

Clinicohistopathological Spectrum of Breast Lesions in a Tertiary Care Teaching Hospital: A Five-Year Observational Study

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Abstract: ***Background and Objectives:** Breast lesions comprise diverse benign and malignant conditions requiring histopathological evaluation. This study assessed their clinicohistopathological and demographic spectrum. **Methods:** A retrospective and prospective observational study included 676 breast specimens received from July 2017 to June 2022. Clinical data and histopathological findings were analyzed, with special stains and immunohistochemistry performed where indicated. IEC approval was obtained. **Results:** Of 676 specimens, 651 were from females and 25 from males. The 21–30-year age group predominated (29.44%). Breast lump was the commonest presentation (85%) and the upper outer quadrant the most frequently involved site (53%). Neoplastic lesions constituted 603 (89.20%) cases, including 453 (75.12%) benign and 145 (24.05%) malignant lesions. Fibroadenoma was the commonest benign tumour (77.0%), while invasive carcinoma of no special type predominated among malignancies (79.31%). Grade II was the most frequent grade (61.38%), and axillary nodal metastasis was present in 53.77% of cases. **Interpretation & Conclusions:** Benign tumours predominated, with fibroadenoma being the commonest lesion. Invasive carcinoma of no special type was the leading malignancy. Frequent nodal metastasis emphasizes the importance of timely diagnosis and pathological evaluation.*

Keywords: Breast; Histopathology; Malignancy; Neoplasms; Pathology

1. Introduction

Breast diseases are among the most common disorders affecting women worldwide and constitute a substantial proportion of outpatient consultations, radiological investigations, and surgical pathology specimens.^{1,2} They encompass a diverse group of conditions ranging from developmental anomalies and inflammatory disorders to benign proliferative lesions and malignant neoplasms. The clinical presentation varies considerably and includes painless or painful breast lumps, diffuse nodularity, mastalgia, nipple discharge, inflammatory swelling, skin changes, and occasionally incidental radiological findings.³ Because a breast lump is frequently perceived as a possible manifestation of malignancy, it remains a major source of anxiety for patients and a common indication for pathological evaluation.⁴

The histopathological spectrum of breast lesions is broad and includes non-neoplastic inflammatory lesions, benign fibroepithelial tumours, epithelial proliferative lesions, precursor lesions, and invasive carcinomas. These entities differ significantly in their pathogenesis, biological behaviour, prognosis, and therapeutic management, making accurate histopathological diagnosis essential for appropriate patient care.^{5,6}

Benign breast diseases constitute the majority of breast lesions encountered in routine clinical practice, particularly among women in the reproductive age group. Fibroadenoma, fibrocystic changes, mastitis, and phyllodes tumour are

among the most frequently diagnosed benign lesions.^{6,7} Although most benign breast lesions have an excellent prognosis, several may clinically and radiologically mimic carcinoma, thereby necessitating tissue diagnosis for definitive characterization and appropriate management.⁸

Breast carcinoma is currently the most frequently diagnosed cancer among women worldwide and remains one of the leading causes of cancer-related mortality.⁹ Recent global estimates continue to demonstrate an increasing incidence of breast cancer, particularly in low- and middle-income countries, reflecting changes in reproductive patterns, urbanization, lifestyle factors, and increasing life expectancy.^{9,10} In India, breast cancer has emerged as the commonest malignancy among women in many urban regions and continues to show a rising incidence across both urban and rural populations.¹¹

Accurate diagnosis of breast lesions relies on the principle of **triple assessment**, comprising clinical examination, radiological imaging, and pathological evaluation.¹² Among these, histopathological examination remains the diagnostic gold standard because it confirms the nature of the lesion, establishes tumour subtype, assesses histological grade, evaluates surgical margins, lymphovascular invasion and lymph node status, and provides essential prognostic information that guides therapeutic decisions.^{5,13}

Comprehensive clinicopathological evaluation of breast lesions provides valuable information regarding disease prevalence, demographic distribution, histological patterns,

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and regional variations. Such studies contribute significantly to improving diagnostic accuracy, facilitating early detection, optimizing treatment planning, and enhancing the understanding of the epidemiological profile of breast diseases.^{5,8}

The present study was undertaken to evaluate the clinicohistopathological spectrum of breast lesions diagnosed over a five-year period in a tertiary care hospital and to correlate histopathological findings with demographic and clinical parameters. The study also aimed to determine the frequency and distribution of non-neoplastic, benign, borderline, and malignant breast lesions and to compare the observed histopathological patterns with those reported in the published literature.

2. Materials and Methods

Study Design and Setting

This observational study, comprising retrospective and prospective components, was conducted in the Department of Pathology at a tertiary care teaching hospital from July 2017 to June 2022. Institutional Ethics Committee approval was obtained prior to the study.

Study Population

A total of 676 breast specimens, including biopsies, lumpectomies, and mastectomies, were included. Autolysed or inadequately preserved specimens were excluded. The study comprised 559 retrospective and 117 prospective cases.

Data Collection and Histopathological Examination

Clinical, demographic, radiological, FNAC, operative, and relevant clinical details were retrieved from medical records and histopathology archives. Prospective cases were documented using a structured proforma. Specimens were fixed in 10% neutral buffered formalin, routinely processed, paraffin-embedded, sectioned at 4–6 µm, and stained with hematoxylin and eosin (H&E). Special stains and immunohistochemistry were performed wherever indicated. In mastectomy specimens, tumour size, margins, nipple–areola complex, adjacent breast tissue, and axillary lymph nodes were appropriately sampled. Slides were reviewed by two pathologists, with consensus reached in cases of disagreement.

Study Variables

Age, sex, clinical presentation, laterality, anatomical site, specimen type, histopathological diagnosis, tumour subtype and grade, tumour size, lymphovascular and perineural invasion, and axillary lymph node status were evaluated. Lesions were classified as non-neoplastic, benign, borderline, precursor, or malignant.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using descriptive statistics. Categorical variables were expressed as frequencies and percentages and presented using tables and charts.

3. Results

A total of **676 breast specimens** were included in the present study after applying the predefined inclusion and exclusion criteria. Among these, lumpectomy specimens constituted the majority with 488 (72.19%) cases, followed by modified radical mastectomy (MRM) specimens in 114 (16.86%) cases. Biopsy specimens, including trucut, incisional and excisional biopsies, accounted for 40 (5.92%) cases, while incision and drainage specimens constituted 33 (4.88%) cases. Only one (0.15%) microdochectomy specimen was received. Thus, lumpectomy was the most frequently performed surgical procedure for breast lesions in the present study.

The age of the patients ranged from **12 to 91 years**. The highest number of breast lesions was observed in the **21–30 years age group** comprising 199 (29.44%) cases, followed by patients aged ≤20 years accounting for 171 (25.30%) cases. The age group of 31–40 years included 117 (17.31%) cases, while 91 (13.46%) patients were between 41 and 50 years of age. Patients aged 51–60 years constituted 44 (6.50%) cases and those above 60 years accounted for 54 (7.99%) cases. Benign breast lesions predominantly affected younger women during the second and third decades of life, whereas malignant lesions showed a progressive increase with advancing age and were most frequently encountered in patients older than 60 years.

A marked female predominance was observed in the present study. Of the 676 cases, **651 females and 25 males** were included, accounting for approximately 96% and 4% of the study population, respectively. (**Table 1**) Breast lesions in males were almost exclusively benign, with gynecomastia representing the overwhelming majority of cases.

Table 1: Gender distribution

Gender	Number of cases	N (%)
Female	652	96%
Male	25	4%
Total	676	100%

With respect to anatomical location, the **upper outer quadrant** was the commonest site of involvement, accounting for 358 (53%) cases. This was followed by the upper inner quadrant in 133 (20%) cases, lower inner quadrant in 74 (11%) cases, lower outer quadrant in 61 (9%) cases, central lesions in 34 (5%) cases, and multiple quadrant involvement in 16 (2%) cases. The predominance of lesions in the upper outer quadrant corresponded with the greater volume of breast tissue present in this region.

Analysis of laterality demonstrated that the **right breast** was more frequently involved than the left. Right-sided lesions were observed in 335 (50%) patients, whereas left-sided lesions occurred in 292 (43%) patients. Bilateral breast involvement was identified in 49 (7%) cases.

Clinically, a **palpable breast lump** was the predominant presenting complaint and was observed in 579 (85%) patients. Breast pain was the second most frequent symptom, occurring in 75 (11%) cases, followed by fever in 40 (6%) patients. Enlargement of the breast was noted in 24 (4%) cases, whereas nipple discharge was an uncommon presentation and was observed in only 10 (1%) patients. Regarding the duration

of symptoms, most patients presented between **6 and 12 months** after onset of symptoms, accounting for 408 (60.36%) cases. A shorter duration of less than six months was recorded in 237 (35.06%) patients, while only 31 (4.59%) patients had symptoms persisting for more than one year.

Histopathological examination revealed that **603 (89.20%) lesions were neoplastic**, whereas **73 (10.80%) lesions were non-neoplastic**. (Table 2) Among the neoplastic lesions, benign tumours predominated and accounted for 453 (75.12%) cases, while malignant tumours comprised 145 (24.05%) cases. Precursor lesions in the form of ductal carcinoma in situ (DCIS) and borderline lesions represented only a small proportion, accounting for 3 (0.50%) and 2 (0.33%) cases, respectively. The benign-to-malignant ratio among neoplastic lesions was approximately **3.1:1**, indicating the predominance of benign breast neoplasms in the present series.

Table 2: Distribution of breast lesions

Category	No. of cases
Non neoplastic lesions	78
Benign lesions	453
Malignant lesions	145
Total	676

Among the **non-neoplastic lesions**, acute and chronic mastitis was the commonest diagnosis, accounting for 27 (36.99%) of the 73 cases, closely followed by granulomatous mastitis in 25 (34.25%) cases. Breast abscess was identified in 16 (21.92%) patients, whereas duct ectasia and galactocele were relatively uncommon, comprising 4 (5.48%) and 1 (1.37%) case, respectively. Acute and chronic mastitis occurred over a wide age range of 18–70 years and was most frequently encountered in women aged 21–40 years. Granulomatous mastitis predominantly affected women aged 31–40 years. Histologically, acute and chronic mastitis demonstrated mixed inflammatory infiltrates composed predominantly of neutrophils, lymphocytes and plasma cells, while granulomatous mastitis showed non-caseating granulomas composed of epithelioid histiocytes, multinucleated giant cells and lymphocytes centred on breast lobules.

Benign neoplastic lesions constituted the largest group of breast lesions in the present study. **Fibroadenoma** was by far the commonest benign tumour, accounting for 349 (77.0%) of all benign neoplasms. The lesion occurred predominantly in young females between 12 and 54 years of age, with maximum incidence during the second and third decades. Grossly, fibroadenomas were well-circumscribed, encapsulated tumours with firm, grey-white cut surfaces displaying characteristic slit-like spaces. (Figure 1) Histologically, both intracanalicular and pericanalicular patterns were identified. Several morphological variations including cystic change, fibrocystic change, apocrine metaplasia, myxoid change, stromal cellularity, lactational change and hyalinization were encountered. Variants such as juvenile fibroadenoma, complex fibroadenoma and myxoid fibroadenoma were also identified.



Figure 1: Gross photograph of Fibroadenoma cut surface showing slit like spaces and lobulations bulge above the cut surface.

Gynecomastia was the second most common benign neoplasm, accounting for 24 (5.3%) cases, and occurred exclusively in males. Histologically, both florid and fibrous patterns were identified. Benign phyllodes tumour constituted 19 (4.2%) cases and demonstrated characteristic leaf-like architecture with mildly cellular stroma lacking significant atypia. Fibrocystic disease was diagnosed in 17 (3.8%) cases and showed varying combinations of cyst formation, fibrosis and apocrine metaplasia. Fibroadenosis, ductal hyperplasia, tubular adenoma, lipoma, pseudoangiomatous stromal hyperplasia (PASH), intraductal papilloma, lactational adenoma, fibroepithelial polyp and pyogenic granuloma together comprised the remaining benign lesions, each exhibiting their characteristic histomorphological features.

Among the **25 male patients**, gynecomastia accounted for 24 (96%) cases, whereas lipoma was identified in only one patient. No malignant breast lesion was encountered in males during the study period. (Table 3)

Table 3: Distribution of male cases according to lesion

Breast lesion	No. of cases	Percentage (%)
Gynecomastia	24	96%
Lipoma	1	4%
Total	25	100%

Among the malignant breast tumours, **invasive breast carcinoma, no special type (IBC-NST)** was the predominant histological subtype and accounted for 115 (79.31%) of the 145 malignant cases. This was followed by invasive lobular carcinoma in 12 (8.28%) cases, metaplastic carcinoma in 6 (4.14%) cases and mucinous carcinoma in 5 (3.45%) cases. Less frequently encountered malignant tumours included malignant phyllodes tumour, neuroendocrine carcinoma/tumour and DCIS with microinvasion, each accounting for two (1.38%) cases, while encapsulated papillary carcinoma with microinvasion was identified in one (0.69%) patient.

IBC-NST occurred predominantly in women older than 40 years and demonstrated variable architectural patterns including tubular, trabecular, solid, cribriform and cord-like arrangements of malignant epithelial cells infiltrating desmoplastic stroma. (Figure 2) Invasive lobular carcinoma showed the classical single-file arrangement of tumour cells. Metaplastic carcinoma demonstrated squamous and adenosquamous differentiation, while mucinous carcinoma exhibited clusters of tumour cells floating within abundant extracellular mucin pools. (Figure 3) Neuroendocrine tumours showed characteristic tumour cells with finely stippled "salt-and-pepper" chromatin. (Figure 4)

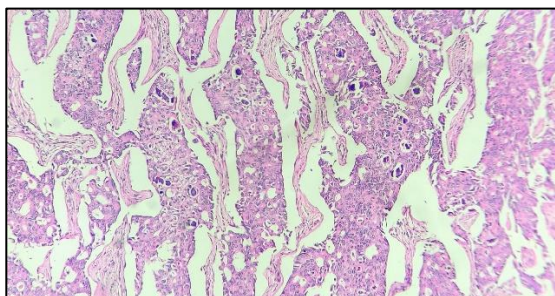


Figure 2: Microphotograph of IBC NST showing calcification in tumour tissue. (H & E, 40X)

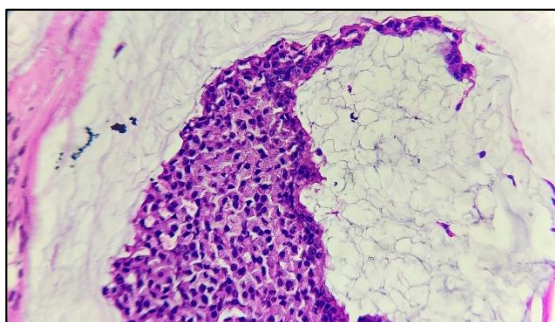


Figure 3: Microphotograph of Mucinous carcinoma showing clusters of tumour cells floating in pools of mucin. (H&E, 100X)

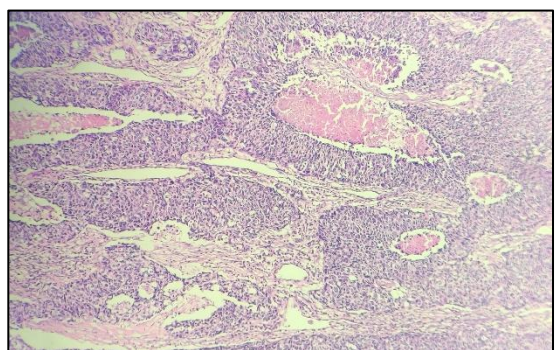


Figure 4: Microphotograph of Neuroendocrine carcinoma showing tumour cells and necrosis. (H&E, 100X)

Histological grading using the **Modified Bloom–Richardson grading system** revealed Grade II carcinoma to be the most common histological grade, accounting for 89 (61.38%) cases. Grade III carcinoma was observed in 38 (26.21%) cases, while Grade I carcinoma comprised only 18 (12.41%) cases, indicating that moderately differentiated carcinomas constituted the majority of malignant breast tumours.

Among the malignant lesions, **lymphovascular invasion** was identified in 95 (65.51%) cases, whereas **perineural invasion** was observed in 64 (44.13%) cases, reflecting the aggressive biological behaviour of a substantial proportion of breast carcinomas. Axillary lymph node dissection was performed in 119 patients, among whom metastatic tumour deposits were identified in 64 (53.77%) cases, while 55 (46.23%) patients showed no evidence of lymph node metastasis. (**Table 4**) Tumour size could be assessed in 125 malignant cases, of which 98 (78.4%) measured between 2 and 5 cm, 24 (19.2%) measured more than 5 cm and only 3 (2.4%) measured less than 2 cm, indicating that the majority of patients presented with intermediate-sized tumours.

Table 4: Distribution of malignant lesions as per lymph node metastasis

Lymph node metastasis	Number of cases	N (%)
Present	64	53.77%
Absent	55	46.23%
Total	119	100%

4. Discussion

Breast diseases encompass a wide spectrum of non-neoplastic and neoplastic lesions with diverse clinical and histopathological presentations. Although the majority of breast lesions are benign, breast carcinoma remains the leading cause of cancer-related mortality among women worldwide. Early diagnosis through effective screening and histopathological examination remains essential for appropriate management and improved patient outcomes.

Age Distribution

Age is one of the most important determinants influencing the occurrence of breast lesions. In the present study, non-neoplastic lesions were predominantly observed during the **third and fourth decades**, whereas benign neoplastic lesions were most common during the **second and third decades**, reflecting the hormonal activity of the reproductive period. Similar findings were reported by **Jadhav et al.¹⁴** and **Maurya et al.¹⁵**, while **Sulhyan et al.¹⁶** observed a relatively higher incidence during the fourth and fifth decades. Malignant lesions in the present study occurred predominantly in patients **older than 60 years**, which is comparable to the observations of **Jadhav et al.¹⁴**. In contrast, **Maurya et al.¹⁵** and **Mudholkar et al.¹⁷** reported the highest incidence in the fifth and sixth decades. The increasing frequency of breast carcinoma with advancing age may be attributed to prolonged hormonal exposure, cumulative genetic alterations and increasing prevalence of lifestyle-related risk factors.

Gender Distribution

A marked female predominance was observed in the present study, with **652 (96%) female** and **25 (4%) male** patients. Comparable female predominance has been reported by **Yogalakshmi et al.¹⁸** (96.7% females), **Aslam et al.¹⁹** (96.1% females) and **Jadhav et al.¹⁴** (97.1% females). Similarly, **Srivastava et al.²⁰** documented **94.5% females** and **5.5% males**, closely resembling the present findings. Although all malignant breast lesions in the present study occurred in females, breast carcinoma in males, though uncommon, should always be considered in patients presenting with suspicious breast masses.

Site of Lesion

The **upper outer quadrant** was the most frequently involved site, accounting for **358 (53%)** cases, followed by the upper inner quadrant (**20%**). Similar observations were reported by **Jadhav et al.¹⁴**, who found **45%** of lesions in the upper outer quadrant, and **Salih et al.²¹**, who reported an incidence of **47.76%**. The predominance of lesions in the upper outer quadrant is likely related to the greater volume of glandular tissue and the presence of the axillary tail of Spence in this region, making it more susceptible to both benign and malignant pathological changes.

Laterality

In the present study, the **right breast** was involved more frequently (**50%**) than the left (**43%**), while **7%** of patients had bilateral lesions. Similar right-sided predominance was observed by **Sayanna et al.²² (50.91%)**. In contrast, **Jadhav et al.¹⁴** and **Salih et al.²¹** reported a slight predominance of left-sided lesions (**51.83%** and **47.8%**, respectively). Bilateral breast involvement in the present study (**7%**) was intermediate between the findings of **Salih et al.²¹ (13.4%)**, **Sayanna et al.²² (4.54%)** and **Jadhav et al.¹⁴ (1.09%)**. These variations are probably attributable to differences in study population and sample size and have limited clinical significance.

Clinical Presentation

A **palpable breast lump** was the commonest presenting complaint, observed in **85%** of patients, which is comparable to **79%** reported by **Aslam et al.¹⁹** and **76%** by **Saha et al.²³**. Breast pain was the second most frequent symptom (**11%**), similar to **15%** and **16%** reported by **Aslam et al.¹⁹** and **Saha et al.²³**, respectively. Fever (**6%**), breast enlargement (**4%**) and nipple discharge (**1%**) were relatively less frequent. The predominance of palpable breast lumps emphasizes the importance of thorough clinical evaluation and histopathological examination, as both benign and malignant lesions may present with similar clinical features.

Non-neoplastic Breast Lesions

Non-neoplastic lesions constituted **10.8%** of all breast lesions in the present study. **Acute and chronic mastitis** was the commonest inflammatory lesion, accounting for **36.99%**, followed by **granulomatous mastitis (34.25%)**. Similar findings have been reported by **Jadhav et al.¹⁴**, **Maurya et al.¹⁵** and **Sulhyan et al.¹⁶**, all of whom identified mastitis as the predominant non-neoplastic breast lesion. Granulomatous mastitis was also the second most common inflammatory lesion in the studies by **Maurya et al.¹⁵** and **Sulhyan et al.¹⁶**. Histopathological examination is particularly important in these lesions because granulomatous mastitis often mimics breast carcinoma clinically and radiologically.

Benign Breast Lesions

Benign breast lesions constituted **453 (75.12%)** of all neoplastic lesions in the present study, confirming that benign breast diseases are considerably more common than malignant lesions. This finding is consistent with previous Indian studies and reflects the predominance of breast lesions in younger women during the reproductive age group.

Fibroadenoma was the most common benign breast lesion, accounting for **77.04%** of benign tumours. This finding is comparable with **Sulhyan et al.¹⁶ (78.94%)**, **Jadhav et al.¹⁴ (73.70%)**, **Aalmeen et al.²⁴ (85.70%)**, and **Mudholkar et al.¹⁷ (87.40%)**. The predominance of fibroadenoma in the present study may be attributed to hormonal influences during the reproductive years, when stromal and epithelial proliferation of the terminal duct-lobular unit is maximal. Histopathological examination remains essential to distinguish fibroadenoma from other fibroepithelial lesions, particularly benign phyllodes tumour.

Gynecomastia was the second most common benign lesion, constituting **5.30%** of benign breast lesions. A comparable

incidence of **3.70%** was reported by **Jadhav et al.¹⁴**. All cases occurred in male patients and showed classical florid or fibrous histological patterns. Although male breast lesions are relatively uncommon, histopathological evaluation is necessary to exclude the rare possibility of male breast carcinoma.

Benign phyllodes tumour accounted for **4.19%** of benign lesions in the present study. Similar incidences have been reported by **Mudholkar et al.¹⁷ (6.29%)**, **Sulhyan et al.¹⁶ (2.63%)**, **Jadhav et al.⁴³ (2.60%)**, and **Aalmeen et al.²⁴ (2.10%)**. Complete surgical excision with tumour-free margins is important because these tumours have a recognized risk of local recurrence despite their benign histological appearance.

Fibrocystic disease constituted **3.75%** of benign lesions, which is lower than that reported by **Jadhav et al.¹⁴ (8.07%)** and **Aalmeen et al.²⁴ (9.40%)**. Similarly, **fibroadenosis** accounted for **2.43%** of cases compared with **2.60%** reported by **Jadhav et al.¹⁴** and **0.70%** by **Aalmeen et al.²⁴**. These differences may reflect variations in referral patterns, diagnostic criteria and geographical distribution of breast diseases.

Less common benign lesions included **ductal hyperplasia (2.21%)**, **tubular adenoma (1.77%)**, **lipoma (1.10%)**, **pseudoangiomatous stromal hyperplasia (1.10%)**, **intraductal papilloma (0.44%)**, **lactational adenoma (0.44%)**, **fibroepithelial polyp (0.22%)**, and **pyogenic granuloma (0.22%)**. Similar low frequencies have been documented by **Mudholkar et al.¹⁷**, **Sulhyan et al.¹⁶**, **Aalmeen et al.²⁴**, and **Jadhav et al.¹⁴**. Although individually uncommon, these lesions contribute to the diverse histopathological spectrum of breast diseases and often require microscopic examination to establish a definitive diagnosis.

Malignant Breast Lesions

Malignant breast lesions constituted **145 (24.05%)** neoplastic lesions in the present study. Although benign lesions predominated overall, breast carcinoma remains an important cause of morbidity among women and continues to show an increasing incidence in developing countries because of changing lifestyle patterns, delayed childbearing, reduced breastfeeding, obesity and increasing life expectancy.

Invasive breast carcinoma, no special type (IBC-NST) was the predominant malignant tumour, accounting for **79.31%** of malignant lesions. This finding is comparable with **Dauda et al.²⁵ (78.80%)**, **Sulhyan et al.¹⁶ (81.13%)**, **Aalmeen et al.²⁴ (80%)**, and **Jadhav et al.¹⁴ (83%)**. The predominance of IBC-NST is in accordance with the WHO classification and reflects its status as the commonest histological subtype of breast carcinoma worldwide.

Invasive lobular carcinoma was the second most common malignant tumour, constituting **8.28%** of malignant lesions. This closely resembles the incidence reported by **Aalmeen et al.²⁴ (8.60%)** and **Dauda et al.²⁵ (6.70%)**. **Mucinous carcinoma** accounted for **3.45%** of cases, while **metaplastic carcinoma** constituted **4.14%**, frequencies that are comparable with those reported in previous studies. Rare

malignant tumours encountered in the present study included **malignant phyllodes tumour (1.38%)**, **neuroendocrine carcinoma (1.38%)**, **DCIS with microinvasion (1.38%)**, and **encapsulated papillary carcinoma with microinvasion (0.69%)**, highlighting the wide histopathological spectrum of breast malignancies encountered in routine practice.

The benign-to-malignant ratio in the present study was **3.1:1**, which lies between the ratios reported by **Ghudasara et al.²⁶ (4.4:1)** and **Sree ND et al.²⁷ (2.4:1)**. This variation may be related to differences in patient demographics, referral patterns and institutional case selection. The relatively higher proportion of malignant lesions in tertiary care centres is expected because suspicious breast masses are more frequently referred for surgical management.

Delayed presentation remains an important challenge in breast cancer management. In the present study, most patients presented with clinically palpable masses and relatively advanced disease, emphasizing the need for improved public awareness, regular breast self-examination, organized screening programmes and timely histopathological diagnosis. Early detection remains the most effective strategy for improving survival and reducing breast cancer-related mortality.

Histological Grade

Histological grading is a well-established prognostic indicator in invasive breast carcinoma. In the present study, **Grade II carcinoma** was the predominant histological grade, accounting for **61.38%** of malignant tumours, followed by **Grade III (26.21%)** and **Grade I (12.41%)**. These findings are comparable with **Siddiqui et al.²⁸**, who reported **59.17% Grade II**, **29.47% Grade III**, and **11.38% Grade I** tumours. Similarly, **Truong et al.²⁹** observed **49.6% Grade II**, **42.6% Grade III**, and **7.7% Grade I** lesions, whereas **Sulhyan et al.¹⁶** reported **70.58% Grade II**, **23.52% Grade I**, and **5.88% Grade III** tumours. **Jangid et al.³⁰** also identified Grade II carcinoma as the most frequent subtype (**51.35%**), followed by Grade I (**26.13%**) and Grade III (**22.52%**). The predominance of moderately differentiated tumours in the present study suggests that most patients presented with intermediate-grade disease.

Lymph Node Metastasis

Axillary lymph node involvement is one of the strongest prognostic indicators in breast carcinoma. In the present study, **53.77%** of patients demonstrated metastatic axillary lymph nodes, while **46.23%** showed no nodal involvement. These findings are comparable with **Ghudasara et al.²⁶ (54.28%)**, **Sulhyan et al.¹⁶ (61.53%)**, and **Sree ND et al.²⁷ (51.85%)**. The relatively high incidence of lymph node metastasis observed in the present study indicates that many patients presented with locally advanced disease. This underscores the importance of early diagnosis, prompt surgical intervention and comprehensive pathological evaluation for accurate staging and prognostication.

5. Conclusion

Breast lesions exhibit considerable clinicopathological heterogeneity, encompassing a wide range of inflammatory,

benign, borderline, precursor, and malignant entities with distinct biological behaviour and therapeutic implications. In this five-year study, benign neoplasms predominated, particularly fibroadenoma among younger women, whereas invasive breast carcinoma of no special type remained the dominant malignant tumour, occurring mainly in older patients. The predominance of Grade II carcinomas, together with the substantial frequency of lymphovascular invasion and axillary nodal metastasis, highlights the continued burden of patients presenting with potentially advanced disease.

Histopathological examination remains the cornerstone of breast lesion diagnosis, providing definitive classification, accurate tumour grading, assessment of prognostic parameters, and guidance for appropriate therapeutic decision-making. The findings of this large single-centre series contribute valuable epidemiological and morphological data on the spectrum of breast lesions in the Indian population and demonstrate close concordance with contemporary published literature. Strengthening public awareness, promoting early clinical evaluation and screening, and ensuring timely pathological assessment are essential to facilitate earlier diagnosis, optimize treatment strategies, and improve long-term patient outcomes.

References

- [1] Kumar V, Abbas AK, Aster JC. *Robbins and Cotran pathologic basis of disease*. 10th ed. Philadelphia: Elsevier; 2021.
- [2] Williams NS, O'Connell PR, McCaskie AW, editors. *Bailey & Love's short practice of surgery*. 28th ed. Boca Raton (FL): CRC Press; 2022.
- [3] Townsend CM Jr, Beauchamp RD, Evers BM, Mattox KL, editors. *Sabiston textbook of surgery: the biological basis of modern surgical practice*. 21st ed. Philadelphia: Elsevier; 2022.
- [4] Burgess CC, Ramirez AJ, Richards MA, Love SB. Who and what influences delayed presentation in breast cancer? *Br J Cancer*. 1998;77(8):1343-1348.
- [5] Goldblum JR, Lamps LW, McKenney JK, Myers JL, editors. *Rosai and Ackerman's surgical pathology*. 11th ed. Philadelphia: Elsevier; 2018.
- [6] WHO Classification of Tumours Editorial Board. *Breast tumours*. 5th ed. Lyon: International Agency for Research on Cancer; 2019.
- [7] Donegan WL. Benign breast disorders. *Surg Clin North Am*. 1990;70(4):777-797.
- [8] Guray M, Sahin AA. Benign breast diseases: classification, diagnosis, and management. *Oncologist*. 2006;11(5):435-449.
- [9] Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2021;71(3):209-249.
- [10] Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, et al. Global cancer statistics 2024. *CA Cancer J Clin*. 2024.
- [11] National Centre for Disease Informatics and Research. *National Cancer Registry Programme Report 2020*. Bengaluru: Indian Council of Medical Research; 2020.

- [12] Dixon JM. Triple assessment in breast disease. *BMJ*. 1995;311:1003-1004.
- [13] Ellis IO, Schnitt SJ, Sastre-Garau X, et al. Invasive breast carcinoma. In: WHO Classification of Tumours Editorial Board. *Breast tumours*. 5th ed. Lyon: International Agency for Research on Cancer; 2019.
- [14] S. JD, B. KP, Apoorv G, G. VA, et al. A histopathological study of neoplastic and non-neoplastic breast lesions at a rural tertiary care centre in India. *Indian J Pathol Res Pract* [Internet]. 2017;6(2 (Part-2)):387–92.
- [15] Kumar Singh DS, Maurya DG, Pandey DP, Rashmi D. Histopathological spectrum of neoplastic and non-neoplastic breast lesions: A three years study in rural tertiary care center. *Int J Med Sci Clin Invent* [Internet]. 2020;7(01):4721–5.
- [16] Sulhyan D, Anvikar DAR, Mujawar DIM, Tiwari DH, et al. Histopathological study of breast lesions. *Int J Med Res Rev* [Internet]. 2017;5(1):32–41.
- [17] Mudholkar VG, Kawade SB, Mashal SN. Histopathological study of neoplastic lesions of breast. *Ind Med Gazette* 2012 Sept :353-64.
- [18] Yogalakshmi S, Kavitha M. A Study of Histopathological Spectrum of breast lesions. *Int J Stud* 2019;7(1):1-5.
- [19] Aslam HM, Saleem S, Shaikh HA, Shahid N, Mughal A, Umah R. Clinico-pathological profile of patients with breast diseases. *Diagn Pathol* [Internet]. 2013;8(1):77.
- [20] Dr. N.K. Srivastava. Clinico-pathological study 200 cases of Breast lesions in a tertiary care centre of Rohtas, Bihar, India. *Trop J Pathol Microbiol* [Internet]. 2019Jun.30 ;5(6):338-42.
- [21] Salih TM. Breast lump, a clinic-histopathological study among women in Western Iraq. *Ann Trop Med & Public Health*. 2019;22.
- [22] Sayanna SS, Shankar MU, Babu KR. Breast Diseases – Clinicopathological Correlation: A Three Years Study. *Int IJSS Journ]al of Surgery* 2019;5(1):13-17.
- [23] Saha et al, Assessment of histopathological evaluation of breast lesions: neoplastic and non-neoplastic lesions in females from Bihar. *International Journal of Medical and Health Research* 2019 Jun 28;5(2);146-150.
- [24] Aalmeen DG, Mushtaq DS, Reshi DR. Clinico-pathological spectrum of breast lesions in females over a period of three years in a tertiary care centre. *Int J Clin Diagn Pathol* [Internet]. 2021;4(1):95–8.
- [25] Dauda AM, Misauno MA, Ojo EO. Histopathological types of breast cancer in Gombe north eastern Nigeria: A seven-year review. *African journal of reproductive health* 2011 Mar 15(1):107-110.
- [26] Ghodasara NM, Dharaiya C, Bhalodia J. Histopathological study of distribution of non-neoplastic and neoplastic lesions i breast. *Arch Cytol Histopathol Res*. 2019;4(3):259–64.
- [27] Sree ND, Patil KB, Gupta A, Arakeri VG, et al. A histopathological study of neoplastic and non-neoplastic breast lesions at a rural tertiary care centre in India. *Indian J Pathol Res Pract*. 2017;6(2 Pt 2):387-392.
- [28] Siddiqui MS, Kayani N, Gill MS, Pervez S, Muzaffar S, Aziz SA, et al. Breast diseases: a histopathological analysis of 3279 cases at a tertiary care center in Pakistan. *J Pak Med Assoc*. 2003;53(3):94–7.
- [29] Truong PT, Berthelet E, Lee J, Kader H, Olivotto I A. The prognostic significance of the percentage of positive /dissected axillary lymph nodes in breast cancer recurrence and survival in patients with one to three positive axillary lymph nodes. *Cancer*. 2005 May 15; 103 (10):2006-14.
- [30] Jangid P, Jangid MK, Pachori G. A histopathological study of malignant lesions of the female breast in a tertiary care centre. *J. Evolution Med. Dent. Sci*. 2020;9(24):1795-17

