

## THE COMPARISON OF ENUCLEATION EFFICIENCY AND MORCELLATION EFFICIENCY IN HOLEP BY SINGLE SURGEON ACCORDING TO PROSTATE VOLUME

### Hypothesis / aims of study

Holmium laser enucleation of prostate (HoLEP) is composed of enucleation and morcellation, and each process shows the difference of the time required according to prostate volume. We compared the enucleation efficiency and morcellation efficiency according to prostate volume.

### Study design, materials and methods

From May 2012 to March 2015, 313 consecutive patients underwent HoLEP by single surgeon. Of these patients, 263 that excluded initial 50 patients were retrospectively studied. Group was classified into I (prostate volume <30g, n=55), II (30-60g, n=134), III (60-90g, n=41) and IV (>90g, n=33) based on prostate volume. Age, IPSS, PSA, peak urinary flow, residual urine volume, enucleation efficiency, morcellation efficiency, used amount of laser energy and hemoglobin loss were compared in each group.

### Results

There was no significant difference comparing age and BPH parameters except PSA (Table 1). Enucleation efficiency and morcellation efficiency except for I-II and II-III group were significantly increased depending on prostate volume. Enucleation ratio tended to increase between each group and laser energy was more consumed by prostate size. Hemoglobin loss was not different between each group except for group I and IV (Table 2).

### Concluding message

HoLEP can be easily applied to huge prostate and bring better surgical outcomes because the larger prostate, the higher enucleation and morcellation efficiency if experienced surgeon performs HoLEP,

**Table 1. Baseline demographic and patient characteristics**

	Group I	Group II	Group III	Group IV	P-value
Age	69.8±7.3	71.1±6.5	73.2±4.9	74.4±7.3	0.06
<b>PSA</b>	<b>1.7±1.6</b>	<b>7.2±12.8</b>	<b>5.9±5.0</b>	<b>17.5±16.6</b>	<b>0.00</b>
IPSS					
total	20.6±8.6	21.6±9.0	19.3±4.5	22.6±8.2	0.50
voiding	13.2±5.7	12.6±5.6	11.2±3.3	13.9±6.0	0.40
storage	7.5±4.4	8.9±4.4	8.1±3.1	8.7±3.7	0.47
Qmax	10.3±4.5	9.1±4.4	8.5±4.4	9.6±3.7	0.59
PVR	63.6±93.6	93.0±81.1	124.8±117.5	86.1±68.0	0.08

**Table 2. Comparison of intraoperative outcomes according to prostate size**

		Group I	Group II	Group III	Group IV	
Enucleation efficiency (g/min)	Mean±SD	0.37±0.28	0.63±0.28	0.97±0.63	1.61±0.65	
	P-value between groups	Group I	-	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>
		Group II	<b>0.01</b>	-	<b>0.01</b>	<b>0.00</b>
		Group III	<b>0.00</b>	<b>0.01</b>	-	<b>0.00</b>
		Group IV	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	-
Morcellation efficiency (g/min)	Mean±SD	2.44±1.71	3.01±0.95	4.14±3.33	6.78±6.04	
	P-value between groups	Group I	-	0.40	<b>0.02</b>	<b>0.00</b>
		Group II	0.40	-	0.18	<b>0.00</b>
		Group III	<b>0.02</b>	0.18	-	<b>0.01</b>
		Group IV	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	-
Enucleation ratio	Mean±SD	0.85±0.25	0.87±0.16	0.89±0.19	0.94±0.18	
	P-value between	Group I	-	0.69	0.57	0.22
		Group II	0.69	-	0.85	0.41

	groups	Group III	0.57	0.85	-	0.54
		Group IV	0.22	0.41	0.54	-
	Mean±SD		32.8±12.1	46.8±14.6	54.8±20.9	72.8±22.2
Enucleation time	P-value between groups	Group I	-	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
		Group II	<b>0.00</b>	-	0.09	<b>0.00</b>
		Group III	<b>0.00</b>	0.09	-	<b>0.00</b>
		Group IV	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	-
	Mean±SD		5.8±4.3	9.4±3.5	16.7±15.6	22.5±13.0
Morcellation time	P-value between groups	Group I	-	0.10	<b>0.00</b>	<b>0.00</b>
		Group II	0.10	-	<b>0.01</b>	<b>0.00</b>
		Group III	<b>0.00</b>	<b>0.01</b>	-	<b>0.048</b>
		Group IV	<b>0.00</b>	<b>0.00</b>	<b>0.048</b>	-
	Mean±SD		63.7±19.1	99.9±30.4	138.3±60.3	156.5±44.1
Laser energy (KJ)	P-value between groups	Group I	-	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
		Group II	<b>0.00</b>	-	<b>0.00</b>	<b>0.00</b>
		Group III	<b>0.00</b>	<b>0.00</b>	-	0.13
		Group IV	<b>0.00</b>	<b>0.00</b>	0.13	-
	Mean±SD		0.49±0.82	0.70±0.96	1.08±2.34	1.29±0.75
Hb change	P-value between groups	Group I	-	0.51	0.09	<b>0.03</b>
		Group II	0.51	-	0.31	0.14
		Group III	0.09	0.31	-	0.61
		Group IV	<b>0.03</b>	0.14	0.61	-

Disclosures

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