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Breast Myofibroblastoma during Pregnancy: A Challenging Diagnosis with Delayed Management and Review of the Literature

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Abstract

We report a rare case of breast myofibroblastoma diagnosed during the third trimester of pregnancy in a 32-year-old gravida 3 para 2 woman who presented with a progressively enlarging exophytic nipple mass. Breast ultrasound revealed a heterogeneous, vascularized lesion measuring 55 × 48 mm, classified as BIRADS 4C. Ultrasound-guided core needle biopsy demonstrated a spindle-cell mesenchymal proliferation with strong desmin positivity, focal CD34 expression, and absence of epithelial marker expression, confirming the diagnosis of myofibroblastoma. Considering the confirmed benign histology and advanced gestational age, surgical excision was deferred until the postpartum period to minimize maternal and fetal risks associated with late-pregnancy surgery. Close clinical surveillance was maintained throughout the remainder of the pregnancy. Definitive surgical management was scheduled six months after delivery to ensure optimal operative conditions and complete maternal recovery. This case highlights the diagnostic complexity of spindle-cell breast lesions during pregnancy and emphasizes the importance of multidisciplinary decision-making in balancing oncologic safety with maternal–fetal well-being.

Subject Areas

Gynecology & Obstetrics

Keywords

Breast Myofibroblastoma, Pregnancy, Benign Breast Tumor, Delayed Management, Immunohistochemistry

1. Introduction

Breast myofibroblastoma (MFB) is a rare benign mesenchymal stromal tumor first described by Wargotz and Norris in 1987 [1]. It is typically observed in older men and postmenopausal women, although cases in premenopausal women have also been reported [2] [3]. The occurrence of MFB during pregnancy is exceptionally uncommon, with only isolated cases described in the literature [4] [5].

Histologically, MFB is characterized by a well-circumscribed proliferation of uniform spindle-shaped cells arranged within a collagenous or variably myxoid stroma, sometimes associated with adipocytic components [6] [7]. Immunohistochemistry is essential for establishing the diagnosis, as tumor cells commonly express desmin and CD34 and may show hormone receptor positivity, while remaining negative for epithelial markers such as cytokeratins and p63 [8] [9]. This immunophenotypic profile is critical for distinguishing MFB from other spindle-cell lesions of the breast, including spindle cell lipoma, fibromatosis, and metaplastic carcinoma [10] [11].

Clinically and radiologically, MFB may mimic malignant breast tumors. Imaging typically reveals a well-defined mass; however, heterogeneous echotexture or increased vascularity may lead to a BIRADS 4 classification and raise suspicion for malignancy [5] [12]. This diagnostic overlap becomes even more challenging during pregnancy, when physiological hormonal changes alter breast density and vascularity, potentially masking or exaggerating pathological findings [4].

Complete surgical excision is considered curative, with extremely low recurrence rates and no documented malignant transformation [9] [13] [14]. Nevertheless, in pregnant patients, the timing of surgery must be carefully individualized. Multidisciplinary evaluation is essential to balance oncologic safety with maternal and fetal well-being, particularly in late gestation [5].

In this context, we report a rare case of breast myofibroblastoma diagnosed during the third trimester of pregnancy, highlighting the diagnostic challenges and rationale for delayed surgical management.

2. Case Presentation

A 32-year-old woman, gravida 3 para 2, presented at 33 weeks of gestation with a progressively enlarging exophytic mass of the left breast that had evolved over four months, coinciding with her current pregnancy. She had no significant past medical history and no family history of breast or ovarian malignancy.

Physical examination revealed a large, mobile, non-tender exophytic lesion centered on the nipple. The overlying skin was intact, with no signs of ulceration or inflammation (**Figure 1**).

Breast ultrasound performed on August 18, 2025, revealed a hypoechoic, heterogeneous, vascularized mass measuring 55 × 48 mm. The lesion was classified as BIRADS 4C. Additional peri-areolar nodules and ductal ectasia were observed. No axillary lymphadenopathy was detected [5] [12].

Ultrasound-guided core needle biopsy demonstrated a spindle-cell mesenchy-

mal proliferation composed of uniform elongated cells embedded within collagenous stroma. Immunohistochemical analysis showed strong desmin expression, focal CD34 positivity, and negativity for p63, pancytokeratin, CK5/6, and β-catenin. These findings confirmed the diagnosis of breast myofibroblastoma [6]-[10].

Following multidisciplinary discussion, surgical excision was deferred due to confirmed benign pathology and advanced gestational age. The patient was monitored clinically until delivery. She delivered a healthy neonate at term via spontaneous vaginal delivery without complications. Postpartum evaluation confirmed lesion stability, and surgical excision was scheduled six months after childbirth (**Figure 2**).

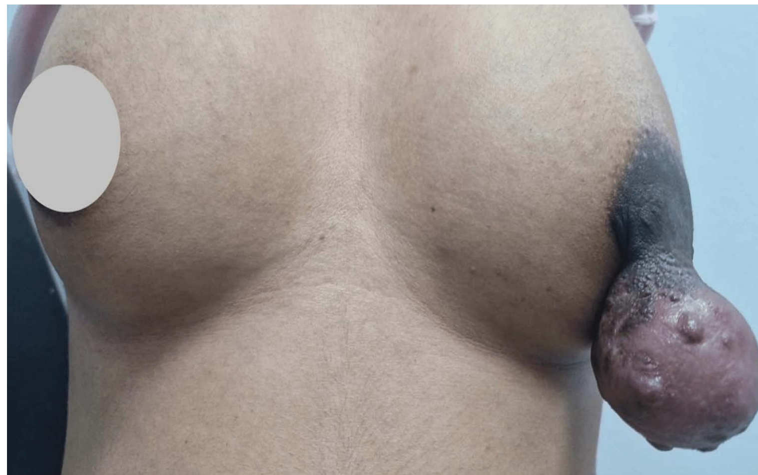

Figure 1. Clinical photograph demonstrating a prominent exophytic nipple mass of the left breast.

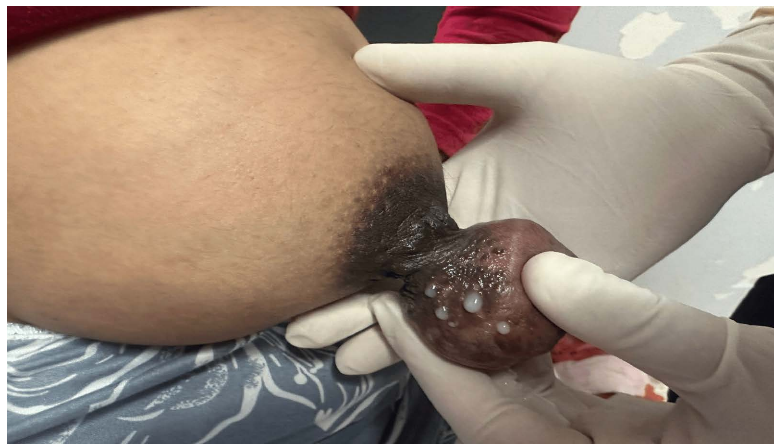

Figure 2. Postpartum clinical image (day 10) showing persistence of the exophytic nipple mass.

3. Discussion

Breast myofibroblastoma is a rare benign stromal tumor with characteristic immunohistochemical features [1] [9]. Although more common in older individuals, its occurrence during pregnancy is exceptional [3] [5]. Hormonal influences may

contribute to tumor enlargement during gestation.

3.1. Diagnostic Challenges

Physiological changes during pregnancy may mimic malignancy on imaging. Increased vascularity and glandular proliferation can result in suspicious ultrasound findings, as observed in our case [4] [12]. Core needle biopsy remains essential for accurate diagnosis and differentiation from malignant spindle-cell tumors [6]-[10].

3.2. Management Considerations During Pregnancy

Complete surgical excision is curative [9] [13] [14]. However, late-pregnancy surgery carries increased anesthetic and hemorrhagic risks due to breast hypervascularity and hormonal stimulation [2]-[4]. When histology confirms benignity and no aggressive features are present, postponing surgery until postpartum may represent a safe and rational approach [5] [14].

In our case, multidisciplinary consensus supported delayed excision, prioritizing maternal-fetal safety while maintaining close surveillance.

3.3. Prognosis

MFB carries an excellent prognosis, with extremely low recurrence and no documented malignant transformation [6] [7]. Postpartum surgical management ensures optimal operative conditions and favorable outcomes.

4. Conclusion

Breast myofibroblastoma during pregnancy is a rare condition that may mimic malignancy and create diagnostic uncertainty. Core needle biopsy combined with immunohistochemistry is essential for accurate diagnosis. When benign pathology is confirmed, delayed surgical excision until the postpartum period may safely balance oncologic control with maternal-fetal well-being. Multidisciplinary management is crucial in optimizing outcomes.

Conflicts of Interest

The authors declare no conflicts of interest.

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