



## Histopathological Spectrum of Benign Breast Lesions

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### ABSTRACT

Breast lesions have gained global attention as breast cancer has become one of the leading causes of death among women. The importance of benign lesions lie in their ability to mimic cancers and not all benign lesions are completely free of risks. The present study was undertaken with an aim to determine the incidence and the histopathological spectrum of various benign breast lesions at our institute. A retrospective study was done in the department of pathology over a period of three years from Jan 2014 to Dec 2016. Relevant clinical details of the cases were obtained from the requisition forms. All breast samples were processed by standard procedure and formalin fixed paraffin embedded tissue sections were studied and analyzed. Total 177 cases of breast lesions were studied and analyzed. Of the total 177 cases, 160(85%) cases were benign lesions. Fibroadenoma (65.7%) was the commonest lesion followed by fibrocystic disease (10%) and benign Phylloides tumour(5.6%).Majority of the benign breast lesions were in the age group of 21-30 years(45.5%). breast lesions are a heterogeneous group of disorder ranging from inflammatory to invasive cancers. Distinguishing these heterogeneous forms by histopathological examination is crucial for prognostic prediction.

**Key words:** Breast Lesions, Benign, Fibroadenoma, Fibrocystic Disease

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histopathological spectrum of benign breast lesions in a tertiary care hospital.

### INTRODUCTION

Breast is a site of a broad array of pathological alterations ranging from inflammatory lesions to life threatening invasive cancers. Breast lesions have gained global attention as breast cancer has become one of the leading causes of death among women worldwide [1]. In India, breast cancer is second most common cancer after cervical cancer [2]. Advances in imaging techniques and increased use of fine needle aspiration cytology have greatly assisted the preoperative evaluation of breast lesions. However, in a large proportion of cases differentiation between benign and malignant lesions still rests on histopathological examination. The importance of benign lesions lie in their ability to mimic cancers and not all benign lesions are completely free of risks. Treatment of benign breast disease is preservation of breast tissue as far as possible in contrast to traumatizing mutilating surgeries in breast cancers. The present study was undertaken with an aim to determine the incidence and analysis of the

### MATERIAL AND METHODS

The present study is a retrospective study done in department of Pathology at Terna medical college, Navi Mumbai over a period of three years from Jan 2014 to Dec 2016. Clinical details regarding age, manifestations and side of the lesion were obtained from the requisition forms. All breast specimens received in different forms such as excisional biopsy & lumpectomy were processed by standard protocol and formalin fixed paraffin embedded tissue sections stained with hematoxylin and eosin were studied and analyzed.

### RESULTS

Total 177 cases of breast lesions were studied and analyzed over a period of 3 years. The incidence of benign lesions was found to be 85.1% (160 cases) of all the breast lesions. Out of 160 benign cases, 150 were females and 10 were males. Histopathological distribution of various benign lesions is shown in Table 1.

**Table 1: Histopathological distribution pattern of benign breast disease**

| Benign breast disease               | No. of cases (%) |
|-------------------------------------|------------------|
| Fibroadenoma                        | 104 (65.7%)      |
| Benign phylloides                   | 9 (5.6%)         |
| Gynaecomastia                       | 10 (6.25%)       |
| Lactating adenoma                   | 4(2.5%)          |
| Tubular adenoma                     | 1 (0.62%)        |
| Lipoma                              | 2 (1.25%)        |
| <b>Benign proliferative lesions</b> |                  |
| Fibrocystic disease                 | 16 (10%)         |
| Adenosis                            | 3 (1.87%)        |
| <b>Inflammatory lesions</b>         |                  |
| Duct ectasia                        | 4 (2.5%)         |
| Granulomatous mastitis              | 3 (1.87%)        |
| Breast abscess                      | 2 (1.25%)        |
| <b>Other</b>                        |                  |
| Juvenile papulomatosis              | 1 (0.62%)        |
| Galactocele                         | 1 (0.62%)        |

**Table 2: Age wise distribution of benign breast lesions**

| BenignBreast Lesion    | 11-20yrs  | 21-30yrs  | 31-40yrs  | 41-50yrs  | 51-60yrs | 61-70yrs | 71-80yrs | Total |
|------------------------|-----------|-----------|-----------|-----------|----------|----------|----------|-------|
| Fibroadenoma           | 33 (1.8%) | 38(36.2%) | 26(25.2%) | 5(4.8%)   | 2(1.9%)  | -        | -        | 104   |
| Benign phylloides      | 1(11.1%)  | 2 (22.2%) | 2 (22.2%) | 4(44.4%)  | -        | -        | -        | 9     |
| Gynaecomastia          | 5(50%)    | 2(20%)    | 2(20%)    | -         | 1(10%)   | -        | -        | 10    |
| Lactating adenoma      | -         | 4         | -         | -         | -        | -        | -        | 4     |
| Tubular adenoma        | -         | 1         | -         | -         | -        | -        | -        | 1     |
| Lipoma                 | -         | 1         | -         | -         | -        | 1        | -        | 2     |
| Fibrocystic disease    | 1(6,25%)  | 5(31.2%)  | 6(37.5%)  | 4(25%)    | -        | -        | -        | 16    |
| Adenosis               | 1         | 2         | -         | -         | -        | -        | -        | 3     |
| Duct ectasia           | -         | 3         | 1         | -         | -        | -        | -        | 4     |
| Granulomatous mastitis | -         | 1         | 2         | -         | -        | -        | -        | 3     |
| Breast abscess         | -         | 2         | -         | -         | -        | -        | -        | 2     |
| Juvenile papulomatosis | 1         | -         | -         | -         | -        | -        | -        | 1     |
| Galactocele            | -         | 1         | -         | -         | -        | -        | -        | 1     |
| Total                  | 42(26.2%) | 62(38.7%) | 39(24.3%) | 13(8.12%) | 3(1.87%) | 1(0.62%) | -        | 160   |

Most commonly seen benign breast lesion was Fibroadenoma accounting for 104 (65.7%) cases followed by fibrocystic disease seen in 16(10%) cases. The age distribution pattern of benign breast disease of our study is shown in Table 2.

Age distribution pattern reveals most of the cases(62) of benign breast lesions in the age group of 21-30 years ( 38.7%) followed by 42(26.2%) cases in age group of 11-20 years. Unilateral lesions (91.7%) were more common than bilateral. Right breast was more commonly affected than left breast

Fibroadenoma accounted for 104 (65.7%)cases of all the benign lesions. majority of the cases were seen in 21-30 years (36.2%) followed by (31.8%) in 11-20 yeas. 50.9% cases presented with lump in right breast, 43.3% in left breast and 5.6% showed bilateral fibroadenomas. Single nodular masses were seen in 79.3% cases while 20.6% presented with multiple nodules in the same breast. Tumour

masses ranged from 0.5 cms to 6.5 cms. Majority of them showed slit like areas on cut surface. Intracanalicular and pericanalicular pattern were seen microscopically and in some both patterns coexisted in the same tumour. We found three cases of complex fibroadenoma which showed morphological changes such as adenosis, cyst formation and apocrine change.

Out of 160 benign lesions, 16 cases (10%) were of fibrocystic disease. Majority of the patients were in the age range of 31-40 years. Right breast was involved in 57.1%, left breast in 42.8% and bilateral lesion was seen in one case. Histologically, they were characterized by overgrowth of both fibrous stroma and of epithelial elements i.e. ducts and lobules, in differing proportions and cyst formations.

Benign Phylloides tumour was seen in 9(5.6 %) cases of all benign lesions of our study. Majority were seen in the age range of 41-50 years with

involvement of right breast in 60% cases. Grossly, the tumor size ranged from 5-15 cm in diameter. Most of them were irregular nodules. Microscopically, these tumors showed stromal hyperplasia. Mitoses were less than 2-3 per 10 high power fields.

10 cases (6.25%) were histopathologically diagnosed as Gynaecomastia in male patients. Most of cases were in 2nd decade with equal involvement of each breast. Grossly, the masses were well circumscribed, firm in consistency. Microscopically, the ducts showed a variable and prominent degree of epithelial hyperplasia and were surrounded by a prominent proliferating stroma.

Lactating adenoma was found in 4 (2.5%) cases. All the cases were seen in the age group of 21-30 years. One case of tubular adenoma was seen in a 24 year old female. Grossly, the tumor measured 3 cm and on microscopy, the lesion showed numerous closely packed uniform small tubules, lined by benign epithelial with very scant stroma.

Duct ectasia was also found in 4 cases (2.5%) Microscopically, the lesions were characterized with foamy macrophages surrounding dilated ducts. Three cases (1.87%) of granulomatous mastitis were found which microscopically showed non-caseating granulomas. Sclerosing adenosis was seen in three cases in the present study which constituted 1.87% of all benign lesions. Microscopy showed densely fibrotic connective tissue along with disorganized ductules.

Two cases of lipoma were noted in a 32 and 65 year old females. Both the cases presented with lump in right breast. Two cases of breast abscess and one case each of galactocele and juvenile papillomatosis were noted. Juvenile

papillomatosis on histopathology revealed multiple dilated ducts containing inspissated secretions and foamy cells, as well as intracystic papillary epithelial proliferation with apocrine metaplasia.

## DISCUSSION

Benign breast disease constitutes a heterogeneous group of disorder which is one of the most important causes of breast problems in females and it is more frequent than the malignant ones. Benign breast lesions deserve attention because of their high prevalence, their impact on women's life and due to the cancerous potential of some histological types. The importance of benign lesions lie in their ability to mimic cancers and not all benign lesions are completely free of risks. Treatment of benign breast disease is preservation of breast tissue as far as possible in contrast to traumatizing mutilating surgeries in breast cancers. Since a majority of benign lesions are not associated with an increased risk for subsequent breast cancer, unnecessary surgical procedures can be avoided in such lesions [3].

Incidence of benign breast lesions in the present study was 85.1% of all the breast lesions. The findings were comparable to the studies done by Hatim *et al* (80%) [4] and Rasheed *et al* (80.7%) [5]. Histopathological diagnosis of various benign lesions in our study and their comparison with other studies is shown in Table 3. Fibroadenoma (65.7%) was the most common lesion seen in our study. Our findings were consistent with the incidence reported by Sangma *et al*[3], Hatim *et al* [4] Rasheed *et al*[5]and Dayanand *et al*[6].Peak incidence of 36.2% of fibroadenoma was found in 21-30 years followed by 31.8% in 11-20 years.

**Table 3: Comparative analysis of histopathological diagnosis of various benign lesions**

| Breast lesions         | Rasheed <i>et al</i> | Sangama <i>et al</i> | Hatim <i>et al</i> | Dayanand <i>et al</i> | Pudale <i>et al</i> | Present study |
|------------------------|----------------------|----------------------|--------------------|-----------------------|---------------------|---------------|
| Benign                 | 80.7%                | -                    | 80%                | -                     | -                   | 85.7%         |
| Fibroadenoma           | 71.4%                | 52.7%                | 77.6%              | 62.3%                 | 40%                 | 65.7%         |
| Fibrocystic disease    | 14.2%                | 19.7%                | 4.3%               | 16.2%                 | 32.7%               | 10%           |
| Benign phylloides      | -                    | -                    | 3.4%               | 7.6%                  | 0.55%               | 5.6%          |
| Gynaecomastia          | -                    | -                    | 4.3%               | -                     | 2.23%               | 6.25%         |
| Granulomatous mastitis | -                    | -                    | 2.4%               | -                     | 2.23%               | 1.87%         |
| Duct ectasia           | -                    | -                    | -                  | -                     | -                   | 2.5%          |
| Adenosis               | -                    | -                    | 1%                 | -                     | -                   | 1.87%         |
| Tubular adenoma        | -                    | -                    | 0.4%               | -                     | 0.55%               | 0.63%         |
| Lactating adenoma      | -                    | -                    | -                  | -                     | 1.67%               | 2.5%          |

Dayanand *et al* reported 41.9% of fibroadenoma between 21-30 years of age followed by 30.5% in 11-20 years. Higher incidence of fibroadenoma in 2<sup>nd</sup> to 3<sup>rd</sup> decade was also reported by Hatim *et al* and Pudale *et al* [7].

In our study, we noted 50.9% lesions in right breast, 43.3% in left breast and bilateral fibroadenoma were seen in 5.6% cases. Sangma *et al* noted 48% lesions in right breast and 40% lesions in left breast. Geethamala *et al* [8] reported 63.2% females with fibroadenoma in 2<sup>nd</sup> and 3<sup>rd</sup> decade of life with a mean age being 25.5 years. Right side of the breast were affected in 51.4% and left side in 47.4%. Single nodular masses were seen in 79.3% cases while 20.6% presented with multiple nodules in the same breast in our study. Geethamala *et al* reported majority lesions as unitary fibroadenomas (97.3%) while multiple were noted in 2.7% cases.

Intracanalicular and pericanalicular pattern were seen microscopically and in some both patterns coexisted in the same tumour. Geethamala *et al* reported proliferating fibromyxoid stroma surrounding ducts in pericanalicular pattern as chief histologic feature in 50.9% cases, rest were intracanalicular 39.7%, and mixed 9.4% similar to a study by Kuijper *et al*. We found three cases (2.8%) of complex fibroadenoma which showed morphological changes such as adenosis, cyst formation and apocrine change. Geethamala *et al* reported 1.5% cases of complex fibroadenoma. Dupont *et al* [9] reported 22% of complex fibroadenomas and opined complex fibroadenoma have 3.1 times the increased risk of invasive breast carcinoma in comparison to women with fibroadenoma in the general population

Fibrocystic disease was the next common lesion accounting for 10% of all the benign lesions in our study. Fibrocystic change accounted for 16.2% of cases by Dayanand *et al*. Majority of our patients with fibrocystic disease were in 3<sup>rd</sup> to 4<sup>th</sup> decade. Sangma *et al* reported an incidence of 19.7% of fibrocystic disease with high incidence in 3<sup>rd</sup> to 4<sup>th</sup> decade. The basic morphologic changes in the fibrocystic disease are cysts formation, apocrine metaplasia and fibrosis. The cyst lining may be flattened, or shows apocrine metaplasia and epithelial hyperplasia. Epithelial hyperplasia whether typical or atypical put the patient in a higher risk of cancer development.

Benign phylloides tumour accounted for 5.6% of all the benign lesions consistent with 7.6% reported by Dayanand *et al*. Study done by Hatim *et al* reported an incidence of 3.4% of benign phylloides tumour. We observed that phylloides tumour were more commonly seen in women in their 5<sup>th</sup> decade of life. Pudale *et al* also noted most of the cases of phylloides tumour in the 5<sup>th</sup> decade. Right breast involvement was seen in majority of patients which was consistent as reported by Hatim *et al*. Sangma *et al* reported a largest lump of size 15x17 cm of benign phylloides tumour in a right breast.

Gynaecomastia constituted 10 cases (6.5%) of all the benign lesions in male patients. Hatim *et al* reported an incidence of 4.3% of gynaecomastia. Bagale *et al* [10] reported 2.25% incidence of gynaecomastia with left breast involvement in 54.5% and right breast in 18% cases.

Lactating adenoma accounted for 1.87% of cases comparable to that of Pudale *et al*. The mean age of presentation was found to be 27 years in our study. Only one case of tubular adenoma was seen in a 23 year female. Pudale *et al* reported an incidence of 0.55% which was seen in patients of 11-30 years. We reported 2 cases of Lipoma in breast in a 24 years and a 65 years female. Pudale *et al* also reported 2 cases of lipoma with a mean age of 45 years. Incidence of our study also correlate with study of Mudholkar *et al* [11].

Duct ectasia was reported in 4 cases (2.5%) consistent with incidence of 2.77% reported by Rasheed *et al*. Duct ectasia is a condition in which there is an obstruction and associated inflammation of the lactiferous duct. Mammary duct ectasia can mimic breast cancer as the disorder presents with nipple retraction, pain, swelling and bloody nipple discharge. The main importance of this lesion is that it is usually considered as a precursor for malignancy.

Granulomatous mastitis accounted for 1.87% of all benign inflammatory benign lesions. Hatim *et al* reported an incidence of 2.4% with most of the case in between 31-40 years.

Sclerosing adenosis was seen in three cases in the present study which constituted 1.87% of all benign lesions. Bagale P *et al* reported Sclerosing adenosis (5.93%) as third common lesion following fibrocystic lesion. Hatim *et al* reported an incidence of 1%. As sclerosing

adenosis is difficult to define, its incidence in different studies may differ according to the criteria adopted.

A rare case of juvenile papillomatosis was reported in our study in a 18 year female. Juvenile papillomatosis (Swiss cheese disease) is an infrequently seen localized benign proliferative lesion typically identified in women less than 30 years of age. The association of juvenile papillomatosis with carcinoma is proven but very rare as there exists several case reports. Sedloev T *et al* [12] noted a case of juvenile papillomatosis in a 15-year-old girl, who presented with two masses in the upper quadrants of the left breast. The microscopic examination showed Juvenile papillomatosis with intraductal epithelial proliferation, apocrine metaplasia, myoepithelial hyperplasia and multiple cystic expanded channels. In some of these channels, the cytological features of intraductal carcinoma of micropapillary types were observed. However in our study there was no focus of intraductal carcinoma.

One case of galactocele was reported in a 26 years lactating female in our study which was in accordance to studies done by Bagale P *et al* as 1.02% & Khanna S *et al* [13] as 1.2%. Golden *et al* [14] observed galactocele occurred most frequently in lactating females in the post-partum period.

### CONCLUSION

Benign breast disease constitutes a heterogeneous group of disorder which is one of the most important causes of breast problems in females and it is more frequent than the malignant ones. Differentiation between benign and malignant lesions still rests on histopathological examination. The spectrum of benign breast diseases in our study population does not appear to differ much from other studies with fibroadenoma being the most common benign breast lesions followed by fibrocystic changes. Though premalignant lesions were less common in our study, it is advisable that all cases of breast lesions should be carefully evaluated to exclude possibility of breast cancer.

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