Section: General Surgery

Case Series

IDIOPATHIC GRANULOMATOUS MASTITIS MIMICKING BREAST MALIGNANCY – OUTCOMES OF A DIAGNOSIS-BASED MULTIMODALITY TREATMENT PROTOCOL: A CASE SERIES

R. Jasper Cliveston[1], M. Rajasekar[2]

[1]Post Graduate, Department of General Surgery, Sri Venkateshwaraa Medical College Hospital and Research Centre, Puducherry, India
[2]Professor & HOD, Department of General Surgery, Sri Venkateshwaraa Medical College Hospital and Research Centre, Puducherry, India

Received *: 15/01/2026*
Received in revised form *: 15/02/2026*
Accepted *: 19/02/2026*

Corresponding Author:
Dr. M. Rajasekar,
Professor & HOD, Department of General Surgery, Sri Venkateshwaraa Medical College Hospital and Research Centre, Puducherry, India.
Email: rajhasekerm@gmail.com

DOI: 10.70034/ijmedph.2026.1.346

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (1); 1989-1993

ABSTRACT

Background: Idiopathic granulomatous mastitis (IGM) is a benign inflammatory breast disease that frequently mimics carcinoma, leading to diagnostic uncertainty and therapeutic dilemmas. The objective is to evaluate the effectiveness of a diagnosis-based multimodality treatment protocol combining selective surgery and structured steroid-sparing therapy in patients with IGM.

Materials and Methods: This case series included five female patients (mean age 47.6 ± 10.2 years) diagnosed with IGM between 2023 and 2025 at a tertiary care centre. Patients underwent clinical, radiological, and histopathological evaluation. A structured protocol consisting of methotrexate (5 mg weekly) and tapered prednisolone therapy for three cycles was administered. Outcomes assessed were clinical regression and recurrence over a follow-up period of up to 24 months.

Results: All patients presented with palpable breast lump (100%). Axillary lymphadenopathy was observed in 80%, and radiological suspicion of malignancy was noted in 40%. Surgical intervention for diagnostic clarification was required in 4 patients (80%). Complete clinical regression was achieved in all cases (100%). Recurrence occurred in one patient (20%) and resolved after extended conservative therapy. No major corticosteroid-related adverse effects were observed.

Conclusion: A diagnosis-based multimodality approach combining selective surgery with structured steroid-sparing therapy is effective and safe in managing IGM, achieving complete remission in this small cohort with low recurrence (20%) and minimal morbidity.

Keywords: Idiopathic granulomatous mastitis, Multimodality therapy, Steroid-sparing therapy, Breast lump, Recurrence

INTRODUCTION

Idiopathic granulomatous mastitis (IGM) is a rare, benign inflammatory breast condition characterized by non-caseating granulomatous inflammation confined to lobules. Although benign, its clinical and radiological resemblance to carcinoma poses significant diagnostic challenges.[1]

Indian tertiary care centres have reported increasing recognition of IGM over the past decade, particularly among parous women within reproductive age groups.[2,3] The etiology remains uncertain; autoimmune mechanisms, hormonal factors, and infectious triggers have been proposed.[4]

Clinically, patients often present with unilateral breast mass, skin changes, sinus formation, and ipsilateral axillary lymphadenopathy, frequently mimicking malignancy.[5] Radiologically, ultrasonography typically reveals irregular hypoechoic masses or complex cystic lesions, findings that are not pathognomonic.[6]

Histopathological examination remains the gold standard, demonstrating granulomatous inflammation without evidence of malignancy or tuberculosis.[7]

Management remains controversial. While surgical excision offers diagnostic clarity, it carries risks of recurrence and cosmetic deformity. Corticosteroids are effective but associated with systemic side effects. Recent Indian literature emphasizes individualized, multimodality approaches tailored to diagnostic certainty and disease severity.[8]

In view of persistent therapeutic uncertainty, the present case series evaluates the outcomes of a structured, diagnosis-based multimodality treatment protocol in patients with IGM.

MATERIALS AND METHODS

Study Design and Setting: Descriptive case series conducted in the Department of General Surgery, Sri Venkateshwaraa Medical College Hospital and Research Centre, Puducherry, from January 2023 to December 2025.

Ethical Approval: The study was approved by the Institutional Ethics Committee of Sri Venkateshwaraa Medical College Hospital and Research Centre.

The study adhered to the Declaration of Helsinki principles.

Informed Consent: Written informed consent was obtained from all participants, including consent for publication of clinical, radiological, and histopathological images.

Participant Selection: Patients presenting with inflammatory breast lesions suspicious for IGM were evaluated.

Inclusion Criteria

- Female patients aged 18–70 years
- Histopathologically confirmed IGM
- Exclusion of malignancy and tuberculosis

Exclusion Criteria

- Breast carcinoma
- Tuberculous mastitis
- Connective tissue disorders
- Recurrent previously treated IGM

Five consecutive eligible patients were included.

Diagnostic Workup

- Clinical examination
- Ultrasonography
- Core needle biopsy / FNAC
- Histopathological confirmation

IGM was diagnosed after exclusion of infectious and malignant causes.

Allocation

This was a non-randomized study.

Management allocation was diagnosis-based:

- Patients with inconclusive radiology/biopsy underwent surgical excision for definitive diagnosis.
- Patients with confirmed IGM were treated conservatively.
- Postoperative IGM-confirmed cases were subsequently started on structured conservative therapy.

Treatment Protocol

Methotrexate 5 mg once weekly × 4 weeks
Prednisolone 20 mg once daily × 1 month
Prednisolone 10 mg once daily × 1 month
Regimen repeated for 3 cycles
Monthly follow-up for 3 months
Extended therapy if recurrence detected

Outcome Measures

Primary Outcome:

- Complete clinical regression

Secondary Outcomes:

- Recurrence rate
- Steroid-related adverse effects

Statistical Analysis: Descriptive statistics were used to summarize frequencies and percentages. Due to the small sample size (n=5), inferential statistical testing was not considered appropriate.

RESULTS

Patient Profile: A total of 5 female patients were included.

Mean age: 47.6 ± 10.2 years

Follow-up duration: 18.4 ± 5.3 months (range: 12–24 months).

Table 1: Age Distribution and Risk Characteristics of Study Participants (n = 5)

Variable	Frequency	Percentage
Age 35–45 years	2	40%
Age 46–55 years	2	40%
Age 56–65 years	1	20%
History of breastfeeding (>9 months)	5	100%
Oral contraceptive use	2	40%
Family history of breast cancer	0	0%
Previous similar illness	0	0%
History of breast tuberculosis	0	0%

All patients were multiparous females with prior breastfeeding history (100%). Two patients (40%) reported oral contraceptive use. No patient had prior history of breast tuberculosis, malignancy, or recurrent mastitis.

Table 2: Distribution of Clinical Features in Patients with IGM (n = 5)

Clinical Feature	Frequency	Percentage
Palpable breast lump	5	100%
Ipsilateral axillary lymphadenopathy	4	80%
Skin changes mimicking malignancy	2	40%
Nipple discharge	2	40%
Abscess formation	1	20%
Pain associated with lump	3	60%

Palpable unilateral breast lump was universal (100%). Axillary lymphadenopathy was observed in 80%, significantly contributing to suspicion of malignancy. Two patients (40%) exhibited skin changes such as erythema and peau d'orange–like appearance.

Table 3: Radiological and Pathological Findings (n = 5)

Investigation Finding	Frequency	Percentage
Irregular hypoechoic mass on USG	3	60%
Complex cystic lesion	2	40%
Radiological suspicion of malignancy	2	40%
Core biopsy suggestive of granulomatous mastitis	3	60%
Histopathology confirmed IGM	5	100%
Evidence of malignancy	0	0%
Evidence of tuberculosis	0	0%

Radiological suspicion of malignancy was raised in 40% of cases. All cases were confirmed histopathologically as non-caseating granulomatous mastitis after exclusion of malignancy and tuberculosis.

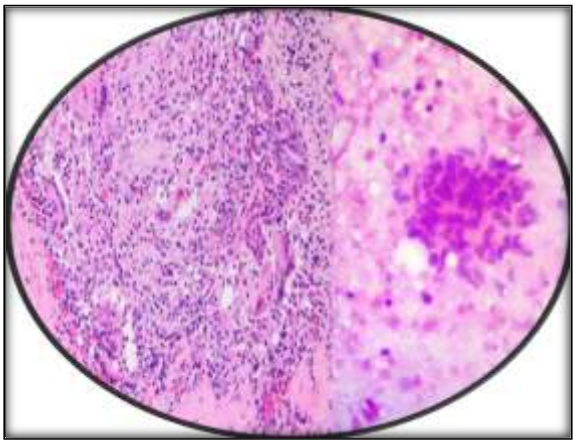

Figure 1: Histopathological Features of Idiopathic Granulomatous Mastitis

[Figure 1] shows cohesive clusters of epithelioid histiocytes forming non-caseating granulomas with surrounding lymphocytic infiltrate. No evidence of malignancy or caseous necrosis is seen.

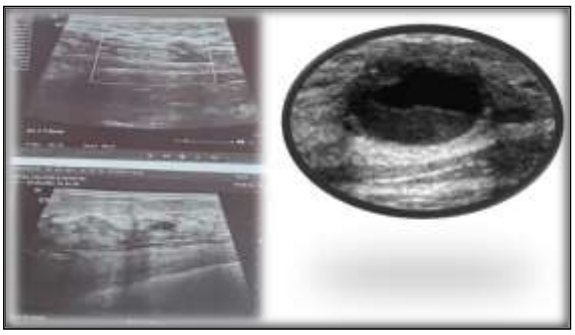

Figure 2: Ultrasonographic Appearance of IGM

Ultrasound image showing complex hypoechoic lesion with irregular margins and internal echoes. The radiological appearance was suspicious for malignancy in 40% of patients prior to histopathological confirmation.

Table 4: Allocation of Treatment Modality (n = 5)

Treatment Parameter	Frequency	Percentage
Surgical excision performed	4	80%
Primary conservative management	1	20%
Postoperative initiation of steroid protocol	4	80%
Structured steroid-sparing therapy administered	5	100%

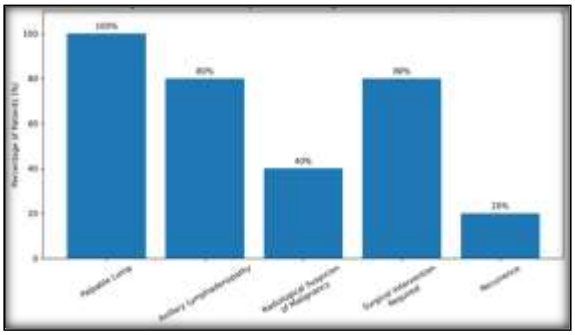

Figure 3: Distribution of Key Clinical and Diagnostic Indicators in Patients with Idiopathic Granulomatous Mastitis (n = 5)

Due to diagnostic uncertainty, 4 patients (80%) underwent surgical excision for definitive diagnosis. All 5 patients subsequently received structured steroid-sparing therapy.

[Figure 3] demonstrates that while all patients presented with palpable breast lump (100%), a significant proportion exhibited axillary lymphadenopathy (80%) and radiological suspicion of malignancy (40%), leading to surgical intervention in 80% of cases. Despite this diagnostic complexity, recurrence was observed in only 20%, highlighting the effectiveness of the structured multimodality treatment protocol.

Table 5: Clinical Outcomes Following Multimodality Treatment (n = 5)

Outcome Variable	Frequency	Percentage
Complete regression within 3 months	4	80%
Complete regression within 5 months	1	20%
Overall complete regression	5	100%
Recurrence during follow-up	1	20%
Extended therapy required	1	20%
Final remission at last follow-up	5	100%
Major corticosteroid-related adverse effects	0	0%

Complete regression was achieved in all patients (100%). One patient (20%) developed recurrence at 6 months, which resolved after extension of therapy for 2 additional months. No major steroid-related adverse effects were observed.

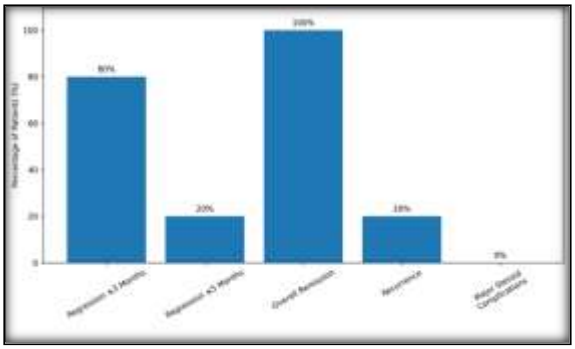

Figure 4: Treatment Outcomes Following Structured Steroid-Sparing Multimodality Therapy in IGM (n = 5)

[Figure 4] shows that 80% of patients achieved complete regression within three months, while the remaining 20% achieved remission within five months. Overall disease control was achieved in 100% of patients. Recurrence occurred in 20% but resolved with extended therapy. No major steroid-related adverse effects were observed.

DISCUSSION

Idiopathic granulomatous mastitis (IGM) remains a challenging clinical entity due to its overlapping presentation with breast carcinoma and chronic infective mastitis. In the present study, all patients (100%) presented with a palpable breast lump, and 80% exhibited ipsilateral axillary lymphadenopathy. Similar findings have been reported in Indian tertiary care series, where breast lump is the predominant presentation and nodal involvement frequently contributes to malignancy suspicion.[9]

Radiological ambiguity plays a crucial role in management decisions. In our cohort, 40% of patients had radiological suspicion of malignancy, and 80% required surgical excision for diagnostic confirmation. Indian imaging reviews have highlighted that ultrasonography often reveals irregular hypoechoic masses or complex cystic lesions that are indistinguishable from carcinoma without histopathological confirmation.[10] Consequently, tissue diagnosis remains mandatory before initiating prolonged immunosuppressive therapy.

The need for surgical intervention in 80% of our patients primarily reflected diagnostic uncertainty rather than therapeutic intent. Indian surgical experiences have similarly emphasized that excision biopsy is frequently performed to exclude malignancy when core biopsy results are inconclusive.[11] However, surgery alone has not consistently demonstrated superiority in preventing recurrence and may lead to cosmetic morbidity.

In our study, complete regression was achieved in all patients (100%) following structured steroid-sparing therapy. The recurrence rate was 20%, and the recurrent case responded to extended conservative therapy. Comparable Indian observational studies have reported recurrence rates ranging from 15–40%, particularly when surgery alone was employed.[12] The relatively lower recurrence in our series may reflect the addition of methotrexate-based immunomodulation.

Steroid monotherapy, although effective, is associated with metabolic and systemic adverse effects. Recent Indian cohorts have demonstrated favorable outcomes with low-dose methotrexate

combined with short-course corticosteroids, allowing steroid tapering while maintaining remission.[13] In our series, no major corticosteroid-related adverse effects were observed, supporting the safety of a controlled steroid-sparing protocol.

This finding aligns with Indian comparative analyses suggesting that wide excision does not necessarily reduce recurrence compared to conservative immunomodulatory management.[14]

Histopathological confirmation remains the cornerstone of diagnosis. All patients in our study demonstrated non-caseating granulomatous inflammation with absence of malignancy and tuberculosis. Indian pathology literature emphasizes the importance of excluding tuberculous mastitis, particularly in endemic regions, before initiating immunosuppressive therapy.[15]

CONCLUSION

Idiopathic granulomatous mastitis is a benign but diagnostically challenging breast condition that frequently mimics carcinoma. In this case series, a diagnosis-based multimodality treatment approach combining selective surgical intervention with structured steroid-sparing immunomodulatory therapy achieved complete remission in 100% of patients, with a low recurrence rate of 20% and no major treatment-related complications. A structured, individualized management strategy appears safe, effective, and capable of minimizing unnecessary surgical morbidity and prolonged corticosteroid exposure.

Limitations

This study is limited by its small sample size, single-centre design, and absence of a comparative treatment arm. The findings may not be generalizable to larger populations. Additionally, long-term recurrence beyond the follow-up period could not be assessed.

REFERENCES

1. Barman A, Barman A, Khan MA, Bari R. Diagnostic and therapeutic evaluation of idiopathic granulomatous mastitis: a case series from Eastern India. Asian J Med Sci. 2023;14(7):268-271.
2. Karthik AH, Suraj L. Management of idiopathic granulomatous mastitis: a surgical experience from a tertiary care centre in South India. Int J Res Med Sci. 2022;10(4):856-861.
3. Pandey D, Syed A, Akhtar M. Idiopathic granulomatous mastitis: clinicopathological study from a North Indian teaching hospital. Trop J Pathol Microbiol. 2021;7(3):142-148.
4. Sharma N, Rathi M, Gupta A. Etiopathogenesis and clinical spectrum of idiopathic granulomatous mastitis in Indian women. Indian J Surg. 2022;84(5):1134-1139.
5. Akhila K, Ravikumar V, Panchami P. Idiopathic granulomatous mastitis: diagnostic dilemma and management challenges. Int Surg J. 2023;10(6):1924-1928.
6. Matich A, Sud S, Buxi TBS, Dogra V. Idiopathic granulomatous mastitis and its mimics on magnetic resonance imaging: pictorial review from India. J Clin Imaging Sci. 2020;10:53.
7. Chandanwale SS, Gore C, Singh M, et al. Idiopathic granulomatous lobular mastitis: cytological and histopathological correlation. J Med Sci. 2021;41(9-10):240-244.
8. Patel OA, Bakhshi GD, Nadkarni A, et al. Granulomatous mastitis due to infectious and non-infectious causes: experience from Western India. ClinPract. 2021;11(2):228-234.
9. Rao S, Kulkarni S, Deshpande R. Clinical presentation and outcomes of idiopathic granulomatous mastitis: a prospective study from Western India. Int J Surg Sci. 2023;7(2):45-50.
10. Singh G, Kaur N, Aggarwal R. Imaging characteristics of idiopathic granulomatous mastitis in a tertiary care centre in North India. Indian J Radiol Imaging. 2022;32(3):412-418.
11. Meena S, Tiwari P, Sharma A. Surgical versus conservative management in idiopathic granulomatous mastitis: institutional experience from Central India. Int J Res Med Sci. 2023;11(1):155-160.
12. Joshi R, Patil V, More S. Recurrence patterns in idiopathic granulomatous mastitis following surgical management: an Indian observational study. Indian J Surg Oncol. 2022;13(4):623-629.
13. Bhatia R, Sood A, Verma S. Low-dose methotrexate as steroid-sparing therapy in idiopathic granulomatous mastitis: a prospective cohort study from North India. Indian J Surg. 2023;85(4):789-795.
14. Kumar P, Yadav R, Chauhan A. Comparative evaluation of medical versus surgical management in idiopathic granulomatous mastitis: a tertiary care study. J Clin Diagn Res. 2022;16(8):PC05-PC09.
15. Iqbal J, Ahmed S, Khan S. Histopathological spectrum and differential diagnosis of granulomatous mastitis in an Indian population. J Pathol Transl Med. 2021;55(6):365-371.