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Editorial

Different laser prostatectomy for benign prostatic hyperplasia: What is the role of outcome-effectiveness analysis in clinical practice?



Laser prostatectomy is the most rigorously studied current option for the surgical management of benign prostatic hyperplasia (BPH). In randomized controlled trials, laser prostatectomy has been compared to transurethral resection of the prostate (TURP) and was associated with superior outcomes.^{1–4} Furthermore, laser prostatectomy may be safely used for prostates that are too large for TURP. Laser prostatectomy outcomes are independent of the size of the treated gland.⁵

Several initial laser techniques have been introduced to make prostatectomy procedures safer and more effective. Such techniques include the use of high-powered 120 W (GreenLight™ HPS; American Medical Systems, Minnetonka, MN, USA), thulium (Tm), diode, holmium, and vela lasers. Depending on the wavelength, power, and type of laser emission, the techniques consist of coagulation (e.g., photoselective vaporization of the prostate [PVP]), vaporization (i.e., PVP and diode), resection, and enucleation (Tm). These methods have been proven as safe for patients with a high risk of bleeding (e.g., anticoagulant users, patients with a bleeding tendency, or patients with an American Society of Anesthesiology score of 3).^{5,6}

The *Medicine Journal* features an important article by Hsu et al.⁵ In one study by Lee et al.,⁶ the authors evaluated the outcomes after more than 1 year in approximately 741 men treated by different laser prostatectomy procedures. Their findings confirm our experience: laser prostatectomy is associated with improved flow rates and symptom scores typical of what would be expected from a debulking BPH procedure such as TURP or an open simple prostatectomy. These outcomes were produced with remarkably little morbidity, which is a common theme with laser prostatectomy.⁶

Tsui et al also confirm that laser prostatectomy is associated with a dramatic and sustained decrease in the prostate specific antigen level, which was comparable to its level after TURP. This finding is entirely consistent with the nature of the laser prostatectomy procedure (e.g., Tm, PVP, and diode lasers), which involves the removal of the entire transition zone and represents anatomically the same degree of tissue removal as TURP surgery. Taken together, PVP laser is also a high cost-effective technology.

This study uses an innovative model to compare procedural treatment options for BPH. In comparison to TURP, laser

prostatectomy is clinically effective, but it is a high-cost treatment for symptomatic BPH because of the cost of the laser equipment. Laser prostatectomy is a more sophisticated and acceptable modality for the treatment of BPH because of the efficiency, short learning curve, and low morbidity profile of using laser prostatectomy. However, because the laser is a new technology, the expense, safety precautions, long-term effectiveness, and general acceptance are all important limiting factors.⁵

Laser prostatectomy is increasingly considered a valid clinical alternative to TURP. This study compared the efficacy of three laser techniques used to treat lower urinary tract symptoms due to BPH. Photoselective vaporization of the prostate, a coagulation-based technique, has durable efficacy for prostates weighing 60 g. The Tm laser (i.e., an enucleation laser technique) has previously been criticized for having a steep learning curve because this laser requires a certain volume of enucleated tissue. However, our evidence supports the contention that Tm offers favorable and durable outcomes for prostates of any size and low morbidity rates (both early and late). Prostatectomy using the GreenLight HPS laser (American Medical Systems) is more widely accepted and offers favorable outcomes for prostates weighing 60 g. Diode laser prostatectomy, a coagulation-based technique, is preferred for prostates weighing 60 g and for patients with thrombocytopenia or who have a bleeding tendency.

In our study, these techniques were equally safe and effective in treating BPH without any severe drawbacks, as long as patients were selected according to risk factors. However, to confirm our results, future research should use higher quality data to further evaluate and compare different types of laser treatment.

Conflicts of interest

The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

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