

Giant Juvenile Fibroadenoma Presenting as Rapid Breast Enlargement: A Case Report

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ABSTRACT

Introduction: Giant juvenile fibroadenoma is an uncommon variant of breast fibroadenoma characterized by rapid growth and breast deformity in young patients, with phyllodes tumor being its main differential diagnosis. The relevance of this case lies in its rapid growth, large size, and benign imaging characteristics (BI-RADS 2), which pose diagnostic and therapeutic challenges in clinical decision-making.

Case presentation: A 19-year-old female patient presented with progressive enlargement of the left breast over a two-month period, associated with occasional pain. Physical examination revealed a well-defined mass measuring approximately 10 cm. Ultrasound demonstrated a circumscribed solid lesion classified as BI-RADS 2, consistent with a benign lesion. Due to the rapid growth, tumor size, and aesthetic compromise, direct surgical excision without preoperative biopsy was decided upon, considering the low suspicion of malignancy and the clinical impact of the mass. **Results:** A tumor measuring 10 × 8 cm and weighing 550 g was removed. Histopathological examination confirmed fibroadenoma, with no evidence of phyllodes tumor or malignancy. The postoperative course was favorable, without complications or recurrence at six months of follow-up.

Conclusion: Giant juvenile fibroadenoma should be considered in rapidly growing breast masses in young patients. This case highlights that, in clinical and imaging contexts suggestive of benignity, direct surgical treatment without prior biopsy may be an appropriate option. Timely resection allows confirmation of the diagnosis, preservation of breast symmetry, and satisfactory aesthetic outcomes, providing a clinically applicable lesson for decision-making.

KEYWORDS: giant juvenile fibroadenoma; benign breast tumor; phyllodes tumor; breast-conserving surgery.

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INTRODUCTION

Fibroadenomas are the most common benign breast tumors, accounting for approximately half of all breast biopsies. They occur predominantly in young women, especially

between 15 and 35 years of age, and in nearly 20% of cases they may be multiple or bilateral.^{1,2}

Although their etiology is not clearly defined, a strong hormonal relationship is widely accepted, as they tend to persist during reproductive age, increase in size during pregnancy or with estrogen stimulation, and regress after menopause. Clinically, they present as well-circumscribed,

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firm, and mobile masses with typical ultrasonographic features. Definitive diagnosis requires histopathological confirmation through biopsy or surgical excision. Currently, fibroadenomas are considered proliferative breast lesions; however, simple fibroadenomas are not associated, in most cases, with a significant increase in breast cancer risk. This risk increases only slightly when proliferative disease or relevant family history coexist.^{2,8}

When the lesion exceeds 5 cm in diameter, weighs more than 500 g, or occupies more than four-fifths of the breast, it is considered a giant fibroadenoma. This variant is characterized by rapid enlargement, which may cause distortion and compression of breast tissue, leading to significant asymmetry and aesthetic impact, especially in young patients. In such cases, surgical excision is indicated, and differentiation from phyllodes tumors is essential, as the greater stromal cellularity of these tumors may imply different biological behavior. Giant juvenile fibroadenoma is a rare entity characterized by accelerated growth and breast deformity in young patients, posing diagnostic and therapeutic challenges.^{3,4}

In this context, giant juvenile fibroadenomas represent a diagnostic and therapeutic challenge, particularly when they exhibit rapid growth and large size despite benign imaging characteristics. These situations may complicate differentiation from other entities such as phyllodes tumor and raise questions regarding the optimal diagnostic approach.

We present the case of a 19-year-old patient with progressive enlargement of the left breast, whose diagnosis was confirmed after surgical excision and histopathological examination, highlighting the importance of timely and conservative management.

CASE PRESENTATION

A 19-year-old female student from a rural area presented with progressive enlargement of the left breast. She reported that approximately two months before evaluation she noticed a slight increase in breast size associated with occasional pain, which progressively worsened. Over the following weeks, the enlargement became more evident and the pain persisted, prompting imaging studies and specialized consultation.

The patient had no relevant past medical history and denied previous surgeries, medication use, oral contraceptive use, tobacco, alcohol, or illicit drug consumption, and had not initiated sexual activity. Family history was negative for breast cancer or other gynecological malignancies. No relevant genetic background or associated psychosocial factors were identified. Menarche occurred at age 12, with regular 28-day menstrual cycles and no history of endocrine disorders. Body mass index was 22 kg/m². She denied any history of breast trauma or previous abnormal breast growth.

Physical examination revealed breast asymmetry due to enlargement of the left breast. The skin, areola, and nipple were intact, without retraction, ulceration, or color changes. Palpation identified a single, well-circumscribed mass with homogeneous soft consistency, mobile and painful on pressure, occupying almost the entire left mammary gland and measuring approximately 10 cm. No pathological axillary lymphadenopathy was palpated. Vital signs were normal, with blood pressure of 110/75 mmHg, heart rate of 88 bpm, respiratory rate of 20 breaths/min, and temperature of 36 °C.

As part of the preoperative evaluation, laboratory studies showed complete blood count within normal limits, including leukocytes of $5 \times 10^3/\mu\text{L}$, hemoglobin of 13.2 g/dL, hematocrit of 39%, and platelets of $344 \times 10^3/\mu\text{L}$, as well as normal coagulation times.

Breast ultrasound demonstrated skin of normal thickness and echogenicity, with unremarkable subcutaneous and retromammary adipose tissue and homogeneous fibroglandular tissue. In the left breast, an ovoid mass with heterogeneous echogenicity and predominantly hypoechoic appearance was identified, with circumscribed margins, parallel orientation to the skin axis, and dimensions of approximately $90 \times 45 \times 78$ mm, without Doppler color vascularity or pathological axillary lymphadenopathy. Based on these findings, the study was classified as BI-RADS 2, consistent with giant juvenile fibroadenoma. Despite the rapid growth and large tumor size, the BI-RADS 2 classification was supported by typically benign characteristics such as circumscribed margins, parallel orientation, absence of architectural distortion, posterior acoustic shadowing, or hypervascularity, which reduced the suspicion of malignancy.

Due to the high clinical and imaging concordance with a benign lesion, the tumor size, persistence of symptoms, and aesthetic impact, it was decided not to perform a prior core needle biopsy and to proceed directly with surgical treatment. This decision was based on the low probability of malignancy, the limited utility of biopsy in large lesions that would require surgery regardless, and the potential risk of nonrepresentative sampling in heterogeneous tumors. Differential diagnoses included phyllodes tumor, breast hamartoma, and malignant lesions; however, the clinical presentation and benign ultrasonographic findings, classified as BI-RADS 2 and without hypervascularization, suggested a higher probability of fibroadenoma. Unlike phyllodes tumor, no lobulated margins, infiltrative growth, or significant increase in vascularity were observed; likewise, there were no features suggestive of borderline or malignant phyllodes tumor, such as marked heterogeneity or complex cystic areas.

Surgical treatment was decided based on the aforementioned findings. The procedure was performed under regional anesthesia with sedation, with the patient in the supine position. A periareolar incision was made, accessing the

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subglandular plane, where a well-circumscribed tumor was identified. Careful dissection of the lesion was performed with preservation of healthy breast tissue, achieving complete excision of the mass (Figure 1). Meticulous hemostasis was achieved using electrocautery, with no evidence of active bleeding; therefore, no drain was placed. The decision not to place a drain was based on adequate hemostasis, absence of significant dead space, and low risk of seroma formation. Closure was performed in layers using absorbable sutures (Vicryl® 3-0 for deep planes and Monocryl® 4-0 intradermally), achieving proper approximation of wound edges. A lobulated tumor measuring approximately 10 × 8 cm and weighing 550 g was removed (Figure 2).

Postoperative management included analgesia with ketorolac 30 mg IV every 8 hours for 24 hours, followed by ibuprofen 400 mg orally every 8 hours for 5 days, with good tolerance. Cefalothin 1 g IV was administered as preoperative antibiotic prophylaxis. Histopathological examination revealed a biphasic breast lesion composed of

ductal and stromal elements. The ducts were lined by epithelium without atypia, with areas of epithelial hyperplasia, while the stroma showed focal hypercellularity on a hypocellular myxoid background, without cytologic atypia, necrosis, or increased mitotic activity (Figure 3). These findings were consistent with fibroadenoma, without evidence of phyllodes tumor or malignancy. Prognosis after complete excision was considered excellent, with low risk of recurrence.

The postoperative course was favorable. At the 10-day follow-up visit, surgical sutures were removed, and the patient was asymptomatic with mild pain (VAS 1/10). At six months of follow-up, breast symmetry, adequate healing, absence of palpable masses, and a control ultrasound classified as BI-RADS 2 without evidence of recurrence were confirmed. No postoperative complications or adverse events were recorded. Recovery was satisfactory, with return to usual activities and good adherence to clinical follow-up.



Figure 1. Periareolar approach for the excision of giant juvenile fibroadenoma.

A) Dissection and exteriorization of the lobulated tumor mass through a periareolar incision.

B) Surgical bed after complete resection, with adequate hemostasis and preservation of the nipple-areola complex.



Figure 2. Surgical specimen corresponding to a lobulated, well-circumscribed breast mass measuring approximately 10 × 8 cm and weighing 550 g, macroscopically consistent with giant juvenile fibroadenoma, following complete excision through a periareolar approach.

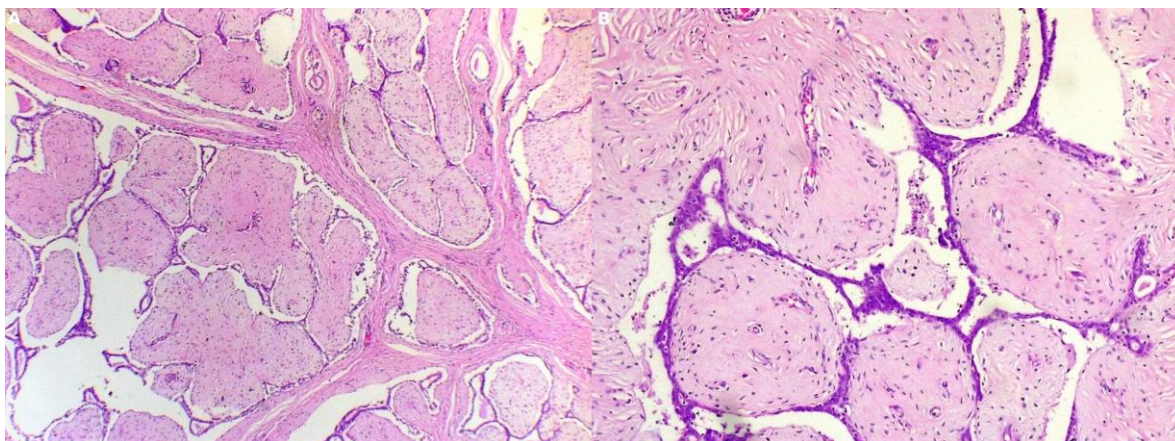


Figure 3. Histopathological study of giant juvenile fibroadenoma (hematoxylin-eosin stain).

A) Low-power view showing a biphasic pattern with stromal proliferation and compressed ducts arranged in pericanalicular and intracanalicular patterns.

B) Higher magnification demonstrating myxoid stroma with focal hypercellularity, ducts without atypia, and absence of leaf-like architecture or increased mitotic activity.

DISCUSSION

Giant juvenile fibroadenomas occur mainly in adolescents and account for approximately 0.5% to 4% of all fibroadenomas. Breast ultrasound is the imaging modality of choice, typically demonstrating a large, well-circumscribed, hypoechoic or isoechoic mass. The most important differential diagnosis is phyllodes tumor due to its clinical and imaging similarity. Although diagnostic suspicion may be raised based on clinical and radiological findings, definitive confirmation requires surgical excision of the lesion and histopathological examination.^{1,3,4}

In the present case, the BI-RADS 2 classification, supported by typically benign ultrasonographic findings (circumscribed margins, parallel orientation, and absence of hypervascularity), played a key role in decision-making by reducing the likelihood of malignancy despite the rapid growth and large tumor size. This aspect is particularly relevant, as in clinical practice these characteristics often generate diagnostic uncertainty.

Due to their accelerated growth and the distortion they may produce on adjacent breast tissue, treatment is surgical and should be performed promptly, aiming for complete excision of the lesion to reduce the risk of recurrence and preserve breast symmetry, especially in young patients in whom the aesthetic and psychological impact is significant.^{2,3}

In the literature, De la Garza-Lozano et al. described a case in an adolescent patient, highlighting rapid tumor growth and the importance of early resection to achieve an adequate aesthetic outcome, findings consistent with our case.⁵ Likewise, Rodríguez López et al. reported a more complex clinical presentation that required complementary studies such as fine-needle aspiration and magnetic resonance imaging before surgical treatment.³ In contrast, our patient presented with a less complicated clinical course, without inflammatory signs or secretion, and with ultrasonographic findings compatible with a benign lesion, which allowed direct surgical management.

Similarly, El Graini et al. emphasized the difficulty of clinically differentiating giant juvenile fibroadenoma from phyllodes tumors, with histopathological examination following excision remaining the definitive diagnostic method, a situation that was also confirmed in our case.⁷ This concordance with the literature supports the management adopted and underscores the importance of maintaining a high index of suspicion in large fibroepithelial lesions.

A relevant aspect of this case was the decision not to perform a preoperative biopsy. This approach was based on the high clinicoradiological concordance with a benign lesion, the BI-RADS 2 classification, and the fact that, given the tumor size and aesthetic compromise, surgical indication was established regardless of biopsy results. Furthermore, in large lesions, core needle biopsy may have limitations due to nonrepresentative sampling, particularly in heterogeneous fibroepithelial tumors such as phyllodes tumor.

Among the strengths of this case management were the adequate clinicoradiological correlation, conservative surgical planning with preservation of healthy breast tissue, and postoperative clinical and imaging follow-up confirming absence of recurrence and a satisfactory aesthetic result. As a limitation, the absence of preoperative core needle biopsy may be noted; however, the BI-RADS 2 classification and clear clinical concordance allowed a well-founded and safe therapeutic decision.

The favorable clinical course and histopathological confirmation of fibroadenoma support the conclusions of this report. The etiology of this entity has not been completely established, although it is associated with the hormonal influence characteristic of adolescence and young adulthood, which could explain the accelerated growth observed.

The main lessons provided by this case include the importance of comprehensive evaluation, the systematic consideration of phyllodes tumor in the differential

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diagnosis, and the indication of timely surgical treatment to preserve breast function and aesthetics in young patients.

This case reinforces the importance of individualized decision-making integrating clinical and imaging findings and suggests that, in selected scenarios, direct surgical resection without prior biopsy may be considered.

From the patient's perspective, surgical treatment resulted in disappearance of pain, restoration of breast symmetry, and significant improvement in emotional well-being and body image, with the patient expressing satisfaction with the outcome achieved.

CONCLUSION

Giant juvenile fibroadenoma should be considered in the differential diagnosis of rapidly growing breast masses in young patients. In this case, the high clinicoradiological concordance, supported by benign ultrasonographic findings (BI-RADS 2), justified a direct surgical approach without preoperative biopsy, with histopathological confirmation and favorable evolution without recurrence. These findings highlight the importance of integrating clinical and imaging evaluation into decision-making, as well as individualizing management to achieve oncologically safe and aesthetically satisfactory outcomes.

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Ethical considerations: The patient was informed at all times about the diagnosis, interventions performed, and potential risks. Written informed consent was obtained for the surgical and anesthetic procedures, as well as for the publication of this case report, in accordance with the ethical principles of the Declaration of Helsinki and the institutional regulations of the hospital.

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