

## POSITION RELATED CHANGES IN URINE FLOW-VOLUME RELATIONS IN MEN WITH SYMPTOMATIC BENIGN PROSTATIC ENLARGEMENT: IMPORTANCE OF AVERAGE FLOW RATES

### Hypothesis / aims of study

Voiding position has been reported to affect urine-flow volume relations in healthy men as well as men with benign prostatic enlargement; however the existing literature is controversial (1-3). It is important to assess, since it may have implications in proper interpretation of results of uroflowmetry and potentially management thereof. We assessed position-related changes in uroflowmetric parameters in men with symptomatic benign prostatic enlargement (BPE).

### Study design, materials and methods

Men with symptomatic BPE were enrolled after written informed consent. Patients with other diseases affecting structure or function of lower urinary tract (e.g. Diabetes Mellitus, Parkinsonism, vertebral disc prolapse, urethral stricture, bladder cancer and prostate cancer) were excluded. They underwent uroflowmetry in standardized fashion using digital uroflowmeter (Solar Silver, MMS International, the Netherlands) once in each of the three voiding positions (standing, sitting and squatting). Postvoid residual urine was measured using abdominal ultrasound (profocus, BK medical, Denmark).

### Results and interpretation

Total 17 men with mean ( $\pm$  SD) age  $63.9 \pm 7.1$  years and body mass index  $23.2 \pm 4.4$  kg/m<sup>2</sup> completed the study protocol. Their mean prostate volume was  $33.0 \pm 12.0$  ml, mean international prostatic symptom score (IPSS)  $22 \pm 8$ , mean global quality of life index (QOL)  $4.0 \pm 0.8$ . IPSS and QOL had significant correlation with absolute and corrected flow rates; the relation was strongest with absolute average flow rate. There was no statistically significant difference in any uroflow parameter with respect to voiding position (table 1).

### Concluding message

Voiding position does not affect uroflow parameters significantly in men with BPE. Average flow rates have stronger correlation with IPSS & QOL than maximal flow rates.

**Table 1: uroflow parameters in different voiding positions**

Parameter	Standing	Sitting	Squatting	P value
Qmax (ml/s)	$9.9 \pm 6.1$	$8.5 \pm 5.3$	$11.6 \pm 6.4$	0.352
Qave (ml/s)	$4.6 \pm 2.0$	$4.2 \pm 2.0$	$5.1 \pm 2.3$	0.476
Voided volume (ml)	$222 \pm 162$	$217 \pm 142$	$241 \pm 158$	0.887
Postvoid residue (ml)	$71 \pm 65$	$105 \pm 88$	$59 \pm 60$	0.164
Postvoid residue (% of bladder volume)	$24.7 \pm 19.1$	$31.8 \pm 22.8$	$20.4 \pm 15.2$	0.231
Corrected Qmax	$1.71 \pm 0.84$	$1.48 \pm 0.86$	$1.91 \pm 0.92$	0.368
Corrected Qave	$0.83 \pm 0.39$	$0.74 \pm 0.38$	$0.86 \pm 0.38$	0.666

### References

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Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	institute ethics committee, postgraduate institute of medical education and research, chandigarh, india
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes