



E-ISSN: 2616-3470  
P-ISSN: 2616-3462  
© Surgery Science  
[www.surgeryscience.com](http://www.surgeryscience.com)  
2025; 9(1): 39-44  
Received: 26-10-2024  
Accepted: 30-11-2024

**Dr. Md. Belal Uddin Akanda**  
Junior Consultant, (Surgery),  
Upazilla Health Complex,  
Shajahanpur, Bogura, Bangladesh

**Dr. Abu Sayeed Md. Aminul Islam**  
Assistant Professor, Department of  
Surgery, Shaheed Ziaur Rahman  
Medical College Hospital, Bogura,  
Bangladesh

**Dr. Md. Abdul Kuddus Mondal**  
Assistant Director, Rajshahi  
Medical College Hospital,  
Rajshahi, Bangladesh

**Dr. Monishankor Roy**  
Resident Surgeon, Department of  
Surgery, Rajshahi Medical College  
Hospital, Rajshahi, Bangladesh

**Dr. Sarder Belal Hossain**  
Senior Consultant (Surgery), 250  
Bedded Mohammad Ali Hospital,  
Bogura, Bangladesh

## Relationship of clinical findings of breast lumps with fine needle aspiration cytology and histopathological reports in a tertiary health care facility in Bangladesh

**Md. Belal Uddin Akanda, Abu Sayeed Md. Aminul Islam, Md. Abdul Kuddus Mondal, Monishankor Roy and Sarder Belal Hossain**

DOI: <https://doi.org/10.33545/surgery.2025.v9.i1.A.1140>

### Abstract

**Background:** Breast lump is a source of great anxiety when it is discovered. Various lesions ranging from inflammation to carcinoma can affect the breast. Carcinoma of the breast is the second most common malignancy among females. So, prompt diagnosis is needed to rule out malignancy. This study aimed to assess the relationship of clinical findings of breast lumps with fine needle aspiration cytology (FNAC) and histopathological reports in a tertiary health care facility in Bangladesh.

**Methods:** This descriptive cross-sectional observational study was conducted in the Surgery Department of Mymensingh Medical College Hospital, Mymensingh, Bangladesh, from May 2013 to April 2014. A total of 90 patients presenting with breast lumps were purposively enrolled in the study. Collected data were analyzed using MS Office tools.

**Results:** Among 90 patients, malignancy was diagnosed in 32.22% clinically, 36.67% on FNAC, and 37.78% on histological diagnosis, while benign lesions were identified in 67.78%, 63.33%, and 62.22%, respectively. The most common benign lesion was fibroadenoma (57.15%), followed by fibrocystic disease (19.65%), and the predominant malignant lesion was infiltrating ductal carcinoma (28.89%). Clinical findings showed a diagnostic sensitivity of 82%, specificity of 98.21%, positive predictive value of 96.55%, and negative predictive value of 90.16%. FNAC demonstrated higher sensitivity (94.11%), specificity (98.21%), positive predictive value (96.96%), negative predictive value (96.49%), and overall accuracy (96.66%).

**Conclusion:** Fine needle aspiration cytology (FNAC) of breast lesions demonstrates high sensitivity, specificity, and accuracy as an initial diagnostic tool for palpable breast lesions in our tertiary care hospital. Therefore, FNAC should be routinely recommended as a primary investigation for evaluating breast lumps.

**Keywords:** Breast lumps, clinical findings, fine needle aspiration cytology, FNAC, histopathological diagnosis

### Introduction

Breast lumps are one of the most common presenting complaints in women visiting healthcare facilities, posing significant diagnostic challenges. While most breast lumps are benign, a substantial proportion may indicate malignant pathology, emphasizing the need for timely and accurate evaluation [1, 2]. Early detection of breast cancer significantly improves treatment outcomes, making diagnostic tools such as fine-needle aspiration cytology (FNAC) and histopathology essential in distinguishing between benign and malignant lesions [3]. FNAC is a minimally invasive, cost-effective diagnostic tool that provides rapid results with minimal patient discomfort. It plays a critical role in the triple assessment approach to breast lump evaluation, which includes clinical examination, imaging, and cytological/histopathological analysis [4]. FNAC demonstrates high sensitivity and specificity in diagnosing breast lesions and provides valuable information for planning management strategies [5]. However, its diagnostic accuracy can vary depending on the skill of the operator, sample adequacy, and the nature of the lesion [6]. Histopathological examination remains the gold standard for definitive diagnosis of breast lesions. While FNAC can provide preliminary cytological findings, histopathology confirms the diagnosis, particularly in cases of discordant or inconclusive FNAC results [7]. Combining these diagnostic tools enhances diagnostic accuracy, reducing the likelihood of misdiagnosis and ensuring appropriate treatment pathways [8].

### Corresponding Author:

**Dr. Md. Belal Uddin Akanda**  
Junior Consultant, (Surgery),  
Upazilla Health Complex,  
Shajahanpur, Bogura, Bangladesh  
E-mail: [akandabelalssmc23@gmail.com](mailto:akandabelalssmc23@gmail.com)

In developing countries like Bangladesh, breast cancer represents a growing public health concern. Limited access to healthcare services, cultural barriers, and delayed presentation often lead to advanced disease at the time of diagnosis<sup>[9]</sup>. Thus, optimizing the use of FNAC and histopathological evaluation can play a pivotal role in addressing this burden. Studies have reported a strong correlation between FNAC findings and histopathological outcomes, validating FNAC as an effective initial diagnostic tool<sup>[10, 11]</sup>. This study aimed to investigate the relationship between clinical findings of breast lumps, FNAC results, and histopathological reports in patients attending a tertiary care facility in Bangladesh. By analyzing the diagnostic concordance and identifying factors influencing discrepancies, this research seeks to improve diagnostic protocols and promote early detection and treatment of breast diseases.

### Methodology

This descriptive, cross-sectional observational study was conducted in the Surgery Department of Mymensingh Medical College Hospital, Mymensingh, Bangladesh, from May 2013 to April 2014. A total of 90 patients with breast lumps admitted to the Surgery Department were included. The study received approval from the hospital's ethical committee, and purposive sampling was used for participant selection. As per the inclusion criteria of this study, male and female patients presenting with a breast lump were included. The exclusion criteria encompassed patients with recurrent breast cancer, those undergoing chemotherapy, and patients before the age of puberty. A pre-tested structured, interviewer-administered questionnaire was used as the research instrument, which included questions on history, physical examination, necessary laboratory investigations, treatment given, and histopathological findings. Data were analyzed using MS Office tools.

### Result

In this study, the highest percentage of patients (30.0%) were aged 20-29 years, followed by 22.2% in the 30-39 age group. The mean age was 35.72±6.12 years. The majority were female (97.78%), indicating breast lumps are primarily a disease of females. All

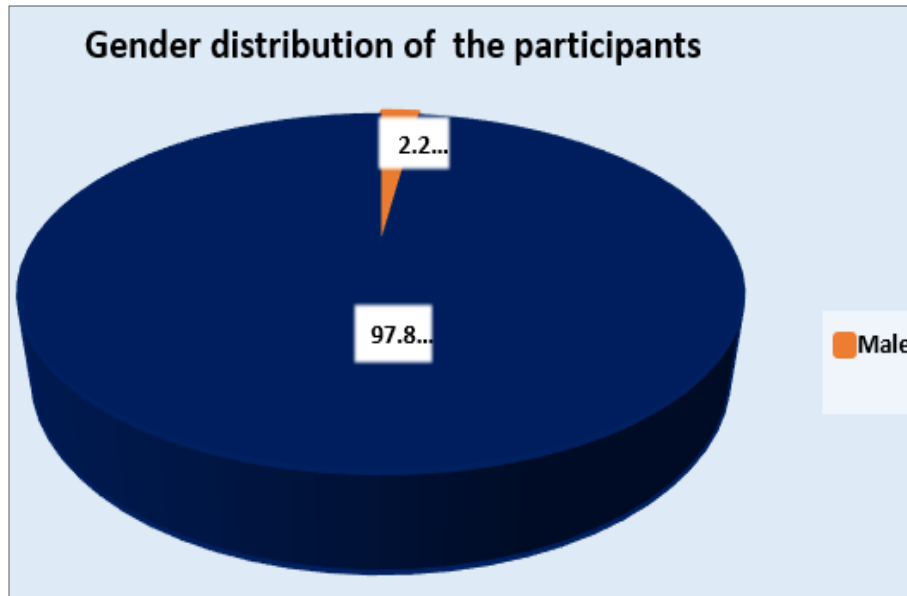
patients (100%) presented with a breast lump, while 26.66% reported breast pain. Nipple discharge and ulceration were seen in 12.23% and 8.88%, respectively. Axillary lumps occurred in 2.23% of cases. Breast lumps were the most common complaint. In this study, most patients had multiple signs on clinical breast examination. Palpable lumps were present in 100% of cases, while palpable axillary lymph nodes, inflammatory signs, and nipple retraction were seen in 17.77%, 16.66%, and 15.55%, respectively. Peau d'orange, nodularity, nipple discharge, and ulceration occurred in 12.23%, 11.11%, 10.00%, and 8.88% of cases. Of the 90 cases, 46.66% had lumps in the right breast, 48.88% in the left, and 4.44% had bilateral involvement, with the left breast slightly more affected. Out of 90 cases, carcinoma was diagnosed in 32.22%, and benign lesions in 67.78%. Among benign cases, fibroadenoma was the most common (60.65%), followed by fibrocystic disease (21.31%) and abscess/mastitis (14.75%). Two male patients had gynecomastia. On FNAC, malignancy was found in 36.67%. Among 56 benign cases, fibroadenoma accounted for 57.90%, fibrocystic disease 17.55%, abscess/mastitis 15.79%, gynecomastia 3.51%, duct ectasia, phyllodes tumor, and benign with atypia each 1.75%. Histopathological reports showed 62.22% benign and 37.78% malignant cases. Among benign cases, fibroadenoma was the most common (57.15%), followed by fibrocystic disease (19.65%), abscess (16.07%), gynecomastia (3.57%), duct ectasia, and phyllodes tumor (1.78% each). Of malignant cases, 76.47% had infiltrating ductal carcinoma, 20.59% infiltrating lobular carcinoma, and 2.94% in situ ductal carcinoma. The most common benign tumor was fibroadenoma, and the most common malignancy was infiltrating ductal carcinoma. The age range for benign lesions was 15-45 years (mean 26.82 years), and for malignant lesions, it was 38-70 years (mean 50.38 years). The most common age group for benign lesions was 20-29 years, while for malignant lesions, it was 40-49 years. Most benign lesions (54/56) occurred below 40 years, whereas most malignant lesions (32/34) occurred above 40 years. Of 90 cases, FNAC diagnosed 56 as benign, 1 as benign with atypia, and 33 as malignant. Histopathology confirmed 32 malignant cases (True Positive) and 1 benign case (False Positive). Among 57 benign cases, 55 were True Negative, and 2 were False Negative.

**Table 1:** Age distribution of participants (N=90)

Age (Years)	N	%
10-19 Yrs.	9	10.0%
20-29 Yrs.	27	30.0%
30-39 Yrs.	20	22.2%
40-49 Yrs.	18	20.0%
50-59 Yrs.	11	12.2%
60-69 Yrs.	4	4.4%
70-79 Yrs.	1	1.1%

**Table 2:** Distribution of presenting complaints (N=90)

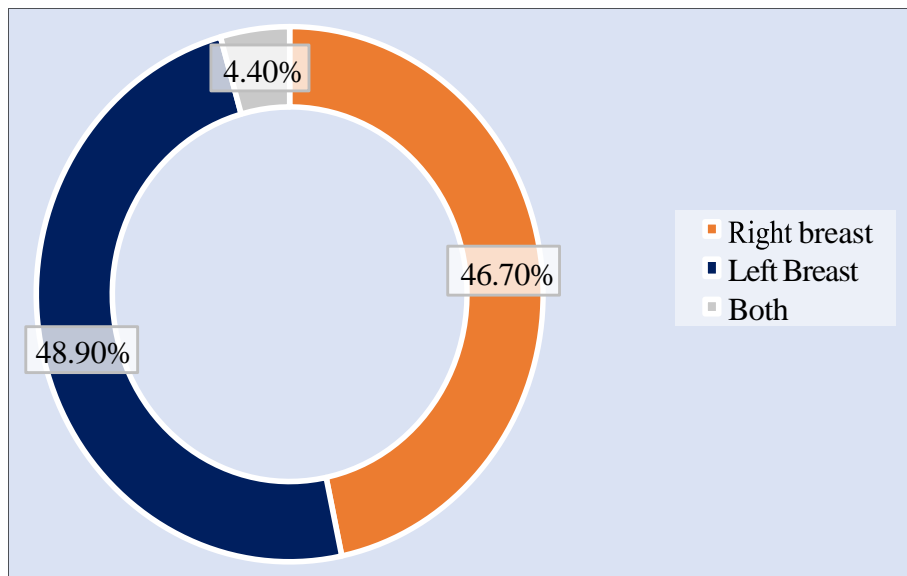
Presentation	N	%
Lump in the breast	90	100%
Breast pain	24	26.66%
Nipple discharge	11	12.23%
Ulceration	8	8.88%
Axillary lump	2	2.20%



**Fig 1:** Pie chart showed gender wise patients distribution (N=90)

**Table 3:** Breast examination findings (N=90)

Findings	N	%
Palpable lump	90	100.0%
Palpable axillary lymph node	16	17.8%
Inflammatory sign	15	16.7%
Nipple retraction	14	15.6%
Peau d'orange	11	12.2%
Nodularity	10	11.1%
Nipple discharge	9	10.0%
Ulceration	8	8.9%



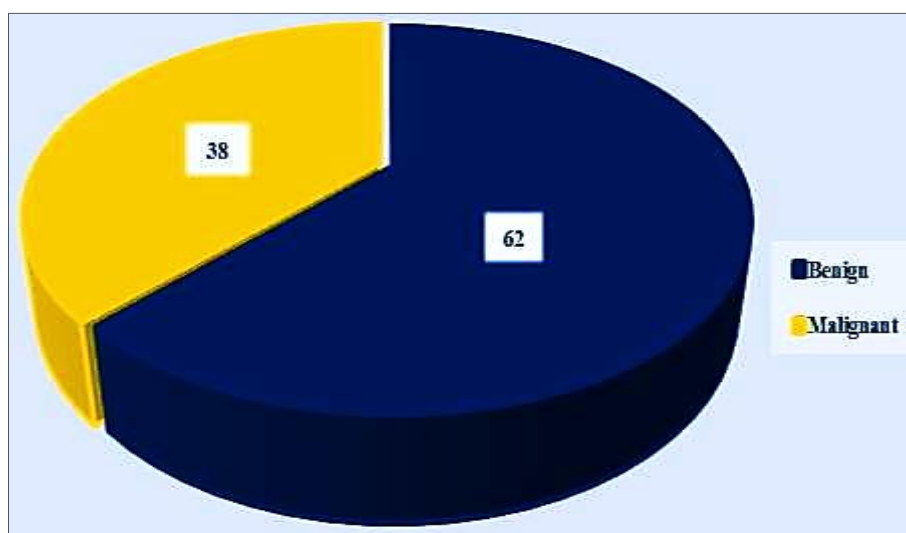
**Fig 2:** Ring chart showed side of the breast involved of the patients (N=90)

**Table 4:** Sub-classification on clinical diagnosis (N=90)

Sub-classification	N	%
Malignancy	29	32.22%
Benign	61	67.78%
Fibroadenoma	37	60.65%
Fibrocystic disease	13	21.31%
Breast abscess/Mastitis	9	14.75%
Gynecomastia	2	3.27%
Total	90	100%

**Table 5:** Distribution of sub-classification on FNAC findings (N=90)

On FNAC	N	%
Malignancy	33	36.7%
Benign	57	63.3%
Fibroadenoma	33	57.9%
Fibrocystic disease	10	17.5%
Abscess	9	15.8%
Gynecomastia	2	3.5%
Duct ectasia	1	1.8%
Phyllodes tumor	1	1.8%
Benign with atypia	1	1.8%
Total	90	100%

**Fig 3:** Pie chart showed distribution of histopathological diagnosis (N=90)**Table 6:** Sub-classification on histological findings of benign lesion (n=56)

On histopathology	N	%
Fibroadenoma	32	57.15%
Fibrocystic disease	11	19.65%
Abscess	9	16.07%
Gynecomastia	2	3.57%
Duct ectasia	1	1.78%
Phyllodes tumor	1	1.78%

**Table 7:** Sub-classification on histological findings of malignant lesion (n=34)

On histopathology	N	%
Infiltrating ductal carcinoma	26	76.47%
Infiltrating lobular carcinoma	7	20.59%
In situ ductal carcinoma	1	2.94%

**Table 8:** Age-wise distribution of breast lump (N=90)

Age (Year)	Benign	Malignant	Total	%
10-19	9(10.0%)	-	9	10%
20-29	27(30.0%)	0	27	30%
30-39	18(20.0%)	2(2.2%)	20	22%
40-49	2(2.2%)	16(17.7%)	18	20%
50-59	-	11(12.2%)	11	12%
60-69	-	4(4.4%)	4	4%
70-79	-	1(1.1%)	1	1%
Total	56(62.2%)	34(37.7%)	90	100%

**Table 9:** A validity test of clinical diagnosis was carried out and shows the results (N=90)

Variables	%
Sensitivity	82.00%
Specificity	98.21%
Positive Predictive Value	96.55%
Negative Predictive Value	90.16%
Accuracy	92.22%

**Table 10:** Distribution of FNAC and histological findings (N=90)

FNAC Diagnosis		Histopathology	
		Malignant	Benign
Malignant	33(36.67%)	35.56%	1.11%
Benign	57(63.66%)	2.22%	61.11%
Total		(37.78%)	62.22%

**Table 11:** A validity test of FNAC diagnosis was carried out and shows the results (N=90)

Variables	%
Sensitivity	94.11%
Specificity	98.21%
Positive Predictive Value	96.96%
Negative Predictive Value	96.49%
Accuracy	96.66%

## Discussion

This study highlights the clinical presentation, cytological findings, and histopathological correlations of breast lumps in patients presenting to a tertiary healthcare facility in Bangladesh. The findings align with global and regional studies on breast lump characteristics, yet some variations merit attention. The majority of patients in this study were young adults, with the highest percentage (30%) aged 20-29 years and a mean age of 35.72±6.12 years. This is consistent with studies in developing nations, where benign breast conditions like fibroadenoma are predominant in younger populations<sup>[12]</sup>. Furthermore, the higher prevalence among females (97.78%) underscores the predominantly female burden of breast diseases. This gender distribution aligns with other studies that report breast lumps as predominantly female concerns, with occasional male presentations due to gynecomastia<sup>[13]</sup>. The most common clinical presentation was a palpable breast lump, reported by all patients. This mirrors findings from other studies where breast lumps are the primary complaint in over 90% of cases<sup>[14]</sup>. Breast pain was reported by 26.66% of participants, while nipple discharge, ulceration, and axillary lumps were less frequent. These symptoms are often secondary indicators of underlying pathology and correlate with similar studies globally<sup>[15]</sup>. On clinical breast examination, most patients had multiple signs, with palpable lumps universally present. Palpable axillary lymph nodes (17.77%) and inflammatory signs (16.66%) indicate potential malignancy or advanced benign conditions, such as abscess or mastitis<sup>[16]</sup>. Notably, the left breast was slightly more affected (48.88%) compared to the right (46.66%), with 4.44% bilateral involvement. While this slight predilection for the left breast lacks a clear explanation, it has been observed in other regional studies<sup>[17]</sup>. Histopathological and cytological findings revealed a predominance of benign lesions (62.22%) over malignant cases (37.78%). Among benign conditions, fibroadenoma was the most common, comprising 57.15% of cases, consistent with studies in similar age groups in South Asia<sup>[18]</sup>. Infiltrating ductal carcinoma (76.47%) was the most frequent malignancy, which is congruent with global data highlighting it as the most common type of breast cancer<sup>[19]</sup>. Age-wise, benign lesions were more common in younger patients (mean age 26.82 years), while malignant lesions predominated in older patients (mean age 50.38 years). This

trend aligns with studies indicating benign conditions peak in the second to third decades of life, while malignancies are more prevalent in postmenopausal women<sup>[20]</sup>. FNAC findings showed a sensitivity of 94.12% and specificity of 98.21%, with a False Negative Rate of 3.51% and a False Positive Rate of 1.75%. These results reflect FNAC's high diagnostic accuracy, comparable to findings from studies in similar healthcare settings<sup>[21]</sup>. However, the presence of false negatives underscores the need for histopathological confirmation, especially in suspicious cases. Histopathology remains the gold standard, as evidenced by the confirmation of 32 malignant cases diagnosed by FNAC. This study reaffirms the importance of integrating clinical examination, FNAC, and histopathology for accurate diagnosis and management of breast lumps. It emphasizes the need for heightened awareness and early screening, particularly for women above 40 years, to enable timely detection of malignancies.

## Conclusion & Recommendation

Fine needle aspiration cytology (FNAC) is highly sensitive, specific, and accurate as an initial diagnostic tool for palpable breast lesions in our tertiary care hospital. Its efficiency makes it a valuable primary investigation for evaluating breast lumps, aiding in early diagnosis and appropriate treatment planning. Routine implementation of FNAC in clinical practice is recommended to enhance diagnostic precision and improve patient outcomes. Further studies may help refine its role alongside advanced imaging techniques in breast lesion evaluation.

## References

1. Chinyama CN. Benign breast diseases: radiology- pathology- risk assessment. Springer Science & Business Media; c2013.
2. Obeagu EI, Obeagu GU. Breast cancer: A review of risk factors and diagnosis. *Medicine*. 2024;103(3):e36905.
3. McKeown MJ. The Liquid Microjunction-Surface Sampling Probe as an Emerging Tool for Medicinal Mass Spectrometry. Diss. 2023.
4. Nuroini F, Hidayat ZA, Ariyadi T. Air-Dried and Wet Fixation on Fine Needle Aspiration Biopsy (FNAB)

- Specimen. *J Teknol Laboratorium*. 2021;10(1):53-58.
5. Moschetta M, *et al.* Comparison between fine needle aspiration cytology (FNAC) and core needle biopsy (CNB) in the diagnosis of breast lesions. *Il G Chir*. 2014;35(7):171-176.
  6. Willems SM, Van Deurzen CHM, Van Diest PJ. Diagnosis of breast lesions: fine-needle aspiration cytology or core needle biopsy? A review. *J Clin Pathol*. 2012;65(4):287- 292.
  7. Coughlin SS, Ekwueme DU. Breast cancer as a global health concern. *Cancer Epidemiol*. 2009;33(5):315-318.
  8. Galli A, *et al.* Fine needle aspiration cytology for parotid neoplasms: Risk of malignancy through inconclusive results and lower grade tumors. *Eur Arch Otorhinolaryngol*. 2020;277:841-851.
  9. Jones CEL, *et al.* A systematic review of barriers to early presentation and diagnosis with breast cancer among black women. *BMJ Open*. 2014;4(2):e004076.
  10. Mutlu F, Bayrak BY, Ozturk M. Enhancing diagnostic precision and clinical outcomes with FNAC in parotid gland masses. *Diagn Cytopathol*. 2024.
  11. Sitalata C, *et al.* Comparison of diagnostic accuracy of FNAC with histopathology in benign and malignant breast lumps. *Res J Med Sci*. 2023;17:243-246.
  12. Bajpai J, *et al.* Indian Society of Medical and Paediatric Oncology (ISMPO)-Breast Cancer in Young Guidelines. *Indian J Med Paediatr Oncol*. 2024.
  13. Valentini V, *et al.* Gender-specific genetic predisposition to breast cancer: BRCA genes and beyond. *Cancers*. 2024;16(3):579.
  14. Roheel A, *et al.* Global epidemiology of breast cancer based on risk factors: A systematic review. *Front Oncol*. 2023;13:1240098.
  15. Lo PK, *et al.* Noncoding RNAs in breast cancer. *Brief Funct Genomics*. 2016;15(3):200-221.
  16. Ahmed M. The application of magnetic nanotechnology to the surgical management of non-palpable breast cancer. *Diss. Guy's, King's and St. Thomas's School of Medicine*; 2015.
  17. Hourani SB. Molecular features of triple negative breast cancer stem cells: a gene expression profiling analysis of mda-mb-231 cells. *MS Thesis*. 2021.
  18. Ramala Jr SR, *et al.* A comprehensive review of breast fibroadenoma: correlating clinical and pathological findings. *Cureus*. 2023, 15(12).
  19. Scott DA, Drake RR. Glycosylation and its implications in breast cancer. *Expert Rev Proteomics*. 2019;16(8):665-680.
  20. Nasim Z, *et al.* Breast cancer incidence and behavior in younger patients: A study from the surveillance, epidemiology, and results database. *World J Oncol*. 2020;11(3):88.
  21. Shuaib M, *et al.* Comparison of the diagnostic accuracy of FNAC and biopsy in the diagnosis of a palpable breast lump. *Ann Int Med Dent Res*. 2018;4(4):10.

**Creative Commons (CC) License**

This is an open-access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**How to Cite This Article**

Akanda MBU, Islam ASM, Mondal MAK, Roy M, Hossain SB. Relationship of clinical findings of breast lumps with fine needle aspiration cytology and histopathological reports in a tertiary health care facility in Bangladesh. *International Journal of Surgery Science*. 2025;9(1):39-44.