TRIDHA
Journal of Clinical Cases & Reports
Volume 2025, Issue 3, 5 pages
https://doi.org/10.46619/joccr.2025.8-1181

CASE REPORT

Breast Cancer Arising from Accessory Mammary Tissue: A Case Report and Literature Review

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Received: 7 May 2025; Accepted: 31 May 2025; Published: 10 June 2025

ABSTRACT

Accessory breast tissue is a rare embryological anomaly, subject to the same pathological processes as orthotopic breast tissue, including malignancies. We report the case of a fifty-five-year-old, caucasien diabetic woman with a congenital supernumerary breast located in the right inframammary fold who presented with a progressively enlarging mass. Imaging revealed a suspicious five centimetres spiculated lesion classified as BIRADS 5 than the core needle biopsy confirmed the diagnosis of a grade III triplenegative invasive carcinoma. Prompt diagnosis and tailored multidisciplinary management are key to achieving favourable prognosis, and due to the rarity of this entity further studies are needed to establish standardized treatment protocols.

KEYWORDS

Mammary gland; Case report; Modified radical mastectomy; Ectopic breast; Breast neoplasms

INTRODUCTION

Accessory breast tissue (ABT) is an embryological remnant that persists due to incomplete regression of the milk line. This line extends bilaterally from the axilla to the inguinal region, and failure of its involution can lead to ectopic breast tissue along this path. ABT occurs in approximately 2%-6% of the general population [1,2]. Although it is most commonly found in the axillary region, it can also be found in other areas, such as the chest wall, abdomen, and vulva [3]. Although ABT is usually asymptomatic and benign, it is subject to the same hormonal influences and pathological changes as orthotopic breast tissue. These include fibroadenomas, mastitis, and, more rarely, carcinoma [4]. Carcinomas arising from ABT are extremely rare, accounting for less than 1% of all breast cancers [5]. Among the few reported cases, invasive ductal carcinoma is the most frequent histological subtype [1]. The atypical location of ABT tumours can lead to a delayed diagnosis. Moreover, the absence of standardised screening and treatment guidelines for ABT carcinoma further complicates its management [6]. Therefore, awareness of the malignant potential of this condition is essential for timely recognition and appropriate

Citation: Ons KRIMI (2025) Breast Cancer Arising from Accessory Mammary Tissue: A Case Report and Literature Review. J Clin Cases Rep 8(3): 95-102.

care. Herein, we report a rare case of invasive ductal carcinoma arising in the accessory breast tissue located in the inframammary fold. We aimed to highlight the clinical presentation, diagnostic pathway, and therapeutic management of this uncommon entity, along with a review of the relevant literature.

CASE REPRESENTATION

A 55-year-old Caucasian diabetic woman with a congenital right-sided supernumerary breast located in the inframammary fold, no medical or psychological history, presented with a progressively enlarging right breast mass arising from the accessory mammary gland, evolving over a 2-month period. On clinical examination, the mass was firm, measured six centimetres, infiltrated the overlying skin, and was associated with ipsilateral axillary lymphadenopathy. Breast imaging, including mammography (Figure-1), tomosynthesis, and ultrasound (Figure-2), revealed five centimetres heterogeneous spiculated mass originating from the accessory breast tissue, with associated skin thickening. The lesion was classified as BIRADS 5. Ultrasound-guided core needle biopsy revealed no special type, grade III, triple-negative, invasive carcinoma with a Ki-67 proliferation index of 50%. After staging investigations, including whole-body computed tomography and bone scintigraphy, the tumour was classified as T4B N1 M0. The patient underwent neoadjuvant chemotherapy consisting of four cycles of epirubicin-cyclophosphamide, followed by six cycles of carboplatin and paclitaxel, which was well tolerated by the patient. A partial reduction in tumour size was noted on clinical and radiological assessment following treatment. Surgical management involved modified radical mastectomy (Patey procedure) (Figure-3 and Figure-4) to enlarge the ectopic breast. The postoperative course was uneventful. Histopathological and immunohistochemical analysis concluded to an atypical infiltrating carcinoma with 75% viable, ulcerating the dermis. Lymph node dissection revealed 2 metastatic nodes among 24 examined, corresponding to class 3 according to the Chevalier classification. TC and NC according to the Sataloff classification.

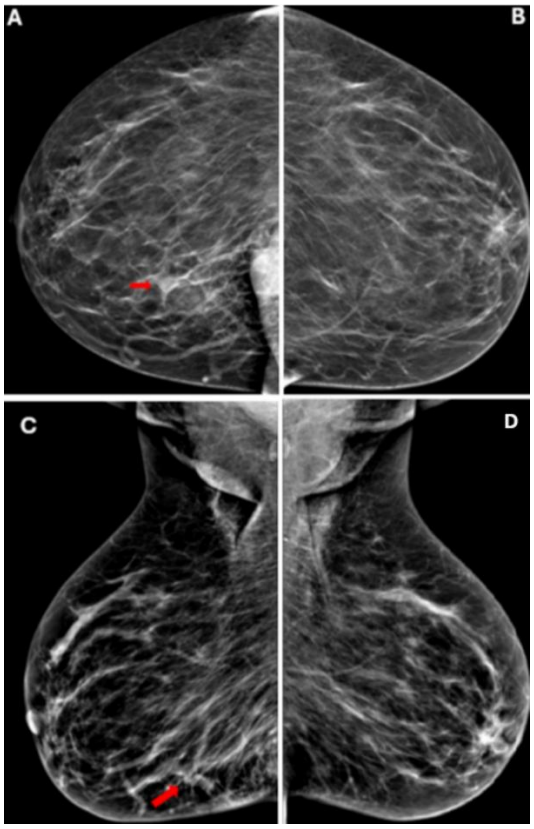

Figure 1: Bilateral mammographic views.
Note: A: Mediolateral oblique projection of the right breast.**; B:** Mediolateral oblique projection of the left breast.**; C:** Craniocaudal projection of the right breast.**; D:** Craniocaudal projection of the left breast**.** Mammography shows heterogeneously dense fibroglandular breast tissue. Red arrows show focal asymmetry with associated architectural distortion, suggestive of an underlying malignancy.

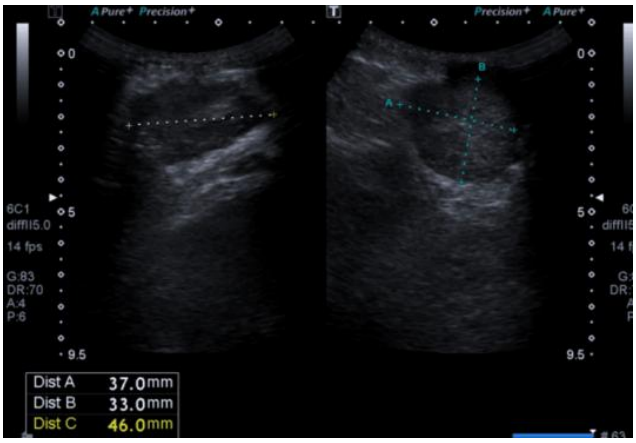

Figure 2: Breast ultrasound. The figure shows an hypogenic mass measuring 46mm with irregular margins.

Figure 3: Preoperative picture. Picture showing the ectopic inframammary gland with a tumour infiltrating the skin.

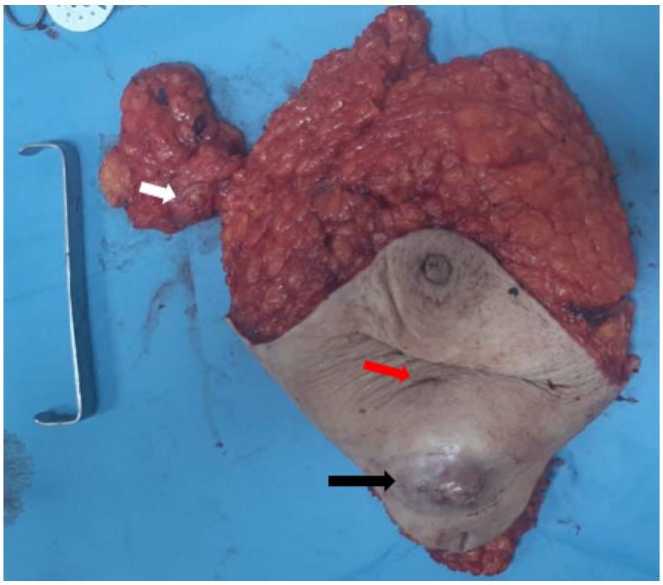

Figure 4: Surgical specimen of radical mastectomy with monobloc axillary lymphadenectomy. The figure shows the S-shaped incision incorporating the accessory breast and the accessory nipple (Red arrow) and the tumour (Black arrow), preserving the supra-areolar cutaneous flap to facilitate post-excision skin suture. An axillary lymphadenopathy is visible in the lymphadenopathy specimen (White arrow).

DISCUSSION

Accessory or supernumerary breast tissue arises from incomplete regression of the embryonic mammary ridge, or "milk line," which extends from the axilla to the inguinal region [2]. Although benign changes in EBT, such as fibroadenoma and mastitis, are relatively well known, malignant transformation remains a rare and

underrecognized entity. Breast cancer developing on EBT represents 0.3%-0.6% of all breast cancers but poses significant diagnostic and therapeutic challenges due to its atypical presentation and lack of consensus guidelines [7]. We reviewed 31 published cases of breast cancer arising from ectopic mammary tissue resumed in Table 1. The axillary region is the most common site, followed by the chest wall, vulva [8-9], abdomen [10], and inguinal region [11]. Although most of the reported patients are women, rare male cases have been described, including in the umbilicus, inguinal region, and axilla [11-13]. Reports by Sghaier et al. [1], Achouri et al. [2], and Suliman et al. [14] highlighted the predominance of axillary tumours. Rare localizations, such as the vulva (Mansour et al, 2023) [3], thoracic wall [15-16], and abdominal wall [10], demonstrate the diversity of possible presentations. The most frequently reported histological subtype is invasive ductal carcinoma (IDC) [17], followed by invasive lobular carcinoma [18] (ILC) [19-20]. Less common variants include medullary [2], mucinous [7], and micropapillary carcinomas [21]. These tumours share morphological and molecular features with their orthotopic counterparts. Immunohistochemical studies confirm hormone receptor positivity (oestrogen and progesterone receptors) in most cases, enabling adjuvant endocrine therapy. Several cases demonstrated HER2 overexpression, which permitted targeted therapy with trastuzumab. A minority of tumours exhibited a 5/10 triple-negative profile [4], which is often associated with a more aggressive clinical course and poorer prognosis. Diagnosis is often delayed due to the atypical location of the mass and lack of awareness among clinicians [4]. EBT tumours may mimic benign lesions, such as lipomas, lymphadenopathy, epidermal cysts, and hidradenitis. The absence of visible breast tissue in the thoracic region can also reduce clinical suspicion [15-16]. Imaging modalities, such as ultrasound, mammography, and MRI, can guide diagnosis [13], but histopathological and immunohistochemical analyses are essential for confirming the mammary origin of the tumour. Markers such as GATA3, CK7, oestrogen/progesterone receptors, and HER2 help distinguish ectopic breast cancer from other primary skin or soft tissue tumours [11-13]. The management approach followed the principles of conventional breast cancer treatment [22]. Surgical resection of the tumour with clear margins, including complete excision of ectopic breast tissue, is the cornerstone of treatment [23]. Axillary lymph node dissection or sentinel lymph node biopsy is commonly performed because of the risk of nodal involvement [24]. Adjuvant treatments (chemotherapy, radiotherapy, hormone therapy, and targeted therapy) are tailored according to the tumour's molecular profile and prognostic factors [1]. In metastatic cases, systemic therapy is used with palliative intent [22]. Due to the rarity of the condition, there are no specific treatment guidelines exist, and current management relies on extrapolation from established breast cancer protocols. The overall prognosis of breast cancer arising from EBT is generally comparable to that of orthotopic breast cancer when diagnosed early and treated appropriately. However, diagnostic delays, which are common in this condition, may lead to more advanced disease at presentation and poor outcomes [1]. Most reported cases describe favourable long-term outcomes, with disease-free intervals ranging from 1 to 5 years. Poorer prognoses are associated with triple-negative phenotypes, nodal involvement, and late diagnosis [22].

Study	Number of patients	Location of Ectopic Tissue	Tumor Subtype	Treatment	Outcome
Sghaier et al. (2021): *Breast Cancer Arising from Ectopic Breast Tissue: A Series of 5 Cases [1]*	5 cases (females)	Right axilla	Invasive lobular carcinoma	Chemotherapy, radiation therapy, hormone therapy and wide local excision and axillary lymph node dissection	Controlateral breast cancer after 4 years
		With supraclavicular metastatic lymph node	Positive hormone receptors		Favourable outcome
		Left axilla	Invasive ductal carcinoma Her2 overexpressed	Wide local excision and axillary lymph node dissection	favourable
				Trastuzumab	
				Adjuvant chemotherapy and radiation therapy	

		Right axilla	Invasive ductal carcinoma	Wide local excision and axillary lymphadenectomy	favourable
			Her 2 overexpressed	Chemotherapy and radiation therapy	
		Right axilla	Invasive ductal carcinoma	Wide excision and lymphadenectomy	Lost to follow up
			Luminal B	Chemotherapy, radiation therapy, hormone therapy	
		Right axilla	Medullary carcinoma	Wide local excision and axillary lymphadenectomy	favourable
				Chemotherapy and radiation therapy	
Achouri et al. (2022): *A Case of Medullary Multifocal Carcinoma in Ectopic Breast Tissue in the Axilla [2]*	1 case (female)	Left axilla	Medullary multifocal carcinoma, Her 2 overexpressed	Wide excision, axillary dissection, chemotherapy, radiotherapy, Herceptin, hormone therapy	No recurrence or metastasis after 2 years
Verras et al. (2022): Ectopic breast carcinoma [6]	1 case (female)	axillary	Invasive ductal carcinoma	Breast-conserving surgeryand lymph node dissection	Favourable outcome
Salvatore et al. (2015) Invasive mucinous carcinoma arising in ectopic axillary breast tissue: a case report and literature review [7]	1 case (female)	Right axilla	Invasive mucinous carcinoma	Breast conserving surgery and sentinel node biopsy	Favourable outcome
Fausto Famá et al. (2016) *Prevalence of Ectopic Breast Tissue and Tumor: A 20-Year Single Center Experience [4]*	327 case of ectopic breast tissue in female patients	1 left axilla	1 infiltrating lobular cancer, luminal A	Wide local excision and axillary lymph node dissection, Chemotherapy, radiation therapy, Hormone therapy	Favourable outcome after 5 years
	4 cases of malignancies on ectopic tissue	1 right axilla	1 infiltrating apocrine carcinoma	Local excision	favourable
		1 left axilla	1 infiltrating ductal carcinoma, triple negative	Wide local excision and axillary lymph node dissection	Pulmonary and hepatic metstases
				Chemotherapy and radiation therapy	
		Chest wall	1 infiltrating ductal carcinoma with tubular pattern	Wide local excision and axillary lymph node dissection	Favourable outcome
			Luminal B, Her-2 positive	Chemotherapy, hormone therapy and radiation therapy	
Joana Marques-Antunes et al. (2022) Invasive Lobular Carcinoma Arising in Ectopic Breast Tissue: A Case Report [5]	1 case (female)	Left axilla	Invasive lobular carcinoma	Excision of the tumour and axillary lymph node dissection	favourable
Mansour et al. (2023) Ectopic primary ductal breast carcinoma of the vulva: a case report and literature review [3]	1 case (female)	vulva	Grade II invasive ductal carcinoma	Tumour excision	Favourable outcome
Ruqayya Naheed Khan et al. Invasive carcinoma in accessory axillary breast tissue: A case report [17]	1 case (female)	Left axilla	Invasive ductal carcinoma	Excision of accessory breast tissue and sentinel lymph node biopsy	Favourable outcome
				Chemotherapy, radiation therapy and endocrine treatment	
Soares et al.(2013) Lobular ectopic breast carcinoma: A case-report [18]	1 case (female)	Left axilla	Invasive lobular carcinoma	Surgical excision and lymph node dissection	Favourable outcome
			positivity for hormonal receptors and HER2 negative.	Adjuvant radiotherapy and hormone therapy	
Suliman et al. (2024) Challenges in diagnosis and management of invasive	1 case (female)	Left axilla	Invasive ductal carcinoma	Wide local excision and axillary lymph node dissection	Favourable outcome

ductal carcinoma in axillary ectopic breast tissue: a case study [14]			Positive ostrogene and progesterone receptors, negative Her-2	Adjuvant chemotherapy and radiotherapy	
McMaster et al. (2013) Primary Breast Adenocarcinoma in Ectopic Breast Tissue in the Vulva [8]	1 case (female)	vulva	Invasive adenocarcinoma positive for CK7, ER, and mammaglobin	wide excision and inguinal lymphadenectomy and radiotherapy	Favourable outcome
Ji Hee Kim (2024) Concurrent Invasive Carcinoma and Fibroadenoma Arising from Bilateral Ectopic Breast Tissue in the Chest Wall: A Case Report and Literature Review [15]	1 case (female)	Chest wall	Invasive ductal carcinoma positive for estrogen and progesterone receptors and negative for the HER2 receptor	Excision and sentinel node biopsy Chemotherapy	Free of reccurence at 12 months post operative
Bansal et al (2022) Primary ectopic breast carcinoma arising in the inguinal region in a male patient [11]	1 case (male)	Left Inguinal region	Invasive ductal carcinoma expressing CK-7, GATA-3, synaptophysin, chromogranin Luminal A	Excision Radiotherapy Hormone therapy	No residual disease after 6 months
Mandal et al. (2020) A Rare Presentation of an Invasive Ductal Carcinoma of Ectopic Axillary Breast Tissue [23]	1 case (female)	Right axilla	Invasive ductal carcinoma Luminal B	Excision and sentinel lymph node biopsy Adjuvant axillary radiation therapy Hormone therapy	Favourable outcome
A Conversi et al. (2017) Axillary ectopic lobular carcinoma of breast: two rare case reports [19]	2 cases (females)	axilla	Invasive lobular carcinoma Luminal A	Wide local excision and axillary lymph node dissection	Favourable
Fachinetti et al. (2018) Metachronous bilateral ectopic breast carcinoma: a case report [10]	1 case (female)	Abdominal wall	Invasive lobular carcinoma estrogen receptor (ER) and progesterone receptor (PR) positive ,(HER2) negative	Excision with upper abdominoplasty Right axillary sentinel lymph node biopsy Hormone therapy	Local reccurence after 19 month
Jeeyeon Lee et al. (2014) Ductal Carcinoma Arising from Ectopic Breast Tissue Following Microcalcification Observed on Screening Mammography: A Case Report and Review of the Literature [20]	1 case (female)	Right axilla	Invasive lobular carcinoma positive and negative staining for the estrogen and progesterone receptors, respectively, and strong positive staining confirmed overexpression of the c-erbB-2 protein	Wide local excision and sentinel lymph node biopsy Hormone therapy	Favourable outcome after 3 months
Takayuki Ishigaki et al. (2017) Primary ectopic breast cancer of the vulva, treated with local excision of the vulva and sentinel lymph node biopsy: a case report [9]	1 case (female)	vulva	Invasive ductal carcinoma estrogen-receptor-positive, progesterone-receptor-positive, human epidermal growth factor 2-negative, and gross cystic disease fluid protein 15 (GCDFP-15)-positive	Excision and sentinel lymph node biopsy Hormone therapy	No reccurence after 6 months
Hallam et al. (2013) Primary ectopic breast carcinoma in a supernumerary breast arising in the anterior chest wall: a case report and review of the literature [16]	1 case (female)	chest wall	Invasive ductal carcinoma strongly positive for oestrogen and progesterone receptors,Her 2 status was negative (0)	Wide local excision and seentinel lymoh node biopsy Radiotherapy and hormone therapy	Favourable outcome
Shukla et al. (2015) *Carcinoma in ectopic breast: A cytologicaldiagnosis [24]*	1 case (female)	Right axilla	Invasive ductal carcinoma positive for ER, PR was negative and Her-2/neu was positive	Wide local excision and lymphnode dissection chemotherapy	Favourable

Kopanakis et al. (2016) Male breast cancer originating in an ectopic breast tissue in the umbilicus A Case Report [12]	1 case (male)	umbilicus	adenocarcinoma of breast origin		
Seung Won Oh et al. (2017) Invasive Micropapillary Carcinoma in Axillary Ectopic Breast and Synchronous Ductal Carcinoma In Situ in the Contralateral Breast [21]	1 case (female)	axillary	Micropapillary carcinoma Overexpressed her 2	Wide local excision and axillary lymph node dissection Chemotherapy Radiotherapy	Favourable after 12 month follow up
Almass et al. (2025) Carcinoma in a male accessory breast; Case report with literature review [13]	1 case (male)	Left axilla	Invasive ductal carcinoma Luminal A positive for GATA-3, mammaglobin, GCDFP-15,	Local excision with sentinel lymph node biopsy	Missed up
Seo Young Park et al (2024) Primary Invasive Ductal Carcinoma Arising in Axillary Accessory Breast: A Case Report [22]	1 case (female)	Left axilla With liver metastases	Invasive ductal carcinoma Luminal B basal like	Palliative chemotherapy	decrease in the size of the hepatic lesions

Table 1: Summary of 32 Reported Cases of Breast Cancer Arising in Ectopic Breast Tissue
Overview of 32 published case reports describing breast cancer arising from ectopic breast tissue (EBT). The table includes patient sex, tumor location, histological subtype, molecular profile, treatment modalities, and outcomes. Most cases involved female patients with axillary involvement and invasive ductal carcinoma as the predominant histological type.

CONCLUSION

Cancer arising from accessory breast tissue is rare and is often overlooked diagnosis owing to its atypical location and misleading presentation. Clinicians should maintain a high index of suspicion when evaluating subcutaneous masses along the milk line. Early recognition and histological confirmation are essential to prevent delays in diagnosis and treatment. Given the lack of specific guidelines, management should follow conventional breast cancer protocols, with consideration of the anatomical context and individual tumour characteristics. Further studies and larger case series are needed to better define the natural history, optimal treatment strategies, and prognostic factors associated with this rare entity.

CONSENT FOR PUBLICATION

Consent for treatment and open access publication was obtained by the patient.

Conflicts of Interest

No conflict of interest to declare

Financial Support

All authors have declared that no financial support was received from any organization for the submitted work.

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