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# Oncoplastic Breast Reconstruction after Resection of a Giant Phyllodes Tumor: A Case Report

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## Abstract

Giant Phyllodes tumors are fibroepithelial breast neoplasms that pose unique challenges for breast and reconstructive surgeons due to their size and propensity for recurrence. We present a case of a 47-year-old female with a rapidly growing giant Phyllodes tumor managed successfully with breast conservation and extreme oncoplastic reconstruction as an alternative to simple mastectomy which is typically recommended for lesions this size. The surgical approach utilized a split Wise pattern reduction on the affected side and standard Wise pattern on the contralateral side for symmetry. Ultimately, a complete resection with negative margins was achieved, along with satisfactory cosmesis and preserved nipple sensation for the patient. This case demonstrates the efficacy of using oncoplastic techniques in the management of a benign giant Phyllodes tumor.

## Introduction

Phyllodes tumors, which derive their name from their leaf-like appearance on cross-sectional histology (from Greek Phyllon ["leaf"]), are fibroepithelial tumors that account for less than 1% of all breast cancers. Though Phyllodes tumors are typically benign, they boast a high recurrence rate with affected margins as an independent risk factor [1]. Tumor diameter varies widely in size, with 12% of them larger than 10 cm and called "giant Phyllodes" [1]. These tumors present the surgeon with unique challenges, as wide excision with negative margins is critical to minimize the risk of reoccurrence [2]. Oftentimes, mastectomy and immediate reconstruction are the only options, due to tumor size-breast ratio, to ensure negative margins and with favorable aesthetic outcomes.

However, when preservation of native breast tissue is desired, creative surgical strategies must be utilized to achieve curability and cosmesis that is acceptable to the patient. Oncoplastic surgery is a well-established oncologic technique to reshape the remaining breast tissue following wide excisions, to allow a more acceptable cosmetic result. While this technique is routinely used in malignant breast cancers, its application in benign tumors is infrequently reported. We present the case of a 47-year-old female with rapidly enlarging right breast giant Phyllodes tumor managed with wide tumor excision and split Wise reduction with combined contralateral standard reduction for symmetry. To our knowledge, this oncoplastic technique has not previously been reported in the literature for surgical management of a giant Phyllodes tumor.

## Case Presentation

A 47-year-old female with previous diagnosis of right breast fibroadenoma (2.5 cm), presented with a growing right breast mass that had doubled in size over 6 months.

The examination revealed a multilobulated and mobile right breast mass, occupying entirely the lateral quadrants of the breast, without direct skin involvement or nipple retraction. Diagnostic studies showed a 12 cm right biphasic mass with cyst-like components, in the area of the previously biopsied fibroadenoma, favoring Phyllodes tumor (Figure 1). Due to the patient's strong desire to pursue breast and nipple preservation, a consultation with plastic surgery was recommended, to further discuss reconstructive options.

Patient was ultimately managed with wide local excision of the right breast mass with oncoplastic

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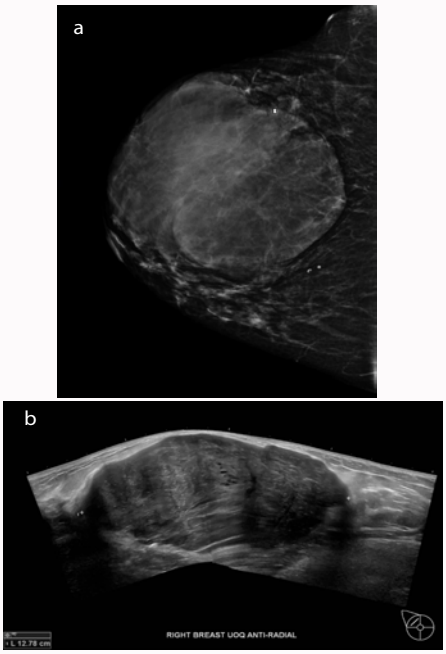


**Figure 1:** a) Digital diagnostic mammogram in craniocaudal view showing large round circumscribed mass involving nearly the entire lateral breast with barbell clip at the lateral aspect indicating previously biopsied fibroadenoma; b) Panoramic diagnostic ultrasound view taken to estimate the size of the large round circumscribed mass in the upper outer quadrant, estimated to measure 12.8 cm in greatest dimension. Characteristic cleft-like cystic spaces are noted, better seen on traditional orthogonal views.

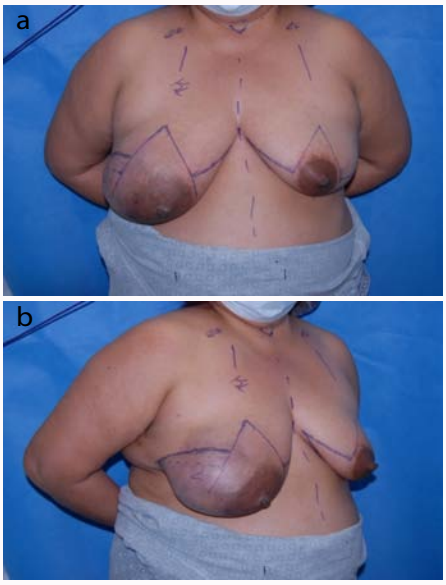


**Figure 2:** Front (a) and side (b) view showing a significant asymmetry due to right breast occupying mass. Preoperative markings for right split reduction and standard left wise pattern reduction.

reconstruction using a split reduction and standard left Wise pattern reduction for symmetry. The procedure started by marking the skin in a modified wise pattern on the right to allow for a wide mass excision, and a traditional wise pattern on the left (Figure 2). A wide local excision of the right breast mass was completed. The mass, that appeared to be multilobulated, with multiple cystic components, was removed en-block to include the skin over the anterosuperior margin.

The vertical portion of the wise pattern was then adjusted to

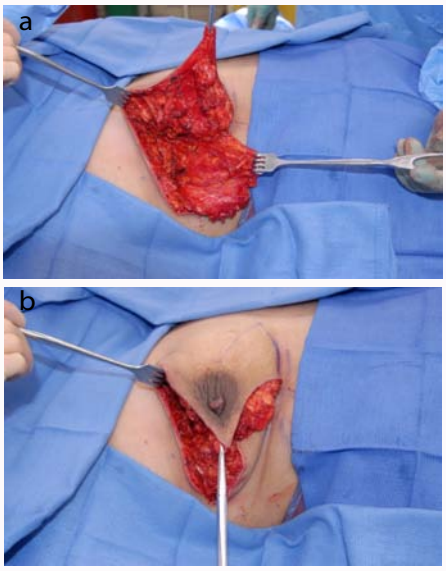


**Figure 3:** Surgical field after completion of wide excision (a) and customization of oncoplastic reconstruction (b).

**Figure 4:** Gross specimen showing a multilobulated right breast mass containing multiple fluid-filled cystic lesions, measuring 13 cm × 12 cm × 10 cm and weighting 823 g.

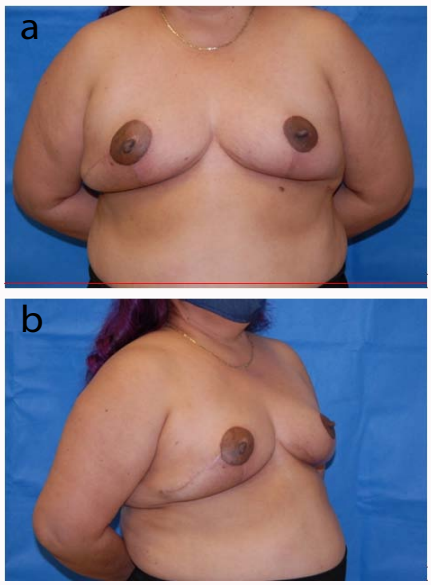


**Figure 5:** Front (a) and side (b) view of the patient at three months postoperative follow up.

provide an additional 2 cm cephalad to the lateral incision and 7 cm caudad to allow for resection of this area. The medial portion of the

wise pattern was left intact. The incisions were temporarily tacked closed using surgical staples and the patient was sat upright (Figure 3). The shape and volume of her breasts appeared generally symmetric despite the split wise pattern on the right and the oncoplastic reconstruction proceeded. Before closing, nipple perfusion was confirmed through piercing with an 18-gauge needle and producing bright red blood. Drains were placed bilaterally. The patient tolerated the procedure well and was discharged home the day of surgery.

Histopathology analysis confirmed the diagnosis of benign Phyllodes tumor, exhibiting elongated epithelial-lined clefts in a largely well-circumscribed mass with focally ill-defined edges, scattered stromal mitoses (<2/10 hpf) and negative margins (Figure 4).

At one week follow up the patient reported preserved nipple sensation bilaterally and a satisfactory cosmetic outcome (Figure 5). Patient remains currently disease-free at 7-month follow up, as confirmed by diagnostic imaging. Patient will be closely monitored with diagnostic imaging every six months for 3 years, to account for the elevated risk of recurrence of the disease.

## Discussion

Phyllodes tumors are breast tumors primarily diagnosed in females in the fourth and fifth decades of life, and may be classified as benign, malignant, or borderline [1]. With an incidence of 1 in 100,000, they account for less than 1% of breast neoplasms [3]. Clinical presentation of the Phyllodes tumor includes insidious onset and slow progression of a painless, round, and mobile mass. Positive surgical margins remain the primary risk factor for Phyllodes tumor recurrence, thus NCCN guidelines recommends wide excision with at least 1 cm margins. However, despite the association between narrower surgical margins and heightened local recurrence risk, this is not are not an absolute indication for mastectomy when partial mastectomy fails to achieve a margin width ≥ 1 cm [4]. The surgical approach depends largely on the size and location of the mass. Breast cosmesis is inversely proportional to the volume of breast tissue removed, and local deformity results in poorer cosmesis when over 10% of the gland is excised [5]. Studies have suggested that there is no statistical significance in recurrence rate between conservation and mastectomy so long as excision margins are adequate [6].

Oncoplastic breast surgery techniques are defined as tumor-specific breast reconstruction methods that apply aesthetically derived breast reduction techniques to the field of breast cancer surgery, allowing for higher volume excision with no aesthetic compromise [7]. Preoperative planning is crucial to determine which surgical approach is appropriate, as volume of the initial breast tissue, extent, and location of tissue resection and volume of remaining available glandular tissue will equally weigh into applicability of the techniques [8].

Breast reduction and mastopexy requires additional meticulous planning to determine the appropriate resection pattern according to tumor size and location. The tumor must be included within the resection pattern. Massetti et al. outline the reduction/mastopexy oncoplastic approach as a four-step procedure consisting of parenchymal excision, parenchymal reshaping, repositioning of the Nipple-Areolar Complex (NAC), and correction of the contralateral breast for symmetry [9]. The most common pattern used for wide excision with reduction mammoplasty is the wise pattern, which consists of the creation of three triangles with the inferior border along the inframammary fold. When the tumors are in areas that do not normally fall within a standard-wise pattern, the pattern can be reconfigured to include the tumor, termed the "split wise" pattern. The lateral and medial triangles are then advanced upward to overlay the tumor, with the medial or lateral vertical limb of the inverted T being "split" to accommodate the higher position of the triangle [7].

Extreme oncoplastic techniques (defined as oncoplastic surgery used in women with malignant breast cancers who otherwise require mastectomy) were employed to achieve successful resection and reconstruction. Silverstein was first to utilize the concept of extreme oncoplastic as an alternative to the more radical surgical approaches for breast cancers [10]. Since then, recent studies have demonstrated success in extreme oncoplasty, with a low rate of recurrence, acceptable local-regional control, and higher patient satisfaction [11]. To our knowledge, this is the first case presented in which extreme oncoplastic technique such as split wise reduction, has been employed for the resection and reconstruction of a giant Phyllodes tumor.

In the present report, the technique was the ideal option due to the ability to achieve tumor resection with safe margins, suitable cosmesis and patient desire for breast and nipple preservation. In cases of patients with larger and more ptotic breasts that also require a large volume of tissue replacement, such as the one presented here, techniques such as therapeutic mammoplasties or mastopexy can be employed to remove the area in question and concomitantly reshape the breast [12,13]. When large volume tissue resection is required, care must be taken to reduce the risk of wound healing complications to prevent delay of possible adjuvant treatment, especially in case of malignant Phyllodes. This case demonstrates that, with close collaboration between the breast surgery and plastic surgery teams, oncoplastic techniques can be utilized to achieve completed resection and excellent cosmetic outcomes in patients with giant Phyllodes tumors requiring complex reconstruction.

## Conclusion

The giant Phyllodes breast tumors require unique considerations due to challenges in diagnosis and treatment. A high frequency of recurrence makes wide excision margins necessary, resulting in large volume defects and deformities of the breast. Oncoplastic techniques, such as a split wise pattern, should be considered as an alternative to mastectomy as proven to be oncological safe, and with improved cosmetic outcome affecting positive self-image and quality of life.

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