

# Efficacy of FNAC in Diagnosing Malignant Breast Lesions - A Comparative Study of Cytology and Histopathology

Dr. R. Naveena M. S,

Assistant Professor, Government Omandurar medical college hospital, Omandurar government estate,  
Chennai.

## Abstract:

*Objective: The objective of this study was to find out the efficacy of FNAC in diagnosing breast cancer in female patients presenting with breast lump.*

*Methods: A descriptive observational study was done among 60 female patients who presented with breast lump during the period- January to December 2019. FNAC was done in all the patients and results were compared with the HPE report after surgery*

*Results: Among the 60 patients, 20% were found to be malignant in FNAC and 21.6% were confirmed to be malignant in HPE. 80% were found to be benign in FNAC and 78.3% were confirmed to be benign in HPE.*

*Conclusions: FNAC has a sensitivity of 92.3% and specificity of 100% in diagnosing breast cancer. It has a sensitivity of 100% and specificity of 92.6% in diagnosing fibroadenoma.*

**Key Words:** Breast lump, fibroadenoma, Sensitivity and specificity, malignancy.

Date of Submission: 08-01-2022

Date of Acceptance: 23-01-2022

## I. Introduction:

All breast lumps are not malignant but benign lumps can't be neglected. Breast carcinoma is the most common malignant tumour and the leading cause of carcinoma death in women with more than 1,000,000 cases occurring worldwide annually[1]. FNAC is a simple, cost effective procedure for diagnosing breast lumps. The advantages of FNAC are minimal invasiveness, low cost and early results. FNAC when performed in adequate condition has good accuracy[2]. The aspirated specimen can also be processed as a cell block that can be used for immunohistochemical analysis of related biomarkers (eg. estrogen receptor, progesterone receptor and Her - 2). The cell block specimen can be used for molecular analysis providing additional information that can be helpful in the diagnosis and treatment by identifying predictive and prognostic markers[3]. FNAC has few limitations like inability to diagnose in-situ carcinoma and inability to differentiate it from invasive carcinoma. Also diagnostic accuracy is highly variable depending on the experience of the cytopathologist. FNAC interpretation requires serious experience of the cytopathologist[4].

## II. Materials And Methods:

A descriptive observational study was done in 60 female patients who presented with breast lump in Omandurar government medical college hospital from January to December 2019. Institutional ethical committee clearance was obtained for the conduct of the study. Informed written consent was obtained from all participants and data confidentiality was maintained. All female cases presenting with complaints of breast pain, lump, nipple discharge, discoloration of breast skin, pain in the axilla were examined after getting their consent. Those patients with palpable breast lump were recruited for the study. The patients were in age group between 18 to 79 years. FNAC of the breast lump was done in all cases by using 10 cc syringes with 22-23G needle under strict aseptic precautions and by ultrasound guidance in some cases. They were categorized according to their FNAC findings as C1 to C5. According to the National Cancer Institute (NCI) guidelines in 1996, FNAC of the breasts were categorized into

C1: Insufficient material

C2: Benign

C3: Atypical Probably benign

C4: Suspicious, probably in-situ or invasive carcinoma

C5: Malignant[5]. NCI recommended these categories in order to bring a degree of uniformity to the diagnostic reporting.

In our study, C2 and C3 patients underwent Excision biopsy

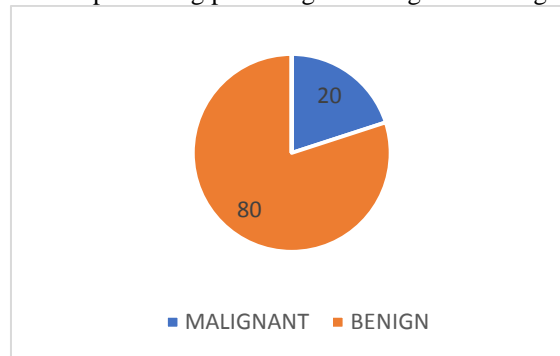
C4 and C5 patients underwent Modified radical mastectomy after confirmation by trucut or incisional biopsy.

Histopathology report of the biopsy specimens obtained postoperatively were compared with the FNAC reports.

**III. Results:**

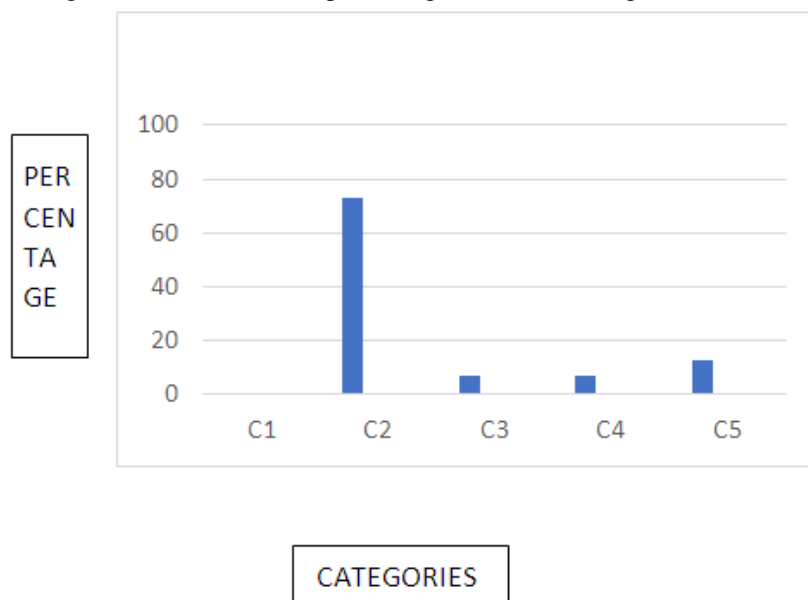
Out of the 60 cases 48 were found to be benign and 12 were found to be malignant in FNAC

Figure: 1 PIE CHART representing percentage of benign and malignant cases in FNAC



Out of the 60 cases ,44 were in category C2 .Out of 44 cases,35 cases were suggestive of fibroadenoma .8 cases were reported as fibrocystic breast disease.1 case was reported as lipoma. Out of the 35 suggestive of fibroadenoma in FNAC,33 were confirmed to be fibroadenoma in HPE and 2 cases were reported as phyllodes tumour.All 8 cases reported as fibrocystic breast disease were confirmed to be the same in HPE.Also lipoma confirmed in HPE.Out of 60 cases,4 cases were in category C3 in FNAC.3 of them were reported as Atypical hyperplasia in HPE ,whereas one case was found to be Invasive ductal carcinoma in HPE.12 cases were in C4 and C5( 4 cases in C4 and 8 cases in C5 category) in FNAC and confirmed to be malignant in HPE.

Figure: 2 BAR CHART representing cases in five categories in FNAC



**IN OUR STUDY:**

Sensitivity of FNAC in diagnosing Malignancy – 92.3%  
 Specificity of FNAC in diagnosing Malignancy – 100%  
 Positive predictive value – 100%  
 Negative predictive value – 97.9%

Sensitivity of FNAC in diagnosing Fibroadenoma – 100%  
 Specificity of FNAC in diagnosing Fibroadenoma – 92.6%  
 Positive predictive value – 94.3%  
 Negative predictive value – 100%

**IV. Discussion:**

FNAC is reported to be 98% accurate in diagnosing benign breast lesions and 85.7% accurate for malignant lesions[6].Fine-needle aspiration of persistent palpable dominant breast masses allows expeditious

and potentially cost-effective management of most cases and decreases the necessity of open surgical biopsy for definitive diagnosis[7][8].

Age wise distribution

Figure: 3 Table showing different age group of females affected by breast disorders

AGE	NO. OF CASES	BREAST LESIONS
<20 years	13	13-fibroadenoma
21-30 years	17	15 -fibroadenoma 2-fibrocystic breast disease
31-40 years	9	5-fibroadenoma 2-fibrocystic breast disease 1-atypical hyperplasia 1-phyllodes tumour
41-50 years	7	2-invasive ductal carcinoma 3-fibrocystic breast disease 1-lipoma 1-phyllodes tumour
51-60 years	4	2-invasive ductal carcinoma 1-medullary carcinoma 1-fibrocystic breast disease
>60 years	10	7-invasive ductal carcinoma 1-lobular carcinoma 2-atypical hyperplasia

Fibroadenoma was the major cause of breast lump in this study(33 cases, 2 cases phyllodes tumour).And age group affected were <20 years-13 cases and 21-30 years 15 cases similar to the findings of Ahmed *et al* study[9]. Carcinoma breast is more common in age group >60 years(8 cases)

FNAC has irrefutably and significantly contributed to the reduction of excisional biopsies in the assessment of breast lesions,especially in the context of triple assessment[10].In our study,the most common malignancy found in C4 and C5 lesions was Invasive ductal carcinoma(10 cases) followed by lobular carcinoma(1 case) and medullary carcinoma(1 case).

In cases of fibroadenoma FNAC revealed glandular and stromal elements.Multiple fibroadenoma were seen in 15-20% of cases[11].

**V. Conclusion:**

FNAC is cost -effective and has good tolerability and hence helps in psychological well-being of the patient.It has high accuracy and therefore prevents unnecessary open biopsies.In patients with palpable breast lesion, FNAC helps to rule of malignancy because of its high sensitivity.This maximizes the availability of effective health care to patients with breast lesions.Diagnosis of Breast lump based on FNAC can be practiced in near future,as there is high correlation with histopathological finding.

**References:**

- [1]. Rosai and Ackerman’s Surgical Pathology.10<sup>th</sup> ed. Vol II .Elsevier;2011.Breast Ch.No. 20 in Juan Rosai (ed.) pp.1660-1771.[Google Scholar].
- [2]. Ali ZS, Parwani AV (2007) Breast cytopathology.Springer,Baltimore,p189
- [3]. Bueno Angela SP,Viero RM,Soares CT (2013) Fine Needle Aspirate cell blocks are reliable for detection of hormone receptors and Her-2 by immunohistochemistry in breast carcinoma.Cytopathology.24:26-32.
- [4]. S.M.Willems,C.H.M.Van Deurzen, and P.J.Van Diest, “Diagnosis of breast lesions : fine needle aspiration cytology or core needle biopsy? A review,”Journal of Clinical Pathology,vol.65,no.4,pp.287-292,2012.
- [5]. The uniform approach to breast fine-needle aspiration biopsy.National Cancer Institute Fine-Needle Aspiration of BreastWorkshop Subcommittees.Diagn Cytopathol. 1997;16:294-311.[PubMed][Google Scholar]
- [6]. Brown LA,Coghill SB.Fine Needle Aspiration Cytology of the Breast.Factors affecting Sensitivity.Cytopathology. 1991;2(2):67-74.doi:10.1111/j.1365-2303.1991.tb00389.x.
- [7]. Day C ,Moatamed N,Fimbres AM, Salami N, Lim S, Apple SK.A retrospective study of the diagnostic accuracy of fine-needle aspiration for breast lesions and implications for future use. *Diagn Cytopathol.* 2008;36(12):855-60. doi :10.1002/dc.20933.
- [8]. Mahajan NA ,Bhale CP, Mulay SS.Fine-needle aspiration cytology of breast lesions and correlation with histopathology-A 2year study. *Int J Health Sci Res.*2013;3(2):55-65.
- [9]. Ahmed HG, Ali AS, Almobarak AO.Utility of fine-needle aspiration as a diagnostic techniques in breast lumps.Diagn Cytopathol 2009;37:881-4.
- [10]. S. O’Neil, M. Castelli,P.Gattuso,L. Kluskens,K. Madsen, and G. Aranha, “Fine-needle aspiration of 697 breast lesions with histopathologic correlation,” *Surgery*, vol.122, no. 4,pp.824-828,1997.[Google Scholar].
- [11]. H. Zakhour and C. Wells, *Diagnostic Cytopathology of the Breast*, Churchill Livingstone, London, UK, 1999.