**Original Research Article**

# Study of palpable breast lesions using a diagnostic tool of fine needle aspiration cytology at tertiary care hospital

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## Abstract

**Introduction:** Breast carcinomas are one of the leading causes of cancer in women. Fine Needle Aspiration Cytology (FNAC) is one of the important tools for the preoperative diagnosis of breast lesions.

**Materials and methods:** A total of 100 breast aspirates were studied. Histo-cytopathological correlations were obtained in all cases. All the aspirates were stained with Hematoxylin and Eosin (H and E) stain.

**Results:** Among 100 patients, 95 were females and 5 were males. Benign breast lesions were found in 62 cases; among which fibroadenoma (34%) was the commonest lesion which was observed. Malignancy was observed in 38 cases; among them, ductal carcinoma (22%) was the predominant.

**Conclusion:** We can conclude that FNA is widely accepted as a reliable technique in the initial evaluation of palpable breast lumps. It is simple, safe, cost-effective, minimally invasive, rapid and as sensitive as biopsy.

## Key words

FNAC, Palpable breast lesion, Fine needle aspiration cytology.

## Introduction

In both developed and developing countries, breast lumps comprise a considerable amount of surgical cases in women. In outpatient departments, breast lump is one of the commonest presentations; majority of them are in women

and benign. Differentiating benign lumps from malignant preoperatively for definite treatment is necessary [1, 2]. The triple test which includes physical breast examination, mammography and fine-needle aspiration (FNA) and has proved a reliable tool for accurate diagnosis of palpable breast masses.

Fine needle aspiration cytology has become an increasingly popular technique utilized in the diagnosis of palpable breast masses owing to its distinct advantages of being sensitive and specific, expedient, economical and safe. The purpose of this study is to evaluate our experiences with fine needle aspiration cytology in a series of patient and compare the diagnostic accuracy of fine needle aspiration cytology with postoperative histopathology.

## Materials and methods

The two years retrospective study of fine needle aspiration cytology of 100 clinically palpable breast lump with histopathological correlation was carried out during March 2020 to February 2021. FNAC was performed at cytology clinic using a 22-guage needle attached to a 10 ml syringe after explaining procedure to the patients and obtaining their oral consent for the same [3-9]. The area to be aspirated was cleaned with spirit before aspiration and multiple hits were made within the lesion, with sufficient negative pressure; the needle was removed and the pressure was applied to the area of aspiration to avoid bleeding or hematoma formation. The aspirated material was smeared on glass slide and stained [10-16]. The cytological diagnosis was classified in to 3 groups benign, suspicious and malignant. After this reporting all the patients were later subjected to open/excision biopsy and its histopathological confirmation.

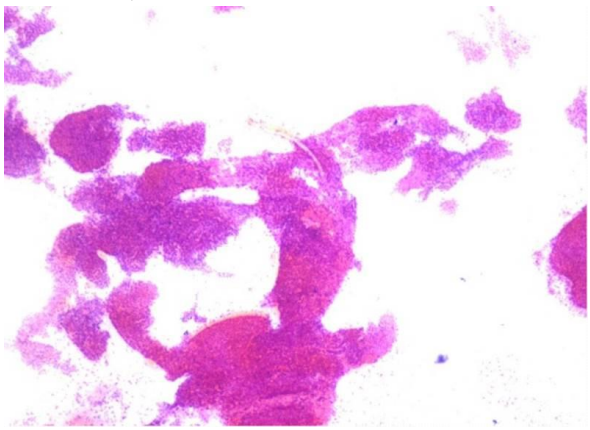
This study documented the fact that benign breast lesions were the most common lesions in young females, among which the Fibroadenoma was the commonest one. The malignant lesions were common in fourth and fifth decades of life, among which infiltrating ductal carcinoma was the most common lesion.

Later diagnostic accuracy of cytology reporting was compared with that of histopathology. The data was collected and analyzed.

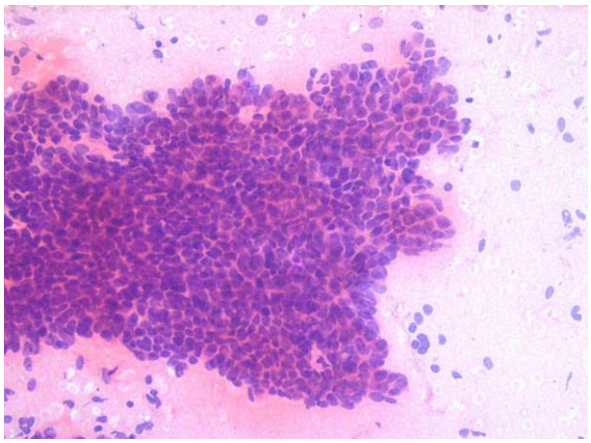
## Results

This study documented the fact that benign breast lesions were the most common lesions in young females, among which the Fibroadenoma (**Photograph - 1, 2**) was the commonest one. The malignant lesions were common in fourth and fifth decades of life, among which infiltrating ductal carcinoma (**Photograph - 3, 4**) was the most common lesion (**Table – 1, 2**).

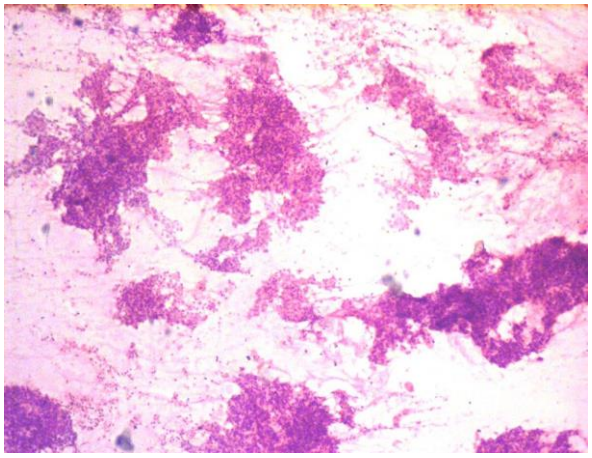
**Photograph – 1:** Sheets of benign ductal epithelial cells with stag horn pattern (H&E Stain,10 X).



**Photograph – 2:** Bare bipolar nuclei with benign ductal epithelial cells and myoepithelial cells (H&E Stain,40 X).



**Photograph – 3:** Sheets of malignant cells in the necrotic background (H&E Stain,10 X).



**Photograph – 4:** Malignant ductal cells with marked pleomorphism,abnormal mitotic figures and hyperchromatism (H&E Stain, 40X).

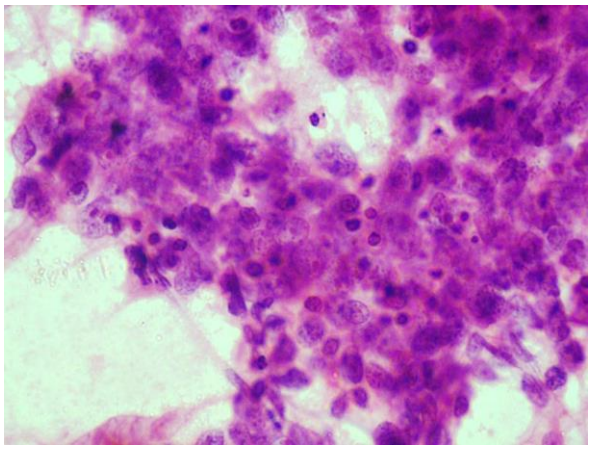


**Table – 1:** Age distribution of cases.

| Age (Years) | Patients | |
|---|---|---|
| | No. | % |
| ≤20 | 04 | 04 |
| 21-30 | 16 | 16 |
| 31-40 | 45 | 45 |
| 41-50 | 30 | 30 |
| 51-60 | 03 | 03 |
| >60 | 2 | 2 |
| Total | 100 | 100 |

## Discussion

The fine needle aspiration cytology is an important diagnostic adjunct in the management of patient with a breast lump [17]. Its distinct advantage is that it can be done during the outpatient visit without the need of the anesthesia, thus eliminating the cost of outpatient surgery. It also allows discussion with the patient of various treatment plans for malignant mass on the same visit. It greatly compliments the clinical and radiological examination and permits rapid diagnosis in more than 95% of the cases. In our study, we had 62 benign lesions (62%), fibroadenoma being the most common benign lesion (34%) that presents for needle aspiration. This has been confirmed in other series also. The fibroadenoma has been considered a significant cause for the false positive diagnosis. The overall activity of the epithelial cell in this tumor is probably the reason. We had no cases of false positive reports in our study. Ductal carcinoma is one of the most common malignancies (22%) among women in our study. The breast lump is usually discovered by the patient. The typical carcinoma presents a gritty resistance to the fine needle. The aspirate is usually copious and blood stained. Another common benign breast lesion we encountered was fibrocystic change ($N$ = 20) with maximum patients between 21-40 years. Though hormones play a role in its development exact pathogenesis remains obscure [18]. Fibrocystic change is not a specific cytological diagnosis. Cytology samples must be evaluated in the context of clinical and mammography findings. Some of these lesions simulate carcinoma clinically, radiologically, and microscopically [19]. More than 90% of the fibrocystic changes were non-proliferative and FNA smears showed many macrophages, apocrine cells with or without scanty chronic inflammatory cells. However, one case which was misinterpreted as a benign cystic lesion by FNAC, was later on diagnosed as a malignant phyllodes tumor on doing a histopathological examination. This might be due to inadequate sampling, because of the cystic nature of lesion. So, in case of cystic lesions, it is better to re-aspirate the lesion from the solid area after evacuation of cyst or image guided FNA should be performed to locate solid area. It is always necessary to correlate the FNAC findings with clinical diagnoses and mammograms and to go for core biopsies whenever they are needed, to avoid misdiagnoses. The false negative rate

varies from 1-8% in different studies [20-23]. In the present study, all the 80 cytologically diagnosed malignant cases were confirmed as malignant on subsequent histopathological examinations. So, in our study, a 100% cyto-histopathological correlation was observed for malignant lesions. Zhang Qin, et al. [22], AZ Mohammed, et al. [23], Tiwari M [20] had also observed the same results in their studies.

**Table – 2:** Frequency of FNA diagnosis of 100 breast lesions.

| | | **No. of patients** | **%** |
|---|---|---|---|
| Benign breast lesions (n=120) | Fibroadenoma | 34 | 34 |
| | Lactating adenoma | 2 | 2 |
| | Fibrocystic change | 10 | 10 |
| | Fibroadenosis | 3 | 3 |
| | Gynecomastia | 3 | 3 |
| | Galactocele | 03 | 03 |
| | Benign phylloides | 3 | 3 |
| | Inflammatory breast disease | 4 | 4 |
| Malignant breast lesions (n= 80) | Ductal carcinoma | 22 | 22 |
| | Mucinous carcinoma | 04 | 04 |
| | Papillary carcinoma | 05 | 05 |
| | Medullary carcinoma | 2 | 2 |
| | Metaplastic carcinoma | 03 | 03 |
| | Metastasis | 02 | 02 |
| Total | | 100 | 100 |

Apart from the high accuracy rate of fine needle aspiration cytology, this technique is quite attractive because of its rapidity of execution and interpretation. Some have raised questions about the possible dangers of cell implantation from the needle aspiration. These rare reports have largely resulted from the use of larger cutting needle (18 gauze) rather than fine needles (22 gauze). With this fine needle technique, there is essentially no danger of implantation with breast aspiration [24]. Franzen and Zajicek in a review of 3479 consecutive breast aspirates found no evidence of seeding along the needle tract [25]. This is not surprising as the needle tract is invariably removed with definitive surgery.

## Conclusion

We can conclude that fine needle aspiration (FNA) cytology is a safe, cost-effective, and reliable technique for preoperative evaluation of palpable breast lumps. FNA features are more informative when combined with clinical and radiological findings. Clinical breast examination and mammography screening in female subjects should be encouraged in developing countries from the third decade onward for early detection of breast carcinoma.

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