

## Original Research Article

## Comparison of Fine Needle Aspiration Cytology and Radiology in Diagnosis of Various Breast Lesions

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## Abstract

*Introduction:* In women, breast lesions are one of the most commonly encountered lesions. Lesions may be benign or malignant, pathological confirmation of the nature of any mass in the breast is needed by all physicians for proper management of lesions. Fine Needle Aspiration Cytology (FNAC) and breast ultrasound is important in the characterization of breast lump to differentiate benign from malignant disease so all palpable breast masses require proper workup, early diagnosis and management. *Aim:* 1. To correlate and to evaluate the role of cytology and radiology in diagnosing breast lesions. 2. To decrease unnecessary surgery in benign conditions. *Materials and methods:* 100 patients with breast lumps were examined clinically, evaluated with Radiology and FNAC by using PAP, H&E, and Geimsa stains. Hence, correlation of Radiologic and cytologic findings is important for diagnosing and management of breast carcinoma and to reduce unnecessary surgery in benign conditions. *Result:* Total 100 cases were evaluated by FNAC and radiologically, among which 88 cases have same results and among them 50 cases were confirmed histologically. *Conclusion:* Considering patient's comfort, lack of requirement of anesthesia, simple to perform, cost effective, rapid analysis and reporting makes FNAC an ideal initial diagnostic modality in breast lumps.

**Keywords:** Breast Lesions; FNAC; Radiology.

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## Introduction

Breast cancer is leading cause of cancer deaths among women worldwide [1]. Majority of females visit the clinic with the common presentation of breast lump. A breast lump may be malignant or non malignant. Although majority of breast lumps are benign [2]. Diagnosis of benign from

malignant lesions is important as breast cancer is the worst fear of a female presenting with a lump in the breast. Early detection of breast cancer in order to improve the cancer outcome and survival remains the keystone in control of breast cancer [3]. The establish management of palpable breast masses includes triple assessment, which includes clinical examination, imaging and fine needle

aspiration cytology. Though a definitive diagnosis can be possible with help of radiology but for all the lesions histopathological examination is proven essential for confirming the diagnosis.

The present study was undertaken to evaluate the role of sonomammography and fine needle aspiration cytology in diagnosing breast lesions individually and also with histopathological findings whenever possible.

### Materials and Method

Present study was conducted over a period of 12 months. A total of 100 patients with breast lesions were evaluated with sonomammography and cytology in department of Pathology, SMIMER, Surat. Clinical evaluation included the patient's demographic details, lactational history, history related to breast diseases, and physical examination. Ultrasound examination of the breast masses was done by an expert Sonologist in the department of radio diagnosis. The cases were reviewed and reported according to BIRADS protocol. Fine needle aspiration was taken aseptically from the lesion using 22 G needle and 5 ml syringe. Cellular material was aspirated and expelled onto slides. Four to six slides were prepared for each patient. All the smears were fixed in alcohol and stained with Hematoxylin and Eosin (H&E), PAP, Geimsa stain.

**Table 1:** Showing reporting system of radiology and cytology.

Radiology reporting -BIRADS scoring	Cytology reporting
0. Incomplete	Unsatisfactory
I. Negative	Benign - non specific
II. Benign	Benign -specific diagnosis
III. Benign but follow up is required	Atypical / indeterminate
IV. Suspicious of malignancy	Suspicious malignancy
V. Suggestive of malignancy	Malignant
VI. Known biopsy having malignancy	-

A correlation was done between cytology and radiology and also with histopathology wherever possible.

### Results

In present study 100 cases were evaluated cytologically and Radiologically. Out of 100 cases 69 case detected as benign breast disease by radiography. Cytologically 74 cases were benign and 26 cases were malignant.

**Table 2:** correlation between radiology and cytological diagnosis

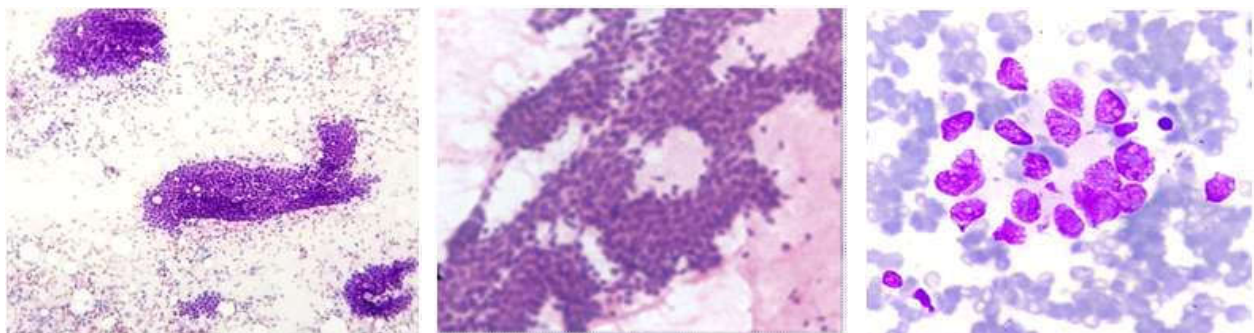
Birads	No. of cases	cytology	No. of cases
II -III	69	benign cytology	74
IV	17	Suspicious / atypical	1
V	14	malignancy	25

On radiological examination, 1 case diagnose as benign which was turned out malignant by FNAC and was confirmed histopathologically. A case of malignant phylloides was misdiagnosed as benign etiology. Other 5 cases diagnosed as malignant, was diagnosed by FNAC as benign lesions which are confirmed by histology

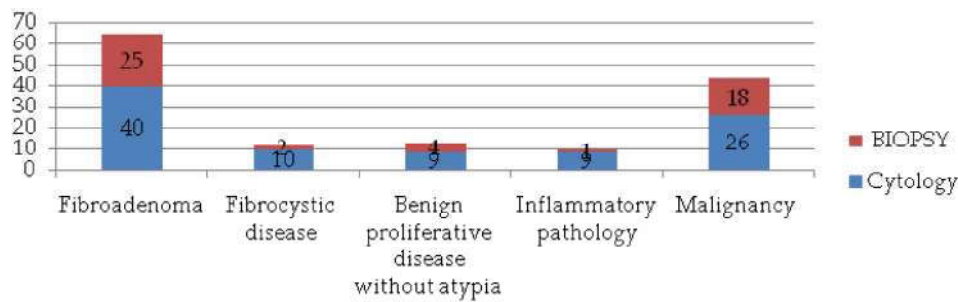
**Table 3:** Following are Cytological Diagnosis In our Study

Cytological diagnosis	No. of cases in%
A. Fibroadenoma	40
B. Fibrocystic disease of breast	10
C. Benign proliferative disease without atypia	09
D. Tuberculous inflammation	03
E. Phylloides	03
F. Inflammatory pathology	09
G. Malignancy	26

Out of total 100 cases, 50 cases were available for histopathology showing in below graph. The confirmation of the ultrasound diagnosis and fine needle aspiration studies was made by gold standard histopathology which was done by an expert pathologist in the pathology department SMIMER, Surat.



**Figures 1,2:** showing cytology of fibroadenoma (10X and 40X), **3:** carcinoma breast (40X)



Graph 1: Showing total no. of cytological cases examined and out of them how many biopsy received.

Table 4: correlation between cytology and histological diagnosis (out of 50 cases)

Lesions	By Cytology	By Histology
Benign	32 (64%)	32 (64%)
Malignant	18 (36%)	18 (36%)

## Discussion

Breast cancer is one of the most common cancer in the world among women. FNAC of breast lumps is an accepted and established method for determining the natures of breast lumps with a high degree of accuracy. The purpose of this present study was to determine the value of fine needle aspiration cytology and ultrasonography in the diagnosis of breast lesions and to compare the result of FNAC and Ultrasonography with available histological diagnosis to assess its accuracy.

Table 5: comparative sensitivity of ultrasonography in different studies

Studies	Sensitivity in% of ultrasonography
Kailash Singh et al. [4]	95%
Wasan et al. [5]	100%
Nandan Kumar et al. [6]	85.45%
Our study	88%

Overall, sensitivity of Ultrasonography in our study is 88%. These results correlate with other studies shown in Table 5, which was similar to our study.

Fine needle aspiration cytology of breast lump is an accepted and established method for early diagnosis of the lump and it may play an important role when it is difficult to determine the nature of breast lump by clinical examination. The study of Puja B. Jarwani et al. [7], Ambedkar Raj Kulandai Velu et al. [8] has been found to have sensitivity ranging from 82% to 97.5% and specificity of more than 99%. In our study, sensitivity of breast FNAC was 100%.

The results of our study showed FNAC of breast lump to be a reliable method to diagnose breast lump with high accuracy. Out of 100 cases 12 cases have difference in final diagnosis by cytology and radiologically. Among them all 12 cases, which are differ from radiological diagnosis, are confirmed histologically with same final diagnosis as cytology.

## Conclusion

Fine needle aspiration cytology is a relatively simple, reliable, atraumatic, economical and complication free technique for the evaluation of mass lesions. FNAC also has less turn around time for diagnosis. Triple assessment by clinical, radiological and FNAC can produce 99% accuracy for breast lesions as false negative results can mislead a clinician and cause a delay in appropriate investigation and treatment. Present study confirms the higher combined sensitivity of ultrasonography and fine needle aspiration cytology for detection of breast masses. Furthermore, it needs absolute collaboration between surgeons, radiologist and pathologist. This will subsequently reduce the number of open breast biopsies significantly.

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