International Surgery Journal
*Reddy CO et al. Int Surg J. 2017 Dec;4(12):4062-4065*
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20175411

**Original Research Article**

# Fine needle aspiration cytology (FNAC) in pre-operative diagnosis of breast lesions in Kadapa region of Andhra Pradesh, India

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**Received:** 16 September 2017
**Accepted:** 07 October 2017

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## ABSTRACT

**Background:** Various diagnostic methods have been developed to evaluate the palpable and non-palpable breast lesions, but Fine needle aspiration cytology of the palpable breast masses have become increasingly popular as a diagnostic technique to assess the breast lesions. To study the role of FNAC in diagnosis of breast lumps.
**Methods:** 60 female patients (11-74 years age group) with palpable breast lump were utilized to study the role of Fine needle aspiration cytology for clinically palpable breast lump was carried out in Fathima Institute of Medical Sciences, Kadapa, Andhra Pradesh.
**Results:** Fine needle aspiration cytology revealed benign in 22 patients, suspicious in 3 and 35 malignant lesions were 93.10% with false negative rate of 6.9% and false positive rate of 0%. The overall sensitivity of fine needle aspiration cytology in diagnosing the palpable breast lump in our study was 93.10%, specificity was 100%, positive predictive of 100% and negative predictive value of 90.47%.
**Conclusions:** FNAC is easy to perform and painless procedure and standard tool for diagnosis of breast lumps with high percentage of true positives without virtual complications.

**Keywords:** Aspiration, Breast, Cytology, Fine needle

## INTRODUCTION

Breast cancer is the second most common cancer among women after carcinoma of cervix in India. The incidence of the disease has shown a steep rise in women younger than 40 years of age. The fine needle aspiration cytology has become the investigation of choice for the diagnosis of the breast malignancy.[1,2] Fine needle aspiration cytology is defined as the study of cells obtained by a fine needle under vacuum. The specimen consists of a minute quantity of tissue or fluid. It is a study commonly used in breast, thyroid, and lymph nodes in neoplastic and non-neoplastic diseases.[3] Various benign and nonneoplastic lesion of the breast may present for needle aspiration. The benign lesions include fibroadenoma, fibrocystic disease, cysts, adenoma, intraductal papilloma, traumatic fat necrosis, fat degeneration and serous cyatadinoma. Benign lesions also include mesencymal neoplasms such as lipoma and granular cell myoblastoma.[4] The present study was undertaken to study the role of Fine needle aspiration in in diagnosis of breast lump lesions around Kadapa region of Andhra Pradesh.

## METHODS

60 Female patients (17-74 years age group) with palpable breast lump were utilized to study the role of Fine needle aspiration cytology for clinically palpable breast lump was carried out in Fathima Institute of Medical Sciences,

Kadapa, Andhra Pradesh between April 2015 to March 2016. In outpatient department a detailed history and thorough physical examination of the patient having palpable breast lump was carried out and entered in the proforma.

The patient is informed about the procedure and informed consent obtained from the patient before subjecting to fine needle aspiration cytology of the breast lump. The standard procedure was followed, making use of a 10ml syringe bearing a 22-gauze needle. The mass is located clinically and fixed in position with free hand. The skin over the puncture site is sterilized with spirit or betadine. The needle is placed over the skin and its direction determined before it is introduced in the mass in one swift motion.

This minimized the discomfort to the patient. Once the tumor is engaged full vacuum is applied, while the needle is moved back and forth in the mass with short strokes. The syringe is observed for appearance of any specimen. When this appeared, the syringe pistol is slowly released and allowed to return to the neutral position. The needle is then withdrawn from the mass. The needle is temporarily removed from the apparatus, and the syringe is filled with air by pulling back the plunger. The needle is reattached, and the specimen is expressed on to a glass slide. It is then immersed in a fixative 95% methyl alcohol.

## RESULTS

Author have utilized 10ml syringe bearing 22-gauge needle for fine needle aspiration cytology in the present study to assess the breast lumps as pre-operative diagnostic tool (Figure1).

**Figure1: Procedure of fine needle aspiration cytology with 22 gauges needle.**

Among 60 patients, 5 patients of breast lump were having family history of breast carcinoma (1- lobular carcinoma; 2-infiltrating ductal carcinoma and 2-benign breast). The age distribution of breast lesions in our study showed 18 patients with both benign and malignant lesions between 31-40 years age group showed more significance when compared other age groups (Table 1).

**Table1: The age incidence of the patients with breast lesions.**

| Age (years) | Benign | Malignant | Total |
|---|---|---|---|
| 11-20 (17yrs) | 6 | - | 6 |
| 21-30 | 9 | - | 9 |
| 31-40 | 7 | 11 | 18 |
| 41-50 | - | 9 | 9 |
| 51-60 | - | 6 | 6 |
| 61-70 | - | 9 | 9 |
| >71 | - | 3 | 3 |
| Total | 22 | 38 | 60 |

The size of the breast lump ranged from 2 to 12cms. The benign lesions ranged between 2 to 6cms. 63.7% of the benign lesions were less than 5cms. Malignant lesions were ranged between 4 to 12cms in its greatest diameter 78.94% of the malignant tumours measured 5 to 10cms in its greatest diameter (Table 2).

**Table 2: Size of the tumor in benign and malignant lesions.**

| Size (cms) | Benign | Malignant |
|---|---|---|
| <5cms | 14 (63.7%) | 7 (18.4%) |
| 5-10cms | 8 (36.3%) | 30 (78.94%) |
| >10cms | 0 (0%) | 1 (2.7%) |
| Total | 22 | 38 |

We have noted 22 benign lesions (36.4%) out of which fibroadenoma being the most common benign lesion that presents for needle aspiration. We have noted 38 malignant lesions (63.33%) of which infiltrating ductal carcinoma being the most common malignant lesion that presented for needle aspiration (Table 3).

**Table 3: Diagnosis of breast lump lesions (Fine needle aspiration cytology).**

| Diagnosis | No. Patients with Prediction |
|---|---|
| Benign | 24(False negative-2) |
| Suspicious | 3 (Malignancy Confirmed with HP) |
| Malignant | 33 (False Positive-0) |
| Total | 60 |

HP-Histopathological Examination

The predictive value (Positvie-100%; Negative-90.47%) in the present study showed with sensitivity 93.10% and specificity of 100% with fine needle aspiration cytology in breast lump lesions.one case among 60 fine needle aspiration cytology reported inadequate sampling with rate of 2%. leads to accuracy rate in FNAC is 98% calculated. Fine needle aspiration cytology showed the

suspicious, atypical, benign and malignant cells differentiation was noted (Figure 2).

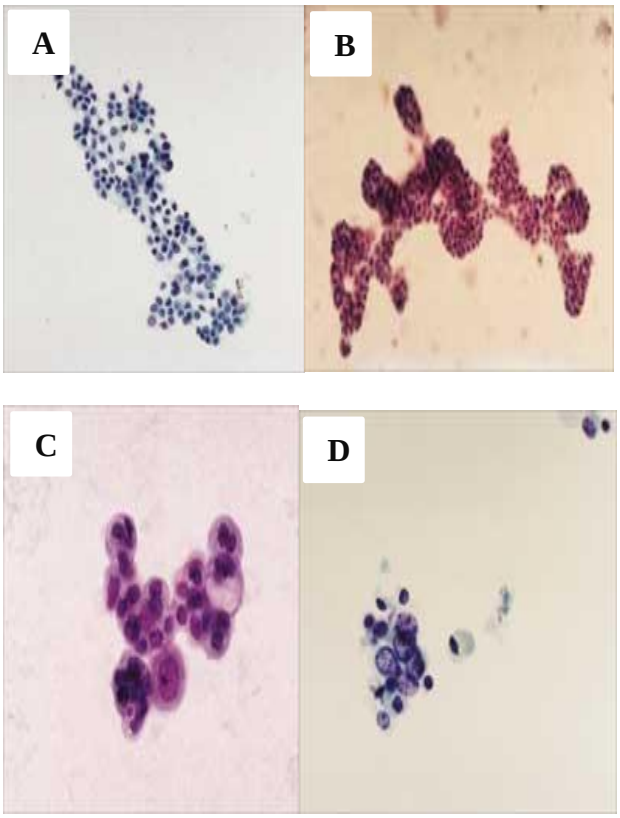


**Figure 2: Fine needle aspiration cytology diagnosis, A) Benign, B) Atypical, C) Suspicious, D) Malignant.**

## DISCUSSION

Analysis of the cytological reports in various series confirms the very high diagnostic accuracy of fine needle aspiration cytology. The accuracy of the diagnosis in patients with malignant breast disease is in the range of 85 to 90% in most of the series. High proportion of unsatisfactory samples (48%) with doctors who performed FNAC occasionally was reported in previous studies.[5] FNAC results were influenced by the number of needle manoeuvres performed with less than ten needle manoeuvres being associated with a 54% unsatisfactory aspiration rate, as compared to 25% when more than ten manoeuvres were performed and concluded that experience and technique are the most important factors in obtaining a satisfactory aspirate from breast lumps.[6]

Sensitivity of FNAC increased and inadequate samples decreased when pathologists took the samples for cytodiagnosis.[7] The influence of training and experience in aspiration cytology of the breast with a maximum influence on sensitivity values which dropped sharply from 98.2% to 75% with an untrained person performing the aspiration.[8,9] The accuracy of the needle tip in localizing the lump is very high (98%), the diagnostic accuracy of fine needle aspiration cytology can be increased by performing FNAC under Ultrasound guidance.[10,11] Size of the needle used for FNAC has often been a point for discussion since patient comfort and patient friendliness is an important aspect of FNAC as a superior diagnostic procedure. In our study we have used the 22-gauze needle for better diagnosis when compared to previous studies.[10,12] The present study confirms the accuracy and clinical utility of fine needle aspiration cytology in the management of benign and malignant breast diseases. The high rate of diagnostic accuracy and other predictive values in our study is similar to those in various other published series.[13]

## CONCLUSION

Fine needle aspiration cytology procedure is safe, atraumatic and repeatable. This can be carried out in outpatient department and better treatment can be outlined prior to surgical intervention.

## ACKNOWLEDGEMENTS

Authors would like to thank all the Faculties of department of surgery and pathology, FIMS, Kadapa, Andhra Pradesh, India.

*Funding: No funding sources*
*Conflict of interest: None declared*
*Ethical approval: The study was approved by Institutional Ethics Committee*

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**Cite this article as:** Reddy CO, Reddy GCM. Fine needle aspiration cytology (FNAC) in pre-operative diagnosis of breast lesions in Kadapa region of Andhra Pradesh, India. Int Surg J 2017;4:4062-5.