Bipolar Plasmakinetic Enucleoresection of the Prostate: Our Experience with 245 Patients for 3 Years of Follow-Up
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Abstract
Objective: The aim of this study was to evaluate the safety, feasibility, and effectiveness of bipolar transurethral plasmakinetic enucleation of the prostate (PKEP).

Patients and methods: Between January 2010 and October 2013, 245 patients with lower urinary tract symptoms due to benign prostatic hyperplasia underwent transurethral enucleation of prostate using bipolar plasma vaporization energy. Patients were evaluated preoperatively by full detailed history, routine preoperative investigation digital rectal examination, serum prostate-specific antigen, abdominal and transrectal ultrasonography, and maximum flow rates ($Q_{\text{max}}$).

Results: Patients’ ages ranged from 50 to 81 (65.5 – 6) years with transrectal ultrasound-measured prostate volume of 97.1 – 36.7mL resulting in an operating time of 76.9 – 27.9 minutes, and postoperative irrigation and catheterization times were 3.5 – 3.2 and 12.7 – 6.1 hours, respectively. No significant complication occurred intra- or postoperatively. $Q_{\text{max}}$ increased from 7.1 – 3.2 mL/second preoperative to 18.4 – 4.2 mL/second ($p < 0.001$). The International Prostate Symptom Score decreased from 25 – 6 to 7.9 – 2.4 ($p < 0.01$).

Conclusion: This study confirmed that PKEP is a safe, easy to learn, and durable technique suitable for any prostate sizes.

Keywords: benign prostatic hyperplasia, M-TURP, PKEP

Introduction

Benign prostatic hyperplasia (BPH) is the most common benign disease of the prostate gland, which affects more than half of elderly male patients and has a negative effect on health excellence and life quality. Conventional monopolar transurethral resection of prostate (M-TURP) was considered as the gold standard of surgical management for BPH causing lower urinary tract symptoms (LUTS). The complications rate associated with M-TURP is ranged between 7% and 43%, which are mainly bleeding, transurethral resection syndrome, urinary incontinence, retrograde ejaculation, infection, and erectile dysfunction. Moreover, the mortality rate associated with M-TURP is 0.2%. Technical modification of transurethral resection of prostate (TURP) with incorporation of bipolar technology (bipolar transurethral resection of prostate [B-TURP]) has two advantages: first, patients can better tolerate sodium chloride...
solution and thus eliminate the risk of transurethral resection (TUR) syndrome. Second, the high-frequency current used minimizes tissue denaturation. The resectoscope and electrode act as the neutral electrode that completes the circuit without need to the patient’s plate.5,6
The depth of tissue penetration in plasma vaporization is about 0.2mm, which is smaller than with M-TURP. This leads to controlled vaporization of superficial tissue layers virtually without heat, thus even named “cold vaporization.”7 Prostatic adenoma can be enucleated anatomically regardless its size with few morbidities. This can be done by using the tip and loop of the resectoscope for dissection of adenoma instead of surgeon’s finger in open prostatectomy (OP).8,9 Despite its innovative nature, the plasma vaporization electrode does not involve great expense for hospitals. The bipolar transurethral resection in saline cutting loops can simply be replaced by the new vaporization electrode. Not only the cost for the upgrade is much lower than with standard laser vaporization procedures but the cost for the single-use electrode is also lower.
In addition to the low equipment costs and short hospital stay, the short learning curve of the procedure adds to its excellent benefit effectiveness. In contrast to other modern minimally invasive procedures, the technique is similar to the commonly practiced standard TURP method. Extensively long learning courses and training periods are thereby reduced.4,7