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Original Research Article

Comparative study of fine needle aspiration cytology, trucut biopsy and final histopathological examination in breast lumps

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Article History:*Received:** 03/01/2017**Revised:** 14/01/2017**Accepted:** 14/01/2017**DOI:** <https://dx.doi.org/10.7439/ijbr.v8i3.3829>**Abstract**

Background: A lump in the breast results in anxiety for the patient and her family whether benign or malignant. Histological tissue diagnosis is a universally accepted means of definitive diagnosis of a breast lump. FNAC gives a rapid diagnosis and can be carried out in outpatient services with minimal trauma. Hence FNAC is gaining wide acceptance. Trucut biopsy is a safe method for a histological diagnosis, in operable breast cancer cases and a reliable technique to assess hormone receptor status. The trucut needle is a very handy instrument and it is now replacing the incision or excision biopsy.

Aim: To find out the diagnostic accuracy of FNAC and trucut biopsy as compared to the final histopathological report in breast lumps. To compare diagnostic accuracy of FNAC and trucut biopsy in differentiating the benign and malignant lesions of palpable breast lumps.

Methodology: This is a prospective study which included 70 patients having breast lump were subjected to FNAC and Trucut biopsy in Victoria hospital, Bangalore between October1, 2015 to September30, 2016 and were compared to final tissue diagnosis after subsequent admission and treatment. Various factors like age, size, duration, marital status, menstrual status and site were studied during statistical analysis.

Results: There were 70 patients who presented with breast lump during the study period. Out of a total 70 breast lump study, final diagnosis was 36 benign breast lump and 34 malignant breast lumps. Sensitivity of FNAC and TRUCUT biopsy were 86.84% and 97.14% respectively. While TRUCUT was more accurate when compared to FNAC.

Keywords: FNAC, Trucut biopsy, breast lump, breast malignancy.

1. Introduction

Breast Lump is the commonest presenting symptom to breast clinic. The specificity and sensitivity of FNAC as diagnostic tool of breast cancer is actually controversial subject of discussion. Despite the wide spread use of FNAC for palpable breast lumps, it is not very helpful in preoperative decision making and management process by surgeon and oncologist.[1] In breast lump work up, triple assessment protocol is followed which includes clinical breast examination, radiological and pathological evaluation. Though FNAC technique is simple, patient don't prefer repeated needling of their breast lump.[2] Also for fear of overtreatment, many surgeons are reluctant to

accept cytology reports, often ambiguous and lacking in standardization of terminology as a basis for definitive surgery.[3] FNAC reports have percentage of uncertainty, also lack important information about the histopathological type, grade, receptor status and intrinsic behavior of the tumour. All these information are of great importance for correct pre-op evaluation.[4]

Trucut biopsy is simple and safe technique. Patient's acceptance is also high and positive diagnosis of malignancy by trucut biopsy, a definitive surgery can be planned.[5]

The study was undertaken to compare the results of FNAC and Trucut biopsy with final histopathology in detection of breast lump pathology.

2. Methodology

2.1 Source of Data

This prospective study included all patients who presented to Out-patient department with breast lump and subsequently admitted and treated in all surgical units, Victoria Hospital, Bangalore between October 1st 2015 and September 31st 2016. The study included 70 cases of Breast Lump, carried out with regards to age, duration, size, site, marital status and menstrual status. The Duration of study was 1 year.

2.2 Inclusion Criteria

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

2.3 Exclusion Criteria

- 1) Patient below 20 years of age.
- 2) Patient with Breast Lump who are not taken up for surgery.
- 3) Patient non compliance for FNAC or Trucut biopsy.

2.4 Method

FNAC: Equipments required:

- 1) 10ml disposable plastic syringe.
- 2) 22 Guage disposable needles.
- 3) 95% ethanol.
- 4) Spirit swabs.
- 5) Glass slides.

Under aseptic precautions, parts painted and draped. Under Local anaesthesia, needle introduced into breast lump. Specimen is withdrawn by aspiration with a syringe. Specimen sent for slide preparation, fixation and cytological examination.

Figure 1: Equipments used for FNAC



TRU-CUT Biopsy: Equipment required:

- 1) Trucut gun with 18 gauge needle.
- 2) Sterile container with formalin.

Technique:

- Parts painted and draped.
- Application of local anaesthesia
- Manual localization and immobilization of the lesion
- 5mm incision on the skin over the lesion using 11G needle.

- Biopsy specimen obtained by four successive insertions with different angulations of the needle into the core of the lesion.
- Specimen sent in a sterile container with formalin for histopathological study.

Figure 2: Equipments used for Trucut biopsy



3. Results

In this study, total numbers of patients were 70. Out of a total 70 breast lump aspirations, 36 breast lumps were benign and 34 breast lumps were malignant lumps [Table 1]. Of 36 breast lumps with benign lesions, 24(66.6) were married [Table 2]. Maximum incidence in this group was in the 3rd decade. Whereas in 34 malignant breast lumps, 32 were married, peak age was in forth decade.

In duration of breast lump, among benign breast lesions, peak group was less than 3months and peak duration of malignant lesion was between 6-8 months. Most common site in both benign and malignant breast lumps was in the upper outer quadrant. Maximum size of breast lumps was 3-5 cm in size [Table 3].

For malignant breast disease, FNAC showed sensitivity and specificity of 86.84% and 100% respectively. In 5 cases, results were false negative by FNAC. Positive predictive value was 100% while Negative predictive value by FNAC was 86.49% [Table 6].

While the sensitivity and specificity of trucut biopsy was 97.14% and 100% respectively. Also positive predictive value was 100% and negative predictive value was 97.30%. The results of trucut biopsy well correlated with final histopathology report than FNAC [Table 7].

Table 1: Showing distribution of breast lumps in different age groups

Age (Yrs)	Benign Breast Lump	Malignant Breast Lump
11-20	8(22.2%)	-
21-30	4(38.8%)	2(5.88%)
31-40	8(22.2%)	14(41.17%)
41-50	2(5.55%)	6(17.64%)
51-60	4(11.11%)	10(29.41%)
61-70	-	2(5.88%)
Total	36(100%)	34(100%)

Table 2: Breast disease vs marital status

Disease	Married	Unmarried
Benign	24(34.28%)	12(33.3%)
Malignant	32(45.71%)	2(2.85%)

Table 3: Size of breast lump in benign and malignant disease

Size of Lump	Benign	Malignant
<5cm	35	23
5-10cm	1	10
>10cm	—	1
Total	36	34

Table 4: Results of FNAC.

Benign Breast Disease	Malignant Breast Disease	Total
37	33	70

Table 5: Results of Tru-Cut Biopsy

Benign Breast Disease	Malignant Breast Disease	Total
36	34	70

Table 6: sensitivity: 86.84%, specificity: 100%, PPV-100%, NPV-86.49%. Calculated from the table below:

FNAC	Disease Present	Disease Absent
Positive	33(a)	0(c)
Negative	5(b)	32(d)

Table 7: Sensitivity: 97.14%, specificity: 100%, PPV-100%, NPV-97.30%. Calculated from the table below:

Trucut Biopsy	Malignancy Present	Malignancy Absent
Positive	34	0
Negative	1	35

Table 8: Histopathology report of benign breast lesions

Fibroadenoma	20
Fibrocystic disease	14
Serocystic disease	2

Table 9: Histopathology report of malignant breast lesion

Infiltrating ductal carcinoma	33
Lobular carcinoma	1

Figure 3: FNA Cytology picture of Fibroadenoma Breast.

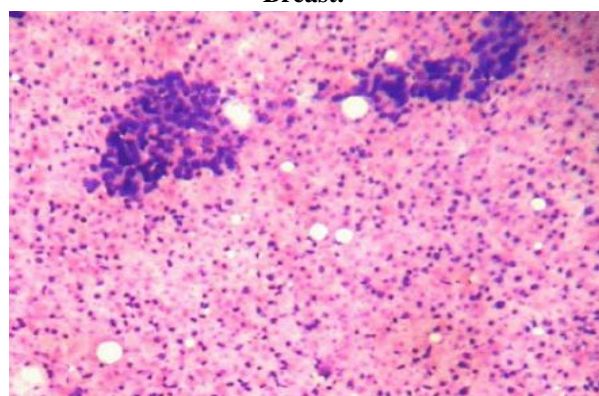


Figure 4: TRUCUT biopsy from breast lesion diagnostic of intra-ductal carcinoma.

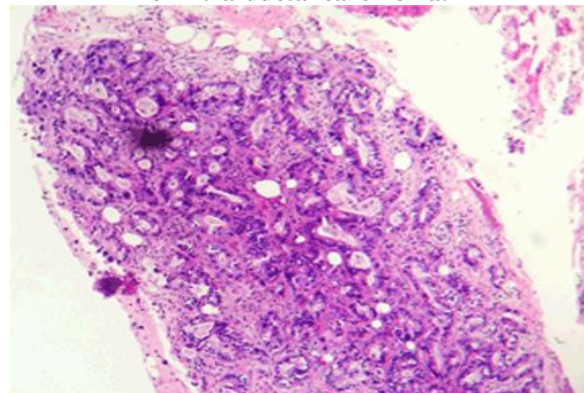
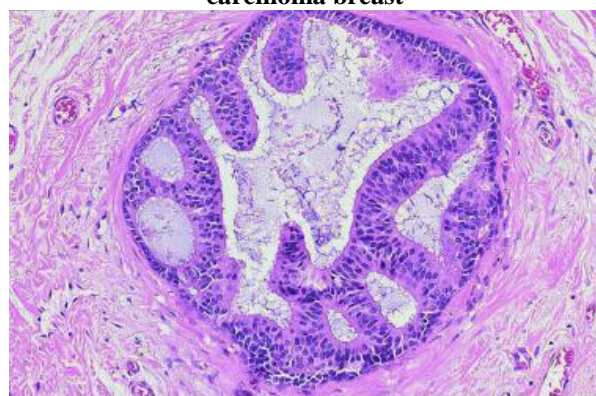


Figure 5: histopathology picture of intra-ductal carcinoma breast



4. Discussion

Breast cancer is one of most common female malignancy world wide.[6] With early detection and proper treatment outcome is best. The ideal approach for women with suspicious breast lump is the triple assessment approach including clinical, cytology and mammography.[7] However this is not sufficient for decision making in treatment. Even though a high degree of diagnostic accuracy of FNAC in breast cancer has been claimed in several studies, its role in management of breast lumps is still controversial. It is often non-conclusive and not the most suitable tool to be used in the diagnosis of breast lumps. Trucut needle biopsy is a good alternative. Also it is an alternative to open biopsy for neoplastic breast lesions.[8,9]

Tissue samples should not be replaced by cytological material when core biopsies can be performed easily and without contraindications. In fact trucut biopsy can substitute both FNAC and open biopsy.[9]

Core biopsy, based on study of architectural and cytological pattern of the obtained tissue specimens can clinch a diagnosis; even can find out an invasive cancer, if present. Thus a more expensive intra operative frozen section biopsy procedure can also be avoided. Core biopsy

supports a definitive diagnosis, permits to take an immediate decision regarding treatment in 90% of cases. In case of diagnostic discordance between mammography and trucut biopsy, an intra operative frozen section biopsy used for decision making.[9] In trucut biopsy complication rates are low, a scar is avoided and its cost effective. When a breast lump is clinically and mammographically suspicious, the sensitivity and specificity of trucut biopsy is almost 100%. False negative rates is extremely low.[10]

For small non palpable lesions in breast lumps, Trucut Biopsy has replaced FNAC because sample insufficiency is rare for trucut biopsy even for these lesions.[11-14] Compared to open surgery, trucut biopsy is much less invasive. The volume of tissue removed, breast deformity, and the effect on mammography are much reduced. For non-palpable lesions surgery is omitted when the pathology is benign. For malignant lesions, surgery can be done in a single setting.[15,16]

Thus Trucut biopsy can routinely be used as a part of triple assessment for suspicious breast lesions in developing countries. Its direct benefit is the avoidance of unnecessary surgery, frozen section, and axillary dissection. Cancer surgery is done as a single session in the majority of cases. It is well planned, with active participation by patients. Because this approach decreases significantly the price of diagnosis and treatment of breast cancer while fully respecting the patient's rights, there is no logic not to use it.[17]

5. Conclusion

In our study trucut was more accurate than FNAC. Trucut biopsy was able to give histological diagnosis and results correlated 100% with the final histopathological report. It also gives further information about tumour type, grade, lymphovascular invasion and receptor status. FNAC to evaluate a breast lump shows a high sensitivity, specificity and accuracy but trucut always provides a better histological diagnosis and more accurate.

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