

# Direct comparison of Green Light Laser XPS Photoselective Vaporization of the Prostate (PVP) and Green Laser En Bloc enucleation of the prostate (GreenLEP) in enlarged glands >80 ml: A study of 120 patients

Misrai V, et al. J Urol. 2016 Apr;195(4 Pt 1):1027-32.

## Background

Photoselective vaporisation of the prostate (PVP) using a GreenLight™ laser system has emerged in recent years as a viable alternative to transurethral resection of the prostate (TURP) when surgery is indicated for the management of lower urinary tract symptoms (LUTS) resulting from benign prostatic obstruction (BPO). Short-term studies have confirmed comparable results of PVP compared with TURP in terms of functional clinical outcomes in patients with small-to-medium sized prostates.

However, recent studies have called into question the efficacy of the 80 W and HPS-120 W GreenLight laser systems in patients who have larger prostates (>80 mL), and there is limited evidence regarding clinical outcomes following PVP using the higher-powered GreenLight XPS 180 W system in this setting.

In patients with large prostate volumes, standard treatment is enucleation of the prostate either by open prostatectomy or using holmium-laser enucleation, which is associated with better outcomes but is technically more complex. A new technique, green-laser enucleation of the prostate (GreenLEP), has recently been introduced which excises the transitional zone as a single piece ('en-bloc'), but supporting clinical data are limited.

**This study compared the efficacy of PVP using the GreenLight XPS 180 W laser system with GreenLEP 'en-bloc' enucleation of the prostate in relieving BPO in patients with large prostate volumes (>80 mL).**

## Patients and study methods

- A retrospective, single-centre study of 120 consecutive patients with prostate volumes >80 mL who underwent PVP or GreenLEP surgery for BPO between April 2011 and March 2014

## Surgical procedures

- GreenLight XPS 532-nm laser generator used for all procedures
- All procedures performed by a single surgeon with no previous enucleation experience
- **PVP:** MoXy fibre utilised; wattage from 120 W to 180 W
- **GreenLEP:** HPS 2090 fibres used; 120 W system

## Assessments

- **Perioperative parameters**
- **Postoperative assessments:**  
Undertaken at 2, 6 and up to 12 months
- **Functional outcomes:**
  - International Prostate Symptom Score (IPSS)
  - Quality of life (QoL) scores
  - Post-void residual (PVR) volume
  - Maximum flow rate (Qmax)
  - Prostate-specific antigen (PSA)
  - Urinary incontinence: Defined as any post-operative urine leakage
- **Complications:** Assessed using the Clavien–Dindo classification



Both PVP and GreenLEP procedures were safe and provided satisfactory short-term functional outcomes in patients with BPO who had large prostate volumes (>80 mL).

## Results

### PERIOPERATIVE PARAMETERS

Parameter	PVP (n=60)	GreenLEP (n=60)	p-value
Total energy (KJ)	490 (360; 580)	65 (47; 95)	<0.0001
Lasing time (min)	58 (45; 68)	20 (15; 25)	<0.0001
Intraoperative time (min)	82 (65; 110)	60 (55; 70)	<0.0001
Early post-op complications	15 (25%)	10 (16.6%)	0.37

- 120 patients included in the analysis
- Median age: 69 years (range: 64–76)
- Median prostate volume: 100 mL (range: 80–110)
- Median preoperative PSA: 4.4 ng/dL (range: 3.0–7.3)

Values are n (%) or median and [1st; 3rd quartile range]

### POSTOPERATIVE FUNCTIONAL OUTCOMES

Outcome Mean ± SD	PVP (n=60)	GreenLEP (n=60)	p-value
<b>At 2 months</b>			
IPSS	4 (3; 6)	4.5 (3; 6)	0.84
QoL	1 (1; 2)	1 (0; 2)	0.83
Qmax (mL/s)	19 (16; 23)	25 (23; 27)	<0.0001
Prostate volume (mL)	40 (30; 60)	23 (20; 30)	<0.0001
PSA (ng/dL)	1.7 (1.4; 3)	0.64 (0.3; 1.0)	<0.0001
Urinary incontinence	2 (3.4%)	15 (25%)	<0.0001
<b>At 6 months</b>			
PSA (ng/dL)	1.6 (1.0; 2.5)	0.66 (0.4; 1.9)	0.006
Urinary incontinence	0	2 (3.4%)	0.15
Unplanned readmissions	10 (16.7%)	4 (6.7%)	0.16

Values are n (%) or median and [1st; 3rd quartile range]

## Conclusions

- The study found that both PVP and GreenLEP were safe and effective for the surgical management of BPO in patients with large prostate volumes (>80 mL), resulting in satisfactory short-term (6-month) functional outcomes.
- **PVP treatment was associated with:**
  - Significantly longer surgery times
  - Higher rates of unplanned admissions following surgery
  - Smaller postoperative decreases in PSA and prostate volume
- **GreenLEP treatment was associated with:**
  - Longer catheterisation time
  - A higher rate of transient stress urinary incontinence (no difference between groups at 6 months)

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