



## **Morphological spectrum of palpable breast lesions by using Fine Needle Aspiration Cytology**

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### **Abstract**

**Background:** The present study was conducted to study the morphological spectrum of palpable breast lesions being diagnosed by using Fine Needle Aspiration Cytology.

**Methods:** The present study was conducted at the Department of Pathology, Jhalawar Medical College, Jhalawar, India. The present study was conducted from February 2020 to July 2021. The total of 321 male and female patients of all age groups, presenting with palpable breast lump in the cytology department were enrolled for the study. The study was carried out after obtaining approval from the Institutional Research Ethics Committee. An informed and written consent was obtained from all the patients.

**Results:** A total of 34 cases were true negative, 9 were true positive, whereas 4 were false positive and 1 was false negative. An accuracy of test was found to be 89.58%, with a 90% sensitivity and 89.47% of specificity.

**Conclusion:** Benign breast lesions are generally easy to diagnose when their characteristic cytologic patterns are noticeable. Hypocellularity, necrosis, degenerated apocrine cells, and epithelial hyperplasia are some factors that are encountered for evaluation of a difficult smear, mimicking malignant or atypical lesions. Despite high accuracy of FNAC, some pitfalls can cause confusion and misdiagnosis of breast lesions. Thus, accuracy of diagnosis increases when it is aided with radiological investigations. Thus the study concluded that FNAC should be used as a routine procedure in combination with different radiological findings in arriving at early and accurate diagnosis

**Keywords:** FNAC, Breast, Benign

### **Introduction**

Breast lesions that are benign in nature are generally easily diagnosed when their typical cytologic features are identified. Hypocellularity, degenerated apocrine cells, epithelial hyperplasia and necrosis, are few factors that are generally considered while assessing a complicated smear, that mimics the lesions that are atypical or

malignant. Although very few false-negative cases have been reported in the breast using FNAC, but if occur, they are generally due to issue with sampling technique, poor localisation of tumor, and the existence of a well-differentiated histological pattern of the tumor. Small sized tumors and nonpalpable lesions of breast are commonly found linked with inadequate aspirate and false-negative results. Thus all the factors that should be taken into consideration while interpreting the FNAC of breast lesions is being rendered.<sup>1-2</sup>

Thus, the precise diagnosis of the breast lesions is dependent upon the triple evaluation of approach that comprised of radiology, clinical, and pathological assessments. Fine needle aspiration cytology (FNAC) is widely being used for assessment of pathologically palpable breast lesions, because of its ease of use and accuracy. The Fine-needle aspiration cytology is a rapid technique and efficient method used for the principal classification of palpable breast lumps into various categories like unsatisfactory, suspicious, benign, atypical, and malignant.<sup>4</sup>

Thus, the present study was conducted to study the morphological spectrum of palpable breast lesions being diagnosed by using Fine Needle Aspiration Cytology.

#### **Material and Methods**

The study was carried out in Department of Pathology, Jhalawar Medical College, Jhalawar, Rajasthan, India to study the morphological spectrum of palpable breast lesions being diagnosed by using Fine Needle Aspiration Cytology.

All participants submitted informed consent before enrolment.

A hospital based cross-sectional study conducted from February 2020 onwards for one and half year (duration

includes time required for data collection, analysis and report writing).

#### **Sample size**

$$n = t^2XP(1-P)/e^2$$

P = proportion of breast FNAC out of total FNAC in last year (349 out of 2601)

n=183

#### **Subjects**

All male and female patients of all age groups presenting with palpable breast lump in the cytology department of JMC, Jhalawar during this period.

#### **Inclusion Criteria**

All male and female patients of all age group with palpable breast lesion.

#### **Exclusion Criteria**

1. Non palpable breast masses.
2. Patient presented with nipple discharge only.
3. Uncooperative patient.

The study was started after approval from Ethical Committee of our institution.

#### **Methodology**

After obtain ing approval and clearance from the institutional ethical committee, subjects presenting with palpable breast lump, meeting the inclusion and exclusion criteria, patients were subjected to fine needle aspiration cytology. Informed consent was obtained from each participant.

In this cross-sectional study, a total of 321 patients presenting with palpable breast lump were assessed in the study at our Institute. The samples were collected and subjected to FNAC.

After enrollment the following parameters were considered and/or measured in all patient's name, age,

gender, occupation, address, general physical examination.

**Statistical Analysis**

The data was collected and compiled on M.S.Excel 2020 and data was analysed using SPSS 20.0 version. Data were analysed and statistically evaluated using Statistical

Package for Social sciences (SPSS)-PC-20 software (version 20, SPSS, Inc, Chicago, IL, USA). Data were presented as mean and standard deviation (SD) for normally distributed continuous variables and as frequencies for categorical variables

**Results**

Table 1: Diagnosis of Benign Lesions

Benign lesions	Frequency	%
Abscess and mastitis	44	18.40
Granulomatous lesions	15	6.27
Fat Necrosis	9	3.76
simple cyst/ Cystic Lesion	8	3.34
Inspissated Cyst	2	0.84
Dermoid cyst	1	0.42
Epidermal Cyst	3	1.26
Galactocele	6	2.51
Duct Ectasia	5	2.09
Fibrocystic Disease	13	5.44
Fibroadenoma	71	29.71
Phyllodes Tumor	2	0.84
Gynecomastia	21	8.79
Fibroadenosis	10	4.18
Lactating Adenoma	1	0.42
Lactating breast	1	0.42
Thelarche	1	0.42
Lipomatous Lesion	2	0.84
Benign breast disease	17	7.12
Proliferative breast disease	7	2.93
Total	239	100

Out of total 239 lesions, maximum (29.71%) were reported to have fibroadenoma, followed by 18.40% abscess and mastitis, 7.12% were benign breast lesions. Least percentage of lesions reported were dermoid cyst, Lactating Adenoma, Lactating breast and Thelarche.

Table 2: Diagnosis of Malignant Lesions

Malignant lesions	Total cases	%	No. Of cases with lymph node metastasis	%
Duct Ca	40	63.49	12	66.66
Lobular Ca	4	6.35	1	5.56
Lymphoproliferative neoplasm	1	1.59	1	5.56
Malignant lesion	11	17.46	2	11.11
Medullary Ca	3	4.76	2	11.11
Papillary Carcinoma	4	6.35	0	0
Total	63	100	18	28.57

Maximum lesions (63.49%) were ductal carcinoma, followed by 17.46% malignant lesions, 6.35% each papillary carcinoma and lobular carcinoma. Out of total 63 malignant lesions, 28.57% showed lymph node metastasis. 66.66% ductal carcinoma showed maximum

percentage of metastasis to lymph nodes, followed by 11.11% each malignant lesions and medullary carcinoma. No LN metastasis was observed in case of papillary carcinoma.

Table 3: Association of UsG/Mammography with Diagnosis

Lesion category	No. Of cases having USG/mammography/ Other investigations	Association with USG/mammography/other investigations		Not associated with USG/mammography/other investigations	
		Freq	%	Freq	%age
Unsatisfactory	1	0	0	1	16.67
Benign	34	33	78.57	1	16.67
Atypical	3	1	2.38	2	33.33
Suspicious for malignancy	0	0	0	0	0
Malignant	10	8	19.05	2	33.33
Total	48	42	87.5	6	12.5

Out of total of 321 cases, 48 cases had undergone USG/mammography/other investigations. Out of 48 lesions, 87.5% showed association and 12.5% showed no association with USG/mammography.

A total of 34 cases were true negative, 9 were true positive, whereas 4 were false positive and 1 was false negative. An accuracy of test was found to be 89.58%, with a 90% sensitivity and 89.47% of specificity.

**Discussion**

In present study, out of 48 lesions, 87.5% showed association and 12.5% showed no association with

USG/mammography. A total of 34 cases were true negative, 9 were true positive, whereas 4 were false positive and 1 was false negative. An accuracy of test was found to be 89.58%, with a 90% sensitivity and 89.47% of specificity.

The few false-negative cases found in breast FNAC, are commonly because of poor sampling technique, poor localization of tumor, and presence of a well-differentiated tumor histology. Small tumor size and nonpalpable breast lesions are also commonly associated with false-negative and aspirate inadequacy.<sup>50</sup> In

accordance with our study, sensitivity of 81%–98% and specificity of 79.6%–100% was reported in various studies like Singh P et al.<sup>3</sup>, Yusuf I et al.<sup>4</sup>, Panjvani SI et al.<sup>5</sup>

The high rate of sensitivity and specificity reflects the use of FNAC as a preoperative diagnostic tool for managing the palpable breast lesions. FNAC is an important part for the preoperative management of breast lesions. The accuracy, ease of use, and affordability of FNAC are factors that make it popular. The imaging technology along with the clinical expertise of the clinician contributes to its increased sensitivity.

Benign breast lesions are generally easy to diagnose when their characteristic cytologic patterns are noticeable. Hypocellularity, necrosis, degenerated apocrine cells, and epithelial hyperplasia are some factors that are encountered for evaluation of a difficult smear, mimicking malignant or atypical lesions. Despite high accuracy of FNAC, some pitfalls can cause confusion and misdiagnosis of breast lesions. Thus, accuracy of diagnosis increases when it is aided with radiological investigations. Thus the study concluded that FNAC should be used as a routine procedure in combination with different radiological findings in arriving at early and accurate diagnosis

### **Conclusion**

Benign breast lesions are generally easy to diagnose when their characteristic cytologic patterns are noticeable. Hypocellularity, necrosis, degenerated apocrine cells, and epithelial hyperplasia are some factors that are encountered for evaluation of a difficult smear, mimicking malignant or atypical lesions. Despite high accuracy of FNAC, some pitfalls can cause confusion and misdiagnosis of breast lesions. Thus, accuracy of diagnosis increases when it is aided with radiological

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### **References**

1. Swati Singh, Mayurika S Tyagi. A prospective study on cytological evaluation of palpable breast lumps. *International Journal of Contemporary Medical Research* 2020;7(8):H1-H4.
2. Bukhari MH, Madiha Arshad, Shahid Jamal, Shahida Niazi, Shahid Bashir, Irfan M. Bakhshi, Shaharyar, "Use of Fine-Needle Aspiration in the Evaluation of Breast Lumps", *Pathology Research International*, vol. 2011, Article ID 689521, 10 pages, 2011.
3. Robinson IA, McKee G, Nicholson A, D'Arcy J, Jackson PA, Cook MG, et al. Prognostic value of cytological grading of fine needle aspirates from breast carcinomas. *Lancet* 1994;343:947-9.
4. Singh P, Chaudhry M, Nauhria S, Rao D. Cytomorphological patterns of breast lesions diagnosed on fine-needle aspiration cytology in a tertiary care hospital. *Int J Med Sci Public Health* 2015;4:674-679.
5. Yusuf I, Atanda AT. Validity of fine needle aspiration cytology of the palpable breast lesions: a teaching hospital experience. *Niger J Basic Clin Sci* 2014;11:36-40.
6. Panjvani SI, Parikh BJ, Parikh SB, Chaudhari BR, Patel KK, Gupta GS, et al. Utility of fine needle aspiration cytology in the evaluation of breast lesions. *J Clin Diagn Res* 2013;7(12):2777-9.