

# Management of Phyllodes Tumours of the Breast

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## Abstract

**Introduction:** Phyllodes tumours are uncommon with unpredictable outcomes. Without a consensus guiding their management, treatment strategies are diverse and remain controversial. The purpose of this study was to review the different treatment strategies employed to treat phyllodes tumours at our centre and to analyse the outcomes. **Methods:** A retrospective study of 32 patients with phyllodes tumours of breast treated at our centre over a 17-year period. The methods employed to treat these tumours and their outcomes were studied and the data was compared to other studies in an attempt to generate consensus. **Results:** During this period, 32 phyllodes tumours were treated; 24 were classified as benign, one as borderline malignant and the remaining 7 as malignant. There were a total of 4 local recurrences (three benign, one malignant), all associated with involved margins within the primary tumour specimen. There were no recurrences where the margin was clear by 1 mm or more. **Conclusion:** We recommend that all malignant, large phyllodes tumours and tumours with involved resection margins should be regularly followed-up because of the increased likelihood of regional recurrences. For benign phyllodes tumours a clear resection margin of 1 mm was found adequate with no recurrences.

## INTRODUCTION

Phyllodes tumours are uncommon, constituting less than 1 per cent of all breast tumours [123]. Histologically they are classified as benign, borderline malignant or malignant tumours [45]. Surgical management and clinical follow-up are usually dependent on histological features. Without a national consensus guiding their management, treatment strategies and follow-up guidelines are diverse and remain controversial [67]. Small tumours are potentially suitable for conservation surgery aiming for clear excision margins, whereas larger or malignant tumours may require a mastectomy [89101112]. However, the management of tumours with involved resection margins remains uncertain. Is it reasonable to adopt a watch and wait policy for some tumours, and if so which of these tumours are at higher risk of recurrence? Phyllodes tumours are notorious for having unpredictable outcomes [11]. There is no evidence in support of or against the wait and watch policy (commonly adopted by many clinicians), nor are there any prognostic indicators within the literature.

This retrospective study examined the surgical techniques including surgical resection margins, histopathological types and the clinical outcomes of benign and malignant phyllodes tumours treated over a 17-year period in a district general hospital. Clinical determinants of recurrence were analysed

and our current policy of follow-up was scrutinised to see if recurrences were overlooked.

## MATERIALS AND METHODS

This study was approved by the Derby Hospitals NHS Foundation Trust Clinical Governance Resource Unit. Patients with a histological diagnosis of a Phyllodes tumour diagnosed at the Derby Breast Unit between 1990 and 2007 were included in the study. Cases were identified by a thorough search of the breast unit and hospital pathological databases and the medical notes reviewed. All pathological specimens were examined by dedicated breast pathologists using the Azzopardi and Salvadori classification [45]. Pathological margin assessment was done according to the hospital protocol which also involved analysis of inked margins as is routinely performed for breast cancer.

Patient details such as age at diagnosis, diagnostic imaging, surgical management, histopathological information (e.g. tumour size, excision and clearance margins), evidence of recurrence, metastasis and mortality were documented.

Surgical treatment of the tumours was classified as follows:

1. Simple Excision – tumour was present or within 10mm of the excision margin.
2. Wide local excision – conservation therapy where the

margin was greater than 10mm.

### 3. Mastectomy.

All patients were treated by surgery alone and received no adjuvant treatment.

The median follow-up period was 65 months (range 2-158 months). All malignant phyllodes and borderline malignant phyllodes, all large tumours of any histopathology and tumours which were incompletely excised had surgical follow-up (3 months, 6 months, and yearly up to five years).

## RESULTS

Thirty-two phyllodes tumours were treated. All occurred in women with a median age at diagnosis of 50 years (range 31-82 years). Twenty-seven patients presented symptomatically with a painless breast lump, 5 were detected in asymptomatic women at routine screening mammography. The median tumour size was 30mm (range 5-80mm) and was more commonly located in the upper outer quadrant of the breast.

## PRE-OPERATIVE ASSESSMENT

Thirty patients had both ultrasound and mammography assessment. Two patients had ultrasound alone due to young age (28, 31 years). A pre-operative histological diagnosis was obtained in 29 cases (90.6%); 8 patients had fine-needle aspiration (6 were C2, 2 were C3 on cytology), 21 had core biopsies (12 had a histological diagnosis “suspicious of phyllodes”, 5 were benign phyllodes tumours, and 4 were malignant phyllodes tumours). The 3 remaining patients were treated early in the study period, and proceeded directly to surgical excision (2 were large benign phyllodes tumours measuring 55 mm and 80mm, one was a malignant phyllodes tumour).

Four patients out of the 32 had previous investigations of their breast lump. All had ultrasound, mammography and core biopsies performed. All were thought to be fibroadenomas (B2 on histology, measuring less than 10mm) and were managed non-operatively due to patient choice. Subsequently, these patients presented symptomatically with a sudden increase in size of their lesions, which prompted surgical intervention. All had surgical excision and a histological diagnosis of benign phyllodes tumour. The initial core biopsies and radiological images of these patients were therefore re-examined. The samples were of sufficient quantity and there was no histological or radiological evidence of pre-existing phyllodes tumours.

## HISTOLOGICAL FINDINGS

Twenty-four (75%) were classified benign, 1 (3%) borderline-malignant and 7 (22%) malignant phyllodes tumours.

## OUTCOMES OF SURGICAL MANAGEMENT

Benign phyllodes (n=24) - Table 1.

**Figure 1**

Table 1: Results of local control for benign phyllodes tumours.

Surgical Procedure	N	Margins Clear (M.C.)	Margins Involved (M.I.)	Recurrence among M.C.	Recurrence among M.I.
Simple Excision	19	11( $\geq 1$ mm)	8( $\leq 1$ mm)	0/11	3/8
Wide Local Excision	4	4( $\geq 10$ mm)	0	0	0

Nineteen had surgical excision (11 with clear margins, median size 22mm; 8 with involved margins, median size 28mm).

Four had wide local excision (median size 40mm; all with clear margins).

There was 1 mastectomy (40mm in size with clear margin).

Borderline malignant phyllodes (n=1)

The only case of borderline malignant phyllodes was excised (size 32mm; involved margin).

Malignant phyllodes (n=7)

Three had wide local excision (2 with clear margins and 1 with involved margin; median size 37mm).

Four had mastectomy (3 with clear margins and 1 with involved margin; median size 30mm). The patient with the involved margin was medically unfit for any further intervention following mastectomy.

## LOCAL RECURRENCES

There were a total of 4 (12.5%) local recurrences during this follow-up period. These recurrences were all associated with involved margins within the primary tumour specimen and were detected during clinical follow-up. Three benign phyllodes tumours recurred following surgical excision (median time to recurrence was 26 months). One malignant

phyllodes tumour recurred 3 months following mastectomy.

There was no evidence of axillary or metastatic disease and there were no deaths within our series.

Univariate analysis was performed to determine which factors were associated with tumour recurrence. We found that patients with involved margins were more likely to have a recurrence (Fisher's Exact test  $p=0.018$ ). However, there was no evidence to link the histological type or surgical treatment with tumour recurrence.

A logistic regression model was also fitted to the data. No other variables were found to be associated with tumour recurrence.

### DISCUSSION

Phyllodes tumours are uncommon tumours but they provide a management challenge for two main reasons. Firstly, they can be clinically, radiologically and pathologically very similar to fibroadenomas, causing diagnostic difficulties and a low pre-operative diagnosis rate [913]. Secondly, their clinical progression may follow an aggressive course even with an initial benign histology [11].

Phyllodes tumours commonly present in middle-aged women, where they are most often located in the upper outer quadrant of the breast [1415]. There are no clinical features that can confidently predict the likelihood of local recurrence [11]. As might be anticipated, both in our study and those within the literature, the risk of recurrence is increased when there is tumour involvement within the resection margin [1316].

In our study, 8 out of 19 benign phyllodes tumours had involved margins. There were 3 recurrences out of the 8 with involved margins. All of these patients presented within 5 years of surgery with no evidence of metastasis or death. Nevertheless, margin involvement does not invariably lead to recurrence [19]. As a result, there is controversy regarding how tumours with involved margins should be managed. With recurrence rate of 37.5% (3/8) in benign tumours with margins involved, managing by surveillance alone may not be adequate. Due to the variability of this condition, there is no clear consensus on the type of surgical procedure to be employed. In benign phyllodes tumours with clear margins, conservation surgery is thought to be adequate due to its low local recurrence rate [17]. Our study supports this view as there were no recurrences when the margin was clear by 1mm or more. We therefore suggest that a resection margin

of 1mm or more may be adequate for benign phyllodes tumours.

Pitfalls to be aware of include incorrect preoperative diagnosis, which can lead to local surgical excision with positive margins, such as in the case of fibroadenoma excision where simple enucleation is performed without a clearance margin [18].

Obviously, patients should be considered on an individual basis, and the clinician should weigh the benefits of performing a wide excision encompassing positive margins against the detriment of aesthetic or functional deformity from aggressive surgery, requiring reconstructive surgery [20].

Transformation of benign fibroadenomas into phyllodes tumours have been reported previously [21], and this may explain the symptomatic enlargement of breast lumps seen in 4 patients within our study.

Although malignant phyllodes tumours are uncommon [10-20%][22], they should be treated more aggressively and followed-up regularly as they are more likely to have recurrences compared with benign disease [319]. Within the literature, the likelihood of malignant recurrence appears to correlate with tumour size and resection margins [23]. We acknowledge that without adequate numbers of borderline and malignant phyllodes, it was not possible to make any adequate conclusions on their management.

We believe that this is a representative study as our data on recurrence rates (12.5%) and histological findings are comparable with the published data [14171924]. In addition, the median follow-up period of 65 months was longer than the majority of other studies [1417192425] which would be adequate in detecting most recurrences.

### CONCLUSIONS

The resection margins were the principal determinants of local recurrence. We suggest that a 1mm margin may be adequate in the surgical treatment of benign phyllodes tumours.

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