

EFFICACY OF LASER SURGERY FOR BENIGN PROSTATIC HYPERPLASIA TREATMENT

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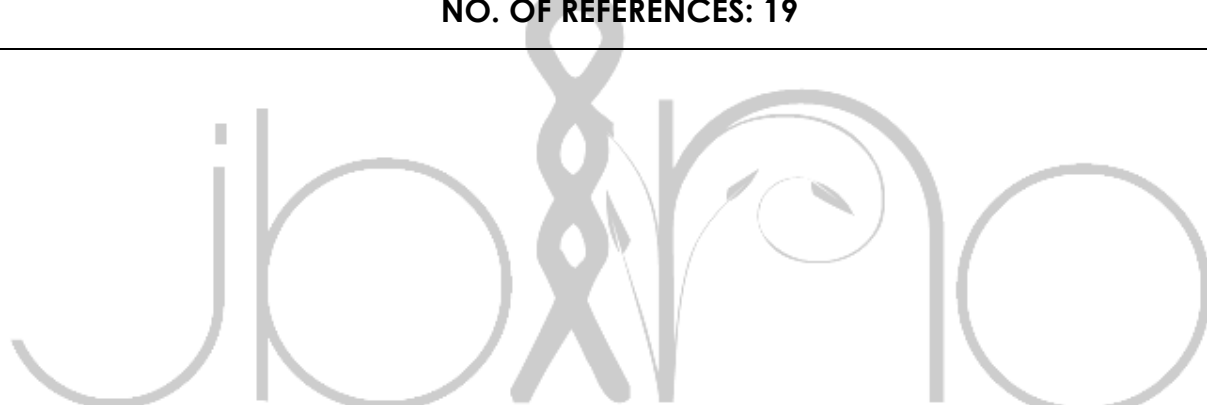
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ABSTRACT

Benign prostatic hyperplasia (BPH) is the most important cases of lower urinary track symptoms (LUTS) and it affects patient's quality of life significantly. Laser is one of new alternative treatment for BPH with minimally invasive surgery. This review was done by data searching in Pubmed data bases with keywords Laser, Outcomes, and Benign prostatic hyperplasia. There are 382 articles were found, and only 12 articles suitable with the theme were reviewed. In addition, there were 7 articles to complete the discussion. Laser surgery has promising outcomes for treating BPH.

Keywords: Laser surgery, Benign prostatic hyperplasia, HoLEP, HPS Greenlight PVP, XPS HPS Greenlight PVP, Thulium laser

NO. OF REFERENCES: 19



INTRODUCTION

Benign Prostatic Hyperplasia (BPH) is prostate adenoma/adenomata causing varies degree of bladder outlet obstruction with or without symptoms¹⁸. BPH is one of the most common diseases in ageing men which can lead to lower urinary tract symptoms (LUTS)⁸.

There are three types management of BPH include watchful waiting, drug therapy and surgery. Although a majority of patients with BPH could be treated with watchful waiting or drug therapies (alpha-blockers, 5-alpha-reductase inhibitors, anticholinergics, phytotherapeutics alone or combinations), there is still a certain number of patients finally required surgical intervention, such as transurethral resection of prostate (TURP) and surgeries lasers.¹⁹

Benign Prostatic Hyperplasia

Lower urinary tract symptoms (LUTS) suggestive of benign prostatic hyperplasia (BPH) is a common and bothersome condition in aging men. Coyne *et al.* made study about the prevalence of LUTS in three countries (USA, UK, Swedish). The prevalence of moderate to severe LUTS in men ranges from 16.2% to 25.1%, while the prevalence of LUTS described at least 'sometimes' is 72.3% and 47.9% for at least 'often', respectively.¹² The study from Kim *et al* about the prevalence of LUTS in Korea on 1.842 subjects, the overall prevalence of LUTS was 83.4%.⁶

Male LUTS can be classified as voiding symptoms (obstructive) and storage symptoms (irritative). Voiding symptoms include hesitancy, weak stream, post micturition dribble, urinary

retention, straining, and incomplete emptying. Storage symptoms include: urgency, urge incontinence, frequency, nocturia, dysuria and suprapubic pain. There are some guidelines to diagnose BPH, such as age (usually > 40 years of age), International Prostate Symptoms Score (IPSS) and Quality of Life (QoL) index, palpate and percuss for a distended bladder, Digital rectal examination, Serum Prostate Antigen (to rule out prostatic cancer), and Ultrasonography.¹⁸

Laser Surgery

In the past two decades, Trans Urethral Resection of the Prostate (TURP) is still frequently used as traditional surgical therapy for BPH, several lasers including holmium laser, thulium laser, KTP/Nd:YAG laser, Nd:YAG laser, diode laser and green light laser, have also shown excellent clinical effectiveness for BPH. All these available surgical treatments have their individual advantages or disadvantages.¹⁹

In Korea, a study was done by Sohnet *et al.* (2011) on 60 patients diagnosed as Benign Prostate Hypertrophy (BPH) and were prescribed anticoagulant medications, concluded that for BPH patients taking anticoagulant medications for the treatment or prevention of cardiac or cerebral diseases who require surgical BPH treatments, 120 W High-Performance System (HPS) Greenlight laser Photo Vaporization of the Prostate (PVP) is considered to be an effective and safe surgical method.¹⁵ Another study with more than 6 months postoperative follow up period was conducted by Yong *et al.* (2013) on 533 patients diagnosed as BPH

and treated with 120 W HPS Greenlight PVP, concluded that laser resection of the prostate is safe and effective. The results of HPS Greenlight PVP were not influenced by prostate size, the use of anticoagulants, intake of 5-alpha reductase inhibitor medication, history of acute urinary retention, or history of transurethral resection of the prostate.³A retrospective study with more than 60 months postoperative follow up period was conducted by Park *et al.* (2017) on 159 patients who underwent HPS Greenlight PVP, concluded that it is an effective, long-term treatment option for bPH, with sustained efficacy of 76.1% at 5-year follow up. Presence of DM, voiding symptom sub score, Quality of life, Maximal cystometric capacity, and Bladder outlet obstruction index were valuable preoperative parameters for predicting postoperative success.⁹

Still in Korea, a study conducted by Ryoo *et al.* (2015) included 174 patients treated with Holmium laser enucleation of the prostate (HoLEP), concluded that there are good surgical outcomes after HoLEP and specifically patients with a higher BOO index had greater chance of surgical success.¹⁴ Similar study conducted by Park *et al.* (2017) on 132 patients who underwent HoLEP by single surgeon and was received BPH medication for at least 6 months before surgery, concluded that when other medical treatments are ineffective, HoLEP is an effective intervention not only in patients with a large prostate (>30 mL), but also in patients with a small prostate (\leq 30 mL).¹⁰ Another study by Ku *et al.* (2010) on 120 patients with BPH underwent photoselective vaporization with an 80 W potassium-titanyl-phosphate

(KTP) laser and followed up for 12 months, concluded that high-power KTP photoselective laser vaporization of the prostate is safe and efficacious for patients with BPH regardless of prostate volume although a larger prostate requires more time and energy delivery.⁷

Another study in Korea was done by Choi *et al.* to observe the improvements of IPSS, Qmax, and PVR in 371 patients with BOO and detrusor underactivity (DU), and 120 W HPS laser PVP was performed to resolve the BOO. They concluded that 120 W HPS laser PVP seems to be an appropriate treatment modality regardless of the existence of DU.²

A retrospective study in United Kingdom (2013) involving 772 patients underwent HoLEP or TURP within 52-months study period, concluded that the introduction of HoLEP alongside TURP is associated with lower rates of blood transfusion and shorter length of hospital stay for all patients.¹⁷

Research by Baldiniet *al.* (2016) in France involving 67 patients, 39 patients had HoLEP and 28 had Laparoscopic transcapsular prostatectomy (LTP); comparing perioperative outcomes, complications, and functional results at 3 months between HoLEP and LTP; concluded that there was no increased morbidity for LTP compared to HoLEP technique. However, the HoLEP technique appeared to be a less invasive technique, reducing the duration of catheterization, blood loss, and the average length of stay while maintaining good efficacy for the enucleated prostate volume.¹

Another research by Elkoushy *et al.* (2015) in Egypt involving 82 patients

undergoing Holmium laser transurethral incision of the prostate by a single surgeon for BOO, concluded that Holmium laser transurethral incision of the prostate is a durable, safe and efficient procedure to treat BOO secondary to a small prostate.⁵

A cohort study of 161 patients with BPH was done by Ekenet *et al.* (2015) in Turkey. In total, 88 patients underwent laser PVP using the greenlight HPS system, and 73 patients were treated using the greenlight XPS system. The study concluded that both the greenlight XPS and the greenlight HPS systems provide safe and effective tissue vaporization of an enlarged prostate gland. The greenlight XPS system is associated with decreased operatin time, suggesting more efficient tissue removal and cost-effectiveness.⁴

Research by Vargas *et al.* (2014) in Spain involving 55 patients with BPH undergoing treatment with 150W Thulium Laser then the changes in Qmax and IPSS was evaluated after 6 months, concluded that vaporization of prostate with 150W Thulium Laser presents promising results in the clinical improvement of patients with small and medium prostates after 6 months. Its complication rate is low, and it offers excellent hemostasis.¹⁶

CONCLUSION

Laser surgery has promising outcomes for treating BPH.

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