

# CORRELATION OF INTERNATIONAL PROSTATE SYMPTOM SCORE WITH INTRAVESICAL PROTRUSION OF PROSTATE IN PATIENTS WITH BENIGN ENLARGEMENT OF PROSTATE

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## Abstract:

**Objective:** To determine the correlation of international prostate symptom score with intravesical protrusion of prostate.

**Methods:** This prospective clinical study was performed on 60 elderly patients presented with LUTS suggestive of Benign Enlargement of Prostate. Their evaluation included DRE, IPSS, Uroflowmetry (Qmax), serum PSA measurements and trans abdominal ultrasound scan. Statistical analysis was performed by SPSS version 13 using Chi square test and scatter plots together with Spearman's correlation coefficients were used to assess the relationship between IPP and IPSS.

**Results:** Mean age of the patients was 66.7+9.85 years, IPSS 23.6+6.53, mean prostatic volume was 60.23+38.16 mL, Qmax 7.98+3.87, PVR was 163.18+141.73 mL. Fifty percent of patients had severe degree (>10mm) of intravesical protrusion of the prostate, 30% had moderate and 20% had mild IPP. There was significant positive correlation between IPSS and IPP ( $r=0.698$ ,  $P < 0.001$ ).

**Conclusion:** From this prospective clinical study it is revealed that IPP had strong correlation with IPSS.

**Key words:** International Prostate symptoms score, Benign enlargement of prostate, IPP.

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## Introduction:

Lower urinary tract symptoms develop through benign prostatic Enlargement and bladder outlet obstruction[1]. Enlargement does not occur homogeneously, however, Prostatic protrusion into the bladder often occurs as a result of morphological changes[2]. It is suggested that prostatic mass with greater protrusion causes more severe voiding dysfunction causing more serious bladder outlet obstruction[3-4].

Several symptoms indices were formulated by different study group of different countries used for assessment

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of BPH symptoms to evaluate the degree of bladder outlet obstruction. In 1992 the American Urological Association (AUA) symptoms score was published and it has been endorsed by the World Health Organization as the international prostate symptoms score (IPSS).

Currently, evaluation and selection criteria for treatment of benign prostatic enlargement include the international prostate symptom score (IPSS), uroflowmetry and postvoid residual urine (PVR) or urodynamic study (AUA practice guideline committee, 2003) and presence or absence of complications such as, haematuria, recurrent urinary tract infection, upper tract changes or renal insufficiency are also considered[5]. Urodynamic study in the international gold standard in the diagnosis of BOO[6].

The most extensively investigated and routinely available clinical indices for BOO are prostate volume (PV) and serum Prostate Specific Antigen (PSA)[7].

Anatomical configuration was in the form of Intravesical prostatic protrusion (IPP) and could affect voiding [8]. IPP is caused by the enlarging median lobe. It has been postulated that it is the grade of the IPP that determines the degree of bladder outlet obstruction more than the prostate volume [9].

In this study we aimed to correlate IPP with International Prostate Symptom Score (IPSS).

**Study Methods:**

The present study is a prospective clinical study carried out in the Department of Urology, Shaheed Suhrawardy Medical College Hospital, Dhaka from January 2016 to December 2017. The study population of this study was patients presented with lower urinary tract symptoms suggestive of BPH who attended in the outpatient department of Urology.

Initially the patients were evaluated by history taking ,physical examination and some relevant investigations. Patients with a known history of lower urinary tract surgery, prostate cancer and bladder carcinoma were excluded. The physical examination including DRE was done to exclude tumor and neurological examination was done to exclude any neurological deficit and neurologically related bladder dysfunction. IPSS was obtained with the help of IPSS questionnaire.

Trans abdominal ultrasonography was done to evaluate Bladder, Prostatic volume (PV) ,IPP and PVR was measured . IPP was measured in mm and bladder capacity had to have 150mL or more. Patients were divided into three groups according to the severity of the protrusion. Intravesical protrusion <5mm considered mild, 5-10mm moderate and >10mm considered severe. Uroflowmetry and PSA was also measured.

Statistical analysis was performed by SPSS version 13 using Chi square test and scatter plots together with Spearman’s correlation coefficients were used to assess the relationship between IPP and IPSS.

**Results:**

The mean age of the patients was 66.7+9.85 years (range 48 to 85 years). The mean IPSS was 23.6+6.53 (range 11-35). The mean prostatic volume (PV) was 60.23+38.16 (range 32-220mL) and Intravesical protrusion of prostate (IPP) was 13.43+10.05 mm (range 3mm-40mm).

**Table-I**  
*Distribution of patients by IPSS (n=60)*

IPSS	Frequency	Percent
Moderate (8-19)	18	30.00
Severe (20-35)	42	70.00
Total	60	100.00

IPSS was obtained with the help of IPSS questionnaire during initial evaluation. Moderate symptoms were in 30% patients and severe symptoms were in 70% cases.

**Table-II**  
*Distribution of patients by IPP (n=60)*

IPP grade (mm)	Frequency	Percent
Mild (<5)	12	20.00
Moderate (5-10)	18	30.00
Severe (>10)	30	50.00
Total	60	100.00

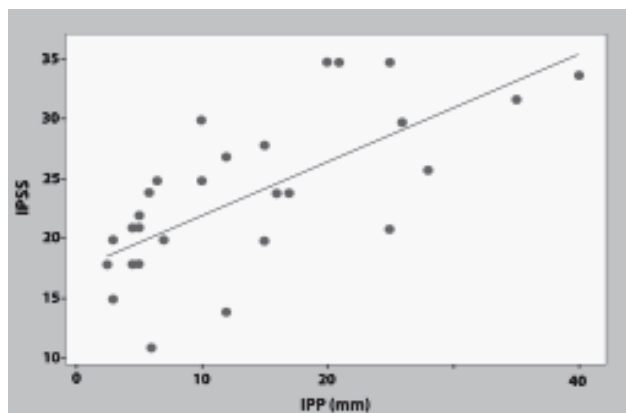
This table shows that 50% patients had severe (>10mm) IPP.

**Table III**  
*Distribution of IPSS by IPP (n=60)*

Grading of IPSS	Grading of IPP			Total
	Mild	Moderate	Severe	
Moderate (8-19)	12 (100.00)	4 (22.22)	2 (6.67)	18 (30.00)
Severe (20-35)	0(00.00)	14 (77.78)	28 (93.33)	42 (70.00)
Total	12 (100.00)	18 (100.00)	30 (100.00)	60 (100.00)

Chi square value=28.28, df=2, p value =0.001

This table shows that IPP has significant association with IPSS as 93.33% patients with severe IPP had severe symptoms.



**Fig.-1:** Correlation of IPSS with IPP (mm)

Pearson correlation = 0.689, P value < 0.001

The Karl Pearson correlation test showed  $r = 0.698$ ,  $p < 0.001$ , which signifies high degree of positive correlation between the IPSS and IPP.

#### Discussion:

IPSS is a simple tool in the evaluation of severity of symptoms due to Benign prostatic enlargement and worsening score may warrant intervention. The features of the gland such as defined by prostatic volume and configuration as defined by IPP are considered to further define the contribution of anatomic components to diagnosis of BOO. The protrusion of the prostate causes a ball-valve type obstruction. A strong bladder contraction force could open a channel between the lobes but tend to aggravate the ball-valve effect in BPH[10].

In the present study it was found that mean age was  $66.7 \pm 9.85$  years, mean IPSS was  $23.6 \pm 6.53$ , mean PV was  $60.23 \pm 38.16$  mL.

In the present study mean IPP was found  $13.43 \pm 10.05$  mm (range 3mm -40mm). Twenty percent patient had mild (<5mm) IPP, 30% had moderate (5-10mm) IPP and 50% patients had severe (>10mm) IPP. Patients with IPP>10mm had severe IPSS in 93.33% cases and IPP between 5-10mm had moderate IPSS in 77.78% cases. Pear Son correlation test between IPP and IPSS showed  $r = .698$ ,  $P < .001$ . So, in the present study there is a significant correlation of IPP with IPSS. Chia et al

found strong correlation of obstructive symptoms with IPP. In their study 94% of patients with IPP>10mm were obstructed in pressure flow study. Lee et al reported significant correlation between the storage symptom score and IPP. The results of these studies are similar with the results of the present study.

Lim et al also found good correlations between IPP, PS and PV when their indices were correlated with BOOI scatter plot, the correlation coefficient ranged from  $p=0.314$  to  $p=0.5007$ . Among then IPP had better correlation with BOOI. These results are more or less similar with the results of the present study. Shrestha et al found significant correlation between IPSS and IPP ( $r=0.354$ ,  $p=0.006$ ) and causing more obstructive symptoms[11]. The result of these studies are also similar with the result of the present study.

#### Conclusion:

From this cross-sectional study it is revealed that IPP had strong correlation with IPSS. So IPP may be a useful tool for patients with LUTS at initial evaluation for further cost effective management.

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