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Management Challenges in Breast Angiomyxoma: Case Report and Review of the Literature

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ABSTRACT

Background: Cutaneous myxoma of the breast is an uncommon benign lesion that represents a diagnostic challenge and for which no standardized management guidelines currently exist. Although high recurrence rates were initially reported in the literature, more recent studies have demonstrated substantially lower recurrence rates despite frequent incomplete excision. This raises questions regarding optimal management in cases with positive surgical margins.

Case Presentation: A 23-year-old woman presented with a 4-cm exophytic, polylobulated superficial mass located in the lower outer quadrant of the left breast, associated with localized skin thickening and without axillary or supraclavicular adenopathy. Imaging assessment classified the lesion as Breast Imaging Reporting and Data System (BI-RADS) category 4C, and the patient underwent lumpectomy. Histopathologic examination confirmed a diagnosis of cutaneous myxoma of the breast with positive surgical margins, prompting subsequent re-excision. No local recurrence was observed more than 2 years after surgery.

Conclusion: This case report discusses current evidence regarding the management of cutaneous myxoma of the breast and highlights persistent areas of uncertainty, emphasizing the need for clearer management recommendations.

INTRODUCTION

Evaluation of breast masses is critical because of their broad differential diagnosis and the importance of promptly identifying breast malignancy. Although most palpable breast lesions are benign, ruling out malignancy remains essential because it carries markedly different implications for treatment and follow-up.

Cutaneous myxoma of the breast, also referred to as superficial angiomyxoma of the breast skin, is a rare benign soft tissue neoplasm that may clinically and pathologically mimic malignant disease. In contrast to myxoid lesions arising within the breast parenchyma or nipple-areolar complex, cutaneous myxoma primarily involves the dermis and superficial soft tissues of the breast skin. Owing to its rarity, overlapping histopathologic features, and the absence of large clinicopathologic series, this entity is frequently misdiagnosed.[1,2] Cutaneous myxomas may occur sporadically or in association with Carney complex, a rare autosomal dominant syndrome characterized by cutaneous, cardiac, and breast myxomas, spotty skin pigmentation, and endocrine abnormalities.[1,2] Accurate diagnosis is therefore important not only for local management but also for identifying patients who may require evaluation for an underlying syndromic condition.

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No standardized management guidelines currently exist for cutaneous myxoma of the breast. Surgical excision is generally recommended[4,5]; however, the available evidence is limited and derived predominantly from case reports and small retrospective series. Furthermore, substantial discrepancies remain regarding recurrence risk and the optimal management of positive surgical margins. Earlier reports described recurrence rates as high as 30% to 38%, particularly after incomplete excision,[7,8] whereas more recent studies have reported substantially lower recurrence rates despite frequent margin involvement and observation alone.[2,6]

This case report describes the management of positive margins in a young woman with cutaneous myxoma of the breast and reviews the current evidence regarding diagnosis, recurrence risk, and therapeutic management.

CASE PRESENTATION

A 23-year-old woman with no significant personal or family medical history was referred to our tertiary center for evaluation of a large exophytic lesion involving the skin of the left breast. The patient reported progressive enlargement of the painless mass over 3 to 4 months, accompanied by recurrent bleeding. Physical examination revealed a 3 × 4-cm erythematous, polylobulated lesion in the lower outer quadrant of the left breast, associated with overlying skin thickening (Figure 1A). No axillary or subclavian lymphadenopathy was detected. A punch biopsy was performed, and a breast ultrasound and mammography were ordered. The patient was also referred to a dermatologist for further evaluation.

The mammogram demonstrated a pedunculated, exophytic mass arising from the cutaneous surface of the lower outer quadrant of the left breast, associated with localized skin thickening but without evidence of intramammary extension within the limits of the ultrasound evaluation. No additional abnormalities were identified. The lesion was classified as BI-RADS category 4C (Figure 3). Although the lesion was superficial and exophytic, the presence of marked vascularity, rapid clinical growth, and associated skin changes raised concern for malignancy, justifying a BI-RADS category 4C classification. It should be noted that superficial cutaneous lesions may occasionally be overestimated when assessed within the BI-RADS framework.

When evaluated by the dermatologist, a broad

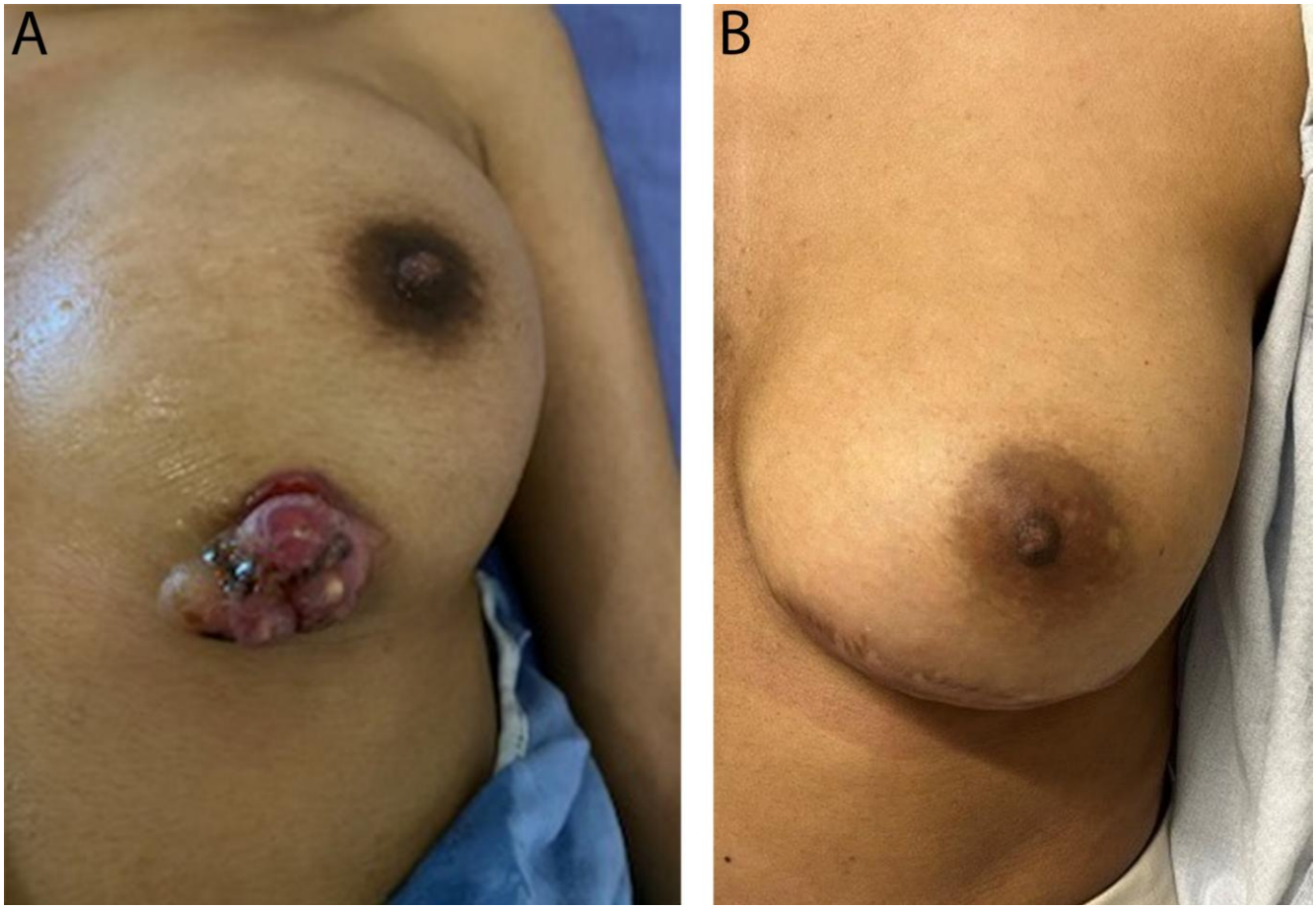

Figure 1. Left Breast Angiomyxoma. A, Appearance before resection B, Appearance 1 year after resection.

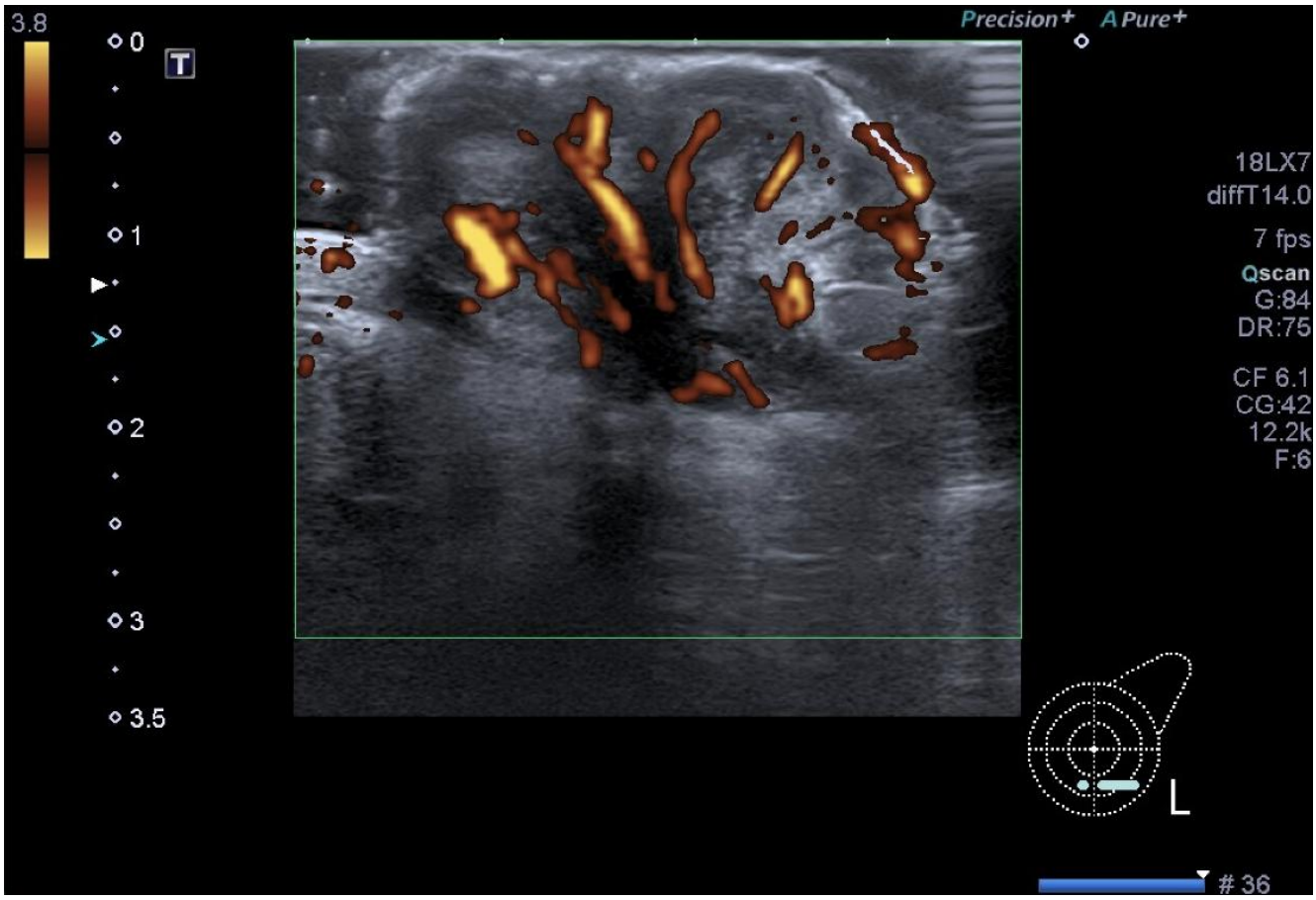

Figure 2. Doppler Ultrasound of the Left Breast. The image reveals a superficial, exophytic mass in the lower outer quadrant, exhibiting heterogeneous echotexture with prominent internal vascularity.

differential diagnosis was considered, including aneurysmal dermatofibroma, dermatofibrosarcoma protuberans, cutaneous adnexal tumor, and basal cell carcinoma. No additional tests were ordered because a punch biopsy had already been performed. The biopsy results suggested an epidermoid cyst with cicatricial fibrosis; however, the pathology report was deemed inconclusive. Given the inconclusive biopsy and the persistent clinical suspicion, surgical excision was pursued to establish a definitive diagnosis.

The initial pathology report described a fibromyxoid tumor with epithelial inclusions and absence of MUC4 expression on immunohistochemistry. The tumor was in contact with both the inferior and medial margins, whereas the lateral and superior margins measured 1 mm or less, and the deep margin was 3 mm. The pathology slides were subsequently reviewed at another tertiary center for a second opinion.

Histologic examination (Figure 4A and B) revealed a polypoid, multilobulated lesion involving the dermis, composed of abundant myxoid stroma containing scattered bland spindle and stellate cells arranged in a loose, disorganized, or vaguely fascicular pattern. The lesion was hypocellular and showed no cytologic atypia, mitotic activity, or necrosis. Numerous small, thin-walled blood vessels were present throughout the tumor. No significant neutrophilic infiltrate was identified. The overlying skin demonstrated epidermoid cystic changes, consistent with the initial biopsy findings.

Immunohistochemical analysis (Figure 4C–G) demonstrated weak and focal expression of smooth muscle actin (SMA) and epithelial membrane antigen (EMA), supporting a myofibroblastic phenotype. Tumor cells were negative for CD34, desmin, and S100 protein, whereas the proliferation index (Ki-67) was low (<2%). This immunoprofile, in conjunction with the characteristic histologic features, supported the diagnosis of cutaneous myxoma (superficial angiomyxoma) of the breast skin. The imaging findings of a superficial, hypervascular, exophytic lesion with associated skin thickening were consistent with the histologic features of a dermal-based myxoid neoplasm with prominent vascularity.

The case was presented at our institution's tumor board, where the recommendation was to achieve wider margins of 1.5 to 2 cm. Plastic surgeons participated in the reconstruction, using a 1.5-cm advancement flap from the adjacent skin. A skin graft was selected over a more complex reconstruction as an initial approach, given the patient's young age and

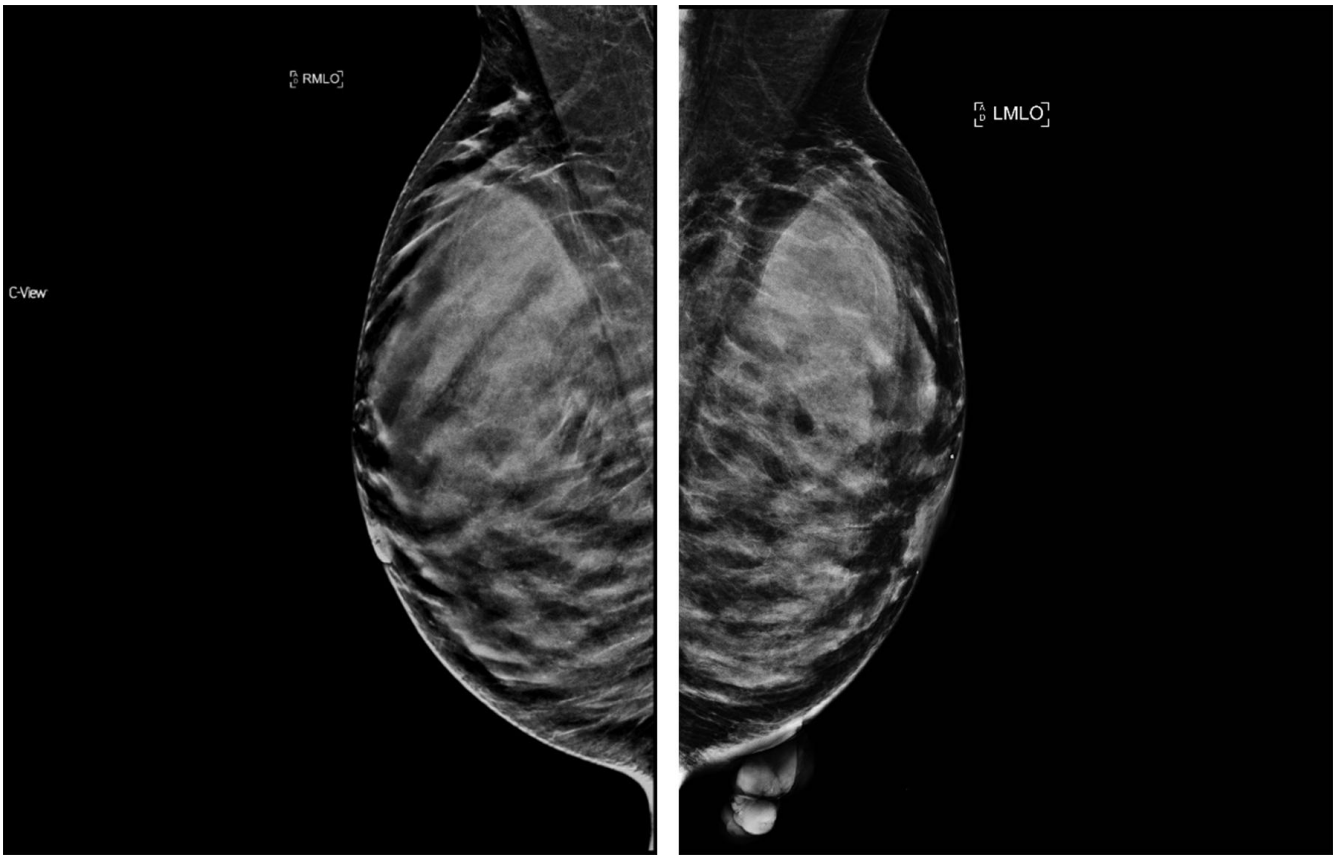

Figure 3. Bilateral Mediolateral Oblique (MLO) Mammographic Images. The images demonstrate extremely dense breasts. In the left lower quadrant, there is a well-circumscribed, lobulated, high-density exophytic mass (arrow) that extends beyond the cutaneous plane. It is associated with skin thickening in the lower quadrant.

the potential risk of recurrence. The patient subsequently underwent wide local excision of the scar with lumpectomy and skin graft.

The postoperative course was complicated by a surgical site infection, which required incision and drainage of a small abscess and treatment with oral cefadroxil, after which the patient recovered uneventfully. At her last follow-up, 30 months after surgery, no local recurrence was observed. The final cosmetic outcome is shown in Figure 1B.

DISCUSSION

Cutaneous myxoma of the breast, also referred to as superficial angiomyxoma of the breast skin, is a rare benign spindle cell neoplasm that shares pathologic and immunohistochemical features with several other benign and malignant myxoid lesions, including fibroma, leiomyoma, dermatofibrosarcoma protuberans, and low-grade fibromyxoid sarcoma.[3] These overlapping features may create substantial diagnostic difficulty, particularly in small biopsy specimens. In the present case, the differential diagnosis initially included both benign and malignant cutaneous spindle cell lesions. Histologically, the lesion demonstrated a hypocellular myxoid stroma containing bland spindle and stellate cells with prominent thin-walled vasculature and without cytologic atypia, mitotic activity, necrosis, or significant neutrophilic infiltrate. The overlying skin also demonstrated epidermoid cystic changes, consistent with the initial punch biopsy findings. Immunohistochemically, the absence of S100 expression argued against a neural lesion, whereas negative CD34 and lack of MUC4 expression, in the appropriate morphologic context, helped exclude dermatofibrosarcoma protuberans and low-grade fibromyxoid sarcoma, respectively.

Cutaneous myxomas may occur sporadically or in association with Carney complex, a rare autosomal dominant syndrome characterized by cutaneous, cardiac, and breast myxomas, spotty skin pigmentation, and endocrine tumors.[1,9] In some instances, cutaneous myxoma may represent the initial manifestation of this syndrome. For this reason, early reports emphasized the need for thorough patient evaluation to exclude Carney complex because of the associated risk of cardiac myxomas.[10] Nevertheless, sporadic cases of superficial angiomyxoma of the breast skin without features of Carney complex have also been reported.[2,4,11,12] A recent clinicopathologic series published in 2023 identified Carney complex in only 7% of patients with breast lesions of this type.[2] In our patient, no

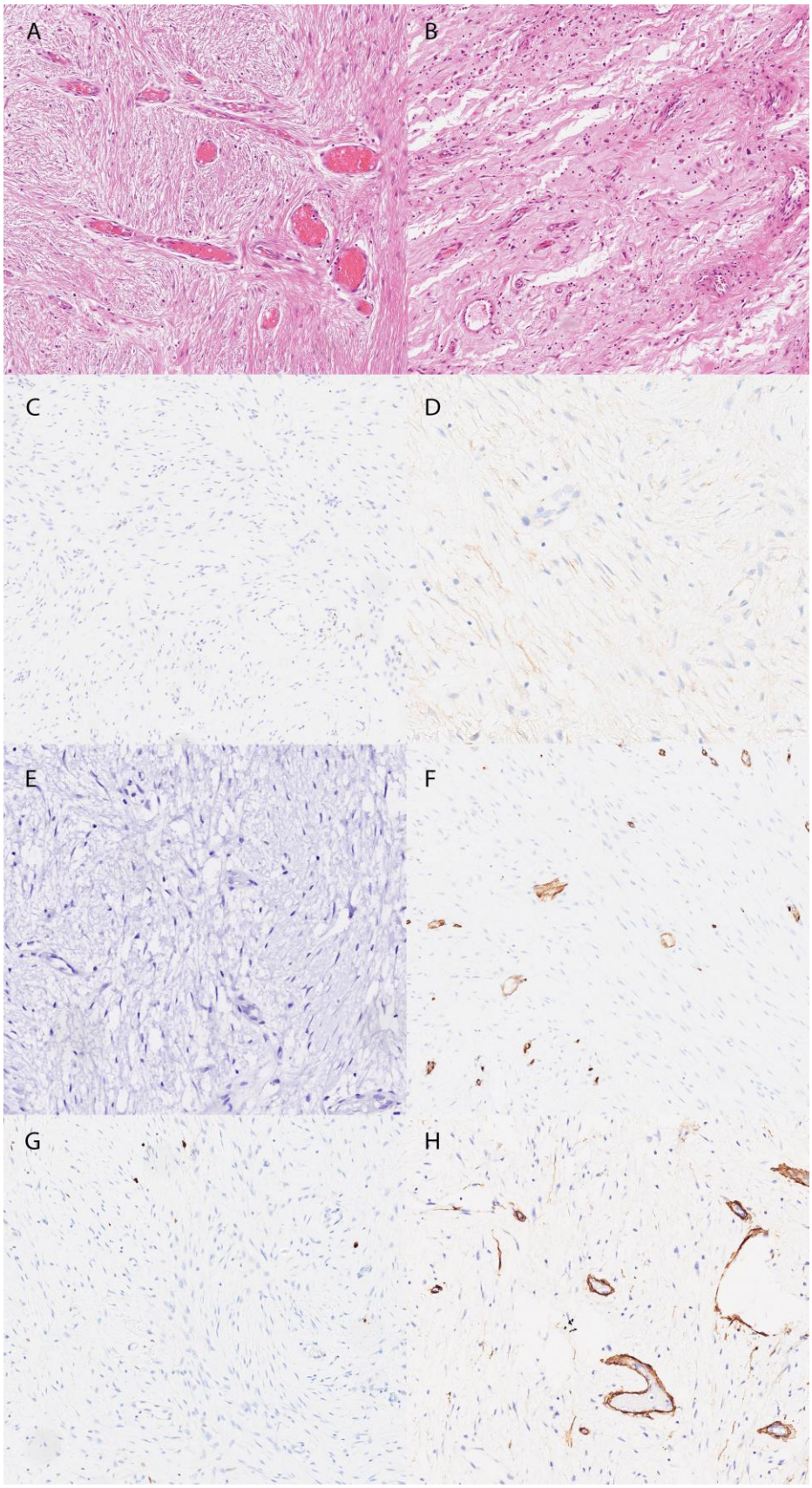

Figure 4. Histopathologic and Immunohistochemical Findings**.** A and B, Hematoxylin and eosin (H&E) staining demonstrates a hypocellular dermal-based lesion composed of bland spindle and stellate cells embedded in abundant myxoid stroma with numerous small, thin-walled blood vessels. No cytologic atypia, mitotic activity, or necrosis is identified. C, Low proliferative index on Ki-67 staining (<2%). D, Negative staining for CD34. E, Negative staining for S100 protein. F, Weak and focal expression of epithelial membrane antigen (EMA). G, Weak and focal expression of smooth muscle actin (SMA). H, Negative staining for desmin.

diagnostic criteria for Carney complex other than the cutaneous myxoma itself were identified, suggesting a sporadic etiology. Consequently, no additional investigations were pursued.

It is important to distinguish cutaneous myxoma of the breast skin from myxoid lesions arising within the breast parenchyma or nipple-areolar complex. Although these entities may share overlapping terminology in the literature, they likely represent distinct clinicopathologic processes with different biologic behavior and management considerations. In the present case, the lesion was clearly superficial and dermal-based, without evidence of intramammary extension on imaging or histopathologic examination.

Surgical excision remains the most commonly recommended treatment for cutaneous myxoma of the breast skin.[4,5] However, the literature presents conflicting data regarding recurrence risk, which has important implications for management. Initial case series of superficial angiomyxomas reported recurrence rates between 30% and 38.1%, with incomplete excision identified as a major risk factor.[7,8,13,14] Although these studies included lesions from multiple anatomical sites and not specifically the breast, they are frequently cited to support complete excision and long-term follow-up in superficial angiomyxoma of the breast skin.[4,12] This literature, therefore, supported re-excision in our patient to achieve negative margins.

In contrast, more recent publications have reported recurrence rates as low as 3.6%.[6] Baranov *et al.*[2] described a series of 40 lesions involving the breast, including superficial, parenchymal, and nipple-areolar complex tumors. Among 33 cases diagnosed on surgical specimens, positive margins were present in 63.6%, yet none of these patients underwent re-excision. Despite this, the local recurrence rate was very low, with only 1 recurrence among 19 patients with available follow-up (5.3%). Based on these findings, the authors recommended against wide excision and favored observation in cases of incomplete resection.[2] Although this study provides valuable data, its retrospective design and relatively small cohort limit the generalizability of its conclusions. Moreover, because it was published after our patient's re-excision, these data were not available during our multidisciplinary discussion.

With most evidence derived from case reports and small retrospective series, optimal management of cutaneous myxoma of the breast remains uncertain. Published studies have primarily focused on pathologic features and clinical presentation rather than treatment outcomes and long-term follow-up, limiting the ability to establish evidence-based management recommendations. Consequently, clinicians should engage in individualized discussions with patients when positive margins are encountered. At present, both re-excision and observation may be considered reasonable options depending on patient preference and clinical context.

Beyond oncological safety, management of cutaneous myxoma of the breast in young women also involves psychosocial and cosmetic considerations. Although wide re-excision may theoretically reduce recurrence risk, it may also compromise body image and aesthetic outcomes. In our case, the cosmetic result was favorable, and the patient expressed satisfaction with the aesthetic outcome. This is consistent with broader breast oncology literature, where re-excision after breast-conserving surgery has been associated with treatment delays, increased morbidity, and poorer cosmetic results. Advances in oncoplastic surgery have nevertheless substantially reduced the risk of postoperative deformity compared with previous decades.[15] In our patient, a combined advancement flap and skin graft were used to cover the excision site, resulting in a satisfactory cosmetic outcome (Figure 1B).

CONCLUSION

In conclusion, we reported the case of a young woman with cutaneous myxoma of the breast who underwent surgical resection with 2-cm margins. The wide disparity in published recurrence rates, ranging from 3.6% to 38.1%,[2,6] underscores the uncertainty surrounding the extent of excision required and the management of incompletely resected disease. Given the low quality of current evidence, further research is necessary to clarify the true risk of recurrence and to evaluate the benefits of re-intervention in the setting of positive margins. This case highlights the need for individualized management strategies in the absence of established guidelines.

ETHICAL CONSIDERATIONS

Written informed consent was obtained from the patient for publication of this case report and the accompanying images. A copy of the signed consent form is available for review by the journal's editorial office upon request. According to institutional policy, ethical committee approval is not required for individual case reports provided that informed consent is appropriately obtained and patient confidentiality is maintained.

DATA AVAILABILITY

The data supporting the findings of this case report are available from the corresponding author upon reasonable request. Additional patient data are

not publicly available in order to protect patient confidentiality.

CONFLICT OF INTERESTS

The authors declare no competing interests relevant to this publication.

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AI DISCLOSURE

AI-assisted tools (ChatGPT, OpenAI, 2025) were used solely for grammar and language refinement. All intellectual content, interpretation, and conclusions are the authors' own, and accuracy was verified manually.

AUTHOR CONTRIBUTION

FB: Writing – original draft; JM: Writing – original draft; MK: Investigation, Visualization; LMS: Investigation, Writing – original draft, Writing – review & editing; ME: Investigation, Visualization; EP: Writing – review & editing; AK: Conceptualization, Supervision, Writing – review & editing.

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