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### Urethral Stricture

Original article

# Urethral stricture disease after bipolar prostatectomy: Is it a concern?



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#### KEYWORDS

Urethral stricture disease;  
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#### Abstract

**Introduction:** bipolar Transurethral Surgery of Prostate (BTUSP) is growing increasingly popular in the management of Benign prostatic hyperplasia related lower urinary tract symptoms (BPH-related LUTS). Compared to monopolar transurethral resection of the prostate (TURP), BTUSP has the potential advantages of less toxicity related to irrigation fluid absorption, and better hemostasis. However, there have been reports of BTUSP being associated with increased incidence of urethral stricture disease (USD). We aim at 2 years results of B-TUSP with special emphasis on USD and continence.

**Patients and methods:** This is a retrospective study of patients who underwent BTUSP (resection, vaporization and enucleation) for BPH-related LUTS at Cairo University Hospital from January 2013 to December 2014. Perioperative parameters were assessed. Patients were evaluated 2 years postoperative to assess international prostate symptom score (IPSS), continence, urinary tract infection (UTI) uroflowmetry and post voiding residual urine (PVR). For patients with suspicion of USD (maximum flow rate "Qmax"  $\leq 15$  ml/s, PVR  $\geq 100$  cc.), retrograde and voiding cystourethrogram and/or cystoscopy were done.

**Results:** A 2-years follow-up was available for 32 patients. Mean age was  $66.2 \pm 8.2$  years. 16/32 patients were catheter dependent due to bladder outlet obstruction. Mean preoperative flowmetry, IPSS and adenoma size were  $9.1 \pm 3.02$  ml/s,  $23.1 \pm 2.3$  and  $60.1 \pm 28.1$  g, respectively. Of our patients 11/32 (34%), 14/32 (44%) and 7/32 (22%) underwent BTU-enucleation, resection and vaporization of prostate, respectively. There was a difference in mean adenoma size for vaporization, enucleation and resection patients ( $29.57 \pm 11.9$  g,  $83.36 \pm 26.49$  g and  $58.71 \pm 17.82$  g, respectively) ( $p < 0.05$ ). Mean postoperative catheter time was  $2.7 \pm 1.3$  days, IPSS, Qmax, and PVRU at 2 years, were  $4.53 \pm 1.29$  (2–7),  $17.94 \pm 2.7$  (11–22) and  $3.13 \pm 7.7$  (0–35) respectively, this was significantly different from preoperative Qmax and IPSS ( $p < 0.05$ ). Eight patients with Qmax  $\leq 15$  ml/s (11–15 ml/s) were assessed and found not to have USD. None of our patients reported incontinence. At 2 years, there was no significant difference in mean Qmax for vaporization, resection and enucleation ( $18$  ml/s  $\pm 3.4$ ,  $18.71$  ml/s  $\pm 2.86$ , and  $16.9$  ml/s  $\pm 1.86$ , respectively) ( $p = 0.267$ ).

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*Conclusion:* BTUSP is a safe and effective modality for surgical management of BPH-related LUTS. With no evidence of increased incidence of USD, and with significant improvement of flowmetry and IPSS after 2 years follow up.

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## Introduction

Transurethral resection of the prostate (TUR-P) is still considered the gold standard for surgical treatment of symptomatic benign prostatic enlargement (BPE) [1]. This is backed up by durable results in number of studies including more than 10,000 patients followed up for up to 5 years in the form of substantial improvement in Q-max, IPSS and postvoid residual urine (PVRU) [2,3]. Nevertheless, it still requires hospitalization and can be complicated by bleeding, clot retention, and TUR syndrome [4].

Several novel minimally invasive therapies have been introduced in recent decades, aiming to improve the safety profile for transurethral resection of the prostate (TURP) [5]. In recent years bipolar electrosurgical technology has gained worldwide attention in surgical management of BPH, with the aim of minimizing the morbidity of the standard monopolar TURP (M-TURP) while maintaining efficacy and durability [6]. Ahyai et al., evaluated 10 randomized controlled trials (RCTs) of bipolar TURP (B-TURP) and they found comparable results to M-TURP with less complications especially TUR syndrome and bleeding [7].

It is theorized that bipolar current has a smaller depth of tissue penetration due to lower peak voltage and high frequency [8]. However, there were reports about its association with increased incidence of urethral stricture disease (USD) following bipolar transurethral prostatic surgery (B-TUPS). Telfekli et al., reported a USD incidence of 6% in B-TUPS in comparison to 2% in M-TURP [9]. Komura et al., reported a higher urethral stricture rate in TURis compared to M-TURP (20% in TURis vs 2.2% in M-TURP;  $p=0.012$ ) [10].

We aim at evaluating the long-term results of B-TUPS (resection, vaporization or enucleation) with special emphasis on USD.

## Subjects and methods

In the current retrospective study, 32 patients who underwent B-TUPS (resection, vaporization or enucleation) for symptomatic SPE requiring surgery at Kasr Alainy Hospital, Cairo University, Cairo, Egypt in the period from January 2013 to December 2014 were followed.

All enrolled patients had signed informed consent form. The study was carried out in accordance with the Helsinki Declaration and local ethical committee approval at Department of Urology, Kasr Alainy Hospital, Cairo University, Cairo, Egypt.

Preoperative patient data included detailed history taking with IPSS and examination findings. Routine labs included serum chemistry,

complete blood count (CBC), coagulation profile, urinalysis with or without culture to exclude infection and prostatic specific antigen (PSA). Patients who were not in refractory urinary retention underwent uroflowmetry. Imaging data included abdominopelvic and transrectal ultrasound (TRUS) for total gland and adenoma volume assessment. Patients were considered candidates for surgery if there had bothersome symptoms with IPSS > 18 despite medical treatment, refractory urine retention, bladder stones, recurrent urinary tract infections, hematuria, or renal impairment due to SPE. Patients with suspicion of neurogenic bladder dysfunction, prostate cancer or previous prostatic surgery were excluded from the analysis. UES-40 Surg-Master (Olympus Winter & Ibe GmbH, Hamburg, Germany) bipolar high-frequency generator was used.

All patients received preoperative antibiotics. In all patients, the procedure was done under spinal or spinal/epidural anesthesia. Cystoscopy was the first procedure done in all patients to assess the urethra, any bladder pathology, prostate size, and lobe configuration. This was followed by resection, vaporization or enucleation depending upon prostate size and lobe configuration using 26 French continuous irrigation sheath. All cases were done by a single experienced surgeon.

For bipolar transurethral vaporization of the prostate (B-TUVP) bipolar vaporization electrode produced by Olympus which has a semispherical shape and is “mushroom” like was used. The current was set to 290–320 W for vaporization and 150 W for coagulation. The prostate was gradually debulked by repeatedly moving in a circular fashion around the whole gland, as in peeling an onion. The motion was slow and gentle and well controlled, and the procedure was carried out in a bloodless manner. For B-TURP, a technique similar to standard M-TURP originally described by Mebust was used [11]. The current was set to 290–320 W for cutting and 120–140 W for coagulation. For bipolar transurethral enucleation of the prostate (B-TUEP) an incision of the prostatic apex just proximal to the verumontanum from 5 to 7 o'clock position was done until the level of the prostatic capsule was reached. The beak of the resectoscope sheath was then used in a similar fashion as the surgeon's finger in conventional simple open prostatectomy to enucleate the whole gland toward the bladder neck to near completion from the capsule. The enucleated adenoma was then retrieved from the bladder either by morcellation or open extraction.

Operative data, duration of surgery, catheterization time and hospital stay were retrieved. Recorded postoperative data included IPSS, uroflowmetry, and post voiding residual urine (PVRU) at one month. All patients were then evaluated postoperatively at 2 years with an IPSS, urine analysis, uroflowmetry, and PVRU. For patients with suspicion of infra-vesical obstruction (Q-max

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