Clinical Algorithm for the Management of Mastalgia Associated with Mammary Duct Ectasia: A Narrative Review with Institutional Perspective

Dr. Himani Manhas [1*], Dr. Rajeev Rahi [2], Dr. Ayush Sinha [3]
[1, 3] Post Graduate, General Surgery, Rama Medical College, Hospital and Research Centre, Hapur, India
[2] Assistant Professor, General Surgery, Rama Medical College, Hospital and Research Centre, Hapur, India

* Corresponding Author: **Dr. Himani Manhas**

Article Info

E-ISSN: 2582-8940
Volume: 07
Issue: 02
Received: 22-03-2026
Accepted: 20-04-2026
Published: 18-05-2026
Page No: 206-209

Abstract
Mastalgia is one of the most common breast-related complaints encountered in surgical practice. Although breast pain often raises concern regarding malignancy, the association between isolated mastalgia and breast cancer remains low. Mammary duct ectasia represents an important benign cause of non-cyclical mastalgia characterized by dilatation of the major lactiferous ducts and periductal inflammation. Because its clinical manifestations may mimic periductal mastitis or it may mimic early carcinoma associated with duct papilloma,patients frequently undergo repeated imaging and unnecessary treatment. This review summarizes current evidence regarding epidemiology, pathophysiology, clinical presentation, diagnostic evaluation, and management of duct ectasia–related mastalgia and proposes a structured clinical management algorithm suitable for routine surgical practice.

DOI: https://doi.org/10.54660/IJMBHR.2026.7.2.206-209

Keywords: Mastalgia, Mammary duct ectasia, Non-cyclical breast pain, Nipple discharge, Periductal mastitis, Breast imaging, Ultrasonography, Mammography, Conservative management, Surgical algorithm

Introduction

Mastalgia is among the most frequent symptoms encountered in breast clinics worldwide. The lifetime reported prevalence of breast pain ranges from
40% to 70% among women. Although the majority of cases are benign, breast pain remains a significant source of anxiety for patients because of the fear of malignancy. Non-cyclical mastalgia is particularly important for surgeons because it is more likely to be associated with structural breast abnormalities.
Mammary duct ectasia is a benign condition characterized by dilatation of the subareolar lactiferous ducts accompanied by periductal inflammation and fibrosis. The condition most commonly affects perimenopausal women and may present with retroareolar pain, nipple discharge, or subareolar thickening. The clinical presentation may overlap with inflammatory breast disease or carcinoma, which can create diagnostic uncertainty.

Materials and Methods

Related literature, articles with reviewed along with our institutional experience to make a better treatment algorithm for management of maltalgia associated with mammary duct ectasia.
Following are the key takeaways of similar publications reviewed :
1.**Title:** Mammary Duct Ectasia
Author(s): StatPearls Publishing
2. **Title:** Mammary duct ectasia in adult females: risk factors for the disease
Author(s): Elsharkawy A. *et al.*
3. **Title:** Mastalgia

Author(s): StatPearls Publishing
4. **Title:** Mammary duct ectasia: clinical characteristics and management
Author(s): Various authors (clinical observational literature summaries)
5. **Title:** Mammary Duct Ectasia – Diagnosis and Treatment
Author(s): Mayo Clinic

Mastalgia & Mammary Duct Ectasia – Detailed Publications Table

Title	Author	Focus	Type	Key Takeaway	Clinical Relevance
Mammary Duct Ectasia	StatPearls	Detailed explanation of pathophysiology, subareolar duct dilatation, inflammation and clinical presentation including discharge and pain.	Narrative Review	Benign inflammatory condition; malignancy must always be ruled out before confirming diagnosis.	Forms the conceptual base for diagnosis and structured stepwise management in clinical practice.
Risk Factors Study	Elsharkawy et al.	Evaluates demographic and clinical risk factors such as obesity, parity, lactation and smoking.	Case-Control Study	Strong association between duct ectasia and non-cyclical mastalgia in middle-aged women.	Helps in identifying high-risk patients and supports diagnosis in OPD setting.
Mastalgia	StatPearls	Classification into cyclical and non-cyclical mastalgia with diagnostic and treatment pathways.	Evidence-Based Review	Majority cases benign; reassurance and conservative therapy effective in most patients.	Provides standard algorithm used in exams and real clinical decision-making.
Clinical Characteristics	Various Authors	Describes symptom patterns, imaging findings and response to different treatment modalities.	Observational Study	Stepwise escalation: reassurance to NSAIDs to hormonal therapy in resistant cases.	Reflects real-world management and avoids unnecessary surgical intervention.
Mayo Clinic Guideline	Mayo Clinic	Covers diagnosis, imaging, and practical treatment options including when to operate.	Clinical Guideline	Most cases self-limiting; surgery reserved for persistent discharge or recurrent infection.	Defines clear surgical indications like microdochectomy and total duct excision.

Fig 1:

Epidemiology
Cyclical mastalgia accounts for the majority of breast pain presentations, whereas non-cyclical mastalgia accounts for approximately one quarter of cases. Mammary duct ectasia represents a recognized structural cause of non-cyclical mastalgia. The condition is most commonly observed in multiparous perimenopausal women and has been associated with cigarette smoking and prior episodes of periductal inflammation.

Pathophysiology
The pathogenesis of duct ectasia involves progressive dilatation of the major lactiferous ducts located beneath the areola. Histologically, the dilated ducts contain lipid-laden macrophages and cellular debris. Chronic periductal inflammatory infiltrate composed primarily of lymphocytes and plasma cells leads to fibrosis and duct wall thickening. Over time, ductal obstruction and stagnation of secretions predispose to intermittent infection and inflammation.

Clinical Presentation
Patients commonly present with unilateral retroareolar breast pain that is non-cyclical in nature. Nipple discharge may occur and is typically green, brown, or sticky. Subareolar thickening, nipple inversion, and intermittent inflammatory episodes may also be observed.

Diagnostic Evaluation
A structured diagnostic approach is essential for accurate diagnosis and to exclude malignancy. Clinical evaluation should include detailed history, assessment of pain characteristics, and careful breast examination. Red-flag features suggesting malignancy include bloody nipple discharge, spontaneous discharge from a single duct, palpable mass, or suspicious skin changes.
Targeted ultrasonography is the preferred initial imaging modality in women younger than 40 years. Mammography combined with ultrasound is recommended in women aged 40 years or older. Imaging findings in duct ectasia typically include dilated ducts greater than 3 mm in diameter, intraluminal echogenic debris, and thickened duct walls.

Management
The majority of patients with duct ectasia can be managed conservatively. Initial treatment includes reassurance regarding the benign nature of the condition, use of a supportive brassiere, smoking cessation, and topical or oral non-steroidal anti-inflammatory drugs.
Antibiotics should be reserved for patients with clinical evidence of periductal mastitis. In cases where symptoms persist despite adequate conservative therapy, medical options such as evening primrose oil may be considered.
Surgical intervention is indicated in patients with persistent troublesome nipple discharge, recurrent infection, or diagnostic uncertainty. Microdochectomy is preferred in patients with pathological discharge arising from a single duct, while total duct excision (Hadfield procedure) is performed in patients with multiduct involvement.

Detailed Management Algorithm
The detailed clinical management pathway is illustrated in Figure below:

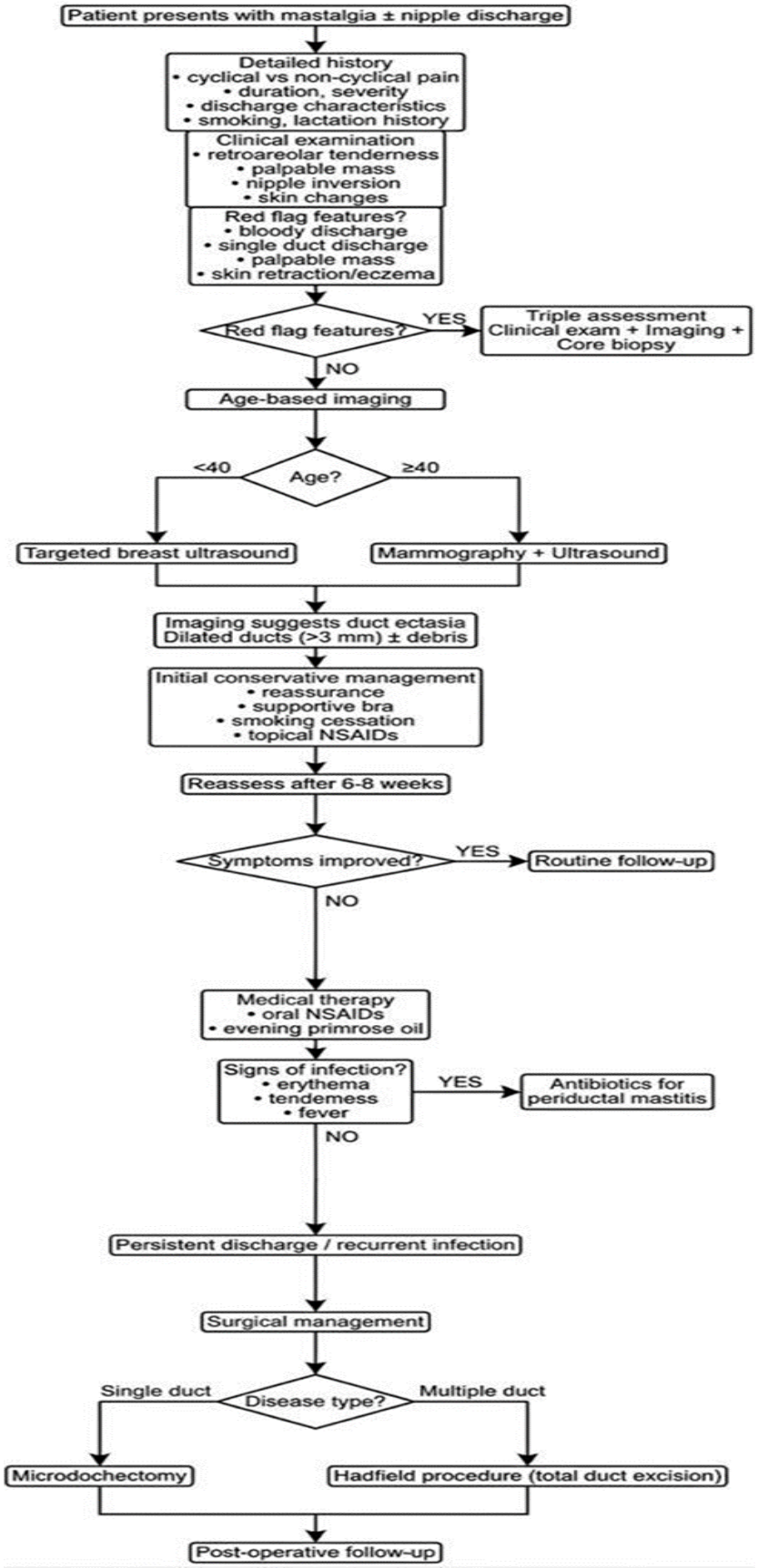
Patient presents with mastalgia ± nipple discharge
Detailed history
• cyclical vs non-cyclical pain
• duration, severity
• discharge characteristics
• smoking, lactation history
Clinical examination
• retroareolar tenderness
• palpable mass
• nipple inversion
• skin changes
Red flag features?
• bloody discharge
• single duct discharge
• palpable mass
• skin retraction/eczema
Red flag features?
YES
Triple assessment
Clinical exam + Imaging + Core biopsy
NO
Age-based imaging
Age?
<40
≥40
Targeted breast ultrasound
Mammography + Ultrasound
Imaging suggests duct ectasia
Dilated ducts (>3 mm) ± debris
Initial conservative management
• reassurance
• supportive bra
• smoking cessation
• topical NSAIDs
Reassess after 6-8 weeks
Symptoms improved?
YES
Routine follow-up
NO
Medical therapy
• oral NSAIDs
• evening primrose oil
Signs of infection?
• erythema
• tenderness
• fever
YES
Antibiotics for periductal mastitis
NO
Persistent discharge / recurrent infection
Surgical management
Single duct
Disease type?
Multiple duct
Microdochectomy
Hadfield procedure (total duct excision)
Post-operative follow-up

Fig 2:

Discussion

Mastalgia remains a common clinical problem encountered in surgical outpatient practice. Although the majority of cases are benign, the symptom often causes significant patient anxiety because of the perceived association with breast cancer. Studies have consistently demonstrated that isolated breast pain rarely represents malignancy; however, careful evaluation is necessary to exclude suspicious features.

Mammary duct ectasia represents an important benign structural cause of non-cyclical mastalgia. The condition results from dilatation of the lactiferous ducts accompanied by periductal inflammation and fibrosis. The presence of ductal debris and chronic inflammation may lead to nipple discharge, pain, and recurrent episodes of periductal infection.

A systematic clinical approach is essential to avoid unnecessary investigations and inappropriate therapy. Age-based imaging strategies, combined with careful assessment of red-flag symptoms, allow clinicians to identify patients requiring further investigation.

In most patients, conservative treatment is sufficient to achieve symptom control. Supportive brassiere use and non-steroidal anti-inflammatory drugs remain the cornerstone of therapy. Antibiotics should be reserved for patients with evidence of periductal infection rather than used routinely.

Surgical management is reserved for a minority of patients who experience persistent symptoms or recurrent pathological nipple discharge. Microdochectomy and total duct excision remain effective surgical options with high rates of symptom resolution.

Conclusion

Mammary duct ectasia is an important benign cause of non-cyclical mastalgia. A structured clinical algorithm incorporating careful clinical evaluation, appropriate imaging, and stepwise management can significantly improve patient outcomes while reducing unnecessary interventions.

References

1. StatPearls Publishing. Mammary duct ectasia. Treasure Island (FL): StatPearls Publishing.
2. Elsharkawy A, *et al*. Mammary duct ectasia in adult females: risk factors for the disease.
3. StatPearls Publishing. Mastalgia. Treasure Island (FL): StatPearls Publishing.
4. Mammary duct ectasia: clinical characteristics and management. Various authors; clinical observational literature summaries.
5. Mayo Clinic. Mammary duct ectasia: diagnosis and treatment.
6. Hamwi MW, *et al*. Mammary duct ectasia. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2023.
7. Current understanding and management of plasma cell mastitis. Breast Care (Karger).
8. Mohammed AA, *et al*. Mammary duct ectasia in adult females: risk factors. 2021.
9. Cleveland Clinic. Mammary duct ectasia. 2023 update.
10. Peters F, *et al*. Severity of mastalgia in relation to milk duct dilatation. 2003.

How to Cite This Article

Manhas H, Rahi R, Sinha A. Clinical algorithm for the management of mastalgia associated with mammary duct ectasia: a narrative review with institutional perspective. International Journal of Medical and All Body Health Research. 2026;7(2):206–209.
doi:10.54660/IJMBHR.2026.7.2.206-209.