



Original Research Article

## A Stitch in Time Saves Nine; Fine Needle Aspiration Cytology of Palpable Breast Lump: An Extensive Study of 1356 Cases

Chavan Y.H.<sup>1</sup>, Sudarshan Pandit<sup>2</sup>, Kadam P. N<sup>1</sup>, Deshpande SA<sup>3</sup>, Meshram Darshan<sup>1</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>P.G. Student, <sup>3</sup>Professor and Head,  
Department of Pathology, Dr. Shankarrao Chavan Govt. Medical College, Nanded, India

Corresponding Author: Sudarshan Pandit

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### ABSTRACT

#### Objectives:

1. To study the frequency of different palpable breast lesions by FNAC.
2. To evaluate utility of FNAC in clinically suspected breast lesions.

**Materials and Methods:** A retrospective study was carried out from AUGUST 2011 to AUGUST 2014. FNAC was done in all cases with palpable breast lump and wherever enlarged lymph node was found. The slides were fixed in methanol and staining was done with H & E stain, Giemsa stain, PAP stain and AFB wherever suspected for TB.

**Results:** There were 1356 cases presented with palpable breast lump along with suspected enlarged axillary lymph node. Age ranges from 11-80 years with a mean age of 33.6 years. Most of the patients were in 21-30 years age group (41.29%). Among the lesions 506 (37.31%) fibroadenoma, 219 (16.15%) fibrocystic changes, 190 (14.01%) carcinoma, 69 (5.08%) acute mastitis, 36 (2.65%) granulomatous lesion, 57 (4.20%) galactocele were identified. Out of 190 cases of carcinoma, 130 patients presented with palpable lymph node and showed metastasis in 115 (60.52%) cases.

**Conclusion:** FNAC serves as a rapid, highly sensitive, economical, and reliable tool for the diagnosis of palpable breast lesions and serves as an important diagnostic modality in early detection of suspicious cases

**Keywords:** Breast lump, Fibroadenoma, Fibrocystic disease, Fine Needle Aspiration Cytology (FNAC), Malignancy

### INTRODUCTION

Breast carcinoma is the most common malignant neoplasm and the leading cause of death from cancer in women, with more than 1million cases occurring worldwide annually. <sup>(1)</sup> Mass in breast, whether benign or malignant is a cause of anxiety to the patient & her family members. Most of the breast lesions produce

palpable lumps associated/ unassociated with other symptoms.

Surgeons insist that carcinoma should be suspected in every palpable breast lump. This often results in unnecessary surgeries as well as great psychological stress to patients. Though histopathological diagnosis is a universally accepted confirmatory mode of diagnosis & follow

up, fine needle aspiration cytology (FNAC) of breast lumps is an important part of triple assessment (clinical examination, imaging, and FNAC) of palpable breast lumps.

Most cases of breast lumps are benign but most of these patients are in a state of heightened anxiety until they have undergone specialist assessment, the necessary investigations and eventual reassurance. (2,3) The only hope of reducing morbidity/mortality due to breast cancer is in the early detection of disease. This can be achieved by “Fine Needle Aspiration Cytology” which is used now-a-days for cytological diagnosis of various breast lesions. It is sensitive, simple, cost-effective, less traumatic and rapid method with a high sensitivity and high predictive value for a positive diagnosis of malignancy.

The present study is intended to look the frequency distribution of different lesions in FNAC of palpable breast lumps.

## **MATERIALS AND METHODS**

A Retrospective study was carried out from August 2011 to August 2014 with written informed consent. Fine needle aspiration (FNA) was done with a 21 or 23 gauge needle attached to a 5 cc airtight disposable syringe. The sample was obtained with aspiration and non-aspiration techniques with minimum passes to minimize haemorrhage.

Samples were smeared onto glass slides and fixed as necessary. FNAC was done in all cases with palpable breast lump and wherever enlarged lymph node was found. The slides were fixed in methanol and staining was done with H & E stain, Giemsa stain, PAP stain and AFB wherever suspected for TB.

Data was recorded regarding the age of the patient, site of involvement, size of the lesion, cytological diagnosis and presence of metastasis in case of malignancies

## **RESULTS**

Total 1356 aspirates were done during study period of 3 years, from all patients presented with complaints related to palpable breast lump. Age of the patients was in the range of 11 years to 80 years. The mean age was 33.60 years. 21-30 years age group comprises most of the patient (560 =41.29%) followed by 31-40 years age group (241=17.77%) (as shown in Table 1). Mean lesion size of all 1356 breast lumps were  $4.3 \pm 2.7$  cm and mean lesion size of 190 malignant cases were:  $2.3 \pm 1.2$  cm. Among malignant lesions 60.71% were presented with a size less than 5cm (as shown in Table 2).

Out of 1356, 1251(92.51%) were female patients and 105(7.74%) were male patients. Regarding side involvement left site was most commonly involved out of that left upper outer quadrant were most commonly involved (as shown in Table 3).

The clinical symptoms of patients presenting with suspected malignant lesion varies from painful to painless mass, nipple retraction, discharge etc.(as shown in Table 4). Out of 190 malignant cases 130 (68.42%) presents with palpable axillary lymph nodes. Out of that, 115 (60.52%) shows metastatic lymphadenitis. (Table 5)

Among the benign lesions diagnosis as given on cytology, fibroadenoma (as shown in Fig.1) showed the highest (506=37.31%) incidence followed by fibrocystic disease (219=16.15%) and positive for malignancy (190=14.01%) cases. Inflammatory lesions were acute mastitis 69 (5.08%), granulomatous mastitis 36 (2.65%).

Highest number of fibroadenoma (230) was in the age group of 21-30 years and upto 20 years group was second (168). Maximum of carcinoma cases were in the age group of 41-50 and 51-60 years of age group (60 and 54 respectively). (As shown in Table 1).

We found 36 (2.65%) cases of granulomatous mastitis (as shown in Fig 2). Ziehl-Neelsen stain of the suspected tuberculosis cases was done and found 22 cases positive for Acid Fast Bacilli (AFB) (as shown in Fig.3).

Out of 190 malignant cases we found that infiltrating ductal carcinoma-not

otherwise specified (as shown in Fig4).were most common type comprising of 162(85.26%) cases, followed by mucinous (6 cases) (as shown in Fig.5) and medullary carcinoma (1 case) (as shown in Fig.6).We also found that subtyping were not possible on cytology in 17(8.94%) cases.

**Table 1: Frequency distribution of different lesions according to age group.**

Diagnosis	Upto 20years	21-30 years	31-40 years	41-50 years	51-60 years	>60 years	Total no. of cases	%
Acute Mastitis	12	42	6	6	-	3	69	5.08%
Granulomatous Mastitis	3	21	9	-	-	3	36	2.65%
Fibrocystic Disease	24	96	69	12	15	3	219	16.15%
Galactocele	9	45	-	3	-	-	57	4.20%
Benign cystic disease	21	36	12	6	3	3	81	5.97%
Fibroadenoma	168	230	81	18	3	6	506	37.31%
Benign Phylloides	-	-	3	6	-	-	9	0.66%
Gynaecomastia	36	42	12	9	-	3	102	7.52%
ADH	6	30	15	3	-	-	54	3.97%
Suspicious of Malignancy	-	6	6	-	3	3	18	1.32%
Positive for malignant cells	-	3	28	60	54	45	190	14.01%
Inadequate Smears	3	9	-	3	-	-	15	1.10%
Total no. of cases	282	560	241	120	84	69	1356	100%

**Table 2: showing classification of breast lesions according to size.**

Sr. No.	Size of lump (in cm.)	Total no. Of cases	Percentage (%)
1.	<5	814	60
2.	5-10	515	38
3.	>10	27	2
	TOTAL	1356	100

**Table 3: Showing side wise distribution of breast lesions.**

Side	Quadrants					Total
	U.O	U.I	L.O	L.I	Central	
Right	231 (17%)	54 (4%)	135 (10%)	54 (4%)	68 (5%)	542 (40%)
Left	272 (20%)	135 (10%)	135 (10%)	68 (5%)	203 (15%)	814 (60%)

**Table 4: Showing presenting symptoms of malignant neoplastic lesions.**

Sr. No.	Presenting Symptoms	No. of cases	Percentage (%)
1	Painless lump in the breast	128	67.34
2	Nipple retraction	94	48.97
3	Palpable axillary lymph nodes.[2 or more]	130	68.42
4	Painful lump	47	24.48
5	Ulceration, fungation of the mass	12	6.12
6	Nipple discharge	8	4.08
7	Signs and Symptoms of metastasis	4	2.04

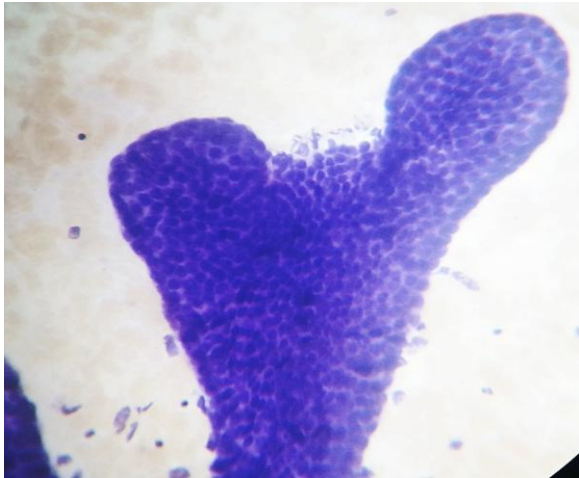
**Table 5: Showing Cytological diagnosis of palpable axillary lymph nodes out of 190 malignant cases**

Sr.No.	Cytological Diagnosis	No.of cases	Percentage (%)
1.	Metastasis of malignancy	115	60.52
2.	Reactive	15	7.89
	Total	130	68.42

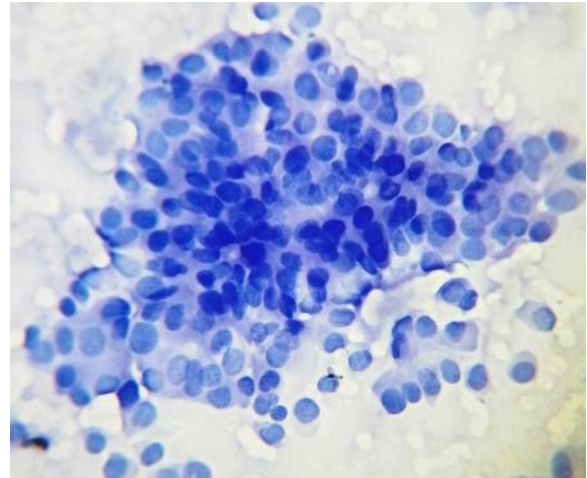
**Table 6. Showing comparison of percentage of breast lesions on cytology between different studies.**

Sr. No.	Author	Total no. of cases	% of Benign lesions	% of Malignant lesions	% of Suspicious lesions
1	Rocha and Nadkarni 1997 <sup>(4)</sup>	837	76.58	11.82	3.10
2	George et al 1997 <sup>(5)</sup>	1472	68.10	12.30	3.30
3	Ishita et al 2003 <sup>(6)</sup>	125	68.00	20.00	1.60
4	Pradhan 2008 <sup>(7)</sup>	2246	81.92	15.49	2.58
5	Yoo-Duk choi 2009 <sup>(8)</sup>	1297	75.63	14	2.92
6	Present study 2014	1356	83.55	14.01	1.10

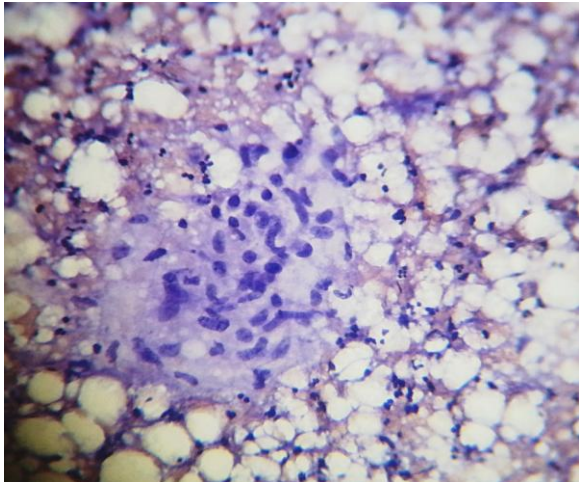




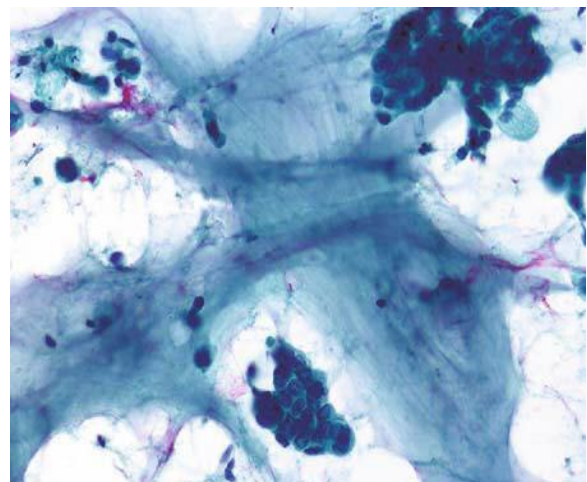
**FIGURE 1: Fibroadenoma showing typical antler horn pattern (H&E 10x)**



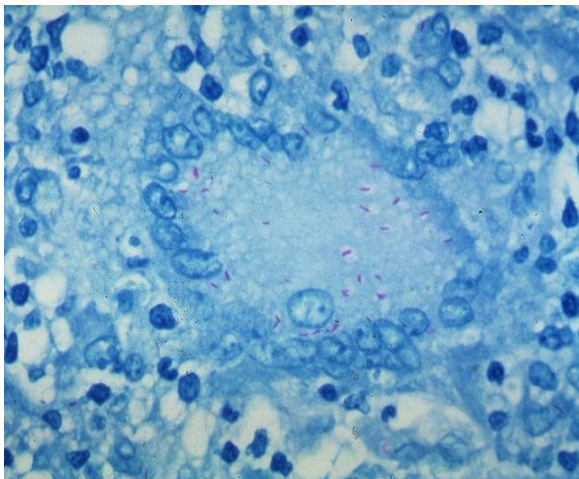
**FIGURE 4: Infiltrating ductal carcinoma – not otherwise specified (H& E 40 x).**



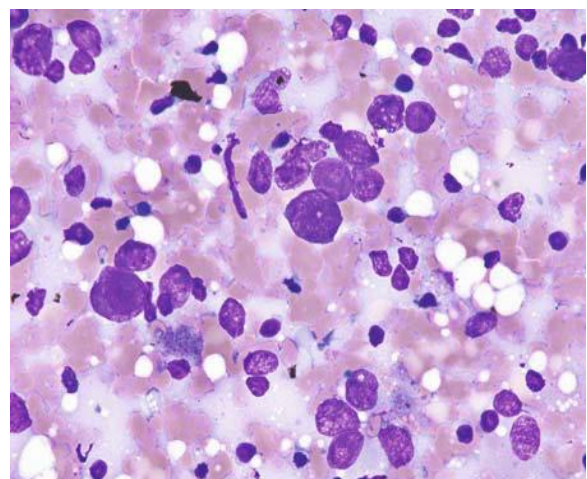
**FIGURE 2: Granulomatous Mastitis (H&E 40x)**



**FIGURE 5: Mucinous Carcinoma PAP (40 X)**



**FIGURE 3: Granulomatous Mastitis (Z N stain 100 x)**



**FIGURE 6: Medullary Carcinoma H & E (40 X)**

## DISCUSSION

Breast is an easily accessible site for fine needle aspiration cytology. There is an increasing tendency to seek to confirm the diagnosis of the breast cancer at first consultation by some form of needle biopsy technique. The present series confirms the accuracy and clinical utility of fine needle aspiration cytology in the investigation of the patient with benign and malignant breast disease.

The study population ranged from 11-80 years with a mean age of 33.6 years. In this study, the lesion presented in the right breast was 40% and the left breast was 60%. This finding correlates with Reddy and Reddy 1958<sup>(9)</sup> and R. K. Gang 1982.<sup>(10)</sup>

We found that peak age of incidence for inflammatory and benign conditions were 21-30 years each. This correlates with Baptist et al 1973<sup>(11)</sup> & Khanna et al 1999.<sup>(12)</sup> Among the granulomatous mastitis we found 36 cases of granulomatous mastitis. We also did Ziehl-Neelsen stain of the suspected tuberculosis cases and found 22 cases positive for AFB. We also found 57 (4.20%) cases of galactoceles. Majority of the cases were in the age group of 21-30 yrs. which is the most active reproductive years.

Regarding fibrocystic disease of breast, we found 219 (16.15%) cases in this study. Their incidence was highest in the 21-30 years age group (96=43.83%) and second highest in 31-40 years age group (69=31.94%), which was comparable to Bukhari et al.<sup>(13)</sup> A total number of 54 (3.97%) cases of atypical duct hyperplasia (ADH) were found. This study also reports 18 (1.32%) cases of suspicious for malignant cells, which were comparable to Ishita et al 2003.<sup>(6)</sup>

In this study we found that total no. of benign cases were 83.55% which correlates with Pradhan et al 2008.<sup>(7)</sup> Fibroadenoma was the major (37.31%) cause of the breast lump in this study. 230

(42.9%) and 168 (38.58%) were in the age group of 21-30 and <20 years age group respectively. This finding was similar to the findings of Krishnamurthy et al 2000.<sup>(14)</sup>

The percentage of malignant lesion was 14.01% which correlates with Yoo-Duk Choi et al 2009<sup>(8)</sup> also with Rocha and Nadkarni 1997<sup>(4)</sup> and George et al 1997<sup>(5)</sup> (as shown in Table 6). Out of 190 malignant cases we found that 115 cases (60.58%) show axillary lymph node metastasis. This correlates with Khan et al 2007.<sup>(15)</sup>

Considering malignant cases in female breast, we found 190 (14.01%) carcinoma cases, among which 162 cases (85.26%) were duct cell carcinoma and only 6 were mucinous carcinoma. During aspiration, we found 130 of 190 breast carcinoma patients with palpable lymph node. 115 (60.52%) of them showed features of metastatic duct cell carcinoma. This correlates with Khan et al 2007.<sup>(15)</sup>

## CONCLUSION

Breast carcinoma is the most common malignant tumor and the leading cause of death in women worldwide. FNAC serves as a rapid, highly sensitive, economical, and reliable tool for the diagnosis of palpable breast lesions. It also serves as an important diagnostic modality in early detection of suspicious cases. It is not associated with any drawback of harm to patients or any complications of the procedure. It is valuable in diagnosing pure benign lesions and avoids surgical intervention in benign lesions, also reduces the anxiety on part of the patient.

Diagnostic accuracy of the procedure for malignant lesions is well established. Moreover, FNAC can be repeated in cases of suspicious diagnosis or in adequate smear, further cases can be followed with biopsy for further confirmation.

FNAC remains an important tool for early diagnosis of malignancy, especially in

remote places of developing countries like India in all aspects. Due to rapid diagnosis we can reduce morbidity or mortality due to breast cancer and prevent further complications. In the present study, out of 1130 benign lesion, 564 lesions diagnosed on FNAC were such that they did not require any surgical management. Thus it is proved that early detection by FNAC and prompt management helps in reducing the morbidity and restricting the disease progression at the very initial stage. It also avoids unnecessary surgical intervention.

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