Application of Modified Clavien Classification System to 120W Greenlight HPS Laser For BPH: Is It Useful in Case of Less Invasive Procedures?

Introduction and Objective: To evaluate the accuracy and applicability of the modified Clavien classification system (CCS) in evaluating complications following photoselective vaporization of the prostate using 120W GreenLight high performance system (HPS-PVP).
Materials and Methods: Medical records of 342 men who underwent HPS-PVP were retrospectively analyzed. Patients were older than 40 years of age with prostate volume >30mL and IPSS ≥8. Patients with prostatic malignancy, neurogenic bladder, urethral stricture, large postvoid residual volume (>250 mL), previous prostatic surgery and urinary tract infection were excluded. All operations were done by a single surgeon, and patients were followed up for uroflowmetry and IPSS postoperatively. All complications were recorded and classified according to the modified CCS, and methods of management were also recorded.
Results: Mean age was 71.6 ± 7.3 years, and mean prostate volume was 50.0 ± 17.0 mL, and 95 cases (27.7%) had volumes greater than 70 mL. Mean total IPSS score was 21.7 ± 7.9 preoperatively and 12.3 ± 8.1 at the first month postoperatively. Total 59 patients (17.3%) had postoperative complications ultil the first month after the surgery. Among them, 49 patients (14.3%) showed grade I complications, 9 patients (2.6%) showed grade II complications, and 1 patient (0.3%) showed grade IIIb complication. No one had complications graded higher than IIIb.
Conclusions: Although the modified CCS is a useful tool for communication among clinicians in allowing comparison of surgical outcomes, this classification should be revised to acquire higher accuracy and applicability in the evaluation of postoperative complications of HPS-PVP.

Table 1 *Patients' demographics and perioperative profiles*

Mean ± SD or n (%)	
Preoperative profiles	
Patient demographics	
Age (years)	71.6 ± 7.3
BMI (kg/m^2)	26.0 ± 42.7
ASA score	
1	97 (28%)
2	198 (57%)
≥3	32 (9%)
Comorbidities	
Diabetes	58 (16.9%)
Hypertension	163 (47.5%)
PSA (ng/mL)	4.0 ± 3.2
Prostate volume (mL)	50.0 ± 17.0
Transitional zone volume (mL)	28.8 ± 14.4
Symptom scores	
Total IPSS	21.7 ± 7.9
Voiding symptom subscore	12.8 ± 5.0
Storage symptom subscore	8.8 ± 3.6
QoL score	4.2 ± 1.2
Symptom scores (postop 1 month)	
Total IPSS	12.3 ± 8.1
Voiding symptom subscore	5.5 ± 5.2
Storage symptom subscore	6.8 ± 3.7
QoL score	2.6 ± 1.7
Voiding diary parameters	
Functional bladder capacity (mL)	382.0 ± 148.3

Daytime frequency (per day)	10.7 ± 3.0
Nocturia (per night)	2.0 ± 0.8
Uroflowmetric parameters	
Qmax (mL/sec)	8.7 ± 3.1
Voided volume (mL)	178.4 ± 100.5
PVR (mL)	93.5 ± 91.2
Urodynamic parameters	
Maximum cystometric capacity (mL)	363.5 ± 93.2
Impaired detrusor contractility	10 (14.7%)
BOO index	42.7 ± 25.6
Perioperative profiles	
Operative time (min)	60.6 ± 31.9
Laser energy (joules)	92349 ±75833
Catheter duration (hour)	21.6 ± 8.7

Table 2 *Postoperative complications and management*

Grade	No. of patients	Symptoms and onset of time (POD)	Management	Duration of management
I	45	Non-specific urinary symptoms	Nothing	
	2	1: Hematuria (third week) 1: Hematuria (second week)	Catheterization	1 week 3 days
	2	1: Urinary retention (first day) 1: Urinary retention (second day)	Catheterization	3 days 1 year and follow-up loss
II	6	1: Urgency (first day) 2: Urgency (third week) 3: Urgency (forth week)	Anticholinergics	1 year 1: 2 months / 1: 9 months 2: 2 months / 1: 4 months
	2	1: Dysuria and slow stream (first week) 1: Urinary tract infection (first day)	Antibiotics	1 month 1 week
	1	Voiding difficulty (third week)	Alpha blocker	2 months
IIIa	0	-	-	-
IIIb	1	Hematuria (seventh day)	Coagulation under general anesthesia and catheterization	2 weeks
IV, V	0	-	-	-
Total	59			

POD, postoperative day