



## PRIMARY LEIOMYOSARCOMA OF THE BREAST IN A 67-YEAR-OLD WOMAN: A CASE REPORT

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### ABSTRACT

**Background:** Primary leiomyosarcoma of the breast is an exceptionally rare malignant neoplasm, accounting for less than 1% of all breast sarcomas. Due to its rarity, diagnosis and management present both clinical and pathological challenges. Reporting such cases contributes to the growing understanding of tumor behavior, optimal surgical management, and prognostic outcomes. **Case Presentation:** We report the case of a 67-year-old female who presented to Military Cancer Center in September 2025 with a progressively enlarging, firm, painless mass in the left breast. Imaging suggested a hypoechoic oval lesion posterior to left nipple suspicious for malignancy, and subsequent core biopsy revealed spindle cell tumor with smooth muscle differentiation raising the possibility of leiomyosarcoma. The patient underwent wide local excision with clear surgical margins. Histopathological analysis confirmed the diagnosis of primary leiomyosarcoma of the nipple areola complex, with immunohistochemical staining positive for smooth-muscle actin, desmin, and BCL-2. Postoperative recovery was uneventful, with no evidence of local recurrence or distant metastasis was detected at 6-month follow-up. **Ethical Considerations:** Written informed consent for publication of clinical information and images has been obtained from the patient. All identifying details will be anonymized to protect patient confidentiality. **Conclusion:** This case highlights the diagnostic complexity and management considerations in primary breast leiomyosarcoma. Documenting such rare presentations is essential to enhance clinical awareness and guide future management strategies.

### INTRODUCTION

Breast sarcomas are of the rarest conditions of the breast, accounting for <1% of breast tumors. Breast sarcomas involve both phyllodes and non-phyllodes entities. Primary leiomyosarcoma of the breast is extremely rare subtype not specific to the breast accounting for 0.0006% of all breast malignancies. According to recent literature, there is fewer than 80 cases reported in the world.<sup>[1]</sup>

Primary leiomyosarcoma of the breast (PLB) arise from mesenchymal tissue of the breast either from the nipple-areola complex or the smooth muscles lining the blood vessels of the breast. It presents as fast growing, well circumscribed firm mass. They occur more often in postmenopausal women, but have also been reported in premenopausal women and men.<sup>[2]</sup>

A recent systematic review has identified only 106 patients with PLB reported in the world literature, with fewer than 80-90 cases historically documented in English language literature.<sup>[3]</sup>

### Case Presentation

Our patient is a 67-years-old lady, presented to our breast clinic complaining of left breast lump in her left areola, she described it as painless slowly growing over the previous 2-month duration.

On physical exam, the mass is fixed, non-tender, around 2 cm in size. It is within the areola just above the nipple. See figure 1.



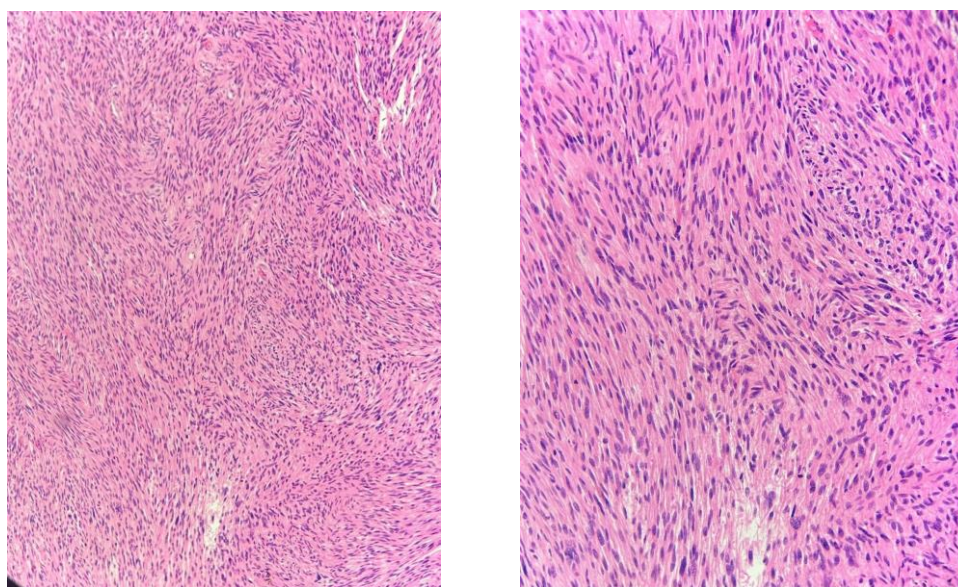
**Figure 1: Patient’s lump shown in the figure just above the nipple, appearing as a nodule in subareolar tissue just above the nipple.**

Patient is known case of HTN, Parkinson disease, chronic gastritis, with a surgical history of cholecystectomy, right hip prosthesis. She has no family history of breast malignancy.

Breast imaging with mammogram and complementary ultrasound revealed subcutaneous oval lobulated hypoechoic breast lesion above and slightly posterior to the left nipple that measures about 1.6 x 0.5 cm, which looks benign. It also revealed a small oval hypoechoic lesion in the left lower outer quadrant measures about 0.6 cm likely benign. Other findings were multiple bilateral iso-hypo echoic lesions located centrally in both breasts

more prominent in the left breast representing intraductal lesions vs thick chronic secretions. both axillae were normal.

Core biopsies of the previously mentioned lesions were performed and revealed the following results: The left breast UOQ lesion revealed atypical spindle cell neoplasm with smooth differentiation raising the possibility of leiomyosarcoma, while the left breast LOQ lesion biopsy showed fibrocystic disease, usual ductal hyperplasia. Also, the left breast intraductal cystic lesion biopsy reveals fibrocystic disease with mild pericyclic chronic inflammation. See Figure 2.



**Figure 2: sections represent a tumor composed of cellular, intersecting fascicles of spindle cells with bright eosinophilic cytoplasm and elongated blunt ended nuclei. Moderate nuclear pleomorphism and mitotic activity (Up to 30 mitosis/10 high power fields) are noted. There is also focal tumor necrosis. On the left is 100X magnifying right 200 X magnifying.**

Then PET\CT whole body scan was done preoperative for staging purposes and was free.

The patient underwent wide local excision in October 1<sup>st</sup> 2025 and the final diagnosis was a unifocal, grade II leiomyosarcoma of the nipple areola complex (NAC) origin, 1.3 cm in its greater dimension, with 30 mitoses per 10 high-power field, and focal necrosis. The Final AJCC Stage was pT1. No axillary surgery was performed, as it was not indicated given the sarcomatous origin.

## DISCUSSION

Primary leiomyosarcoma of the breast is extremely rare malignant mesenchymal tumor that arise from smooth muscles cells either from the blood vessel walls or from the nipple-areola complex (NAC). In these cases, the approach is typically as any breast lesion, by triple assessment protocol, including proper history taking, physical examination, breast imaging, and histological diagnosis.

The first impression of this lesion is often mistaken as benign, due to its resemblance with other benign lesions, being mobile, subcutaneous, no surrounding skin changes, no nipple retraction or discharge, so its diagnosis is extremely hard clinically, and usually requires core needle biopsy, then to be confirmed after complete excision of the tumor.

Mostly, it presents in postmenopausal women, although some cases in premenopausal age and in men had been reported.<sup>[5]</sup> Due to rarity of disease, causes are largely unknown, but it may be associated with underlying genetic conditions, or certain environmental factors that have not been determined yet.

Differential diagnosis of the malignant leiomyosarcoma of the breast, includes benign and malignant conditions, like benign myofibroblastic tumors, fibroadenomas, desmoid fibromatosis, fat necrosis, leiomyoma, and phyllodes tumors, that's why tissue diagnosis is essential in the diagnosis of this condition, to avoid incorrect diagnosis of this malignant lesion as a benign entity.<sup>[6]</sup>

The findings of primary leiomyosarcoma of the breast on imaging, mimics other benign breast lesions. Mammography often shows nonspecific lesion, and ultrasound also commonly illustrates hypoechoic lobulated tumor. So a core needle biopsy is mandatory for the diagnosis, which could be confirmed by the positivity of smooth muscle markers as smooth muscle actin, desmin, and the negativity of epithelial markers (keratins), which will be confirmed through histopathological evaluation and immunohistochemical analysis.<sup>[7]</sup>

The mainstay treatment of primary leiomyosarcoma is surgical, either by breast conservation surgery with safety margin,<sup>[5]</sup> or mastectomy, according to the size of the tumor.

The use of adjuvant chemotherapy and/or radiotherapy remains uncertain, typically reserved for advanced conditions and high-risk cases.<sup>[8]</sup>

The prognosis of primary leiomyosarcoma of the breast is usually more favorable than other breast sarcomas, though it has a risk of metastasis and local recurrence is common, so it requires long term follow up for lung and soft tissue metastasis. To decrease chances of recurrence, and improve outcomes, the tumor should be excised with sufficient excision margin.<sup>[9]</sup>

## CONCLUSION

Primary leiomyosarcoma is an extremely rare condition. It is often hard to distinguish from other breast lesions clinically, and could be easily misdiagnosed as a benign condition. Hence, it requires tissue biopsy. Final diagnosis usually made after full excision.

The treatment of choice is surgical either by WLE or mastectomy with safe margin, which carry the best survival benefit, and confirm the diagnosis.

As metastasis is hematogenous, interval lung and soft tissue imaging is essential for patient follow-up.

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