



## CORRELATION OF FINE NEEDLE ASPIRATION CYTOLOGY OF CLINICALLY PALPABLE BREAST LUMPS WITH HISTOPATHOLOGICAL REPORT- A PROSPECTIVE STUDY

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**ABSTRACT** Carcinoma breast is the commonest malignancy worldwide in women and the most essential part of evaluation in management of breast lumps is adequate preoperative preparation. It is a challenge to manage breast lumps in resource poor settings. Though core needle biopsy has evolved as the diagnostic tool of choice for breast lumps, fine needle aspiration cytology (FNAC) still remains an important diagnostic tool as it is a quick, safe, cheap and reliable procedure that can be done bedside. With this background, we have done a prospective study to compare the diagnostic accuracy of FNAC in differentiating the benign and malignant lesions of palpable breast lump with histopathological correlation.

**KEYWORDS :** FNAC, Breast lump, Carcinoma of breast, Diagnosis.

### INTRODUCTION

Diseases of the breast constitute a significant proportion of surgical cases seen in both developed and developing countries, and frequently the need arises to distinguish benign from malignant lesions prior to definitive treatment.

The most common sign and symptom of breast disease is a palpable mass; although breast diseases can also present as inflammatory lesion, nipple secretion or imaging abnormalities<sup>2</sup>

Breast lump Fine needle aspiration cytology (FNAC) is an accepted and established method to determine the nature of the lump. Studies shown that FNAC can reduce the number of open breast biopsies<sup>6</sup>. It is now used more frequently to diagnose any lump in the breast, which is clinically malignant. It is extremely beneficial in reconfirming the clinical impression of benign disease, which may not need subsequent biopsy. Adding on to that, it allows more rapid diagnosis of a malignant condition in non-suspicious clinical masses.

This study is done to see how a breast lump preliminary FNAC is correlated with the final histopathology report to which every specimen excised would invariably be subjected.

### AIMS AND OBJECTIVES

Our study was conducted to compare the diagnostic accuracy of fine needle aspiration cytology in differentiating the benign and malignant lesions of palpable breast lump with histopathological correlation, to analyse the specificity, sensitivity, positive and negative predictive values and also the efficacy of fine needle aspiration cytology.

### MATERIALS AND METHODS

Our study was a prospective study conducted on 200 female patients who attended the out-patient department of General Surgery in our tertiary care hospital Shantiram medical college and general hospital over a period of 1 year from August 2022 to July 2023.

### Inclusion Criteria

1. Age between 10 and 70 years.
2. Palpable breast lump of variable duration.

### Exclusion Criteria

1. Patient with acute and tender breast lump like breast abscess.
2. Patient with ulcerated breast lump.
3. Recurrence in a previously operated case of confirmed ca breast.
4. Patient is not willing for surgery.
5. Frank malignant mass with skin infiltration.

### RESULTS:

Out of the 200 cases of FNAC done, 124 were diagnosed as benign lesions, 72 were diagnosed as malignant lesions and 4 cases were suspicious of malignancy.

Of the 200 specimens that were sent for histopathological examination, 116 were diagnosed as benign lesions and 84 were

diagnosed as malignant lesions.

### Observations and results of benign lumps

Of the 124 cases of benign lesions reported by fine needle aspiration cytology, 116 were confirmed by histopathology. False negative were 8 cases. False positive was zero. 8 cases were reported as unsatisfactory (inadequate) sampling, which on repeat fine needle aspiration cytology revealed benign fibroadenoma, later confirmed by histopathology after local excision.

The results of the benign lesions were given below :

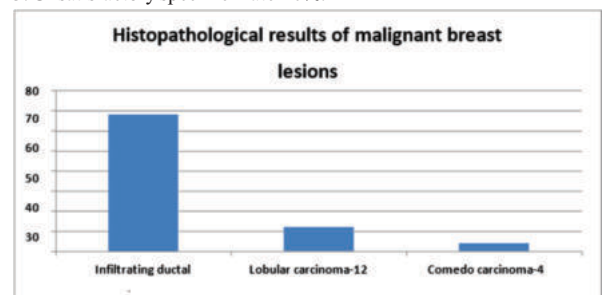
1. Accuracy rate for benign lesion-100%.
2. False positive -0%.
3. Unsatisfactory specimen rate -6.45%.

### Observations and results of malignant lumps:

Of the total 84 cases of malignant lesions, FNAC reported 72 as malignant lesions, 8 as benign lesions and 4 as suspicious lesions. False negative were 8 and false positive was zero. Four cases on fine needle aspiration cytology were reported as suspicious lesions for malignancy. They underwent postoperative rapid hematoxylin and eosin staining for confirmation of malignancy after Surgical intervention and later histopathological confirmation. There was no unsatisfactory (inadequate) sampling for malignant lesions.

The results of the malignant breast lesions were given below :

1. Accuracy rate for malignant lump -90%.
2. False negative rate -10%.
3. Unsatisfactory specimen rate -0%.



**Chart 1** The histopathological results of the malignant breast lesion

Among 8 cases of false negative, 4 cases were diagnosed as fibroadenoma depending on the presence of uniform cells in sheets with myoepithelial cells with minimal nuclear atypia on fine needle aspiration cytology. On local excision biopsy and histopathology they were confirmed as infiltrating ductal carcinoma. Later they underwent modified radical mastectomy in the same hospital stay.

In another 4 cases of breast lumps, which were diagnosed as benign proliferative breast disease with mild atypia by fine needle aspiration

cytology, on local excision biopsy and histopathology they were confirmed as infiltrating ductal carcinoma. Later they underwent modified radical mastectomy.

We have found 4 suspicious cases in our study on FNAC, which on further histopathology was confirmed as malignant lesions. To calculate predictive value of the fine needle aspiration cytology of the palpable breast lump we excluded those 4 cases.

**Table 1 The predictive value of the FNAC of the palpable breast lump**

Test result (FNAC)	Disease (malignant)	Not diseased (benign)	Total
Positive	72 (a) (True positive)	0(b) (False positive)	72
Negative	8 (c) (False negative)	116 (d) (True negative)	124
Total	80	116	196

From the above observations, it is evident that the sensitivity of FNAC is 90% and its specificity is 100%. The positive predictive value of FNAC is 100% and its negative predictive value is 93.55%.

Inadequate sampling (unsatisfactory report) Eight cases among the 200 fine needle aspiration cytology were reported as inadequate sampling (unsatisfactory) based on the presence of normal glandular cells on cytology. On repeat fine needle aspiration all the 8 cases were reported as fibroadenoma. Patients underwent local excision of the tumour and histopathological confirmation later. The inadequate sampling rate was 4%.

## DISCUSSION

Fine-needle aspiration cytology is commonly used in the diagnosis of breast cancer because it is an excellent, safe, and cost-effective diagnostic procedure. One can get on site immediate report with minimal cost using inexpensive equipments and a simple technique. The most significant advantage of FNAC is the high degree of accuracy, rapid results, and a minimal invasive procedure than a tissue biopsy. FNAC of the breast can reduce the number of open breast biopsies<sup>5</sup>.

In our study, which was conducted on 200 patients the commonest pathology which was found was fibroadenoma (80 in 200) which accounted for 40% of the cases. The observations are similar to study conducted by Sonali Saraf et al. who observed fibroadenoma as the commonest cause which was seen in 130 (40%) of a total of 321 patients<sup>10</sup>. Tiwari et al. also reported fibroadenoma as the commonest pathology (39.6%)<sup>11</sup>.

In our study, where we had 84 malignant lesions, infiltrating ductal carcinoma was the most common malignant lesion that presented for needle aspiration. It forms 80.95% of the malignant lesions aspirated for cytology (68 out of total 84 cases).

Singh A et al. reported that invasive ductal carcinoma is the commonest breast malignancy and found in the age group of 41-60 years of age<sup>12</sup>. Invasive ductal carcinoma in our study accounted for 34% of total fine needle aspirations.

In our study, fine needle aspiration cytology revealed benign in 124 patients, suspicious in 4 and malignant in 72 patients with false negative results of 8 and false positive zero. A risk of false negative results exists in low grade malignancies, small or complex proliferative lesions as well as in tumors with central necrosis or a small cell carcinoma.

To give a wider spectrum to our interpretation of the results, we calculated the specificity of FNAC as a diagnostic test for malignant lumps, i.e. how specific is FNAC a test in the diagnosis of malignancy in a breast lump. The positive predictive value of the test indicates the probability of a patient with a positive result to have the disease. Hence, it shows the diagnostic power of the test while the negative predictive value of the test on the other hand, indicates the probability of a patient with negative result not to have the disease. The diagnostic accuracy of fine needle aspiration for benign lesions was 100% and malignant lesions were 90% with false negative rate of 10% and false positive rate of 0%. The overall sensitivity of fine needle aspiration cytology in diagnosing the palpable breast lump in our study was 90%, specificity was 100%, positive predictive value of 100% and negative

predictive value of 93.55%.

The unsatisfactory specimen rate as per our study was 6.45%. Unsatisfactory sample can be due to insufficient experience of the pathologist, radiologist or clinician who perform FNAC or due to nature of lesion itself. FNAC technique is as equally important as sample interpretation in reaching the correct diagnosis.

## CONCLUSION

The fine needle aspiration cytology is an important diagnostic tool in the management of patient with a breast lump. It is a patient friendly, quick, easy, reliable, repeatable and simple diagnostic test. A high sensitivity and a high positive predictive value proved that a positive FNAC in the breast means a definite diagnosis of the concerned pathology if compared with the final histology report. The high specificity and a high negative predictive value for malignancy illustrated the high accuracy of FNAC in the diagnosis of malignancy in the breast. It can be advised that the patients in whom fine needle aspiration cytology is unequivocally diagnostic for cancer can be managed directly by mastectomy or any other definitive therapy. Thus, we conclude that FNAC is a very important preliminary diagnostic test in palpable breast lumps, and if done by expert hands, the results show a high degree of correlation with the final histopathology report.

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