

## COMPARISON OF CONVENTIONAL URODYNAMIC STUDY AND ULTRASOUND FINDINGS IN MEN WITH LOWER URINARY TRACT SYMPTOMS

### Hypothesis / aims of study

The anatomical configuration of the prostate, specially the extent of intravesical protrusion of the prostate (IPP), could affect voiding. Previous studies have demonstrated that IPP can identify patients with bladder outlet obstruction (BOO),[1] thus we explored the relationship of the IPP with defined BOO during conventional urodynamic study.

The aims of this study were to determine the effect of IPP on voiding, and correlate its results with the ones of pressure flow studies, assessing the accuracy of ultrasound imaging method for diagnosing BOO.

### Study design, materials and methods

Forty-two men with lower urinary tract symptoms (LUTS) were prospectively evaluated by means of physical examination, including digital rectum examination, and neurological examination. All patients completed the International Prostatic Symptoms Score (IPSS) and Quality of Life (QoL) score. Patients with a known history of previous lower urinary tract surgery, prostate or bladder carcinoma, bladder calculi, or neurological deficit were excluded from the study. Patients underwent conventional urodynamic study for diagnosis of BOO. We calculated the number of Abrams-Griffiths to identify obstructed patients[2]. Abdominal ultrasound was then performed in all subjects and the IPP distance and prostate volume were measured and recorded. The degree of IPP was obtained by measuring the distance from the tip of the protrusion of prostate into bladder lumen to the base of the gland. Distance was recorded in millimeters. Prostate volume was calculated through automatic software measurement and expressed in cubic centimeters (cc).

The results were analyzed statistically for reliability and correlation utilizing Kruskal-Wallis test, Pearson's correlation coefficient and simple linear regression model.

### Results

Patients age ranged from 43 to 82 years with mean age  $64.8 \pm 8.5$  years and mean IPSS encountered was  $13 \pm 6.9$ . Mean prostatic volume was  $34.7 \pm 31.2$ cc. Twenty patients had BOO confirmed by the Abrams-Griffiths number and in those men, the mean IPP calculated was  $15.4 \pm 6.6$  mm, and mean prostate volume of  $53.6 \pm 32.9$ cc. Twelve patients with equivocal results for BOO had mean IPP of  $8.5 \pm 7.0$  mm and mean prostate volume of  $43.2 \pm 33.1$ cc; in the other 10 patients without obstruction, the mean IPP was  $7.6 \pm 8.5$  mm and mean prostate volume was  $29.8 \pm 19.4$ cc. Both IPP and prostate volume correlated significantly with the Abrams-Griffiths number ( $p = 0,016$  and  $p = 0,03$ , respectively).

### Interpretation of results

Measures of IPP and prostate volume demonstrated correlation with the presence or not of BOO. Although significant, statistical analysis revealed broad results, preventing adequate patient identification based solely on ultrasound measurements. Results yielded a great variation in prostate volume and IPP, either in obstructed and unobstructed patients. In patients with BOO confirmed on conventional urodynamic study, IPP correlated better with a greater Abrams-Griffiths number than prostatic volume.

### Concluding message

The IPP and prostatic volume assessed by transabdominal ultrasonography correlates significantly with BOO; but they should not be used as definitive variables in men with LUTS because of inconstancy. Its advantages are being a noninvasive and cost-effective method but further studies should be performed to achieve a definitive conclusion.

1. *BJU Int* 2002;**91**: 271-274
2. *BJU Int* 1999;**84**: 14-5

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**CLINICAL TRIAL REGISTRATION:** This clinical trial has not yet been registered in a public clinical trials registry.

**HUMAN SUBJECTS:** This study was approved by the HC Unicamp and followed the Declaration of Helsinki Informed consent was obtained from the patients.