

**BENIGN PHYLLODES TUMOUR PRESENTING AS A PAINLESS PALPABLE BREAST LUMP:
PRE-SURGICAL AND POST-SURGICAL IMAGING FINDINGS**

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Рhyllodes tumour of the breast is an unusual fibroepithelial tumour representing 0.3-1% of all breast tumours and 2.5% of fibroepithelial tumours; the peak incidence occurs in patients between 40 and 50 years of age. This case presents a 46-year-old woman who presented with a painless palpable left breast lump, diagnosed by mammography and ultrasound; the tumour was removed by surgery, which allowed us to show pre and post-surgical changes. We supplement the case with a brief literature review.

Keywords: phyllodes tumour, breast, benign tumour, fibroepithelial neoplasm.

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**ДОБРОКАЧЕСТВЕННАЯ ФИЛЛОИДНАЯ ОПУХОЛЬ, ВЫЯВЛЕННАЯ КАК
БЕЗБОЛЕЗНЕННОЕ ПАЛЬПИРУЕМОЕ ОБРАЗОВАНИЕ МОЛОЧНОЙ ЖЕЛЕЗЫ:
ОСОБЕННОСТИ ВИЗУАЛИЗАЦИИ НА ПРЕД- И ПОСЛЕОПЕРАЦИОННОМ ЭТАПАХ**

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Филлоидная опухоль молочной железы – редко встречаемая фиброэпителиальная опухоль, составляющая 0,3-1% всех опухолей молочной железы и 2,5% фиброэпителиальных опухолей; наиболее часто выявляется у пациенток в возрасте от 40 до 50 лет. В данном случае из практики представлено клиническое наблюдение женщины, 46 лет, у которой была выявлена безболезненная пальпируемая опухоль левой молочной железы, диагностированная с помощью маммографии и ультразвукового исследования. Опухоль была удалена хирургическим путем, что позволило продемонстрировать пред- и послеоперационные изменения. Клинический случай дополнен кратким обзором литературы.

Ключевые слова: филоидная опухоль, молочная железа, доброкачественная опухоль, фиброэпителиальное новообразование.

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Introduction. Phyllodes tumour of the breast is an unusual fibroepithelial tumour representing 0.3-1% of all breast tumours and 2.5% of fibroepithelial tumours; the peak incidence occurs in patients between 40 and 50 years of age [1]. The aetiology of these tumours is not clear, but it has been described that factors such as endothelin-1 stimulate fibroblast

growth and increase estrogenic activity [2]. Factors that may be involved in tumour growth are trauma, pregnancy and lactation [2]. The clinical characteristics of this tumour are a firm, painless, fast-growing unilateral mass, with a standard size of 4-5 cm that could be larger than 10 cm in some patients [2]. Phyllodes tumours are classified by the World Health Organization as benign, borderline, or malignant

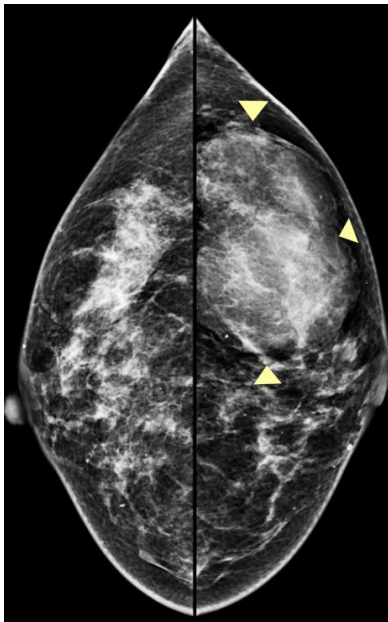


Fig. 1 a (Рис. 1 а)

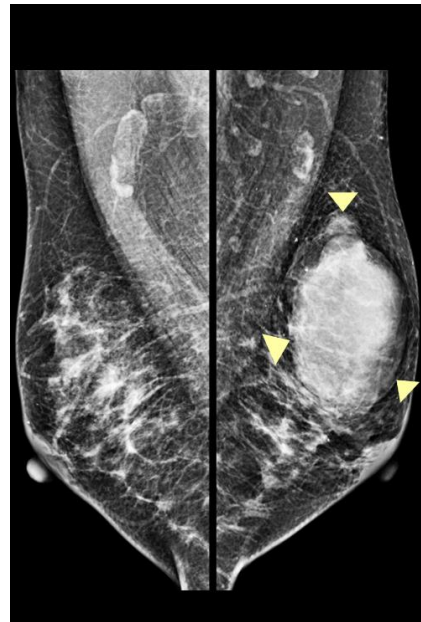


Fig. 1 b (Рис. 1 б)

Fig. 1. Mammography.

a – Bilateral craniocaudal (CC) breast mammography showed scattered areas of fibroglandular density. On the upper external quadrant of the left breast, there is an oval, circumscribed, of equal density mass (yellow arrowhead).

b – Mediolateral oblique (MLO) breast mammography revealed a mass on the left breast (yellow arrowhead).

Рис. 1. Маммография.

а – билатеральная краниокаудальная (CC) маммография; рассеянные участки фиброглангулярной плотности. В верхнем наружном квадранте левой молочной железы определяется очерченный овал однородной плотности (желтая стрелка).

б – маммография, медиолатеральная косая проекция (MLO); образование в левой молочной железе (желтая стрелка).

based on histologic characteristics [3]. The management for benign phyllodes tumours has traditionally consisted of complete surgical excision with 1 cm tumour-free margins without axillary surgery. Previous studies' low incidence of lymph node metastasis supports the recommendation not to perform axillary surgery in these cases [3]. For surveillance, it was recommended to perform a clinical follow up for three years. [3] In this report, we present the case of a 46-year-old woman who presented with a painless palpable left breast lump and got diagnosed by mammography and ultrasound.

Case presentation.

A 46-year-old woman presented with a painless palpable left breast lump that had appeared six months earlier and that had been gradually increasing. A mass occupied the left upper external quadrant with 14x8x5 cm; no other masses were palpable, nor were axillary lymph nodes.

A bilateral craniocaudal (CC) breast mammography (Fig. 1A) showed scattered areas of fibroglandular density. On the upper external quadrant of the left breast, there was an oval, circumscribed, of equal density mass (yellow arrowhead). A mediolateral oblique (MLO) breast mammography (Fig. 1B) revealed a mass on the left breast (yellow arrowhead).

The ultrasound (Fig. 2A) revealed an oval, parallel, circumscribed, hypoechoic mass with posterior enhancement and internal and peripheral vascularity that measured 13.5x8x4.6 cm at 3-5 o'clock of the left breast. Histopathology reported a diagnosis of benign phyllodes tumour. The patient underwent surgery for the removal of the lesion. It was a complete surgical excision leaving a 1-cm margin of normal breast tissue around the mass without axillary surgery. After surgery, breast ultrasound (Fig. 2B) demonstrates architectural distortion at 3-5 o'clock due to surgical

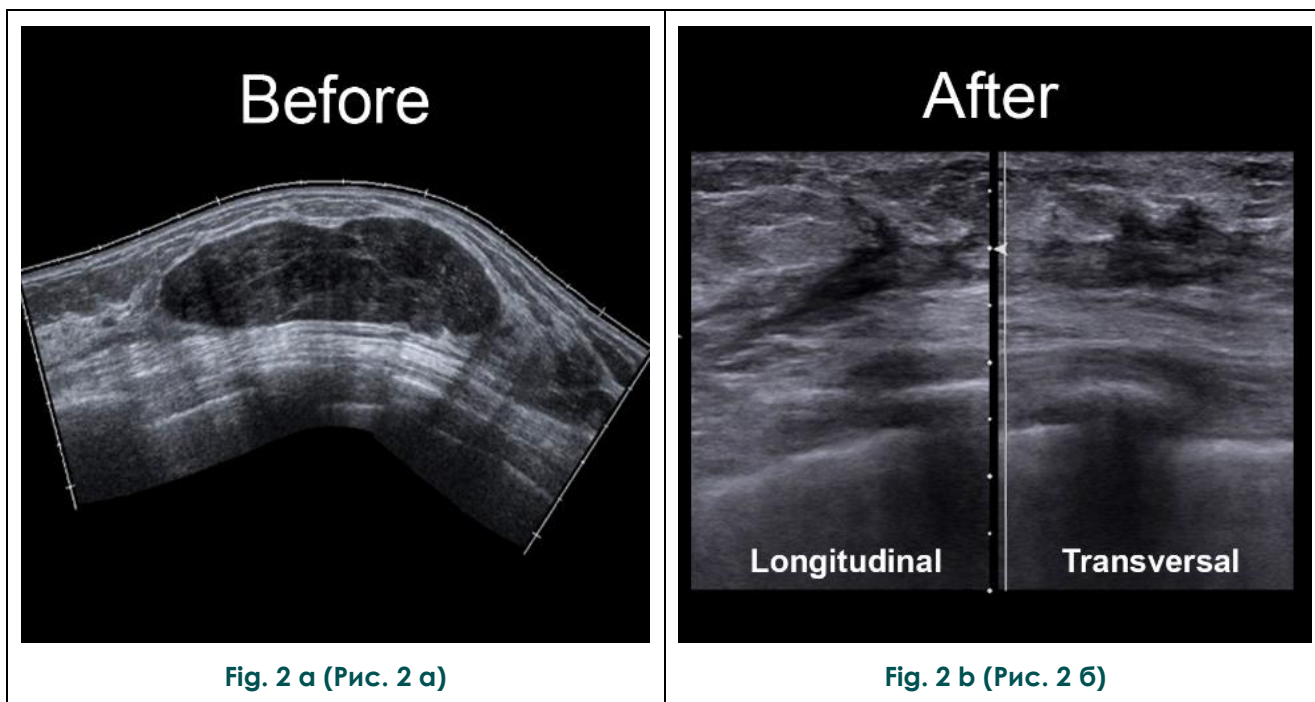


Fig. 2 а (Рис. 2 а)

Fig. 2 б (Рис. 2 б)

Fig. 2. Ultrasound.

a – The ultrasound reveals an oval, parallel, well-circumscribed, hypoechoic mass with posterior enhancement and internal and peripheral vascularity that measures 13.5x8x4.6 cm, at 3-5 o'clock of the left breast before surgery.

b – Breast ultrasound longitudinal and transversal planes demonstrate architectural distortion at 3-5 o'clock due to surgical changes.

Рис. 2. УЗИ.

а – при УЗИ в левой молочной железе определяется на 3-5 часах гипоехогенное образование, овальной формы, с четкими контурами, расположенное продольно, с усилением кзади, с внутренним и периферическим сосудистым компонентом, размером 13,5х8х4,6 см, на дооперационном этапе.

б – УЗИ в продольной и поперечной плоскостях демонстрирует структурные изменения на 3-5 часах после хирургического лечения.

changes.

Discussion.

Demographics.

The word phyllodes derive from Latin (phyllodium) and Greek (phullodes), which mean leaf-like or flattened leaf stalk [4]. Phyllodes tumour of the breast is a rare heterogeneous fibroepithelial neoplasm accounting for 0.3 to 1% of all breast tumours [5]. These tumours can occur at any age, ranging from 10 to 70 years, with a peak incidence between 40 and 50 years [1]. Latino Americans have a higher risk of this cancer than other racial-ethnic groups (Asians and African Americans) [2].

Genetic Risk Factors.

Genetic risk factors for this type of tumour are mostly unknown, but some authors had reported that growth factors produced by the breast epithelium and stromal expression of endothelin-1, insulin-like growth factors (IGF-I and II), and epithelial overexpression of Wnt5a could cause stromal induction in benign phyllodes tumours [2, 6].

overlying the tumour may look shiny, stretched, and attenuated in some areas [9]. As they grow larger, phyllodes tumours can even cause pressure necrosis of the overlying skin [10]. Bilateral diseases, nipple retraction, chest wall fixation and ulceration are rare but described for phyllodes tumours [2, 11].

A tumour can vary in size, from small to occupying the entire mammary gland (>3 cm, average 4 to 5 cm) [3]. Only some case reports have described the incidence of giant phyllodes tumours, which are phyllodes tumours of a size larger than 10 cm with a range from 15 to 50 cm [2]. The sudden increase in size in a longstanding breast lesion that distorts the contour of the breast is another main clinical finding. Axillary lymph node metastases are uncommon. [7]

Imaging findings.

An accurate diagnosis of phyllodes tumour is supported by a clinical, mammographic, sonographic, and histologic assessment, allowing proper surgical planning.[12] Imaging studies are used to validate the clinical suspi-

Table №1. World Health Organization classification of breast tumour [8].

Criteria	Phyllodes tumours		
	Benign	Borderline	Malignant
The relative proportion of all phyllodes tumours	60-75%	15-26%	8-20%
Tumour border	Well defined with pushing tumour margins	Well defined, may be focally permeative	Infiltrative tumour margins
Stromal cellularity and atypia	Minimal	Moderate	Marked
Stromal overgrowth	Absent	Moderate	Often present
Mitotic activity (Mitoses/10 high power fields)	Usually low (0-4)	Usually frequent (5-9)	Usually abundant (≥10)

Classification.

The World Health Organization categorized all phyllodes tumours into three primary forms: benign, borderline and malignant. The main criteria for the classification were the degree of stromal cellular atypia, the mitotic activity per 10 high power fields, the degree of stromal overgrowth, and tumour border appearance.[7]

Physical examination findings.

On physical examination, patients usually have a smooth, multinodular, well-defined, firm mass that is mobile and painless. The skin

of phyllodes tumours. They were allowed to identify locoregional staging, guide percutaneous biopsies, and find differential diagnoses with other breast masses.[3] Table 2 summarizes the primary radiological investigations in the diagnosis of phyllodes tumours.

Clinical relevance and differential diagnosis.

Benign phyllodes tumour is an unusual neoplasm that represents a diagnosis challenge to the physicians and radiologists because they can be challenging to differentiate from other breast tumours. This case aims to draw atten-

Table №2. Imaging features [13].			
Ultrasonography	<ul style="list-style-type: none"> • Show hypoechoic, heterogeneous, or complex cystic and solid echo patterns. • Lobulated shape (in some cases round or oval) sufficiently circumscribed with smooth margins, echogenic rim, and low level homogenous internal echoes. • Fluid-filled clefts in a predominantly solid mass (highly suggestive of phyllodes tumour) with good thorough transmission and lack of microcalcification are seen. 		
Color Doppler Ultrasonography	<p style="text-align: center;"><i>(Malignant behaviour)</i></p> <ul style="list-style-type: none"> • Marked hypoechogenicity. • Posterior acoustic shadowing. • Ill-defined tumour margins • Higher values of RI (resistance index). • Increased PI (pulsatility index). • Increased Vmax (systolic peak flow velocity). 		
Mammography	<ul style="list-style-type: none"> • It shows a well-circumscribed oval or lobulated mass with rounded borders. • A radiolucent halo may be seen around the lesion due to compression of the surroundings. • Coarse calcification (but malignant microcalcification is rare) may be present 		
Magnetic Resonance Imaging (MRI)	General features	<ul style="list-style-type: none"> • Round or lobulated shape and well-defined margins • Heterogeneous internal structure/nonenhancing septations • Exhibits hypointense signals on T1-weighted images • Displays hyper/isointense signals on T2-weighted images 	
	Contrast enhancement pattern	<i>Benign lesion</i>	<ul style="list-style-type: none"> • Slow initial enhancement with persistent delayed phase
		<i>Malignant lesion</i>	<ul style="list-style-type: none"> • Fast initial enhancement with plateau phase • Fast initial enhancement with wash-out phenomenon.

tion towards imaging methods as the primary tool for identifying benign phyllodes tumours. They supported the physician in predicting the tumour behaviour and in planning surgical treatment. Neoplasms such as fibroadenoma, adenoma, hamartoma, juvenile papillomatosis, and lipoma may be considered differential diagnoses for benign phyllodes tumours.[7]

Treatment.

Based on the National Comprehensive Cancer Network (NCCN) guidelines, the treatment for phyllodes tumours (includes benign, borderline and malignant) is surgery [14]. It consists of a wide surgical excision, defined as negative surgical margins superior or equal to 1 cm, without axillary lymph node dissection [15]. This approach is considered the standard of care to diminish the risk of local reapppearance, ranging from 5% to 30% in benign phyllodes tumours and up to 65% in borderline and malignant forms [12]. The role of adjuvant radiotherapy and chemotherapy continues in doubt, and the application of hormonal therapy has not been thoroughly probed [7].

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Conclusion.

Phyllodes tumours are uncommon fibroepithelial tumours that represent an unprecedented challenge to physicians and radiologists because they can be challenging to differentiate from other breast tumours. Any patient with a palpable, rapidly growing painless mass with an irregular shape and clinical suspicion should be investigated by imaging methods. Finally, awareness of the clinical and imaging findings of phyllodes tumours, nevertheless, could support the physician in predicting tumour behaviour and in planning surgical treatment.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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