Scientific Research Publishing

Case Reports in Clinical Medicine, 2025, 14(11), 592-598
https://www.scirp.org/journal/crcm
ISSN Online: 2325-7083
ISSN Print: 2325-7075

A Case of Synchronous Advanced Double Cancer of the Breast and Endometrium with Separate Metastatic Pathways, Discovered following Gynecological Surgery

Katsutaka Watanabe*, Yoshihiko Yonekawa

Department of Surgery, Daido Hospital, Nagoya, Japan
Email: *nabekatsu88@gmail.com

How to cite this paper: Watanabe, K. and Yonekawa, Y. (2025) A Case of Synchronous Advanced Double Cancer of the Breast and Endometrium with Separate Metastatic Pathways, Discovered following Gynecological Surgery. *Case Reports in Clinical Medicine*, **14**, 592-598.
https://doi.org/10.4236/crcm.2025.1411076

Received: September 24, 2025
Accepted: October 26, 2025
Published: October 29, 2025

Abstract

Synchronous advanced double cancer of the breast and endometrium is an exceptionally rare clinical entity, posing significant diagnostic and therapeutic challenges. We report the case of a 68-year-old woman with endometrioid adenocarcinoma who was incidentally found to have invasive lobular carcinoma of the breast following a modified radical hysterectomy. Intraoperatively, a suspicious lesion on the right adnexa was identified. Histopathological analysis confirmed it to be a metastasis from invasive lobular breast carcinoma, based on its distinct morphology and a specific immunohistochemical profile (CK7+, CK20−, E-cadherin−, Mammaglobin+). Further staging with chest computed tomography revealed multiple pulmonary nodules. A subsequent thoracoscopic lung biopsy was performed to differentiate the primary origin, which was definitively identified as a metastasis from the endometrial cancer. This case is remarkable for the existence of two distinct advanced malignancies with separate distant metastatic sites. Chemotherapy with carboplatin and paclitaxel for the endometrial cancer was initiated but was discontinued after three cycles due to severe adverse events. Subsequently, endocrine therapy with letrozole and palbociclib was commenced for the breast cancer, with the patient maintaining stable disease for over two years. This case highlights the critical importance of definitive histopathological and immunohistochemical analysis to accurately determine the primary origin of metastases in patients with coexisting advanced malignancies, thereby guiding appropriate, individualized treatment.

Keywords

Breast Cancer, Endometrial Cancer, Synchronous Double Cancer, Invasive Lobular Carcinoma, Metastasis

1. Introduction

The occurrence of multiple primary malignant tumors is an uncommon phenomenon. Among these, synchronous advanced double cancer, where two distinct malignancies are diagnosed concurrently and have progressed with distant metastases, presents a complex and formidable challenge in clinical management. Synchronous breast and endometrial cancer is particularly rare, with only a limited number of cases reported in the literature [1]. The management of such patients requires a highly collaborative, multidisciplinary approach to navigate the intricacies of diagnostic workup, treatment prioritization, and the selection of systemic therapies. We present a unique case in which a patient with advanced endometrial cancer was discovered to have a synchronous invasive lobular carcinoma of the breast, with each tumor metastasizing to different distant sites. This report underscores the critical role of pathological confirmation in guiding therapeutic decisions and provides insights into the management of this rare condition.

2. Case Report

Patient: A 68-year-old woman with no significant past medical or family history.

History of Present Illness: The patient was referred to our hospital after an abdominal ultrasound during a routine health checkup revealed a uterine body tumor. Subsequent imaging studies, including abdominal CT and MRI, confirmed a mass in the uterine corpus, and an endometrial biopsy diagnosed endometrioid adenocarcinoma (G2) (**Figure 1**). She underwent a modified radical hysterectomy, bilateral salpingo-oophorectomy, and pelvic lymphadenectomy. Intraoperatively, a suspected peritoneal seeding lesion was noted on the right adnexa.

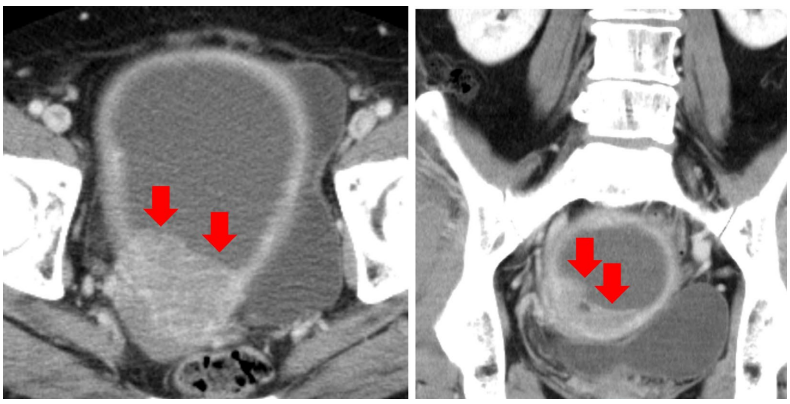

Figure 1. Abdominal contrast-enhanced CT: A tumorous lesion in the uterine corpus with associated pyometra.

Pathological Findings: The tumor found on the right ovary and fallopian tube was morphologically distinct from the primary endometrial carcinoma. Immunohistochemical staining was performed, yielding a profile of CK7 positive, CK20 negative, E-cadherin negative, and Mammaglobin positive (Figure 2). These findings were strongly suggestive of a metastasis from a lobular carcinoma, particularly given the E-cadherin negativity, which is a pathognomonic feature of invasive lobular carcinoma (ILC). Gastroscopy revealed no evidence of a primary gastric malignancy.

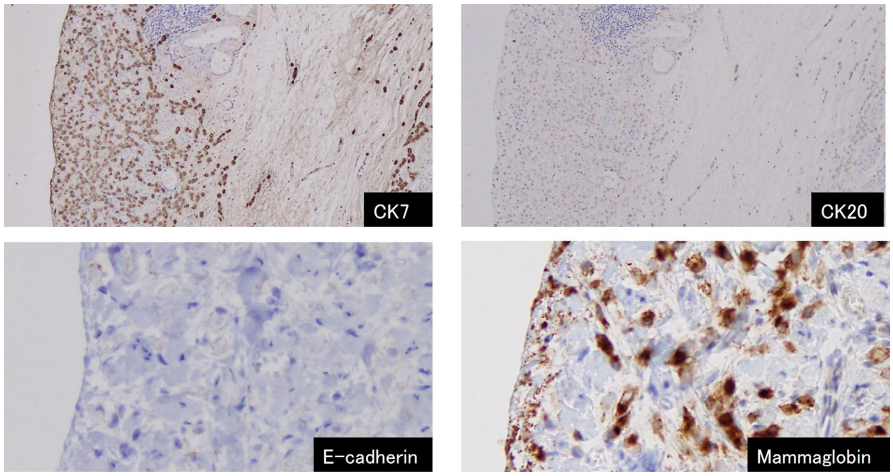

Figure 2. Immunohistochemical staining of the right ovarian lesion: The tumor is positive for CK7 and Mammaglobin, and negative for CK20 and E-cadherin, consistent with metastatic invasive lobular carcinoma.

The endometrial carcinoma was classified as FIGO stage IIIC1 (pT2N1M1), grade 2 endometrioid adenocarcinoma. The breast carcinoma was staged as pT2N0M1, Stage IV, invasive lobular carcinoma (ER+, PgR+, HER2−, Ki-67 10%).

Breast and Systemic Evaluation: Following the pathological findings, a thorough breast workup was initiated. Although physical examination was unremarkable, mammography revealed architectural distortion in both breasts (Figure 3), and breast ultrasound identified hypoechoic lesions with architectural distortion in the bilateral upper outer quadrants. A core needle biopsy of the right breast lesion confirmed invasive lobular carcinoma, which was found to be ER positive, PgR positive, and HER2 score 2+ (FISH negative) (Figure 4). The biopsy of the left breast lesion showed atypical ductal hyperplasia. Chest CT performed for staging revealed multiple pulmonary nodules in both lungs (Figure 5). To determine the primary origin of these nodules and guide treatment, a thoracoscopic lung biopsy was performed. The histological examination confirmed that the lung lesions were metastatic deposits from the endometrial cancer.

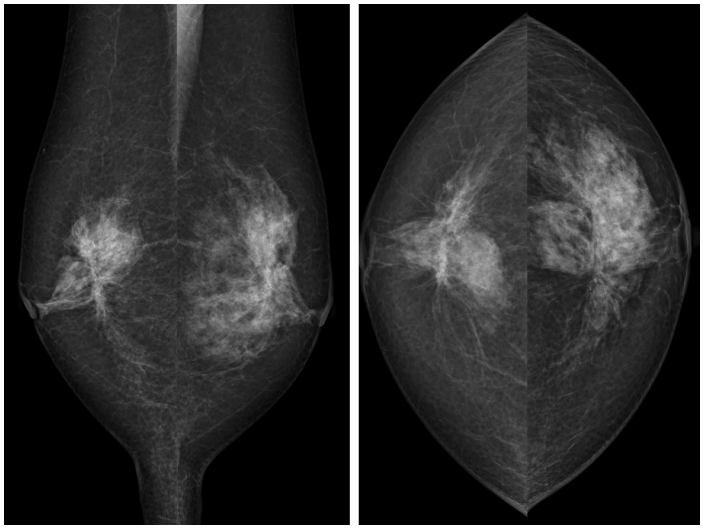

Figure 3. Mammography: Architectural distortion is present in the upper-outer quadrant of the right breast and the upper-inner quadrant of the left breast.

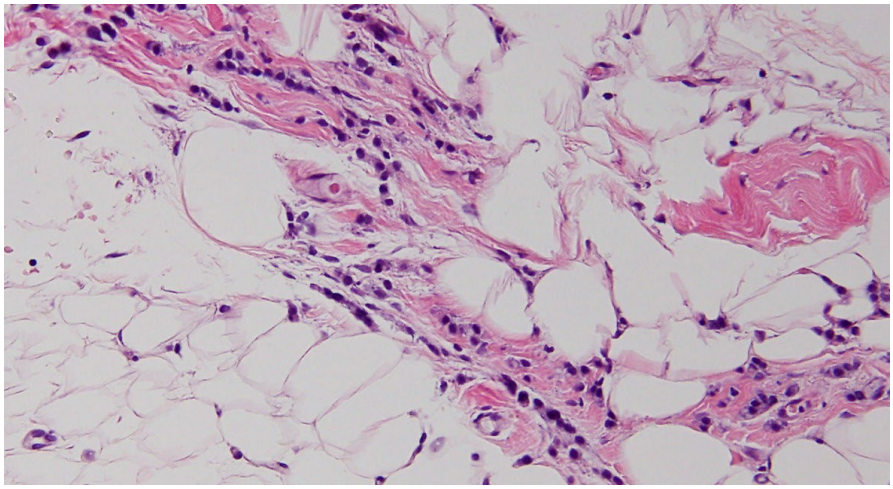

Figure 4. Right breast core needle biopsy: Histopathology confirming invasive lobular carcinoma.

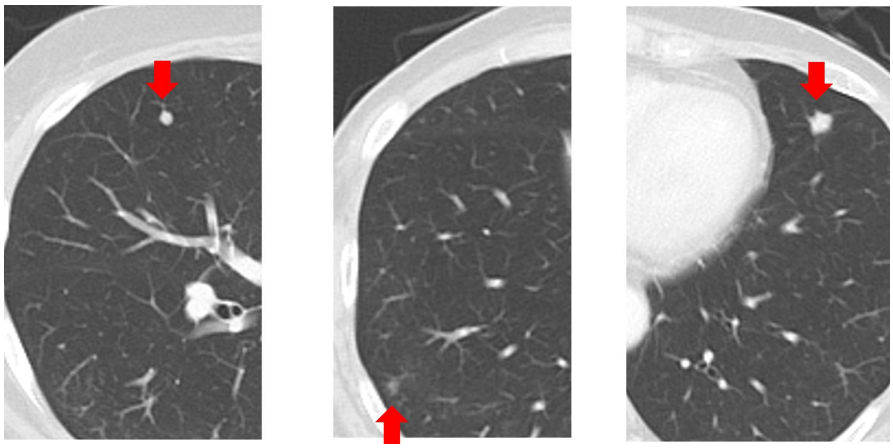

Figure 5. Chest CT: Multiple bilateral pulmonary nodules.

Treatment Course: Given the advanced nature of both malignancies with separate distant metastases, a multidisciplinary tumor board convened to formulate a treatment plan. The decision was made to prioritize systemic chemotherapy for the endometrial cancer with lung metastases. The patient was started on carboplatin and paclitaxel, but the treatment was discontinued after three cycles due to severe adverse events, including neutropenia and profound anorexia, compounded by the patient's strong aversion to further chemotherapy. A follow-up CT scan showed a partial response or stable disease of the lung metastases. The patient was then transitioned to a therapeutic regimen for her breast cancer, commencing endocrine therapy with letrozole and palbociclib. Follow-up chest CT scans at 6-month intervals (February 2022, August 2022, and February 2023) demonstrated no radiologic progression according to RECIST 1.1 criteria, confirming stable disease under endocrine therapy. The patient has remained progression-free for 26 months after discontinuation of chemotherapy. Surveillance for endometrial cancer, including pelvic MRI and serum CA125 every six months, is ongoing, with no evidence of recurrence.

3. Discussion

Synchronous multiple primary cancers, particularly those involving advanced disease, are a rare and challenging clinical scenario. The present case is a prime example of the diagnostic complexities that can arise when two distinct malignancies exist with their own unique metastatic patterns. The discovery of the breast cancer was an incidental finding prompted by the unexpected pathology of the ovarian lesion. The E-cadherin negative phenotype of the ovarian metastasis was a crucial clue, directing our attention to the possibility of invasive lobular breast carcinoma, which is well-documented for its propensity to metastasize to the ovaries, peritoneum, and gastrointestinal tract [2]-[4].

The subsequent finding of pulmonary metastases further complicated the clinical picture. The fact that the lung lesions originated from the endometrial cancer, while the ovarian metastasis was from the breast cancer, highlights the importance of not assuming a single primary origin for all metastatic sites. This case underscores the fundamental principle that definitive tissue diagnosis, rather than clinical suspicion, must guide the treatment plan. Immunohistochemistry was invaluable in this regard, with markers such as Mammaglobin and E-cadherin providing critical information to differentiate the metastatic origins [5].

Although CK7, CK20, E-cadherin, and Mammaglobin are useful markers for differentiating primary origins, their expression patterns may occasionally overlap. CK7 and Mammaglobin can be weakly positive in gynecologic malignancies, while E-cadherin loss, although characteristic of invasive lobular carcinoma, may occur in other epithelial cancers with cadherin dysfunction. Therefore, a panel-based interpretation is essential to avoid diagnostic misclassification [6] [7].

The treatment strategy for synchronous advanced double cancer is highly individualized. As shown in this case, the decision on which tumor to treat first depends

on various factors, including the tumor type, aggressiveness, extent of metastasis, and the patient's overall health and preference. The patient's intolerance to chemotherapy for her endometrial cancer necessitated a change in strategy, leading to a focus on her breast cancer with a better-tolerated hormonal therapy.

Furthermore, the co-occurrence of breast and gynecological cancers should raise suspicion for underlying hereditary cancer syndromes, such as those associated with BRCA1/2 mutations, although this was not the focus of this report [8] [9].

This case report serves as a strong reminder for clinicians to consider synchronous malignancies in their differential diagnosis and to rely on comprehensive pathological and molecular analyses to ensure that each primary tumor and its unique metastatic profile are accurately identified and treated.

4. Conclusion

This report details an exceedingly rare case of synchronous advanced double cancer of the breast and endometrium with distinct metastatic sites. The successful management of this patient relied on meticulous histopathological analysis and a collaborative, multidisciplinary approach. The case highlights the pivotal role of definitive pathological diagnosis in distinguishing the primary origins of metastases, which is essential for developing an appropriate and individualized treatment strategy.

Ethics Statement

This study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of Daido Hospital. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Warren, S. and Gates, O. (1932) Multiple Primary Malignant Tumors: A Survey of the Literature and a Statistical Study. *American Journal of Cancer*, **16**, 1358-1414.

[2] Ferlicot, S., Vincent-Salomon, A., Genin, P., *et al.* (1996) Ovarian Metastases from Breast Cancer: Report of 29 Cases. *Cancer*, **77**, 2320-2326.

[3] Arpino, G., Bardou, V.J., Clark, G.M. and Elledge, R.M. (2004) Infiltrating Lobular Carcinoma of the Breast: Tumor Characteristics and Clinical Outcome. *Breast Cancer Research*, **6**, R149-R156. https://doi.org/10.1186/bcr767

[4] Borst, M.J. and Ingold, J.A. (1993) Metastatic Patterns of Invasive Lobular versus Invasive Ductal Carcinoma of the Breast. *Surgery*, **114**, 637-641.

[5] Tot, T. (2000) The Role of Immunohistochemistry in the Differential Diagnosis of Metastatic Carcinomas. *Pathology and Oncology Research*, **6**, 179-193.

[6] Yamaguchi, K., Nakagawa, K., Shimizu, C., *et al.* (2023) Synchronous Breast and En-

dometrial Cancers: Clinical Features and Molecular Characteristics. *Cancer Diagnosis & Prognosis*, **3**, 45-51.

[7] Chen, L., Zhao, S., Xu, J., *et al.* (2022) Diagnostic Challenges of Metastatic Invasive Lobular Carcinoma: A Clinicopathologic Study and Review. *Frontiers in Oncology*, **12**, Article 873425.

[8] Kuchenbaecker, K.B., Hopper, J.L., Barnes, D.R., Phillips, K., Mooij, T.M., Roos-Blom, M., *et al.* (2017) Risks of Breast, Ovarian, and Contralateral Breast Cancer for *BRCA*1 and *BRCA*2 Mutation Carriers. *JAMA*, **317**, 2402-2416. https://doi.org/10.1001/jama.2017.7112

[9] Petrucelli, N., Daly, M.B. and Pal, T. (1998) *BRCA*1- and *BRCA*2-Associated Hereditary Breast and Ovarian Cancer. GeneReviews®, University of Washington.