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# Rare Gynecological Metastases from Breast Carcinoma: Case Report and Literature Review

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**Abstract** | **Case Report**

Metastases to the female genital tract from invasive ductal carcinoma (IDC) of the breast are exceptionally rare and pose diagnostic and therapeutic challenges. We report the case of a 44-year-old woman with a history of right breast IDC who developed synchronous uterine and ovarian metastases four years after initial diagnosis. Clinical presentation included a firm breast mass and, later, heavy uterine bleeding. Imaging revealed a suspicious right breast lesion with axillary lymphadenopathy and diffuse bone metastases. Histopathology and immunohistochemistry confirmed metastatic breast carcinoma in the uterus and ovaries, showing strong hormone receptor positivity and GATA3 expression. Emergency hysterectomy was performed due to hemorrhagic complications. The patient is currently managed with endocrine therapy combined with CDK4/6 inhibitors, achieving disease control. This case emphasizes the importance of comprehensive pathological evaluation and a multidisciplinary approach in managing rare gynecological metastases of breast cancer, highlighting the role of targeted therapies in hormone receptor–positive metastatic disease.

**Keywords**: IDC, breast cancer, metastases, uterus, ovaries.



## INTRODUCTION

Breast cancer is the leading cause of cancer among women worldwide and a major cause of cancer-related mortality in this population [1]. Its metastatic potential is well documented, with preferential dissemination sites including bone, lungs, liver, and brain [2]. In contrast, metastatic involvement of the female genital tract—particularly the uterus and ovaries—remains exceptional and mostly limited to case reports [3,4]. Among breast cancer histological subtypes, invasive lobular carcinoma (ILC) is classically associated with a higher tropism for gynecologic organs compared to invasive ductal carcinoma (IDC) [5,6]. Therefore, uterine metastases from IDC are considered extremely rare, with only a few isolated cases described in the literature [7]. Clinical manifestations of these gynecological metastases are often nonspecific, including pelvic pain, abnormal uterine bleeding, or incidental discovery during imaging or surgery [8]. Definitive diagnosis relies on histopathology combined with immunohistochemical analysis to differentiate breast metastases from primary uterine or ovarian tumors [9]. Due to their rarity, there are no specific treatment guidelines for these metastatic sites. Their presence generally indicates disseminated disease with a poor prognosis [10]. In this study, we report an exceptional case of IDC of the breast presenting with synchronous uterine and ovarian metastases, along with a literature review to better characterize the clinical, histopathological, and therapeutic aspects of this rare entity.

## CLINICAL PRESENTATION

A 44-year-old widowed woman, mother of one, followed for 4 years for IDC of the right breast, initially revealed by self-palpation of a nodule in the upper-inner quadrant of the right breast, progressively enlarging and associated with nipple retraction and local inflammatory signs.

- **Breast Imaging:**
- **Ultrasound showed:**
  - A large, heterogeneous, hypoechoic spiculated nodule measuring 5.8 × 3.6 cm in the upper-inner quadrant of the right breast, with some

hyperechoic spots, poorly vascularized on Doppler, with posterior attenuation.
- Extensive diffuse infiltration of the right breast fibroglandular tissue.
- Right axillary lymphadenopathies of variable size and shape, hypoechoic with lost central hilum; largest measuring 11.5 × 15.7 mm.
- Left axillary adenomegaly with preserved central hilum, 10.3 mm in short axis.
- No nodular or cystic lesions visible in the left breast.

➢ **Conclusion:** Right breast mass classified ACR 5, associated with suspected carcinomatous mastitis and ipsilateral axillary lymphadenopathy.

❖ **Histology and Immunohistochemistry:**
❖ **Core biopsy showed:**
- Breast carcinoma of no special type (WHO 2019 classification),
- Positive hormone receptors: ER 90%, PR 80%,
- HER2: score 1+ (low expression),
- Ki-67 proliferation index: 20%.

❖ **Staging Workup:**
❖ **Thoraco-abdominopelvic CT revealed:**
- Intraparenchymal and subpleural nodules in middle and lateral basal lung areas,
- Bilateral scattered subpleural micronodules,
- Precarinal, bilateral sternal, and right axillary lymphadenopathies,
- Multiple osteolytic lesions of axial and peripheral skeleton with cortical breakthrough and L3 vertebral compression (grade I),
- No secondary lesions identified in abdominopelvic region,
- Confirmation of large suspicious right breast mass.
- Several mesenteric lymph nodes, both supra- and infra-mesocolic, as well as para-aortic lymph nodes, some of which are calcified.
- No peritoneal effusion is observed.
- Globular uterus with lobulated contours, containing multiple lesion-like formations suggestive of leiomyomas — to be correlated with ultrasound findings and, if necessary, pelvic MRI for mapping.

❖ **Bone scintigraphy showed:**
- Increased uptake in cranial vault (notably left),
- Increased uptake in humeral heads, especially right,
- Scattered hyperfixation in the rib cage,
- Uptake in dorsal and lumbar vertebrae (notably D11),
- Hyperfixation in sacroiliac joints and articular surfaces of both knees.

➢ **Conclusion:** Imaging consistent with diffuse metastatic bone involvement.

**Clinical Course:** One month after diagnosis, the patient presented with heavy uterine bleeding. She underwent emergency subtotal hysterectomy without adnexal conservation and cervical amputation.

❖ **Pathology Findings**
❖ **Subtotal hysterectomy specimen:**
- Morphology and immunohistochemistry consistent with breast carcinoma metastases to uterus and ovaries,
- Presence of benign uterine leiomyomas,
- Serous ovarian cyst,
- Bilateral subacute and chronic nonspecific salpingitis.

**Cervical amputation specimen:**
- Nonspecific subacute and chronic fibroinflammatory changes.

❖ **Immunohistochemistry:** Demonstrated strong and diffuse nuclear expression of GATA3 in 90% of tumor cells (clone L50-823-Bio-SB).

**Current Status:** The patient is currently in good general condition, receiving endocrine therapy combined with a CDK4/6 inhibitor.


**Figure 1: Sagittal slice of an abdominopelvic CT scan showing Globular uterus with lobulated contours, containing multiple lesions**

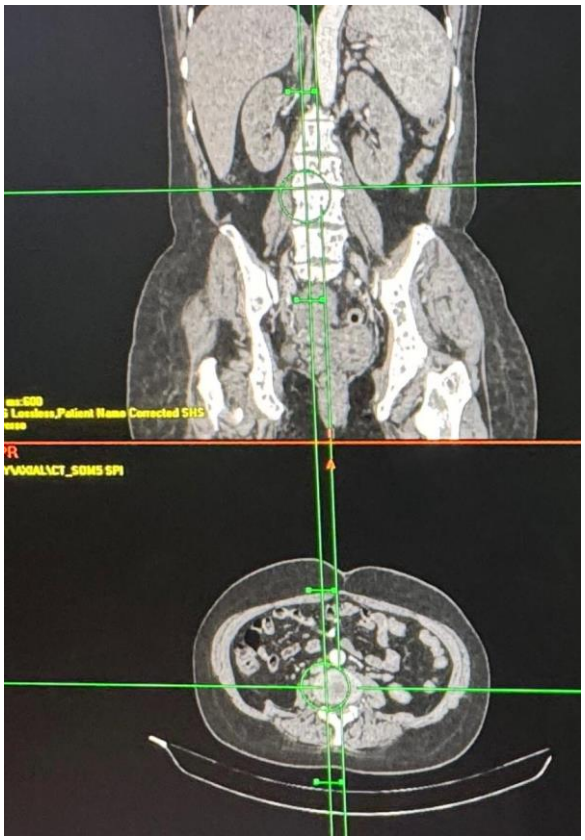

**Figure 2: Coronal and axial slices of an abdominopelvic CT scan showing a globular uterus with multiple lesions at the spinal level**

## DISCUSSION

Gynecological metastases from IDC of the breast remain exceptionally rare, complicating diagnosis and management. This case illustrates synchronous uterine and ovarian metastases occurring 4 years after initial diagnosis, highlighting key points from literature. While breast cancer commonly metastasizes to bone, lung, liver, and brain [11], genital tract metastases are infrequent and mostly described in case series [12,13]. Ovarian metastases are more documented than uterine ones [11,14]. IDC is less often involved in these sites compared to ILC, which has greater affinity for gynecologic tissues due to distinct adhesion and invasion properties [15,16]. Thus, uterine metastases from IDC are rare [7,17]. Clinical manifestations such as pelvic pain and abnormal bleeding are nonspecific and often delay diagnosis [18,19]. In this patient, heavy uterine bleeding was a presenting symptom, a common alert sign of genital metastases [20]. Imaging evaluates disease extent but cannot reliably differentiate primary from metastatic lesions [12]. Histopathology and immunohistochemistry are essential for confirming breast origin, with markers such as hormone receptors and GATA3 supporting diagnosis [21–23]. Dissemination pathways include hematogenous spread favored by rich uterine and ovarian vasculature [24], retrograde lymphatic spread via pelvic chains explaining synchronous involvement [25], and transcoelomic spread particularly to ovaries [26]. These likely explain the multisite involvement in our patient, alongside diffuse bone metastases. Therapeutic management is multidisciplinary. Surgery is indicated for complications such as hemorrhage, as in this case with emergency hysterectomy [27]. Systemic therapy is guided by immunohistochemical profile; in HR-positive, HER2-negative breast cancer, endocrine therapy combined with CDK4/6 inhibitors improves survival and quality of life [28–30]. Our patient tolerates this treatment well with disease control. Prognosis remains guarded due to disseminated disease; median survival is often under 2 years without targeted therapy. However, CDK4/6 inhibitors have significantly improved outcomes in HR-positive metastatic breast cancer [31,32].

## CONCLUSION

This rare case of synchronous uterine and ovarian metastases from IDC highlights the diagnostic and therapeutic challenges posed by unusual metastatic sites. Enhanced clinical vigilance, thorough histopathological evaluation, and integrated multidisciplinary management are essential to optimize prognosis and quality of life. This report contributes to the scarce literature on this rare entity and underscores the importance of targeted therapies in HR-positive metastatic breast cancer.

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