



ORIGINAL RESEARCH PAPER

General Surgery

A PROSPECTIVE STUDY OF EPIDEMIOLOGY, ASSESSMENT AND OUTCOMES OF PALPABLE BREAST LUMP

KEY WORDS: Palpable Breast Lump, Fibroadenoma, Triple Assessment

Vanisha Uppal	Junior Resident, Department of General Surgery, GMC Patiala, Punjab
Manpreet Walia*	Associate Professor Department of Ophthalmology, GMC Patiala, Punjab.*Correspondence Author
Darshanjit Singh Walia	Professor, Department of General Surgery, GMC Patiala, Punjab
Anand Singla	Assistant Professor, Department of General Surgery, GMC Patiala, Punjab
Anita Mishra	Senior Resident, Department of General Surgery, GMC Patiala, Punjab.
SR Rajeev	Junior Resident, Department Of General Surgery, Gmc Patiala, Punjab.
ABSTRACT	Background:Palpable breast lumps are a common clinical presentation and a major source of anxiety due to the possibility of malignancy. Early and accurate evaluation is essential for optimal management.Methods:This prospective observational study was conducted in the Department of General Surgery, Government Medical College and Rajindra Hospital, Patiala, from March 2024 to February 2026. A total of 100 patients presenting with palpable breast lumps were evaluated using triple assessment, including clinical examination, radiological imaging, and pathological evaluation. Epidemiological characteristics, diagnostic findings, histopathological diagnoses, and management outcomes were analyzed.Results: The mean age was 39.8±16.3 years, with females comprising 94% of cases. Benign lesions predominated (59%), with fibroadenoma being the most common diagnosis (44%), while invasive ductal carcinoma was the commonest malignant lesion (30%). FNAC showed 96.1% concordance with histopathology. Triple assessment demonstrated high diagnostic accuracy. Malignancy was significantly associated with advancing age, hard consistency, fixation, nipple retraction, skin changes, and axillary lymphadenopathy.Conclusion: Benign breast lesions are more common than malignant lesions among patients with palpable breast lumps. Triple assessment is a reliable diagnostic approach, facilitating early diagnosis and appropriate management, thereby improving patient outcomes.
INTRODUCTION Breast lumps are one of the most common complaints encountered in surgical and general practice, causing significant anxiety among women due to the fear of malignancy. More than 25% of women are affected by breast disease during their lifetime, and most present with a newly detected breast lump. Fortunately, the majority of palpable breast lumps are benign, while breast cancer is diagnosed only in a smaller proportion of cases. However, the risk of malignancy increases with advancing age, making early diagnosis and proper evaluation essential.[1] Breast cancer remains a major public health challenge worldwide and is one of the leading causes of cancer-related mortality among women. In India, although the incidence of breast cancer is lower compared to developed countries, the overall burden and mortality remain high because of the large population, inadequate screening programs, delayed presentation, and lack of awareness. Breast cancer has now overtaken cervical cancer as the most common cancer among Indian women. In addition to malignant lesions, benign breast diseases also contribute significantly to breast-related complaints and often create diagnostic confusion because of overlapping clinical and pathological features.[2] Accurate history taking and clinical examination remain important in the evaluation of breast disease. Triple assessment, which includes clinical examination, radiological imaging, and pathological evaluation, is considered the gold standard approach for assessing palpable breast lumps. Investigations such as ultrasonography, mammography, fine needle aspiration cytology (FNAC), and histopathological examination help in differentiating benign from malignant lesions and guide further management. Early detection of breast lesions, especially malignant ones, is associated with better prognosis and improved treatment outcomes, whereas delayed diagnosis may lead to advanced disease and	increased mortality.[3] In view of the increasing burden of breast diseases and the importance of early diagnosis, the present study was undertaken to prospectively evaluate the epidemiology, assessment, and outcomes of palpable breast lumps in patients attending a tertiary care centre. MATERIAL AND METHODS Study Design and Setting This prospective observational study was conducted in the Department of General Surgery, Government Medical College and Rajindra Hospital, Patiala, to study the epidemiology, assessment, and outcomes of palpable breast lumps. The study was carried out over a period of two years, from 1st March 2024 to 28th February 2026, during the postgraduate training period as a part of thesis work. Patients presenting to the surgical outpatient department (OPD) with palpable breast lumps and fulfilling the inclusion criteria were enrolled in the study after obtaining valid informed consent. Source of Data The data for the present study was obtained from patients attending the outpatient department of Government Medical College and Rajindra Hospital, Patiala, during the study period. All eligible patients presenting with breast lumps were evaluated clinically and investigated further according to the study protocol. Study Population The study included a total of 100 patients presenting with palpable breast masses or lumps to the Department of General Surgery. Patients of all age groups and both sexes were included in the study. Only those patients who provided valid written informed consent were enrolled. Inclusion Criteria

1. Patients of all age groups.
2. Both male and female patients.
3. Patients presenting with palpable breast lumps detected by self-breast examination (SBE), clinical breast examination (CBE), or during routine evaluation.
4. Patients willing to participate and providing valid informed consent.

Exclusion Criteria

1. Patients not willing to participate in the study.
2. Patients who did not provide informed consent.

Sample Size Calculation

The sample size for the present study was calculated using the standard formula for estimating prevalence in observational studies:

$$n = (Z^2 \times p \times q) / d^2$$

Where, n = required sample size
 Z = standard normal deviate at 95% confidence interval (1.96)
 p = prevalence from previous study
 q = 1 - p
 d = allowable error

Based on the study conducted by Singh G et al. (2020), the prevalence of malignant breast lumps among patients presenting with breast lumps was reported to be 45.2%. Therefore, p = 0.452 and q = 0.548. Considering an allowable error of 10%, the calculated sample size was approximately 95 patients. To improve feasibility and ensure better statistical analysis, a final sample size of 100 patients was included in the study.

Data Collection and Methodology

Detailed clinical history was obtained from all patients, including presenting complaints, duration of symptoms, associated symptoms, past medical and surgical history, and relevant personal history. A thorough general physical examination and local breast examination were performed in all patients. Data was collected using a pre-structured questionnaire designed specifically for the study.

All patients underwent triple assessment comprising clinical examination, radiological evaluation, and pathological assessment. Radiological investigations included ultrasonography, mammography, or sonomammography as indicated. Pathological evaluation was performed using fine needle aspiration cytology (FNAC) and/or core needle biopsy (CNB). Histopathological examination findings, nature of the lesion, type of surgical intervention performed, and postoperative histopathological outcomes were also recorded and analyzed.

Statistical Analysis

The collected data was compiled, tabulated, and statistically analyzed using Statistical Package for Social Sciences (SPSS) software version 20.0 (Chicago, Illinois, USA). The results were expressed using appropriate descriptive and inferential statistical methods. Categorical variables were analyzed using chi-square test, while Student's t-test and other suitable statistical tests were applied wherever required. Statistical significance was assessed accordingly.

Ethical Considerations

Ethical clearance for the study was obtained from the Institutional Ethics Committee prior to commencement of the study. Written informed consent was obtained from all participants after explaining the purpose and methodology of the study. Confidentiality and privacy of patient information were maintained throughout the study period.

OBSERVATIONS

A total of 100 consecutive patients presenting with palpable breast lumps were included in this prospective observational study conducted in the Department of General Surgery, Government Medical College and Rajindra Hospital, Patiala.

Detailed demographic, clinical, radiological, cytological, histopathological and management-related data were collected and analyzed according to the study objectives.

Epidemiological Profile

The mean age of the study population was 39.8 ± 16.3 years, with ages ranging from 12 to 77 years. Females constituted the majority of the study population. The most commonly affected age group was 31–40 years. Most patients belonged to the lower middle and upper lower socioeconomic classes. Married women and housewives formed the predominant groups in the cohort. Among female patients, premenopausal women constituted the majority and most had a lactation duration of 3–6 years. The majority of patients had no significant surgical history or associated comorbid illness. Most patients were residents of Patiala district, reflecting the tertiary referral status of the institution.

Table 1: Epidemiological Characteristics Of Study Population (n=100)

Variable	Most Common Finding	n (%)
Age group	31–40 years	24(24.0%)
Sex	Female	94(94.0%)
Socioeconomic status	Lower middle class	37(37.0%)
Marital status	Married	78(78.0%)
Occupation	Housewife	69(69.0%)
Menopausal status	Premenopausal	64(68.1%)
Lactation duration	3–6 years	56(59.6%)
Geographic distribution	Patiala district	69(69.0%)

Clinical and Radiological Assessment

Progressively increasing lump size was the most frequent presenting complaint followed by cyclical or non-cyclical breast pain. Nipple discharge and weight loss were comparatively less common symptoms. The left breast was more commonly involved than the right breast, and the upper outer quadrant was the predominant site of involvement. Most patients presented with a single lump having a smooth surface and regular margins.

Radiological assessment using sonomammography was performed in the majority of patients. BI-RADS III was the most frequent formal BI-RADS category, while BI-RADS V lesions demonstrated complete correlation with malignant histopathology. FNAC showed high diagnostic concordance with histopathological findings, with no false-positive results observed in the present study. Triple assessment demonstrated excellent diagnostic accuracy when all three components were concordant.

Table 2: Clinical, Cytological and Radiological Findings (N=100)

Parameter	Observation
Most common symptom	Increasing lump size –72%
Most common quadrant	Upper outer quadrant –46%
Most common side involved	Left breast – 60%
Most common surface	Smooth – 79%
Most common FNAC diagnosis	Fibroadenoma / benign fibroepithelial lesion
Overall FNAC concordance	96.1%
Most common BI-RADS category	BI-RADS III
BI-RADS V PPV	100%
Triple assessment concordance	77.4%

Histopathological Diagnosis and Outcomes

Benign lesions predominated overall, with fibroadenoma being the most common final histopathological diagnosis. Invasive ductal carcinoma (IDC) was the most common malignant lesion. Malignancy increased significantly with advancing age, particularly in patients above 50 years. Malignant lesions were significantly associated with hard

consistency, irregular margins, fixation, skin changes, nipple retraction, and axillary lymphadenopathy.

Surgical excision was the most frequently performed procedure, predominantly for benign lesions, while modified radical mastectomy (MRM) was performed exclusively in malignant cases. Conservative management was adopted in selected benign and clinically stable patients.

Table 3: Histopathological Diagnosis and Management Outcomes (N=100)

Variable	Most Common Finding	n (%)
Most common benign lesion	Fibroadenoma	44(44.0%)
Most common malignant lesion	IDC breast	30(30.0%)
Overall benign lesions	—	59(59.0%)
Overall malignant lesions	—	31(31.0%)
Most common management modality	Surgical excision	55(55.0%)
Patients undergoing MRM	Confirmed malignant cases	27(27.0%)
Significant predictors of malignancy	Hard consistency, fixation, nipple retraction, axillary lymphadenopathy	p<0.001

DISCUSSION

The present study evaluated 100 patients with palpable breast lumps and demonstrated that benign breast lesions were more common than malignant lesions, with fibroadenoma 44(44.0%) being the most common histopathological diagnosis, followed by invasive ductal carcinoma (IDC) 30(30.0%). Similar findings were observed in the studies conducted by Rita Yadav et al. [4] and N Lingaraju et al. [5], where fibroadenoma was also reported as the most common benign lesion and IDC as the predominant malignant pathology. However, the proportion of malignant lesions in the study by Rita Yadav et al. [4] was higher 26(61.9%) compared to the present study 31(31.0%), possibly due to selective inclusion of clinically suspicious lesions.

In the present study, the mean age was 39.8 ± 16.3 years and the most commonly affected age group was 31–40 years. This finding was comparable with Rita Yadav et al. [4], where most patients belonged to the 31–50-year age group 33(78.6%). Female predominance was observed in all studies. The left breast was more commonly involved in the present study 60(60.0%), whereas right-sided predominance was observed in Rita Yadav et al. [4] 24(57.1%) and N Lingaraju et al. [5] 42(52%). The upper outer quadrant was the most commonly involved site in all three studies.

The present study demonstrated high diagnostic accuracy of triple assessment, with FNAC concordance of 96.1% and triple assessment concordance of 77.4%. Similar observations were reported by N Lingaraju et al. [5], where FNAC showed concordance of 97.3%, sensitivity of 98.5%, and specificity of 97.1%. Radiological assessment also showed excellent predictive value in both studies, particularly in higher BI-RADS categories. Clinical features such as hard consistency, irregular margins, fixation, skin changes, nipple retraction, and axillary lymphadenopathy showed significant association with malignancy in the present study, correlating well with the observations of previous studies.

CONCLUSION

Palpable breast lumps were more common in females and predominantly affected younger and middle-aged patients. Benign lesions, especially fibroadenoma, constituted the majority of cases, while invasive ductal carcinoma was the most common malignant lesion. The risk of malignancy increased with advancing age. Triple assessment comprising

clinical examination, radiological imaging, and FNAC showed high diagnostic accuracy in evaluating breast lumps. Clinical features such as hard consistency, fixation, nipple retraction, skin changes, and axillary lymphadenopathy were significantly associated with malignancy. Early diagnosis and appropriate management are essential for improving patient outcomes and reducing morbidity associated with breast cancer.

REFERENCES

1. Malherbe F, Nel D, Molabe H, Cairncross L, Roodt L. Palpable breast lumps: An age-based approach to evaluation and diagnosis:15 Available from <https://pmc.ncbi.nlm.nih.gov/articles/PMC9575372/pdf/SAFP-64-5571.pdf>
2. Sahu A, Jauhari A, Suresh K. Epidemiological Study of Breast Lump Cases. Int J Contemp Surg. 2019;7(1):14.
3. Cornelius G, Onesmus M, John N, Molly M. Prevalence and Patterns of Breast Lesions among Women Presenting with Palpable Breast Lumps at Kiambu Level 5 Hospital in Kiambu County, Kenya. Int Res J Oncol [Internet]. 2026;9(1):2030. Available from <https://journalirjo.com/index.php/IRJO/article/view/194/424>
4. Yadav R, Sagar M, Tripathi K, Kumari B. Clinico-Pathological Evaluation of Palpable Breast Lump: Hospital Based Prospective Study. Int J Heal Clin Res. 2022;5(3):8959.
5. Lingaraju N, Narashimhaswamy P, Mohan RM, Venkatesh N. Evaluation of Palpable Breast Lumps under the Age of 35 Years with Triple Assessment. Int J Sci Study [Internet]. 2016;4(1):105. Available from: https://www.ijssn.com/uploads/2/0/1/5/20153321/ijssn_apr_oa03.pdf