Section: General Surgery

Original Research Article

# A RETROSPECTIVE ANALYSIS OF BENIGN BREAST DISEASES AT A TERTIARY CARE INSTITUTION

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***Received*** *: 04/08/2024*
***Received in revised form*** *: 03/09/2024*
***Accepted*** *: 09/09/2024*

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**DOI:** 10.70034/ijmedph.2024.3.114

**Source of Support:** Nil,
**Conflict of Interest:** None declared

**Int J Med Pub Health**
2024; 14 (3); 635-639

**ABSTRACT**

**Background:** Benign breast disorders represent a diverse group of conditions characterized by congenital anomalies, inflammatory processes secondary to injury or infection, and deviations from the normal patterns of breast tissue development and involution. Specific examples of these disorders include cystic breast disease, mastalgia, breast cysts, and fibroadenomas.

**Materials and Methods:** This investigation seeks to elucidate the correlation between clinical, histopathological, and imaging features in benign breast diseases. Moreover, the study explores the impact of demographic variables, including age, marital status, religious affiliation, symptom presentation, and diagnostic modalities, on the characteristics of these benign conditions.

**Results:** A total of 132 patients were diagnosed with benign breast disease. The majority of cases occurred in the age range of 31-40 years. Fibroadenoma was the most prevalent benign breast pathology within this age group, followed by fibroadenosis. The primary presenting symptom was a palpable breast mass, often without associated pain.

**Conclusion:** Benign breast conditions represent the preponderance of breast pathology. The majority of benign breast diseases occur during the reproductive years, with fibroadenoma being the most prevalent lesion. A palpable mass is the most common clinical presentation of benign breast diseases.

**Keywords:** Breast lump, Fibroadenoma, Fibroadenosis.

## INTRODUCTION

The breast is a complex organ that serves both aesthetic and reproductive functions in females. It undergoes dynamic physiological changes throughout a woman's reproductive lifespan, including developmental, cyclical, gestational, lactation, and in ovulation phases. While the majority of breast volume is composed of stroma, the epithelial component, though relatively small (less than 10%), is of greater pathological significance due to its propensity for lesion development. The interplay between specialized epithelial and stromal tissues within the breast can lead to the formation of both benign and malignant lesions. The pathogenesis of benign breast diseases encompasses a spectrum of disturbances in breast physiology, ranging from subtle deviations from normal to well-defined disease processes. [1,2]

Benign breast disease is a prevalent condition in women, frequently presenting with breast pain or palpable masses. This heterogeneous group of disorders encompasses a wide range of tissue alterations, including developmental, inflammatory, and proliferative changes. [3]

The objective of this study is to elucidate the correlation between clinical manifestations, histopathological features, and radiographic findings in female patients with benign breast pathology.

## MATERIAL AND METHODS

**Study type**

A retrospective, cross-sectional, observational study was conducted at the Department of Surgery, Shri Jagannath Medical College and Hospital, Puri, India, from January 1, 2023, to June 30, 2024. Patients diagnosed with benign breast disease during this period were included in the study.

**Inclusion Criteria**

Patients with any benign breast disorders and willing to participate in the study.

**Exclusion Criteria**

Patients diagnosed with malignant breast neoplasms and those who declined to participate in the study were excluded. All included patients were stratified based on age, histological diagnosis, and clinical presentation. Radiological findings were correlated with histopathological results.

**Statistical analysis**

All data were entered into a Microsoft Excel spreadsheet. Independent sample t-tests were employed to assess the statistical significance of differences in continuous study variables between the two groups for metric parameters.

## RESULTS

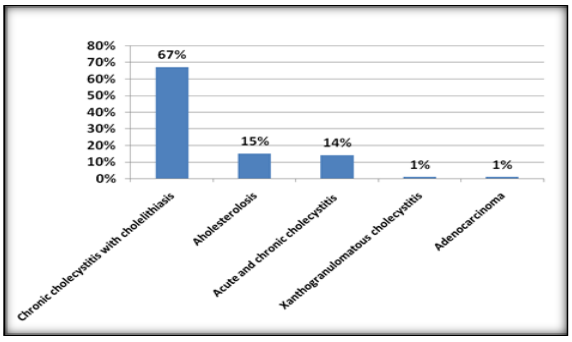


**Figure 1: Age wise distribution of enrolled cases**

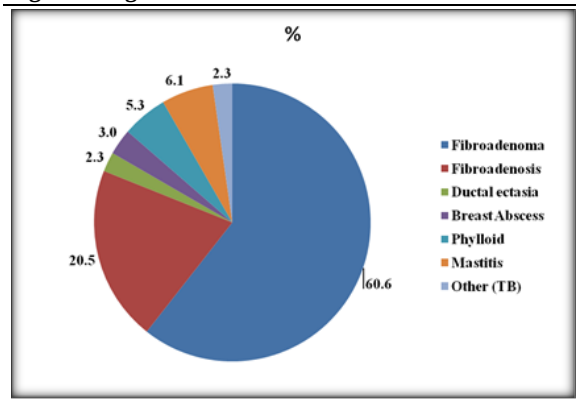


**Figure 2: Benign breast diseases distribution**

A total of 132 patients with benign breast disease were included in this study. The highest incidence of benign breast disease was observed in the age group of 31-40 years [Table 1, Figure 1]. The most common presenting symptom was a breast lump, and the majority of lesions were found to be 1-3 cm in size with a firm consistency [Table 2, Figure 2]. Fibroadenoma was the most prevalent diagnosis; followed by fibroadenosis [Table 3].

This diagnosis of fibroadenoma was further confirmed through radiological and histopathological examinations [Table 4]. Fibroadenoma was particularly predominant in the age range of 21-40 years.

**Table 1: Age wise distribution of enrolled benign cases**

| Age Group | Number (N=132) | % |
|---|---|---|
| <20 | 7 | 5.3 |
| 21-31 | 43 | 32.6 |
| 31-40 | 58 | 43.9 |
| 41-50 | 19 | 14.4 |
| >51 | 5 | 3.8 |

**Table 2: Depicting various features of benign breast lump in study subjects**

| Characteristics | | Total (N=132) | % |
|---|---|---|---|
| Complaints | Breast Lump | 67 | 50.8 |
| | Breast Lump +Pain | 41 | 31.1 |
| | Breast Lump +Nipple Discharge | 13 | 9.8 |
| | Pain Only | 4 | 3.0 |
| | Nipple Discharge only | 7 | 5.3 |
| Size | <1 cm | 48 | 36.4 |
| | 1-3cm | 68 | 51.5 |
| | >3cm | 16 | 12.1 |
| Laterality | Left | 72 | 54.5 |
| | Right | 57 | 43.2 |
| | Both | 3 | 2.3 |
| Consistency | Soft/Cystic | 87 | 65.9 |
| | Firm | 31 | 23.5 |
| | Variable | 14 | 10.6 |

**Table 3: Distribution of benign breast diseases**

| Diseases Distribution | Total (N=132) | % |
|---|---|---|
| Fibroadenoma | 80 | 60.6 |
| Fibroadenosis | 27 | 20.5 |
| Ductal ectasia | 3 | 2.3 |
| Breast Abscess | 4 | 3.0 |
| Phylloid | 7 | 5.3 |
| Mastitis | 8 | 6.1 |
| Other (TB) | 3 | 2.3 |

**Table 4: Age wise distribution of benign breast diseases**

| Disease Distribution | <20 | 21-31 | 31-40 | 41-50 | >51 | Total |
|---|---|---|---|---|---|---|
| Fibroadenoma | 6 | 28 | 29 | 16 | 1 | 80 |
| Fibroadenosis | 0 | 9 | 17 | 0 | 1 | 27 |
| Ductal ectasia | 0 | 2 | 1 | 0 | 0 | 3 |
| Breast Abscess | 0 | 3 | 1 | 0 | 0 | 4 |
| Phylloid | 0 | 1 | 3 | 2 | 1 | 7 |
| Mastitis | 0 | 0 | 6 | 1 | 1 | 8 |
| Other (TB) | 1 | 0 | 1 | 0 | 1 | 3 |
| Total | 7 | 43 | 58 | 19 | 5 | 132 |

## DISCUSSION

Our study included 132 patients diagnosed with benign breast disease. As detailed in Table 1, the subjects were categorized into various age groups. Previous research aligns with our findings. Memon et al. [4] reported a predominance of young females (15-25 years) in their study, comprising 62.5% of the participants. Gupta et al. [5] observed that 85% of patients with benign breast disease fell within the reproductive age range of 15-40 years. In line with these observations, our study identified the 20-30 age groups as the most prevalent, accounting for 38.75% of cases with an average age of 22.38 years. Kumari et al. [6] also noted a high incidence in younger individuals, with the 10-19 age group representing 39.7% of their cohort. Janaki et al. [7] similarly found that the majority of women with benign breast disease were between 21 and 60 years old.

The presenting symptoms of various benign breast diseases were analyzed and are summarized in Table 2. A solitary breast lump was the most common presentation, observed in 67 cases (50%). In 41 cases (31%), patients presented with both a breast lump and associated pain. These findings are consistent with a previous study by Chauhan, which reported that the predominant clinical manifestation was a breast lump. In their study, 67 patients (63.80%) presented with a lump alone, followed by 14 patients (13.33%) who experienced a lump accompanied by pain. [8]

Consistent with findings from previous studies, [5, 6, 7, 9] breast pain was a common presenting symptom in our cohort. Gupta et al. [5] reported pain in 66.25% of patients, with 27% experiencing additional symptoms such as breast lumps, nodularity, or nipple discharge. In contrast, Kumari et al. [6] observed breast pain in 39.7% of patients, while 60.3% presented without pain. These data collectively highlight the prevalence of breast pain as a primary complaint among individuals seeking evaluation for breast concerns.

In a similar study by Kumar et al. (2023), [9] of 425 patients, 181 (47.63%) presented with right-sided breast involvement, while 151 (39.73%) had left-sided involvement. Bilateral involvement was observed in 48 (12.63%) patients. Kumari et al. [6] reported that 35 of 58 patients had a palpable mass in the upper outer quadrant of the breast, followed by 10 patients with a mass in the lower outer quadrant. The remaining patients exhibited lesions extending to multiple quadrants, including the nipple-areolar complex. Laxman et al. [10] evaluated 50 patients and found that 34% had fibroadenomas in the upper lateral quadrant, 8% in the lower medial quadrant, 26% in the lower lateral quadrant, and 20% in the upper medial quadrant.

Table 2 summarizes the characteristic features of benign breast lumps identified in the study participants. Consistent with Kumar et al.'s findings [9], the majority of solitary fibroadenomas (84/151, 55.6%) were smaller than 2 cm, followed by 67/151 (44.3%) in the 2-5 cm range. All giant fibroadenomas exceeded 5 cm, as defined, while most multiple fibroadenomas (2/3, 66.66%) measured between 2 and 5 cm. Kumari et al.[6] also reported a predominance of firm consistency (81%, 47/58) among the lumps, with 13.8% (8/58) being soft and 13% (8/58) being hard. Laxman et al. [10] observed the highest prevalence.

Table 3 summarizes the prevalence of various benign breast diseases among the study participants. Of the 132 cases analyzed, fibroadenoma was the most common diagnosis, affecting 80 patients (60.6%). Consistent with previous findings by Chauhan et al. [8] and Kumar et al. [9], fibroadenoma was the predominant benign breast pathology, accounting for 49 (46.66%) and 31 (29.52%) cases, respectively. Other diagnosed conditions included breast abscess (6.6%), duct ectasia (4.76%), and mastitis (4.76%).

The diagnostic accuracy of benign breast disease in study subjects was evaluated using clinical, radiological, and histopathological methods. Among 80 cases of fibroadenoma, histopathological

examination achieved 100% sensitivity, while clinical and radiological assessments yielded 98% and 96% sensitivity, respectively. For 27 cases of fibroadenosis, histopathological diagnosis was 100% accurate, with radiological and clinical methods identifying 95% and 93% of cases, respectively.

Clinical diagnosis demonstrated superior accuracy in identifying ductal ectasia, breast abscess, and phylloid tumors compared to radiological and histopathological methods. While clinical examination achieved 80% accuracy in diagnosing ductal ectasia, radiological and histopathological assessments were less sensitive, reaching 60% and 30%, respectively. In contrast, clinical diagnosis of breast abscess and phylloid tumors achieved 100% accuracy in both instances. Radiological and pathological methods also contributed to the diagnosis of phylloid tumors, with 100% accuracy combined. For mastitis, clinical diagnosis remained the most accurate method, achieving 100% accuracy, while radiological and pathological methods had lower sensitivities of 40% and 30%, respectively. These findings align with a previous study by Samal et al. [11] which reported 100% clinical accuracy in diagnosing breast abscess and high accuracies for fibroadenoma (96%) and mastalgia (89%).

Of the 132 patients, all underwent ultrasonography (USG). Additionally, 18 patients aged 40 years or older underwent mammography. The diagnostic accuracy of USG for fibroadenoma, mastalgia, and phyllodes tumors was 83%, 67%, and 50%, respectively. In contrast, mammography demonstrated 83% accuracy for breast abscess, 90% accuracy for fibroadenoma, and 50% accuracy for mastalgia.

Fine needle aspiration cytology (FNAC) demonstrated 100% accuracy in diagnosing fibrodenoma and ductal papilloma. In a study by Sukanya et al. [12] comparing clinical and pathological findings in benign breast diseases, the sensitivity of clinical diagnosis was 97% for fibroadenoma and 100% for fibroadenosis among 80 patients. FNAC identified two cases of phylloid tumor, one of which was subsequently diagnosed as breast carcinoma. The overall sensitivity of clinical diagnosis in detecting benign breast diseases was 97.9%.

Shanker et al. [13] conducted a retrospective analysis of benign breast diseases, examining the final diagnosis and age distribution. Their findings revealed a predominance of benign breast conditions in the reproductive age group, specifically between 20 and 35 years.

Ortiz et al. [14] conducted a comparative analysis of clinical, pathological, and radiological findings in benign breast diseases, examining 698 breast ultrasounds in women under the age of 40. Of these, 52% were classified as normal, while 48% demonstrated benign breast pathology. The most common benign lesions observed included fibroadenomas (38%), cysts (27%), dilated ducts (24%), benign nodules (4%), mastitis (3%), ectasia (2%), and abscesses (2%). Among the 265 cases of fibroadenoma, the concordance between clinical examination and ultrasound findings was 50%.

Surgical intervention was performed in 74 cases of fibroadenoma, 23 cases of fibroadenosis, 14 cases of breast abscess, and all 7 cases of phylloides. A conservative approach, including counselling and medical management, was recommended for younger patients with asymptomatic breast lumps measuring less than 2 centimeters. Conversely, surgical management was indicated for patients with breast lumps greater than 2 centimeters accompanied by symptoms such as pain or discomfort.

In a comparable study, Shanker et al. [13] reported that among 50 participants, excision was the primary surgical intervention in 36 cases (72%), followed by incision and drainage (I&D) in 6 cases (12%) and wide excision in 3 cases (6%). Conservative management was employed in 5 cases (10%). Of the 24 fibroadenomas, 72% underwent excision. All breast abscesses were treated with I&D, while phylloid tumors and duct ectasias were managed conservatively.

**Limitations**

The study was a hospital-based retrospective study. The limited sample size hampered the accuracy of the presentation. Since it is a study conducted in tertiary institutions, we lack data on rural areas where awareness is a big issue like a country in India.

## CONCLUSION

Benign breast diseases constitute the predominant category of breast pathology. The majority of these benign conditions occur in women of reproductive age, with fibroadenomas representing the most frequent lesion. A palpable mass is the most common presenting symptom of benign breast diseases. When evaluating benign breast diseases using a combination of clinical, radiological, and histopathological assessments, fibroadenomas exhibit a nearly equivalent correlation between clinical and histopathological findings. Fibroadenosis and breast abscesses demonstrate a similar level of correlation among all three parameters. Ductal ectasia and mastitis are primarily diagnosed based on clinical features, with a lesser degree of correlation observed with other diagnostic modalities.

**Funding:** No funding sources

**Conflict of interest:** None declared

**Ethical Approval:** The study was approved by the Institutional Ethics Committee.

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