



# Pattern of Benign Breast Lesions on Fine Needle Aspiration Cytology

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**ABSTRACT**

**Background :** Fine Needle Aspiration Cytology is of high value in the assessment of benign breast lesions.  
**Aim :** To evaluate the pattern of benign breast lesions on FNAC based on morphology in a tertiary care hospital.  
**Materials and Methods :** This is a prospective study of FNAC of breast lumps which were clinically diagnosed as benign breast lesions over a period of 2 years with the sample size of 100. Histopathological examinations was done where biopsies were available.  
**Results :** The most common age group affected in our study was 31-40 years followed by 11-20 years. Two of them were in the juvenile age group (13 year and 17 year) which were of size 7cm and 6cm in diameter and diagnosed as giant juvenile fibroadenoma on FNAC. The most common lesion encountered in our study was fibroadenoma (40%) followed by Benign Proliferative Lesions (16%) and inflammatory lesions both acute mastitis, plasma cell mastitis and granulomatous mastitis (13%). On follow up it was found that all the inflammatory lesions got cured with proper medical treatment without any surgical intervention. Histopathological biopsy was available for most of the fibroadenoma cases. So the diagnostic accuracy of FNAC for diagnosis of fibroadenoma was calculated to be 94.7%.  
**Conclusion :** A cytological diagnosis of the benign breast lesions can be established with the help of FNAC which is of highly accurate diagnostic value.

**KEYWORDS** FNAC, Benign breast lesions, Fibroadenoma, giant juvenile fibroadenoma, Histopathology.

**INTRODUCTION**

A palpable breast lump is a common diagnostic problem both to the general practitioner and to the surgeon. Excisional biopsy was accepted practice in the past, but presently fine needle aspiration cytology (FNAC) makes it possible to reduce unnecessary surgical excision of benign breast lesions to a minimum. A preoperative diagnosis offers several advantages.

1. Immediate diagnosis relieves the patient's anxiety and saves time.
2. The definitive treatment can be planned in advance with the informed consent of the patient.
3. Many benign conditions can be confidently diagnosed by FNAC and surgery avoided.
4. The need for frozen section diagnosis is reduced.

**However FNAC also has some limitations**

1. Representative samples.
2. Exact typing of various hyperplastic and low grade neoplastic lesions.

**AIMS AND OBJECTIVES :**

1. To establish a cytological diagnosis for the benign breast lesions.
2. To correlate the findings histologically in selected cases

- and to find out the diagnostic accuracy of those cases.
3. To evaluate the prevalence of benign breast lesions at different age groups and sex differentiation.

**INCLUSION CRITERIA :**

1. All breast lumps which were clinically and radiologically diagnosed as benign lesions.
2. Both male and female.
3. All age groups.

**EXCLUSION CRITERIA :**

1. Patients with bleeding diathesis
2. Extremely uncooperative or agitated patient
3. Skin infection at needle aspiration site.

**Classification of Breast Lesions (WHO Classification)<sup>1</sup>**  
**EPITHELIAL TUMOURS**

Microinvasive carcinoma  
 Invasive Breast Carcinoma

**EPITHELIAL-MYOEPITHELIAL TUMOURS**  
**PRECURSOR LESIONS**

Ductal carcinoma in situ  
 Lobular carcinoma in situ  
 Atypical lobular hyperplasia

**INTRADUCTAL PROLIFERATIVE LESIONS**

Usual ductal hyperplasia  
Columnar cell lesions including flat epithelial atypia  
Atypical ductal hyperplasia

**PAPILLARY LESIONS**

Intraductal papilloma  
Intraductal papillary carcinoma  
Encapsulated papillary carcinoma  
Solid papillary carcinoma

**BENIGN EPITHELIAL PROLIFERATIONS**

Sclerosing adenosis  
Apocrine adenosis  
Microglandular adenosis  
Radial scar/ Complex sclerosing lesion

**Adenomas****MESENCHYMAL TUMOURS  
FIBROEPITHELIAL TUMOURS**

Fibroadenoma  
Phyllodes tumour  
Benign  
Borderline  
Malignant  
Periductal stromal tumour, low grade

**Hamartoma****TUMOURS OF THE NIPPLE****MALIGNANT LYMPHOMA****METASTATIC TUMOURS****TUMOURS OF THE MALE BREAST**

Gynaecomastia  
Carcinoma

**CLINICAL PATTERNS**

Inflammatory carcinoma  
Bilateral Breast Carcinoma

**Materials and Method**

Samples for FNAC were collected from patients attending the cytology division in the department of pathology FAA Medical College & Hospital with clinical diagnosis of benign breast mass lesions. A total of consecutive 100 patients were included in the study for a period of 2 years (from 1st January 2014 to 31<sup>st</sup> December 2015).

**PLAN OF STUDY**

Initially, a thorough clinical examination and then routine haematological and biochemical investigations were carried out in the cases. Radiological investigation like X-ray, Ultrasonography, CT scan were also available in some cases. Fine needle aspiration was performed in all cases by using a 22 gauge needle with or without aspiration.

In those cases where biopsy was done, the materials were sent for processing for histopathological examination.

**Collection of specimen for cytology:**

The fine needle aspiration cytology was carried out in the cytology division of pathology department. The aspiration was performed using 22 gauge needles without aspiration or with aspiration attaching to a 10ml plastic syringe. The patient did not require prior anaesthesia.

The details of equipments for aspiration are given below:

1. Spirit swab to clean the skin.
2. 22 gauge needle (external diameter ranging from 0.6 to 1.8 mm and length ranging from 1 to 1 1/2 inches).
3. 10 cc plastic syringe.
4. One pair of disposable gloves, Coplin jars.
5. A number of 76 x 26 mm microscope slides.
6. Marker for labeling.
7. Completed laboratory requisition form giving the clinical details.

8. 95% alcohol or ether alcohol for fixation (in case of pap staining).
9. Local anesthesia in some cases.

**TECHNIQUE OF ASPIRATION**

The procedure was carried out as described by Zajicek (1974) Bottles et al (1985) and Orell (2005)<sup>2</sup>.

Fine needle aspiration is most conveniently carried out with the patient lying supine in an ordinary examination couch. A clear explanation of the procedure ensures patient's consent and cooperation. The overlying skin is made sterile by swabbing with alcohol (rectified spirit) and antiseptic solution.

**FINE NEEDLE SAMPLING WITH ASPIRATION**

In this technique needle is attached to a plastic syringe and introduced into the target tissue and the other hand fixes the target tissue. The plunger is pulled to apply negative pressure; needle is moved back and forth inside target. The negative pressure is released while needle remains in target tissue, needle is detached and air drawn into syringe. The sample is blown onto microscopy slides.

**FINE NEEDLE SAMPLING WITHOUT ASPIRATION**

In this technique needle is inserted into target tissue without attaching to the syringe. The needle is moved back and forth inside target varying the angle and after that needle is withdrawn. Thereafter needle is attached to a syringe and sample is blown onto microscopy slides.

**Results & observations**

The study work was carried out in the Cytology Section of the Pathology Department, FAA Medical College & Hospital, Barpeta, on 100 cases presenting with clinically diagnosed benign breast lump who were subjected to FNAC.

Whenever material was available for histopathological examination, the cytologic diagnosis was compared with the histopathological diagnosis, and only those cases which had histopathologic correlation available, were included in calculating diagnostic accuracy.

The results and observations of the present study are shown in following tables:

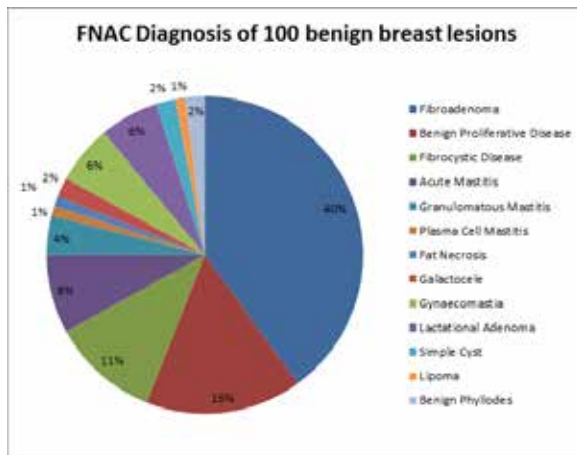
**Cytological Findings**

In all the 100 aspirates, smears were adequate. Out of 100 cases 96 cases had rich cellularity and the remaining 4 cases had poor cellularity. The smears with poor cellularity were mainly from cystic lesions and lipomatous type of lesions.

The cytological diagnosis was made on the basis of accepted cytological criteria (Orell, 2005)<sup>3</sup>. Following table shows distribution of 100 cases of salivary gland lesions diagnosed by cytological examination.

**Table: 1 FNAC Diagnosis of 100 benign breast lesions**

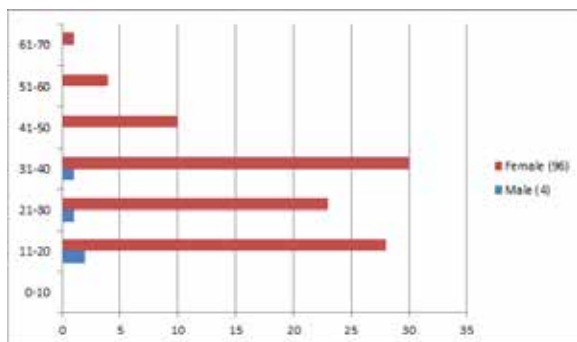
| Cytological Diagnosis        | No. Of Cases | Percentage % |
|------------------------------|--------------|--------------|
| Fibroadenoma                 | 40           | 40           |
| Benign Proliferative Disease | 16           | 16           |
| Fibrocystic Disease          | 11           | 11           |
| Acute Mastitis               | 8            | 8            |
| Granulomatous Mastitis       | 4            | 4            |
| Plasma Cell Mastitis         | 1            | 1            |
| Fat Necrosis                 | 1            | 1            |
| Galactocele                  | 2            | 2            |
| Gynaecomastia                | 6            | 6            |
| Lactational Adenoma          | 6            | 6            |
| Simple Cyst                  | 2            | 2            |
| Lipoma                       | 1            | 1            |
| Benign Phyllodes Tumour      | 2            | 2            |



**Fig:1 FNAC Diagnosis Of 100 benign breast lesions**

**Table:2 Age and sex distribution of 100 patients of benign breast lesions**

| Age Group | Male (4) | Female (96) | Total (100) |
|-----------|----------|-------------|-------------|
| 0-10      | -----    | -----       | -----       |
| 11-20     | 2        | 28          | 30          |
| 21-30     | 1        | 23          | 24          |
| 31-40     | 1        | 30          | 31          |
| 41-50     | -----    | 10          | 10          |
| 51-60     | -----    | 4           | 4           |
| 61-70     | -----    | 1           | 1           |



**Fig:2 Age and sex distribution of 100 patients of benign breast lesions**

**Table:3 Side involvement of benign breast lesions.**

| Right sided breast | Left sided breast |
|--------------------|-------------------|
| 44 cases           | 56 cases          |

**Table: 4 Cytohistological correlation of available fibroadenoma cases.**

| Cytological Diagnosis | Number of cases | Histological correlation | Consistent | Not Consistent |
|-----------------------|-----------------|--------------------------|------------|----------------|
| Fibroadenoma          | 40              | 38                       | 36         | 2              |

**Table:5 Diagnostic accuracy of FNAC in the diagnosis of fibroadenoma in our study as compared to other studies.**

| Studies                        | Diagnostic accuracy of FNAC |
|--------------------------------|-----------------------------|
| Our Study                      | 94.7%                       |
| Tiwari M <sup>4</sup>          | 90%                         |
| Arjun Singh et al <sup>5</sup> | 92.3%                       |
| Clive et al                    | 94%                         |

|  |        |
|--|--------|
| Shirish Chandanwale et al <sup>6</sup> | 86.66% |
|--|--------|

**DISCUSSION :**

In our present study FNAC was done in 100 patients with benign breast lesions out of which histopathology was available in 38 cases of fibroadenoma. Diagnostic accuracy of FNAC was calculated by correlating with histopathological results .

The most common age group affected in our study was 31-40 years followed by 11-20 years .Another study done by Haque et al<sup>7</sup> also found that 30-40 years is the most commonly affected age group .

In our study we also found two uncommonly reported cases of giant juvenile fibroadenoma of age 13 years and 17 years which were of large size 7 cm and 6 cm in diameter respectively. These cases were confirmed by FNAC as giant juvenile fibroadenoma . Such studies on giant juvenile fibroadenoma is also available in various literature. Similar study was done by C.A.Park et al<sup>8</sup> and R.L.Moore et al<sup>9</sup>.

In our study out of 100 cases 6 were male and all were diagnosed as gynaecomastia . Similar findings were reported by Echejoh et al<sup>10</sup> , Arjun Singh et al<sup>5</sup> and Shirish Chandanwale et al<sup>6</sup> .

In the present study left breast was more commonly involved than the right one which is supported by the study of Prakash et al .

In our study most common cytological diagnosis on FNAC was fibroadenoma (40%) followed by benign proliferative lesions (16%) . Similar observations were made by Arjun Singh et al<sup>5</sup>, Echejoh et al<sup>10</sup> and Farkhanda et al<sup>11</sup>.

Inflammatory lesions including acute mastitis,plasma cell mastitis, and granulomatous mastitis all constitutes about 13%. Similar finding was also found in studies done by Baptist et al<sup>12</sup>, Baravkar LV<sup>13</sup>, and Haque et al<sup>7</sup> . On follow up , it was found that all the inflammatory lesions got cured by proper medical treatment without any surgical interventions.Cases which were diagnosed as granulomatous mastitis were first given a short course of anti tubercular therapy as tuberculosis is very common in this part of Assam than any other granulomatous diseases. All the patients showed good response with the therapy . Studies of Dharkar et al show the importance of diagnosis of tubercular mastitis. A case of plasma cell mastitis was also suggested on FNAC in our study. This is a very rare chronic inflammatory lesion and a distinct entity. Such rare case is also found in literature as case report done by Amarendra Prasad Naragam et al "Plasma cell mastitis mimicking as carcinoma of the breast.A case report and review of literature."

Cytohstological correlation of 38 cases of fibroadenoma was available. Out of which 36 cases were consistent and 2 cases were not consistent with histopathological diagnosis. So the diagnostic accuracy was calculated and found to be 94.7%. This finding correlates with the studies made by different authors like Tiwari M (90%) , Arjun Singh et al (92.3%), Clive et al (94%) and Shirish Chandanwale et al 86.66%.

In this study two cases of cytological diagnosis of fibroadenoma were found to be benign Phyllodes tumour on histopathological diagnosis.Such fallacies are also reported by other author like Umberto S et al<sup>14</sup> .

**CONCLUSIONS :**

In our institution , cases of benign breast lesions are commonly reported. Based on cytological diagnosis out of 100 cases maximum number of cases were found to be fibroadenoma (40%) and diagnostic accuracy of FNAC in the diagnosis of the most common lesion encountered in our study is 93.7% which is calculated after correlation with histopathology . Moreover the lower age group of frequent occurrence of fibroadenoma (11-20years) as well as higher number of giant

juvenile fibroadenoma in this locality is an subject of further research.

FNAC is an useful tool in the diagnosis of inflammatory lesions so that unnecessary surgery can be avoided as well as in cases of benign breast lesions where unnecessary mastectomy can be avoided.

FNAC can be used as a reliable, cheap, quick, easy to perform pretreatment diagnostic method in the diagnosis of benign breast lesions with low risk of complications.

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