



Diagnostic Usefulness of Trucut Biopsy in Diagnosis of Palpable Breast Lesions

Authors

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Abstract

Introduction: Tru-cut biopsy is now one of the useful means of obtaining early and accurate histopathological diagnosis. It is easy and can be performed on an outpatient basis. It also avoids unnecessary excisional biopsy. It provides sufficient amount of tissue for pathologist to make an accurate histological diagnosis with its type, grade and degree of differentiation in majority of cases

Aim: To study usefulness of trucut biopsy of palpable breast lesions in patients coming to a tertiary care hospital

Objectives: 1. To correlate findings of trucut biopsy with histopathology of follow up surgical procedures.
2. To find sensitivity, specificity, positive predictive value, negative predictive value and overall diagnostic accuracy of trucut biopsy.

Material and Methods: A prospective comparative study of two years conducted in Department of Pathology KHMRC between June 2015 to June 2017. The study includes 106 patients of palpable breast lump. Trucut biopsy was performed using a Tru-Cut gun BARD MAX-CORE with an 18-gauge needle by means of 4 successive insertions with different angulations of the needle into the lesion's core.

Result: The study includes 106 patients, Trucut Biopsy findings correlated with the histopathological findings in 103 of 106 cases (97.2%), which included 29 of 30 (96.7%) of the benign lesions and 74 of 76 (97.4%) of the malignant lesions.

Conclusion: Tru-cut biopsy is an easy, cost-effective, safe and accurate in diagnosing breast lesions and in detecting suspicious malignant breast lumps. It is also superior to open biopsy in terms of safety, hospital stay, costs, post operative pain and complications.

Introduction

Tru-cut biopsy of palpable breast lesions can provide all the reliable information to guide the surgeon and the oncologist to plan an ideal therapeutic strategy in surgical decision making.¹ And permits the eventual use of neoadjuvant therapy.² On the other hand excisional biopsy would provide the pathologist with the whole breast lesion and allows him or her to examine its histopathological type, grade and degree of

differentiation of the carcinoma if present. Also receptor status for estrogen, progesterone and tyrosine kinases Her2 (C erb b2) can be assessed. However, it mostly requires general anesthesia.^{3,4}

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Figure-1- Equipments required for trucut procedure

Result and Discussion

In the present study, majority of the patients (30.2%) were in the age group of 41-50 years followed by 23.6% in the age group of 51-60 years, 19.8% in the age group of 31-40 years, 14.2% in the age group of 21-30 years and 12.2% in the age group of >60 years. The most common clinical presentation in our study was a lump (90.7%) which was not associated with any other complaint (pain/ulcer) The left breast was affected in 52 (49%) patients while the right breast was affected in 53 (50%) patients. Bilateral involvement was observed in 1 (1%) patient. In maximum cases (60.4%), the lump measured between 3-5cms while in minimum (5.7%) cases, it measured <3 cms.

Table-1 Distribution of breast lesions on Trucut biopsy according to different CNB categories

Category	N	%
B1	0	-
B2	30	28.2%
B3	0	-
B4	1	0.9%
B5	75	70.7%
Total	106	100%

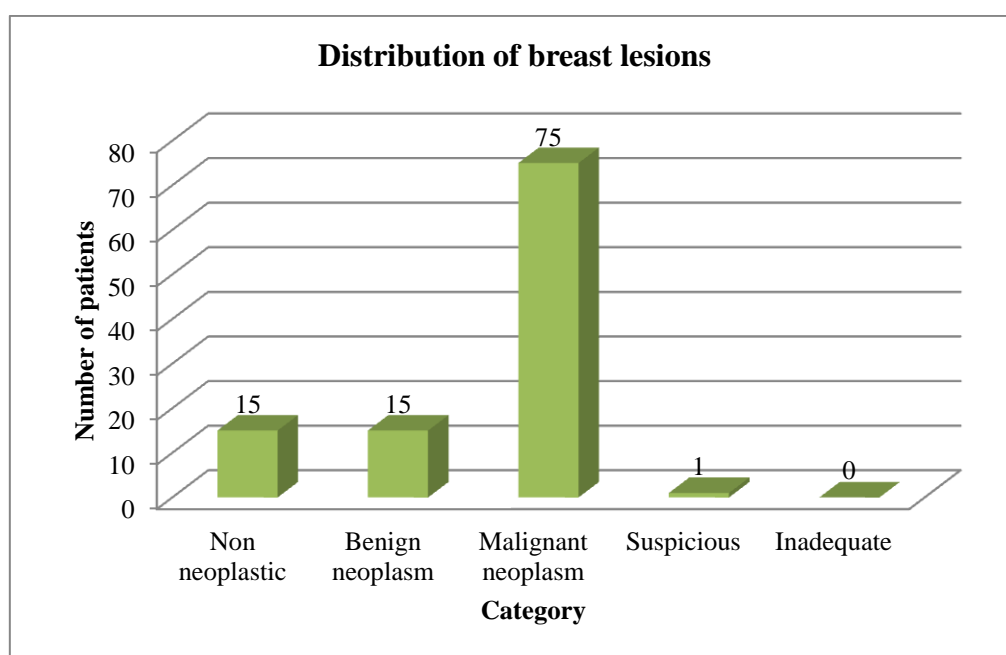


Figure 2 Distribution of breast lesions on Trucut biopsy

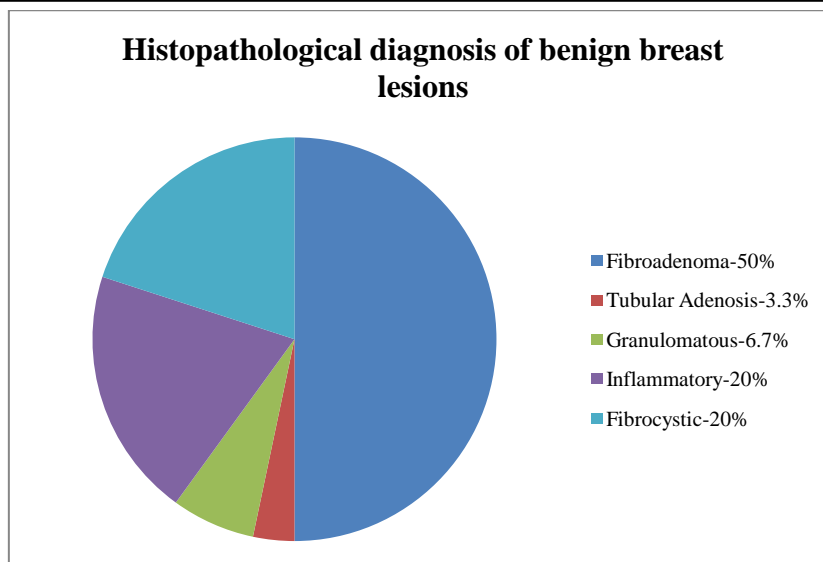


Figure-3 Histopathological diagnosis of benign breast lesions

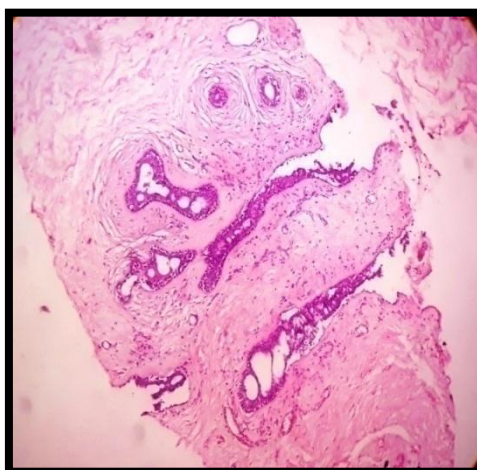


Figure-4 Photomicrograph of needle core biopsy showing Fibroadenoma (H&E stain, 100x)

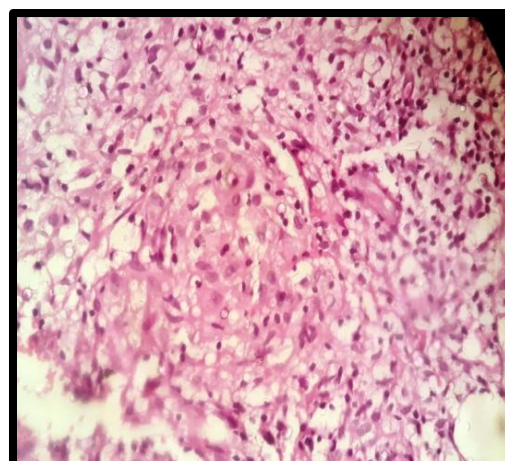
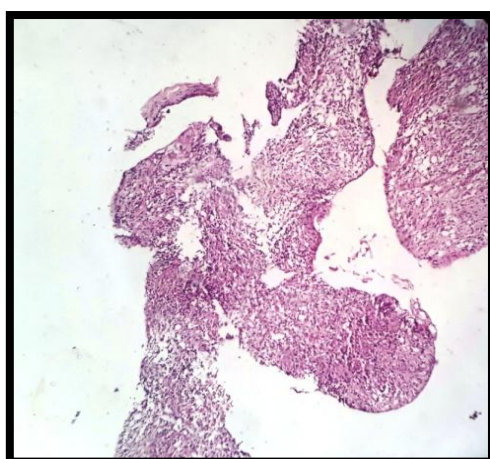


Figure-5,6 The needle core biopsy shows features of non specific Granulomatous Mastitis (H & Estain, 40x&400x)

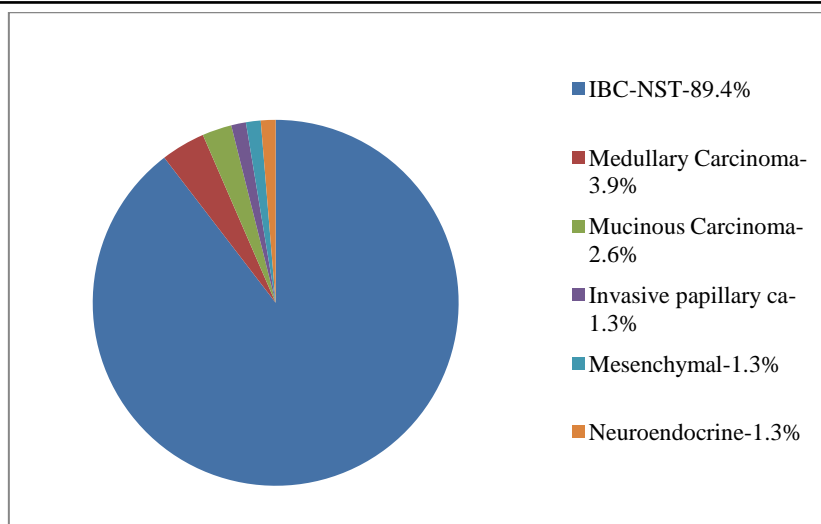


Figure 7: Histopathological Diagnosis of Malignant Breast Lesions

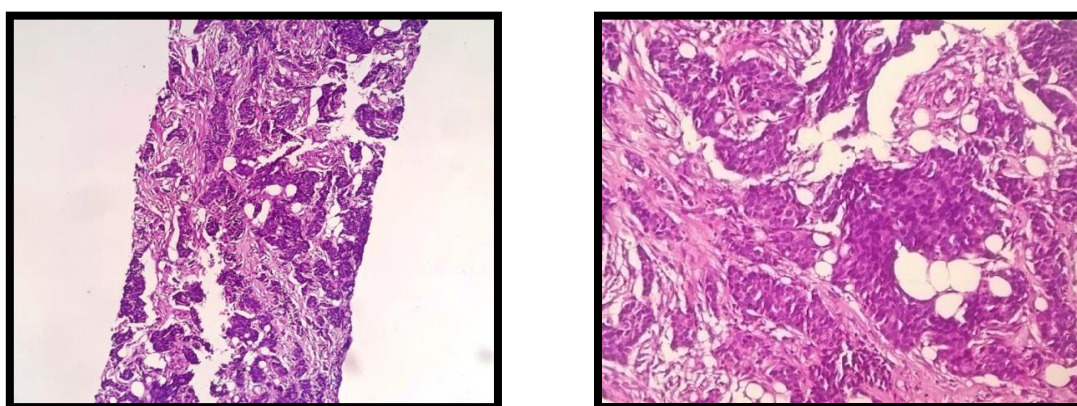


Figure- 8,9 Needle Core Biopsy showing Invasive Breast Carcinoma NST (H&E stain,100x&400x)

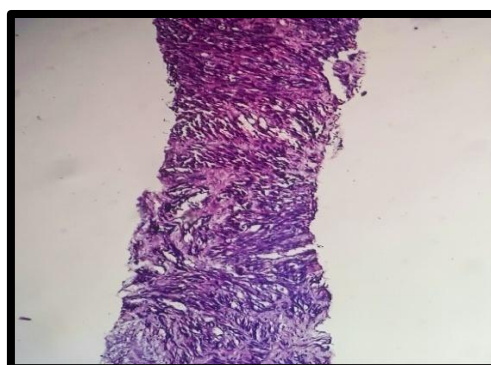


Figure 10 The needle core biopsy shows malignant spindle cells (High Grade) (H&E stain,100x)

Correlation of Trucut Biopsy and Histopathological findings

In the present study, Trucut Biopsy findings correlated with the histopathological findings in 103 of 106 cases (97.2%), which included 29 of 30 (96.7%) of the benign lesions and 74 of 76 (97.4%) of the malignant lesions. 1 case was wrongly diagnosed as malignant while one case each was falsely diagnosed as benign and

suspicious on Trucut Biopsy findings. The association was found to be statistically significant ($p < 0.05$).

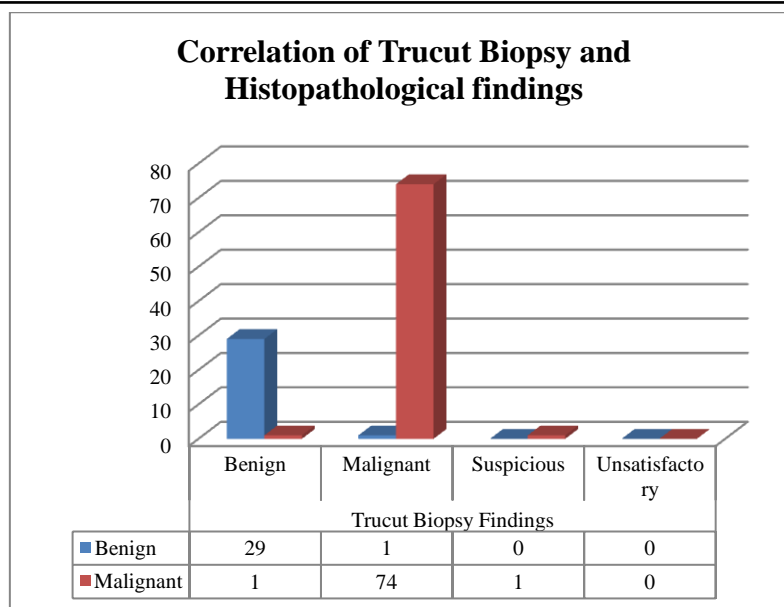


Figure-11 Sensitivity, Specificity, PPV, NPV and Accuracy of Trucut Biopsy

The Sensitivity, Specificity, Positive Predictive Value (PPV) and Negative Predictive Value (NPV) of Trucut Biopsy were 97.37%, 96.67%, 98.67% and 93.55% respectively. Accuracy of Trucut Biopsy was 97.16%.

Discussion

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Singh S et al⁵ did a retrospective study of 104 cases in which 2 patients were Males and rest 102 cases were Females. Age of the patients ranged from 15-65 years with mean age of 33yrs.

It was observed in the present study that out of 106 patients, 15 (14.1%) patients had non neoplastic lesion while 90(85%) patients had neoplastic lesion. Out of 90 neoplastic lesion, 15 (16.6%) were benign neoplasm i.e. Fibroadenoma and 75(83.3%) were malignant. And one case (0.9%) was reported as inconclusive/ Suspicious for malignancy.

Similar to present study Samantray S et al⁶ also reported 747 cases (83.6%) out of 892 Core biopsies to be diagnosed as malignant Neoplasm. Ajitha MB et al⁷, in a prospective study on fine needle aspiration cytology, trucut biopsy and final

histopathological examination in breast lumps found of a total 70 breast lump aspirations, 36 breast lumps were benign and 34 breast lumps were malignant lumps. Of 36 breast lumps with benign lesions, 24(66.6%) were married.

Rikabi et al⁸ also reported benign neoplasm to be predominant lesion in their study.

Since the place of our study is tertiary care centre where patient presents with disease in advanced stage, which is the reason for discordance with other studies.

In the present study, Trucut Biopsy findings correlated with the histopathological findings in 103 of 106 cases (97.2%), which included 29 of 30 (96.7%) of the benign lesions and 74 of 76 (97.4%) of the malignant lesions. 1 case was wrongly diagnosed as malignant while one case each was falsely diagnosed as benign and suspicious on Trucut Biopsy findings. The association was found to be statistically significant ($p < 0.05$).

Rikabi A et al⁸ in a cross-sectional study reported final histopathological diagnosis of the TCB specimens, there were 97 (35.3%) true-positive cases, 173 (62.9%) true-negative cases, 5 (1.8%) false-negative cases and no false positive cases.

Dimitrov DD et al⁹ in a retrospective clinical study reported Histopathology after tru-cut biopsies showed 74 (93.7%) malignant lesions and 5 benign lesions (6.3%). Histopathology of the

post surgical specimen showed 75 (94.9%) malignant lesions and 4 benign lesions (5.1%).

Comparison of TCB to postsurgical histopathology revealed the following results: 74 true positive cases (93.7%), zero false positive cases (0%), one false negative case (1.3%) and 4 true negative cases (5.1%).

The one case falsely diagnosed as benign on trucut biopsy came out to be mucinous carcinoma on histopathology.

Weaver MG et al.¹⁰ In his study. Mucinous lesion of breast: A pathologic continuum. Reported that The diagnosis of mucinous carcinoma in core needle biopsy is uncomplicated if neoplastic epithelial cells are seen within the mucin. The diagnosis of mucocoele like lesion with a frequently minimal epithelial component is more difficult. It is reasonable to view mucocoele like lesions as a part of spectrum from benign through to mucinous carcinoma with a significant risk of underdiagnosis from the limited material present on core needle biopsy. Excision of mucocoele like lesions is therefore recommended.

Rosen PP in his study Mucocoele like tumors of the breast also reported that Mucocoele like lesions must be considered in the differential diagnosis of mucinous carcinoma.¹¹

The case falsely diagnosed as malignant on trucut biopsy came out to be Tubular adenosis on histopathology. Patient came for screening mammogram and lump of 1 cm in size was detected in screening mammography. FNAC of lump was inconclusive and Trucut biopsy was reported B5- positive for low grade malignancy.

Lee KC et al¹² in his study. Tubular Adenosis of the breast- A distinctive benign lesion mimicking invasive carcinoma The histologic hallmark of tubular adenosis is haphazard proliferation of elongated tubules that are non crowded, narrow and sometimes branching. He concluded that tubular adenosis can be potentially mistaken for invasive carcinoma especially when tubular adenosis is cancerized by DCIS.

The case diagnosed as inconclusive was reported as suspicious for malignancy came out to be solid invasive papillary carcinoma on histopathology.

Deshmukh S et al.¹³ concluded that Papillary carcinoma is the rare entity. differentiation between benign and malignant papillary lesions may be difficult on FNAC as well as trucut biopsy because both procedures targets the centre and invasion is at periphery.

Table 22 Comparison of Studies Conducted to determine the usefulness of Trucut Biopsy in the breast masses.

Author	Sensitivity	Specificity	PPV	NPV	Diagnostic Accuracy
Shastri RK et al ¹⁴	95.45%	100%			
Dimitrov et al ⁹	98.67%	100%	100%	80%	98.73%
Ajitha MB et al ⁷	97.14%	100%	100%	97.30%	
Rikabi A et al ⁸	95.1%	100%	100%	97.2%	98.2%
Vega A et al ¹⁵	90%	100%			91%
Bukhari et al ¹⁶	94%	100%	100%	100%	89%
Homesh et al ¹⁷	92.3%	94.8%			
Present study	97.37%	96.67%	98.67%	93.55%	97.16%

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