

# A COMPARATIVE BACKGROUND CLINICAL, ULTRASONOGRAPHY, AND HISTOPATHOLOGY FINDINGS OF BENIGN BREAST DISEASES

**Dr. Aparna Mule <sup>1</sup>, Dr.T.Srinivas <sup>2</sup>, Dr. A. Nagaraju <sup>3</sup>, dr. Puli Vineela <sup>4</sup>**

1. Assistant Professor, Department of General Surgery, Govt Medical College. Mahabubnagar, Telangana, India.
2. Associate Professor, Department of General Surgery, Govt Medical College. Mahabubnagar, Telangana, India.
3. Assistant Professor, Department of General Surgery, Govt Medical College. Mahabubnagar, Telangana, India.
4. Senior Resident, Department of General Surgery, Govt Medical College. Mahabubnagar, Telangana, India.

**Corresponding author: Dr.T.Srinivas**

## **ABSTRACT**

### **BACK GROUND:**

Breast cancer is becoming more common in today's population. Eighty percent of lesions are harmless. No clinical examination or investigation can reliably detect BBD. When clinical examination, USG breast, and FNAC/HPR are coupled, the accuracy of diagnosis improves.

### **AIMS & OBJECTIVES:**

The purpose of this study was to examine the roles of clinical examination, ultrasonography, and histopathological examination in the diagnosis of benign breast illnesses.

### **Materials And Methods:**

Female patients with breast disorders who attended O.P.D. or were admitted to wards at Department of Surgery, Govt Medical College/GGH, Mahabubnagar and research centre between June 2019 and July 2022. A detailed history of the patient was taken in order to determine the reasonable risk factor, and complaints were recorded chronologically. A clinical examination was performed to determine the various forms of presentation. The breast USG and FNAC/HPR are then performed.

**RESULT:** The present study indicated that the incidence of benign lumps was higher in the age group of 11-20 years. 28 patients (90 percent) reported a lump in the breast, followed by pain and drainage from the nipple. The majority of them (60%) were 3cms. Fibroadenomas were prevalent (73.34 percent). There were 16 cases of left side lesions. The majority of the lesions were isolated in 28 patients (93.34 percent). FNAC was performed in all patients and was diagnostic (100 percent). The USG could clearly indicate whether the tumour was cystic or solid, however further typing of the lesion had limitations, even though fibroadenoma could be reliably diagnosed.

**CONCLUSION:**

When all three methods—a clinical exam, a USG, and a FNAC—are applied, the accuracy of the BBD diagnosis is able to achieve its full potential. Several needless procedures for benign lesions may be avoided with triple assessment.

**KEYWORDS:** *BBD, Triple assessment, USG breast, mammography, ultrasonography.*

**Introduction**

Benign breast diseases are any non-malignant breast conditions that include a wide variety of clinical and pathologic abnormalities. It is one of the most prevalent disorders in girls in any civilization. Breast cancer is the most frequent cancer among women around the world.

It is the second leading cause of cancer-related fatalities among females, after lung cancer. The age-adjusted incidence rates for Indian women range from 6.2 to 39.5 per 100,000. With increased public knowledge of breast cancer, a lump in the breast causes significant physical, emotional, and psychological trauma to the patient and family members. As a result, distinguishing benign from malignant tumours is critical for patient and effective care.[ 3]

The great majority of lesions in the breast are harmless. Noncancerous pathology of the breast has always been overlooked in comparison to breast cancer, despite the fact that benign disorders account for 90% of clinical presentations linked to the breast[1].

In contrast to malignant diseases, the incidence of benign breast lesions begins to climb around the second decade of life and peaks in the fourth and fifth decades, whereas the incidence of malignant diseases continues to rise after menopause, albeit at a slower rate.

Triple assessment, which combines clinical examination, imaging, and histological study, is now regarded as the gold standard approach to breast lump diagnosis. A definitive diagnosis of benign lesion not only spares the patient from unneeded stress, but it also relieves the health-care system of an unnecessary burden. A definitive preoperative identification of a malignant lesion, on the other hand, opens up numerous chances for patient counselling and planning of prospective single-stage surgical therapy. Breast cancer might manifest as a lump or a nipple discharge[3]. Triple assessment is used to evaluate this breast mass, which includes a complete history, clinical breast examination, imaging modalities, and tissue diagnosis. Although histological examination (HPE) of the excised material is used to make the final diagnosis, routine excision of all breast lumps is not justified because up to 80% of breast lumps are benign. As a result, there is a need to use a less invasive and cost-effective way to identify the lump that is accurate, easier to apply, reproducible, valid, and does not require much preparation, rather than resorting to a more painful and invasive open biopsy method. For the examination of breast lumps, a variety of diagnostic techniques are currently available. Ultrasound Doppler scanning, fine needle aspiration cytology (FNAC), mammography (MMG), and, more recently, magnetic resonance imaging (MRI) and contrast-enhanced ultrasound are all examples of this. [3,4] However, because of the greater price[3,4]

Because of the limited availability of MMG and MRI, not all patients can benefit from this. This advised that less expensive and more economical diagnostic methods, such as FNAC and ultrasonography, be preferred (USG)[5,6].

Ultrasound imaging of the breast is another technique for evaluating breast lumps, with benefits such as no radiation exposure, noninvasiveness, and high accuracy in diagnosing cystic lesions with greater accuracy

in the breast with dense parenchymal tissue, but it is an operator-dependent technique, and thus some interobserver variations may exist[7].

Fine needle aspiration cytology is a straightforward, dependable, valid, and reproducible diagnostic technique. It is a less stressful and nearly painless treatment that does not require anaesthesia and produces a high percentage of genuine positive results, making it a patient-friendly standard tool for diagnosing breast masses[3,8].

Although the accuracies of FNAC and USG in the identification of breast masses have been investigated individually in numerous research, there is a paucity of evidence comparing the two modalities for evaluation. Thus, the purpose of this study was to assess and compare the accuracy of USG and FNAC in the diagnosis of newly identified palpable breast lumps in comparison to the final HPE report of the biopsied specimens.

## **MATERIALS AND METHODS**

### **SOURCE OF DATA**

Consecutive female patients with breast diseases who attended O.P.D or were admitted to wards in Department of Surgery , Government General Hospital, Mahabubnagar during the period from June 2019 to July 2022.

### **METHOD OF COLLECTION OF DATA**

Detailed history of the patient was noted to find out the reasonable risk factor and complaints were recorded in chronological order. Clinical examination was done to find out the various modes of presentation. Followed by USG of the breast and FNAC/HPR[2,3].

### **STATISTICAL ANALYSIS**

Was done using proper statistical test

Diagrammatic presentation

Sensitivity, Specificity and Positive & Negative predictive value

### **INCLUSION CRITERIA**

All cases diagnosed clinically benign breast diseases irrespective of age were included in the study.

### **EXCLUSION CRITERIA**

Those patients recruited in this study as benign breast disease and later proved to be having malignancy after investigation and acute inflammatory conditions were excluded from study.

### **RESULTS**

This study includes 30 patients with breast lump. They have undergone clinical examination followed by USG breast and FNAC evaluation. The diagnosis of breast lump was reached with correlation of clinical finding, ultrasonography & FNAC/HPR.

### **AGE DISTRIBUTION OF BBD:**

On analysis of my study, it was found that benign lump incidence was found to more in age group of 11-20 years (12 patients i.e. 40%), followed by 21-30 years and than 31-40 years.

TABLE 1: AGE DISTRIBUTION OF BBD

AGE DISTRIBUTION(YEARS)	NO OF CASES	PERCENTAGE (%)
1-10	0	0
11-20	12	40
21-30	10	33.3
31-40	8	26.7
41-50	0	0

**SYMPTOMATOLOGY:**

Most of patients presented with a complain of lump in the breast 28 cases (90%) followed by pain and discharge from nipple .

TABLE 2: SYMPTOMATOLOGY OF BBD

SYMPTOM	NO OF CASES	PERCENTAGE (%)
LUMP	27	90
PAIN	2	6.7
DISCHARGE	1	3.3

**LUMP SIZE:**

The size of lump was divided based on the maximum diameter. Patients were divided into those with a lump <3cms (small size) in diameter, those between 3-5cms (intermediate size) and those >5cms (giant size). Most of them 18 cases (60%) were <3cms in no.

TABLE 3: LUMP SIZ

SIZE OF LUMP (cms)	NO OF CASES	PERCENTAGE (%)
<3	18	60
3-5	8	26.7
>5	4	13.3

## DISEASE PATTERN OF BENIGN BREAST DISEASE:

In this study of 30 patients, 22 cases (73.34%) had fibroadenomas, followed by fibroadenosis and non specific mastitis.

TABLE 4: DISEASE PATTERN OF BBD

DISEASES	NO OF CASES	PERCENTAGE (%)
FIBROADENOMA	22	73.34
FIBROADENOSIS	4	13.32
NS.MASTITIS	3	10
GALACTOCELE	1	3.34
DUCTAL PAPPILOMA	0	0

## AGE DISTRIBUTION AS PER BREAST PATHOLOGY

TABLE 5: AGE DISTRIBUTION AS PER BREAST PATHOLOGY

DISEASES	<10 YRS	11-20 YRS	21-30 YRS	31-40 YRS	>40YRS
FIBROADENOMA	0	11	7	4	0
FIBROADENOSIS	0	0	1	3	0
NS MASTITIS	0	1	0	0	0
GATACOTCELE	0	0	1	2	0

DUCTAL PAPPILOMA	0	0	0	0	0
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**LATERALITY OF LESION:**

Most of the patients presented with pathology on left side 16 cases (53.33%), followed by right and bilateral side.

**TABLE 6: LATERALITY OF LESION**

<b>SIDE</b>	<b>NO OF CASES</b>	<b>PERCENTAGE (%)</b>
RIGHT	13	43.34
LEFT	16	53.33
BILATERAL	1	3.33

**NO. OF LESIONS:**

Most of the lesions were solitary 28 cases (93.34%) and few were multiple lesions.

**TABLE 7: NO. OF LESIONS**

<b>NO. OF LESION</b>	<b>NO. OF CASES</b>	
	<b>CLINICAL</b>	<b>USG</b>
SINGLE	29	28
MULTIPLE	1	2

**CLINICAL VS USG VS FNAC DIAGNOSIS OF BB**

**TABLE 8: CLINICAL VS USG VS FNAC DIAGNOSIS OF BBD**

<b>DIAGNOSIS</b>	<b>CLINICAL</b>	<b>%</b>	<b>USG</b>	<b>%</b>	<b>FNAC</b>	<b>%</b>
FIBROADENOMA	25	83.3	22	73.3	22	73.3
ADENOSIS	2	6.7	-	-	4	13.3
NON SPECIFIC	0	0	-	-	3	10.0
MASTITIS						

GALACTOCELE	3	10	1	3.3	1	3.4
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In the current study, there were a total of 25 cases of fibroadenoma, and clinical examination was able to diagnose 83.3 percent of those cases. However, USG was only able to diagnose 22 cases (73.3 percent). The FNAC has verified this information. Among the three cases that were picked up on clinical ground, only one case of galactocele was picked up on USG, and this case was confirmed on FNAC. The USG test used in this investigation has a sensitivity of one hundred percent and a specificity of seventy-five percent.

## DISCUSSION

Breast cancer is still a big hazard to women's health around the world. However, its prevalence varies greatly between industrialised and developing countries. The clinical evaluation of a condition is always followed by reports obtained from dependable investigation instruments to increase the accuracy of the clinical diagnostic skill. Thus, the purpose of this study was to establish the diagnostic accuracy of the two basic tools for diagnosing lumps in the breast, namely USG and FNAC, as stated below[2,3].

In our country, benign breast disorders are a frequent ailment that affects women. Between June 2019 and July 2022, 30 patients of benign diseases were admitted and treated at Department of General Surgery, Govt Medical College, Mahabubnagar, Telangana, India

According to the Kalwani R et al study, the average age of malignant cases was 51.25 ± 11.40 years, with the greatest incidence occurring in the fifth decade of life, followed by the sixth decade. Our findings are consistent with the data from the Indian Council of Medical Research's (ICMR) National Cancer Registry Program (1996), which indicated that the average age of females with breast cancer was 51 to 53 years[3]. According to the findings of the current study, the incidence of benign lumps was highest in the age range of 11-20 years (12 patients, or 40%), followed by 21-30 years, and then 31-40 years

The majority of patients (68.33 percent) in the Shyamala Jothy et al study were in their active reproductive years (20-40 years) as a result of repeated cyclical changes in the form of menstruation, pregnancy, and breastfeeding illustrating the incidence of ANDI as stated in the literature. In our investigation, the most prevalent lesions were fibroadenoma, fibrocystic disease, galactocele, cystosarcoma phyllodes tumour, and ductal papilloma[5].

TABLE 9: COMPARISON OF DISEASE PATTERN OF BBD WITH OTHER STUDIES

Author	FA	FCD	GLC	DP	CSP	OTHERS
Khanna et al <sup>9</sup>	40.0%	14.3%	12.0%	0.7%	4.2%	28.8%
Shukla et al study <sup>10</sup>	46.4%	14.3%	0.0%	0.9%	0.6%	37.8%
Rangabashyam study <sup>11</sup>	56.7%	16.2%	6.9%	0.0%	2.3%	17.9%
Selvakumaran study <sup>12</sup>	55.9%	20.8%	1.2%	1.2%	2.3%	18.6%
Shyamala Jothy, et al <sup>5</sup>	50.0%	36.6%	8.3%	1.6%	3.3%	0.0%

Present study	73.34%	13.32%	3.34 %	0 %	0 %	13.34 %
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One of most typical findings in the Shyamala Jothy, et al study were fibroadenoma and fibrocystic disease. Studies that compared all three modalities with final HPE or those employed individual modality and compared with final HPE were evaluated. All FNAC confirmed fibroadenomas were treated with excisional biopsy after obtaining patient consent, and all FNAC confirmed fibrocystic disease patients were treated conservatively and exposed to core needle biopsy for research purposes. In the Shyamala Jothy et al study, each parameter of the triple assessment was compared separately to calculate sensitivity, specificity, PPV, and NPV. Each characteristic was compared in relationship to fibroadenoma because it was the most common presentation[5].

Calculating the sensitivity and specificity of each modality for BBD diagnosis necessitates a large sample size and the presence of malignant lesions.[13].

**TABLE 10 :COMPARISON OF CLINICAL EXAMINATION RESULTS WITH OTHER STUDIES**

Study	Eltahir al <sup>14</sup>	Bangaru H et al <sup>15</sup>	Egwuonwu et al <sup>16</sup>	Shyamala Jothy et al <sup>5</sup>	Present study
Sensitivity	88.7%	98.8%	93.3%	93.33%	100 %
Specificity	99.1%	65.9%	58.8%	76.66%	92.4%
Positive predictive value	98.5%	91.9%	85.7%	80%	-

**TABLE 11 : COMPARISON OF SENSITIVITY OF USG WITH OTHER STUDIES**

Study	Sensitivity of USG
Carty et al <sup>13</sup>	98%
Bangaru H et al <sup>15</sup>	98.3%
Gonzanga et al <sup>17</sup>	75%
Mansoor et al <sup>18</sup>	81.8%
Khailas et al <sup>19</sup>	81.6%
Shyamala Jothy et al <sup>5</sup>	
Mandal A et al	96.66%

Present study	95.6 %
	100 %

**TABLE 12: COMPARISON OF SENSITIVITY OF FNAC FOR WITH OTHER STUDIES**

Study	Sensitivity(%)
Carty et al <sup>11</sup>	84%
Velu et al <sup>15</sup>	97.2%
Cant et al <sup>16</sup>	87%
Bangaru H et al <sup>9</sup>	97.2%
Shyamala Jothy et al <sup>5</sup>	96.66%
Mandal A et al <sup>21</sup>	87.5 %
Present study	92.4%

In this present study, 25 patients (83.3 percent) of fibroadenoma were detected clinically, however only 22 cases were diagnosed by USG (73.3 percent). This has been confirmed by FNAC. Only one case of galactocele was identified on USG out of three clinical cases, which was confirmed on FNAC. In the current investigation, USG has a sensitivity of 100% and a specificity of 75%.

All cases of fibrocystic breast disease were reported in people aged 21 to 40. This did not match the findings of Khanna et al,[9] who found that 58.53 percent of patients were between the ages of 20 and 40. Another study by Rangabashyam et al found that the majority of patients (70%) were between the ages of 20 and 30[11].

In the current study, 81.12 percent of fibroadenomas were found in people aged 11 to 30. In an Indian study conducted by Rangabashyam et al, the majority of cases (75.39 percent) were observed in the 11-30 year age range. Similarly, in Khanna et al's study, 82.78 percent of fibroadenomas were seen in people aged 11 to 30[11].

In this particular study, the reproductive age group comprised the vast majority of the participants. Two of the patients reported having menstrual periods that were not regular, and none of the patients had any appreciable reduction in the amount of the swelling either before or during menstruation.

In the study by Shyamala Jothy et al, the sensitivity of clinical breast examination in the prognosis of fibroadenoma was good but showed less sensitivity and specificity than USG and FNAC. In this study, USG and FNAC showed similar sensitivity, while FNAC has higher specificity than USG. FNAC outperformed clinical evaluation and USG in terms of specificity and positive predictive value. Because of the small sample size in this investigation, FNAC exhibited equal sensitivity, specificity, and positive predictive value. The sensitivity and specificity of clinical examination to detect cancer in this Mandal A et al investigation were 87.5 percent and 95.6 percent, respectively. The majority of these women had huge lumps in their breasts. The average size of a malignant

breast lump presentation was 5.174.38 cms[5].

According to the Kalwani R et al study, the sensitivity and NPV of USG were higher than those of FNAC (92 percent vs 88.68 percent and 93.75 percent vs 91.04 percent respectively). However, with USG, the percentage of unclear results was higher than with FNAC (5.17 percent vs 1.72 percent ) [6].

The sensitivity and specificity of clinical examination to detect cancer in this investigation were 92.4 percent and 100 percent, respectively. The greatest diameter of the lump was used to split the size of the lump. Patients were classified as having a lump 3cms (small size), 3-5cms (middle size), or greater than 5cms in diameter (giant size). The majority of the 18 cases (60 percent) were 3cms in no.

Clinical examination and USG were shown to be in good agreement with HPE in the diagnosis of BBD. However, decisions about the care of benign breast lumps could not be made only on the basis of these modalities.

In other investigations, FNAC traits were found to be more informative when paired with physical and radiological findings[3]. A single modality test was found to be insufficiently accurate to make the correct diagnosis, and that using a multimodality test could improve diagnostic accuracy.

The use of FNAC and USG in breast disease diagnosis and therapy is expanding. However, each of these diagnostic methods has a significant false negative rate. This error in breast disease diagnosis can be overcome by combining several diagnostic approaches, which boosts sensitivity. Close communication among doctors, radiologists, and pathologists was thus found to be beneficial in improving diagnostic accuracy[21].

However, this is a one-center, record-based study. More large-scale studies on the accuracy and necessity of triple assessment of benign breast tumours would be beneficial. When the triple assessment parameters are integrated, a definitive diagnosis may be made, indicating that the triple assessment has a high sensitivity, specificity, positive predictive value, and negative predictive value with minimum error.

## **RECOMMENDATIONS**

Ultrasonography has demonstrated its usefulness in all ages, particularly in dense breast, and should be considered the first-line inquiry for the evaluation of breast lumps, particularly in women under the age of 35. If the clinical diagnosis and USG results agree, the patient is practically diagnosed with cancer. The USG has demonstrated good accuracy in older females, and because of its low cost, ease of access, and lack of radiation risk, it can be used as a first-line screening modality in older females in poor countries like as India, where mammographic facilities are already scarce in rural areas. More research and randomised controlled trials, however, are required to validate this finding.

On the contrary, FNAC has demonstrated extremely good diagnostic accuracy in the diagnosis of malignant breast disease, and it may even demonstrate its accuracy in cases where USG findings were equivocal or inconclusive. As a result, both modalities were complementary to one another. To avoid false negative and inconclusive USG results, it should be performed by an expert sonologist with the addition of colour Doppler, which significantly increases ultrasonography diagnostic accuracy. To decrease false negative FNAC results, it should be performed in

accordance with USG guidelines to properly identify the solid suspicious region and avoid inadequate sampling errors. As a result, both diagnostic equipment have demonstrated exceptional diagnostic ability and accuracy. As a result, neither tool can replace the other because they are complementary to each other and, when coupled in the form of Triple Assessment, can provide diagnostic value up to 100 percent accuracy

Breast screening programmed with breast cancer awareness and the necessity of breast self-examination should be undertaken at the age of 40 and above for early detection of breast lumps, which can then be thoroughly investigated to diagnosis malignant lesion and reduce mortality. Certainly, more research is needed to precisely determine the role of FNAC and USG in the treatment of breast lump.

## CONCLUSION

The use of breast imaging and fine-needle aspiration cytology (FNAC) for preoperative diagnosis has had an impact on the treatment of breast disease. In this study, we looked at 30 different patients with BBD, each of which had a clinical exam, USG breast, and FNAC/HPR performed on them. When a BBD diagnosis is attempted using all three methods—a clinical exam, a USG, and a FNAC—the level of accuracy achieved is significantly improved. Triple assessment can help rule out the need for unneeded procedures for BBD patients. Based on the findings of our research, FNAC appears to be a reliable diagnostic method. However, if the results of the FNAC are ambiguous, the best option for breast lesions is to have an excisional or core needle biopsy performed. The FNAC/HPR is helpful in recognising the various ways in which BBD can show itself, which in turn influences how the disease is managed. In light of this, performing a clinical breast examination, ultrasonography, and fine needle aspiration cytology as part of the evaluation process for benign breast masses is a strategy that is both beneficial and successful. Triple examination could help surgeons avoid doing many unneeded operations on benign lesions.

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