

# **UCLA**

## **UCLA Radiological Sciences Proceedings**

### **Title**

Malignant Phyllodes Tumor of the Breast: A Case Report

### **Permalink**

<https://escholarship.org/uc/item/2774m249>

### **Journal**

UCLA Radiological Sciences Proceedings, 6(3)

### **Authors**

Benson, Jessica

Liu, Hanna

Yong, Holly

et al.

### **Publication Date**

2026-10-02

### **DOI**

10.5070/RS4.53901

### **Copyright Information**

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

# Malignant Phyllodes Tumor of the Breast: A Case Report

Benson J<sup>1</sup> | Liu H, MD<sup>2</sup> | Yong H, MD<sup>3</sup> | Garcia A, MD<sup>4</sup> | Ibarra J, MD<sup>4</sup> | Wilsen CB, MD, PhD<sup>2</sup>

**Author Affiliation:** <sup>1</sup> California University of Science and Medicine  
<sup>2</sup> Department of Radiological Sciences, UCI School of Medicine  
<sup>3</sup> Department of Surgery, UCI School of Medicine  
<sup>4</sup> Department of Pathology, UCI School of Medicine

**Corresponding Author:** J.B. ([jessica.benson@md.cusm.edu](mailto:jessica.benson@md.cusm.edu))

*UCLA Radiol Sci Proc.* 2026;6(3):27-34

**Abstract:** Malignant phyllodes tumors are rare fibroepithelial neoplasms, comprising less than 1% of all breast tumors. We report the case of a 46-year-old woman who presented with a rapidly enlarging right breast mass. Serial imaging revealed progressive growth from 1.1 cm to over 7 cm. Initial core biopsies suggested an atypical lipomatous neoplasm or well-differentiated liposarcoma. Features of phyllodes tumor were not seen. Multidisciplinary review recommended surgical excision. The patient underwent a skin-sparing mastectomy with wide margins. Final pathology confirmed a 7.1 cm malignant phyllodes tumor with high-grade liposarcoma. Postoperative management included post-mastectomy radiation due to close posterior margins. This case underscores the diagnostic challenges of lipomatous lesions occurring in phyllodes tumors, highlights the importance of clinicopathologic correlation, and demonstrates the critical role of multidisciplinary evaluation in managing rare and diagnostically challenging breast tumors.

**Keywords:** *phyllodes tumor, breast, mammography, ultrasonography*

## Introduction

Malignant phyllodes tumors of the breast are rare fibroepithelial neoplasms, accounting for less than 1% of all breast tumors.<sup>1</sup> They are characterized histologically by marked stromal cellularity and nuclear atypia, stromal overgrowth, infiltrative borders, the presence of heterologous elements, and increased mitotic activity (equal to or greater than 10 mitoses per 10 high-power fields).<sup>2</sup> They often present as painless breast masses and have the ability to grow at a rapid rate.<sup>1</sup> Although they are most often confined to the breast, they carry a significant risk of local recurrence and, less commonly, distant metastasis.<sup>3,4</sup> The pattern of spread is predominantly hematogenous, and axillary lymph node involvement is rare. Clinical suspicion combined with imaging and histopathological evaluation plays a crucial role in guiding management. Here we present a case of a

## Key Points

- Malignant phyllodes tumors with liposarcomatous differentiation are rare and may mimic benign lipomatous lesions or primary breast sarcomas, making diagnosis on core needle biopsy challenging.
- Rapid interval growth or discordance between imaging and pathology should prompt consideration of malignant phyllodes tumor.
- Wide surgical excision with negative margins remains the cornerstone of treatment, with mastectomy indicated when tumor size precludes breast-conserving surgery or adequate margins.
- Close collaboration between radiology, pathology, surgery, medical oncology, and radiation oncology specialists is critical for diagnosis and management of these rare tumors.

Abbreviations

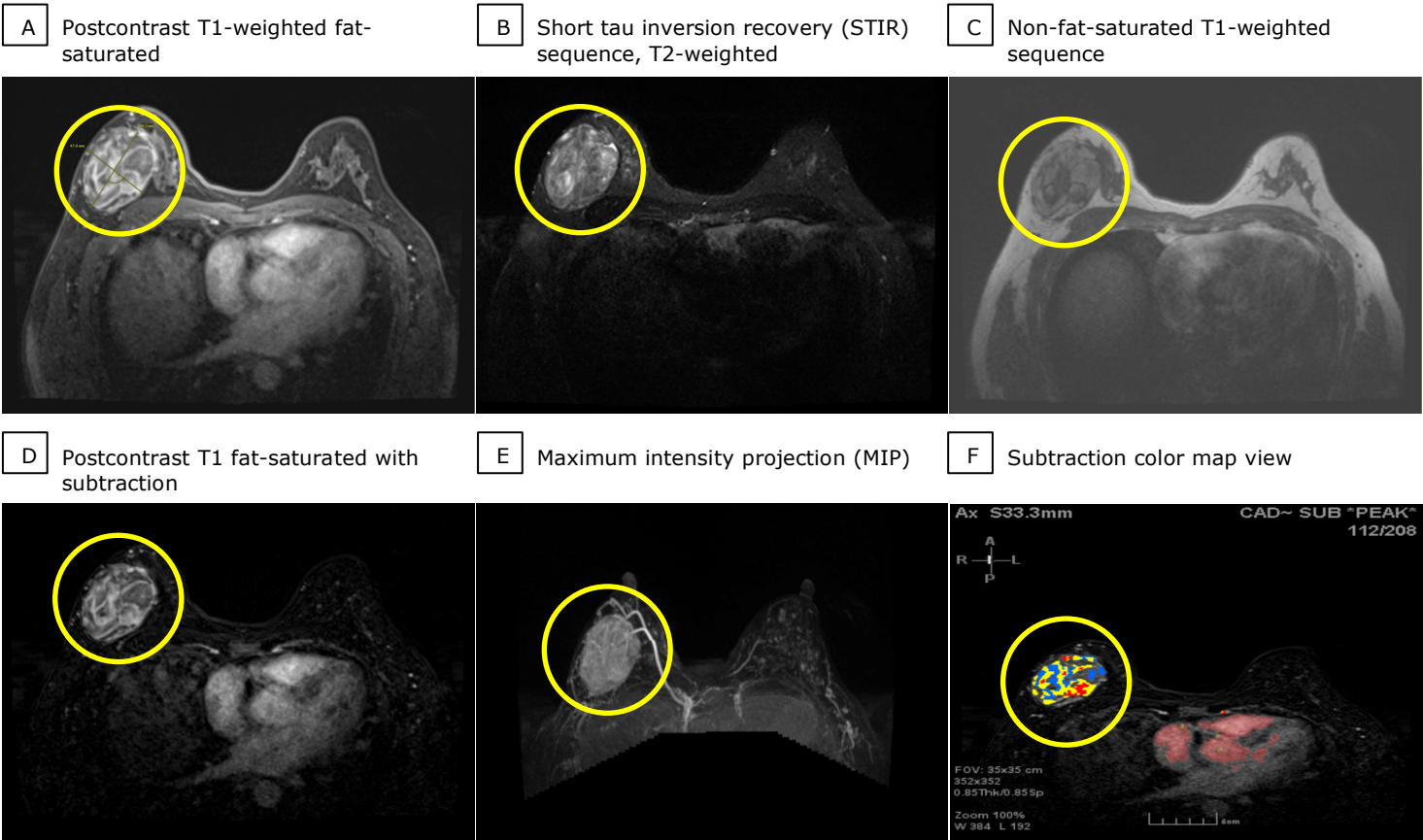
18F-FDG PET: fluorine-18 fluorodeoxyglucose positron emission tomography  
BI-RADS: breast imaging reporting and data system  
CDK4: cyclin-dependent kinase 4  
CT: computed tomography  
MRI: magnetic resonance imaging  
STIR: short tau inversion recovery  
SUV: standardized uptake value

malignant phyllodes tumor, highlighting its clinical presentation, diagnostic workup, and surgical management. This case report was prepared following the CARE Guidelines.<sup>5</sup>

Case Presentation

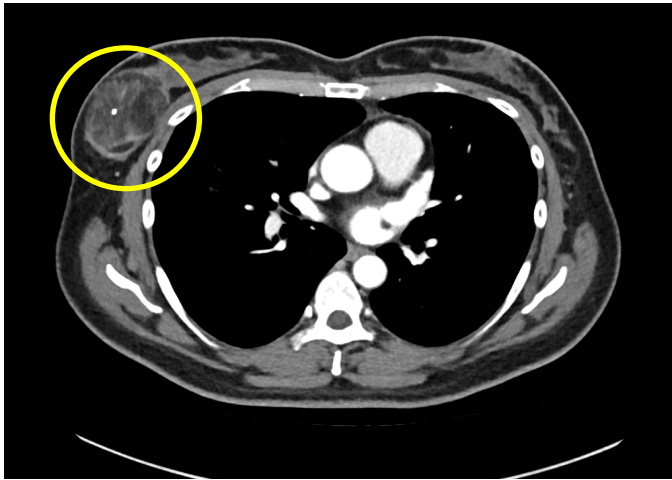
A 46-year-old woman presented to an outside imaging facility for the evaluation of a lump in the upper outer region of the right breast. Fifteen months prior to presentation, screening mammography and subsequent diagnostic mammography and ultrasound identified a 1.1 cm mass that was believed at the time to be a cyst. The patient also reported a history of benign excisional biopsy of the left breast at age 25. In the area of clinical concern, a mammogram revealed a 1.6 cm oval, circumscribed, and predominantly low-density mass, suggestive of a fat-containing lesion. Ultrasound showed a corresponding oval, parallel, circumscribed,

Figure 1. Axial Magnetic Resonance Imaging of the Breasts of a 47-Year-Old Woman with a Malignant Phyllodes Tumor



(A-F) Magnetic resonance imaging (MRI) in the axial plane visualized a mass measuring 5.9 cm x 4.8 cm x 7.1 cm (yellow circle) and corresponding to previous ultrasonography and mammography findings. (B) On a T2-weighted short tau inversion recovery (STIR) sequence, the lesion appears hyperintense relative to surrounding tissue, consistent with fluid-sensitive signal characteristics. (C) A T1-weighted image without fat saturation shows intermediate intensity within the lesion, suggesting fat content. (D) A subtraction peak image of the bilateral breasts shows avid contrast enhancement in the lesion, which is consistent with increased vascularity. (E) A maximum intensity projection (MIP) highlights the extent and contrast uptake of the lesion. (F) MRI with a subtraction color map shows the enhancement kinetics of the lesion, including areas of washout kinetics, suggestive of the neoangiogenesis associated with malignancy.

**Figure 2.** Computed Tomography with Contrast of the Chest of a 47-year-old Woman with Malignant Phyllodes Tumor



Contrast-enhanced CT of the chest shows heterogeneous enhancement of the mass in the right breast, circled in yellow.

hyperechoic mass measuring  $1.9 \times 1.3 \times 1.6$  cm at the 10-o'clock position 2 cm from the nipple. There was no significant internal vascularity. The appearance was compatible with a lipoma. After biopsy was declined, ultrasound follow-up was recommended.

Seven months later, follow-up ultrasound showed that the palpable mass had increased in size to  $5.3 \times 3.5 \times 5.1$  cm and appeared heterogeneous with indistinct margins. There was no axillary lymphadenopathy, and an ultrasound-guided biopsy was recommended (BI-RADS 4). Biopsy with placement of an hourglass biopsy clip was performed, and histopathologic examination revealed an atypical lipomatous neoplasm. The morphologic features were suggestive of a well-differentiated liposarcoma, which was negative for *MDM2* amplification. At this point, no diagnostic features of a phyllodes tumor were identified, and histopathologic interpretation was deemed concordant with imaging findings.

The patient, now 47 years old, subsequently presented to a breast surgeon at our institution for consultation. Physical exam reviewed a protrusion in the upper outer quadrant of the right breast, with an approximately 8.5 cm underlying firm and mobile mass that spanned from 2 cm from the nipple at the 2-o'clock position to 6.5 cm from the nipple at the 11-o'clock position. The skin, nipple, and areola appeared normal. There was no nipple discharge or axillary lymphadenopathy.

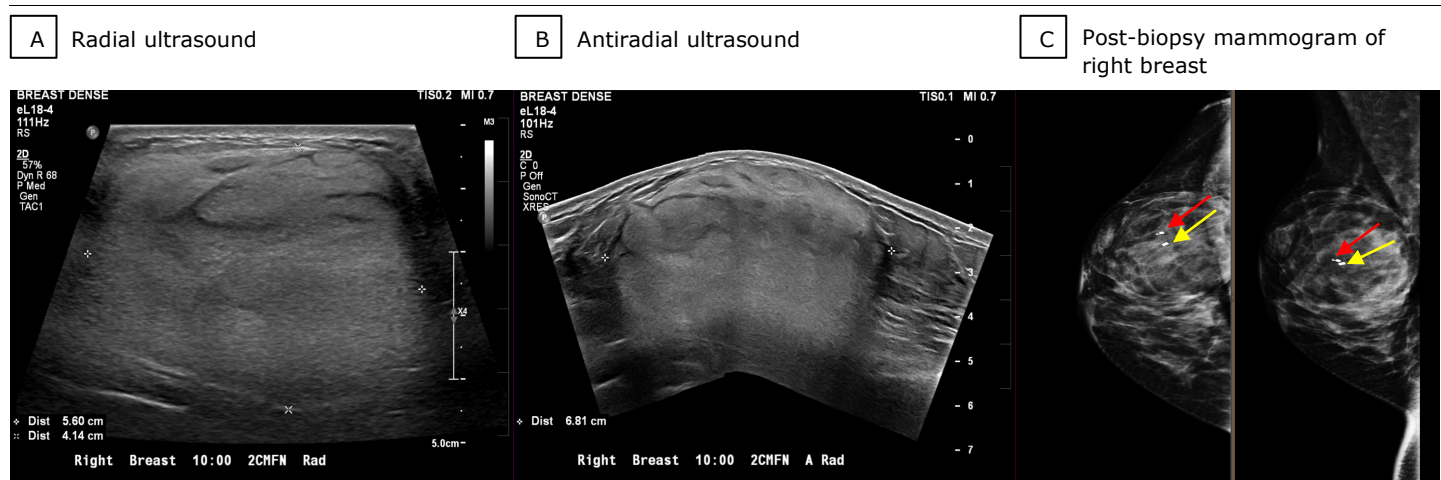
Mastectomy without sentinel lymph node biopsy was recommended, as breast sarcoma does not typically metastasize to axillary lymph nodes. Magnetic resonance imaging (MRI) of the breast was ordered to assess the proximity of the mass to skin, nipple, and chest wall. Computed tomography (CT) of the chest was also ordered for staging. The patient was referred to plastic surgery to discuss reconstruction options. Review of outside pathology slides and genetic testing were also recommended.

MRI of the breast showed a heterogeneously enhancing oval mass with circumscribed margins, measuring  $5.9 \times 4.4 \times 7.1$  cm (anterior-posterior  $\times$  transverse  $\times$  superior-inferior) at the 10-o'clock position in the right breast, from anterior to posterior depth (Figure 1). There was heterogeneous enhancement with washout kinetics, as well as the suggestion of fat within the mass. This mass approached to within 2.1 cm of the nipple and abutted the lateral skin and pectoralis major. There were no suspicious findings in the left breast.

Staging CT of the patient's chest showed a 6.3 cm, heterogeneously fatty, soft tissue mass in the upper outer quadrant of the right breast, without chest wall invasion (Figure 2). In the lungs, there were at least 9 scattered, indeterminate ground-glass nodules, each less than 1 centimeter in size, that were considered to be inflammatory rather than neoplastic in origin.

Staging MRI of the abdomen showed hepatomegaly and hepatic steatosis. There were enhancing lesions measuring 1.2 cm in the caudate lobe and 0.8 cm in segment 5 of the liver, raising suspicion of metastasis. Subsequently, a fluorine-18 fluorodeoxyglucose positron emission tomography ( $^{18}\text{F}$ -FDG PET)/CT visualized a mass in the right breast that measured 6.8 cm and had a standardized uptake value (SUV) maximum of 3.7. There was no lymphadenopathy. No definite FDG uptake was seen in the liver lesions noted on MRI. Follow-up MRI abdomen was recommended for monitoring.

The case was presented at both breast multidisciplinary tumor board and sarcoma tumor board given its unusual pathology. The sarcoma tumor board concluded that the outside pathology diagnosis of well-differentiated liposarcoma was

**Figure 3.** Repeat Ultrasound-Guided Biopsy of the Right Breast of a 47-year-old Woman with Malignant Phyllodes Tumor

Preprocedural ultrasound shows (A) radial and (B) antiradial views of the oval, parallel, circumscribed, heterogeneously hyperechoic mass measuring 6.8 cm and spanning the depth of the breast. (C) A post-biopsy mammogram of the right breast shows the newly placed coil clip (red arrow) adjacent to the previously placed hourglass clip (yellow arrow).

discordant with imaging and recommended repeat biopsy.

The patient established care with oncology, and excision of the mass with possible adjuvant radiation therapy was recommended. It was noted that systemic chemotherapy was not indicated for localized soft tissue sarcoma.

Repeat ultrasound-guided breast biopsy was performed, and a coil clip was placed (Figure 3). The mass at the 10-o'clock position 2 cm from the nipple measured 6.8 × 4.1 × 5.6 cm. Pathology findings were consistent with an atypical lipomatous tumor. At this time, possible diagnoses under consideration included atypical spindle cell/pleomorphic lipomatous tumor, liposarcoma, and atypical lipomatous proliferation. No definitive histologic features of phyllodes tumor were identified, though this may have been due to the limited sampling inherent to core biopsy. Molecular testing identified partial loss of the *RB1* tumor suppressor gene and revealed the sample to be negative for *MDM2* and positive for *CDK4*. Considering that primary sarcomas of the breast are extremely rare, wide excision was recommended for investigation into the possibility of a phyllodes tumor.

Given the large size of the tumor, and the tumor board's recommendations, mastectomy was recommended. The patient opted for delayed reconstruction, and a skin-sparing mastectomy was performed. Operative findings included a 12 × 12 cm firm mass occupying the lateral

breast. The skin overlying the mass, as well as the areas of biopsy needle entry, were included in the mastectomy specimen. An intraoperative radiograph of the mastectomy specimen confirmed two biopsy clips within the specimen (Figure 4). Extensive flap dissection was performed both superiorly and inferiorly to close the mastectomy wound. The patient recovered well from the surgery.

Surgical pathology reported a 7.1 cm malignant phyllodes tumor with high-grade liposarcoma, no tumor on ink, with the closest margin being 2 mm posteriorly. Histologic findings included marked stromal cellularity and atypia, presence of stromal overgrowth, infiltrative borders, and 12 mitoses per 10 high-power fields (Figures 5A and 5B). Focal epithelial elements were identified (Figure 5C), which supported the diagnosis of a phyllodes tumor mixed with the high-grade lipomatous tumor.

Given the close posterior margin, the breast multidisciplinary tumor board determined that the patient would benefit from post-mastectomy radiation therapy. Follow-up breast MRI was recommended for surveillance, and follow-up chest CT and liver MRI were recommended for the imaging findings in the patient's lungs and liver. Radiation therapy of 50 Gray in 25 fractions was successfully completed 3 months after surgery. The nonspecific lung and liver findings continue to be followed by chest CT and abdominal MRI.

## Discussion

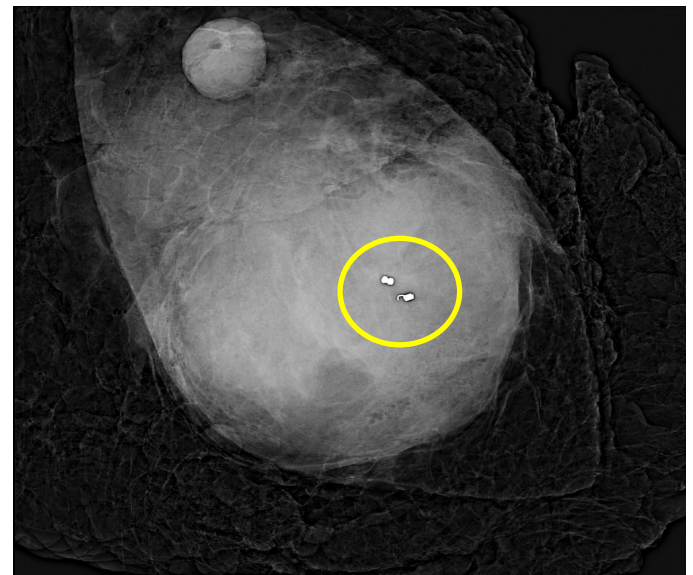
Phyllodes tumors can present diagnostic and therapeutic challenges due to their overlapping features with other breast lesions, particularly fibroadenomas. Of all fibroepithelial lesions, only 2.5% are phyllodes tumors.<sup>6</sup> Additionally, borderline and malignant phyllodes tumors have some overlapping histologic findings, which makes the distinction between these two entities a challenging diagnostic exercise, particularly in core biopsy specimens. Malignant transformation occurs in 10–20% of phyllodes tumors, often through fibrosarcomatous differentiation.<sup>6</sup> Less commonly, the malignant component may be lipomatous.<sup>6</sup> The presence of a high-grade lipomatous tumor in a growing mass in the breast with an epithelial component will establish a diagnosis of malignant phyllodes tumor. On the other hand, a low-grade lipomatous tumor within a phyllodes tumor has a more indolent course and is not considered diagnostic of a malignant phyllodes tumor. These low-grade lipomatous tumors are negative for *MDM2* and *CDK4* amplification, in contrast to well-differentiated extramammary liposarcomas.<sup>7</sup>

This case highlights the diagnostic complexity of large fibroepithelial lesions, particularly when lipomatous elements and atypical spindle cell features are present. The initial imaging impression favored a benign fat-containing lesion such as lipoma, and subsequent histopathologic examination raised the possibility of well-differentiated liposarcoma or an even broader differential of an atypical lipomatous tumor that was negative for amplification of *MDM2* and *CDK4*. While these features are supportive of the diagnosis of low-grade liposarcoma in extramammary sites, this is not true for similar lesions occurring within phyllodes tumors in the breast, which have been shown to be less aggressive. In our case, the results from the final pathologic examination established the presence of high-grade liposarcoma occurring within a phyllodes tumor; this is equivalent to finding other heterologous elements, such as osteosarcoma or chondrosarcoma, and by definition establishes a malignant diagnosis. The evolving histopathologic interpretations underscore the diagnostic challenges that arise due to overlapping

morphologic features. While studies such as *MDM2* and *CDK4* amplification and *RB1* loss can provide additional information, they are not definitive. *MDM2* is a gene that can inhibit the p53 tumor suppressor, and its amplification promotes cancer growth. *CDK4* (cyclin-dependent kinase 4) is an enzyme encoded by the *CDK4* gene that regulates the cell cycle, and its overexpression can drive uncontrolled cell division. Combined *MDM2* and *CDK4* amplification is a hallmark of extramammary, but not intramammary, well-differentiated liposarcoma.<sup>7</sup> *RB1* is a tumor suppressor gene that is often mutated in pleomorphic sarcoma and malignant or borderline phyllodes tumor.<sup>8,9</sup>

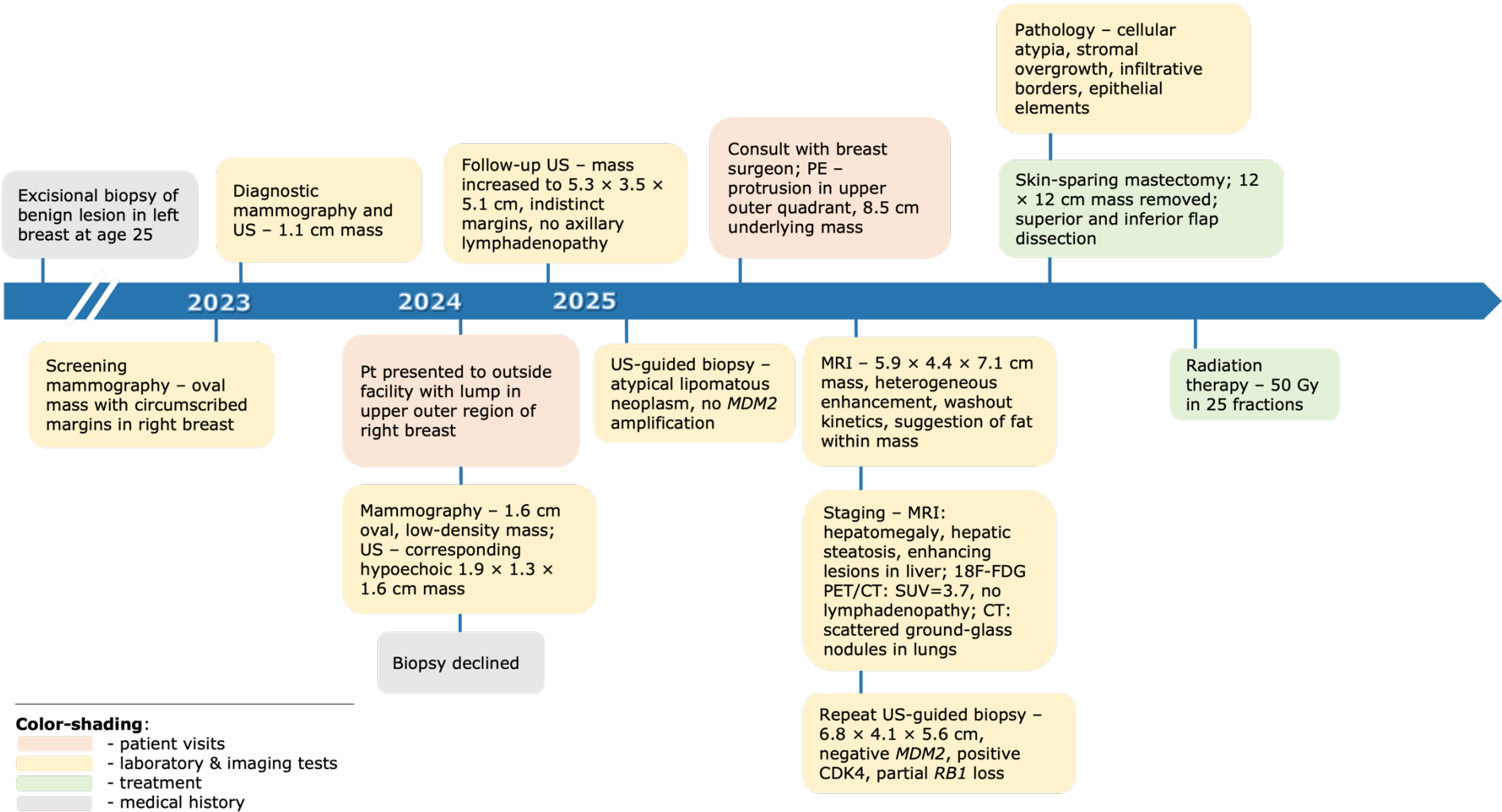
The clinical course of this patient, with rapid tumor growth over a relatively short interval, was concerning for aggressive pathology. Wide local excision remains the standard of care for phyllodes tumors, and mastectomy is often required for very large tumors or when clear margins cannot be achieved with breast conservation. In this case, a skin-sparing mastectomy was performed due to tumor size, relative proximity of the tumor to the nipple, and the need for adequate margins. Moreover, because the pathology was unclear, the biopsy needle tracts were considered and included

**Figure 4.** Radiograph of Mastectomy Specimen from Right Breast of 47-year-old Woman with Malignant Phyllodes Tumor

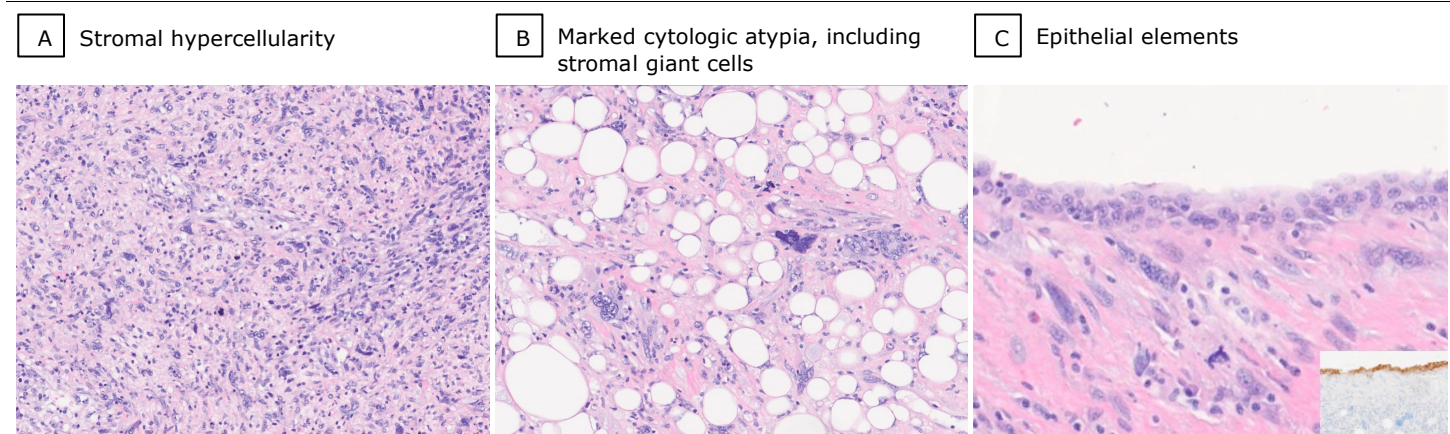


A radiograph of the mastectomy image shows two surgical clips (yellow circle) within a large oval mass. in the surgical specimen.

Case report timeline



**Abbreviations:** 18F-FDG PET/CT, fluorine-18 fluorodeoxyglucose positron emission tomography/computed tomography ; CT, computed tomography; Gy, Gray; MRI, magnetic resonance imaging; PE, physical examination; PT, patient; SUV, standardized uptake value; US, ultrasound

**Figure 5.** Histopathologic Examination of Mastectomy Specimen at ×20 Magnification

Pathology slides viewed at ×20 magnification reveal marked cytologic atypia, including (A) stromal hypercellularity, (B) stromal giant cells, and (C) epithelial elements. Cytologic atypia is best visualized at higher magnifications but is appreciable in this specimen even at low power. Epithelial elements are scant, but the inset pancytokeratin immunohistochemical stain (C) confirms the specimen's epithelial component.

## Conclusion

This case illustrates the critical role of multidisciplinary teams in guiding the management of rare breast tumors. Input from specialists in breast surgery, medical oncology, radiation oncology, pathology, radiology, and sarcoma ensured a comprehensive diagnostic and therapeutic approach. Additionally, the presence of indeterminate pulmonary and hepatic findings raised concern for possible metastasis, emphasizing the importance of thorough staging and surveillance in malignant phyllodes tumors, despite their relatively low rate of distant spread. In summary, this case reinforces the importance of considering phyllodes tumors in the differential diagnosis of rapidly enlarging breast masses, the necessity of obtaining wide surgical margins for local control, and the utility of multidisciplinary management in optimizing outcomes for patients with these rare tumors.

## Author Contributions

Conceptualization: H.L. Acquisition: H.L., C.B.W., A.G., J.I. Analysis and interpretation of data: H.L., C.B.W., J.B., A.G., J.I. Writing – original draft preparation: J.B. Review and revisions: H.L., H.Y., C.B.W., J.B., A.G., J.I. Supervision: C.B.W. All authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

## Acknowledgments

We extend our gratitude to the patient for graciously granting permission to share their clinical course in this case report. This work would not have been possible without their generous participation.

## Disclosures

None to report.

## References

1. Packer MDC, Lester SC. Current understanding of phyllodes tumors of the breast: Tumor classification, molecular landscape, and best pathology practice. *Hum Pathol*. 2025;162:105863. doi:10.1016/j.humpath.2025.105863
2. Tan PH, Ellis I, Allison K, et al. The 2019 World Health Organization classification of tumours of the breast. *Histopathology*. 2020;77(2):181-185. doi:10.1111/his.14091
3. Donato AR, Goncalves R, Maesaka JY, et al. Phyllodes tumors of the breast: A comprehensive review of diagnosis, treatment, and follow-up. *Clinics (Sao Paulo)*. 2025;80:100617. doi:10.1016/j.clinsp.2025.100617
4. Mitú J, Reinfuss M, Mitú JW, et al. Malignant phyllodes tumor of the breast: treatment and prognosis. *Breast J*. 2014;20(6):639-44. doi:10.1111/tbj.12333
5. Riley DS, Barber MS, Kienle GS, et al. CARE guidelines for case reports: explanation and elaboration document. *J Clin Epidemiol*. 2017;89:218-235. doi:10.1016/j.jclinepi.2017.04.026
6. Kim JH, Lee JY. Malignant phyllodes tumor of the breast with liposarcomatous differentiation: A case report with imaging findings. *Radiol Case Rep*. 2019;14(5):531-534. doi:10.1016/j.radcr.2019.02.007

- 
7. Lyle PL, Bridge JA, Simpson JF, Cates JM, Sanders ME. Liposarcomatous differentiation in malignant phyllodes tumours is unassociated with MDM2 or CDK4 amplification. *Histopathology*. 2016;68(7):1040-1045. [doi:10.1111/his.12898](https://doi.org/10.1111/his.12898)
  8. Kleinerman RA, Schonfeld SJ, Tucker MA. Sarcomas in hereditary retinoblastoma. *Clin Sarcoma Res*. 2012;2(1):15. [doi:10.1186/2045-3329-2-15](https://doi.org/10.1186/2045-3329-2-15)
  9. Zhou P, Zhang Q, Zhu J, Li P. Molecular characterization of pleomorphic liposarcomatous differentiation in malignant phyllodes tumor of the breast: A case report. *Pathol Res Pract*. 2021;224:153489. [doi:10.1016/j.prp.2021.153489](https://doi.org/10.1016/j.prp.2021.153489)