

## A Study of Histopathological Pattern of Breast Lesions in Central India, Madhya Pradesh

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### Abstract:

**Introduction:** The breast is a common site for pathologies which predominantly involves the female breast. While benign diseases are more common, malignancies are of utmost concern for the patients, clinicians, and the pathologists.

**Aim:** This study aims to evaluate the frequency, age, gender, and histopathological features of breast lesions in a tertiary care hospital.

**Materials and Methods:** This retrospective study was conducted in the Department of Pathology, in tertiary care centre, central India, Madhya Pradesh, from January 2020 to December 2022. Tissue for hematoxylin and eosin (H and E) sections was fixed in 10% formalin and subjected to routine paraffin-embedded processing and stained with H and E stain. The histopathological features were noted, and the tumors were diagnosed based on the WHO classification.

**Results:** Out of 290 cases of breast lesions, 12 were inflammatory lesion (4.1%), 199 were benign breast lesions (68.6 %) and 79 were malignant (27.2 %) with a benign and malignant ratio of **2.52:1**. Fibroadenoma was the most common benign breast lesion, being 174 out of 199 (87.4 %) and infiltrating duct carcinoma was the commonest malignant breast lesions. Breast lumps most commonly affected 26-35 years of age group (37.5%). Females accounted for 281 cases (96.8%) with female to male ratio of 31.2:1.

**Conclusion:** Study of histopathological patterns of breast lesions plays an important role in diagnosis, treatment, and prognosis of breast lesions. This study highlights incidence and pathological characteristics of a wide range of breast lesions. The clinical diagnosis of a breast lump must be correlated with histopathological diagnosis for correct and adequate treatment of patient.

**Keywords:** Breast Lesion; Fibroadenoma; Fibrocystic disease; Infiltrating duct carcinoma; Histopathological pattern

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## Introduction

The breast is a highly modified apocrine sweat gland, composed of both epithelial and connective tissue components and the range of diseases which affect it can be inflammatory or neoplastic (benign or malignant). [1] Malignant breast lesions are less common than benign ones. Benign lesions of the breast usually present in the second decade of life. Common benign lesions of the breast include fibroadenoma, phyllodes tumour, lactating adenoma and tubular adenoma. Benign proliferative lesions include fibrocystic disease, inflammatory lesions such as breast abscess, and granulomatous mastitis. Malignant lesions are ductal carcinoma, lobular carcinoma, papillary carcinoma, mucinous carcinoma, metastatic carcinoma and carcinoma in situ. [2] We have studied and analysed various neoplastic and non-neoplastic breast lesions from the specimens received in our histopathology section.

## Material and Methods

This is a retrospective study of all breast specimens that were histologically diagnosed in the Histopathology Department, over a 2-year period from January 2020 to December 2022. The specimens included excision biopsies, core needle biopsies, lumpectomy and

mastectomy specimens. These breast specimens were received in 10% buffered formalin, sections were taken and auto-processed in tissue processor. Paraffin-embedded sections (at 2–3µm) were routinely stained with hematoxylin and eosin stains. Data were extracted from the departmental archives, patient request forms, copies of histology reports of all cases, and case notes/files of patients. Information extracted includes age, sex, side of breast affected, histology diagnosis and any significant finding noted.

Histopathology plays an important role in the diagnosis of breast lesions. It is the main criteria that assess the adequacy of treatment and is a necessary component in the diagnosis, treatment, and prognosis of breast diseases. The main purpose of the study is to analyze and highlight the histopathological spectrum.

## Results

Out of 290 breast lesions, 281 (96.89 %) were female breast lesions and only 09 (3.10 %) were male breast lesions with a male female ratio of **1:31.2 (Table 1)** in the study group. Out of the 09 male breast lesions of the study group, 02 were infiltrating duct carcinoma followed by 01 being papillary carcinoma.

**Table 1: Sex wise distribution**

Lesions	Sex		Total in number	%
	Male	Female		
Inflammatory Lesions	0	12	12	4.1
Benign Breast lesions	6	193	199	68.6
Malignant breast lesions	3	76	79	27.2
<b>Total</b>	<b>9</b>	<b>281</b>	<b>290</b>	<b>100</b>

The youngest patient in the study was a 13 years old girl, diagnosed as fibroadenoma breast and the Majority of patients with breast lesions, irrespective of sex were in the age group of 26 - 35 years (n-109; 37.6 %) in the study group. Oldest patient in the study was a 75-years-aged female diagnosed as infiltrating duct carcinoma. (Table 2)

**Table 2: Age wise distribution of histopathological breast lesion**

S.N	Lesions	Age in year							Total	%
		10-15	16-25	26-35	36-45	46-55	56-65	66-75		
<b>A</b>	<b>Inflammatory Lesion</b>									
1	Chronic Mastitis		3	2	1	1			7	2.41
2	Granulomatous mastitis			2	1	1			4	1.37
3	Duct ectasia			1					1	0.35
<b>B</b>	<b>Benign Breast lesions</b>									
4	Fibroadenoma	6	66	79	17	6			174	60
5	Fibrocystic change			2	2	1			5	1.72
6	Lactating adenoma			1					1	0.35
7	Tubular adenoma	1	3						4	1.37
8	Atypical ductal hyperplasia			1	3				4	1.37
9	Gynecomastia		4			1		1	6	2.06
10	Benign phyllodes			1	2				3	1.03
11	Epidermoid cyst			2					2	0.70
<b>C</b>	<b>Malignant breast lesions</b>									
12	Malignant phyllodes			1	2				3	1.03
13	Infiltrating duct carcinoma (NOS)			14	20	19	11	4	68	23.44
14	Lobular carcinoma			2					2	0.70
15	Papillary carcinoma							1	1	0.35
16	Metastatic carcinoma				1	1			2	0.70
17	Mucinous carcinoma						1		1	0.35
18	Carcinoma in situ			1					1	0.35
19	Pagets disease				1				1	0.35
	<b>Total</b>	7	76	109	50	30	12	6	290	100

Table 2 shows the age distribution of patients with different histopathological breast lesions in the study groups. In the present study, Fibroadenoma breast was commonest in the age group 26 - 35 years which was seen in 79 out of 174 cases (45.4 %) followed by 16-25 years age group 66 out of 174 (37.93%). Chronic mastitis affected mostly 16-25 years of age group

where as other inflammatory and benign lesion more commonly affected the 26 to 35 years of age group. Atypical ductal hyperplasia and infiltrating ductal carcinoma (NOS) affecting mostly 36-45 years of age group. Gynecomastia was seen most commonly in 16-25 years of age group of young male population

**Table3: Site wise distribution of histopathological breast lesion**

S.N	Lesions	Unilateral		Bilateral	Total	%
		Right site	Left site			
<b>A</b>	<b>Inflammatory lesions</b>				<b>12</b>	<b>(Out of 12)</b>
1	Chronic Mastitis	5	2		7	58.3
2	Granulomatous mastitis	3	1		4	33.4

3	Duct ectasia	1			1	08.3
<b>B</b>	<b>Benign Breast lesions</b>				<b>199</b>	<b>(Out of 199)</b>
4	Fibroadenoma	92	75	7	174	87.43
5	Fibrocystic change	3	1	1	5	2.51
6	Lactating adenoma	1			1	0.50
7	Tubular adenoma	2	2		4	2.01
8	Atypical ductal hyperplasia	3	1		4	2.01
9	Gynecomastia	4	2		6	3.01
10	Benign phyllodes	2	1		3	1.50
11	Epidermoid cyst	2			2	1.00
<b>C</b>	<b>Malignant breast lesions</b>				<b>79</b>	<b>(Out of 79)</b>
12	Malignant phyllodes	2	1		3	3.80
13	Infiltrating duct carcinoma (NOS)	41	27		68	86.07
14	Lobular carcinoma	1		1	2	2.53
15	Papillary carcinoma	1			1	1.26
16	Metastatic carcinoma	1	1		2	2.53
17	Mucinous carcinoma	1			1	1.27
18	Carcinoma in situ	1			1	1.27
19	Pagets disease	1			1	1.27
	<b>Total</b>	<b>167</b>	<b>114</b>	<b>09</b>	<b>290</b>	

Patients mostly had unilateral breast lesions (96.8%) and the bilateral breast lesions were few that is 9 (3.1%). The right sided breast lesions were seen in 167 (57.5.8%) patients whereas the left sided breast lesion affected 114 (39.3%) patients. Table-3

**Table 4: Histopathological diagnosis of lesions**

S.N	Lesions	Number	% ( Out of 290)
<b>Inflammatory lesions</b>			
	Chronic Mastitis	7	2.41
	Granulomatous mastitis	4	1.37
	Duct ectasia	1	0.35
<b>Benign Breast lesions</b>			
	Fibroadenoma	174	60
	Fibrocystic change	5	1.72
	Lactating adenoma	1	0.35
	Tubular adenoma	4	1.37
	Atypical ductal hyperplasia	4	1.37
	Gynecomastia	6	2.06
	Benign phyllodes	3	1.03
	Epidermoid cyst	2	0.70
<b>Malignant breast lesions</b>			
	Malignant phyllodes	3	1.03
	Infiltrating duct carcinoma (NOS)	68	23.44
	Lobular carcinoma	2	0.70
	Papillary carcinoma	1	0.35
	Metastatic carcinoma	2	0.70

	Mucinous carcinoma	1	0.35
	Carcinoma in situ	1	0.35
	Pagets disease	1	0.35
	<b>Total</b>	<b>290</b>	<b>100</b>

Table 4- shows different histopathological patterns of benign breast diseases in this study group.

The most common inflammatory lesion to be identified was chronic mastitis. 7 cases (58.3%) followed by Granulomatous inflammation 4 cases (33.4%). Most of the patients are between the age group of 26-35 years of age groups.

Out of the benign breast diseases of 199 (100 %) in the study group, fibroadenoma breast was seen in 174 cases (87.43 %) which was the most common lesion observed. Fibrocystic diseases of breast were seen in 5 cases (2.51%) which was the second common group among benign breast disease in the study. Other benign breast diseases were atypical ductal hyperplasia in 4 cases (2.01 %), tubular adenoma in 4 cases (1.50%), benign phyllodes in 03 cases (1.50 %) in our study. Gynaecomastia was most common benign tumor, 6 cases (3.01%) in male.

Total 79 malignant tumors were observed. The majority of cases with malignant breast tumors had infiltrating duct carcinoma (NOS) 68 cases (86.07%) as subtype. The special subtypes encountered were metaplastic carcinoma 2 cases (2.5%) and mucinous carcinoma 1 case (1.26%). One of these cases of also had Paget disease and 1 patient had carcinoma in situ (DCIS).

## Discussion

The breast tissue is composed of specialized epithelium and stroma that is capable of turning into benign or malignant lesions. The human breast consists of 6 to 10 major duct systems. The overlying skin of the breast is lined by keratinizing squamous epithelium that dips into the orifices of the nipple and then abruptly changes to a double-layered cuboidal epithelium that continues to line the ducts. The larger ducts further branch and eventually lead to the terminal ductolobular unit (TDLU). Two cell types line the ducts and lobules. They are the luminal epithelial cells that overlay the epithelial cells. [3]

Occurrence of benign lesions of breast in our present study was 68.6% of all the breast lesions. These findings were comparable with the studies done by Lakhani S et al, [4] who had 67.88% of the cases and Iraj Harirchi et al, [5] who had 60.9% cases. In our study malignant breast lesions was seen in 79 (27.2%) cases which is similar to Lakhani S et al, [4] 28.46% of the cases (Table -5). Most malignant breast lesions occurred in the age group of 36-55 of years accounting 55.7%, which is similar to the studies done by Hankey et al., (46%). In our study, the most common breast lesion was fibroadenoma and the most common malignant breast lesion was infiltrating duct carcinoma.

**Table 5: Comparison of prevalence of non-neoplastic, benign and malignant lesions**

	Lakhani S et al,[4]	Iraj Harirchi et al,[5]	Present study
Non neoplastic	3.64%	2.4%	12(4.1%)
Benign	67.88%	60.9%	199(68.6%)
Malignant	28.46%	36.7%	79(27.2%)

In our study, the most common benign lesion is fibroadenoma 174 cases (87.4%), followed by fibrocystic change 2.5%. Our findings were correlating with the findings of cases reported by Mudholkar et al (2012), [6] who had (87.40%) of the cases and Gaikwad SL et al (2018), [7] who had

118 (90%) of the cases. In our study the peak occurrence of fibroadenoma was seen in 26-35 years followed by 16-25 year. In our study tubular adenoma was 2 cases (2.01%) which was found to be correlating with incidence of 2.36% cases reported by Mudholkar et al (2012), [6]. (Table-6)

**Table 6: Frequency distribution in different benign breast tumours (Comparison with other similar studies)**

S.N	Benign tumours	Mudholka r et al (2012),[6]	Gaikwad SL et al (2018),[7]	Present study
1	Fibroadenoma	87.40%	90%	<b>87.43%</b>
2	Benign phyllodes tumour	6.29%	4.58%	1.5%
3	Tubular adenoma	2.36%	1.5%	2.01%
4	Lactating adenoma		1.5%	0.50%

In our study, the most common inflammatory lesion is chronic mastitis 7 cases (2.41%). Our findings were correlating with the findings of cases reported by Awatif A. Jamal, [8] who had 3.2 % of the cases.

In our study, among malignant breast lesions, infiltrating ductal carcinoma is most common accounting for 23.44% which is similar to studies done by Awatif A. Jamal, [8] and Sulhyan et al, [9] that is, 24.7% and 26.7% respectively. (Table-7)

**Table 7: Comparison of most common non neoplastic, benign and malignant lesions of breast in various studies**

Most common lesion	Awatif A. Jamal,[8]	Sulhyan et al,[9]	Nandam et al,[10]	Present study
Non-Neoplastic	Chronic Mastitis (3.2%)	Acute/chronic Mastitis (7.45%)		Chronic Mastitis (2.41%)
Benign	Fibroadenoma (25%)	Fibroadenoma (37.26%)	Fibroadenoma (59%)	Fibroadenoma (60%)
Malignant	IDC-NST (24.7%)	IDC-NST (26.7%)	IDC-NST (16.6%)	IDC-NST (23.44%)

## Conclusion

Benign breast disease is a heterogeneous group of disorders of breast in females and is more common than the malignant lesions. Histopathological examination still plays an important role in differentiating between benign and malignant lesions. In the present study, the most common benign breast lesion is fibroadenoma with a prevalence of 87.43% and the most common malignant breast lesion is

infiltrating ductal carcinoma with a prevalence of 23.44%. The optimal prevalence of benign lesions of the breast is seen in the age group of 26–35 years, and the peak prevalence of malignant lesions of the breast is seen in 36–45 years. The study emphasizes the importance to recognize and treat benign lesions at an early stage and distinguish them from in situ and invasive breast carcinomas.

## Reference

1. Aslam HM, Saleem S, Shaikh HA, Shahid N, Mughal A, Umah R, et al. Clinico- pathological profile of patients with breast diseases. *Diagn Pathol* 2013;8:77.
2. Kumar V, Abbas A, Fausto, et al. Pathologic basis of disease: the breast. 7th edn. Philadelphia, PA: Elsevier 2017: p. 1119-54.
3. Gail MH, Brinton LA, Byar DP, Corle DK, Green SB, Schairer C, et al. Projecting individualized probabilities of developing breast cancer for white females who are being examined annually. *J Natl Cancer Inst* 1989; 81: 1879-86.
4. Lakhani S, O. Ellis I. WHO classification of tumours of the breast. 4th ed. 69372 Lyon Cedex 08, France: International Agency for Research on Cancer (IARC); 2012
5. .Harirchi I, Karbakhsh M. Breast Cancer in Iran: Results of a Multi-center study. *Asian Pacific Journal of Cancer Prevention*. 2004;5:24-27
6. Mudholkar VG, Kawade SB, Mashal SN. Histopathological study of neoplastic lesions of breast. *Ind Med Gazette*. 2012:35364.
7. Gaikwad SL et al. A histopathological study of neoplastic and non-neoplastic breast lesions. *Medpulse- international medical journal*. 2019 Jan; vol 9: issue 1.
8. A. Jamal A. Pattern of breast diseases in a teaching hospital in Jeddah, Saudi Arabia. *Saudi Medical Journal*. 2001; 220020(2):110- 113.
9. Sulhyan K.R, Anvikar A.R, Mujawar I.M, Tiwari H. Histopathological study of breast lesions. *Int J Med Res Rev* 2017;5(01):32-41. doi:10.17511/ijmrr. 200020100207.i01.05
10. Nandam M, Shanthi V, Grandhi B, Byna S, Vydehi B, Conjeevaram J. Histopathological spectrum of breast lesions in association with Histopathological Grade versus Estrogen receptor and Progesterone receptor status in breast cancers: A Hospital based study. *Annals of Pathology and Laboratory Medicine*. 20170020;4(5):A496-A501.