




Surgical Management of Recurrent Plasma Cell Mastitis in a Male Patient: A Case Report

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Introduction: Plasma Cell Mastitis (PCM) is a rare, chronic inflammatory breast disorder that primarily affects females, although there are occasional reports in males. This case report details an instance of PCM in a male patient, underscoring the diagnostic and therapeutic complexities associated with this condition.

Patient Concerns: The male patient presented with a palpable parapyllary mass, erythema, and localized breast pain.

Diagnoses: Radiological and histopathological assessments confirmed the diagnosis of PCM.

Interventions: Initial management included conservative pharmacological therapy, which was ineffective. Subsequently, the patient underwent a minimally invasive surgical intervention to address the breast lesion. However, 10 months post-surgery, a recurrence necessitated a total subcutaneous mastectomy.

Outcomes: Despite surgical interventions, the recurrence of PCM highlights the challenges in managing this condition. Complete resolution was achieved following the total subcutaneous mastectomy.

Conclusion: This case underscores the importance of recognizing and addressing PCM in male patients. It highlights the absence of a standardized clinical treatment protocol and emphasizes the necessity for personalized management approaches, especially in recurrent cases.

Keywords: plasma cell mastitis, male breast disease, inflammatory breast disease

Introduction

Plasma cell mastitis (PCM) is a rare inflammatory breast disorder characterized by the infiltration of plasma cells around the mammary ducts and lumps beneath the areola, which may result in purulent and ulcerated ductal fistulas.^{1,2} The etiology of PCM remains unclear, multifarious factors, such as a hormonal imbalance, smoking, and autoimmunity, are considered possible causes of the disease.³ Given the complexity and variability in clinical presentation, treatment strategies have ranged from conservative management to various surgical interventions, and there is no consensus on disease management exists.⁴ Conservative treatments encompass antibiotics,⁵ antituberculosis medications,⁶ immunosuppressants,⁷ endocrine therapy,⁸ and traditional Chinese medicine. Although PCM is more commonly seen in women across various age groups, it is not exclusive to them. It can also occur in men, although cases are exceptionally rare.⁹ Male PCM presents unique diagnostic and therapeutic challenges, as its symptoms can mimic those of other inflammatory and malignant breast conditions, such as inflammatory breast cancer (IBC), mammary tuberculosis. Given the unique characteristics and limited research on male PCM, early intervention is critical, and existing literature contains limited documented cases of recurrent PCM following minimally invasive excision procedures.

Case Presentation

A-38-year-old man was admitted to our clinic with a 1-month history of a palpable parapyllary mass, erythema, and localized pain on the right chest. The patient had been diagnosed with PCM earlier, and the previous medical history is insignificant. The patient had previously received antibiotic, prednisone as prescribed by doctors at a local hospital, but

this approach proved ineffective. The patient showed no history of prior trauma or infection and did not exhibit joint pain or other symptoms, such as fever, night sweats, or weight loss. The patient had no nipple inversion. The patient had no history of drug addiction or chest radiation exposure, nor a family history of breast cancer or atopy.

Physical examination revealed that most of the skin on the patient's right chest wall was red and swollen, particularly around the areola, with no signs of ulceration or pustules. There was no nipple retraction or discharge. A palpable mass was detected near the nipple in the right breast (see [Figure 1](#)). Ultrasound imaging (see [Figure 2](#)) identified an irregular, ill-defined hypoechoic mass measuring 1.5 cm × 0.8 cm with vascularity in the subareolar region of the right breast, accompanied by right axillary lymphadenopathy.

Laboratory tests, including a complete blood cell count, coagulation panel, and serum prolactin levels, were all within normal ranges. Liver and kidney function were also normal. The patient underwent a ultrasound-guided minimally invasive rotational excision of the right breast mass, which confirmed chronic inflammation characterized by the infiltration of lymphocytes, neutrophils, and plasma cells (see [Figure 3](#)). The patient made a satisfactory recovery following the surgery, and a photograph taken one month after the operation is presented below (see [Figure 4](#)).

Approximately ten months later, the patient returned to our clinic with a five-day history of a palpable mass under the nipple, erythema, and localized pain on the right chest wall. Ultrasound imaging (see [Figure 5](#)) revealed an irregular, poorly defined hypoechoic mass measuring 2.2 cm × 0.9 cm with vascularity in the subareolar area of the right breast, along with right axillary lymphadenopathy. Given the persistence of inflammatory mass despite ≥8 weeks of corticosteroid therapy and the development of significant steroid-related complications (notably progressive weight gain), surgical intervention was deemed clinically indicated. Subsequently, a right breast mastectomy was performed, and a specimen (measuring 5 cm × 5 cm × 1 cm) was excised and sectioned. Histopathologic examination confirmed chronic inflammation with acute inflammatory changes in the breast tissue (see [Figure 6](#)).

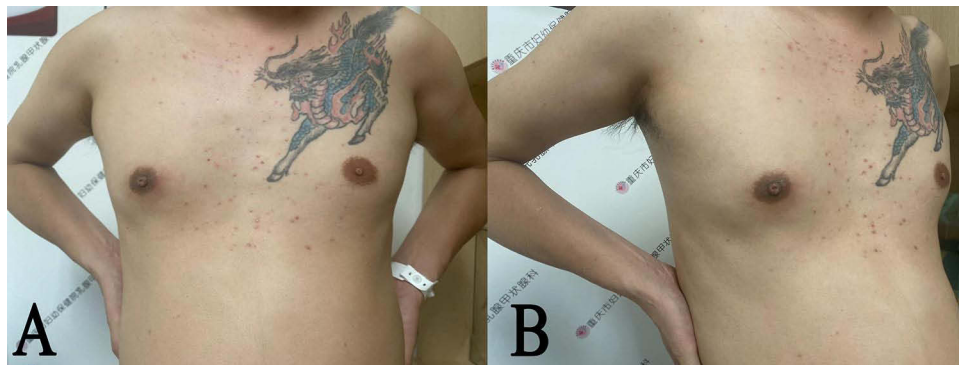


Figure 1 The skin of the right chest wall was red and swollen. (A) Front view. (B) Side view.

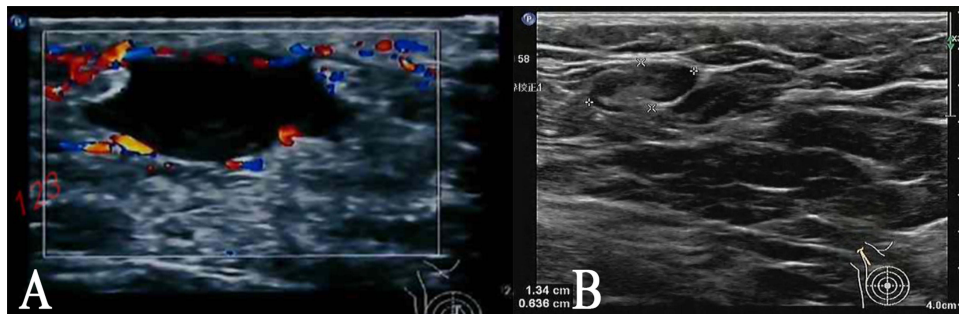


Figure 2 Ultrasound imaging of the right breast revealed an irregularly shaped and ill-defined hypoechoic mass, which measured 1.5×0.8 cm, with evidence of internal vascularization, located in the subareolar area (A). The existence of right axillary lymphadenopathy was identified through ultrasound examination (B).

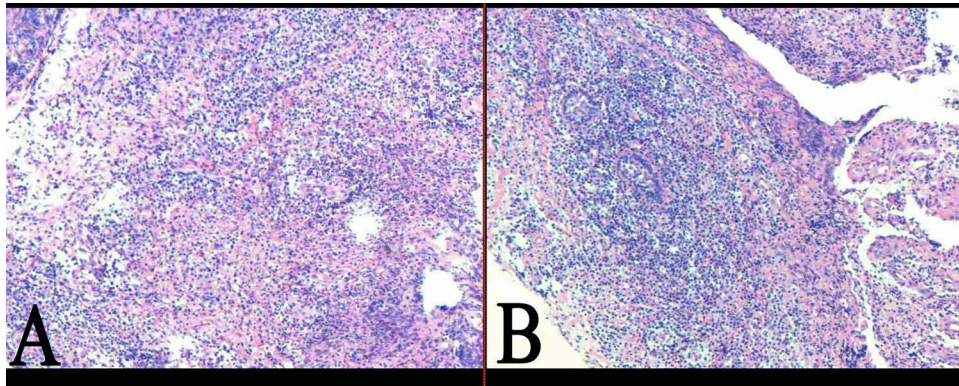


Figure 3 The histopathological examination of the tissue sample taken from the right breast demonstrated significant infiltration of lymphocytes, neutrophils, and a moderate number of plasma cells within the glandular acini and the surrounding stroma. No obvious ductal dilation was observed (**A** and **B**).

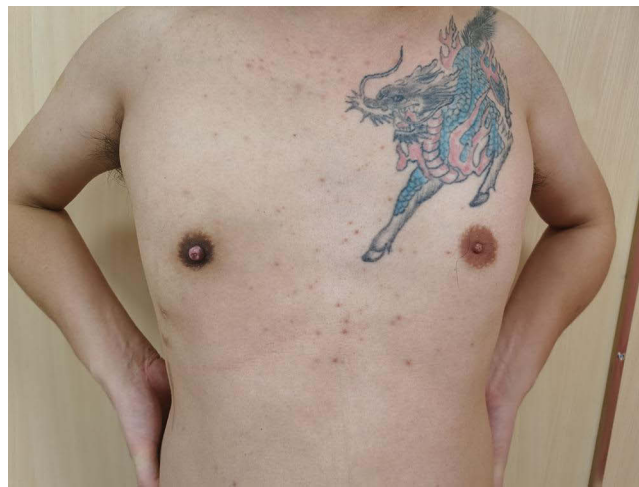


Figure 4 One-month postoperative image showed good recovery, with no significant scar formation observed.

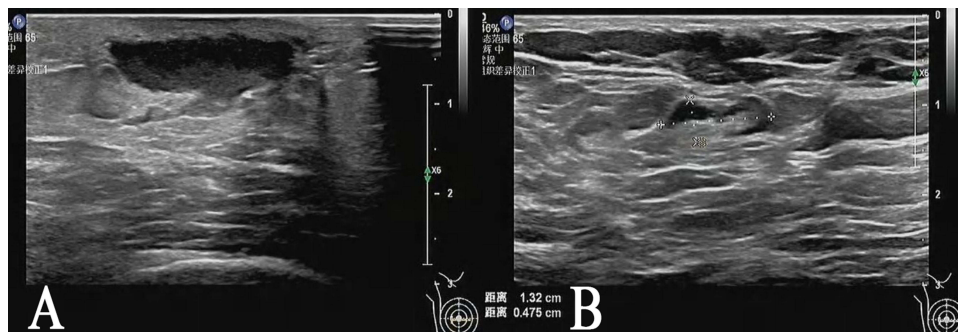


Figure 5 Ultrasound examination detected an ill-defined, irregular hypoechoic lesion, measuring 2.2×0.9 cm with internal vascular signals, in the subareolar region of the right breast (**A**). Right axillary lymphadenopathy was identified on the ultrasound images (**B**).

Discussion

PCM, a chronic inflammatory breast disease, remains diagnostically challenging due to its resemblance to other breast pathologies, including malignancies. Although benign, PCM's chronic nature, risk of recurrence, and similarity to invasive breast carcinoma demand precise diagnostic and therapeutic strategies to optimize patient outcomes.

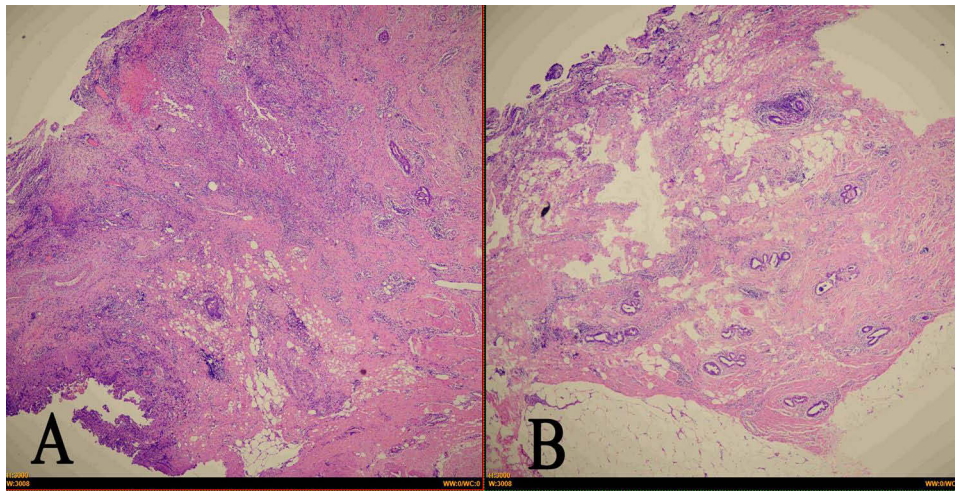


Figure 6 Chronic inflammation with acute inflammation was observed in the right breast tissue (**A** and **B**).

Recurrent PCM is a rare and challenging condition to manage, particularly after initial treatment. As a chronic form of breast inflammation, PCM often demonstrates resistance to standard therapies, similar to this male patient, he experienced a relapse 10 months post-surgery, with recurrence posing significant obstacles to achieving long-term resolution.

Recurrence Mechanisms and Challenges

The recurrence of PCM is frequently attributed to incomplete resolution of inflammation or persistent underlying triggers, such as ductal obstruction or immune dysregulation.¹⁰ Research findings showed obesity, smoking, pregnancy, breastfeeding, late menarche, and the use of oral contraceptives can all contribute to the recurrence of PCM.¹¹ Treatments like corticosteroid therapy or minimally invasive drainage, while initially effective, may fail to address the chronic and multifactorial nature of PCM, leading to disease recurrence.¹² Surgical strategies for recurrent PCM should not only focus on excising the affected tissue but also address residual ductal involvement or localized immune dysregulation, which are key contributors to persistent disease activity.¹³

Role of Repeat Surgery

Repeat surgery plays a dual role in cases of recurrent PCM. It is both therapeutic and diagnostic. Surgical resection of recurrent lesions can confirm the presence of granulomatous inflammation, which is often consistent with previous histological findings.¹³ Unlike primary surgical interventions, repeat procedures may necessitate more extensive resections due to the progressive nature of the disease. Despite this, localized excision continues to be a preferred choice, with studies advocating for conservative tissue-sparing techniques over mastectomy, even in cases of severity or widespread involvement.¹² Such approaches not only preserve breast aesthetics but also improve patient satisfaction without compromising therapeutic outcomes.

Adjunctive Therapies to Reduce Recurrence

Adjunctive medical therapies play a critical role in minimizing the likelihood of recurrence after surgery. Corticosteroids remain a cornerstone of PCM management, effectively reducing inflammation and promoting healing. For patients who are resistant to corticosteroids, immunosuppressive agents such as methotrexate and azathioprine have demonstrated efficacy in controlling disease progression.¹⁴ Recent studies investigating idiopathic granulomatous mastitis have revealed that tissue infiltrates rich in IgG4-positive plasma cells (defined as ≥ 11 cells/10 high-power fields) may delineate a distinct clinical subgroup. These cases demonstrate marked initial responsiveness to corticosteroid therapy but are associated with a significantly higher risk of disease recurrence upon treatment cessation.¹⁵ These findings highlight the diagnostic utility of IgG4 immunostaining in evaluating recurrent granulomatous mastitis and suggest that patients with

elevated IgG4-positive cell counts may benefit from either extended steroid tapering protocols or the addition of adjunctive immunosuppressive therapy to mitigate relapse risk. Furthermore, biologics targeting immune mediators, such as tumor necrosis factor-alpha (TNF- α) inhibitors, have emerged as promising alternatives for refractory cases. These therapies complement surgical intervention, supporting a multimodal approach to PCM management.¹⁶

Future Directions

Advances in molecular diagnostics and immunological profiling are paving the way for personalized treatment protocols that optimize outcomes and reduce recurrence rates. The involvement of a Th1 immune response in the development of PCM is evident. However, the specific way in which these cytokines contribute to the disease's progression is not well understood and requires additional research.¹⁷ Combining minimally invasive techniques with localized steroid delivery represents a potential strategy to limit the need for repeat surgeries while preserving cosmetic results.¹³ The integration of immune profiling, particularly tissue IgG4 immunostaining, may refine future therapeutic approaches by enabling risk stratification and personalized treatment decisions, including prolonged steroid tapering or adjunctive immunosuppressive regimens. Additionally, further research is essential to establish standardized guidelines for managing recurrent PCM, ensuring consistent and effective care across diverse patient populations.

Limitations

Several limitations should be considered when interpreting our findings. First, the inherent nature of a single-case report precludes generalization of the observed treatment response and recurrence pattern to broader PCM populations, particularly given the rarity of male PCM cases. Second, while the 10-month follow-up captured corticosteroid therapy failure and surgical relapse, this intermediate-term observation cannot elucidate long-term outcomes post-mastectomy. Third, the diagnostic workup lacked (a) IgG4 immunophenotyping and other biomarker profiling that might have stratified recurrence risk, and (b) comprehensive microbiologic cultures or autoimmune serologies that could have excluded secondary etiologies—a notable gap given emerging evidence of infectious/autoimmune PCM subtypes. Finally, therapeutic decisions were necessarily empiric due to absent consensus guidelines for male PCM management.

Conclusion

This article presents a clinically distinctive case of plasma cell mastitis (PCM) in a male patient, a demographic rarely reported in existing literature. The clinical course exemplifies a therapeutic challenge: initial conservative management (including corticosteroid therapy) failed to achieve sustained remission, necessitating eventual surgical intervention. Although the precise etiology of recurrence remains multifactorial, the patient's substantial smoking history (30 pack-years) aligns with established pathophysiological mechanisms linking tobacco use to disease progression. The development of locally aggressive recurrence ultimately mandated definitive surgical resolution via total subcutaneous mastectomy. The intricacies of managing PCM and its tendency for recurrence warrant further exploration to improve therapeutic strategies and patient outcomes.

Ethics and Consent Statements

Ethical review and institutional approval were waived for this single-patient case report in accordance with the policies on case report publications of the Women and Children's Hospital of Chongqing Medical University and the Chongqing Health Center for Women and Children. All procedures involving human participants followed the ethical standards of the institutional and/or national research committees and complied with the Helsinki Declaration (revised 2013). Written informed consent was obtained from the patient for both the clinical procedures and the publication of this case report, including the use of anonymized clinical images and data.

Disclosure

The authors have stated that they have no conflicts of interest in regard to this article.

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