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INFLUENCE OF DETRUSOR OVERACTIVITY ON STORAGE SYMPTOMS FOLLOWING POTASSIUM-TITANYL-PHOSPHATE PHOTOSELECTIVE VAPORIZATION OF THE PROSTATE

Hypothesis / aims of study

Overactive bladder (OAB) symptoms occur in 52 to 80% of men with lower urinay tract symptoms (LUTS)/ benign prostatic hyperplasia (BPH) [1]. The clinical manifestations of BPH may include voiding or storage symptoms frequently due to detrusor overactivity (DO) [2]. Although voiding symptoms are more common in men with LUTS/BPH, storage symptoms such as OAB are more bothersome and more adversely affect the quality of life (QOL). Long-term trial have shown that transurethral resection of the prostate (TURP) improves storage symptoms, although to a lesser extent than voiding symptoms [3]. Recently, photoselective laser vaporization of the prostate (PVP) has gained popularity as a potential replacement of the TURP, the reference standard for managing patients with LUTS/BPH. However, there has been no research devoted specifically to the effects of PVP, performed for BPH, with regard to changes in storage symptoms. The aim of the present study was to evaluate the changes in storage symptoms after a PVP performed for BPH, and determine whether the presence of DO was associated with the changes in storage symptoms.

Study design, materials and methods

A total of 149 patients that underwent PVP were included in this retrospective study. All patients underwent a preoperative evaluation including transrectal ultrasound (TRUS) and multichannel video urodynamic study. The efficacy of the PVP was assessed at 1-, 3-, 6-, and 12-months postoperatively using the International Prostate Symptom Score (IPSS), uroflowmetry, post void residual (PVR), and 3-day frequency volume charts (FVC). To assess the subjective and objective treatment outcomes, and their durability based on the presence of DO, the patients were stratified into two groups (DO group versus non-DO group).

Results

By the IPSS, overall, all individual voiding symptom scores, subtotal voiding symptom score, total IPSS score and QOL index were significantly reduced compared to the baseline starting from 1 month after the PVP. Among the storage symptom scores, frequency and nocturia scores were significantly reduced compared to the baseline starting from 1-month after the PVP. By contrast, urgency and the subtotal storage symptom score were significantly reduced compared to the baseline starting from 6- and 3-months after the PVP, respectively. As expected, both the preoperative urgency and the subtotal storage symptom scores were significantly higher in the DO group (n = 39) than in the non-DO group (n = 110). Starting from 6-months after the PVP, the DO group was noted to have a significantly greater reduction in the subtotal storage symptom score than the non-DO group. When the improvement of storage symptoms was defined as a reduction of $\geq$ 50% in the total storage symptom scores by the IPSS, the percentage of patients with improvement of storage symptoms was 20.1%, 24.8%, 37.0%, and 37.3% at 1-, 3-, 6-, and 12-months after the PVP, respectively (Fig. 1). For the DO and non-DO groups, the percentage of patients with improvement of storage symptoms was 13.9%, 25.9%, 47.8%, and 52.9%, and 22.2%, 24.4%, 33.3%, and 33.3% at 1-, 3-, 6-, and 12-months postoperatively, respectively (Fig. 1). Starting from 6-months after the PVP, there was a tendency for the percentage of patients with improvement of storage symptoms to be greater in the DO group than in the non-DO group, although this difference was not statistically significant.

According to the FVCs, overall, daytime frequency and nocturia were significantly reduced, starting from 1-month after PVP. The reduction in the daytime frequency was significantly greater in the DO group than in the non-DO group even as late as 12-months postoperatively. The reduction in nocturia at 3- and 6-months after the PVP were significantly higher in the DO group than in the non-DO group. However, there was no significant difference in the reduction of nocturnal frequency at 12-months after the PVP between the two groups.

According to the uroflowmetry and PVR, both the maximum flow rate and PVR improved significantly starting from 1 month after the PVP in both groups.

Interpretation of results

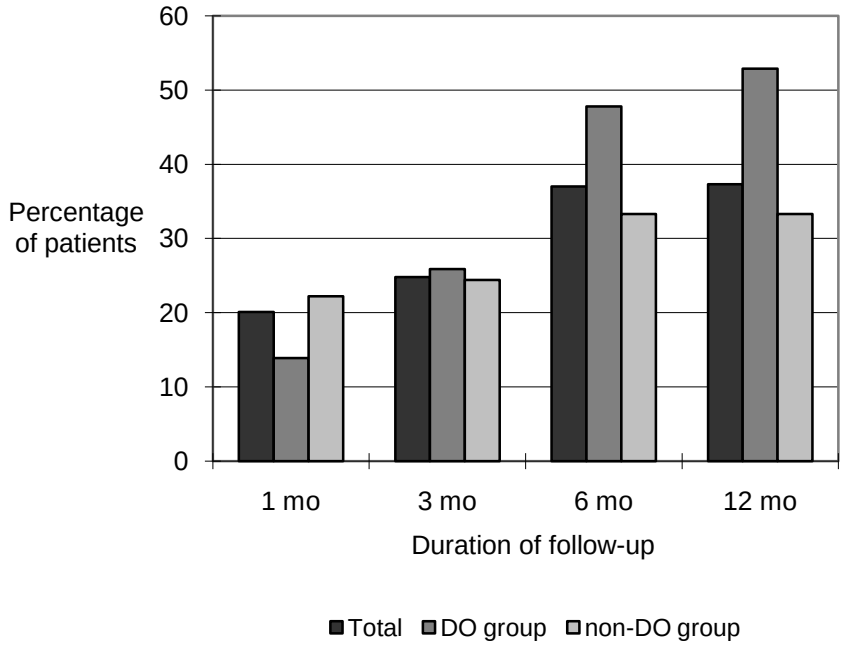
The previous long-tern trial noted that the improvement in storage symptoms (60% to 80%) was slower and less than improvement in the voiding symptoms (82.6% to 87.0%) at 3-years after a TURP [3]. Consistent with the findings of previous study, our study showed that there was a significant improvement in the storage symptoms although less and later (urgency in particular) than the voiding symptoms. The recent study suggested that permanent surgical ablation of abnormal sensory stimuli, from an anatomically altered prostatic urethra, would be beneficial [2]. In addition, they reported that a prostatectomy significantly reduced the incidence of DO from 68% at baseline to 31% at a mean follow-up of two years after the surgery, and the rate of de novo DO after the prostatectomy was only 9% [2]. Therefore, the denervation effects of the prostatectomy on the bladder neck and prostatic urethra, or the relief of obstruction by the prostatectomy may also apply to the improvement of storage symptoms after a PVP. However, there is another plausible explanation for the improvement of storage symptoms after PVP. The PVR decreased, and subsequently the time for bladder filling increased, which led to the reduction of frequency and nocturia; these features might have been secondary to the relief of obstruction.

In our study, there was a significantly greater reduction in the subtotal storage symptom score of the patients with DO, starting from 6 months after the PVP, compared to the patients without DO. In addition, more patients in the DO-group had an improvement of storage symptoms compared to the non-DO group, although not statistically different. Our results indicated that the diagnosis of DO preoperatively might be a predictor for improvement of storage symptoms after treatment.

Concluding message

The results of this study suggest that storage and voiding symptoms can improve significantly starting from the early postoperative period after a PVP for symptomatic BPH. Our findings indicate that the presence of preoperative DO, as determined by urodynamic studies, is an important factor for the prediction of the outcome of storage symptoms after a PVP. The patients with DO might have greater improvement of their storage symptoms after a PVP than patients without DO.

Fig.1 Percentage of patients with the improvement of storage symptom during the follow-up



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What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**The Internal Review Board at Clinical Research Institute Seoul National University Hospital**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**