



# Concurrent Invasive Carcinoma and Fibroadenoma Arising from Bilateral Ectopic Breast Tissue in the Chest Wall: A Case Report and Literature Review

양측 흉벽 이소성 유방에 동시 발생한 침윤성 유방암과 섬유선종: 증례 보고 및 문헌 고찰

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Ectopic breast tissue, which results from incomplete regression of the mammary line during embryogenesis, is observed in 0.2%–6% of the population. Carcinoma development in ectopic breast tissue, especially in the abdominal or chest wall, is rare. Here we present the unusual case of a 38-year-old woman with invasive ductal carcinoma in the ectopic breast tissue on the left side of the chest wall and concurrent fibroadenoma in the ectopic breast tissue on the right side. We also describe the US and MR findings of these masses.

**Index terms** Ectopic Breast; Breast Cancer; Chest Wall; Concurrent Tumors; Magnetic Resonance Imaging

## INTRODUCTION

Ectopic breast tissue, which affects 0.2%–6% of the population, can arise anywhere along the mammary line, from the axilla to the vulva, due to incomplete embryological involution of the breast bud. The most common location is the axilla (60%–70%), followed by the vulva and the abdominal or chest wall. Carcinoma arising from ectopic breast tissue is rare, accounting for 0.2%–0.6% of all breast cancers; in most reported cases, it is located in the axilla (1). To the best of our knowledge, only

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16 cases of ectopic breast cancer located in the chest or abdominal wall have been reported to date (1-5). Here we present a rare case of ectopic breast cancer of the anterior chest wall with a concurrent benign mass on the opposite side, along with the US and MR findings.

## CASE REPORT

A 38-year-old woman was diagnosed with ductal carcinoma in situ in the left breast by vacuum-assisted biopsy at another hospital and referred to our hospital for surgery. The patient had no personal or family history of breast cancer. A physical examination revealed no palpable mass in the breast and no palpable lymph node swelling in the axilla but the presence of bilateral symmetrical masses in the lower anterior chest wall adjacent to the epigastric area. A 20-mm firm irregular mass was palpable 2-cm caudal to the left inframammary fold. Another 30-mm soft well-demarcated round mass was located in the right inframammary region. No accessory overlying areolae or nipples were observed. The patient was aware of the palpable masses beyond the breast but was not concerned because she had been told at a local hospital that they were lipomas.

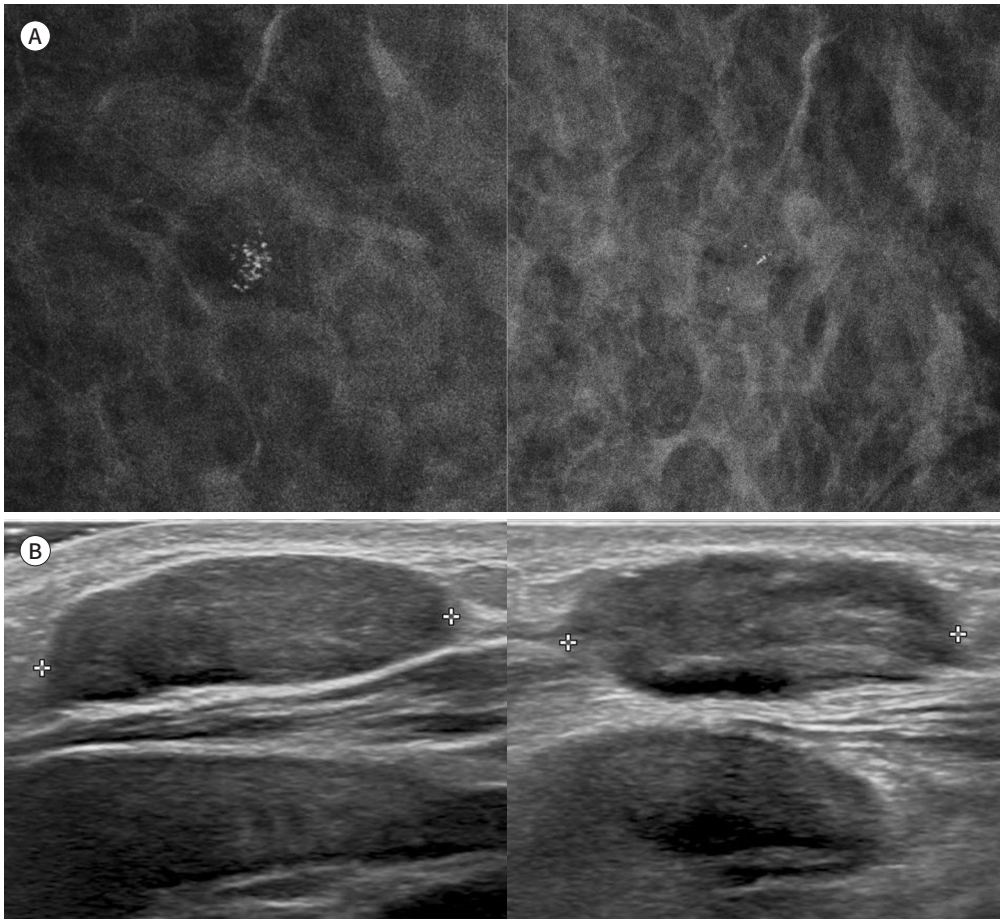
Left craniocaudal and mediolateral magnified mammography (Lorad Selenia; Hologic, Danbury, CT, USA) revealed a known residual malignant lesion with a few fine pleomorphic microcalcifications in the upper central portion of the left breast (Fig. 1A). Ultrasonography with an 18–4 MHz transducer using a real-time linear array unit (EPIQ 5; Philips Medical System, Bothell, WA, USA) revealed architectural distortion in the correlated area due to the previous vacuum-assisted biopsy. No enlarged axillary lymph nodes were observed.

Ultrasonography of the palpable mass in the left lower anterior chest wall revealed a heterogeneous hypoechoic mass with an irregular shape and a microlobulated margin located in the subcutaneous fat layer measuring 22-mm in its longest diameter. The mass showed posterior acoustic enhancement and was located parallel to the skin's surface. Color Doppler US revealed central vascularity within the mass. The mass was classified under Breast Imaging Reporting and Data System category 4B. Palpation of the right lower anterior chest wall revealed a circumscribed oval hypoechoic mass located in the subcutaneous fat layer that was 23-mm in the longest diameter. The mass was considered benign (Fig. 1B).

Contrast-enhanced chest CT performed for preoperative staging revealed bilateral enhancement of the masses, which were relatively symmetrical in the lower chest wall (Fig. 1C).

Preoperative breast MRI (Discovery; GE Healthcare, Chicago, IL, USA) revealed a spiculated relatively irregular mass measuring 22 mm × 13 mm × 17 mm with low signal intensity on T2-weighted images and intermediate signal intensity on T1-weighted images in the left inframammary region. In a gadolinium-enhanced dynamic study, the mass showed rapid initial enhancement and a delayed plateau enhancement pattern with heterogeneous enhancement (Fig. 1D, E). The mass's margins, shape, and enhancement kinetics suggested malignancy. A circumscribed oval mass with persistent enhancement and non-enhancing linear structures resembling dark internal septations was found in the right inframammary region, suggesting a benign lesion. On sagittal fat-saturated T1-weighted images, bilateral inframammary masses were observed in the ectopic breast tissue extending from the fibroglandular tissues of the bilateral lower inner breasts (Fig. 1F). At the vacuum-assisted biopsy site in the left upper

**Fig. 1.** Imaging of a 38-year-old woman with bilateral palpable masses in the lower anterior chest wall.  
**A.** Standard left craniocaudal mammogram before biopsy shows grouped fine pleomorphic microcalcifications in the left upper central breast (left). Left craniocaudal magnification view at our hospital after the vacuum-assisted biopsy reveals a few residual microcalcifications (right).  
**B.** Ultrasonography reveals a circumscribed oval hypoechoic mass in the right inframammary region (left) and a heterogeneous hypoechoic mass with a microlobulated margin on the opposite side (right).

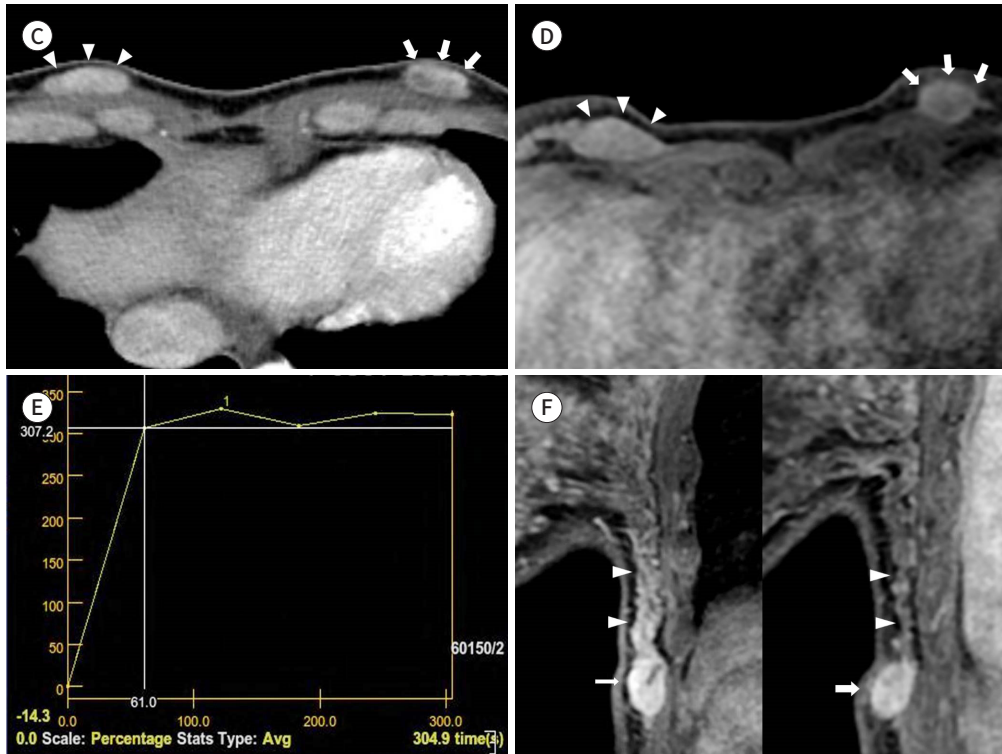


central breast, architectural distortion with dark signal intensity presumed to be air from the previous biopsy was observed without definite abnormal enhancement, suggesting residual malignancy.

The patient underwent complete resection of the bilateral inframammary masses with simultaneous excision of the known left breast cancer. Histopathologically, the suspicious mass in the left inframammary region was an 11-mm invasive ductal carcinoma arising from the ectopic breast tissue. Immunohistochemistry revealed positivity for estrogen and progesterone receptors and negativity for the HER2 receptor. The circumscribed mass in the right inframammary region was a fibroadenoma. No residual tumor was observed in the surgical specimen obtained from a previous vacuum-assisted biopsy of the left breast. One of the three excised lymph nodes contained a metastatic carcinoma on a sentinel lymph node biopsy.

The patient underwent four cycles of adjuvant chemotherapy with cyclophosphamide and doxorubicin, followed by weekly paclitaxel. Radiotherapy was administered to the left breast, ipsilateral axilla, supraclavicular fossa, and tumor bed of the left upper chest wall, and hor-

**Fig. 1.** Imaging of a 38-year-old woman with bilateral palpable masses in the lower anterior chest wall.  
**C.** Contrast-enhanced CT images show bilateral, relatively symmetrical, and somewhat irregularly shaped (arrows) and oval-shaped (arrowheads) enhancing masses in the lower chest walls.  
**D.** On dynamic contrast-enhanced MRI, axial T1-weighted image at 120 seconds after contrast injection shows heterogeneous enhancement of the left mass (arrows) and homogeneous enhancement of the right mass (arrowheads).  
**E.** The left inframammary mass shows rapid initial enhancement and delayed plateau enhancement.  
**F.** Sagittal T1-weighted MR image taken at 360 seconds after the contrast injection demonstrates a suspicious inframammary mass in the left chest wall (thick arrow) and a likely benign mass showing dark internal septations in the right chest wall (thin arrow). Both masses are located in the chest wall's ectopic breast tissue extending from the fibroglandular tissues of the lower inner breasts (arrowheads).



monal therapy was ongoing. The patient was free of recurrence and metastases at the last follow-up visit at 12 months postoperative.

This case report was approved by the local Institutional Review Board, which waived the requirement for written informed consent (IRB No. 2023-10-002).

## DISCUSSION

Ectopic breast tissue in the chest or abdominal wall along the milk line occurs in 20% of the population and is often located on the left side of the body just below the inframammary crease (1). However, the etiology of malignancy in ectopic breast tissues is not well known. Genetic and environmental risk factors of orthotopic breast cancer may contribute to the pathogenesis of ectopic breast cancer (6). Ectopic breast tissue is an important entity with a similar risk of benign and malignant tumor development as normal breast tissue. All types of ectopic breast cancer have been reported in literature, including ductal, lobular, medullary,

mucinous, and papillary carcinomas (7). Benign lesions, such as intraductal papilloma, granulosa cell tumor, fibroadenoma, and fibrocystic disease, have also been described (8). In our patient, concurrent benign and malignant tumors were found in the bilateral ectopic breast tissues of the chest wall, which have not been previously reported.

Ectopic breast tissue is histologically classified into supernumerary breast with a nipple or areola and aberrant breast tissue without a nipple or areola. Compared with supernumerary breasts, aberrant breast tissue is considered more susceptible to malignant degeneration, probably due to stagnation of the ductal lumen (9). A review of 82 cases of ectopic breast cancer published between 1865 and 1994 reported an increased incidence of cancer in aberrant breast tissue but not in supernumerary breast cancer. A single-center study by Famá et al. (8) found four malignancies in 327 patients with ectopic breast tissue; three were detected in cases of aberrant breast tissue, while only one was found in a supernumerary breast. In the present case, ectopic breast cancer was observed in aberrant breast tissue.

Few studies have described breast carcinomas located in the anterior chest or abdominal wall. In a review, da Silva et al. (3) reported 12 cases of ectopic breast cancer of the chest wall between 1966 and 2007. Fachinetti et al. (1) described a metachronous bilateral invasive lobular carcinoma arising in the upper anterior abdominal ectopic breast tissue. Ogino et al. (4) reported a case of invasive ductal carcinoma in the aberrant breast tissue of the left upper anterior abdominal wall similar to our case. Önel et al. (2) reported an invasive lobular carcinoma in the inferior portion of the left breast. However, none of these studies showed MR images but only descriptions, histopathological pictures, or gross appearances.

Standard mammograms do not usually show ectopic breast tissue because it is located beyond the breast, except in the axilla. The ectopic axillary breast tissue resembled the normal glandular tissue. On MRI, the signal intensity of the ectopic breast tissue was similar to that of the adjacent non-contiguous breast tissue. The contrast enhancement was heterogeneous and similar to that of normal breast parenchyma. Upon sonographic examination, ectopic breast tissue is typically observed as an echogenic area resembling normal glandular tissue. In our case, ectopic breast cancer appeared as a hypoechoic mass with an irregular shape and a microlobulated margin on US and as a heterogeneously enhancing mass on MRI with findings suggestive of malignancy. Although no specific imaging findings have been reported for ectopic breast cancer, it is presumed not to differ from orthotopic breast cancer.

Ectopic breast cancer can be treated as an orthotopic breast tumor, although standardized general clinical guidelines are lacking. Lumpectomy is the treatment of choice for benign neoplasms. Wide excision with or without axillary lymph node dissection is recommended for malignant lesions. The postoperative treatment was the same as that for orthotopic breast cancer. Most previous studies have not provided clear evidence of the recurrence rate and prognosis because ectopic breast cancer is rare and only a limited number of studies have been conducted (5, 10). However, ectopic breast cancer seems to have a poorer prognosis than orthotopic breast cancer because its early diagnosis can be difficult. In a case series of 11 patients with ectopic breast cancer reported by Zhang et al. (10), > 80% presented with stage 2 or higher disease, 45% had axillary nodal disease, and 36% had distant metastasis.

In conclusion, here we described a rare case of ectopic breast cancer in an unusual location. We also present the MRI findings of concurrent malignant and benign masses in the bi-

lateral ectopic breast tissues located in the lower chest wall. As the diagnosis of cancer may be delayed without high suspicion when a patient presents with a mass located beyond the breast, physicians must consider the possibility of tumors arising from ectopic breast tissue.

### Conflicts of Interest

The author has no potential conflicts of interest to disclose.

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## 양측 흉벽 이소성 유방에 동시 발생한 침윤성 유방암과 섬유선종: 증례 보고 및 문헌 고찰

김지희\*

이소성 유방 조직은 배아발생 과정 중 유선의 불완전한 퇴화로 발생하며 인구의 0.2%–6%를 차지한다. 흉벽이나 복벽에 발생한 이소성 유방암은 특히 드물게 보고되었다. 본 연구에서는 양측 전흉벽의 이소성 유방에 유방암과 섬유선종이 동시에 발생한 38세 여성의 매우 드문 사례를 초음파 및 자기공명영상 소견과 함께 보고하고자 한다.

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