298

Matsuo T[1], Miyata Y[1], Watanabe S[1], Sagara Y[1], Ohba K[1], Sakai H[1]
1. *Department of Urology, Nagasaki University School of Medicine*

SYMPTOMS OF URINATION ARE UNLIKELY TO ALLEVIATE EVEN AFTER TRANSURETHRAL PROSTATECTOMY IN BPH/LUTS PATIENTS WITH URINARY BLADDER WEIGHT OF 65 G OR MORE

Hypothesis/aims of study

Among patients with benign prostatic hyperplasia (BPH)/lower urinary tract symptoms (LUTS), dysuria sometimes fails to alleviate even after surgical correction of the urethral obstruction (e.g., by transurethral resection of the prostate: TURP). This is probably because prolonged mechanical closure of the urethra renders it difficult for detrusor muscle to compensate for the obstruction, resulting in the reduction of detrusor muscle pressure. This means that in the presence of mechanical obstruction of the lower urinary tract, the volume of the urinary bladder smooth muscles and the urinary bladder weight increase at an early stage. Although the urinary bladder elevates its pressure (intravesical pressure) by increasing the smooth muscle weight, prolongation of obstruction or the presence of severe obstruction disturbs the urinary bladder compensation and stimulates the progression of urinary bladder fibrosis, possibly leading to reduction in the detrusor muscle pressure [1].
In the present study, transabdominal ultrasonography was carried out to examine the pre-TURP urinary bladder weight enabling postoperative improvement in the parameters of uroflowmetry (UFM) and to analyze the relationship between urinary bladder weight and intravesical pressure etc.

Study design, materials and methods

Patients with BPH/LUTS who underwent TURP at our facility were analyzed retrospectively. Excluding patients evidently having neurogenic bladder, 85 patients were enrolled to the study. Ultrasound-estimated bladder weight (USEBW) was measured transabdominally using a 7.5-MHz probe before and 3 months after TURP by using the method described elsewhere [1]. Presence/absence of improvement in urination after TURP from the preoperative condition was checked by UFM, by dividing the patients into the improved group and the unchanged group. In addition, urodynamic test was preoperatively carried out to determine the correlation between detrusor muscle pressure and USEBW.

Results

The patients were aged 73.3 ± 7.6 years. The length of time from appearance of urination symptoms to TURP was 75.6 ± 64.5 months. Preoperative prostate weight and resected tissue weight were 58.7 ± 23.2 g and 18.6 ± 8.5 g, respectively. Mechanical obstruction of the urethra was successfully corrected by surgery in all cases. Table 1 shows the data on each parameter before and after TURP. Table 2 shows the data on each parameter before and after TURP for the improved UFM group and the unchanged UFM group. USEBW had negative correlation with detrusor muscle pressure ($r = -0.48$, $p < 0.05$). When the minimum urinary bladder weight likely to result in no postoperative improvement in urination was determined, the cut-off urinary bladder weight of 65 g had a sensitivity of 87.0% and a specificity of 93.1%.

Table1. Comparison between preoperative and postoperative data in all subjects

	Preoperative	Postoperative	P
USEBW (g)	56.7 ± 27.7	49.6 ± 22.8	P < 0.01
Qmax (mL/s)	6.6 ± 3.7	14.0 ± 7.36	P < 0.001
Voided volume (mL)	135.5 ± 88.3	168.3 ± 89.1	P < 0.01
PVR (mL)	93.5 ± 95.5	45.6 ± 57.2	P < 0.001

Table2. Comparison between the unchanged group and the improved group

		Unchanged group N = 20	Improved group N = 65	P
Preoperative		77.6 ± 34.7	45.3 ± 18.8	P < 0.001
USEBW (g)	Postoperative	69.1 ± 25.5	40.6 ± 17.3	P < 0.001
P		P=0.07	P < 0.05	
Preoperative		7.9 ± 2.7	6.2 ± 3.9	P=0.11
Qmax (mL/s)	Postoperative	6.5 ± 3.5	16.4 ± 6.6	P < 0.001
P		P=0.06	P < 0.001	
Preoperative		138.1 ± 88.9	135.5 ± 90.9	P=0.99
Voided Volume (mL)	Postoperative	155.4 ± 71.5	182.2 ± 93.6	P < 0.001
P		P=0.09	P < 0.01	
Preoperative		81.6 ± 93.0	95.5 ± 96.6	P=0.61
PVR (mL)	Postoperative	60.8 ± 53.6	43.1 ± 60.4	P < 0.001
P		P=0.08	P < 0.001	
Intravesical pressure (cmH_2O)		50.2 ± 35.2[1)]	69.2 ± 28.4[2)]	P < 0.001

[1)] N = 11, [2)] N = 28

Interpretation of results

The improved group had significantly lower preoperative urinary bladder weight and significantly higher detrusor muscle pressure than those of the unchanged group. The improved group showed significant reduction in urinary bladder weight after

surgery, accompanied by improvement in Qmax, voided volume, and post-void residual urine. The unchanged group showed a tendency for reduction in urinary bladder weight after surgery, although this change was not statistically significant ($p = 0.07$). Voided volume and post-void residual urine (PVR) also tended to improve ($p = 0.09$ and $p = 0.08$, respectively). Because urinary bladder weight is inversely correlated with detrusor muscle pressure, improvement in UFM is unlikely in patients with urinary bladder weight of 65 g or more. Hence, it seems necessary to obtain informed consent before surgery for such cases because of the possibility that urinary symptoms fail to alleviate despite surgery.

Concluding message

Preoperative measurement of urinary bladder weight may enable screening of cases unlikely to show alleviation of urination symptoms in response to surgery. Although further analysis is needed, USEBW is a promising test replacing the conventional invasive tests such as urodynamic test.

References

1. Urology 1996:47:942-947

Specify source of funding or grant	**None**
Is this a clinical trial?	**Yes**
Is this study registered in a public clinical trials registry?	**No**
Is this a Randomised Controlled Trial (RCT)?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Nagasaki university hospital**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**