

**FNAC ACCURACY IN DIAGNOSIS OF BREAST LESIONS**Venugopal K<sup>1</sup>, Pratap Balakrishna<sup>2</sup>, Nikshita N<sup>3</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: BACKGROUND:** Malignancy of breast imposes significant reduction in life span. The prognosis of breast cancer is primarily dependent on the extent of disease and also early diagnosis is important. FNAC is a widely accepted cytological technique in the early diagnosis of palpable breast lesions. There have been many studies of accuracy of FNAC, which has been shown to be high in many centres. **AIMS:** To compare cytological and histopathological diagnosis of breast lesions and to establish accuracy of aspiration cytology as an early diagnostic aid. **SETTINGS & DESIGN:** This prospective study was conducted at our hospital on a study population of 66 female patients over a period of 1 year from 2010 to 2011. **MATERIAL AND METHODS:** 66 female patients presenting with palpable breast lesions were included. Males, pediatric age group and non-palpable breast lesions were excluded. FNAC was done in all cases and a comparison was made between clinical, cytologic and histopathologic results. **CONCLUSION:** FNAC is a simple, rapid procedure, which has got high level sensitivity and specificity in diagnosing breast lesions and should be a compulsory investigation before any definite therapeutic procedure is instituted.

**KEYWORDS:** FNAC; Breast lumps; Fibroadenoma; Carcinoma Breast.

**INTRODUCTION:** FNAC is a widely accepted cytological technique in the early diagnosis of palpable breast lesions. The prognosis of breast cancer is primarily dependent on the extent of disease and how far the tumor has spread before treatment is instituted and this is relatively a direct function of time. Early diagnosis and treatment of benign and malignant breast lesions in turn are associated with increased chance of long-term survival.

It is sometimes difficult to determine whether a suspicious lump is benign or malignant simply from clinical assessment.<sup>1</sup> Therefore a method of definitive diagnosis of patients who present with breast lumps at the outpatient clinic is needed in order to reassure the patients and to offer the best possible treatment. A confident diagnosis can be made in 95% of the cases through a combination of clinical examination, imaging and FNAC.<sup>2</sup>

FNAC is a safe, minimally traumatic technique that can be repeated<sup>2</sup>, done as an out-patient procedure, results being rapidly available, economical with a high accuracy rate. FNAC has superseded the use of frozen section examination in the diagnosis and management of patients with breast cancer.<sup>3,4</sup>

The role of cytology in the diagnosis of breast lesions is complimentary with the clinical opinion of examining surgeon and the mammographic appearances. Histological examination is indispensable to the establishment of exclusion of the diagnosis of malignant disease. There have been many studies of accuracy of FNAC, which has been shown to be high in many centres.

**AIMS:**

1. To compare cytological and histopathological diagnosis
2. To establish accuracy of aspiration cytology as an early diagnostic aid.

## ORIGINAL ARTICLE

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**MATERIAL AND METHODS:** This is a prospective study conducted at our hospital on a study population of 66 female patients over a period of 1 year from 2010 to 2011.

**ETHICAL CONSIDERATIONS:** This study was approved by the ethical committee of our institute, and cases were included after written informed consent.

66 female patients presenting with palpable breast lesions, and aged above 16years were included. Males, age less than 16years, traumatic lesions and non-palpable breast lesions were excluded.

The included cases were subjected to detailed clinical history, physical examination, investigations- complete blood count, urine routine, chest X-ray, FNAC, Histopathology. FNAC was done in all cases and a correlation was made between clinical, cytologic and histopathologic results.

**RESULTS:** The present study comprises of FNAC with Histopathological correlation of 66 patients with breast lesions on a selected on a consecutive basis from our hospital.

**The following observations have been made in the study:**

**1. AGE DISTRIBUTION:** The maximum number of patients was in the 31-40years age group. The maximum number of benign lesions occurred in 31-40 years age group, youngest patient being 16 year old and oldest patient 72 years of age.

The maximum number of malignant lesions occurred in 41-50 years age group, youngest patient being 21 year old and oldest patient 75 years.

Age Group in years	Benign Lesions	Malignant Lesions
16-20	6	-
21-30	16	3
31-40	15	6
41-50	6	8
51-60	-	2
61-70	1	1
71-75	1	1
Total	45	21

Table 1: Age Distribution

## ORIGINAL ARTICLE

**2. ANATOMICAL DISTRIBUTION:** The maximum number of both benign and malignant lesions was in the upper outer quadrant.

Site	Benign	Malignant
<b>Right side</b>	28	10
Upper and outer quadrant	24	6
Upper and inner quadrant	-	-
Lower and outer quadrant	4	3
Lower and inner quadrant	-	-
Diffuse	-	1
<b>Left side</b>	17	11
Upper and outer quadrant	10	7
Upper and inner quadrant	3	1
Lower and outer quadrant	2	-
Lower and inner quadrant	2	3
Diffuse	-	-

Table 2: Anatomical distribution

**3. SOLITARY/ MULTIPLE LESIONS:** All malignant lesions were solitary, and 7 benign lesions were multiple on palpation.

Type of breast lump	Solitary	Multiple
Non-neoplastic	8	-
Neoplastic		
• Benign	30	7
• Malignant	21	-
<b>Total</b>	<b>59</b>	<b>7</b>

Table 3: Solitary/Multiple lesions

**4. CLINICAL DIAGNOSIS OFFERED:** Clinically, 41 cases appeared to be benign and 21 cases malignant.

Clinical Diagnosis	Number of cases
<b>Inflammatory lesions</b>	
• Chronic Mastitis	2
<b>Benign Lesions</b>	
• Fibroadenoma	34
• Fibrocystic disease	7
<b>Malignant Lesions</b>	21
<b>Multiple Diagnosis</b>	2
<b>Total</b>	<b>66</b>

Table 4: Clinical Diagnosis

## ORIGINAL ARTICLE

**5. CYTOLOGICAL DIAGNOSIS:** Inflammatory lesions accounted for 8 cases. In benign lesions, 27 cases were diagnosed as fibroadenoma, 10 cases as fibrocystic disease and 21 malignant lesions as ductal carcinoma.

Cytodiagnosis	Number of cases
<b>Inflammatory lesions</b>	
Mastitis	8
<b>Benign Lesions</b>	
• Fibroadenoma	27
• Fibrocystic disease	10
<b>Malignant Lesions</b>	
Ductal carcinoma	21
<b>Total</b>	<b>66</b>

Table 5: Cytological diagnosis

**6. HISTOPATHOLOGICAL DIAGNOSIS:** The lesions were classified histologically into 3 categories.

The benign lesions were diagnosed in 37 cases, of which 27 cases were fibroadenoma and 10 cases fibrocystic disease.

2 cases diagnosed as fibroadenoma on FNAC were malignant (infiltrating ductal ca. and medullary ca.) on histopathological diagnosis.

21 cases were malignant, and 2 cases diagnosed as carcinoma on FNAC, were reported to be Fibroadenoma histologically.

Histological diagnosis	Number of cases
<b>Inflammatory</b>	
• Chronic non-specific mastitis	7
• Tuberculous mastitis	1
<b>Benign Lesions</b>	
• Fibroadenoma	27
• Fibrocystic disease	10
<b>Malignant Lesions</b>	
• Infiltrating ductal carcinoma	16
• Medullary carcinoma	5
• Comedo carcinoma	-
<b>Total</b>	<b>66</b>

Table 6: Histopathological diagnosis

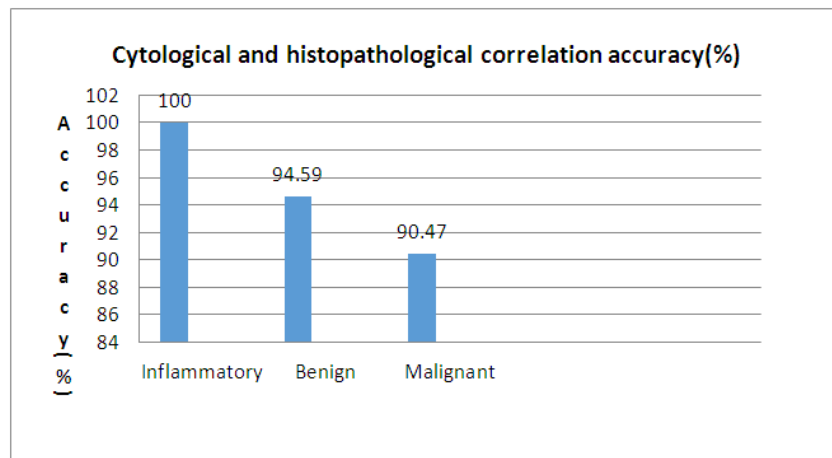
**7. Cytological and histopathological correlation- Diagnostic accuracy:**

All cytologically diagnosed inflammatory lesions were histopathologically correct (100% accuracy).

Among the 37 histopathologically diagnosed benign lesions, cytologically, 35 cases were detected correctly, cytological accuracy being 94.59%. Among malignant lesions, 21 lesions were

## ORIGINAL ARTICLE

diagnosed as malignant cytologically, out of which 19 were proven malignant histologically. The cytological accuracy was 90.47%.



**Table 7: Diagnostic accuracy**

**DISCUSSION:** The present study confirms the accuracy and clinical utility of FNAC in the diagnosis of benign and malignant breast diseases. The study conducted on 66 female patients has a diagnostic accuracy of 100% for inflammatory lesions, 94.59% for benign lesions and 90.47% for malignant lesions. The high rate of diagnostic accuracy in our study is similar to those in various other published series.

In 1984 Wanebo et al suggested FNAC in place of open surgical biopsy for the diagnosis of breast cancer<sup>5</sup>. Dennison et al.<sup>6</sup> concluded that FNAC and core needle biopsy is complementary in the accurate diagnosis of the breast cancer.

The largest series conducted between 1982 and 2000 at Rush Presbyterian St. Lukes medical college Chicago, USA, where the sensitivity was 98%, specificity was 97%, positive predictive value was 99% and negative predictive value was 86%.<sup>7</sup>

Between September 1992 and may 1996 another study was conducted in Department of surgery, St Joseph hospital, Denever, Colorado and concluded that the use of FNAC for solid breast lesion is accurate and cost effective with 100% positive predictive value, 100% specificity, 87% sensitivity and 89% negative predictive value.<sup>8</sup>

The overall accuracy rate of FNAC is comparable with other studies in Indian Literature. The present study has an overall FNAC accuracy of 92.53%, while studies conducted by S.K.Gupta, A.K.Ghosh<sup>9</sup> had an accuracy of 84.2%, Talukdar et al<sup>10</sup> – 90.3%, and Kusum Verma et al<sup>11</sup> – 98.4%.

**CONCLUSION:** The sensitivity of FNAC for detecting breast lesions is very high according to the study. For benign lesions it is 94.59%, 90.47% for malignant lesions and 100% for inflammatory lesions.

An attempt to correlate the results of cytology and histopathology shows that FNAC is equally specific in the diagnosis of breast lesions especially malignancy. The Specificity for benign lesion is 93.1% and 95.55% for malignancy.

This study reaffirms that FNAC is a very effective adjunct to the clinical evaluation of breast lesions and has a definitive role in the diagnosis and early treatment of palpable breast lumps.

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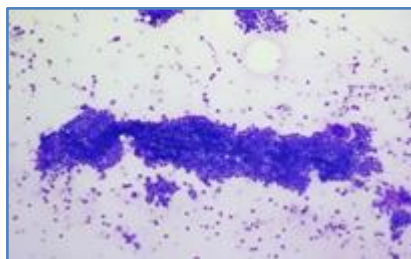
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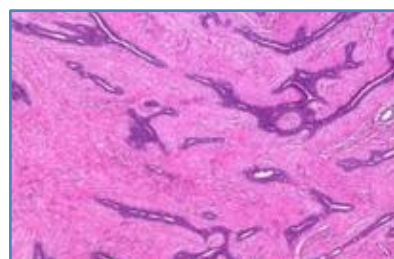
**Lump in right breast,  
clinically malignant features**



**Specimen sent for HPE, post  
modified radical mastectomy**



**Cytology of fibroadenoma**



**Histology of fibroadenoma**

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