

Clinicopathological Assessment of Breast Lump Biopsies in Patients Presenting to General Surgery Outpatient Services: A Cross-Sectional Observational Study.

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Dr. Thirupathi Thorram^{1*}, Dr. Banothu Prudhvi Raj²¹Assistant Professor, Department of Pathology, Government Medical College and Government General Hospital, Bhadradi Kothagudem, Telangana, India²Assistant Professor, Department of General Surgery, Government Medical College and Government General Hospital, Bhadradi Kothagudem, Telangana, India

Abstract

Background:

A breast lump is one of the most common reasons for surgical outpatient consultation. Although most palpable breast lesions are benign, histopathological confirmation remains essential because clinical features overlap between benign, inflammatory, and malignant conditions.

Objectives:

To assess the clinicopathological profile of breast lump biopsies among patients presenting to general surgery outpatient services and to determine the distribution of benign, inflammatory, and malignant lesions.

Methods:

This hospital-based cross-sectional observational study included 50 patients with clinically evident breast lumps who underwent biopsy. Demographic details, clinical presentation, lump characteristics, biopsy procedure, and histopathological diagnosis were recorded and analyzed using descriptive statistics.

Results:

The mean age was 39.8 ± 13.6 years. Most patients were aged 31–40 years, and females constituted 96% of cases. The upper outer quadrant was the commonest site. Most lumps measured 2–5 cm. Core needle biopsy was the most frequently performed procedure. Benign lesions were observed in 68%, inflammatory lesions in 4%, and malignant lesions in 28%. Fibroadenoma was the leading diagnosis, followed by invasive ductal carcinoma and fibrocystic change. Malignancy was more frequent after 40 years of age.

Conclusion:

Benign breast lesions formed the major clinicopathological category, with fibroadenoma as the predominant diagnosis. Nevertheless, a substantial malignant fraction highlights the need for systematic clinical assessment and tissue diagnosis in all breast lump cases.

Recommendations:

Early outpatient evaluation, appropriate imaging, timely biopsy, and structured histopathology reporting should be strengthened to improve diagnostic accuracy and clinical decision-making.

Keywords: Breast lump; Biopsy; Fibroadenoma; Histopathology; Invasive ductal carcinoma; General surgery

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Corresponding author: Dr. Thirupathi Thorram

Email: tiru2tiru@gmail.com

Assistant Professor, Department of Pathology, Government Medical College and Government General Hospital, Bhadradi Kothagudem, Telangana, India

Introduction

Breast lump is a frequent clinical presentation in general surgery outpatient practice and remains a source of considerable anxiety for patients and families. The differential diagnosis includes a broad range of benign, inflammatory, premalignant, and malignant conditions. Fibroadenoma, fibrocystic change, duct ectasia, inflammatory mastitis, phyllodes tumour, ductal carcinoma in situ, and invasive carcinoma are among the commonly encountered entities. Because several of these lesions present as palpable masses, clinical examination alone is not sufficient for definitive diagnosis [1,2].

Benign breast diseases are more common than malignant breast lesions in symptomatic outpatient settings. They commonly affect women in the reproductive age group and frequently present with a mobile lump, mastalgia, nodularity, or nipple discharge. Fibroadenoma is widely described as one of the most common benign breast tumours, while fibrocystic change represents a frequent non-neoplastic alteration of breast tissue [3,4]. However, benign presentation does not remove the need for careful evaluation, especially when lesions are large, rapidly enlarging, recurrent, fixed, or associated with skin, nipple, or axillary findings.

The clinical relevance of breast lump evaluation has increased further because breast cancer continues to be a major public health concern worldwide and in India. Current global cancer estimates identify breast cancer as a leading malignancy among women, and Indian data also show a rising burden requiring better early detection and diagnostic services [5,6]. In routine surgical practice, delayed presentation, limited awareness, fear of malignancy, and variable access to imaging and pathology services influence outcomes. Therefore, outpatient-based clinicopathological studies are useful for identifying local disease patterns and strengthening referral pathways.

A structured diagnostic approach is usually based on clinical examination, imaging, and pathological confirmation. Core needle biopsy, fine-needle aspiration cytology, and excision biopsy are selected according to clinical suspicion, lesion size, imaging findings, and resource availability. Previous studies have supported the value of combined clinical, radiological, and tissue assessment in palpable breast masses, with core biopsy providing reliable preoperative histological diagnosis in suspicious lesions [5-8]. Histopathology remains important not only for distinguishing benign from malignant disease but also for

subclassifying lesions such as phyllodes tumours, granulomatous mastitis, ductal carcinoma in situ, and invasive carcinoma [9-12].

The present study was undertaken with the objective of assessing the clinicopathological profile of breast lump biopsies among patients presenting to the general surgery outpatient services at Government Medical College Bhadradi Kothagudem, Telangana, India. The specific objectives were to describe the demographic and clinical characteristics of patients with breast lumps, document the type of biopsy performed, determine the histopathological spectrum of lesions, and analyze the broad distribution of benign, inflammatory, and malignant breast lesions in the study population.

Methodology

Study design

This was a hospital-based cross-sectional observational study conducted among patients presenting with a clinically palpable breast lump. The study was planned to describe the clinical presentation, biopsy approach, and histopathological spectrum of breast lump cases evaluated in general surgery outpatient services.

Study setting

The study was conducted at Government Medical College and Government General Hospital, Bhadradi Kothagudem, Telangana, India, a government teaching hospital providing outpatient and inpatient surgical care to patients from district, rural, and semi-urban populations. The Department of General Surgery was involved in outpatient evaluation, clinical assessment, biopsy planning, and biopsy procedures, while the Department of Pathology was responsible for tissue processing, microscopic examination, and histopathological reporting. The study period extended from July 2025 to December 2025.

Study population

The source population comprised patients attending the general surgery outpatient department with a clinically palpable breast lump during the study period. The study population included eligible patients who underwent biopsy for histopathological confirmation and had complete clinical and pathology records available for analysis.

Participant selection and eligibility criteria

All consecutive patients of either sex with a discrete clinically palpable breast lump who underwent biopsy during the study period were considered for inclusion. Inclusion criteria were: patients presenting with a breast lump identified on clinical examination; patients who underwent core needle, excision, or incisional biopsy; and patients with available histopathological diagnosis. Exclusion criteria were: patients who did not undergo biopsy, patients with incomplete clinical or histopathological records, and patients already receiving treatment for a previously diagnosed breast malignancy.

Study size

The study size was based on consecutive enrolment of all eligible breast lump biopsy cases during the predefined six-month study period. A total of 50 patients fulfilled the eligibility criteria and were included in the final analysis. Because the study was descriptive and institution-based, the sample size was justified by the available biopsy workload within the study period and was intended to document the local clinicopathological distribution rather than test a treatment effect.

Clinical assessment

All patients were evaluated using a structured clinical proforma. Demographic details such as age and gender were recorded. Clinical variables included duration of lump, laterality, quadrant or anatomical site, lump size, pain, nipple discharge, skin or nipple changes, and palpable axillary lymph nodes. Clinical examination was performed systematically to document size, mobility, tenderness, skin involvement, nipple changes, and regional lymph node status. Findings were used to guide the choice of biopsy procedure and further management.

Biopsy procedure and histopathological evaluation

Biopsy was performed according to clinical indication, lump characteristics, and surgeon discretion. Core needle biopsy was preferred for suspicious or larger lesions, while excision biopsy was used mainly for smaller, clinically benign, mobile lumps. Incisional biopsy was reserved for selected large or locally suspicious lesions. Tissue specimens were fixed in formalin and processed using routine histopathological methods. Sections were stained with haematoxylin and eosin. Histopathological diagnosis was

reported by the pathology department and categorized as benign, inflammatory, or malignant. Diagnoses included fibroadenoma, fibrocystic change, phyllodes tumour, duct ectasia, intraductal papilloma, lactating adenoma, mastitis, ductal carcinoma in situ, invasive ductal carcinoma, and invasive lobular carcinoma.

Bias

Potential selection bias was minimized by including consecutive eligible patients who underwent biopsy during the study period. Information bias was reduced by using a structured proforma for clinical data collection and by relying on histopathological confirmation for final diagnosis. Classification bias was minimized by grouping lesions according to pathology reports into benign, inflammatory, and malignant categories. Data-entry errors were limited by checking records for completeness before analysis. Since this was a single-centre descriptive study, referral and institutional practice patterns may still influence the observed distribution.

Data management and statistical analysis

Data were entered into a spreadsheet and checked for completeness before analysis. Descriptive statistics were used because the study aimed to document clinicopathological distribution rather than test an intervention. Continuous variables were summarized as mean and standard deviation. Categorical variables were presented as frequency and percentage. Results were arranged in tabular form to show demographic distribution, clinical features, biopsy procedure, pathological category, and histopathological diagnosis.

Ethical considerations and informed consent

Ethical approval was obtained from the Institutional Ethics Committee, Government Medical College and Government General Hospital, Bhadradi Kothagudem, Telangana, India. Written informed consent was obtained from participants before biopsy and use of anonymized clinical data for research purposes. Patient confidentiality was maintained throughout data collection and analysis by removing direct identifiers from the dataset. No patient-identifying details were included in the manuscript. Biopsy was performed as part of standard diagnostic care, and clinical management decisions were not altered for the purpose of this study.

Results

Participant flow

During the study period, 50 patients presenting with a clinically palpable breast lump were screened in the general surgery outpatient department. All 50 patients fulfilled the eligibility criteria and underwent biopsy. No patient was excluded after eligibility assessment because no incomplete records or previously treated breast malignancy was identified among the analysed cases. Therefore, 50 patients were included in the final analysis.

A total of 50 patients presenting with a breast lump to the general surgery outpatient services were included in the study. The mean age of the study population was 39.8 ± 13.6 years. Most patients were in the 31–40 years age group, followed by the 41–50 years age group. Females constituted the majority of cases. The left breast was slightly more commonly involved than the right breast, while bilateral breast lumps were observed in a small proportion of patients (Table 1).

Table 1. Baseline Demographic and Presentation Profile of Patients With Breast Lump

Variable	Category	Frequency (n)	Percentage (%)
Age group	≤20 years	3	6.0
	21–30 years	10	20.0
	31–40 years	13	26.0
	41–50 years	12	24.0
	51–60 years	8	16.0
	>60 years	4	8.0
Gender	Female	48	96.0
	Male	2	4.0
Duration of lump	<1 month	8	16.0
	1–3 months	21	42.0
	4–6 months	12	24.0
	>6 months	9	18.0
Laterality	Right breast	22	44.0
	Left breast	24	48.0
	Bilateral	4	8.0

Note. Percentages are based on the total sample (n = 50).

The upper outer quadrant was the most common site of breast lump. Most lesions measured between 2 and 5 cm at presentation. Pain was reported in 36% of patients, whereas nipple discharge, skin or nipple changes, and palpable axillary lymph nodes were less frequent clinical findings. Palpable axillary nodes were observed in 18% of cases, suggesting the need for careful nodal assessment during routine outpatient examination (Table 2).

Table 2. Clinical Characteristics of Breast Lumps

Clinical variable	Category	Frequency (n)	Percentage (%)
Site of lump	Upper outer quadrant	24	48.0
	Upper inner quadrant	7	14.0
	Lower outer quadrant	6	12.0
	Lower inner quadrant	5	10.0
	Central/retroareolar region	8	16.0
Lump size	<2 cm	12	24.0
	2–5 cm	30	60.0
	>5 cm	8	16.0
Pain	Present	18	36.0
	Absent	32	64.0
Nipple discharge	Present	6	12.0
	Absent	44	88.0
Skin/nipple changes	Present	7	14.0
	Absent	43	86.0
Palpable axillary nodes	Present	9	18.0
	Absent	41	82.0

Note. Percentages are based on the total sample (n = 50).

Core needle biopsy was the most frequently performed biopsy procedure, followed by excision biopsy. Incisional biopsy was used in a small number of patients with large or clinically suspicious lesions. On broad pathological classification, benign breast lesions were predominant, accounting for 68% of cases. Malignant lesions were reported in 28%, while inflammatory lesions were seen in 4% (Table 3).

Table 3. Biopsy Procedure and Broad Clinicopathological Category

Variable	Category	Frequency (n)	Percentage (%)
Type of biopsy	Core needle biopsy	32	64.0
	Excision biopsy	15	30.0
	Incisional biopsy	3	6.0
Pathological category	Benign lesions	34	68.0
	Inflammatory lesions	2	4.0
	Malignant lesions	14	28.0

Note. Percentages are based on the total sample (n = 50).

Fibroadenoma was the most common histopathological diagnosis, followed by invasive ductal carcinoma and fibrocystic change. Among malignant lesions, invasive ductal carcinoma constituted the major proportion. Benign lesions were more frequent in younger patients, whereas malignant lesions were more commonly seen after 40 years

of age. The presence of ductal carcinoma in situ, invasive lobular carcinoma, and malignant phyllodes tumour as individual diagnoses further supported the importance of tissue confirmation in clinically palpable breast lesions (Table 4).

Table 4 *Histopathological Diagnosis of Breast Lump Biopsies*

Histopathological diagnosis	Pathological category	Frequency (n)	Percentage (%)
Fibroadenoma	Benign	18	36.0
Fibrocystic change	Benign	7	14.0
Benign phyllodes tumour	Benign	3	6.0
Duct ectasia	Benign	2	4.0
Intraductal papilloma	Benign	2	4.0
Lactating adenoma	Benign	2	4.0
Chronic mastitis/abscess	Inflammatory	1	2.0
Granulomatous mastitis	Inflammatory	1	2.0
Invasive ductal carcinoma, NST	Malignant	11	22.0
Invasive lobular carcinoma	Malignant	1	2.0
Ductal carcinoma in situ	Malignant	1	2.0
Malignant phyllodes tumour	Malignant	1	2.0
Total	—	50	100.0

Note. NST = no special type. Percentages are based on the total sample (n = 50).

Overall, benign breast lesions formed the major clinicopathological group among patients presenting with a breast lump. Fibroadenoma was the leading diagnosis, particularly in younger women. However, a clinically important proportion of malignant lesions was identified, emphasizing the need for careful clinical assessment and histopathological confirmation in all breast lump cases.

Discussion

The present cross-sectional observational study assessed 50 breast lump biopsy cases from general surgery outpatient services. The mean age was 39.8 ± 13.6 years, and the largest proportion belonged to the 31–40 years age group. This distribution reflects the mixed pathology of breast

lumps, with benign lesions clustering in younger adults and malignant lesions increasing with age. Earlier studies have similarly reported fibroadenoma as a frequent diagnosis in young women presenting with palpable breast lesions.

Females constituted 96% of cases, while two male patients also presented with a breast lump. Although breast lump evaluation is usually centred on women, male breast lesions require careful assessment because benign and malignant entities occur in this group. The upper outer quadrant was the commonest site, which is anatomically consistent with the larger volume of glandular tissue in that region. Most lesions measured 2–5 cm, and the commonest symptom duration was 1–3 months.

Pain was documented in 36% of patients, while nipple discharge, skin or nipple changes, and palpable axillary nodes were less frequent. These findings show that clinical appearance alone cannot reliably classify breast lesions. Triple assessment, integrating clinical examination, imaging, and pathology, has been recommended for palpable breast masses, especially when clinical suspicion persists or when features are discordant [7,8].

Core needle biopsy was the leading diagnostic procedure in this series, accounting for 64% of cases. This supports current diagnostic practice because core biopsy preserves tissue architecture and assists preoperative planning. Published evidence has shown high diagnostic performance of core biopsy in palpable breast cancers, and modified triple assessment studies have emphasized the value of ultrasound combined with core needle biopsy [9,10]. Excision biopsy remained useful for selected small and clinically benign lesions.

Benign lesions constituted 68% of cases, malignant lesions 28%, and inflammatory lesions 4%. Fibroadenoma was the most common diagnosis, followed by invasive ductal carcinoma and fibrocystic change. Comparable clinicopathological studies have also reported fibroadenoma as the dominant benign lesion among breast lump biopsies [2,13,14]. The malignant group was led by invasive ductal carcinoma, no special type, which agrees with established breast carcinoma pathology [10].

The detection of ductal carcinoma in situ, invasive lobular carcinoma, malignant phyllodes tumour, benign phyllodes tumour, and granulomatous mastitis demonstrates the broad histological spectrum of breast lumps [9,11,12]. In the Indian context, increasing breast cancer burden and delayed clinical presentation strengthen the need for early outpatient evaluation, biopsy-based diagnosis, and prompt referral for oncological management.

Generalizability

The findings are relevant to tertiary-care and district-level surgical outpatient settings where breast lump evaluation commonly begins, particularly in government medical colleges serving mixed rural and semi-urban populations. Since this was a single-centre study with 50 patients over six months, the results best represent comparable institutional settings. Broader application requires multicentre studies with larger samples, imaging correlation, receptor profiling, treatment linkage, long-term clinical follow-up, and regional cancer registry comparison.

Conclusion

This observational study showed that benign breast lesions constituted the major clinicopathological category among patients presenting with breast lump to general surgery outpatient services. Fibroadenoma was the most common diagnosis, followed by invasive ductal carcinoma and fibrocystic change. Malignant lesions were observed in more than one-fourth of biopsy cases and were more frequent after 40 years of age. Core needle biopsy was the most commonly used diagnostic procedure. The findings underline the importance of structured clinical examination, appropriate biopsy selection, and histopathological confirmation. Early diagnosis supports reassurance for benign lesions, proper surgical planning, prompt oncological referral, and better patient counselling for malignant disease.

Limitations

This study was limited by its single-centre design, small sample size, and short six-month duration. Imaging findings, BI-RADS categories, hormone receptor status, treatment details, and follow-up outcomes were not analyzed. The absence of inferential statistical testing restricts causal interpretation. Selection was confined to patients who underwent biopsy, limiting representation of conservatively managed breast lumps, screening-detected lesions, and community-level disease patterns.

Recommendations

General surgery outpatient services should follow a structured breast lump evaluation protocol that includes clinical examination, age-appropriate imaging, and timely tissue diagnosis. Core needle biopsy should be preferred for suspicious or larger lesions, while excision biopsy should be reserved for selected clinically benign and removable lumps. Women above 40 years, patients with axillary nodes, skin or nipple changes, rapidly enlarging masses, or lesions larger than 5 cm require priority evaluation. Hospitals should maintain a breast lump registry with histopathology correlation to monitor disease trends, improve referral pathways for oncology care, reduce diagnostic delay, and support periodic clinical audit.

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Abbreviations

BI-RADS: Breast Imaging Reporting and Data System
 DCIS: Ductal carcinoma in situ
 FNAC: Fine-needle aspiration cytology
 NST: No special type
 OPD: Outpatient department

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Conflict of interest

The authors declare no conflict of interest.

Author contributions

TT-Concept and design of the study, results interpretation, review of literature, and preparing the first draft of the manuscript. Statistical analysis and interpretation, revision of the manuscript.

BPR -Results interpretation, review of literature, and preparing the first draft of the manuscript, revision of the manuscript.

Data availability

Data available on request

Author Biography

Dr. Thirupathi Thorram is an Assistant Professor in the Department of Pathology at Government Medical College and Government General Hospital, Bhadradi Kothagudem, Telangana, India. He is actively involved in diagnostic pathology services, undergraduate medical teaching, and academic research. His areas of professional interest include histopathology, cytopathology, clinicopathological correlation, and laboratory-based evaluation of disease patterns.

Dr. Banothu Prudhvi Raj is an Assistant Professor in the Department of General Surgery at Government Medical College and Government General Hospital, Bhadradi Kothagudem, Telangana, India. He is engaged in surgical patient care, undergraduate medical teaching, and clinical research. His academic interests include general surgical

diseases, biopsy-based clinical evaluation, perioperative care, and outcomes research in general surgery.

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