

Assessment of FNAC, Trucut Biopsy and Histo-Pathological Examination in Breast Lumps at a Tertiary Centre in Bihar

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Abstract

Background: Breast is host to many diseases which range from benign and malignant neoplasm's, inflammatory conditions to infections, most of which present as lumps in the breast. 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.

Aim and objectives: The present study was conducted to assess FNAC, Tru-cut biopsy and histopathological examination in breast lumps.

Materials & Methods: 86 patients with palpable breasts were subjected to FNAC, Tru-cut biopsy, and correlation with histopathology was done. Sensitivity, specificity, PPV, and NPV were carried.

Results: Age group < 20 years had 7, 21–30 years had 20, 31–40 years had 21, and >40 years had 38 cases. The difference was not significant ($P > 0.05$). The diagnosis in FNAC was benign in 50, malignant in 31 and suspected in 5 cases. The difference was significant ($P < 0.05$). The diagnosis in tru-cut biopsy was benign in 46, malignant in 34, and suspicious in 6 cases. The difference was non-significant ($P > 0.05$). The histopathological diagnosis was benign in 45 cases and malignant in 41 cases. The difference was non-significant ($P > 0.05$). FNAC sensitivity was 86%, specificity was 100%, PPV was 100%, and NPV was 85%. The sensitivity of Tru-cut biopsy was 96%, specificity was 100%, PPV was 100%, and NPV was 97%.

Conclusion: We observed that using FNAC to evaluate a breast lump shows high sensitivity, specificity, and accuracy, but trucut always provides a better histological diagnosis and is more accurate.

Keywords: FNAC, Lumps, Breast, Tru-cut

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Introduction

Breast cancer is the most common malignant tumor in women [1,2], accounting for 18.4% of all female cancers worldwide due to its increasing incidence, morbidity, and mortality. The ability to distinguish a benign from a malignant lesion is the surgical pathologist's primary responsibility because it is the leading cause of cancer death in women [3]. A breast FNAC is a minimally invasive diagnostic technique that often replaces an open biopsy. It is less expensive, simple to carry out, and produces results quickly. If a malignant cell is detected, FNAC can easily distinguish between benign and malignant lesions; however, it is unable to differentiate between invasive and non-invasive breast cancer [4]. Core needle biopsy (CNB) and fine needle aspiration cytology (FNAC), two minimally invasive breast biopsy techniques, have established themselves in recent years for the diagnostic evaluation of palpable breast lesions, even though open surgical biopsy remains the "gold standard" for the diagnosis of breast lesions that can be felt [5]. The gold standard for making a definitive assessment of breast lumps is a triple test that includes a clinical examination, mammography, and FNAC [6]. FNAC is readily useful because of its obvious advantages in settings with limited resources like ours. It is a reliable, fast, and affordable diagnostic method. Furthermore, open biopsies are becoming less frequent [6]. Pain and haemorrhage formation are some of FNAC's drawbacks. Additionally, it has been found that, when done before mammography, it may have the potential to mask radiological assessment [5]. It's also possible that the smears are acellular (no cells are harvested), which would make cytological examination impossible. These are described as inadequate aspirates; rates vary significantly, especially depending on the operator; and cases must be converted to core needle biopsies, which can solve

the problem [7]. The advantages of core needle biopsies include providing adequate tissue for a conclusive histological diagnosis, distinguishing between invasive cancer and carcinoma in situ in patients for whom FNAC is inconclusive due to insufficient samples but who have suspicious ultrasound and/or mammography findings, and breast lesions with microcalcifications; tissue banking specimens are immensely helpful for research [8].

Tru-cut biopsy's main objective is to provide a clear pre-operative breast lesion diagnosis and eliminate the need for an open surgical biopsy. Given its benefits, it is still used as an extra forensic method if FNAC fails to produce a diagnosis.

Aim and objectives: The present study was conducted to assess FNAC, Tru-cut biopsy and histopathological examination in breast lumps.

Materials & Methods

The present prospective study comprised 86 female patients with palpable lumps in their breasts attending the outpatient department, surgery and gynaecology department at Nalanda Medical College & Hospital, Patna, Bihar, as the subject of this study. The period of study was between September 2021 to May 2022. The ethical clearance of the study protocol was reviewed by the Institutional Ethical Committee of the institution and permitted by it. All gave their written consent for participation in the study. Data such as name, age, etc. was recorded.

Inclusion criteria:

- a. It was a patient with a palpable breast lump of variable duration.
- b. Aged between 18 and 80 years old.

Exclusion criteria:

- a. patients with recurrent malignancy
- b. patients who were on chemotherapy

- c. patient with an acute and tender breast lump, like a breast abscess and
- d. patient with a frank malignant mass with skin ulceration.

For FNAC, the breast lump was fixed between 2 fingers. After observing aseptic precautions, a 22-24-gauge disposable sterile needle with a 10 mL disposable syringe is used to enter the swelling and multiple passes are given. Smears are made, air dried and wet fixed, and stained with Giemsa stain, Haemotoxylin, and Eosin stains. Under complete aseptic technique, a 2% Lignocaine infiltrating anaesthetic was administered, and the skin

incision was performed. A biopsy specimen was obtained by means of four successive insertions with different angulations of the needle into the core of the lesion. The quantity and quality of the material obtained were judged after immediate immersion of the specimen in fixative, and then the specimen was sent to the histopathology department. Data thus obtained were subjected to statistical analysis through Microsoft Excel 16 and Statistical package for social sciences (SPSS, Version 22). P value ≤ 0.05 was considered significant.

Results

Table 1: Distribution of patients on the basis of age

Age group (In years)	Number	P value
<20	7	0.71
21-30	20	
31-40	21	
>40	38	

Table I, shows that age group <20 years had 7, 21-30 years had 20, 31- 40 years had 21 and >40 years had 38 cases. The difference was non- significant ($P>0.05$).

Table 2: Results of fine needle aspiration cytology (FNAC)

Diagnosis	Number	P value
Benign	50	0.04
Malignant	31	
Suspicion	5	

Table II, shows that diagnosis in FNAC was benign in 50, malignant in 31 and suspicion in 5 cases. The difference was significant ($P\leq 0.05$).

Table 3: Results of Tru-cut biopsy

Diagnosis	Number	P value
Benign	46	0.011
Malignant	34	
Suspicion	6	

Table III, shows that diagnosis in tru- cut biopsy was benign in 46, malignant in 34 and suspicion in 6 cases. The difference was significant ($P\leq 0.05$).

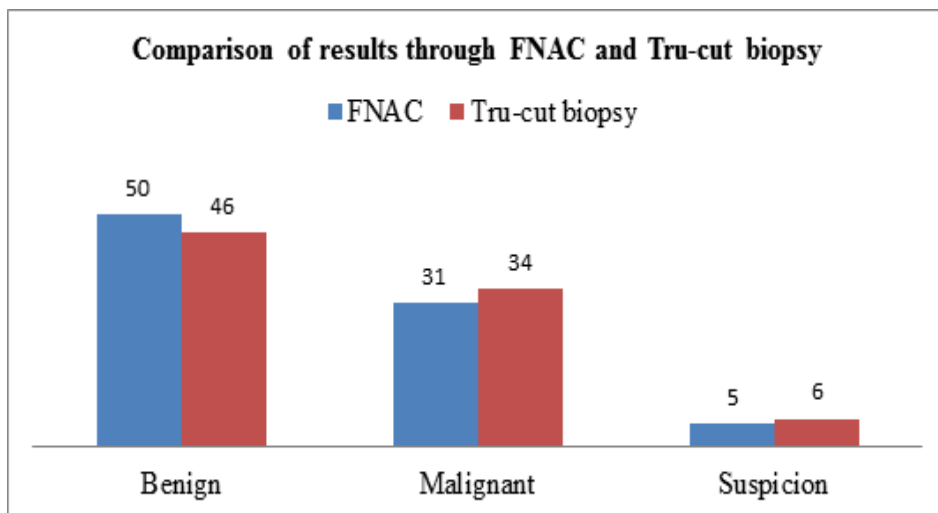


Figure 1: Showing comparison of results through FNAC and Tru-cut biopsy

Table 4: Results of Histopathology

Diagnosis	Number	P value
Benign	45(52.33%)	0.03
Malignant	41(47.67%)	

Table IV, shows that histo-pathological diagnosis was benign in 45 and malignant in 41 cases. The difference was significant ($P \leq 0.05$).

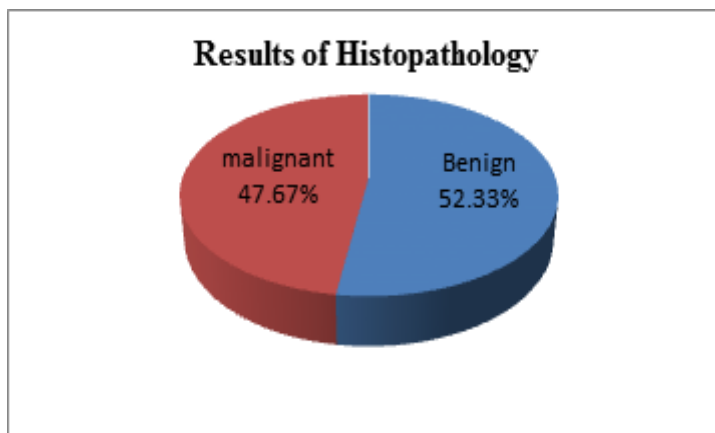
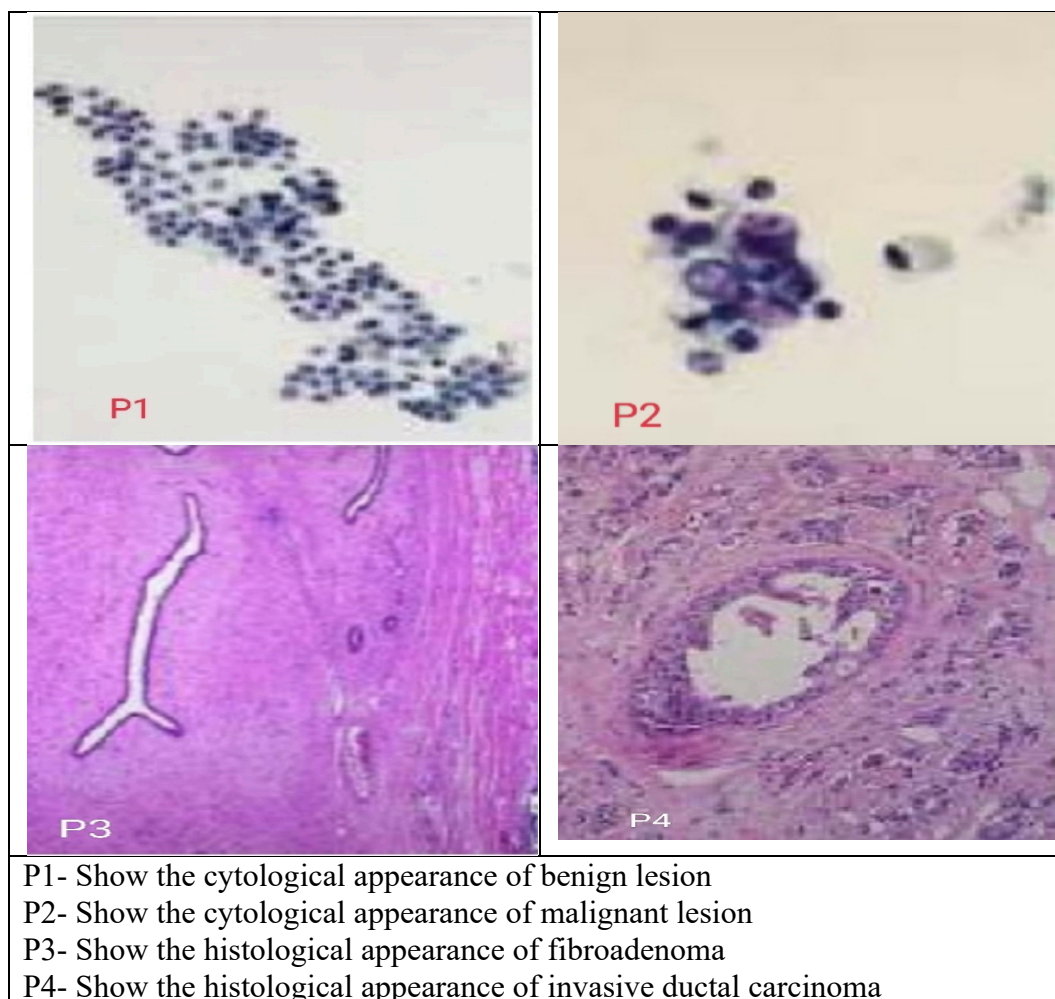


Figure 2: showing results of histopathological

Table 5: Efficacy of FNAC and Tru-cut biopsy

Efficacy	FNAC	Tru-cut biopsy
Sensitivity	86%	96%
Specificity	100%	100%
PPV	100%	100%
NPV	85%	97%

Table V shows that sensitivity of FNAC was 86%, specificity was 100%, PPV was 100% and NPV was 85%, sensitivity of Tru-cut biopsy was 96%, specificity was 100%, PPV was 100% and NPV was 97%.



Discussion

Breast cancer is the second most common cancer among Indian females. The cumulative incidence in females until 64 years of age is 1–2%. Fine needle aspiration cytology (FNAC) is increasingly being used for preoperative breast cancer diagnosis in order to determine specific prognostic parameters in order to provide the best therapy for patients. The present study was conducted to assess FNAC, Tru-cut biopsy, and histopathological examination in breast lumps. We found that the age group < 20 years had 7, 21–30 years had 20, 31–40 years had 21, and >40 years had 38 cases. The diagnosis in FNAC was benign in 50, malignant in 31 and suspected in 5 cases. Shashirekha CA et al.[9] investigated the accuracy of FNAC in comparison to TCNB for the diagnosis of breast masses. Out of 62 patients with breast lumps, 32

were diagnosed with benign breast lesions and 30 with malignant lesions. The FNAC and Tru-cut biopsy sensitivity were 84.34% and 97.1%, respectively. Tru-cut was more accurate when compared to FNAC. Both FNAC and Core Needle Biopsy are complimentary to each other and are useful in the diagnosis of breast lesions.

We found that the diagnosis in Tru-cut biopsy was benign in 47, malignant in 34, and suspicious in 6 cases. The histopathological diagnosis was benign in 45 cases and malignant in 41 cases. Ibikunle et al.[10] determined a total of 289 FNAC of breast lumps were done. The aspirates were obtained from 275 (95.2%) females and 14 (4.8%) males. There were 161 cases of FNAC with corresponding tissue for histological correlation, giving a biopsy rate of 55.7%. The sensitivity of

FNAC in determining the final histologic diagnosis was found to be 99.4%, while the specificity was 100%. FNAC was able to determine the final histologic diagnosis conclusively in 86.3% of cases.

We observed that the sensitivity of FNAC was 86%, specificity was 100%, PPV was 100%, and NPV was 85%; the sensitivity of Tru-cut biopsy was 96%, specificity was 100%, PPV was 100%, and NPV was 97%. Bukhari MH et al. [11] in 425 patients over a period of 4 years strongly suggested that the cytological examination of breast lesions prior to surgical treatment serves as a rapid, economical, and valuable diagnostic tool. In a study by Tiwari et al.[12], in 91 patients with fibroadenoma (39.6 %) was the most common lesion. Other benign conditions such as fibrocystic disease, galactocele, breast abscess, and duct ectasia were responsible for 5.5 -7.7% of cases. Furthermore, 6.6 % of the 91 cases were responsible for invasive ductal cancer. Michael Shabot et al. [13], included 43 cases of infiltration of carcinomas, Robinson's grading method used cytological grading and the SBR grading method used histological grading. Cytological grading was found to be comparable to histological grading; the difference between the two grading methods was insignificant in all three of the six parameters studied, the most influential being cell dissociation, nuclei, and chromatin pattern. [14]

Limitation of study: The study's limitation is the small sample size.

Conclusion

We observed that using FNAC to evaluate a breast lump shows high sensitivity, specificity, and accuracy, but Tru-cut always provides a better histological diagnosis and is more accurate.

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