Journal of Carcinogenesis
Covering Genesis to Therapeutics

Journal of Carcinogenesis, ISSN: 1477-3163
2025; Vol 24: Issue 8s, https://carcinogenesis.com/

Correlation Of Fine Needle Aspiration Cytology (FNAC) With Histopathology In Patients With Breast Lumps In A Rural Tertiary Hospital

Dr. Saba Siraj[1], Dr. Saritha Karre*[2], Dr.Koppuravuri Soundarya[3], Dr.Maddela Pratyusha[4], Dr.Ongole Monika[5]

Senior Resident, Government Medical College, Quthbullapur, KNRUHS, Hyderabad, Telangana

Email Id: drsabasiraj1@gmail.com

Associate Professor,Government Medical College, Quthbullapur, KNRUHS, Hyderabad, Telangana

[3]Senior Resident, Government Medical College, Quthbullapur, KNRUHS, Hyderabad, Telangana

[4]Senior Resident, Government Medical College, Quthbullapur, KNRUHS, Hyderabad, Telangana

[5]Senior Resident, Government Medical College, Quthbullapur, KNRUHS, Hyderabad, Telangana

Crosspondind Author : Dr. Saritha Karre. Email id : dr_saritha14@yahoo.co.in

ABSTRACT

Introduction: Breast lumps are a common clinical presentation, and early diagnosis is crucial for effective management. Fine Needle Aspiration Cytology (FNAC) is a minimally invasive, cost-effective diagnostic tool frequently used to evaluate breast lesions. Histopathology remains the gold standard for definitive diagnosis.

Aims: This study aims to assess the diagnostic accuracy of FNAC by correlating its findings with histopathological results.

Materials and Methods: This prospective observational study was conducted in the Department of Pathology at Maheshwara Medical College and Hospital, Sangareddy district, Telangana, from November 2022 to June 2024. It included a total of 60 patients with breast lumps who underwent fine needle aspiration cytology (FNAC) followed by lump excision.

Results: In our study of 60 patients with breast lumps, the majority were in the 18–30 years age group (56.6%). FNAC revealed that most lesions were benign (93.3%), with only 6.6% malignant. Histopathology confirmed similar findings, showing 95% benign and 5% malignant lesions. Among the malignant cases, invasive ductal carcinoma was the most common (66.6%), followed by malignant phyllodestumor (33.3%).

Conclusion: FNAC is a safe, rapid, and cost-effective diagnostic tool for evaluating breast lumps in a rural healthcare setting. Its findings show strong correlation with histopathology, making it a valuable first-line investigation. Early and accurate diagnosis through FNAC can facilitate timely management, particularly in resource-limited settings.

Keywords: *Fine Needle Aspiration Cytology, FNAC, Histopathology, Breast Lumps, Diagnostic Accuracy, Rural Hospital*

How to Cite: Dr. Saba Siraj, Dr. Saritha Karre, Dr.Koppuravuri Soundarya, Dr.Maddela Pratyusha, Dr.Ongole Monika,(2025) Correlation Of Fine Needle Aspiration Cytology (Fnac) With Histopathology In Patients With Breast Lumps In A Rural Tertiary Hospital, *Journal of Carcinogenesis*, *Vol.24, No.8s*, 813-818

1. INTRODUCTION

Breast lumps are a prevalent clinical concern, with a significant number of patients presenting to healthcare facilities for evaluation. In rural tertiary hospitals, where resources may be limited, accurate and timely diagnosis is crucial for effective management. Fine Needle Aspiration Cytology (FNAC) has emerged as a valuable diagnostic tool due to its simplicity, cost-effectiveness, and minimal invasiveness [1,2].

FNAC involves the aspiration of cellular material from a breast lump using a fine needle, followed by cytological examination. It serves as a preliminary diagnostic procedure, especially in settings with limited access to advanced imaging modalities [3,4].

Histopathology, on the other hand, remains the gold standard for diagnosing breast lesions. It involves the microscopic examination of tissue samples obtained through biopsy or surgical excision, providing detailed information about the tissue architecture and cellular characteristics [5].

The correlation between FNAC and histopathology is essential to evaluate the accuracy and reliability of FNAC in diagnosing breast lumps. Previous studies have demonstrated varying degrees of sensitivity, specificity, and diagnostic

accuracy for FNAC when compared to histopathological findings [6, 7].

In rural settings, where access to advanced diagnostic tools may be limited, FNAC offers a practical alternative for initial evaluation. However, understanding its correlation with histopathology is vital to ensure appropriate clinical decision-making and patient management [8, 9].

This study aims to assess the correlation between FNAC and histopathology in patients presenting with breast lumps at a rural tertiary hospital, thereby providing insights into the diagnostic utility of FNAC in such settings [10].

The primary objectives of this study are to correlate the cytological findings obtained through fine needle aspiration cytology (FNAC) with the histopathological results in patients presenting with breast lumps, and to determine the diagnostic accuracy of FNAC in distinguishing benign from malignant breast lesions.

2. MATERIALS AND METHODS

Study design: Prospective observational study

Study centre: Department of Pathology, Maheshwara Medical College and Hospital, Sangareddy district, Telangana.

Period of study: November 2022 to June 2024.

Study population: A total of 60 patients with breast lumps, who underwent FNAC followed by lump excision at Maheshwara Medical College and Hospital, Sangareddy district.

Sample size:60 patients with Breast Lumps

Studyvariables:

Age

FNAC

Histopathology

Condition

Inclusion criteria: Female patients 18 years and above with palpable breast lump, who underwent FNAC and subsequent Biopsy for histopathological examination.

Exclusion criteria:

Patients below 18 years

Male patients

Statistical Analysis

The particulars recorded in the proforma were tabulated using Microsoft Excel. Statistical analysis was performed to compute Sensitivity, Specificity, PPV, NPV, and Accuracy, in finding the correlation of FNAC with HPE findings using SPSS (version).

FIGURE 14: Invasive Breast Carcinoma (H&E, 400X): Infiltrative nests of tumor cells with moderately enlarged nuclei and surrounding desmoplastic stroma

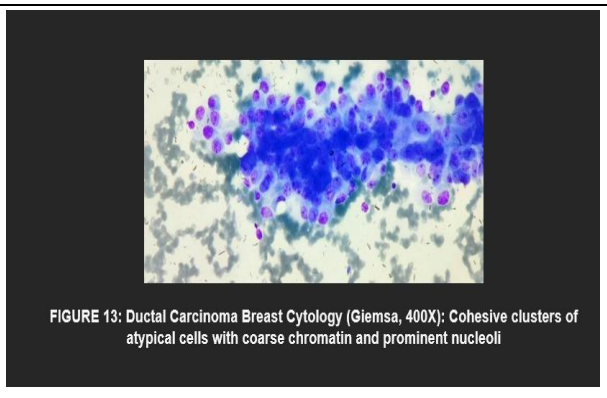


FIGURE 13: Ductal Carcinoma Breast Cytology (Giemsa, 400X): Cohesive clusters of atypical cells with coarse chromatin and prominent nucleoli

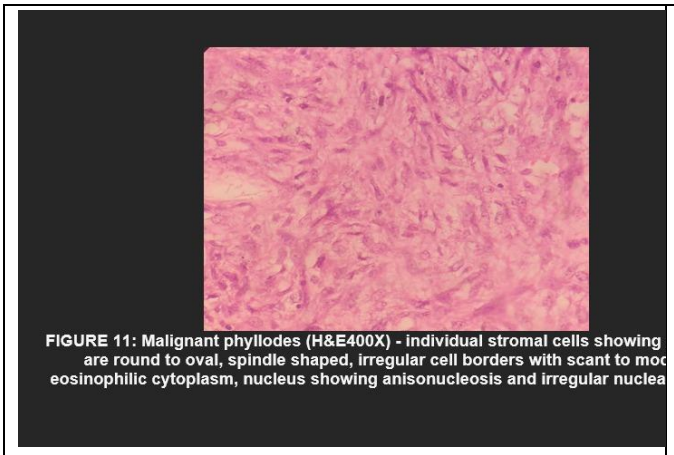


FIGURE 11: Malignant phyllodes (H&E400X) - individual stromal cells showing are round to oval, spindle shaped, irregular cell borders with scant to moc eosinophilic cytoplasm, nucleus showing anisonucleosis and irregular nuclea

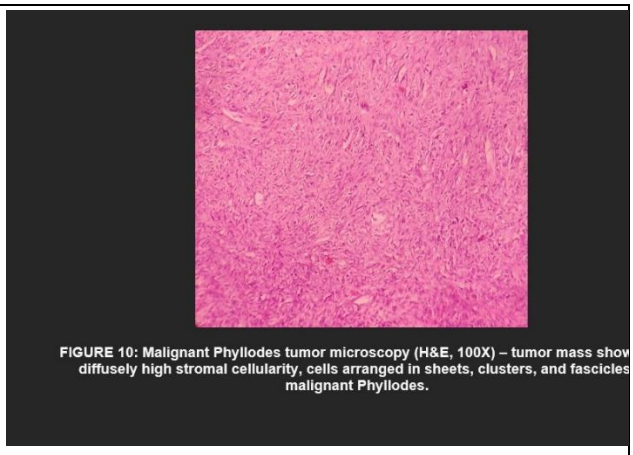


FIGURE 10: Malignant Phyllodes tumor microscopy (H&E, 100X) – tumor mass shov diffusely high stromal cellularity, cells arranged in sheets, clusters, and fascicles malignant Phyllodes.

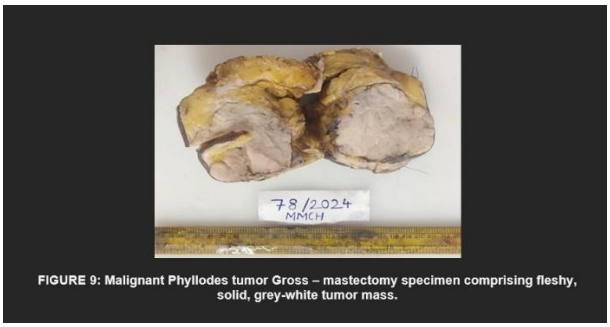


FIGURE 9: Malignant Phyllodes tumor Gross – mastectomy specimen comprising fleshy, solid, grey-white tumor mass.

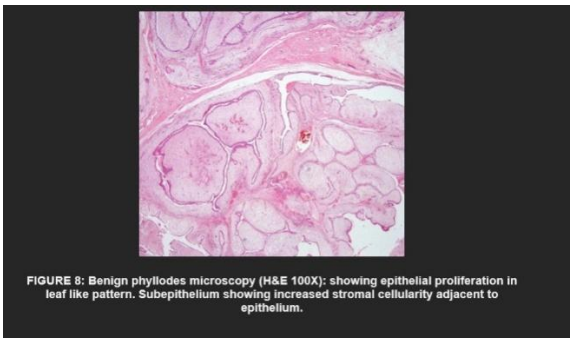


FIGURE 8: Benign phyllodes microscopy (H&E 100X): showing epithelial proliferation in leaf like pattern. Subepithelium showing increased stromal cellularity adjacent to epithelium.

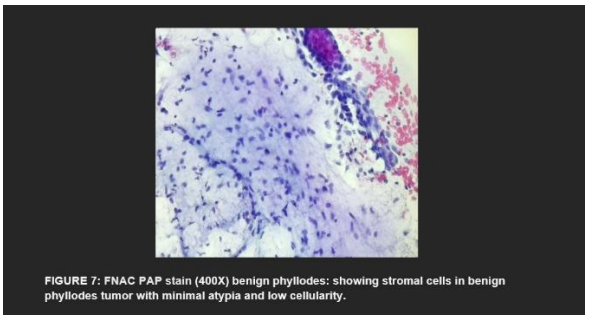


FIGURE 7: FNAC PAP stain (400X) benign phyllodes: showing stromal cells in benign phyllodes tumor with minimal atypia and low cellularity.

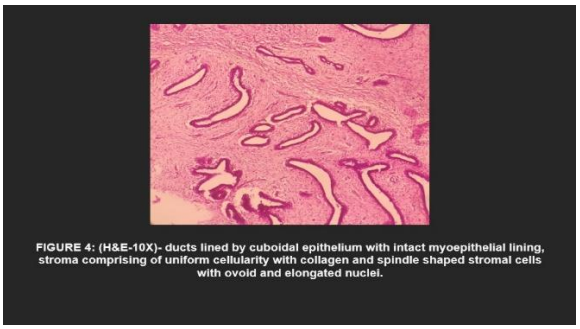


FIGURE 4: (H&E-10X)- ducts lined by cuboidal epithelium with intact myoepithelial lining, stroma comprising of uniform cellularity with collagen and spindle shaped stromal cells with ovoid and elongated nuclei.

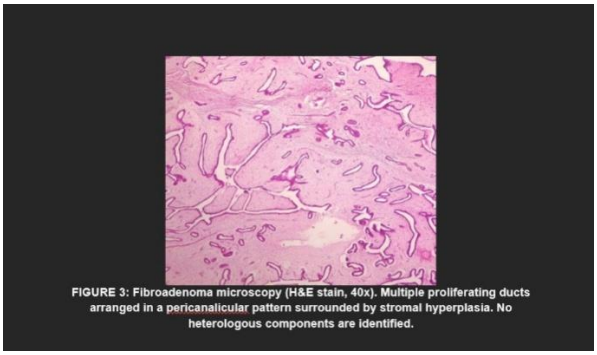


FIGURE 3: Fibroadenoma microscopy (H&E stain, 40x). Multiple proliferating ducts arranged in a pericanalicular pattern surrounded by stromal hyperplasia. No heterologous components are identified.

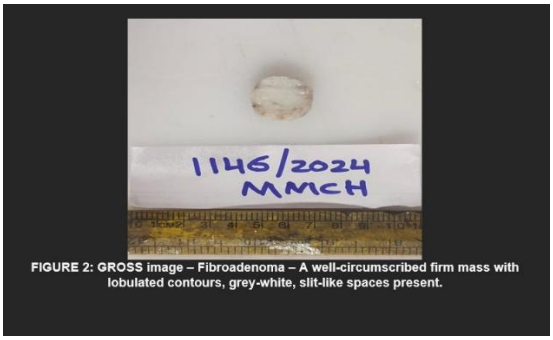


FIGURE 2: GROSS image – Fibroadenoma – A well-circumscribed firm mass with lobulated contours, grey-white, slit-like spaces present.

3. RESULT

Table 1: distribution of patient's age group wise

Age (Years)	No of Patients	Percentage
18-30	34	56.60%
31-40	17	28.30%

41-50	9	15%
Total	60	100%

Table 2: benign and malignant interpretation of FNAC

FNAC	No of Patients	Percentage
Benign	56	93.30%
Malignant	4	6.60%
Total	60	100%

Table 3: benign and malignant interpretation on HPE

Histopathology	No of Patients	Percentage
Benign	57	95%
Malignant	3	5%
Total	60	100%

Table 4: Incidence of malignant diseases on HPE

Condition	Frequency	Percentage
Malignant Phyllodes	1	33.30%
Invasive Ductal Carcinoma	2	66.60%
Total	3	100%

Figure 1: benign and malignant interpretation of FNAC

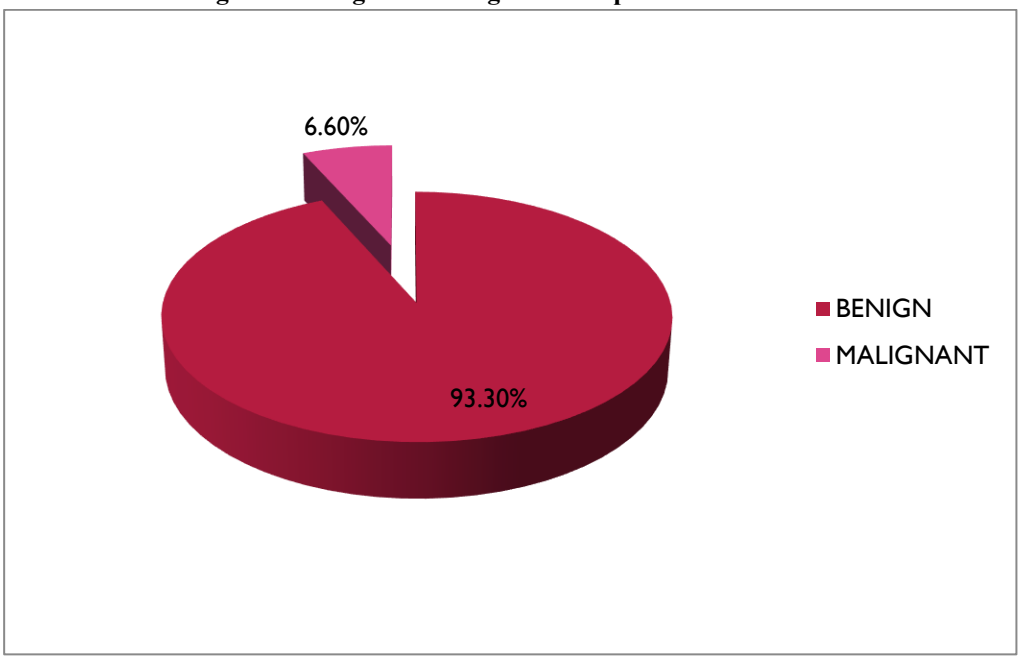
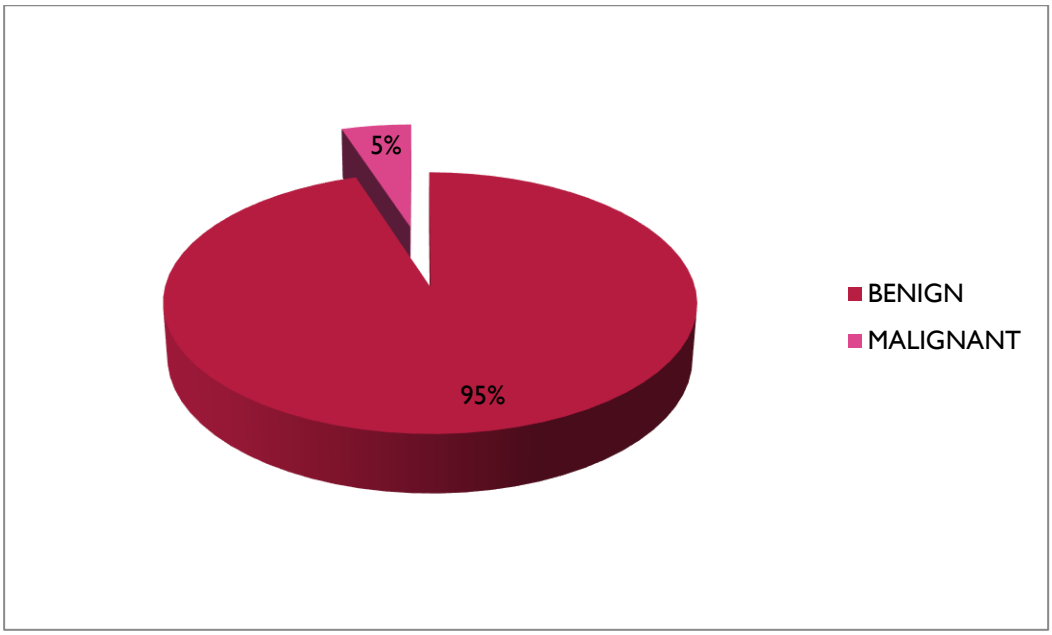


Figure 2: benign and malignant interpretation on HPE



In our study, out of 60 patients with breast lumps, the majority (34 patients, 56.6%) were in the age group of 18–30 years, followed by 17 patients (28.3%) in the 31–40 years group, while 9 patients (15%) belonged to the 41–50 years age group.

In our study, FNAC findings revealed that the majority of breast lumps were benign, accounting for 56 patients (93.3%), while malignant lesions were identified in 4 patients (6.6%).

In our study, histopathological examination confirmed that 57 patients (95%) had benign breast lesions, while 3 patients (5%) were diagnosed with malignant lesions.

In our study, among the malignant breast lesions diagnosed on histopathology, invasive ductal carcinoma was the most common, seen in 2 patients (66.6%), followed by malignant phyllodestumor in 1 patient (33.3%).

4. DISCUSSION

In our study, breast lumps were more commonly observed in younger individuals, particularly in the second and third decades of life. Similar observations were reported by Bukhari et al., who found that breast lumps were more frequent in younger women in their series [11]. On the other hand, studies from Western populations have shown a higher incidence of breast lumps, particularly malignant ones, in older age groups, reflecting demographic and genetic differences [12,13].Fine Needle Aspiration Cytology (FNAC) in our study proved to be a highly effective diagnostic tool, identifying the majority of breast lumps as benign. This is consistent with the findings of Choudhury et al. [14] and Gupta et al. [15], who also reported a predominance of benign lesions in their FNAC series. The proportion of malignant lesions detected in our study was low, which is in line with studies conducted in rural and semi-urban populations of India, where benign breast diseases are more prevalent [16].Histopathology confirmed the FNAC findings in most cases, reiterating its role as the gold standard. Our results showed good concordance between FNAC and histopathology, as reported by Khanzada et al. [17] and Arul et al. [18]. Such agreement highlights the utility of FNAC as a reliable, minimally invasive, and cost-effective method for the initial evaluation of breast lumps, especially in resource-limited settingsAmong malignant lesions, invasive ductal carcinoma was the most frequent diagnosis in our study, which is consistent with the findings of Omoniyi-Esan et al. [19] and Singh et al. [20], who also observed invasive ductal carcinoma as the predominant malignancy in their respective series. Malignant phyllodestumor, though uncommon, was also detected in our study, reflecting similar reports of its rare but notable occurrence in breast pathology.

5. CONCLUSION

In our study, breast lumps were found to occur more frequently in younger individuals, with the majority being benign in nature. FNAC proved to be a valuable diagnostic tool, showing good correlation with histopathological findings. Malignant lesions were relatively less common, with invasive ductal carcinoma being the predominant type, followed by malignant phyllodestumor. Overall, FNAC remains a simple, reliable, and minimally invasive procedure for the preliminary evaluation of breast lumps, with histopathology serving as the confirmatory standard.

REFERENCES

[1] Ogbuanya AU, Anyanwu SN, Nwigwe GC, Iyare FE. Diagnostic accuracy of fine needle aspiration cytology for palpable breast lumps in a Nigerian teaching hospital. Niger J ClinPract. 2021;24(1):1-7.

[2] Daramola AO, Akinmoladun VI, Akinmoladun AK. Correlation between fine-needle aspiration cytology and histopathology in the evaluation of breast lumps. Niger J ClinPract. 2015;18(3):318-22.

[3] Khan A, Khan S, Khan S, et al. Correlation of fine needle aspiration cytology and histopathology diagnosis in the evaluation of breast lumps. Int J Med Sci. 2014;11(2):120-4.

[4] Pradhan M, Dhakal HP. Study of breast lump of 2246 cases by fine needle aspiration. J Nepal Med Assoc. 2008;47(172):205-9.

[5] Siddique R, Sinha A, Adhikary M, Phukan JP. Comparative study of fine-needle aspiration cytology and needle core biopsy in the diagnosis of breast lumps with histopathological correlation. J Sci Soc. 2022;49(1):14-8.

[6] Agarwal A, Singh D, Mehan A, et al. Diagnostic accuracy of fine-needle aspiration cytology for breast lump by Yokohama system for reporting and its correlation with histomorphology. Indian J Med Spec. 2024;15(2):101-5.

[7] Dhaketa SS, Kumar GP, Garg P. A prospective study evaluating the diagnostic accuracy of FNAC in palpable breast lumps in women under 40 years of age. Int J Acad Med Pharm. 2025;7(4):920-4.

[8] Ibikunle DE, Omotayo JA, Ariyibi OO. Fine needle aspiration cytology of breast lumps with histopathologic correlation in Owo, Ondo State, Nigeria: a five-year review. Ghana Med J. 2017;51(1):1-6.

[9] Agarwal NK, Agarwal R, Agarwal S, et al. Diagnostic accuracy of fine needle aspiration cytology for breast lumps in a rural tertiary hospital. Asian Pac J Cancer Care. 2023;8(1):45-9.

[10] Ogbuanya AU, Anyanwu SN, Nwigwe GC, Iyare FE. Diagnostic accuracy of fine needle aspiration cytology for palpable breast lumps in a Nigerian teaching hospital. Niger J ClinPract. 2021;24(1):1-7.

[11] Bukhari MH, Arshad M, Jamal S, Niazi S, Bashir S, Bakhshi IM. Use of fine-needle aspiration in the evaluation of breast lumps. Patholog Res Int. 2011;2011:689521.

[12] Ellis IO, Schnitt SJ, Sastre-Garau X, Bussolati G, Tavassoli FA, Eusebi V, et al. Invasive breast carcinoma. In: Tavassoli FA, Devilee P, editors. WHO Classification of Tumours. Pathology and Genetics of Tumours of the Breast and Female Genital Organs. Lyon: IARC Press; 2003. p. 13–59.

[13] Lakhani SR, Ellis IO, Schnitt SJ, Tan PH, van de Vijver MJ, editors. WHO Classification of Tumours of the Breast. 4th ed. Lyon: IARC Press; 2012.

[14] Choudhury M, Singh S, Agarwal R, Dey S, Bhattacharya P. Correlation of fine needle aspiration cytology with histopathology in diagnosis of breast lumps. J Dent Med Sci. 2013;6(2):63–7.

[15] Gupta S, Gupta K, Sood N. Correlation of fine needle aspiration cytology with histopathology in the diagnosis of palpable breast lumps. J Cytol. 2017;34(3):165–9.

[16] Kumar N, Raina V, Choudhary S, Gogia A, Deo S, Shukla NK. Benign breast diseases: Spectrum and management in a tertiary care hospital in north India. Indian J Cancer. 2009;46(3):244–9.

[17] Khanzada TW, Samad A, Sushel C. Spectrum of benign breast diseases. Pak J Med Sci. 2009;25(2):265–8.

[18] Arul P, Masilamani S, Akshatha C. Cytohistopathological correlation of breast lesions in a rural hospital in Southern India. J ClinDiagn Res. 2015;9(9):EC05–8.

[19] Omoniyi-Esan GO, Osasan SA, Oluwasola AO. Benign breast disease in Ile-Ife: a 10 year experience and literature review. Niger J Surg Res. 2005;7(1–2):120–5.

[20] Singh A, Haritwal A, Murali BM. Pattern of breast lumps and diagnostic accuracy of fine needle aspiration cytology: A hospital-based study from Pondicherry, India. Internet J Pathol. 2011;11(2):1–7