International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Available online on: https://ijmpr.in/

Case Report

Granulomatous Mastitis with Embedded Hair in a Young Male: A Rare Case Report

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Received: 22-02-2026
Accepted: 28-3-2026
Available online: 06-04-2026

ABSTRACT

Granulomatous mastitis (GM) is a chronic inflammatory condition of the breast that predominantly affects women of reproductive age. Occurrence is extremely rare in males. It often presents a diagnostic challenge as it can clinically and radiologically mimic malignancy. Various etiologies have been proposed, such as infections, foreign-body reactions, autoimmune disorders and metabolic disorders. Here, we present an unusual case of right breast granulomatous mastitis in a 23-year-old male, in which an embedded hair was identified within the inflammatory lesion.

Keywords*: Granulomatous mastitis, Male breast, Foreign body reaction, Embedded hair, Subareolar granuloma.*

INTRODUCTION

Granulomatous mastitis (GM) is a rare and benign chronic inflammatory disease of the breast.[1] It is classified into idiopathic granulomatous mastitis (IGM) and secondary GM.[2] GM primarily affects women of reproductive age, with a mean onset around 35 years. It is exceptionally rare in men.[2,3,4] For example, one large series of breast biopsies identified 127 patients with granulomatous lesions, of whom only one was male.[5] Clinically, GM initially presents as a breast mass, with or without pain. As the disease progresses, it may extend toward the areola, causing swelling, warmth, pain, nipple retraction, discharge, and axillary lymphadenopathy. In severe cases, abscess formation can occur, leading to sinus tracts, fistulae, or ulceration with delayed healing. In males, reported risk factors for granulomatous mastitis include bacterial infections, tuberculosis, foreign body reactions, immunological disorders, hyperprolactinemia, smoking, alpha-1 antitrypsin deficiency, and metabolic conditions such as type 2 diabetes and obesity.[2] Here, we describe an unusual case of right breast granulomatous mastitis in a 23-year-old male, in which an embedded hair was identified within the inflammatory lesion.

CASE PRESENTATION

A 23-year-old male presented to the General Surgery Outpatient Department at Vishesh Jupiter Hospital, Indore, with complaints of right breast pain on and off for two months, associated with intermittent purulent discharge from the nipple region.

The pain was mild to moderate in intensity and non-radiating. There was no history of fever, trauma, weight loss, nipple retraction, or similar complaints in the past. The patient had no known comorbidities and no significant past medical, surgical, or family history.

The patient was initially managed conservatively with a one-month course of antibiotics. However, despite compliance, his symptoms persisted, with intermittent fluid filled discharge from the nipple region and pain.

Ultrasonography (USG) examination of the right breast revealed a well-defined, oval-shaped hypoechoic lesion measuring 0.6 × 0.5 cm located in the subareolar region superiorly at the 12 o'clock position. The lesion demonstrated smooth margins with linear fine echogenic shadows embedded within it, suggestive of a foreign body component. The lesion was seen extending up to the nipple level [Figure-1(a,b)]. The left breast showed no evident ductoglandular tissue, and the bilateral axillary tail regions appeared normal [Figure-1(c)]. No suspicious solid mass or features suggestive of malignancy were identified. The imaging findings were suggestive of a right breast granuloma with an embedded hair, extending up to the nipple. Given persistent symptoms and imaging findings, surgical intervention was planned.

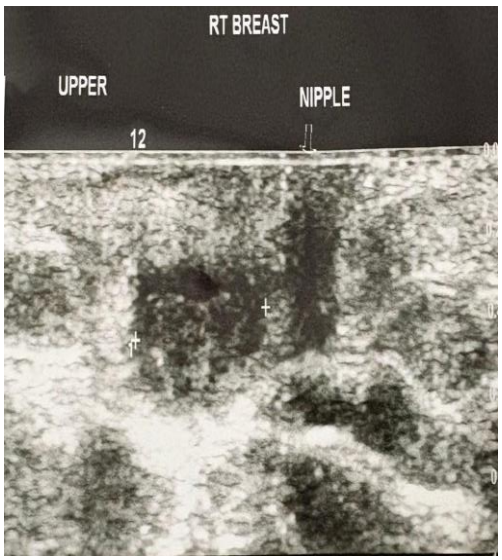

Figure-1(a)

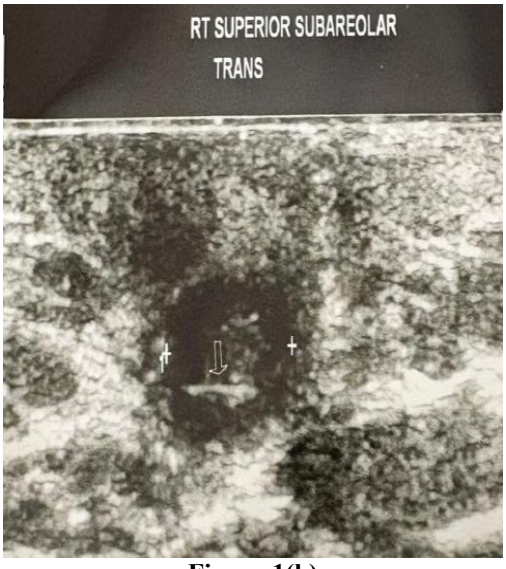

Figure-1(b)

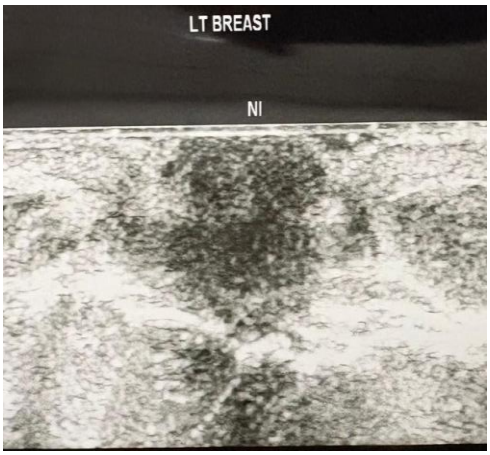

Figure-1(c)

Figure-1(a,b): USG of the Right breast showing a well-defined oval hypoechoic subareolar lesion with internal linear echogenic reflections representing an embedded hair.

Figure-1(c): USG of the Left breast showing no abnormal lesion.

Routine preoperative laboratory investigations were performed. Hemoglobin was 13.5 g/dL, total leukocyte count was 7.43 × 10^3/µL, platelet count was 202 × 10^3/µL. Serum sodium was 139 mEq/L, potassium 4.2 mEq/L, chloride 103 mEq/L and bicarbonate was 24 mEq/L. Blood urea nitrogen was 18 mg/dL and serum creatinine was 0.9 mg/dL. Random blood sugar was 98 mg/dL. Urine routine examination was normal.

Figure-2: Intraoperative view showing a subareolar granulomatous lesion being delivered through a circumareolar incision.

Figure-3: Intraoperative image showing dissection of the inflammatory granulomatous tissue from the surrounding subareolar structures

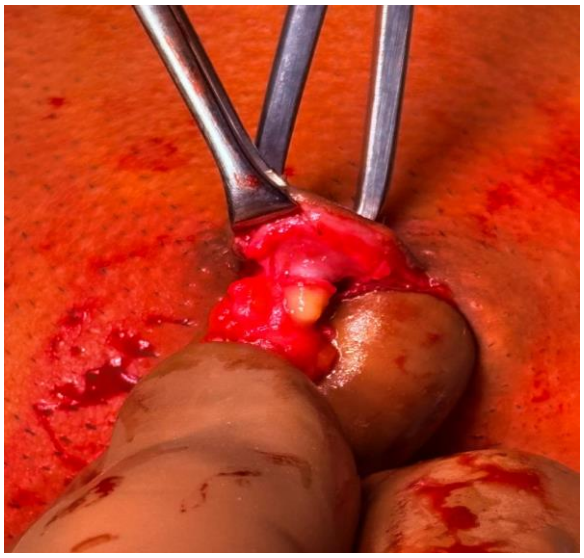

Figure-4: Gross appearance of the excised lesion.

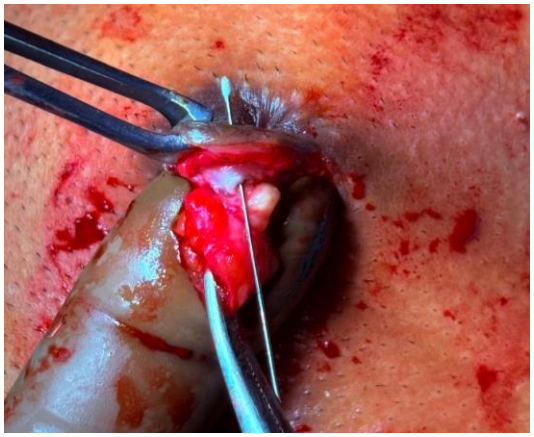

Figure-5: Intraoperative view showing excision of the granulomatous lesion.

The patient underwent right breast granuloma wide excision with microdochectomy (Figure-2,3,4,5) under general anesthesia. Intraoperatively, a single embedded hair follicle was observed within the ductal system, acting as a likely nidus for chronic inflammation. The excised specimen was sent for histopathological examination which revealed benign skin lining with preserved skin adnexal structures. The subepithelial region contained breast tissue with a few ducts embedded within fibrous stroma. The stroma and periductal areas demonstrated well-formed granuloma composed of central caseating-type necrosis surrounded by epithelioid histiocytes, lymphocytes and multinucleated giant cells. The surrounding tissue exhibited dense chronic inflammatory infiltrate. No evidence of cellular atypia or malignancy was identified. The overall histopathological impression was granulomatous mastitis of the male breast.

DISCUSSION

Granulomatous mastitis in males is extremely uncommon. In the present case, our patient was a 23-year-old male. Al Manasra et al.(2016) reported a 29-year-old male with GM, [6] while Madzima et al.(2022) documented bilateral disease in a 46-year-old man.[4] Similarly, Joo et al. (2018) described a case in a 60-year-old male,[7] and Yazkan et al. reported GM in a 63-year-old man. These reports suggest that male GM has generally been observed in middle-aged or older patients.[8] Our patient presented with a tender subareolar nodule and purulent nipple discharge, with an embedded hair identified within the lesion, likely acting as an inflammatory nidus. Previous studies by Madzima et al.(2022)[4] and Joo et al. (2018)[7] similarly describe male patients presenting primarily with a palpable subareolar breast mass.

In our study, USG demonstrated a well-circumscribed, oval hypoechoic lesion with internal linear echogenic reflections corresponding to the embedded hair. In contrast, in previous studies, male cases have shown more irregular imaging features. Kawashima K et al.(2023)[9] reported an ill-defined hypoechoic mass with peripheral vascularity, while Madzima et al.(2022)[4] reported an ill-defined irregular hypoechoic mass (3.8 × 2.0 × 1.6 cm) with sinus tracts. Similarly, Joo et al. (2018)[7] found an oval hypoechoic mass (12 × 7 mm) with increased internal and peripheral Doppler flow, and Al Manasra et al. (2016)[6] reported a small hypoechoic lesion (5 × 2 mm) with increased vascularity on Doppler. Thus, although our lesion appeared relatively well circumscribed, previously reported cases often demonstrated irregular or vascular masses that could mimic carcinoma on imaging.

Histopathologically, our case showed well-formed granulomas, with a mixture of epithelioid histiocytes, multinucleated giant cells, lymphocytes and plasma cells, and areas of central caseating-type necrosis in the stroma. Joo et al. (2018)[7] observed epithelioid histiocytes and Langerhans-type giant cells with lymphocytes and plasma cells without necrosis. Al Manasra et al.(2016)[6] reported epithelioid histiocytes and giant cells surrounding a squamous-lined cystic space. Kawashima K et al.(2023)[9] reported mononuclear inflammatory infiltration and foam cells without caseous necrosis. The presence of caseating necrosis in our case likely reflects the foreign-body granulomatous reaction to the hair.

Management in male GM may vary due to its rarity. In present case, wide surgical excision with microdochectomy was performed after antibiotics failed, which is similar to the surgical management reported by Al Manasra et al.(2016)[6] and Yazkan et al.(2026)[10] . While Farrokh et al.(2019)[11] and Madzima et al.(2022)[4] reported successful medical management with corticosteroids or immunosuppressants. Hence, this highlights the absence of a standardized treatment approach for male GM.

Our case report underscores that it is necessary to consider foreign-body reactions in the differential diagnosis when evaluating male breast granulomas.

CONCLUSION

Granulomatous mastitis in males is an extremely rare condition and may mimic other inflammatory or neoplastic breast lesions. This case highlights an unusual presentation in a young male with an embedded hair acting as a possible inflammatory nidus. Recognition of such atypical etiologies is important to ensure accurate diagnosis and appropriate management.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

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