Giant malignant phyllodes tumor with ulceration: A case report and brief review of the literature

ABDULWAHID M. SALIH[1], LANA R.A. PSHTIWAN[1], ARI M. ABDULLAH[1,2], SHABAN L. TOFIQ[1], SAKAR O. ARIF[1], REBAZ O. MOHAMMED[1], HIWA O. BABA[1], HAWKAR A. NASRALLA[1], MASTY K. AHMED[1], SHKO H. HASSAN[1,3] and FAHMI H. KAKAMAD[1,4,5]

[1]Department Scientific Affairs, Smart Health Tower, Sulaymaniyah 46001, Iraq; [2]Department of Pathology, Sulaymaniyah Teaching Hospital, Sulaymaniyah 46001, Iraq; [3]Zad Organization, Sulaymaniyah 46001, Iraq; [4]College of Medicine, University of Sulaimani, Sulaymaniyah 46001, Iraq; [5]Kscien Organization for Scientific Research (Middle East Office), Sulaymaniyah 46001, Iraq

Received September 11, 2025; Accepted October 8, 2025

DOI: 10.3892/wasj.2025.412

Abstract. A phyllodes tumor (PT) is a rare breast neoplasm characterized by variable biological behavior, ranging from benign to malignant. A number of PTs exhibit a rapid growth and are classified as fibroepithelial tumors with a notable risk of local recurrence. Of note, ~10-15% of cases are malignant and may recur locally in up to 30% of instances. The present study describes a case of a rapidly growing, giant, ulcerative malignant PT. A 40-year-old female patient presented with a rapidly enlarging left breast mass over period of 2 months. An examination revealed a hard, irregular, fixed mass measuring ~24x20x17 cm, with a skin ulceration. She underwent a wide local excision followed by adjuvant radiotherapy. Histopathological analysis confirmed a malignant PT with myoid differentiation. At the 1-year follow-up, recurrent PT was diagnosed, and a modified radical mastectomy was performed. In a review of the literature, a total of seven case reports on malignant PTs of the breast were identified. The patients were all female, with ages ranging from 19 to 73 years. Of note, 5 of the cases involved tumors in the right breast, while 2 cases involved tumors in the left breast. Tumor sizes varied widely, from 7.5x7x4.5 cm to as large as 55.5x36x50 cm. The diagnosis and management of malignant PTs may be challenging due to their rarity and unpredictable clinical behavior. Even with aggressive treatment, these tumors carry a significant risk of recurrence, highlighting the importance of vigilant clinical follow-up and multidisciplinary care.

Correspondence to: Dr Fahmi H. Kakamad, College of Medicine, University of Sulaimani, HC8V+F66, Madam Mitterrand Street, Sulaymaniyah 46001, Iraq
E-mail: kakamad.fahmi@gmail.com

Key words: adjuvant radiotherapy, breast tumor, wide local excision, ulcerative breast lesion, recurrence

Introduction

A phyllodes tumor (PT) is a rare type of breast tumor known for its diverse biological behavior, which can range from benign to malignant forms. A number of PTs are known for their rapid growth and are classified as fibroepithelial neoplasms with a tendency for local recurrence (1). PTs comprise up to ~0.3 to 1% of all primary breast tumors. Although they can occur at any age, they are most frequently observed in women between 30 and 50 years of age (2).

PTs were initially described in 1838 by Johannes Müller, who named them cystosarcoma phyllodes due to their leaf-like (phyllodial) projections into cystic spaces and their sarcoma-like stromal features (3). However, this term is somewhat misleading, as up to 70% of these tumors follow a benign course and cystic degeneration is uncommon (1). In 1931, the first case of a malignant PT that had spread to the lungs was documented, highlighting the potential of the tumor for malignancy (4).

Recent studies indicate that ~10 to 15% of PTs are malignant. Malignant PTs have a high risk of local recurrence, occurring in up to 30% of cases, and they also have the potential to metastasize. PTs >10 cm in size are referred to as 'giant' PTs and comprise ~20% of all cases (1).

PTs are categorized as benign, borderline, or malignant based on a combination of histological features, including stromal cellularity, nuclear abnormalities, mitotic count, stromal overgrowth, necrosis, heterologous sarcomatous elements and tumor margins (5).

Th present study describes the case of a 40-year-old female patient with a rapidly growing, giant, ulcerative malignant PT. The report follows the CaReL guidelines, and all references cited were evaluated for relevance (6,7).

Case report

Patient information. A 40-year-old female patient presented to Smart Health Tower (Sulaymaniyah, Iraq) with a rapidly growing mass in her left breast for a 2-month duration. She had no significant past medical or surgical history and no family history of breast cancer. An analysis of her obstetric history

revealed gravida 2, para 2 and abortion 0. She had a total lactation history of 2 years.

Clinical findings. Upon a clinical assessment, the left breast was found to be markedly enlarged, pendulous and significantly asymmetrical compared to the right breast, with the lower position attributed to the weight and extent of the underlying mass. Palpation revealed a hard, irregular and fixed mass, measuring ~24x20x17 cm occupying the majority of the breast parenchyma. Centrally, there was a large, well-demarcated ulcerative lesion measuring ~10-12 cm in diameter. The ulcer surface was necrotic with areas of black eschar and friable granulation tissue, and a purulent, foul-smelling discharge, accompanied by zones of active bleeding. The overlying skin was erythematous, edematous and indurated, with diffuse discoloration and no evidence of peau d'orange or satellite lesions. The nipple-areolar complex was completely obscured and retracted, likely due to the extensive involvement of the lesion (Fig. 1).

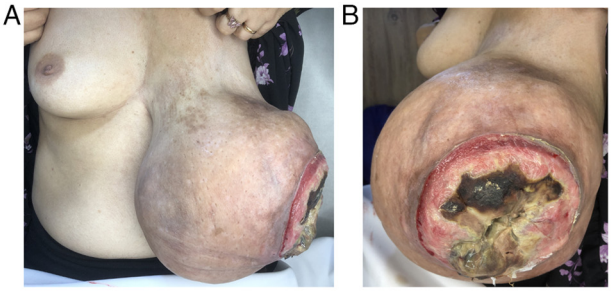

Figure 1. Clinical image demonstrating: (A) A markedly enlarged, pendulous left breast with pronounced asymmetry relative to the right breast; (B) close-up of the ulcerated surface, demonstrating extensive necrosis with purulent exudate, granulation tissue and hemorrhage, findings consistent with an infected, ulcerated tumor mass.

Diagnostic approaches. An ultrasonography of the left breast demonstrated the marked enlargement and replacement of normal parenchyma by a large heterogeneous mass with prominent internal vascularity. A sizable ulceration was identified in the lower outer quadrant, accompanied by diffuse skin thickening. These findings were highly suggestive of a locally advanced breast malignancy. An axillary ultrasound revealed two suspicious lymph nodes (LNs) in level I, with no abnormal nodes observed in levels II, III, or the supraclavicular region. The lesion was assigned a Breast Imaging Reporting and Data System (BI-RADS) category of 5. A mammography of the right breast demonstrated no architectural distortion, suspicious mass, or microcalcifications, and was categorized as M1. Imaging of the left breast could not be obtained due to the presence of a large, ulcerated mass. A contrast-enhanced computed tomography (CT) scan of the chest, abdomen and pelvis revealed no evidence of distant metastasis. A core needle biopsy (CNB) of the left breast mass revealed a fibroepithelial lesion with stromal smooth muscle (myoid) differentiation. Fine-needle aspiration of the left axillary LNs yielded negative results for malignant cells. An immunohistochemical analysis was performed. For immunohistochemical analysis, 4-5 μm-thick sections were cut from formalin-fixed, paraffin-embedded (FFPE) tissue blocks using a Sakura Accu-Cut SRM microtome. Permeabilization was not required since the analyzed targets were membrane and cytoplasmic antigens. Endogenous peroxidase activity was blocked using hydrogen peroxide (Dako, Agilent Technologies, Inc.) for 7-10 min at room temperature. The slides were then incubated with the primary antibodies for 45 min at room temperature. The secondary antibody (Dako horseradish peroxidase conjugate) was applied for 45 min at room temperature, followed by chromogen development with diaminobenzidine (DAB) for 5-10 min. Counterstaining was performed using Hematoxylin Gill II (MilliporeSigma) for 2-5 min at room temperature, then dehydrated through graded alcohols and cleared in xylene. Imaging was performed using a standard light microscope at x20 and x40 magnification. p63 staining was negative in both the ductal and stromal cells, but positive in the myoepithelial cells. AE1/AE3 was negative in spindle cells and positive in benign ductal epithelial components. Smooth muscle actin (SMA) and smooth muscle myosin heavy chain (SMMHC) were both positive in the stromal cells, exhibiting strong cytoplasmic staining, supporting smooth muscle differentiation (Fig. 2).

Therapeutic interventions. Following a multidisciplinary team discussion, the decision was made to perform a wide local excision of the left breast mass. A post-operative histopathological analysis was performed on 5-μm-thick paraffin-embedded sections. The sections were fixed in 10% neutral buffered formalin at room temperature for 24 h and then stained with hematoxylin and eosin (H&E; Bio Optica Co.) for 1-2 min at room temperature. The sections were then examined under a light microscope (Leica Microsystems GmbH). The histopathological analysis confirmed the diagnosis of a malignant PT exhibiting myoid differentiation (Fig. 3). The patient was subsequently referred to the oncology team for further management and treatment planning.

Follow-up and outcome. The patient received adjuvant external-beam radiotherapy to the left breast following initial surgical excision, using a 3D conformal technique. A total dose of 50 Gy was delivered in 25 fractions (2 Gy per fraction) over a period of 5 weeks, followed by a tumor-bed boost of 10 Gy in 5 fractions, for a cumulative dose of 60 Gy. The patient was maintained on regular follow-up. At the 1-year follow-up, a breast ultrasonography (images not available) revealed a focal hypoechoic area in the left breast. A CNB was performed, revealing a fibroepithelial neoplasm consistent with recurrent PT. Considering the recurrence, the patient subsequently underwent a modified radical mastectomy. At the 8-month post-operative follow-up, the patient remained clinically stable with no evidence of disease recurrence.

Discussion

In the present study, a brief review of the literature was also performed. A total of seven case reports (2,5,8-12) on malignant PTs of the breast were reviewed, published between 2024 and 2025 (Table I). The patients were all female, with ages ranging from 19 to 73 years. The majority of the cases (5 out of 7 cases) involved tumors in the right breast, while 2 cases involved

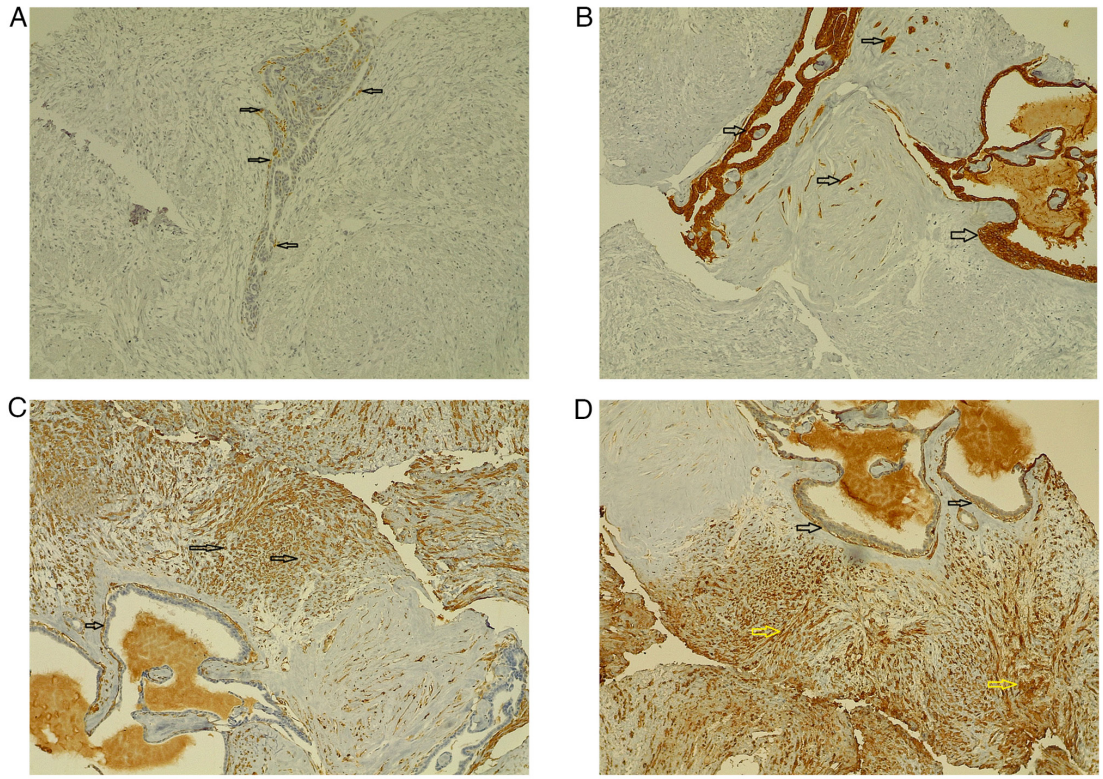

Figure 2. Immunohistochemical staining demonstrating: (A) p63 positivity in myoepithelial cells surrounding the ducts (black arrows) and negativity in the adjacent stromal cells (magnification, x10). (B) AE1/AE3 displaying a cytoplasmic staining pattern in the epithelial cells lining the ducts (arrows) and negative staining in the surrounding stroma (magnification, x40). (C) Smooth muscle actin-positive in stromal cells (large arrows) and myoepithelial cells encircling the ducts (small arrows), but negative in the epithelial component (magnification, x40). (D) Smooth muscle myosin heavy chain exhibiting cytoplasmic staining in myoepithelial cell layers around the ducts (black arrows) and stromal cells (yellow arrows), with no staining in the epithelial cells lining the ducts (magnification, x40).

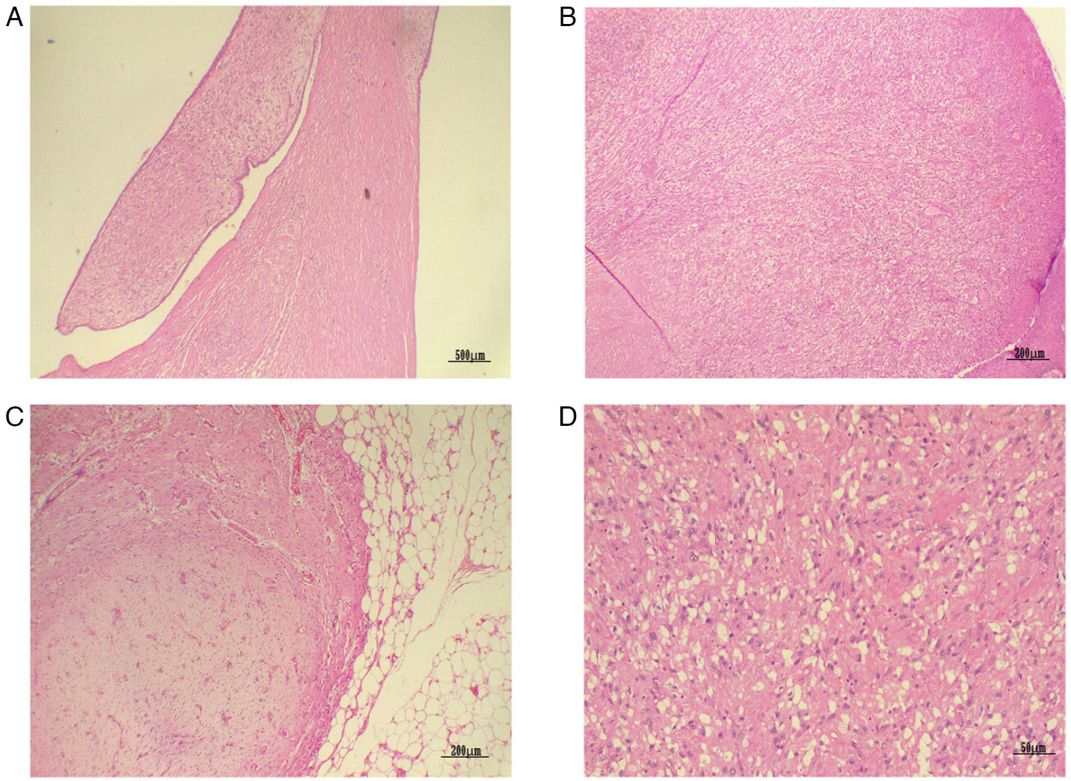

Figure 3. Sections from different areas of the mass: (A) Leaf-like projections with an epithelial component (magnification, x4); (B) skin ulceration adjacent to normal epidermis (magnification, x10); (C) infiltrative tumor border invading surrounding adipose tissue (magnification, x10); and (D) stromal overgrowth with cytologic atypia (magnification, x40). The sections were stained with hematoxylin and eosin.

Table I. Summary of seven recently reported cases of malignant phyllodes tumor.

First author, year of publication	Age, years/sex	Laterality	Tumor size (cm)	Presentation	Duration	BI-RADS	Treatment	IHC Markers	Metastasis	Follow-up/ outcome	(Refs.)
Ahmadi, 2025	19/F	Right	24x12x7	Rapid growth, ulceration, bleeding	~2 months of rapid growth after stable years	BI-RADS 4	Total right mastectomy	Not reported	None	No adjuvant therapy, close follow-up, no recurrence reported	(8)
Murcia, 2025	53/F	Right	23x22x28	Large, rapidly growing mass	Rapid growth over the past 2 months (present ~1 year)	BI-RADS 5	Right mastectomy	Not reported	None	No detailed follow-up given	(9)
Rumyantseva, 2025	73/F	Left	25	Large painless mass, lymphadeno-pathy	Progressive growth (duration not fully detailed)	Not reported	Excision with 1 cm margin	Not reported	Regional lympha-denopathy (possible reactive; exact status not fully detailed)	Outcome not fully detailed	(2)
Dong, 2024	48/F	Right	25x10	Rapid post-COVID growth, ulceration, and anemia	Rapid growth in 3 months (stable for 6 years)	BI-RADS 4b	Modified radical mastectomy	Not reported	None	No adjuvant therapy, no recurrence at 9 months	(10)
Haddad (2024)	24/F	Right	7.5x7x4.5	Rapid growth, pain, and skin suffering	~2 months of rapid pro gressive growth	BI-RADS 4	Partial mastectomy + axillary dissection	Not reported	None	Adjuvant chemo- and radiotherapy, no metastasis	(5)
Kaiser, 2024	66/F	Left	55.5x36x50	Giant mass, bleeding, anemia, metastases	Rapid massive growth in 1 month (after 5 years of neglect)	Not reported	Radical mastectomy, chemo, radiotherapy	Not reported	Lung, brain, and bone metastases	Stable disease at 18 months despite brain and bone metastasis	(11)
Vicentini, 2024	29/F	Right	10x8x8	Ulcerated mass, axillary node metastasis	Mass since age 9, rapid increase over 2 months	Not reported	Modified radical mastectomy + axillary dissection	Positive P53, P63, β-catenin; Ki-67 high (50%)	Axillary lymphnode metastasis, lung nodules suspicious	Recurrence at 56 days, died at 6 months	(12)

tumors in the left breast. Tumor sizes varied widely, from 7.5x7x4.5 cm to as large as 55.5x36x50 cm (weighing 18.6 kg). Clinically, all cases presented with rapid tumor growth. In several cases, rapid growth occurred after a prolonged period of stable tumor size, with final accelerated growth durations ranging from one to three months. BI-RADS categories were reported in 5 cases, typically classified as BI-RADS 4 or 5. The case in the present study aligns with the reviewed cases in terms of clinical presentation, demonstrating a strikingly rapid tumor growth over a short period, expanding to 24x20x17 cm within 2 months. However, it differs in tumor laterality, arising in the left breast, which was less frequently affected in the reviewed cases. Additionally, the lesion was categorized as BI-RADS 5, reinforcing the high radiologic suspicion, which is consistent with the reviewed cases of malignant PTs.

In patients with a large malignant PT, the rapid growth of the tumor can cause varicose veins to appear on the surface of the skin. This can result in poor blood circulation, leading to tissue death, infection and the development of skin ulcers. When the tumor or associated blood vessels rupture, bleeding may occur. A malignant PT is also often accompanied by systemic symptoms, such as anemia and severe weight loss, which may be caused by the metabolic demands of the tumor, infections, or bleeding (10). In advanced cases, patients may develop cachexia, a condition that can lead to multi-organ failure. Dong *et al* (10) reported a case in which the tumor of the patient became enlarged rapidly and prominently, with surface varicosities, bleeding and infection. The patient in their study also exhibited signs of poor appetite, marked weight loss and anemia (10). Similarly, the case described herein presented with a large, ulcerated area containing necrotic, foul-smelling tissue and active bleeding, features that are characteristic of an aggressive malignant PT and their tendency to cause skin breakdown due to pressure-induced necrosis.

Identifying the subtype of PTs is crucial, as it helps predict the clinical course of the tumor: Benign forms may recur locally, borderline types can also recur with a minimal risk of metastasis, while malignant tumors carry a higher likelihood of spreading (12). Mammography and color Doppler ultrasound are the primary imaging modalities used for evaluating PT. However, in the early stages, both techniques often lack specific findings that clearly indicate the presence of PT (10). In the case in the present study, an ultrasonography revealed a large, heterogeneous mass with internal blood flow and diffuse thickening of the skin, features such as those reported by in the study by Murcia *et al* (9), who observed that PTs can resemble fibroadenomas and often lack distinctive imaging characteristics to differentiate benign from malignant forms. In the present study, a mammography could not be performed on the affected breast due to the extensive size of the mass and the presence of surface ulceration, an imaging limitation frequently encountered in advanced tumors. A comparable situation was described by Kaiser *et al* (11), where a PT had expanded to 55 cm. These limitations in imaging underscore the importance of histological examination for definitive diagnosis (11).

A definitive diagnosis of PTs requires a CNB, which reveals characteristic histological features, including a leaf-like architecture formed by stromal overgrowth that projects into papillary structures resembling leaf blades (9). Fine needle aspiration has also been considered a useful preoperative tool for diagnosing PTs. Cytological findings typically include fibromyxoid stromal fragments rich in spindle cells, along with clusters or sheets of benign ductal epithelial cells without atypia, often accompanied by myoepithelial cells (1). In the case in the present study, CNB identified a fibroepithelial lesion with stromal myoid differentiation, which raised the possibility of a PT. Distinguishing PT from other fibroepithelial tumors, such as fibroadenomas or metaplastic carcinoma, can be challenging before surgery, as noted by Haddad *et al* (5). Immunohistochemical analysis was essential in confirming the diagnosis in the present case. p63 staining was negative in both the ductal and stromal cells, but remained positive in the myoepithelial cells. AE1/AE3 was positive in the benign ductal epithelial components and negative in the stromal cells. In contrast, the stromal cells showed strong, diffuse cytoplasmic staining for SMA and SMMHC, supporting smooth muscle differentiation (Fig. 2). These findings are consistent with those reported by Lissidini *et al* (1) (2022) and Haddad *et al* (5), who emphasized the critical role of immunohistochemistry in determining stromal cell lineage and distinguishing malignant PTs from metaplastic carcinomas, particularly in cases with prominent spindle cell features.

Current management strategies for PTs reveal a lack of consensus and limited evidence-based guidelines, particularly as regards the optimal surgical margins required to achieve complete excision and reduce the likelihood of recurrence. Traditionally, treatment has involved wide local excision with margins >1 cm, with tumor size often influencing the decision to proceed with mastectomy. Malignant PTs are known for their aggressive nature, with a high risk of local recurrence and potential for metastasis to the lungs, bones and LNs. However, emerging data suggest that margins <1 cm may be adequate for effective tumor removal, potentially making breast-conserving surgery a viable option in selected cases (8). In the case presented herein, the patient underwent wide local excision. This treatment approach is consistent with the current literature, which emphasizes that complete surgical resection with negative margins remains the primary method for managing malignant PTs. As highlighted by Lissidini *et al* (1) and Haddad *et al* (5), the most critical factor influencing local recurrence is the adequacy of surgical margins, with a general recommendation of at least 1 cm. Due to the elevated risk of recurrence, adjuvant radiotherapy was administered following the initial excision. This decision aligns with findings from the study by Kaiser *et al* (11), who underscored the importance of radiotherapy in enhancing local disease control, particularly for large or marginally resectable tumors.

Despite initial aggressive local treatment, the patient in the present study experienced a recurrence within 1 year, identified through follow-up imaging and confirmed by CNB. Recurrence in malignant PTs is relatively common, with reported rates as high as 30%, particularly in cases with inadequate surgical margins or tumors characterized by high mitotic activity and stromal overgrowth, as documented by Lissidini *et al* (1) and Dong *et al* (10). Given the recurrence, the patient underwent a modified radical mastectomy, a more extensive procedure involving the removal of the breast along with regional LNs. While axillary LN metastasis in malignant PTs is uncommon, as noted by Vicentini *et al* (12), LN dissection may be warranted

in select cases with clinically suspicious nodes. In the case in the present study, a lymphadenectomy was performed due to suspicious findings, but no LN metastases were identified on the histopathological examination.

The present case report is distinguished by the rare coexistence of extensive ulceration, recurrence following wide local excision with adjuvant radiotherapy, and stromal myoid differentiation within a giant malignant phyllodes tumor. These uncommon features occurring together make the case a valuable addition to the limited literature on the biological variability and aggressive behavior of malignant phyllodes tumors. In conclusion, the diagnosis and management of malignant PTs can be challenging due to their rarity and unpredictable clinical behavior. Even with aggressive treatment, these tumors carry a significant risk of recurrence, highlighting the importance of vigilant clinical follow-up and multidisciplinary care.

Acknowledgements

Not applicable.

Funding

No funding was received.

Availability of data and materials

The data generated in the present study may be requested from the corresponding author.

Authors' contributions

FHK and LRAP were major contributors to the conception of the study, as well as to the literature search for related studies. AMS, SLT, HAN and MKA contributed to the clinical management of the patient, assisted with data acquisition and interpretation, and participated in the literature review and manuscript preparation. ROM, HOB and SHH contributed to the conception and design of the study, the literature review, the critical revision of the manuscript, and the processing of the table. SOA was the radiologist who assessed the case. AMA was the pathologist who performed the diagnosis of the case. FHK and AMS confirm the authenticity of all the raw data. All authors have read and approved the final manuscript.

Ethics approval and consent to participate

Written informed consent was obtained from the patient for her participation in the present study.

Patient consent for publication

Written informed consent was obtained from the patient for the publication of the present case report and any accompanying images.

Competing interests

The authors declare that they have no competing interests.

References

1. Lissidini G, Mulè A, Santoro A, Papa G, Nicosia L, Cassano E, Ashoor AA, Veronesi P, Pantanowitz L, Hornick JL and Rossi ED: Malignant phyllodes tumor of the breast: A systematic review. Pathologica 114: 111-121, 2022.
2. Rumyantseva V, Slepukhova D, Sukhotko A, Ankin A, Bumbu A and Covantsev S: Malignant phyllodes tumor management-a case report. Acad J Health Sci 40: 75-79, 2025.
3. Müller J: On the finer structure and the forms of morbid tumors. Berlin Gedruckt und verlegt bei, 1838.
4. Lee BJ and Pack GT: Giant intracanalicular myxoma of the breast. Ann Surg 93: 250-268, 1931.
5. Haddad CF, de Oliveira Paiva AC, de Souza Silva JP and Rodrigues IT: Malignant phyllodes tumor of the breast in a young patient-case report. Mastology 34: e20220043, 2024.
6. Prasad S, Nassar M, Azzam AY, García-Muro-San José F, Jamee M, Sliman RK, Evola G, Mustafa AM, Abdullah HO, Abdalla AB, *et al*: CaReL Guidelines: A consensus-based guideline on case reports and literature review (CaReL). Barw Med J 2: 13-19, 2024.
7. Abdullah HO, Abdalla BA, Kakamad FH, Ahmed JO, Baba HO, Nasih M, Bapir R, Rahim HM, Omar D, Kakamad SH, *et al*: Predatory publishing lists: A review on the ongoing battle against fraudulent actions. Barw Med J 2: 26-30, 2024.
8. Ahmadi N, Sajdlowska J, Shenasan P, Veltri J and Moulayes N: Case report: Rapid growth of malignant phyllodes tumor. J Surg Case Rep 2025: rjaf082, 2025.
9. Murcia DK, Tenreiro A, Kohlnhofer JA, Wagner C and Monetto FP: Giant malignant phyllodes tumor: A case report. Radiol Case Rep 20: 3719-3723, 2025.
10. Dong X, Song D, Ma J, Sun J and Wang X: Massive malignant phyllodes tumor accompanied by anemia and ulceration in the breast: A case report. Clin Case Rep 12: e9096, 2024.
11. Kaiser C, Abramian AV and Faridi A: Surgical management and system therapy of the most giant known malignant metastatic breast phyllodes tumor: A case report and review of the literature. Oncol Res Treat 47: 145-148, 2024.
12. Vicentini G, Linhares JC, Borsari G and Linhares HZ: Malignant phyllodes tumor of the breast with lymph node metastasis: A case report. Mastology 34: e20230008, 2024.