

**ORIGINAL RESEARCH**

# Diagnostic utility of FNAC in breast lesions and its correlation with histopathology

<sup>1</sup>Dr. Akhtar Un Nisa Salaria, <sup>2</sup>Akshiptika, <sup>3</sup>Dr. Subhash Bhardwaj<sup>1</sup>Lecturer, <sup>2</sup>Post graduate 3rd year, <sup>3</sup>Professor and Head, Department of Pathology GMC Jammu, J & K, India**Corresponding author**

Dr. Akhtar Un Nisa Salaria

Lecturer, Department of Pathology GMC Jammu, J &amp; K, India

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**ABSTRACT**

**Background:** Breast lumps are among the most frequent complaints that surgical oncology departments get, therefore it's critical to distinguish between benign and malignant disorders before beginning treatment. The present study was conducted to assess diagnostic utility of fine needle aspiration cytology in breast lesions. **Materials & Methods:** 215 cases of FNAC was conducted in the Department of Pathology at Government Medical College Jammu. Aspiration was done with 10 ml disposable syringe fitted with 21 gauge needle and Franzens handle. Material spread on glass slides was wet fixed & stained with pap and Giemsa, occasionally keeping few unstained slides for later use. Histopathological correlation was available in 91 cases. The specimens were examined, representative tissue sampled and the sections were stained with H&E. **Results:** Out of 215 patients, males were 9 and females were 206. Out of 9 male patient lesions, 7 were benign and 2 were malignant. 7 cases of gynecomastia mostly in 30 to 40 years, 2 cases of Duct cell Carcinoma at 58 years & at 65 years. The difference was significant ( $P < 0.05$ ). Out of 206 smears in females, 13 were inadequate smears, out of 193 adequate smears, 171 smears were reported as neoplastic, out of which 127 were benign and 44 were malignant. 22 were reported as non-neoplastic. The difference was significant ( $P < 0.05$ ). Common lesions in female patients was fibroadenoma 87, malignancy 44, phyllodes 4, fibrocystic disease 26, papilloma 3, acute mastitis 9, granulomatous mastitis 10, galactocoele 3, simple cyst 7, and pagets 1. The difference was significant ( $P < 0.05$ ). Common malignancies were medullary Ca. in 4, duct cell carcinoma- NOS in 37, pure mucinous Ca. in 1, Sq cell Ca in 1, and mixed mucinous Ca. in 1 case. The results showed sensitivity- 97.2 %, specificity- 83.4% , PPV- 88.2%, and NPV – 96%. **Conclusion:** Our study highlights the continuing role of fine needle aspiration cytology in the diagnosis of breast lesions & proves that it is an extremely accurate, well-tolerated, relatively non-invasive and low-risk test that obviates the need for surgical intervention in most benign conditions and disseminated malignancies.

**Keywords:** Breast, FNAC, Lump

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**INTRODUCTION**

Numerous illnesses, most of which manifest as breast lumps, can affect the breast. These illnesses include infections, inflammatory disorders, and both benign and malignant neoplasms.<sup>1</sup> Breast lumps are among the most frequent complaints that surgical oncology departments get, therefore it's critical to distinguish between benign and malignant disorders before beginning treatment. A detailed understanding of the normal anatomical, physiologic, and pathologic aspects of the breast is essential for a good diagnosis of the condition.<sup>2</sup> Twenty to thirty percent of all malignancies worldwide are caused by it. at the medical field, early diagnosis is crucial because treating patients at advanced stages is frequently ineffective. A lack of education and screening initiatives causes the ignorant people to be unaware of the deadly illness. The majority of breast disorders most commonly manifest as breast lumps. Breast

cancer ranks second among cancers that affect women in India. When it comes to breast lesions, most cases are benign.<sup>3</sup>

Even with the previously discussed imaging modalities, pathological characterization remains crucial for both differential diagnosis and preventing over-treatment with surgery when breast lesions have questionable characteristics.<sup>4</sup> The current gold standards for pathological diagnosis are vacuum assisted breast biopsy (VABB), core needle biopsy (CNB) or trucut needle biopsy (TCNB), and fine-needle aspiration cytology (FNAC). Each has unique benefits and drawbacks. FNAC is superior to open tissue biopsy in a number of ways. This process is dependable and quick.<sup>5</sup> Treatment planning for breast lumps is aided by its use, and molecular auxiliary techniques such as progesterone and estrogen receptors, proliferation antigen (Ki 67), and DNA pattern analysis can be carried out. As a result,

there are now fewer open breast biopsies due to the FNAC. Multiple sampling of suitable areas guided by ultrasound and/or mammography localization can improve diagnosis accuracy.<sup>6</sup> The present study was conducted to assess diagnostic utility of fine needle aspiration cytology in breast lesions.

**MATERIALS & METHODS**

A study of 215 cases of FNAC was conducted in the Department of Pathology at Government Medical College Jammu. Our study included all patients with palpable breast lumps, including cytology of nipple

discharge associated with these lesions. Aspiration was done with 10 ml disposable syringe fitted with 21gauge needle and Franzens handle.

Material spread on glass slides was wet fixed & stained with pap and Giemsa, occasionally keeping few unstained slides for later use. Histopathological correlation was available in 91 cases. The specimens were examined, representative tissue sampled and the sections were stained with H&E. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

Total- 215		
Gender	Male	Female
Number	9	206

Table I shows that out of 215 patients, males were 9 and females were 206.

**Table II Age wise distribution of lesions in male patients**

Age group (years)	Benign	Malignant	P value
30-40	4	0	0.05
41-50	1	0	
51-60	0	1	
61-70	1	2	

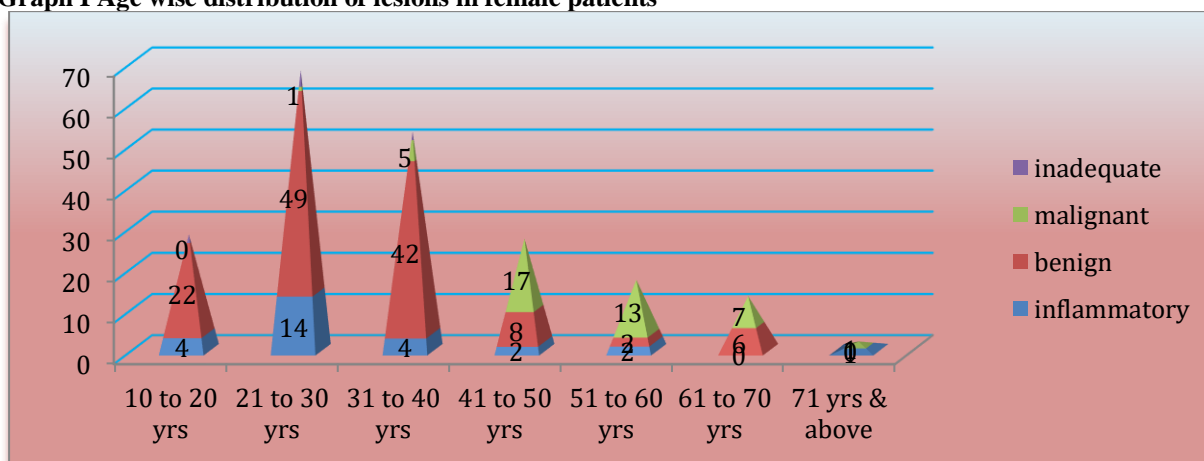
Table II shows that out of 9 male patient lesions, 7 were benign and 2 were malignant. 7 cases of gynaecomastia mostly in 30 to 40 years, 2 cases of Duct cell Carcinoma at 58 years & at 65 years. The difference was significant (P< 0.05).

**Table III Age wise distribution of lesions in female patients**

Age group (years)	Inflammatory	Benign	Malignant	P value
10-20	4	22	0	0.02
21-30	14	49	1	
30-40	4	42	5	
41-50	2	8	17	
51-60	2	2	13	
61-70	0	6	7	
>71	0	0	0	

Out of 206 smears in females, 13 were inadequate smears, out of 193 adequate smears, 171 smears were reported as neoplastic, out of which 127 were benign and 44 were malignant. 22 were reported as non-neoplastic. The difference was significant (P< 0.05).

**Graph I Age wise distribution of lesions in female patients**

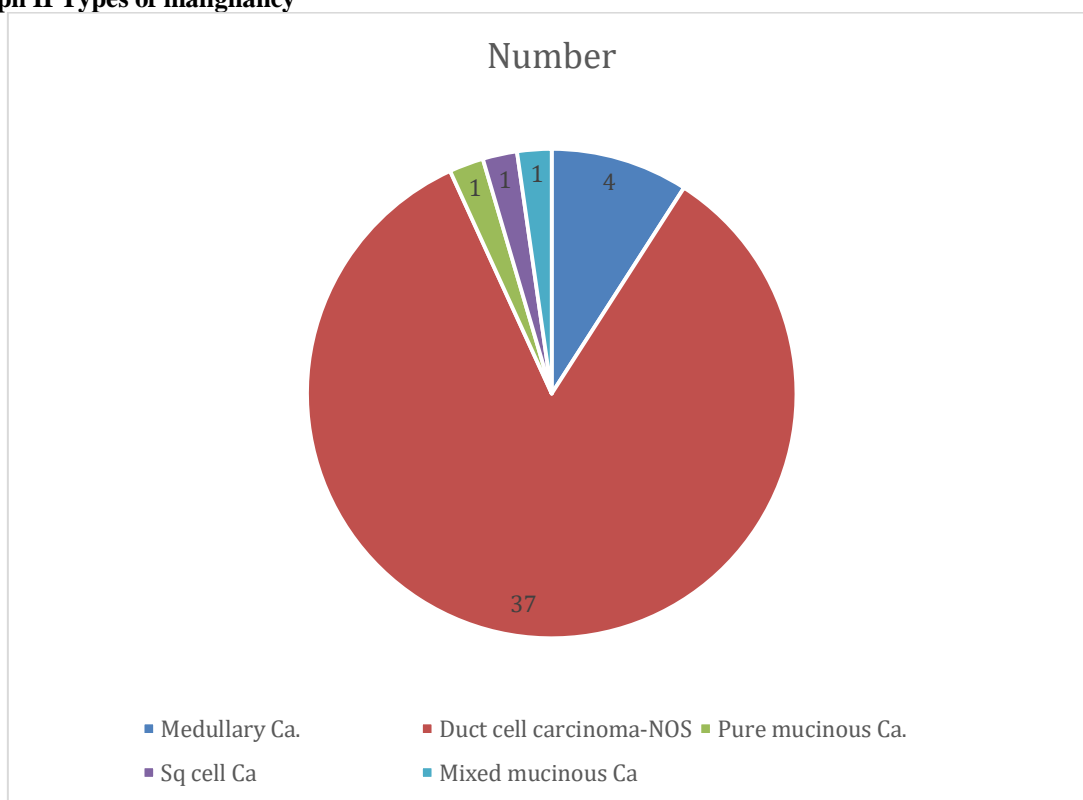


**Table IV Various lesions in female patients**

Lesions	Number	P value
fibroadenoma	87	0.03
malignancy	44	
phylloides	4	
fibrocystic disease	26	
papilloma	3	
acute mastitis	9	
granulomatous mastitis	10	
galactocoele	3	
simple cyst	7	
pagets	1	

Table IV shows that common lesions in female patients was fibroadenoma 87, malignancy 44, phylloides 4, fibrocystic disease 26, papilloma 3, acute mastitis 9, granulomatous mastitis 10, galactocoele 3, simple cyst 7, and pagets 1. The difference was significant ( $P < 0.05$ ).

**Graph II Types of malignancy**

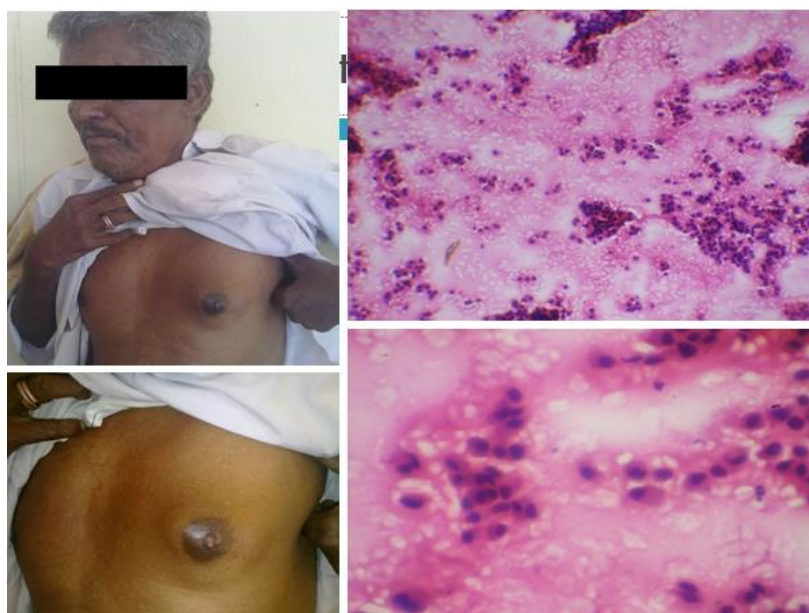


Graph II shows that common malignancies were medullary Ca. in 4, duct cell carcinoma- NOS in 37, pure mucinous Ca. in 1, Sq cell Ca in 1, and mixed mucinous Ca. in 1 case.

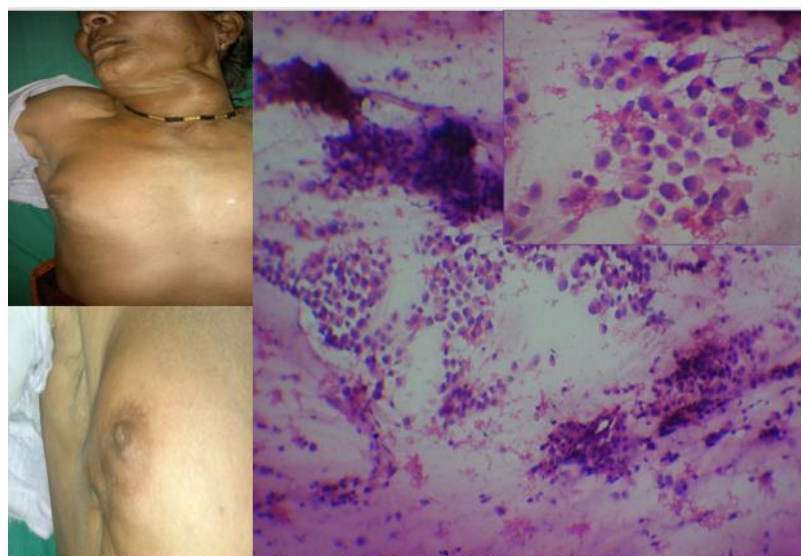
**Table V Correlation of FNAC and histopathology**

FNAC	Histopathology		
	Benign	Malignant	Total
Benign	44	03	47
Malignant	02	42	44
Total	46	45	91

The results showed sensitivity- 97.2 %, specificity- 83.4%, PPV- 88.2%, and NPV – 96%.



Duct cell carcinoma in a male 65 year old

**Figure 1: Duct cell carcinoma**

Bilateral invasive duct cell Ca. breast associated with papillary Ca. thyroid

**Figure 2: Invasive duct cell carcinoma****DISCUSSION**

To varying degrees, FNAC and open excision biopsy are employed in the diagnostic process of a breast lump that may be felt.<sup>7</sup> For this reason, FNAC has long been used in conjunction with mammography and clinical assessment. It has been shown to be quite helpful in the diagnosis of breast lumps. In addition to being affordable, it provides the cytological diagnosis in a straightforward and speedy manner.<sup>8</sup> FNAC is frequently the patient's first choice investigation when they have a breast lump. Nevertheless, it has several drawbacks, such as the difficulty to distinguish between in situ and invasive carcinomas, inadequate sample sizes, and false negative results.<sup>9</sup> The present

study was conducted to assess diagnostic utility of fine needle aspiration cytology in breast lesions.

We found that out of 215 patients, males were 9 and females were 206. Out of 9 male patient lesions, 7 were benign and 2 were malignant. 7 cases of gynecomastia mostly in 30 to 40 years, 2 cases of duct cell carcinoma at 58 years & at 65 years. We found that out of 206 smears in females, 13 were inadequate smears, out of 193 adequate smears, 171 smears were reported as neoplastic, out of which 127 were benign and 44 were malignant. 22 were reported as non-neoplastic. In the study by Shashirekha et al<sup>10</sup>, 62 patients with breast masses were examined. Thirty-two of the sixty-two individuals with breast lumps had malignant lesions, while thirty had benign lesions.

The FNAC and TRUCUT biopsies had sensitivity rates of 84.34% and 97.1%, respectively. In contrast to FNAC, TRUCUT provided greater accuracy.

We observed that common lesions in female patients was fibroadenoma 87, malignancy 44, phyllodes 4, fibrocystic disease 26, papilloma 3, acute mastitis 9, granulomatous mastitis 10, galactocoele 3, simple cyst 7, and pagets 1. Bilateral lesions were 13 (6%), a single bilateral invasive duct cell carcinoma was seen in a 65 years female patient with associated papillary carcinoma thyroid. Most of the lesions 136 (58.8%) were left sided, 65 (30.2%) were right sided. Of the 44 malignancies, 6 cases showed metastasis to the axillary group of lymph nodes. One of the patients had secondary deposits over the mandible as well, in addition to positive axillary & cervical lymph nodes. We found that common malignancies were medullary Ca. in 4, duct cell carcinoma- NOS in 37, pure mucinous Ca. in 1, Sq cell Ca in 1, and mixed mucinous Ca. in 1 case. The results showed sensitivity- 97.2 %, specificity- 83.4%, PPV- 88.2%, and NPV – 96%. 3 false negatives given as fibrocystic disease on FNAC and biopsy came as invasive duct cell carcinoma. 2 false positives given as malignant & biopsy was reported as sclerosing adenosis. 4 cases were reported as suspicious for malignancy on FNAC and were proved to be malignant on biopsy as well. In the study conducted by Ukah et al<sup>11</sup>, all patients who had Fine Needle Aspiration Cytology of Breast lumps and received subsequent histological confirmation during this time were included. Over the course of the five years under evaluation, 289 FNACs of breast masses were performed. Aspirates came from 14 (4.8%) men and 275 (95.2%) females. A biopsy rate of 55.7% was obtained from 161 cases of FNAC that had matched tissue for histological linkage. It was discovered that the final histologic diagnosis could be made with 99.4% sensitivity and 100% specificity using FNAC. In 86.3% of patients, the ultimate histologic diagnosis could be definitively determined by FNAC.

The limitation of the study is the small sample size.

## CONCLUSION

Our study highlights the continuing role of fine needle aspiration cytology in the diagnosis of breast lesions & proves that it is an extremely accurate, well-tolerated, relatively non-invasive and low-risk test that

obviates the need for surgical intervention in most benign conditions and disseminated malignancies.

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