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CORRELATION OF INTRAOPERATIVELY MEASURED BLADDER CAPACITY AND POST OPERATIVE RE-CATHETERIZATION AFTER HOLMIUM LASER ENUCLEATION OF PROSTATE (HOLEP)

Hypothesis / aims of study
We hypothesized that increased intra-operative bladder capacity during the operation is a risk factor for post-operative re-catheterization after HoLEP and investigated this hypothesis in a prospective observational study.

Study design, materials and methods
Between January 2010 and July 2011, we measured the intra-operative bladder capacity of the patients underwent HoLEP by a single surgeon of our institution. Urine drainage catheter was removed at the following day unless gross hematuria persisted. Then, the patient was checked whether he could void well without residual urine. Catheter was reinserted if he failed to void or the residual urine volume was more than 300 m. Pre-, intra-, and post-operative factors were thoroughly investigated and compared between the re-catheterized group (group A) and the other group (group B).

Results
Of 166 patients who underwent HoLEP, recatheterization rate was 5.4% (Table). All the pre- and intra-operative parameters including patient's age, PSA, prostate volume, catheter indwelling duration, operation time, used laser energy, and enucleated volume were not significantly different between group A and B, except only for the median value of intra-operative bladder capacity which was 900 mL and 680 mL in group A and B, respectively ($p<0.001$). Intra-operative bladder capacity was the only significant risk factor for re-cathterization after surgery, adjusting for patient's age, prostate volume, functional bladder capacity measured by voiding diary, and operation time in the multivariable regression analysis (HR=1.006, 95% CI=1.002-1.010, p=0.002). ROC curve analysis showed that cutoff value of 790mL in intra-operative bladder capacity had sensitivity of 77.8% and specificity of 72.9% (Figure).

Table Preoperative and intraoperative variables in Group 1, 2, and total population. P values were derived from the Mann-Whitney U test.

Average ± SD median (range)	Total (N=166)	Group A (n=9)	Group B (n=157)	P
Age (year)	69.20 ± 6.90 68.00 (51-84)	69.22 ± 6.11 68.00 (60-79)	69.20 ± 6.96 68.00 (51-84)	0.906
PSA (ng/mL)	3.72± 4.36 2.67 (0.33-36.00)	1.94 ± 1.05 1.49 (0.78-4.27)	3.83 ± 4.46 2.75 (0.33-36.00)	0.077
Prostate volume (mL)	59.99 ± 22.66 56.15 (19.8-158.0)	52.93 ± 17.37 50.00 (33.0-91.7)	60.41 ± 22.91 57.00 (19.8-158.0)	0.362
TZ volume (mL)	32.64 ± 18.98 26.50 (4.0-94.0)	28.16 ± 16.43 20.00 (15.1-61.4)	32.90 ± 19.13 27.10 (4.0-94.0)	0.586
Qmax (mL/sec)	9.11 ± 4.21 8.80 (2.0-19.1)	6.65 ± 3.85 6.30 (2.0-13.0)	9.24 ± 4.20 8.90 (2.1-19.1)	0.089
Voided volume (mL)	167.00 ± 112.32 145.00 (12.0-691.0)	141.62 ± 116.0 116.50 (12.0-319.0)	171.99 ± 111.78 153.50 (16.0-691.0)	0.397
Residual urine (mL)	68.95 ± 106.46 30.00 (0.0-590.0)	178.22 ± 212.33 110.00 (0.0-590.0)	68.76 ± 106.56 30.50 (0.0-633.0)	0.201
IPSS_total	19.57 ± 7.17 19 (4-35)	18.89 ± 8.75 16 (7-33)	19.26 ± 7.15 19 (4-35)	0.748
Resected vol/Total (%)	37.46 ± 21.70 34.91 (2.44-171.98)	33.68 ± 20.18 32.42 (7.36-80.46)	37.71 ± 21.53 35.59 (2.44-171.98)	0.422
Enucleation time (min)	50.02 ± 13.84 47.00 (22.0-88.0)	45.66 ± 11.87 42.00 (31.0-65.0)	49.54 ± 14.15 47.00 (22.0-88.0)	0.402
Mocellation time (min)	9.04 ± 7.36 7.00 (0.0-50.0)	6.11 ± 2.57 5.00 (4.0-11.0)	8.85 ± 7.21 7.00 (0.0-50.0)	0.309
Used energy (KJ)	103.27 ± 35.46 104.32 (29.86-202.50)	85.93 ± 17.11 91.32 (57.80-104.93)	100.77 ± 36.30 100.15 (29.86-202.50)	0.173
Distention volume* (mL)	706.10 ± 186.05 690 (250-1420)	897.78 ± 208.37 900 (600-1300)	700.65 ± 176.81 680 (250-1420)	**0.000**
Catheter duration (days)	1.57 ± 0.80 1 (1-5)	1.56 ± 0.72 1 (1-3)	1.57 ± 0.81 1 (1-5)	0.903

Interpretation of results
Intra-operative bladder capacity was the only risk factor for post-operative recatheterization.

Concluding message
We speculate that the surgeon has to minimize the bladder filling capacity during the HoLEP to prevent re-catheterization after surgey.

Disclosures
Funding: none **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** It was a retrospective study **Helsinki:** Yes **Informed Consent:** No