



## STUDY OF EFFECTIVENESS OF FNAC IN DIAGNOSIS OF PROSTATIC DISEASE

## Surgery

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## ABSTRACT

**Background:** Prostatic carcinoma is an important growing health problem, presenting a challenge to surgeons. Prostatic carcinoma is one of the most important causes of mortality in elderly men mainly because of the late detection despite of the fact that it is a potentially curable disease. Fine needle aspiration cytology (FNAC) is an easy to perform outpatient procedure requiring no expensive equipment or anesthesia.

**Objectives-** The present study was carried out in an attempt to evaluate the effectiveness of fine needle aspiration cytology in the diagnosis of prostatic lesions.

**Materials and Methods:** The present study has been performed on the fifty (50) patients, admitted in the surgical wards of , ESIC Hospital Basaidarapur New Delhi 2018-2019 with complaints of LUTS, in whom there was found to be a suspicion of malignancy of the prostate gland, in the form of palpable nodule or area of induration, during digital per rectal examination..

**Results:** Out of 32 cases of BPH on core biopsy, 29 cases were diagnosed as BPH on FNAC, 2 were diagnosed as adenocarcinoma on FNAC and FNAC of 1 case was not available. So accuracy of FNAC for BPH was 90.62%. accuracy of FNAC for adenocarcinoma was 70.00%.

**Conclusion:** FNAC is a very useful, simple, cheap, repeatable technique in diagnosing accurately the prostatic lesions and can avoid an open biopsy in many cases reducing patient morbidity and increasing cost effectiveness of the treatment.

## KEYWORDS

Benign prostatic hyperplasia, prostatitis, prostatic cancer, LUTS (lowe urinary tract symptoms), FNAC (fine needle aspiration cytology)

## AIM

This study was carried-out to evaluate the diagnostic accuracy of fine needle aspiration cytology (FNAC) and the role of FNAC in the diagnosis of prostatic lesions in 50 patients.

## INTRODUCTION

Prostate cancer is the most commonly diagnosed cancer, making this disease a significant public health issue. Unfortunately, the anatomical location of the prostate does not lend itself to straight forward examination. It is the second leading cause of cancer death in man. Cancer of prostate is said to have been first acknowledged in 1817. The prostate gland is located between the base of the bladder and the rectum and surrounds the proximal part of the urethra. The two ejaculatory ducts transit through the glands. Anatomically the prostate may be divided into five poorly defined lobes namely the anterior, median, posterior and two lateral lobes. The functional concept of the prostate given by Mc NEAL. Most carcinoma arise in the peripheral zone of the prostate where as benign hyperplasia exclusively involves the transitional zone of the prostate. Prostate represents the major organ for most of the surgical problems in the field of urology. It is the favored site for neoplastic growths and infections. For understanding the etiopathology of the prostatic diseases knowledge about the embryology anatomy, histology and physiology is essential. For proper management of the prostate diseases many investigations like per rectal examination, transrectal ultrasonography, fine needle aspiration cytology, core biopsy, serum enzyme estimations like prostate specific antigen, prostate associated antigen, acid phosphatase and cysto pan endoscopy (CPE) examination are available. Among all the above investigations tissue diagnosis obtained by aspiration cytology and truecut biopsy by transrectal route are very important to plan the management. The purpose of FNAC is to obtain diagnostic material for cytological study. Initially FNAC was used to diagnose only palpable lesions. The first attempt at cytological diagnosis of prostate was by transperineal approach by Ferguson in 1930. The technique of FNAC of prostate was introduced by Franzen, Gietz and Zajicek in 1960. Later it was replaced by trans rectal route and popularized by Franzen instrumentation . It is a safe, simple, easy to perform as outpatient procedure and causes less discomfort to the patient, the risk of complications is also very low and the patient was not subjected to radiological exposure. This procedure has a high diagnostic accuracy as many studies revealed that it allows prostatic core biopsy to be obtained in arrange of 66-97% of accuracy.

## MATERIAL AND METHOD

Present study has been performed on the patients, admitted in the

surgical wards of ESIC Hospital Basaidarapur New Delhi during 2018 to 2019 with complaints of prostatism (LUTS), in whom there was found to be a suspicion of malignancy of the prostate gland, in the form of palpable nodule or area of induration, during digital per rectal examination. Patients underwent Needle core biopsy and FNAC. Fifty (50) Cases of Prostate enlargement benign, premalignant and malignant were included in this study. The selection of cases will be random.

*Collection of core biopsy of prostate*

The patient was explained the whole procedure and its importance regarding management of patients' problems and advised to take a light evening meal and a mild laxative. In the next morning, after passing the motion, the patient underwent digital per rectal examination to see whether the rectum was empty; if not so, an enema was given to him to cleanse the rectum. After that, patient was given a shot of injection gentamycin (80 mg. IM). Patient was positioned either in left lateral or in lithotomy position. The syringe and needle were wetted by aspirating one ml. of 0.90% saline, which was subsequently returned to its source. (It decreases the frequency of clotted samples). Then cores were obtained by automated spring loaded 18 gauge biopsy gun with help of left index finger of double gloved hand. The Core Biopsies were processed in the department of pathology ESIC Hospital Basaidarapur New Delhi. Method of processing for Biopsy specimen-

1. Fixation
2. Processing
3. Cutting and Mounting
4. Staining-Staining procedure was same for FNAC and Biopsy section

*Collection of FNAC of prostate*

The aspiration of prostate was done with help of Franzen's instrument with 22 gauge 20 cm. long flexible needle. In lithotomy position lubricated left index finger of double gloved hand with instrument was inserted slowly and carefully into the rectum. The suspected area of prostate was palpated with the index finger after which the needle was advanced into lesion with the plunger of syringe down. Negative pressure was obtained by pulling on the syringe plunger in order to aspirate the material on to the needle before withdrawing the needle from prostate the negative pressure was released. The smears were prepared from needle content and processed as alcohol fixed smears. The smears were stained with Giemsa stain and H&E stain.

## RESULTS

**Distribution of patients according to prostatic lesion on Core biopsy prostate and FNAC prostate**

Table-1

Lesions	No of cases	Percentages of cases
Adenocarcinoma	10	20.00%
BPH	38	76.00%
Chronic inflammation	02	04.00%

In present study maximum no. of patients were of BPH (76.00%) and 20.00% were of carcinoma and 04.00% were of chronic information.

Table- Distribution of cases according to FNAC Findings

Lesions	Total positive cases on core biopsy	No of cases with positive FNAC findings	No of cases with negative FNAC findings	Total
Adenocarcinoma	10	07	03	10
BPH	32	29	03	32
Chronic inflammation	02	02	00	02

Core biopsy of 5 cases and FNAC of one case was unavailable/unsatisfactory out of these 5 cases; all 5 cases were diagnosed as BPH on FNAC. FNAC of 1 case was not available which was diagnosed as BPH on core biopsy. Out of 32 cases of BPH on core biopsy, 29 cases were diagnosed as BPH on FNAC, 2 were diagnosed as adenocarcinoma on FNAC and FNAC of 1 case was not available. So accuracy of FNAC for BPH was 90.62%. Out of 10 cases of adenocarcinoma on core biopsy FNAC of all 10 cases was available and out of these 10 cases, 7 cases were diagnosed as adenocarcinoma so accuracy of FNAC for adenocarcinoma was 70.00%. Out of 2 cases of chronic inflammation 02 were diagnosed as chronic inflammation so accuracy of both core biopsy and FNAC is 100.00%.

## DISCUSSION

Digital rectal examination (DRE) is valuable clinical method to diagnose the prostatic abnormality, but differentiation between benign and malignant lesions by DRE alone cannot be made accurately. The accuracy of digital examination of prostatic nodules is only 50%. The serious limitation is lack of sensitivity i.e. false negative results. Hence all palpable nodules of prostate should be followed by cytological or tissue diagnosis. FNAC not only determines the etiology of prostatomegaly but also facilitates the detection of small cancer nodules which can be completely cured by surgery. In present study FNAC of 44 patients were obtained and core biopsy of 45 patients were obtained. Core biopsy 5 cases and FNAC of 1 case was unavailable/unsatisfactory. So 44 cases have both FNAC and core biopsy available. Out of these 44 cases 10 cases were diagnosed adenocarcinoma (22.72%). And 32 cases were diagnosed as BPH (72.72%) and 2 cases were diagnosed as chronic prostatitis (4.54%). Out of 10 cases of adenocarcinoma on core biopsy FNAC of 7 cases were showing results of adenocarcinoma (70.00%) and FNAC of 3 cases were showing BPH (30.00) and out of 32 cases of BPH on core biopsy, FNAC of 29 cases was showing BPH (90.62%) and FNAC of 3 cases was showing adenocarcinoma (09.37%). 2 cases of chronic prostatitis was found on core biopsy and FNAC of these 2 cases shows similar results to core biopsy. These results were correlated with study of T. Islam *et al* who stated the accuracy of FNAC was 83% on his study of Corten HB *et al* (1986)<sup>1</sup>. Also shows 91% of correlation between FNAC and histopathological studies.

The present study also correlated with study of Lee F *et al* (1987)<sup>2</sup> who studied that cancer diagnosis was 53% with cytological evaluation. The present study also correlated with study of Singh N *et al*<sup>3</sup> who stated that accuracy of diagnosis on FNAC for benign and carcinoma prostate was 98.33% and 81.81% respectively. The present study also correlated with study of M layer *et al* (1994)<sup>4</sup> who stated 95.6% of accuracy of FNAC diagnosis. The present study also correlated with study of Piaton MD *et al* (1993)<sup>5</sup> who stated that FNAC was positive in 87% of carcinoma. The present study also correlated with study of Polito M *et al*<sup>6</sup> who found 97.5% and 94.7% accuracy of FNAC for adenocarcinoma and BPH respectively. This study also correlated with study of D Engelsteine *et al* (2008)<sup>7</sup> who found on FNAC accuracy of 81% for cancer patients.

## CONCLUSION.

Fine needle aspiration cytology is easily available and inexpensive procedure. It is a reliable method in the diagnosis of prostatic cancer. Its positive results are relatively more reliable than the negative ones. It can avoid an open biopsy in many cases reducing patient morbidity and

increasing cost effectiveness of the treatment.

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