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**Case Report**

# Encapsulated papillary carcinoma of the breast: a case report

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## ABSTRACT

Encapsulated papillary carcinoma (EPC) of the breast is a rare form of ductal carcinoma characterized by its development within a cystic space surrounded by a fibrous capsule. Due to its uncommon nature, the in situ or invasive status of EPC can be challenging to establish, particularly through biopsy. Surgical intervention is the primary treatment, and the need for adjuvant therapy remains a subject of debate. This case report describes the diagnosis, management, and outcome of EPC in a premenopausal woman. A 39-year-old premenopausal woman presented with a 12-month history of a painless, palpable mass in the right breast. There was no history of nipple discharge, smoking, oral contraceptive use, or familial breast or ovarian cancer. Clinical examination revealed a 4×7 cm, well-circumscribed, soft, oval, and mobile mass in the superior outer quadrant of the right breast, with no evidence of axillary, cervical, or supraclavicular lymphadenopathy. Mammography identified two adjacent retroareolar masses (47×36 mm and 43×28 mm), and ultrasonography showed one predominantly cystic lesion with a solid component and a second anechoic lesion, both classified as ACR 4, indicating suspicious malignancy. A lumpectomy was performed, and histopathological analysis confirmed encapsulated papillary carcinoma. Immunohistochemistry showed tumor cells positive for p63, p40, CK5/6, AML, and estrogen receptor (ER) with a Ki-67 proliferation index of less than 5%, suggesting a low proliferative rate. Complete surgical excision was achieved with no further adjuvant therapy deemed necessary due to the low proliferation index. At the 6-month follow-up, the patient remained asymptomatic with no evidence of recurrence. This case highlights the importance of considering EPC in the differential diagnosis of breast masses in premenopausal women. Early recognition and appropriate surgical management are crucial for favorable outcomes. Further research is needed to determine optimal management strategies for EPC, particularly in younger patients.

**Keywords:** Encapsulated, Papillary, Carcinoma, Breast, Post-menopausal, Woman

## INTRODUCTION

Encapsulated papillary carcinoma (EPC) is an uncommon form of breast cancer that accounts for less than 1% of all breast malignancies. It is typically characterized by a well-defined mass with a papillary architecture, often presenting in postmenopausal women. EPC has a low metastatic potential and is generally associated with a favorable prognosis. However, due to its rarity, the clinical presentation and optimal management strategies are not well established, particularly in premenopausal women. This case report details the presentation, diagnostic process, and management of EPC in a 39-year-old woman, contributing to the limited literature on this rare entity.[1,2]

## CASE REPORT

A 39-year-old premenopausal woman presented with a painless, palpable mass in the right breast that had been progressively enlarging over a period of 12 months. The patient reported no nipple discharge, and her medical history was unremarkable. She was a nonsmoker, had no history of oral contraceptive use, and there was no family history of breast or ovarian cancer.

***Clinical findings***

On physical examination, a 4×7 cm, well-circumscribed, soft, oval, and mobile mass was palpated in the superior outer quadrant of the right breast. There were no signs of skin changes, nipple retraction, or discharge. No axillary, cervical, or supraclavicular lymphadenopathy was detected.

***Diagnostic assessment***

*Imaging studies*

Mammography revealed two adjacent retroareolar masses measuring 47×36 mm and 43×28 mm, respectively (Figure 1). Both masses appeared well-circumscribed, with no associated microcalcifications or architectural distortion.

Ultrasonography of the breast showed two retroareolar lesions: one predominantly cystic and complex with a solid component projecting into the cystic lumen, and the second lesion was entirely anechoic. Both lesions were classified as ACR 4, indicating a suspicious malignancy (Figure 2).


**Figure 1: Mammography showing two adjacent retroareolar masses measuring 47×36 mm and 43×28 mm respectively.**

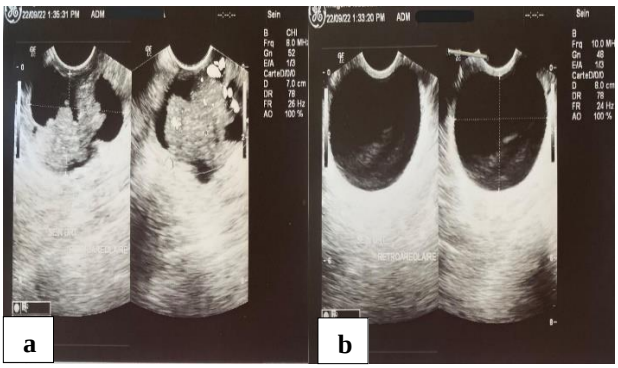


**Figure 2 (a and b): Ultrasound showing two retroareolar lesions one predominantly cystic and complex with solid component projecting into the cystic lumen and the second totally anechoic classified ACR 4.**

*Pathological findings*

The patient underwent a lumpectomy to excise the masses. Gross examination of the resected specimen revealed a 30×30 mm encapsulated mass. Histopathological analysis confirmed encapsulated papillary carcinoma. The tumor displayed papillary fronds lined by a single layer of epithelial cells within a fibrous capsule.

*Immunohistochemistry*

Immunohistochemical staining demonstrated the tumor cells were positive for p63, p40, CK5/6, AML, and estrogen receptor (ER). The Ki-67 proliferation index was less than 5%, indicating a low proliferation rate.

***Therapeutic intervention***

The patient underwent a lumpectomy with complete surgical excision of the lesion. Given the tumor's low proliferative index and encapsulated nature, further adjuvant therapy was not deemed necessary. The patient was advised to undergo regular follow-up with clinical examination and imaging.

***Follow-up and outcomes***

At the 6-month follow-up, the patient remained asymptomatic with no evidence of recurrence on clinical examination or imaging. She continues to undergo regular surveillance with no signs of disease progression.

## DISCUSSION

Less than 2% of breast cancer cases are EPC, a rare and unusual breast cancer that has been reported in both men and women. It primarily affects elderly postmenopausal women and usually presents as a painless uni/multifocal mass, sometimes associated with bloody nipple discharge.[1-3]

It manifests as an expansile papillary neoplasm that is well circumscribed within a cystic space and encased in a fibrous capsule.

In the latest world health organization classification of tumors of the breast EPC is classified into encapsulated papillary carcinoma and encapsulated papillary carcinoma with invasion.[4]

The invasive component is defined by the presence of tumor infiltrating beyond the fibrous capsule. Completely absent in encapsulated papillary carcinoma previously called in situ.[5] Both EPC and EPC with invasion have been reported to be associated with axillary and distant metastases.[1,6]

In some cases, EPC and papillary ductal carcinoma in situ (DCIS) can coexist. One distinguishing characteristic

between the two is the absence of myoepithelial cells, both within and at the periphery of the EPC.[5,7]

The radiological and clinical results of EPC are not particularly characteristic. Mammography may show the tumor as an oval or lobulated, well-defined mass, most frequently located in the retroareolar region. EPC is typically heterogeneous on ultrasonography, exhibiting both solid and cystic components. A polycyclic contour and an ill-defined border are both characteristics of a malignant tumor. There may be septations in the cystic portion.[8] A recent study found that a complex solid and cystic mass on ultrasound is more often associated with the diagnosis of in situ EPC, while EPC with invasion most frequently manifests as an irregular mass.[9]

MRI is an important complementary tool to ultrasonography. A larger size, irregular margins with washout enhancement kinetics and axillary lymph node metastasis are consistent with malignancy.[9,10] EPC with invasion is comparable in diffusion restriction characteristics and enhancement kinetics to other invasive breast cancers.[11] Although there have been an interesting case report of a shrinking tumor turning out to be invasive, wich leads us to question the value of the large size and demonstrates that decreasing size does not guarantee benignity.[12] MRI was also more useful than MG and US in showing the local spread of lesions and accompanying synchronous tumors.[11]

The in situ or invasive character of EPC is difficult to discern particularly on fine needle aspiration or core needle biopsy. Mainly because the size of the biopsy tissue is too small to make a clear diagnosis, plus invasion is detected at the tumor's periphery whereas the biopsy frequently targets the lesion's center.[13] EPC can be underappreciated on percutaneous biopsy.

For pure EPC, surgical excision with negative surgical margins should be sufficient; EPC with invasion are staged and managed according to characteristics of the invasive component.[1,10]

Although there have been documented lymph node micrometastasis associated with EPC.[8] Axillary lymph node surgery is still a subject of debate because of the low metastatic rate of this tumor and the morbidity associated with axillary lymph node clearance.[7] In invasive EPC sentinel lymph node biopsy is a good alternative to axillary lymph-node dissection, in order to provide useful input for both adjuvant treatment and prognosis.[14]

Indications of chemotherapy, adjuvant radiation, endocrine and HER2-targeted therapies remain unclear. Some say that radiotherapy and endocrine therapy should be considered in patients with pure EPC especially below 40 years old.[1] Others say that endocrine therapy should be recommended to patients with positive receptor status and EPC with invasion, but many agree that complete surgical excision, whether radical or conservative, is the main pillar of treatment, that adjuvant therapy with hormones and/or radiotherapy could be useful in cases which present either invasive elements or coexistent DCIS and that the prognosis of EPC is excellent.[2,10,14-17]

## CONCLUSION

This case illustrates the importance of considering encapsulated papillary carcinoma in the differential diagnosis of breast masses in premenopausal women. Early recognition and appropriate surgical management are critical for favorable outcomes. Given the rarity of EPC, further studies are needed to elucidate the optimal management strategies and long-term prognosis for premenopausal women diagnosed with this condition.

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