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# A Comparison of Trucut Biopsy with Fine Needle Aspiration Cytology in the Diagnosis of Breast Cancer

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## ABSTRACT

**Introduction: Carcinoma of the breast is common in Singapore and many patients may present with just a suspicious breast lump.**

**Aim: To determine the accuracy of fine needle aspiration cytology (FNAC) and trucut biopsy in the diagnosis of suspicious breast lumps in an outpatient setting.**

**Methods: A total of 39 women, from May 1995 to November 1995, who had a suspicious breast lump were subjected to concurrent FNAC and trucut biopsy.**

**Results: The accuracy of FNAC is 90% whereas trucut biopsy is 67%, the difference being statistically significant with a $p < 0.02$.**

**Conclusion: FNAC is recommended for the diagnosis of suspicious breast lumps.**


**Keywords: breast cancer, cancer diagnosis, fine needle aspiration cytology (FNAC), trucut biopsy**

## INTRODUCTION

Carcinoma of the breast is a very common problem in Singapore. Patients usually present with a palpable breast lump. However, it is sometimes difficult to determine whether a suspicious lump is benign or malignant simply from clinical assessment. Therefore a method of definitive diagnosis of patients who present with breast lumps at the outpatient clinic is needed. This method must be accurate, easy to perform and reproducible. It must also be acceptable to the patient, can be carried out in a busy clinic setting and must not require too much preparation or expensive equipment.

Fine needle aspiration cytology (FNAC) of a breast lump is an accepted and established method to determine the nature of a breast lump. However, the trucut biopsy needle can give a core tissue sample as to the just cells for FNAC. This can provide a more definitive diagnosis[1-2]. Various studies have been done to determine the efficacy and usefulness of both FNAC and trucut biopsy; and the results vary. FNAC has been found to have a sensitivity ranging from 84% to 97.5% and a specificity of more than 99% to 100%. Trucut biopsy was reported to have a sensitivity of around 90% and a specificity of 100%. However, various authors have differing opinions on which method is better and there is no consensus in their recommendations[3-6]. The aim of our study was to compare the accuracy of FNAC and trucut biopsy in our local context.

## MATERIALS AND METHOD

A total of 39 women who presented to a single consultant surgeon from May 1995 to November 1995, with clinically suspicious breast lumps at the outpatient clinic and subsequently confirmed to have breast cancer, were accrued into this study. After a detailed history and physical examination, they had concurrent FNAC and trucut biopsy of the breast lump performed. Both the FNAC and trucut biopsy were performed by a single operator, and in this case, a consultant surgeon.

The FNAC was performed using a 23G needle and 10 mL syringe with an average of four to six passes. Trucut biopsy was performed using the 18G Autovac spring loaded trucut biopsy needle making one or multiple passes so as to obtain an adequate core sample of the lesion[7]. The FNAC specimen was checked by a cytology technician immediately at the outpatient clinic to ensure that adequate cells were present. Both specimens were then sent to the pathology department and read separately. Based on either or both the histology reports, the patient underwent excision biopsy and/or mastectomy. This final histology was read by an independent pathologist who was blinded to the original FNAC and trucut biopsy report.

## RESULTS

Out of a total of 39 patients, 37 had carcinoma of the breast and two had phylloides tumour. The patients ranged in age from 32 years to 92 years with a mean of 57 years. The mean size of the breast lump was 3.8 cm in diameter with a range of 1.5 cm to 12 cm.

The histology report for FNAC or trucut biopsy was classified into either benign, inadequate, suspicious or malignant. Benign and inadequate were taken as a negative result. Suspicious and malignant

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were taken as a positive result. The initial histology reports for FNAC and trucut biopsy are shown in Table I. The difference between the detection rate of FNAC (90%) and trucut biopsy (67%) is statistically significant with a p value of less than 0.02 using McNemar's test for paired data.

The final histology from either excision biopsy or mastectomy was infiltrative ductal carcinoma in 31 cases, mucinous carcinoma in two cases, infiltrative lobular carcinoma in two cases, ductal carcinoma-in-situ in two cases and phylloides tumour in two cases. The final histology was compared with the initial histology of all 19 cases reported as malignant for trucut biopsy. There was a 100% correlation between these two results.

When the results of FNAC and trucut biopsy were compared, there were 26 cases which were positive for both FNAC and trucut biopsy. There were no cases whereby the FNAC was negative but the trucut biopsy was positive (Table II). There were four cases where both FNAC and trucut biopsy were negative. Of these, two were phylloides tumour and two were lesions of 2 cm in diameter. The histology of these four cases were reported as either inadequate or showed inflammatory cells or fibrosis. A total of nine cases were reported as positive on FNAC but negative for trucut biopsy. The average size of the lesion in these nine cases was 3 cm (range 1 cm to 5 cm) compared to the mean size of 3.8 cm for all lesions. However, the difference in size was not statistically significant. There was also no difference in the histology of these nine lesions as compared to the rest of the lesions.

## DISCUSSION

The findings of this study show that FNAC has a higher chance or rate than trucut biopsy in detecting carcinoma of the breast. However, trucut biopsy is able to give a definite histology of the lesion and this correlates very well with the final actual histology. We would then be able to proceed to definitive surgery.

In this series, the results favour the use of FNAC compared to trucut biopsy due to the higher rate of detection. There are various reasons for this. Firstly, there is the technical problem of immobilising the breast lump while performing the biopsy. Especially for a smaller and mobile lump, it is easier to perform a biopsy using a 23G needle as opposed to using an 18G spring-loaded trucut biopsy needle. Secondly, there is the consideration of the patient's safety and potential complications of the procedure. For FNAC, the operator would not hesitate to aim directly for the breast lump even if the needle is perpendicular to the chest wall. However, when using a trucut biopsy needle, the operator may traverse a longer, more indirect route to reach the breast lump so as to avoid aiming the needle perpendicularly to the chest wall for fear of causing a pneumothorax or lung and cardiac laceration.

Thirdly, the FNAC is able to perform a multidirectional sampling of the lesion. This is because the needle can be moved in and out of the lesion and each time with a slight change in angle or direction, sampling a larger part of the lesion. However, the trucut biopsy needle can only perform a monodirectional sampling of the lesion with each firing of the spring-loaded mechanism. Fourthly, the use of the smaller and shorter FNAC needle improves the ability of the operator to aim and localise the tip of the needle to the lesion. This is opposed to the trucut biopsy needle which is both larger and longer. In fact the trucut needle may even push the lesion away and sample only normal breast tissue.

There is also more patient morbidity in terms of pain and bleeding when using a trucut needle as compared to an FNAC needle. FNAC can be performed without any anaesthesia and the puncture wound is minute as opposed to trucut biopsy where local anaesthesia is usually given and the wound larger. The cost of using either FNAC or trucut biopsy is not as simple as comparing the price of a syringe and a 23G needle against the price of a spring-loaded trucut biopsy needle. We have to take into account the cost of having a technician standing by in the clinic to stain the specimen and determine whether an adequate sample has been obtained. We also have to take into account the additional need of an excision biopsy procedure in the case of FNAC or a negative trucut biopsy. This may ultimately influence a particular institution's decision to choose and adopt either method.

Our results showed that there were no instances where a trucut biopsy was positive and an FNAC was negative. However, there were nine cases where the FNAC was positive and the trucut biopsy was negative. This implies a higher sensitivity and pick up rate of FNAC as compared to trucut biopsy. This also suggests that there is no need to perform a trucut biopsy on a breast lump which is negative on FNAC. If there is a clinical suspicion of malignancy, the next step should then be an excision biopsy.

**Table I – Comparison of fine needle aspiration cytology (FNAC) with trucut biopsy (trucut)-histology**

| | FNAC | Trucut |
|---|---|---|
| Benign | 2 | 8 |
| Inadequate | 2 | 5 |
| Suspicious | 10 | 7 |
| Malignant | 25 | 19 |
| Total | 39 | 39 |
| Sensitivity | 90% | 67% |

**Table II – Results of fine needle aspiration cytology (FNAC) and trucut biopsy (trucut)**

| | | FNAC | |
|---|---|---|---|
| | | Positive | Negative |
| TRUCUT | Positive | 26 | 0 |
| | Negative | 9 | 4 |

## CONCLUSION

The results of this study showed that FNAC had a 90% detection rate compared to 67% for trucut biopsy in detecting breast cancer. Trucut biopsy, however was able to give a histological diagnosis and the results correlated 100% with the final histology. However, in the setting of an outpatient clinic, we would like to recommend the use of FNAC for the diagnosis of suspicious breast lumps. With the results we would be able to advise the patient and recommend further treatment. We, however would like to stress the need for an excision biopsy to obtain a definitive histology before proceeding to definitive surgery as there have been cases of false positive results for FNAC.


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## REFERENCES


1. Ballo MS, Sneige N. Can core needle biopsy replace fine needle aspiration cytology in the diagnosis of palpable breast carcinoma? Cancer 1996; 78:773-7.
2. Patell JJ, Gartell PC. Fine needle aspiration cytology of breast masses: an evaluation of its accuracy and reasons for diagnostic failure. Ann R Coll Surg Engl 1987; 9:156-9.
3. Cusick JD, Dotan J. The role of trucut needle biopsy in the diagnosis of carcinoma of the breast. Surg Gynecol Obstet 1990; 170:407-10.
4. Gelabert HA, Hsiu JG. Prospective evaluation of the role of fine needle aspiration biopsy in the diagnosis and management of patients with palpable solid breast lesions. Am Surg 1990; 56:263-7.
5. Horgan PG, Waldron D. The role of aspiration cytologic examination in the diagnosis of carcinoma of the breast. Surg Gynecol Obstet 1991; 172:290-2.
6. Vega A, Garijo F, Ortega E. Core needle aspiration biopsy of palpable breast massess. Acta Oncol 1995; 34:1.31-4.
7. The uniform approach to breast fine needle aspiration biopsy. NIH Consensus Development Conference. Am J Surg 1997; 174:371-85.