

Coexisting Ductal Carcinoma In Situ in Benign Phyllodes Tumour Highlights Diagnostic and Therapeutic Challenges

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Received: 2nd Mar, 2026 | **Revised:** 14th Mar, 2026 | **Accepted:** 4th Apr, 2026 | **Available Online:** 20th Apr, 2026

ABSTRACT

The coexistence of breast carcinoma in the form of ductal carcinoma in situ (DCIS) within a phyllodes tumour (PT) is extremely rare. Phyllodes tumours represent a spectrum of fibroepithelial lesions with variable biological behaviour and are classified as benign, borderline, or malignant based on histopathological criteria defined by the World Health Organization (WHO).

We report the case of a 23-year-old premenopausal female presenting with a progressively enlarging right breast lump over a duration of eight months. The swelling had a gradual onset with steady increase in size and was associated with intermittent pricking pain, without identifiable aggravating or relieving factors. There was no history of nipple discharge, retraction, trauma, or systemic symptoms such as fever, weight loss, or anorexia. No other swellings or neurological complaints were noted.

This case underscores the importance of early evaluation of solitary breast masses in young women and highlights the need for comprehensive clinical, radiological, and histopathological assessment to identify rare coexisting pathologies that may significantly influence management and prognosis.

Keywords: Breast tumour in young female, Rare breast tumour coexistence, Fibroepithelial breast neoplasm, Benign phyllodes tumour, Ductal carcinoma in situ (DCIS).

How to cite this article: Johari A, Kuppusami B, Raghupathy T. Coexisting Ductal Carcinoma In Situ in Benign Phyllodes Tumour Highlights Diagnostic and Therapeutic Challenges. *Int J Drug Deliv Technol.* 2026;16(33s):10-14. DOI: 10.25258/ijddt.16.33s.2

Source of support: Nil.

Conflict of interest: The authors declare no conflict of interest.

Introduction

Phyllodes tumours (PTs) are rare fibroepithelial neoplasms of the breast, accounting for less than 1% of all breast tumours, with an incidence ranging from 0.3% to 0.9% [1]. These tumours demonstrate a wide spectrum of clinical behaviour, ranging from benign to highly aggressive malignant forms [2,3].

Histologically, phyllodes tumours may resemble fibroadenomas but are distinguished by increased stromal cellularity and the characteristic “leaf-like” architectural pattern. Based on histopathological features such as tumour margins, stromal cellularity,

mitotic activity, cellular atypia, and stromal overgrowth, they are categorized into benign, borderline, and malignant types [4].

Various factors such as trauma, pregnancy, increased estrogen activity, and lactation have been proposed as potential stimulants for tumour growth, although the exact mechanisms remain unclear. Endothelin-1, known to stimulate breast fibroblast proliferation, has been suggested as a contributing factor.

Unlike conventional breast carcinomas that arise from ductal or lobular epithelium, phyllodes tumours originate from the periductal stromal component of the

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breast, which includes connective tissue, adipose tissue, and supporting ligaments. However, these tumours may also contain epithelial elements derived from ducts and lobules [5].

The presence of coexistent ductal carcinoma in situ (DCIS) within a phyllodes tumour is exceedingly rare. Its identification is clinically significant, as it may alter both therapeutic strategies and long-term surveillance due to the malignant epithelial component.

Case Presentation

A 23-year-old female presented with a progressively enlarging lump in the right breast of eight months duration. The swelling had an insidious onset and gradually increased in size. The patient reported intermittent pricking pain, which was not associated with any specific aggravating or relieving factors.

There was no history of nipple discharge, nipple retraction, trauma, fever, or systemic symptoms such as weight loss, loss of appetite, or respiratory complaints. Additionally, there was no history of similar swellings elsewhere in the body, back pain, or neurological symptoms.

Past Medical, Surgical, and Family History

The patient had no prior history of similar complaints, known comorbidities, or significant surgical interventions. There was no history of radiation exposure or use of oral contraceptive pills. Both personal and family histories were unremarkable for breast disease or malignancies.

Menstrual and Obstetric History

The patient reported regular menstrual cycles, using approximately three pads per day. Her last menstrual period was on January 30, 2024. Menarche was attained at the age of 16 years.

She had one full-term normal vaginal delivery 1.5 years prior to presentation and had breastfed the child for seven months postpartum.

General Examination

On general physical examination, the patient was conscious, alert, and well-oriented to time, place, and person. She was afebrile, moderately built, and adequately nourished.

There were no signs of pallor, icterus, cyanosis, clubbing, or pedal edema.

Vital parameters were within normal limits:

- Pulse rate: 72 beats per minute
- Blood pressure: 110/70 mmHg
- Oxygen saturation (SpO₂): 98% on room air
- Body temperature: 98°F

Local Breast Examination

On inspection, there was noticeable asymmetry of the breasts, with the left breast appearing enlarged and distorted in contour. A prominent swelling measuring approximately 10 × 10 cm was observed, involving the upper outer and upper inner quadrants and extending beneath the nipple-areolar complex.

The overlying skin showed dilated superficial veins. However, there was no evidence of skin dimpling, discoloration, ulceration, or inflammatory changes. The nipple-areolar complex was preserved, with no retraction, discharge, or distortion.

Examination of the supraclavicular and infraclavicular regions did not reveal any abnormalities. The inframammary fold was well maintained, even on raising the arms. On forward bending, there was no evidence of skin tethering, fixation, or abnormal movement of the lesion.

On palpation, a firm, well-circumscribed, lobulated mass was identified involving the upper quadrants and extending beneath the nipple-areolar complex. The overlying skin was freely mobile and pinchable, indicating no dermal involvement. The mass was mobile and not fixed to the underlying chest wall or pectoral muscles.

Additionally, a single left axillary lymph node measuring approximately 1 × 1 cm was palpable. It was firm, mobile, and non-tender. The right breast and right axilla were clinically unremarkable.



FIGURE 1: breast examination

Systemic Examination

Systemic examination did not reveal any significant abnormalities.

Cardiovascular examination demonstrated normal first and second heart sounds (S1 and S2), with no added sounds or murmurs.

Respiratory system examination revealed normal bilateral air entry, with no adventitious sounds or evidence of respiratory distress.

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Neurological examination was unremarkable, with no focal deficits.

Musculoskeletal examination, including evaluation of the spine and long bones, was within normal limits, with no tenderness or deformities.

Per vaginal and per rectal examinations did not reveal any palpable abnormalities.

Diagnostic Investigations

Routine hematological and biochemical investigations were within normal reference limits.

Ultrasonography of the left breast revealed a large heteroechoic, multilobulated lesion with internal cystic spaces and calcifications, occupying nearly the entire breast parenchyma. Based on these findings, the lesion was categorized as Breast Imaging Reporting and Data System (BI-RADS) category IV, suggestive of a suspicious neoplastic process. Associated left axillary lymphadenopathy was also noted.

Fine needle aspiration cytology (FNAC) suggested features consistent with a benign proliferative breast lesion. To further characterize the pathology, a core needle (Tru-Cut) biopsy was performed, which demonstrated features of a fibroepithelial lesion, favoring a benign phyllodes tumour.

Surgical Management and Intraoperative Findings

Following pre-anesthetic evaluation and clearance, the patient was taken up for wide local excision under general anesthesia.

A circumareolar incision was made, extending from the 12 o'clock to the 5 o'clock position. Careful dissection was carried out circumferentially to delineate the tumour margins.

Intraoperatively, a well-defined mass measuring approximately 7×5 cm was identified, involving the upper and lower outer quadrants and extending beneath the nipple-areolar complex.

The tumour was excised with a margin of approximately 1 cm of surrounding healthy tissue to ensure adequate oncological clearance. Hemostasis was achieved using electrocautery. The residual dead space was obliterated, and a surgical drain was placed to prevent postoperative seroma formation.

The wound was closed in layers with meticulous approximation, and a sterile compression dressing was applied.



FIGURE 2: intra operative picture

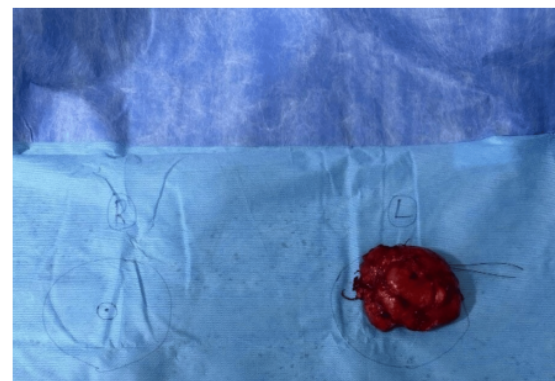


FIGURE 3: excised specimen

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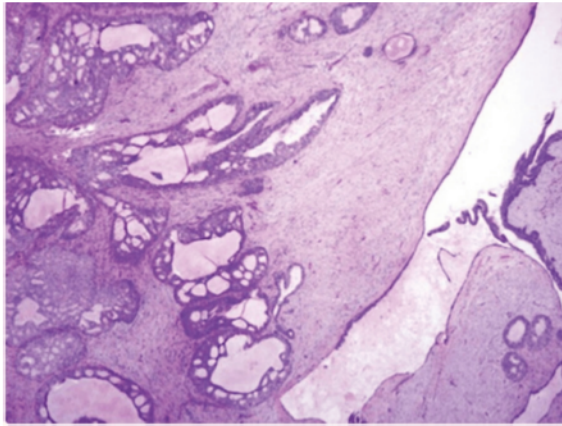


FIGURE 4: Fibroepithelial tumour with focal leaf-like architecture. There is secondary involvement of the ductal epithelial component by foci of ductal carcinoma in-situ.

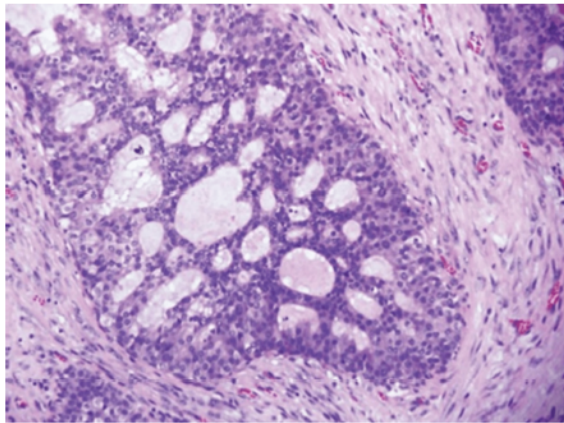


FIGURE 5: Secondary involvement of the ductal epithelial component of the fibroepithelial tumour by foci of ductal carcinoma in-situ

Discussion

The coexistence of phyllodes tumours (PTs) with breast carcinoma is an uncommon clinical entity, with only a limited number of cases reported in the literature. When present, the malignant epithelial component may either arise within the phyllodes tumour or occur as a separate synchronous lesion in the ipsilateral or contralateral breast [6].

The occurrence of ductal carcinoma in situ (DCIS) within a benign phyllodes tumour is particularly rare and presents significant diagnostic and therapeutic challenges. Preoperative diagnosis is often difficult, as imaging modalities and cytological techniques such as fine needle aspiration may fail to detect the epithelial malignancy, as observed in the present case. Core needle biopsy may suggest a fibroepithelial lesion but may still miss focal areas of carcinoma, thereby necessitating thorough histopathological evaluation of the excised specimen.

Due to the rarity and heterogeneity of such cases, there is no standardized protocol for management or follow-

up. According to the National Comprehensive Cancer Network (NCCN) guidelines, the primary treatment for benign phyllodes tumours is wide local excision with margins of at least 1 cm or, in selected cases, simple mastectomy. Routine axillary lymph node dissection is not recommended due to the low likelihood of nodal metastasis in phyllodes tumours [7].

Histopathological differentiation between benign, borderline, and malignant phyllodes tumours is crucial and is based on parameters such as stromal cellularity, stromal overgrowth, degree of atypia, mitotic activity, tumour margins, and the presence of necrosis [8]. Additionally, distinguishing benign phyllodes tumours from fibroadenomas can be challenging, particularly on limited biopsy samples. Features such as an intracanalicular growth pattern, increased stromal cellularity, and leaf-like architecture are helpful in establishing the diagnosis [9].

The presence of DCIS within a phyllodes tumour has important clinical implications. While the stromal component dictates the behaviour of the phyllodes tumour, the epithelial component requires management as per standard breast carcinoma protocols. This may necessitate additional considerations such as margin assessment, adjuvant radiotherapy, and long-term surveillance.

Recent evidence suggests that margin status plays a critical role in recurrence. Wei et al. (2022) demonstrated that positive surgical margins significantly increase the risk of local recurrence across all phyllodes tumour subtypes, whereas the exact width of negative margins (<1 cm versus \geq 1 cm) may not significantly impact outcomes. Based on these findings, a tailored surgical approach is recommended, with conservative follow-up for benign tumours and more aggressive management, including re-excision or mastectomy, for borderline and malignant lesions where clear margins cannot be achieved.

This case highlights the importance of maintaining a high index of suspicion and performing comprehensive histopathological evaluation in all excised breast lesions, particularly large or rapidly growing masses, even in young patients.

Conclusion

Phyllodes tumours are rare fibroepithelial neoplasms of the breast, and the coexistence of ductal carcinoma in situ within a benign phyllodes tumour is an exceptionally uncommon occurrence. This case emphasizes the limitations of preoperative diagnostic modalities in detecting coexistent epithelial malignancy and underscores the importance of

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complete surgical excision followed by meticulous histopathological examination.

Adequate surgical management with negative margins remains the cornerstone of treatment for phyllodes tumours. Current evidence suggests that margin positivity, rather than margin width, is the key determinant of recurrence risk. Routine use of adjuvant therapy is not indicated for benign phyllodes tumours; however, the presence of DCIS may necessitate individualized management and closer follow-up.

Early diagnosis and appropriate surgical planning are essential to optimize outcomes and reduce the risk of recurrence, particularly in rare cases with coexisting pathologies.

Additional Information

Disclosures

Human subjects: All authors have confirmed that this study did not involve human participants or tissue.

Conflicts of interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following:

- **Payment/services info:** No financial support was received from any organization for the submitted work.
- **Financial relationships:** The authors have no financial relationships with any organizations that could have an interest in the submitted work within the past three years.

- **Other relationships:** The authors declare no other relationships or activities that could have influenced the submitted work.

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