

## Original Article

# Phyllodes Tumour of the Female Breast in Two District Hospitals in Abuja, Northcentral Nigeria: A Ten-Year Review of Clinicopathological Features and Management Outcome

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## ABSTRACT

**Background:** Phyllodes tumours (PT) of the breast are rare fibroepithelial tumours which are often indistinguishable from fibroadenomas and commonly affect women aged 35 to 55 years. PTs are a spectrum of tumours that range from benign and borderline to malignant subtypes. Preoperative histological diagnosis is often a challenge but key to optimal surgical management, which is the mainstay of treatment. Postoperative histopathological examination of surgical specimen and frequent clinical audit of cases are important in identifying the disease burden.

**Aim:** The aim of the study was to retrospectively review the clinicopathological features and management outcome of phyllodes tumours managed in two public secondary-level healthcare facilities in Abuja, North-central Nigeria.

**Materials and Method:** The study involved a review and analysis of all cases of histologically diagnosed phyllodes tumours of the female breast managed at the departments of surgery by 2 district hospitals over a 10-year period, between June 2014 and May 2024.

**Results:** A total of 857 patients were managed for breast tumours in both hospitals within the study period. Of these, 54 cases representing 6.3% were

phyllodes tumours of the female breast. The patients' age ranged from 14-57 years (mean age of 32.1 years). A biphasic peak frequency was noted in the 14-20 years and the 31-40 years age range. More than 50% of the patients were below age 30 years [30(55.5%)]. Most of the tumours, 32(59.2%) were located in the right breast and 4(7.4%) were bilateral. Majority of the tumours, 45(83.3%) were benign, 4(7.4%) were borderline, while 5(9.3%) were malignant. 60% of those with the malignant subtype were aged over 50 years. Majority, 30(55.5%), measured <5 cm in the widest diameter. The mean tumour weight was 510.4 g. Surgical management was employed in all cases with either wide local excision or mastectomy. Overall, management outcome was favourable.

**Conclusion:** This study found a predominance of benign disease, a dual peak and high incidence of PT among the younger age group with older patients affected by the malignant subtypes. Accurate preoperative histological diagnosis and institution of appropriate surgical management are necessary in reducing the risk of recurrence.

**Key words:** Phyllodes, Tumour; Breast; Clinicopathological, Features; Management Outcome; Abuja.

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## Introduction

Phyllodes tumours (PTs) of the breast are rare fibroepithelial tumours accounting for 0.3-1% of all breast tumours and 2-3% of fibrous epithelial tumours of the breast<sup>[1]</sup>. It was first reported by Johannes Muller who described it as cystosarcoma phyllodes in 1838. According to the diagnostic criteria recommended by WHO in 2003, PTs of the breast are classified as benign, borderline and malignant based on the tumour cell atypia, mitotic activity, stromal overgrowth and cellularity, and the nature of tumour surgical margins (AMOS)<sup>[2, 3]</sup>.

PTs often present as unilateral, single nodular painless mass of insidious onset and slow-progression, with an average size of approximately 5 cm (larger than average fibroadenomas). It commonly occurs in women aged 35 to 55 years. Few cases have been reported in men with gynaecomastia<sup>[3]</sup>. They may appear as fibroadenoma with fibrocystic changes, adenosis, epithelial hyperplasia or atypical hyperplasia<sup>[1, 3]</sup>. Most PTs are benign with occasional local recurrences but metastasis is rare. Distant metastases from malignant PTs occur via haematogenous spread; common sites of metastasis include lungs, bone, abdominal viscera, and mediastinum<sup>[4]</sup>.

PTs present a diagnostic challenge preoperatively due to their similarity with fibroadenoma of the breast. Imaging techniques such as ultrasonography, MRI and X-rays are employed as part of clinical assessment but findings are often not pathognomonic of PT<sup>[5]</sup>. MRI may define the tumour scope but differentiation from fibroadenoma remains a challenge<sup>[6]</sup>. Fine Needle Aspiration cytology (FNAC) and core

needle biopsy (CNB) are keys to preoperative tissue diagnosis but differentiation from fibroadenoma remains challenging due to limited sampling, making preoperative diagnosis difficult and hindering adequate treatment with risk of local recurrence, rapid growth and metastases<sup>[7]</sup>.

The diagnosis of PT is most often determined following histopathological examination of the surgical specimen. Histological sections show lobulated solid, grey or grey-yellow mesenchymal and epithelial components with necrotic haemorrhagic leaf-like protrusions into the cystic spaces<sup>[8, 9]</sup>. The stroma is more cellular than in a fibroadenoma, but the fibroblastic cells are bland, and mitoses are infrequent<sup>[9]</sup>. Studies have suggested the role of growth factors in the stromal induction of phyllodes tumours. Trauma, pregnancy, increased oestrogen activity and lactation have occasionally been implicated as aetiological risk factors<sup>[10]</sup>.

Surgical management is the mainstay of treatment for all subtypes of PT and wide local excision (WLE) with 1cm margin is advocated without need for lymph node dissection<sup>[11]</sup>. Patients with local recurrence or malignant tumours will usually require mastectomy. The role of adjuvant radiotherapy and chemotherapy are yet to be elucidated as is hormonal therapy<sup>[12, 13]</sup>.

The paucity of studies on phyllodes tumours of the breast in Abuja, Northcentral Nigeria necessitated this study. The study aims to retrospectively review the clinicopathological features and management outcome of all phyllodes tumours of the female breast seen at two FCT Hospitals, Abuja over a ten-year period.

## **Objective**

To evaluate the clinicopathological features and management outcome of all phyllodes tumours of the female breast managed in 2 FCT Hospitals in Abuja over a 10-year period.

## **Materials and Method**

This was a retrospective analysis of all cases of phyllodes tumours managed at the departments of surgery of two FCT Hospitals, Abuja over a 10-year period, between June 2014 and May 2024. Both hospitals are public secondary-level healthcare facilities in Abuja, located in the Abuja Municipal Area Council of the Federal Capital Territory (FCT). They provide general and specialized surgical care and serve as referral centres for patients from both public and private health institutions in the FCT Abuja and its environs. Both hospitals run a secured electronic medical records system (E-MRS) which guarantees and facilitates secure data for retrieval when required.

For the study, data were collected from the patients' records on the E-Medical Records database and also from the surgical clinics and wards, theatre records and histopathology units when necessary. The relevant demographic and clinicopathologic characteristics of the patients such as age, location and duration of the swelling in the breast, were obtained using a structured proforma. Data analysis was done using IBM Statistical Package for Social Sciences (SPSS) version 22.0 with results presented in tables and simple percentages. Frequency distribution was generated for all categorical variables for the descriptive aspect of the analysis. Surgical images are presented as figures. Ethical approval was obtained from the Institutions' Ethics Committees. Consent

## **Phyllodes tumour management in Abuja**

was obtained from the patients to use the images and with the guarantee to protect the identities of the patients.

All the surgeries were performed by the same surgical team of each hospital. Tru-cut and excision biopsies were done for histological diagnosis while wide local excision (WLE) was done for benign tumours and mastectomy was done for huge or malignant tumours as indicated. All the excised specimens were weighed and largest diameters measured before the histological analysis of specimens were done by the histopathologists. All the malignant types had immunohistochemistry analysis for oestrogen, progesterone, and HER2/neu receptor status confirmed before referring the patients to the medical oncologist for adjuvant therapy where indicated. All patients were scheduled to have follow-up review for at least 12 months to look out for evidence of recurrence but some of them were lost to follow-up.

## **Results**

The results showed that a total of 857 female patients presented with breast tumours in both hospitals within the study period. Of these, a total of 54 cases, representing 6.3%, were phyllodes tumours of the female breast. The patients' ages ranged between 14-57 years, with a mean age of 32.1 years.

Table 1 shows the age distribution of the patients, tumour location, and histopathological diagnosis of the tumours. Majority, 18(33.3%), were aged 20 years or less, while 4(7.4%) were more than 50 years old. A biphasic age peak frequency distribution was observed. The first age frequency peak was in the 14-20 years range while the second peak was in the 31-40 years range. 30(55.5%) of the patients were below 30 years of age. Most of the tumours, 32(59.2%) were located in the right breast,

18(33.3%) were in the left breast, while tumour bilaterality occurred in 4(7.4%) of cases. Majority of the tumours, 45(83.3%) were benign, 4(7.4%) were borderline while the remaining 5(9.3%) were of the malignant subtype. Of the five cases of malignant PT, three (60%) were aged over 50 years.

Table 2 shows the distribution of the tumour weight in grams. The tumour weight ranged between 40g and 3000g, with a mean of 510.4 g. Majority 24(44.4%) weighed between 201g and 300g with 2(3.7%) weighing less than 100g while another 2(3.7%) weighed more than 1000g.

The tumour size ranged between 1cm and 22cm in the widest diameter. Majority 30 (55.5%) were less than 5cm in the widest diameter while only 1(2%) measured more than 20cm in the widest diameter (Table 3).

Figure 1 is a picture of the breast of a patient with a huge, smooth, globular, freely mobile

mass involving the whole right breast and measured 20cm in its widest diameter. She had a simple mastectomy and the specimen turned out to be a benign phyllodes tumour on histopathological examination.

Figure 2 demonstrates a preoperative fungating phyllodes tumour of the right breast of a patient. The tumour was uniformly attached to the overlying skin with associated colour changes. Histopathological examination of the mastectomy specimen revealed a borderline phyllodes tumour.

Figure 3 shows an intra-operative patient with a huge, pedunculated, ulcerated, and hyper-pigmented, multiple nodules of the left breast. The breast shown in Figure 4 is the intra-operative mastectomy specimen of the patient in Figure 3. It measured 22cm in its widest diameter, weighed 3000g and the histology report confirmed malignant phyllodes tumour of the left breast.

**Table 1-Distribution of Age group, Location and Histological diagnosis of the tumours**

Variable	No. of Patients (N=54)	Percentage (100%)
<b>Age group (years)</b>		
≤ 20	18	33.3
21-30	12	22.2
31-40	15	27.8
41-50	5	9.3
>50	4	7.4
<b>Location of Tumour</b>		
Right breast	32	59.3
Left breast	18	33.3
Both breasts (bilateral)	4	7.4
<b>Histological Diagnosis</b>		
Benign	45	83.3
Borderline	4	7.4
Malignant	5	9.3

Table 2-Distribution of Tumour weight

Weight (g)	No. of Patients (n=54)	Percentage (100%)
0-100	2	3.7
101-200	6	11.1
201-300	24	44.4
301-400	10	18.5
401-500	7	13.0
501-600	3	5.6
>1000	2	3.7

Table 3- Distribution of Tumour Size

Widest Diameter (cm)	No. of Patients (54)	Percentage (100%)
0-5	30	55.6
6-10	18	33.3
11-15	3	5.6
16-20	2	3.7
>20	1	1.8



Figure 2- Fungating borderline phyllodes tumour of the right breast



Figure 3a - Ulcerated multinodular malignant phyllodes tumour of the left breast

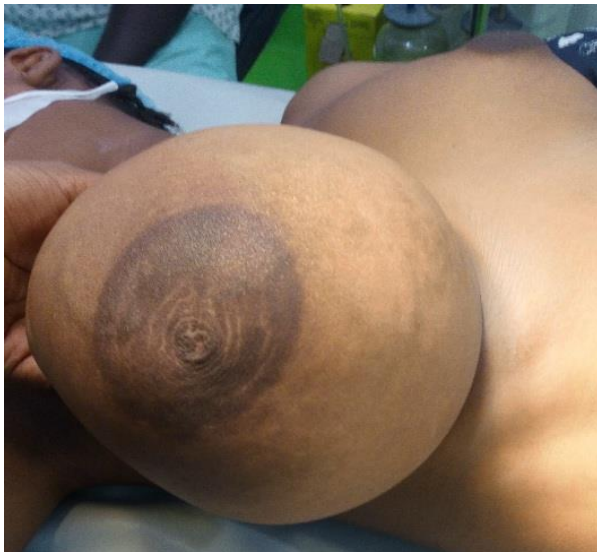


Figure 1 - A huge benign phyllodes tumour involving the entire right breast of a 24-year-old female.



Figure 3b - Intra-operative mastectomy specimen of the ulcerated multinodular malignant left breast phyllodes tumour shown in Figure 3a above

## Discussion

Phyllodes tumours (PTs) are rare fibroepithelial tumours of the breast that present a spectrum of benign, borderline and malignant histopathological features [2]. The results from our study show that phyllodes tumours of the breast accounted for 6.3% of all breast tumours managed within the study period. This is much higher than the 1.1% reported by Ekanem et al [14] and the 0.3%-1% reported in the literature [1]. The common morphological spectrum shared by phyllodes tumour and fibroadenoma makes it difficult to differentiate them clinically, radiologically and with cytology. Histological findings of core needle biopsy and small excision biopsy can sometimes also pose a challenge. This may explain the wide variations in reported incidences and also the high incidence reported in our study. Karim et al observed that pathological diagnosis of PTs can be difficult on cytology or small biopsy specimens due to their heterogenous nature such that some areas of the tumour are indistinguishable from fibroadenomas with considerable overlap in their histological features [15]. Thus, the diagnosis of phyllodes tumour is clinched on histology with the demonstration of a well-developed leaf-like pattern, hypercellularity and marked stromal overgrowth.

The age range of the patients in this study was 14-57 years (mean age of 32.1years). There was also a biphasic peak occurrence, with the first peak occurring in the age range 14-20 years and the second peak in the 31-40 years age range. Although phyllodes tumours are reported to be commoner in females between the ages of 35-55 years (with median age at presentation of 45 years), 55.5 % of our patients were below age 30 years,

with a significant majority (33.3%) aged 20 years or less. This may suggest that our patients present early and the cosmopolitan nature of the capital city may play a role in their accessing surgical care because of increased awareness. In consonance with findings in our study, Ekanem et al [14] in Benin City, Nigeria reported an age range of 14-63 years (mean 30.4 years) with two age peak frequencies (16-20 years and 36-40 years). The mean age for malignant phyllodes tumours in our study was 55 years which is comparable to that reported by Ekanem et al (56.6 years) [14] and 60% (three of five) of the patients who had malignant PT in our study were aged over 50 years of age. This is consistent with previous reports that those tumours which develop after 50 years of age are more likely to be malignant [1-4, 14-16].

The benign subtype of PT was the commonest in this study, accounting for 83.3% of cases, in line with previously reported world's global occurrences [1,6-10]. Although rare, distant metastases from malignant phyllodes tumours occur via haematogenous spread commonly to the lungs [5]. Only one out of the five patients who had malignant PT in this study presented with unilateral pleural effusion which was managed via closed thoracostomy tube drainage (CTTD) with underwater seal. This patient was subsequently lost to follow-up.

In this study, PT was more commonly found on the right breast (59.3%) compared with the left (33.3%), with 7.4% of cases being bilateral. This is comparable to the findings by Kilic et al in Turkey [17]. Other researchers, however, reported no significant differences in occurrence between both sides with the tumour occurring in equal proportions in both breasts [14,18]. Most reported cases of

bilateral PTs have occurred in young women in association with pregnancy or lactation [10, 19-21]. None of the bilateral cases of PTs in our study was associated with either pregnancy or lactation. Nwadiokwu et al reported that malignant PTs often occur following a previously treated fibroadenoma [22]. We did not find any such association in any of our patients.

Our study did not record any incidence of local recurrence or mortality during the period of follow-up even though some patients were lost to follow-up. Although borderline tumours have been reported to have a greater potential for local recurrence, [23, 24] none of the patients with borderline PT in this study presented with local recurrence. This tends to suggest that their treatment by WLE was adequate. The WHO reports local recurrence rates of 17%, 25% and 27% for benign, borderline and malignant PT respectively [2]. These rates tend to increase with the tumour grade [15].

PT may present as a large, sometimes massive tumour with a smooth surface and margins or an unevenly lobulated or bosselated surface. Occasionally, ulceration of overlying skin or outright fungation may occur because of pressure necrosis. Despite their size, PTs tend to remain mobile on the chest wall [1-3]. These patients who had above features of complications as well as the five who had malignant PT in our study were offered simple mastectomy. These macroscopic features were clearly demonstrated in some of our patients as shown in the figures 1 to 3.

The nomenclature, presentation, and diagnosis of PTs have posed many problems for the surgeons due to lobulated masses that can range in size, with an average size of

approximately 5 cm (larger than average fibroadenomas) [8-10]. The tumours with the largest diameter in our series measured 25cm for benign and 30 cm for malignant PT respectively. Karim et al reported that although PTs are thought to be typically larger than fibroadenomas, the size range overlaps with those of fibroadenoma. Consequently, size alone cannot be used as sole criterion to distinguish between the two tumour types [15].

Although the weight of PT is not reported in most previous studies, there has not been any association of tumour weight with pathological behaviours of the tumour. However, 2 out of the 5 cases of malignant tumours in our study presented with tumour weights of 3000g each and involving the whole breast. This may be a reflection of the greater proliferative activity and severe local metastasis of malignant tumours as have been observed in other studies [9, 10, 15].

Our patients had Tru-cut or excision biopsies of the swelling for preoperative diagnosis, and surgical management involved wide local excision (WLE) and mastectomy as indicated. Over the 6-month period of follow-up, there was no mortality reported save for the patient who presented with malignant PT with pleural effusion who was subsequently lost to follow-up.

### **Conclusion**

There is a predominance of benign disease and a dual peak incidence of PT in this study. The 6.3% incidence of PT in our study is high compared to what is reported in the literature. Accurate preoperative diagnosis prior to surgical treatment is necessary in the management of PT of the breast to prevent

local recurrence and possible malignant transformation.

### Limitations of Study

It is a retrospective study where the symptoms and their durations were not evaluated and small sample size could be limitations.

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### Conflict of Interest

The Authors declare no conflicts of interests

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