

## Prevalence of Voiding Dysfunction After Finger-Guided Prostate Needle Biopsy in Nigerian Men

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### Abstract

**Background:** Prostate biopsy is the standard procedure to detect prostate cancer. Opinion is still divided if voiding disorders are part of the major complications worthy of attention. We investigated the prevalence of Lower Urinary Tract Symptoms [LUTS] in men that underwent Finger-Guided Prostate Needle Biopsy [FGPNB] in Nigeria.

**Materials and Methods:** The study included 79 patients that underwent transrectal FGPNB used in the diagnosis of prostate cancer. The indications for the prostate biopsy were abnormal digital rectal examination and/or an elevated total serum prostate specific antigen (PSA) level ( $\geq 10$  ng/mL). The participants received prophylactic infusion of 100 mls of 200 mg ciprofloxacin 30 minutes to one hour before the biopsy. Peri-anal nerve block through local infiltration of lignocaine with adrenaline was used as anaesthesia.

**Results:** Age range was 42-98 years with mean age of  $67.4 \pm 11.2$  years. Cancer detection rate was 67.1%. Prevalence of moderate LUTS pre-biopsy was 36.7%; one week after biopsy was 40.5%. Prevalence of 51.9% and 53.2% was recorded a month and three months post biopsy respectively. Moderate severity of LUTS was most prevalent in the first and third month post-biopsy.

**Conclusion:** There was a progressive worsening of moderate symptomatology post biopsy in Nigerian men who had prostate biopsy.

**Keywords:** Biopsy; Finger-guided; Prevalence; Prostate; Voiding disorders

### Introduction

Trans-rectal prostate biopsy is still the standard urological procedure for detecting prostate cancer [1]. The procedure is relatively safe with few major complications [2,3]. While some have reported that prostate biopsy does not affect lower urinary tract symptoms [4], others have recorded a risk of short-term worsening of voiding dysfunctions after TRUS biopsy [5-8].

In most developed countries, finger-guided prostate needle biopsy [FGPNB] is still being practiced due to paucity of Trans-rectal ultrasound [TRUS] facility. There is little or no record of voiding dysfunction after the procedure. It is important to determine the voiding functions post biopsy.

This study was to investigate the development of Lower urinary tract symptoms [LUTS] after prostate needle biopsy in Nigerian men. To the best of our knowledge, this is the first study that reported the prevalence of voiding dysfunction after prostate needle biopsy in this country.

### Materials and Methods

This is a prospective study of men who underwent prostate biopsy at the urology clinic of Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria.

The study was conducted between January and December, 2016.

### Inclusion criteria

1. Patients who were not on urethral catheter.
2. Patients aged 50 years & above, with serum PSA > 10 ng/ml which was our practice in low risk patients for prostate biopsy.
3. Patients with suspicious digital rectal examination [DRE] with any level of PSA (All DREs were done with empty bladder).
4. Patients who have not undergone prostate biopsy in the last four weeks.

### Exclusion criteria

1. Patients who have Parkinson's disease, stroke, encephalitis, or temporal lobe epilepsy.
2. Patients who have brain tumors, dementias, Alzheimer's disease, Shy-Drager syndrome, and head injury.
3. Patients with a spinal cord injury especially, those with complete lower cord lesions plus other disorders at the spinal level (e.g., spina bifida, disc herniation, syringomyelia, tumor, transverse myelitis, and multiple sclerosis).
4. Patients who did not give consent.

5. Patients who were on alpha blockers or 5-alpha reductase inhibitors that could affect the voiding pattern.

## Data Collection and Procedure

### A. Biopsy procedure

Aspirin and NSAIDs were discontinued for 7 days prior to the biopsy in patients who were on them. The single-dose regimen of 100 ml of 0.2 g ciprofloxacin was administered shortly before the procedure. Patient was placed on a left lateral position while routine cleansing and draping done.

Twenty millilitres (20 mls) of 1% xylocaine with adrenaline was withdrawn and infiltrated around the peri-anal region to block the pudendal nerve that supply the external sphincter muscle at the 3,6,9 and 12 o'clock using 23 G gauge needle with 10 mls syringe. This caused paralysis of the anal sphincter and allowed easy access to the prostate gland.

About 3-5minutes was allowed for the anaesthetic effect to take and a size 14 gauge tru-cut needle (Disposable guillotine needle for coaxial soft tissue biopsy with semi-automatic action 14G x 20 cm.VigeoS-1. Via Dell'Alpino, made in Italy) was guided into the site of the nodule or any other suspicious areas [The plastic tubing served both as a carrier and guide for the tru-cut needle which was aided into the site by the lubricated left index and middle fingers] and the biopsy was taken. The procedure was repeated at different sites until reasonable amount of tissue was taken. An average of six sites was sampled and the tissue placed inside a formalin-contained specimen bottle for histological analysis. All the biopsy was done by the lead author (Figure 1).

### B. International prostate symptoms score (IPSS)

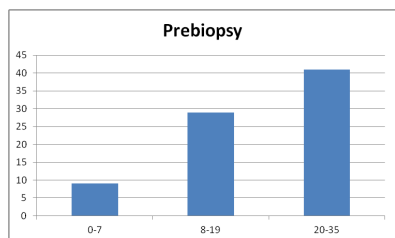
It is also recorded on the day of the biopsy and week 1,4 and 12 after the biopsy (Figure 2-4).

All the clinical records including age, IPSS, and bother scores were entered into a proforma.

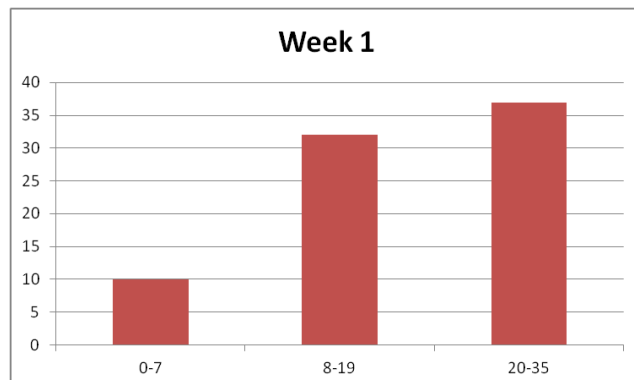
Main outcome measurement or end points:

IPSS score of <8 means mild form of LUTS; IPSS score of 8-19 means moderate form of LUTS and IPSS of 20-35 means severe form of LUTS.

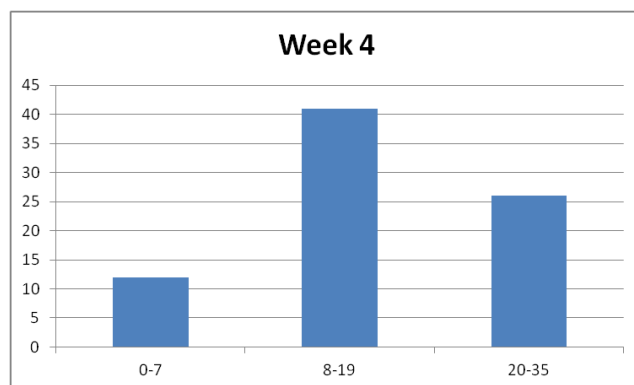
**Note:** Legends to figures: 0-7=mild symptoms; 8-19=moderate symptoms; 20-35=severe symptoms.



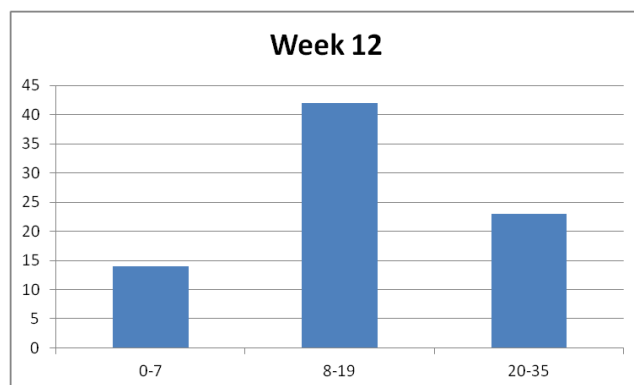
**Figure 1:** Is the frequency distribution of IPSS according to severity of symptoms. It shows that the severe LUTS was the most prevalent at pre-biopsy.



**Figure 2:** Is the frequency distribution of IPSS one week after the biopsy. Severe LUTS was the most prevalent.



**Figure 3:** Is the frequency distribution of IPSS according to severity four weeks after the biopsy. It shows that moderate LUTS was the most prevalent.



**Figure 4:** Is the frequency distribution according to LUTS severity week 12/3 month post biopsy. It shows that moderate voiding disorder was the most prevalent.

## Ethical issue

Written consent was obtained after adequate information had been given to the patient about the procedure and possible complications/benefits.

Ethical Committee of Ekiti State University Teaching Hospital, Ado-Ekiti gave the ethical approval.

## Statistical analysis

The data obtained were analyzed using the SPSS statistical Windows Version 19.0 (SPSS Inc, IBM, UK). Dichotomous and ordinal variables

Severity of LUTS	Pre-biopsy	Week 1	Week 4	Week 12
<8	9 (11.4%)	10 (12.7%)	12 (15.2%)	14 (17.7%)
≥ 8	70 (88.6%)	69 (87.3%)	67 (74.8%)	65 (82.3%)
Prevalence 0-7	N (%) 9 (11.4)	N (%) 10 (12.7)	N (%) 12 (15.2)	N (%) 14 (17.7)
8-19	29 (36.7)	32 (40.5)	41 (51.9)	42 (53.2)
20-35	41 (51.9)	37 (46.8)	26 (32.9)	23 (29.1)

**Table 1:** Prevalence of LUTS according to period of biopsy.

## Discussion

Notable complication following prostate needle biopsy was voiding disorders which necessitated the recommendation of commencement of prophylactic alpha-blockers routinely before the biopsy by some authors [9].

We therefore embarked on this study to determine the prevalence of Lower Urinary Tract Symptoms [LUTS] after finger-guided prostate needle biopsy among Nigerian men who underwent prostate needle biopsy especially because most of our patients presented at the advanced stages. It was revealed that the prevalence of LUTS pre-biopsy was 88.6%; one week after biopsy was 87.3%. Prevalence of 74.8% and 82.3% was recorded at week 4 and week 12 post biopsy respectively. This high prevalence pre and post biopsy was an indication that voiding prevalence in this study may not necessarily be procedure related alone. This is similar to the findings of Bozlu who reported that voiding impairment was not limited to week 1 only but also seen in week 4 [9]. There is no clear cut reason for these findings but it may be that the voiding impairment may be due to a co-existing benign prostatic enlargement in these patients. A future study is required to confirm this. However, the prevalence of 87.3% in week 1 in this study was higher than that of Bozlu et al. [9] of 42.4% and Efeoy et al of 42.5% in patients who were not on alpha-blocker prophylaxis [9,10]. Although, Bozlu et al. [9] was also a prospective study like ours, there was no record of pre-biopsy prevalence of LUTS in their study to be able to state categorically if their prevalence was less than our study. But comparing the population size =66 [Bozlu et al. [9]; our study=79], our study was better powered and may be partly responsible for the higher prevalence in our study. Nonetheless, the exact mechanism of the biopsy-related voiding impairment has not been clearly defined. However, instrumental trauma to the prostate gland during biopsy which could cause increases in bladder outlet resistance and voiding difficulty has been implicated [11,12].

were analyzed using Chi-square test or Fishers' exact test. P-values <0.05 were considered as statistically significant.

## Results

Age range was 42-98 years with mean age of  $67.4 \pm 11.2$  years. Cancer detection rate was 67.1%.

More importantly, unlike the prevalence of LUTS that was persistently high pre and post biopsy, moderate severity of LUTS showed a worsening trend post-biopsy in this study. This trend is similar to that of Dobruch J et al and Wadhwa et al who recorded the most prevalent moderate LUTS among European men who had prostate biopsy [13,14]. No clear reason has been adduced for these findings except that Dobruch found that most men with localized prostate carcinoma are found in this group of LUTS [13]. However, all our patients presented as advanced stage. The reason for the worsening trend of moderate LUTS requires further research.

Some of the limitations to this study include the following: 1. some of these patients may have been commenced on alpha blockers after the biopsy. This would have reduced the prevalence and severity of LUTS as the week went by. 2. Being a Hospital based study; a community study would give a superior finding.

## Conclusion

There was a high prevalence of LUTS pre and post biopsy but with a worsening trend in the moderate form post biopsy among patients who underwent finger-guided prostate needle biopsy in Nigeria. Patients should be counseled on the possibility of increased moderate form of LUTS post biopsy and use of alpha blockers to ameliorate this problem should be a wise decision.

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