penetrating pelvic cysts, even in malignant mesothelioma cases.^[8] Therefore, vaginal egg retrieval could have been considered in our case if the patient had requested it or had time to delay chemotherapy. The excised cysts included endometriosis, but after neoadjuvant chemotherapy for breast cancer, the patient had a premature menopausal situation. Therefore, we think that there is no current risk of progression of endometriosis, and the patient is being followed up without further treatment. There is no recurrence of pelvic cysts at 1 year postoperatively.

Our patient was young and had a strong desire to have a baby. For such patients, the timing of reproductive health interventions after breast cancer treatment should be carefully discussed. In our patient, genetic counseling for Hereditary Breast and Ovarian Cancer syndrome (HBOC) was performed because of the patient was a young breast cancer patient and a p53 signature was found in the right Fallopian tube by the SEE-FIM protocol [Figure 3c]. Although she had no familial history of HBOC-related cancer to her knowledge, she hoped for BRCA gene testing and her results were negative for germline mutation after genetic counseling. Therefore, she

chose preservation of her normal right breast and the partial resection of her left breast after neoadjuvant chemotherapy.

Acknowledgment

We thank SES translation services (Sapporo, Japan) for editing a draft of this manuscript.

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.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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