

## Case Report



# Recurrence of Phyllodes Tumour Breast with Transformation into Metaplastic Carcinoma

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## Introduction

Phyllodes tumours also known as serocystic disease of Brodie or cystosarcoma phyllodes are biphasic neoplasms, that constitute 1% of breast tumours.<sup>1</sup> They have leaf-like architecture resulting from a prominent intracanalicular growth pattern and cleft-like spaces lined by epithelial and myoepithelial cells with hypercellular stroma. The epithelial component may show apocrine or squamous metaplasia or ductal hyperplasia and rarely it may transform into ductal carcinoma in situ, and invasive carcinoma. Its aetiology is currently unclear. On a histological basis, phyllodes tumours are classified into three main types which are benign, borderline, and malignant. 60%-75% of phyllodes tumours are benign and therefore cured by wide local excision with a recurrence rate of 10%-20%.<sup>1</sup> According to the World Health Organization (WHO), breast tumors are classified morphologically based on tumor border, stromal cellularity, stromal cell atypia, stromal cell mitotic activity, presence of stromal overgrowth, and presence of malignant heterologous elements. Commonly presents with a firm, asymptomatic, and mobile breast mass.<sup>2</sup> Large tumours (up to 20 cm) can cause skin ulceration and pain.<sup>3</sup>

## A B S T R A C T

Phyllodes tumours of the breast are rare fibroepithelial neoplasms, that can recur as metaplastic breast carcinoma. Metaplastic breast carcinoma is an uncommon invasive carcinoma that constitutes 0.2% to 1% of all breast cancers. We report a rare case of a 45-year-old female with a recurrent phyllodes tumor with transformation into metaplastic carcinoma, who presented with a huge recurrent mass in the right breast that was treated with mastectomy. Histopathological and immunohistochemistry analysis confirmed it to be metaplastic carcinoma. Postoperatively she had adjuvant therapy and was followed regularly for up to 6 months after surgery.

**Keywords:** Breast Carcinoma, Phyllodes Tumour, Metaplastic Carcinoma

Phyllodes tumours can recur as metaplastic breast carcinoma. Diagnosis is largely dependent on histologic diagnosis as imaging is not accurate in diagnosis. Ultrasound and mammography do not accurately differentiate phyllodes tumor from fibroadenoma. Ultrasound is unreliable in grading phyllodes tumour.<sup>4</sup>

Local excision with clear margins is the recommended surgical treatment. Narrow margins may be adequate for benign phyllodes tumour. The exact extent of clearance is still under debate, and currently no consensus as to adequate margin width.<sup>5</sup> Axillary dissection not indicated. The efficacy of radiotherapy and chemotherapy is unclear. Prognosis correlates with histologic grade. Positive margin status associated with local recurrence. Tumor size is an independent risk factor for local recurrence.

Metaplastic breast carcinoma (MBC) is an uncommon invasive carcinoma that constitutes 0.2% to 1% of all breast cancer. The majority of MBCs are triple-negative for ER, PR, and HER 2neu; therefore, have poor prognosis.<sup>6</sup> Metaplastic carcinoma is a spindle cell lesion and is a diagnostic challenge in distinguishing it from stroma-predominant malignant phyllodes tumours.<sup>7</sup> A definitive diagnosis can be reached with the help of core

biopsies. Immunohistochemistry shows that phyllodes tumours are negative for CKs and *p63*, whereas expression of CD34 is detected in 37% to 57% of cases and metaplastic carcinomas are negative for CD34 neoplasm.<sup>2</sup>

We present a biopsy-proven case of phyllodes tumor that was excised thrice but the fourth time it presented as a huge breast mass and diagnosed as a malignant phyllodes tumor. Treated with mastectomy and histopathology confirmed it as metaplastic carcinoma.

## Case Presentation

A 45-year-old female presented with a huge recurrent lump in her right breast for one year. Her personal history showed her age at menarche was 12 years, with regular menstrual cycles. She was married with five breastfed children, with the last child born 16 years ago. There was no history of any oral contraceptive pills and no history of breast or ovarian cancer in the family. She has a history of mesh repair for a paraumbilical hernia 10 years ago.

Her history of breast disease dates back seven years when she presented in OPD with a complaint of a lump in her right breast. On examination, it was a 5x4 cm lump in UOQ of the right breast which was firm, non-tender, and mobile with no axillary lymphadenopathy. A mammogram at that time showed a large well defined rounded soft tissue mass lesion with lobulated margins in UOQ with ill-defined antero-inferior margins. It was 5x5.5cm in CC view. Ultrasound commented a well-defined heterogenous mass with regular margins and areas of central necrosis, wider than a taller lesion with subareolar extension, located in UOQ measuring 42.9x33.1 mm in the right breast with clear axilla and rest of the breast parenchyma. It was labeled BIRADS III. FNAC showed the atypia was probably benign, C3. Tru-cut biopsy of the same lump reported one fragment of benign breast lobules and other fragments of atypical cells. A lumpectomy was done and sent for histopathological analysis that showed a benign mixed tumor and concluded it as a phyllodes tumor, BIRADS IV with axillary lymphadenopathy.

The patient presented twice in the next three years with a recurrent right breast lump and a lumpectomy was done on both occasions. After two years, she presented again with a lump in the same breast. Mammography showed BIRADS V in the right breast, a huge multilobulated mass lesion almost completely replacing it with diffuse overlying skin thickening and nipple retraction, and extensive architectural distortion with ipsilateral lymphadenopathy. However, ultrasound concluded a huge hypoechoic, heterogeneous area measuring about 8.5x9.1

cm involving almost the whole breast. Few lymph nodes are seen in the axilla, the largest one measuring about 0.4cm with echogenic hilum. It was labeled phyllodes tumor, BIRADS IV with axillary lymphadenopathy. FNAC also depicted fibroepithelial neoplasm, most likely a phyllodes tumor. However, the patient lost to follow-up. Last time again she presented with a huge mass involving the whole breast approximately 43x30 cm in size with ulcerated overlying skin and palpable axillary lymph nodes. Tru-cut biopsy was done and histopathological reported metaplastic carcinoma with immunohistochemistry with ER, Her 2 neu- negative; PR- positive; Ki67- 25%; CKAE1/AE3- positive; *p63*- positive, CK5/6- positive; CD34- negative. CT scan showed a large lobulated heterogeneously enhancing soft tissue density mass lesion involving almost all breast parenchyma with internal non-enhancing necrotic component and metastasis in the lungs.

A modified radical mastectomy was done and tumour weight was approximately 12 kg. Histopathology showed metaplastic carcinoma, grade 3/3, with a tumor size of 22.5x22.5x20.5 cm. All margins were negative for malignancy with the closest margin to invasive carcinoma being 1mm deep. All 24 lymph nodes were negative for malignancy. Postoperatively she had adjuvant chemotherapy and was followed closely for six months.



Figure 1. Huge Right Breast Mass.



Figure 2. Excised Mass.

Figure 3. Postoperative wound.

## Discussion

Phyllodes Tumours are biphasic fibroepithelial neoplasm with leaf-like epithelial (phyllodal) pattern and stromal proliferation. Based on histological features, phyllodes tumours are categorized into three main varieties benign, borderline, and malignant. Commonly occurs in 40 to 50 years of age and presents with a firm, asymptomatic, and mobile breast mass. Large tumours (up to 20 cm) can cause skin ulceration and pain. This patient has an age of 45 years old and presented with a huge firm recurrent mass in her right breast.

Recurrence may show a higher histologic grade with increased mitosis and a higher potential for distant metastasis.<sup>1</sup> According to NCCN guidelines, the surgical treatment for phyllodes tumors is complete surgical excision with 1 cm margins, and axillary clearance is not needed.<sup>5</sup> However, large tumors need a mastectomy. In terms of survival, there is not much difference in whether mastectomy or breast-conserving surgery is performed, even if it is a malignant type. Therefore, to reduce recurrence, local radiotherapy as adjuvant therapy is recommended.<sup>8</sup> There is no morphologically epithelial differentiation between malignant phyllodes tumor and spindle cell metaplastic carcinoma, which makes it challenging to make the final diagnosis. Therefore, sometimes extensive sampling is done to differentiate between the two. On histopathology, detection of ductal carcinoma in situ with malignant mammary spindle cell tumor identifies as spindle cell metaplastic breast carcinoma, whereas if leaf-like fronds lined by benign glandular epithelium are present it suggests phyllodes tumor. Immunohistochemical analysis for various protein markers is also recommended for diagnosis.<sup>9</sup> The expression of cytokeratin or p63/p40 in malignant spindle cells suggests metaplastic carcinoma.

Moreover, high molecular weight or basal-type keratins such as 34 $\beta$ E12, CK5/6, and CK14 are also found on spindle cells of metaplastic breast carcinoma. Whereas, patchy staining of cytokeratin or p63/p40 has also been found in the stromal component of malignant phyllodes. However, positive expression of CD34 and bcl-2 on stromal cells has been described for phyllodes tumors. Many studies have suggested stromal cell positivity for nuclear  $\beta$ -catenin that favours the diagnosis of phyllodes tumor but conflicting reports have also demonstrated nuclear staining of  $\beta$ -catenin in metaplastic carcinoma.<sup>10</sup>

Other radiological investigations are carried out like CT scans, and bone scans to see if metastatic disease is present or not, and accordingly treatment plan is devised. As in the

above-mentioned case, the lump was huge, therefore for improvement in the patient's daily life mastectomy was done and later the patient was referred for adjuvant therapy.

## Conclusion

Recurrence of phyllodes is common but its presentation as a transformed form of metaplastic carcinoma is rare, therefore accurate and timely diagnosis is required. A multidisciplinary approach should be taken into account while treating this condition. The use of adjuvant therapies is still controversial due to the lack of clinical trials. Diagnosis is based on core biopsies depending primarily on immunohistochemistry. Treatment recommendations should be individualized according to the patient's risks and preferences.

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