

## Diagnostic Accuracy of Fine Needle Aspiration Cytology for Evaluation of Breast Lump Compared to Trucut Biopsy

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### Abstract

### Original Research Article

**Background:** Breast lump is one of the most common surgical problems in female. Many diagnostic modalities available for the evaluation of breast lump. For several years, fine needle aspiration cytology (FNAC) was the most practiced method for the pathological diagnosis of breast lump specially differentiation of benign from malignant. The advent of Trucut biopsy in the new millennium has resulted in many surgeons switching to Trucut biopsy since it provides a sufficient amount of tissue for pathologists to make an accurate histological diagnosis. **Aim of the Study:** The aim of the study was to find out the diagnostic accuracy of FNAC findings in comparison to Trucut biopsy for evaluation of breast lump. **Materials and Methods:** The cross sectional observational study was carried out in the Department of Surgery of Mymensingh Medical College Hospital, Mymensingh. Patients with a breast lump were enrolled by purposive sampling during July, 2018 to June, 2019. All the patients were assessed by FNAC and Trucut biopsy. Final diagnosis was made on the basis of histopathology. A pre-formed semi-structured, case record form was prepared which was used to collect data. Data analysis was done by SPSS Version 23. **Results:** The mean age was found  $41.4 \pm 10.6$  years with range from 24 to 68 years. Clinical examination revealed suspicious for malignancy 52(61.9%) patients and 32(38.1%) in benign. In FNAC diagnosis, benign breast lump was found 39(46.4%), suspicious malignant cell was 10(11.9%) and malignant was 35(41.7%). In trucut biopsy, 48(57.1%) patients were found in malignant and 36(42.9%) in benign tumor. In histopathological diagnosis, 49(58.3%) patients were found in malignant and 35(41.7%) in benign tumor. 49 cases were malignant breast lump evaluated by histopathological diagnosis, out of which 41(83.7%) cases were suspicious for malignancy evaluated by clinical findings, 43(87.8%) cases were malignant breast lump evaluated by FNAC diagnosis and 47(95.9%) cases were malignant breast lump evaluated by trucut biopsy. The efficacy of FNAC as a diagnostic tool of malignant breast lump where the sensitivity, specificity, accuracy, PPV, NPV were 87.8%, 94.3%, 90.5%, 95.6% and 84.6% respectively. The efficacy of trucut biopsy as a diagnostic tool of malignant breast lump where the sensitivity, specificity, accuracy, PPV, NPV were 95.9%, 97.1%, 96.4%, 97.9% and 94.4% respectively. **Conclusion:** In this study evaluation of FNAC, Trucut biopsy and excision biopsy were performed to see the efficacy of FNAC and Trucut biopsy compared with standard excision biopsy. Both the FNAC and trucut biopsy are simple, safe and reliable in terms of their sensitivity, specificity and accuracy. The findings of this study showed that trucut biopsy is more accurate and specific in confirming breast lesions and it is able to give correctly preoperative histological diagnosis including its nature, type, grading, and avoiding unnecessary surgery.

**Keywords:** Breast lump, FNAC, Trucut biopsy, Tissue diagnosis.

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## INTRODUCTION

Breast is a dynamic organ which undergoes cyclical changes under the influence of hormone and growth factors throughout the reproductive life of a woman [1]. This change involves disturbances in the breast physiology extending from an extreme of

normality to well defined disease process Pervin *et al.*, (2014) [2]. In Bangladesh, patients suffering from breast cancer have been increasing. Because of the existing social circumstances and low empowerment of women, the tendency to overlook the complaints exists. Moreover, female patients are reluctant to be examined by the clinician's particularly male surgeons for lump in

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the breast. They report in advanced stage of breast cancer with poor outcome due to late presentation, diagnosis and treatment [2]. Breast lumps are one of the commonest complains encountered in surgical OPD's which makes it important to differentiate between benign and malignant conditions before treating it. The successful diagnosis of the palpable breast masses requires clinical breast examination, imaging, and tissue sampling for a definitive diagnosis [3]. In evaluation of a discrete mass in the breast, ultrasound-guided automate Trucut needle biopsy is an alternative to fine needle aspiration cytology. It was popularized by Torsten Lowhagen and his colleagues, in the sixth and seventh decades at Karolinska institute in Stockholm helped to popularize a new minimally invasive technique of diagnosis known as Fine-Needle Aspiration Cytology [4]. The sensitivity and specificity of fine needle aspiration and trucut biopsy as a diagnostic tool of breast cancer is actually a controversial subjects of discussion. Both procedure is used as screening test in the handling of suspicious lesions of breast cancer. Despite the wide used of fine needle aspiration cytology for palpable breast masses, it has no achieved improvement in the pre-surgical decision making and management process by both the surgeon and oncologist. The development in patient education and screening programe have permitted a mark increase in the number of tumors detected, thereby increasing the use of FNAC procedure. However, many surgeons are reluctant to accept FNAC report as basis of definitive diagnosis [5]. Trucut biopsy is superior to FNAC in confirming breast cancer in suspicious lumps and it enables a definite histology of the lesion at low cost, well tolerated and low complication rate and obviates the need for formal excision biopsy of lesions especially in cases where there is a low index of suspicion [6]. Moreover, trucut biopsy is simple and safe technique. Patients acceptance is high and following positive diagnosis of malignancy, a definitive surgery can be planned [7]. A definitive diagnosis cannot be made by FNAC alone, either due to inherent limitations of cytological examination or the inability to obtain adequate material for diagnosis. Trucut biopsy (TCB) has been performed to evaluate breast lesions and it has the advantage of having a core of tissue possessed by traditional histopathological techniques [8]. FNAC reports uncertainty, lacks important information about the histopathological type, grade, receptor status and intrinsic behavior of the tumour. All this information is of great importance for correct pre-operative evaluation [4]. FNAC shows some technical difficulties. These are limited cellularity, excessive air drying and/or artefactual mechanical disaggregation can potentially limit the interpretation, as well as contribute to a false-negative or a false-positive diagnosis of malignancy, respectively. However, the major current limitation of FNAC is the separation of atypical ductal hyperplasia (ADH) from ductal carcinoma in situ (DCIS) and differentiating DCIS from invasive carcinoma [9]. All this information

is of great important for correct pre-operative evaluation by both surgeons and oncologist for a possible major breast surgery and chemoradiotherapy. The trucut biopsy of palpable breast lesions based on histological study of tissue specimens can provide all the reliable information to guide the surgeon and the oncologist for ideal modern therapeutic strategy in surgical decision making. It permits the eventual use of new adjuvant therapy [10].

## OBJECTIVES

### General Objective

The general objective of the study was to find out the diagnostic accuracy of FNAC in comparison to Trucut biopsy for evaluation of breast lump.

### Specific Objectives

- To find out the diagnostic accuracy of FNAC in evaluation of breast lump.
- To find out the diagnostic accuracy of Trucut biopsy in evaluation of breast lump.
- To estimate sensitivity, specificity, positive predictive value, negative predictive value of FNAC findings compared with Trucut biopsy.

## MATERIALS AND METHODS

This was a cross sectional observational study conducted in the Department of Surgery, Mymensingh Medical College & Hospital, Mymensingh, Bangladesh, from July 2018 to June 2019. The patients selected by purposively. A total of 84 female patients who were clinically suspected as breast lump attending surgical OPD and admitted in general surgical wards of Mymensingh Medical College were included in this study as study population.

### Inclusion Criteria

- All female patients above the age of 20 years with a clinically palpable breast lump.

### Exclusion Criteria

- Patients non-compliant for FNAC & Trucut biopsy.

### Study Procedure

Female patients who were enrolled in the study based on selection criteria where subjected to details history and clinical examination. In history details of age, parity, socio-economic condition, marital status, breast feeding practice, duration of breast lump, family history was taken. Clinical examination of breast included determination of size, location, margin, consistency, tenderness, other features, routine investigations, FNAC and true cut biopsy. All these were recorded in a prestructured questionnaire for each patient for evaluation. Each patient was subjected first to FNAC and then trucut biopsy. All the patients underwent surgery depending upon the reports of the two methods and finally all the reports of the technique

were matched with histopathological reports of the excised specimen.



Figure I: FNAC materials



Figure II: Trucut materials



Figure III: True-cut biopsy of breast

### Data Processing and Data Analysis

Statistical analyses were carried out by using the Statistical Package for Social Sciences version 23.0 for Windows (SPSS Inc., Chicago, Illinois, USA). The mean values were calculated for continuous variables. The quantitative observations were indicated by frequencies and percentages. For the validity of study outcome, sensitivity, specificity, accuracy, positive predictive value and negative predictive value of the FNAC diagnosis and trucut biopsy evaluation of malignant tumors was calculated.

### Ethical Considerations

Ethical clearance for the study was taken from the Institutional Review Board (IRB) of Mymensingh Medical College. The entire study participants were thoroughly appraised about the nature, purpose and implications of the study, as well as entire spectrum of benefits and risks of the study. There is minimum physical, psychological, social and legal risk during collection of data and physical examinations; proper consent was taken. For safeguarding confidentiality and protecting anonymity each of the patient was given and

special ID no. which was followed in sample collection, transport to lab and reporting, in each and every step of the procedure. All study participants were assured of adequate treatment of any complications developed in relation to study purpose and freedom to withdraw themselves from the study any time. A signed informed consent was taken from the patient convincing that privacy of the patient was maintained.

### RESULTS

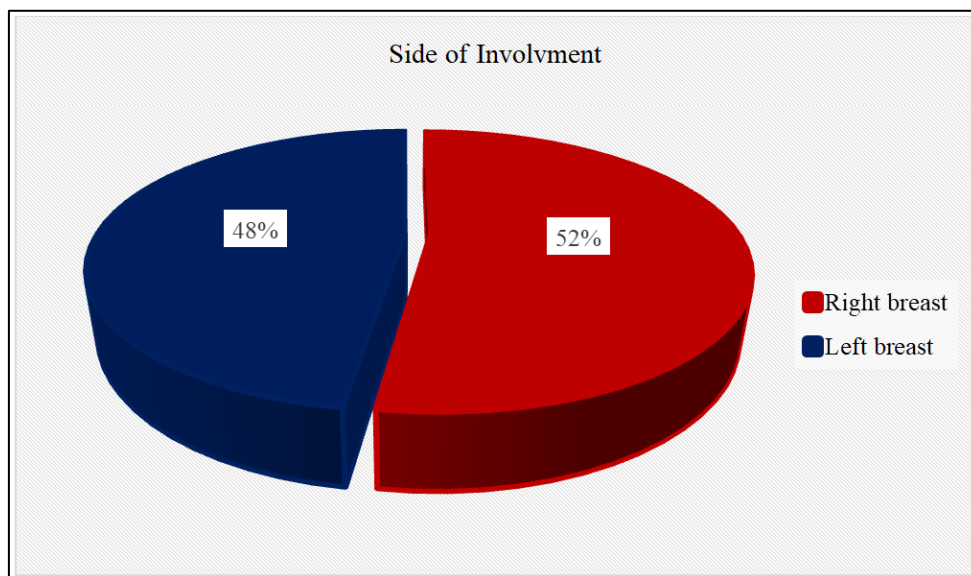
The present study comprises of total 84 cases of breast lumps which were evaluated by clinical examination, Fine Needle Aspiration Cytology (FNAC) followed by Trucut biopsy and the cytological diagnosis and Trucut biopsy diagnosis is compared with that of final histological diagnosis to calculate the sensitivity and specificity in a breast lump. This study was conducted over a period of 1 year from July, 2018 to June, 2019 in the Department of Surgery, Mymensingh Medical College & Hospital, Mymensingh. The following observations were made.

**Table 1: Baseline characteristics of the study patients with breast lump (N=84)**

Baseline characteristics	Values
Age range (in years)	24-68
Mean age (years)	41.4±10.6
<b>Size of lumps</b>	
Range (in cm)	3-10
Mean size of lumps (in cm)	6.3±2.5
<b>Side of involvement</b>	
Right breast	44(52.4%)
Left breast	40(47.6%)

Table 1 showed that out of 84 cases, mean age was found was found 41.4±10.6 years with range from 24 to 68 years, mean size of lumps was 6.3±2.5 cm.

More than half 44(52.4%) patients had right side breast lump and 40(47.6%) had left breast side lump.

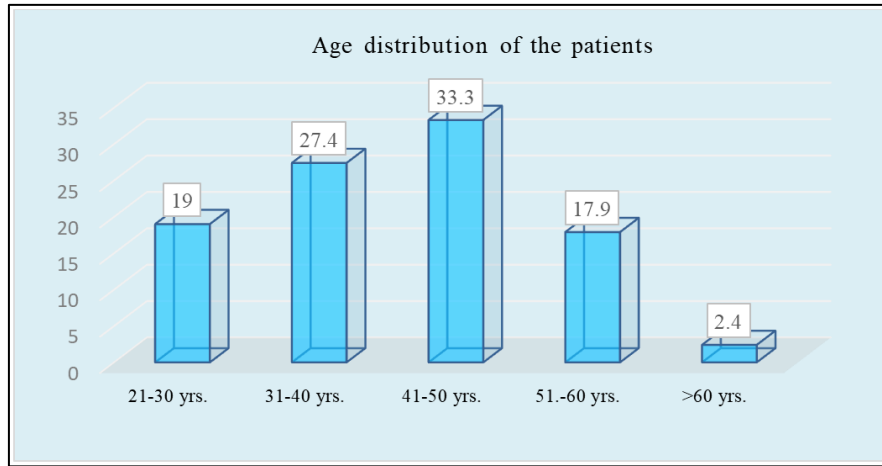


**Figure IV: Pie chart showed side of involvement wise patients breast lump (N=84)**

**Table 2: Distribution of the study patients by age (N=84)**

Age (In years)	Frequency(n)	Percentage (%)
21-30 yrs.	16	19.0
31-40 yrs.	23	27.4
41-50 yrs.	28	33.3
51.-60 yrs.	15	17.9
>60 Yrs.	2	2.4
Mean $\pm$ SD	41.4 $\pm$ 10.6	
Range (min-max)	24-68	

Table 2 showed that one third (33.3%) patients belonged to age 41-50 years. The mean age was found 41.4 $\pm$ 10.6 years with range from 24 to 68 years.

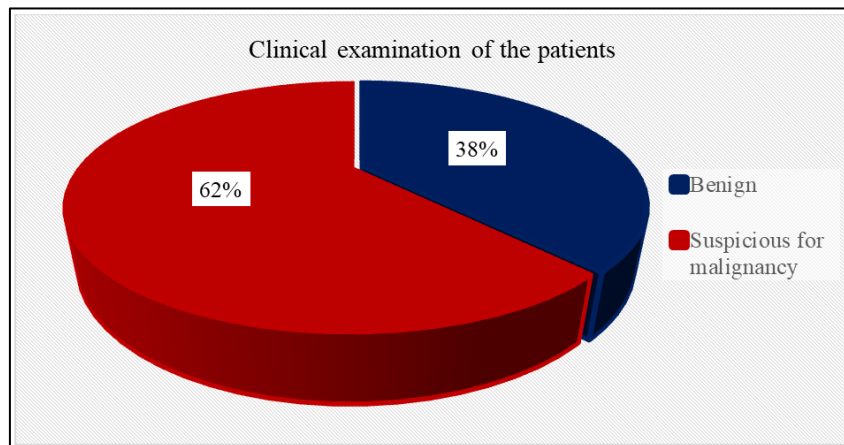


**Figure V: Column chart showed age wise patients (N=84)**

**Table 3: Clinical examination of the study patients (N=84)**

Clinical examination	Frequency(n)	Percentage (%)
Benign	32	38.1
Suspicious for malignancy	52	61.9

Table 3 showed that 52(61.9%) patients were found in suspicious for malignancy and 32(38.1%) in benign.



**Figure VI: Pie chart showed clinical examination wise patients (N=84)**

**Table 4: FNAC diagnosis of the study patients (N=84)**

FNAC diagnosis	Frequency(n)	Percentage(n)
Benign	39	46.4
Suspicious malignant cell	10	11.9
Malignant	35	41.7

Table 4 showed in FNAC diagnosis, benign breast lump was found 39(46.4%), suspicious malignant

cell was 10(11.9%) and malignant was 35(41.7%).

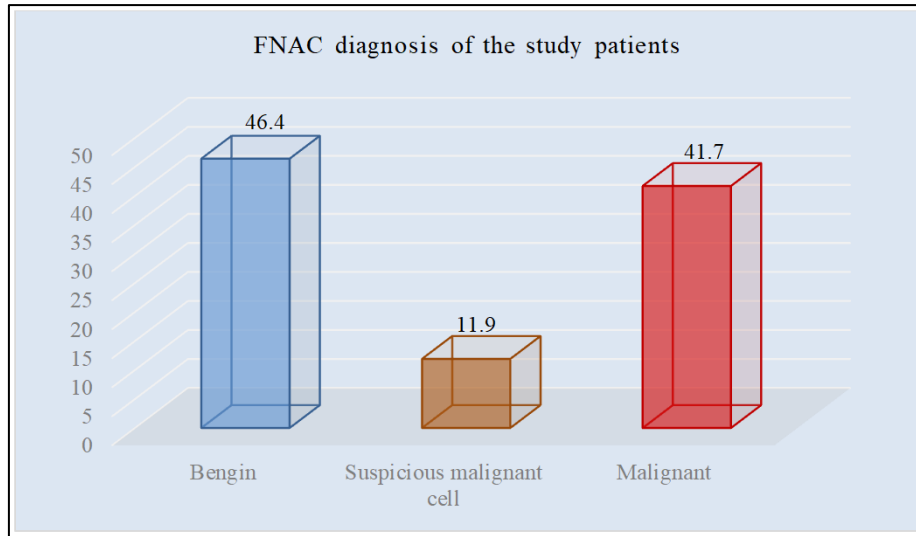


Figure VII: Bar chart showed FNAC diagnosis of study patients (N=84)

Table 5: Trucut biopsy of the study patients (N=84)

Trucut biopsy	Frequency(n)	Percentage (%)
Benign	36	42.9
Malignant	48	57.1

Table 5 showed in trucut biopsy, 48(57.1%) patients were found in malignant and 36(42.9%) in benign tumor.

Table 6: FNAC findings of the study patients (N=84)

FNAC findings	Frequency(n)	Percentage (%)
<b>Malignant</b>		
Suspicious for ductal cell carcinoma	10	11.9
Ductal cell carcinoma	35	41.7
<b>Benign</b>		
Fibroadenoma	20	23.8
Fibrocystic disease	9	10.7
Phylloids tumour	4	4.8
Granuloma	6	7.1

Table 6 showed in malignant breast lump, suspicious for ductal cell carcinoma was found in 10(11.9%) and ductal cell carcinoma was 35(41.7%). In

benign breast lump, fibroadenoma was 20(23.6%), fibrocystic disease 9(10.7%), phylloidstumour 4(4.8%) and granuloma 6(7.1%).

Table 7: Trucut biopsy findings of the study patients (N=84)

Trucut biopsy	Frequency (n)	Percentage (%)
<b>Malignant</b>		
Invasive lobular carcinoma	4	4.8
Invasive ductal cell carcinoma	44	52.4
<b>Benign</b>		
Fibroadenoma	21	25.0
Fibrocystic disease	8	9.4
Phylloids tumour	3	3.6
Granuloma	4	4.8

Table 7 showed that 44(52.4%) patients were found invasive ductal cell carcinoma and 4(4.8%) were invasive lobour carcinoma. Fibroadenoma was found in

21(25.0%), fibrocystic disease 8(9.4%), phylloidstumour 3(3.6%) and granuloma 4(4.8%)

**Table 8: Histopathological diagnosis of the study patients (N=84)**

Histopathological diagnosis	Frequency(n)	Percentage (%)
Benign	35	41.7
Malignant	49	58.3

Table 8 showed in histopathological diagnosis, 49(58.3%) patients were found in malignant and 35(41.7%) in benign tumor.

**Table 9: Comparison of clinical findings, FNAC diagnosis and Trucut biopsy with histopathological diagnosis (N=84)**

		Histopathological diagnosis	
		Malignant (n=49)	Benign (n=35)
Clinical findings	Suspicious for malignancy	41(83.7)	11(31.4)
	Benign	8(16.3)	24(68.6)
FNAC diagnosis	Malignant	43(87.8)	2(5.7)
	Benign	6(12.2)	33(94.3)
Trucut biopsy	Malignant	47(95.9)	1(2.9)
	Benign	2(4.1)	34(97.1)

Table 9 showed that 49 cases were malignant breast lump evaluated by histopathological diagnosis, out of which 41(83.7%) cases were suspicious for malignancy evaluated by clinical findings, 43(87.8%)

cases were malignant breast lump evaluated by FNAC diagnosis and 47(95.9%) cases were malignant breast lump evaluated by trucut biopsy.

**Table 10: Comparison of FNAC diagnosis and Trucut biopsy with histopathological diagnosis (N=84)**

		Histopathological diagnosis	
		Malignant (n=49)	Benign (n=35)
FNAC diagnosis	Malignant	43 TP	2 FP
	Benign	6 FN	33 TN
Trucut biopsy	Malignant	47 TP	1 FP
	Benign	2 FN	34 TN

Table 10 showed that 49 cases were malignant breast lump evaluated by histopathological diagnosis. Out of all cases 43 were diagnosed as malignant breast lump by FNAC and confirmed by histopathological diagnosis. They were true positive. Two cases were diagnosed as malignant breast lump by FNAC but not confirmed by histopathological diagnosis. They were false positive. Of 39 cases of benign, which were diagnosed by FNAC, 6 was confirmed as malignant and 33 were benign by histopathological diagnosis. They

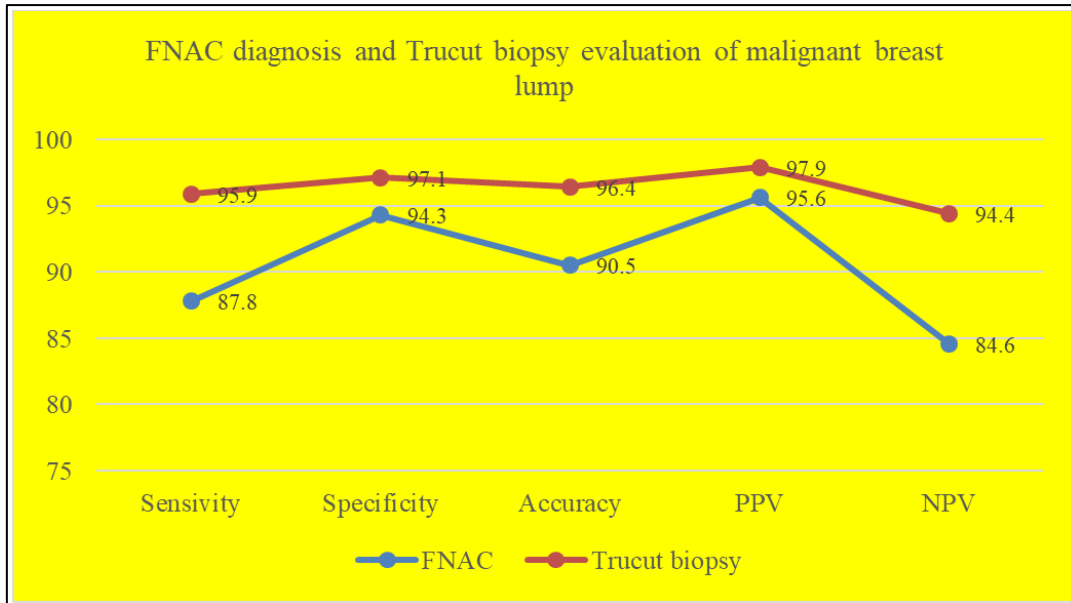
were false negative and true negative respectively. Out of all cases 47 were diagnosed as malignant breast lump by trucut biopsy and confirmed by histopathological diagnosis. They were true positive. One case was diagnosed as malignant breast lump by trucut biopsy but not confirmed by histopathological diagnosis. They were false positive. Of 36 cases of benign, which were diagnosed trucut biopsy, 2 was confirmed as malignant and 34 were benign by histopathological diagnosis. They were false negative and true negative respectively.

**Table 11: FNAC diagnosis and Trucut biopsy evaluation for prediction of malignant breast lump (N=84)**

Validity test	FNAC	Trucut biopsy
Sensitivity	87.8	95.9
Specificity	94.3	97.1
Accuracy	90.5	96.4
PPV	95.6	97.9
NPV	84.6	94.4

Table 11 showed that 49 cases were malignant breast lump evaluated by histopathological diagnosis. The efficacy of FNAC as a diagnostic tool of malignant breast lump where the sensitivity, specificity, accuracy, PPV, NPV were 87.8%, 94.3%, 90.5%, 95.6% and

84.6% respectively. The efficacy of trucut biopsy as a diagnostic tool of malignant breast lump where the sensitivity, specificity, accuracy, PPV, NPV were 95.9%, 97.1%, 96.4%, 97.9% and 94.4% respectively.



**Figure VIII:** Line chart showed FNAC diagnosis and Trucut biopsy evaluation of malignant breast lump (N=84)

## DISCUSSION

Excision biopsy is considered to be the gold stand for diagnosis of breast lump. Emphasis has been placed now a day on improving method of establishing a definitive diagnosis of breast mass prior to surgery. Several studies have been conducted to compare the role of FNAC and other histopathological investigations like trucut needle biopsy. The present study is of 84 cases of breast lumps, all of which were evaluated by FNAC and Trucut biopsy. In present study showed that one third (33.3%) patients belonged to age 41-50 years. The mean age was found  $41.4 \pm 10.6$  years with range from 24 to 68 years which is almost nearly similar to Krishna *et al.*, (2020) [11] mean age of 41.35 years. Also similar observation was found different studies, Rahman *et al.*, (2019) [10] reported that the mean age of 37.41 years, Subangi *et al.*, (2017) [4] observed 83 (41.5%) patients belonged to age 46-60 years. Gojanur *et al.*, (2017) [12] reported that mean age 50.74 years. The most common age group for benign lesions is 21 to 30 years and that of malignant is 41 to 50 years which is almost similar to Krishna *et al.*, (2020) [11] most common age group for benign lesions is 20 to 40 years and malignant is 41 to 50 years. Pervin *et al.*, (2014) [2] also observed breast carcinoma common in age group 41 to 50 years, Hatada *et al.*, (2000) [13] reported a mean age of 52 years. All these studies are differed in our study it may be geographical variance and included older age patients. Most of the patients are illiterate and they do not know about breast cancer. So, they suffer at the early stage of the disease and came to the hospital at the advanced stage of disease. In this study the mean size of the breast lump was 6.3 cm in diameter with a range of 3 to 10 cm. Numerous studies have shown that survival decreases with increasing tumor size. In this study observed that more than half (52.4%) patients had right side breast lump and 40(47.6%) had left breast side lump. Similar observation was found Subangi *et*

*al.*, (2017) [4] they reported 108 (54%) patients were found in right side, 91(45.5%) in left and 1(0.5%) in bilateral of breast. Rahman *et al.*, (2019) [10] observed right breasts were involved in 31 (53.4%) patients and rest of 27 (46.6%) patients had their lesion in left breast. This study showed that in clinical diagnosis, 52(61.9%) patients were found in suspicious for malignancy and 32(38.1%) in benign. In this study showed in FNAC diagnosis, benign breast lump was found 39(46.4%), suspicious malignant cell was 10(11.9%) and malignant was 35(41.7%). Gojanur *et al.*, (2017) [12] reported 64.7% patients were found in malignant and 13(35.3%) in benign breast lump. Rahman *et al.*, (2019) [10] showed that 21(36.3%) patients were found in malignant and 37(63.7%) were in benign breast lump. In this study showed in trucut biopsy, 48(57.1%) patients were found in malignant and 36(42.9%) in benign tumor. Rahman *et al.*, (2019) [10] reported that 22(38.0%) patients were found in malignant and 36(62.0%) were in benign breast lump. Approximately similar observation was found Gojanur *et al.*, (2017) [12] they reported 60.0% patients were found in malignant and 10(40.0%) in benign tumour. Shashirekha *et al.*, (2017) [3] reported out of 62 patients, 32 breast lumps were benign, and 30 breast lumps were malignant their findings are dissimilar to our study may be they have taken majority of patients younger age group. In current study showed that in malignant breast lump, suspicious for ductal cell carcinoma was found in 10(11.9%) and ductal cell carcinoma was 35(41.7%). In benign breast lump, fibro adenoma was 20(23.6%), fibrocystic disease 9(10.7%), phylloidstumour 4(4.8%) and granuloma 6(7.1%). Rahman *et al.*, (2019) [10] observed in FNAC out of 58 cases, majority of the cases were diagnosed as DCC 21(36.3%). 14(24.1%) were reported granuloma, 5(8.6%) cases fibroadenoma, 4(6.9%) diagnosed as a fibrocystic changes, one case was of fibroadenoma with



fibrocystic changes, one chronic mastitis, and one case was breast abscess. Gojanur *et al.*, (2017) [12] reported the commonest benign pathology found in our patients was fibroadenoma almost 58% of all benign diagnosis. And the commonest malignant diagnosis was infiltrative ductal carcinoma 41.2% of all malignant conditions. Mitra Shaila *et al.*, (2016) [14] observed 22 cases were found in benign, 7 cases in atypia probably benign, 6 cases in suspicious of malignancy and 33 cases in malignant. In present study observed that 44(52.4%) patients were found invasive ductal cell carcinoma and 4(4.8%) were invasive lobular carcinoma. Fibroadenoma was found in 21(25.0%), fibrocystic disease 8(9.5%), phylloidstumour 3(3.6%) and granuloma 4(4.8%). Rahman *et al.*, (2019) [10] reported in Tru-cut, out of 58 cases majority of the cases were diagnosed as DCC (36.3%), which is same as FNAC. 14 (24.1%) were reported granuloma which is also same as FNAC. One case was of ADH and one case was DCIS was diagnosed which were confirmed by histopathology. Mitra Shaila *et al.*, (2016) [14] showed 2 cases were found in unsatisfactory/normal tissue only followed by 28 cases in benign, 3 cases in suspicious of malignancy and 35 cases in malignant. In this study that 49 cases were malignant breast lump evaluated by histopathological diagnosis, out of which 41(83.7%) cases were suspicious for malignancy evaluated by clinical findings, 43(87.8%) cases were malignant breast lump evaluated by FNAC diagnosis and 47(95.9%) cases were malignant breast lump evaluated by trucut biopsy. In this study showed that out of all cases 43 were diagnosed as malignant breast lump by FNAC and confirmed by histopathological diagnosis. They were true positive. Two cases were diagnosed as malignant breast lump by FNAC but not confirmed by histopathological diagnosis. They were false positive. Of 39 cases of benign, which were diagnosed by FNAC, 6 was confirmed as malignant and 33 were benign by histopathological diagnosis. They were false negative and true negative respectively. The efficacy of FNAC as a diagnostic tool of malignant breast lump where the sensitivity, specificity, accuracy, PPV, NPV were 87.8%, 94.3%, 90.5%, 95.6% and 84.6% respectively. Bdour *et al.*, (2008) [15] reported FNAC confirmed the diagnosis of breast carcinoma in 65 patients, the remaining 7 patient's required further confirmation. There were no false positive results, with sensitivity 90% and specificity 100%. Gojanur *et al.*, (2017) [12] reported true positive for FNAC was 45(90%) True negative was 50 (100%) and false positive was zero and false negative was 05 (10%), which lead to the interpretation of sensitivity of 90% for FNAC and specificity of 100% for FNAC. This false negative rate in my study was mainly due to sample error, inadequate material sample or underestimation of the cellular atypia which is depends on the cytologist. Subangi *et al.*, (2017) [4] reported sensitivity of the FNAC in our study is 75% which is comparable to Gukas *et al.*, (2000) [16] which have a sensitivity of 88.9% in their study. Rahman *et al.*, (2019) [10]

reported sensitivity, specificity, positive predictive value, negative predictive value, and diagnostic accuracy for FNAC were 88.88%, 100%, 100%, 91.89%, and 95.08%, respectively in diagnosing carcinoma. Shashirekha *et al.*, (2017) [3] reported Malignant disease, FNAC showed sensitivity and specificity of 84.35% and 100% respectively. In 5 cases, results were false negative by FNAC. Positive predictive value was 100% while Negative predictive value by FNAC was 84.1%. Memom and Qureshi (2009) [17] supported that the sensitivity of core biopsy (84.62%) is more than that of FNAC (80.71%) in their study of 52 samplings, in which all the patients underwent FNAC followed by core biopsy. El-Ghorori and Ewais (2004) [18] the sensitivity of FNAC was (81.4%) and the diagnosis was correct in 35/44 cases (79.5%). Homesh *et al.*, (2005) [8] reported that the FNAC sensitivity was 66.66%, 81.8% specificity, 75.7% accuracy, positive predictive value (PPV) 100% and negative predictive value (NPV) 90%, while in core needle breast biopsy sensitivity was 92.3%, 94.8% specificity, 93.4% accuracy, PPV 100% and NPV 100%. Moschetta *et al.*, (2014) [19] reported 166 out of 210 (79%) FNACs Sensitivity, specificity, diagnostic accuracy, PPV and NPV of 97%, 94%, 95%, 91% and 98% were found for FNAC. In this present study it was observed that out of all cases 47 were diagnosed as malignant breast lump by trucut biopsy and confirmed by histopathological diagnosis. They were true positive. One case was diagnosed as malignant breast lump by trucut biopsy but not confirmed by histopathological diagnosis. They were false positive. Of 36 cases of benign, which were diagnosed trucut biopsy, 2 was confirmed as malignant and 34 were benign by histopathological diagnosis. They were false negative and true negative respectively. The efficacy of trucut biopsy as a diagnostic tool of malignant breast lump where the sensitivity, specificity, accuracy, PPV, NPV were 95.9%, 97.1%, 96.4%, 97.9% and 94.4% respectively. Rahman *et al.*, (2019) [10] reported sensitivity, specificity, positive predictive value, negative predictive value, and diagnostic accuracy for tru cut biopsy were 92.30%, 100%, 100%, 94.44% and 96.66%. In this study the use of trucut middle biopsy is superior to the use of FNAC in the confirmation of breast cancer in a suspicious to breast lump which consisted with the result of my study. Both FNAC and Tru cut biopsy is important tool in management of patients with breast lump. When performed by expert hands the diagnostic accuracy of both is very high but not 100%. when combined together accuracy is 100%. Mitra Shaila *et al.*, (2016) [14] observed percent positivity of malignant diagnosis on CNB (B5) was 51.4% while that of FNAC was 48.5%. The suspicious rate for FNAC (C3 and C4) was 19.1% as compare to suspicious rate of CNB (B3 and B4) of just 4.4%. Percentage of benign cases diagnosed on FNAC (C2) was 32.4% while that on CNB (B2) was 41.2%. Thus there was a 11.2% increase in definite benign diagnosis of CNB over FNAC. Shannon *et al.*, (2001) [20] also

documented that CNB can diagnose the presence and absence of invasion in carcinoma. However, the sensitivity of CNB was (91.5%) and 93.5% of cases (43/46) had concordant histological diagnosis. Similar findings were observed by many authors. [20-22] Homesh *et al.*, (2005) [8] reported that the core needle breast biopsy sensitivity was 92.3%, 94.8% specificity, 93.4% accuracy, PPV 100% and NPV 100%. Moschetta *et al.*, (2014) [19] reported 166 out of CNB, sensitivity, specificity, diagnostic accuracy, PPV and NPV of 92%, 82%, 89%, 92% and 82% were obtained for CNB. Oluwasola *et al.*, (2015) [23] reported the overall sensitivity, specificity and accuracy were 86%, 71% and 80.4% respectively by Trucut needle biopsies. In another Italian study reported similar observation they showed Trucut biopsy had a sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of 93.5%, 95.4%, 99%, 75% and 80%, respectively in this study [24].

### Limitations

This was a small scale single centered study. Study population was collected from one selected peripheral tertiary hospital in Mymensingh only, so the result of the study may not reflect the exact picture of the country. FNAC / Trucut biopsy was not done under Image guidance. The sample size was not adequate.

### CONCLUSION

In this study evaluation of FNAC, Trucut biopsy and excision biopsy were performed to see the efficacy of FNAC and Trucut biopsy compared with standard excision biopsy. Both the FNAC and trucut biopsy are simple, safe and reliable in terms of their sensitivity, specificity and accuracy. The findings of this study showed that trucut biopsy is more accurate and specific in confirming breast lesions and it is able to give correctly preoperative histological diagnosis including its nature, type, grading, and avoiding unnecessary surgery. TCB also provides adequate tissue for the evaluation of molecular markers which have extreme therapeutic value specially in pre-operative chemotherapy, hormone therapy, radiotherapy and immunotherapy. It also permits the eventual use of preoperative neoadjuvant therapy.

### RECOMMENDATIONS

Trucut biopsy in the diagnosis of breast lump is more accurate and can be carried out safely as a preoperative histological diagnosis. So Trucut biopsy should be considered as a first line of tissue diagnosis in a patient with breast lump prior to definitive treatments. We proposed that TCB is an accurate alternative to FNAC for the diagnosis of breast lesions as regards its fundamental nature.

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