

## PREOPERATIVE FACTORS PREDICTING PERSISTENT NOCTURIA AFTER HOLMIUM LASER ENUCLEATION OF THE PROSTATE

### Hypothesis / aims of study

Adequate treatment for benign prostate hyperplasia (BPH) can improve not only voiding symptoms but also storage symptoms including nocturia. Medical treatment for patients with lower urinary tract symptoms (LUTS)/BPH showed significant improvement of nocturia by decreasing the nocturnal urine volume.(1) Transurethral resection of the prostate was superior to tamsulosin for the management of nocturia in patients with LUTS/BPH.(2) Thus adequate relieve bladder outlet obstruction (BOO) expect to improve nocturia. Holmium laser enucleation of the prostate (HoLEP) allows for a true anatomic enucleation of an adenoma of any prostate size by peeling the median and lateral lobes off the surgical capsule and retrieved, it can relieve BOO anatomically in patients with BPH. We investigated the preoperative clinical characteristics and urodynamic findings related to the change of nocturia after HoLEP for BPH patients.

### Study design, materials and methods

We evaluated 103 patients with nocturia and follow-up period of at least 12 months who were treated with HoLEP for BPH. Those who had nocturnal polyuria on frequency volume chart, prostate cancer diagnosed previously or after HoLEP, a history of prostatic and/or urethral surgery, disease with BOO other than BPH, neurogenic bladder and bladder cancer were excluded. We divided the patients into two groups on the basis of the nocturia at 12 months after HoLEP: improvement of nocturia group, non-improvement of nocturia group. Improvement of nocturia was defined as 1 or more reduction in international prostate symptoms score (IPSS) nocturia question 7 score. Preoperative clinical factors and urodynamic factors of each group were compared.

### Results

Sixty patients (58.3%) were improved, and forty three (41.7%) were not improved in IPSS question 7 at 12 months after HoLEP. Preoperative mean IPSS nocturia score ( $P<0.001$ ), storage subscore ( $P<0.001$ ) and mean IPSS total score ( $P=0.004$ ) of the improvement group was higher significantly than those of the non-improvement group. (Table 1) In preoperative urodynamic study, postvoid residual urine volume (PVR) ( $P=0.039$ ) and detrusor overactivity (DO) ( $P=0.010$ ) of the improvement group were lower significantly than those of the non-improvement group. (Table 2)

### Interpretation of results

HoLEP could improve nocturia in more than half of patients with BPH. PVR and DO in preoperative urodynamic study could be poor prognostic factors of nocturia after HoLEP in BPH patients without nocturnal polyuria. Improvement of nocturia after HoLEP was affected by factors related to storage function.

### Concluding message

Additional management for bladder storage function would be considered for improvement of nocturia after HoLEP in BPH patients without nocturnal polyuria.

Table 1. Comparison of preoperative clinical characteristics between improvement group and non-improvement group

Variables	Improvement group (n=60)	Non-improvement group (n=43)	P-value
Age (year)	68.8 ± 7.3	70.3 ± 6.3	0.279
A history of AUR (%)	8 (13.3)	9 (20.9)	0.306
Urgency incontinence (%)	15 (25.0)	5 (11.6)	0.091
Total Prostate volume (ml)	51.6 ± 26.5	53.8 ± 25.5	0.681
Transitional zone volume (ml)	29.2 ± 19.2	32.5 ± 19.1	0.446
PSA (ng/ml)	5.2 ± 9.9	6.8 ± 13.0	0.500
IPSS			
Voiding subscore	12.3 ± 5.7	10.4 ± 5.4	0.091
Storage subscore	8.8 ± 3.9	5.7 ± 3.2	<0.001*
Nocturia score	3.1 ± 1.3	1.7 ± 1.0	<0.001*
QoL score	4.1 ± 1.1	3.6 ± 1.1	0.056
Total score	21.0 ± 8.6	16.2 ± 7.5	0.004*

Mean±SD or no. of pts (%), AUR: acute urinary retention, PSA: prostate specific antigen, IPSS: international prostate symptom score, QoL: quality of life, \*: statistically significant

Table 2. Comparison of preoperative urodynamic parameters between improvement group and non-improvement group

Variables	Improvement group (n=60)	Non-improvement group (n=43)	P-value
Qmax (ml/s)	9.2 ± 3.8	8.3 ± 3.9	0.235
PVR (ml)	54.3 ± 58.4	83.3 ± 81.8	0.039*
Maximum bladder capacity (ml)	389.6 ± 129.9	378.2 ± 145.9	0.679
PdetQmax (cmH <sub>2</sub> O)	54.6 ± 24.0	58.8 ± 22.6	0.377
MUCP (cmH <sub>2</sub> O)	82.7 ± 47.9	84.1 ± 33.1	0.906
BOOI	38.8 ± 27.3	43.4 ± 24.1	0.379
BCI	97.3 ± 25.5	98.3 ± 24.9	0.833
DO (%)	9 (15.0)	16 (37.2)	0.010*

Mean±SD or no. of pts (%), Qmax: maximal flow rate, PVR: postvoid residual urine volume, PdetQmax: detrusor pressure on maximal flow, BOOI: bladder obstruction index, BCI: bladder contractility index, DO: detrusor overactivity, \*: statistically significant

#### References

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#### Disclosures

**Funding:** none **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Bucheon St. Mary's Hospital Institutional Review Board **Helsinki:** Yes **Informed Consent:** No