

VARIATION IN URINARY FLOW ACCORDING TO VOIDING POSITION IN MALE PATIENTS WITH LOWER URINARY TRACT SYMPTOMS

Hypothesis / aims of study

We sometimes encounter patients who cannot void in bed immediately after surgery, probably because voiding is done in bed in the supine or the lateral position. We have encountered that patients with acontractile detrusor could void only with the bending forward position (similar to prone position) [1]. Thus voiding positions are thought to make voiding difficult in these subjects. It is important to study whether the urinary flow rate would vary according to voiding position. Previously, we have reported that the maximum urinary flow rate was highest in the prone position, followed by the standing, supine, and the lateral position in normal male volunteers [2]. The aim of the present study is to investigate whether or not urinary flow rate varies according to voiding position in male patients with lower urinary tract symptoms.

Study design, materials and methods

Thirty-three male patients with lower urinary tract symptoms aged 64 to 80 years were studied. The underlying disease of these patients included prostatic cancer (n=6), benign prostatic hyperplasia (BPH: before TUR-P, n=15; after TUR-P 12), and neurogenic bladder (n=4). Four of BPH patients were examined both before and after the surgery (TUR-P). The bed used was designed so that a hole could be bent at two points so that the subject could void in various positions. Urinary flow was measured with a portable uroflowmeter (P-flow). Each subject assumed 1-4 sessions of flows which included three flows with different voiding positions (standing, lateral, prone) in a random order. Basically, 3 sessions (1-4 sessions) of flows, with voided volumes of more than 150ml and with similar volumes were evaluated. For voiding in the lateral position, subjects were instructed to void while bending the upper leg to keep an open angle between the legs. All patients were also instructed to void without increasing abdominal pressure. Paired t-test was used for the comparison of uroflowmetric parameters in each position.

Results

Thirteen sessions of flows with voided volumes of less than 150ml were included because voided volumes in each voiding position were similar. Thus 91 sessions (i.e. 273 flows) were evaluated. Voided volume was 151 ± 73.3 ml in the lateral position, 176.8 ± 81.94 ml in the standing and 168 ± 83.54 ml in the prone position. Maximum flow rate was 8.66 ± 6.72 (mean \pm SD) ml/s in the lateral position, 11.2 ± 7.2 ml/s in the standing and 11.66 ± 7.836 ml/s in the prone position (Fig.1). Mean urinary flow rate was 5.043 ± 6.337 ml in the lateral position, 5.357 ± 3.442 ml in the standing and 6.082 ± 4.315 ml in the prone position. The maximum and mean urinary flow rates were greatest in the prone position, followed by the standing and the lateral positions. With regard to these parameters, significant differences were noted between the prone and the lateral positions (Table). Subjects were divided into 2 groups: those with bladder outlet obstruction (BOO) and those without BOO. The maximum flow rate of the prone position were highest among 3 voiding positions in the subjects with BOO and those without BOO, the same as the result of total subjects.

Interpretation of results

In this study, the prone position was found to make the highest maximum urinary flow rates, followed by the standing, and the lateral positions, in male patients with lower urinary tract symptoms. These results were found to be similar as normal volunteers in the previous study.

Concluding message

Voiding positions are thought to be important in treating patients with voiding difficulties. If patients have difficulty in voiding on the bedside in the prone or lateral position, voiding may be facilitated by the prone or bending forward position.

	Lateral	Standing	Prone
Group with BOO n=15	6.471±3.948	7.656±4.595 P<0.05 vs.Lateral	7.864±4.305 P<0.05 vs.Lateral P:NS vs,Standing
Group without BOO n=20	10.84±8.12	14.647±7.659 P<0.05 vs.Lateral	15.451±8.731 P<0.05 vs.Lateral P:NS vs.Standing
Total n=35	8.66±6.72	11.2±7.2 P<0.05 vs.Lateral	11.66±7.836 P<0.05 vs.Lateral P:NS vs.Standing

ml/s

Table: Comparison of maximum flow rate among 3 voiding position.

Subjects were divided with 2 groups: those with bladder outlet obstruction (BOO) and those without BOO.

References

1. The urodynamic evaluation of surgical outcome in patients with urinary retention due to central lumbar disc prolapse. *Neurourol. Urodyn* 22, 670-675, 2003.
2. Variation in urinary flow according to voiding position in normal males. *Neurourol. Urodyn.* 18, 553-557, 1999.