Postoperative Outcomes of Plasmakinetic Transurethral Resection of the Prostate Compared to Monopolar Transurethral Resection of the Prostate in Patients With Comorbidities

Orhun Sinanoglu, Sinan Ekici, M. Naci Tatar, Güven Turan, Ahmet Keles, and Zeki Erdem

OBJECTIVE To compare the 12-month postoperative clinical data in patients with comorbidities undergoing plasmakinetic enucleation of the prostate (PK-TURP) and monopolar transurethral resection of the prostate (M-TURP) for symptomatic benign prostatic hyperplasia (BPH).

METHODS The data of 165 patients undergoing either PK-TURP or M-TURP from September 2006 to December 2010 were retrospectively evaluated in terms of erectile function. Decrease in Hb level at 24-hour follow-up, variations in serum Na^+ at 2-hour follow-up, and 12 month postoperative International Prostate Symptom Score (IPSS), $Q_{max.}$, postoperative International Index of Erectile Function (IIEF) scores and urethral stricture rates were evaluated.

RESULTS A total of 85 patients underwent M-TURP and 80 patients PK-TURP. In all, 62 patients in M-TURP group and 71 patients in PK-TURP group had one or more comorbidities ($P = .01$). The operative times were 59.8 ± 17.8 versus 60.3 ± 23.8 ($P = 0.539$). The postoperative 12-month IIEF scores of PK-TURP patients were significantly higher than those of M-TURP patients (M-TURP; 14.5 ± 6.9, PK-TURP; 17.4 ± 8.9, $P = .04$). IPSS and $Q_{max.}$ were similar in both the M-TURP and PK-TURP treatment arms (10.9 ± 8.1 versus 9 ± 7.9, $P = .187$ and 18.9 ± 4.8 versus 18.8 ± 6.4, $P = .905$). Urethral stricture rate was 3/62 in M-TURP versus 8/71 in PK-TURP treatment arm, $P = .171$).

CONCLUSION Both modalities yielded similar results with respect to IPSS and $Q_{max.}$. The postoperative IIEF in BPH patients with comorbidities appeared to be significantly higher in the PK-TURP group. Although urethral stricture rates seemed higher in the PK-TURP arm, the difference was not statistically significant. UROLOGY 80: 402–407, 2012. © 2012 Elsevier Inc.

The range of treatment modalities for benign prostatic hyperplasia (BPH) has been extended dramatically within the last decade. Many of these novel techniques were considered minimally invasive therapies because of their favorable safety profile compared with conventional surgical therapy. Monopolar transurethral resection of the prostate (M-TURP) still represents the gold standard in the operative management of BPH.[1] M-TURP is associated with maximal improvement in both symptoms and urinary flow rates. However this ablative procedure is associated with complications such as retrograde ejaculation, hemorrhage, or electrolyte disturbances, transurethral resection (TUR) syndrome, and erectile dysfunction.[2-4] The plasmakinetic transurethral resection of the prostate (PK-TURP) is a procedure using a bipolar electrocautery device. Its main advantages are use of normal saline instead of hyponatremic solutions, and avoiding the risk of TUR syndrome. Interference with certain types of pacemakers may be avoided during the use of monopolar diathermy for the high-frequency current generated by a bipolar instrument tends to remain superficial; the depths of penetration for

Financial Disclosure: *The authors declare that they have no relevant financial interests.*

The database and evaluation of results were approved by the Ethics Committee of Maltepe University (MAL. UN. KAEK/MEG.27 2011/22).

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Submitted: January 4, 2012, accepted (with revisions): February 7, 2012

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0090-4295/12/$36.00
http://dx.doi.org/10.1016/j.urology.2012.02.029

monopolar and bipolar systems are 3-5 and 0.5-1 mm, respectively.[5] The superficial depth aids in avoiding unintended stimulation of nearby nerves in contrast to monopolar resection. Although several studies compared the efficacies of different BPH treatments, there are few systematic reviews focused on their impact on male erectile function.[6] Significant risk of erectile dysfunction (ED) after M-TURP for benign prostatic hyperplasia was noted in some trials, with some reporting complete loss of erection. However these reports did not considered preoperative erectile status. A recent prospective study reported that ED associated with lower urinary tract symptoms (LUTS) frequently precedes M-TURP, that the procedure did not itself adversely affect sexual function, and that preoperative erectile dysfunction can be improved by M-TURP.[7] Despite the similar outcomes of both modalities in large series with respect to potency status, International Prostate Symptom Score (IPSS), $Q_{max.}$ and urethral stricture rates, the impact of PK-TURP on these parameters compared to standard M-TURP has not been thoroughly analyzed in patients with comorbidities, such as hypertension (HT), coronary artery disease (CAD), diabetes mellitus (DM) and chronic obstructive pulmonary disease (COPD). The aim of this study is to compare the perioperative data and 12 month postoperative clinical data, including erectile function status, in patients with comorbidities undergoing PKEP and TURP for symptomatic BPH.

MATERIAL AND METHODS

Study Design

The data of 165 patients undergoing either PK-TURP or M-TURP from September 2006 to December 2010 were retrospectively evaluated. After formal study approval by our Institutional Review Board, the data of preoperative IPSS, maximal flow rate ($Q_{max.}$), residual urine volume, International Index of Erectile Function (IIEF), and comorbidities, such as HT, CAD , DM, and COPD were reviewed (Table 1). Sodium levels before the procedure and at the 2nd hour, and hemoglobin levels before and at 24th hour were recorded postoperatively. Treatment efficacy was evaluated at postoperative 12 months by comparing urinary flow rates, and IPSS, IIEF scores, and urethral stricture rates were also recorded. Mean postoperative 12-month potency status of patients were evaluated with an IIEF questionnaire and compared with postoperative IIEF scores. Inclusion criteria were age >50 years, good performance status, acute urinary retention if catheter removal failed after therapy with α-blockers or chronic urinary retention unresponsive to medical treatment, IPSS ≥8, and $Q_{max.}$ ≤15 mL/s. Exclusion criteria were prostate volume <30 cm^3, documented or suspected prostate cancer, neurogenic bladder, bladder stone or diverticula, urethral stricture, and maximal bladder capacity >500 ml.

Table 1. Distribution of comorbidities in M-TURP and PK-TURP patients

	Modality		
Comorbidity	M-TURP	PK-TURP	Total
HT	30	25	55
HT + CAD	5	10	15
COPD	3	6	9
DM	13	7	20
HT + COPD	2	2	4
HT + CAD + DM	3	7	10
HT + CAD + COPD	1	1	2
HT + DM	4	10	14
HT + DM + COPD	0	2	2
DM + COPD	1	1	2
Total	62/85	*71/80	142/165

M = monopolar; PK = plasmakinetic; TURP = monopolar transurethral resection of prostate; HT = hypertension; CAD = coronary artery disease; COPD = chronic obstructive pulmonary disease; DM = diabetes mellitus.
* $P < .05$.

Equipment

The electroresection and coagulation for M-TURP were performed with a standard tungsten wire loop by high-frequency current having a maximum cutting power of 200 W and coagulating power of 80 W. In M-TURP application, a 25F resectoscope, a 30° wide-angled optic, a wire loop electrode (Storz, Tuttlingen, Germany), and 1.5% glycine solution were used. The gyrus Plasmakinetic System for PK-TURP consists of a generator and a cutting loop that does not differ in shape from a monopolar loop but has an active and return electrode on the same axis, separated by a ceramic insulator. A computer chip in the loop automatically adjusts the power setting of the generator for the best cutting and coagulating parameters. In the PK-TURP application, a 26F resectoscope, a 30° wide-angled optic, and saline solution were used. All operations were performed using a similar technique under spinal or general anesthesia. A 22F three-way urinary catheter was left in place after the operation, and saline irrigation was continued until the effluent fluid was completely clear.

STATISTICAL ANALYSIS

The results were analyzed using descriptive statistics with paired t tests and the χ^2 test to compare continuous variables and categorical data, respectively. Differences were considered significant at $P < .05$.

RESULTS

A total of 85 patients underwent M-TURP and 80 patients PK-TURP. Of the patients, 62 in the M-TURP group and 71 patients in the PK-TURP group had one or more of the comorbidities, including HT, DM, CAD and COPD ($P = .01$) (Table 1). Mean ages in M-TURP and PK-TURP were 64 ± 8.4 and 69.2 ± 8.2, respectively ($P = .000$) (Table 2). Preoperative IPSS scores were 18.6 ± 7.8 versus 25.6 ± 7.6 ($P = .000$). Prostate volumes were

Table 2. Preoperative characteristics of patients

Operation Modality	Age (y)	Prostate Volume (mL)	IPSS	$Q_{max.}$, mL/s	PVR Volume, mL	IIEF	Patients With Comorbidities (n)
M-TURP (n = 85)	64.0 ± 8.4	42.5 ± 13.2	18.6 ± 7.8	8.5 ± 2.73	120.8 ± 59	16.5 ± 6.32	62/85 (73%)
PK-PKEP (n = 80)	69.2 ± 8.2	72.4 ± 25.8	25.6 ± 7.6	8.4 ± 4.2	131.2 ± 74.3	15.6 ± 6.5	71/80 (88%)
P =	0.000	0.000	0.000	0.936	0.324	0.218	0.007

IPSS = International Prostate Symptom Score; $Q_{max.}$ = maximum flow; PVR = postvoiding residue; IIEF = International Index of Erectile Function; other abbreviations as in Table 1.

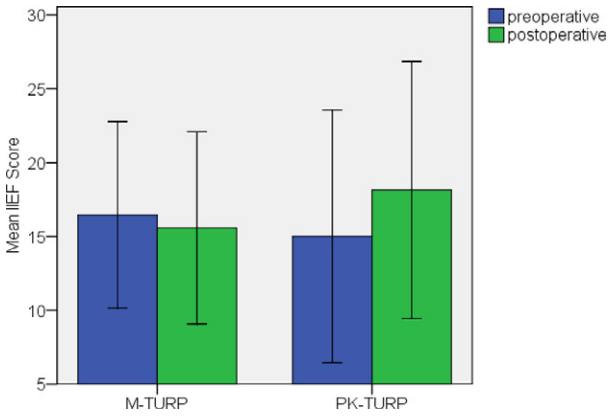

Figure 1. Mean IIEF (International Index of Erectile Function) score in the two groups with comorbidities at preoperative and postoperative 12 month. Values are mean ± SD (*P* = 0.218 preoperatively and *P* = 0.04 postoperatively). M = Monopolar, PK = Plasmakinetic, TURP = Monopolar transurethral resection of prostate. (Color version available online.)

42.5 ± 13.2 mL versus 72.4 ±25.8 mL (*P* = .000). There were no significant difference in terms of preoperative IIEF scores (Fig. 1), $Q_{max.}$, and PVR between two groups (Table 2). The operative times were 59.8 ± 17.8 and 60.3 ± 23.8 minutes, respectively (*P* = .539). None of the patients received blood transfusion intraoperatively or postoperatively. The mean difference in Hb level at 24-hour follow-up (g/dL) were lower in PK-TURP group (−1.4 ± 1.1 vs. −1.9 ± 1.1, *P* = .03). The mean difference in serum sodium at 2-hour follow-up (mg/dL) were lower were lower in PK-TURP group (−3.4 vs. −10.7, *P* = .000). The catheterization time and length of hospital stay were 2-3 days irrespective of resection modalities. In patients with comorbidities, the postoperative 12-month IIEF scores of PK-TURP patients were significantly higher than those of M-TURP patients (M-TURP; 14.5 ± 6.9, PK-TURP; 17.4 ± 8.9, *P* = .04) (Fig. 1). IPSS and $Q_{max.}$ were similar in both the M-TURP and PK-TURP treatment arms (10.9 ±8.1 vs. 9 ±7.9, *P* = .187 and 18.9 ±4.8 vs. 18.8 ±6.4, *P* = .905 respectively). Urethral stricture rate was 3/62 in M-TURP versus 8/71 in PK-TURP treatment arm, *P* = .171) (Table 3). The states of significance in terms of IIEF scores and urethral stricture rates between both procedures did not differ either when the data of all patients with or without comorbidities were analyzed (*P* = .035 and *P* = .102) (Table 3).

COMMENT

The goals of the treatment modalities for BPH are to reduce symptoms, provide safety, and minimize adverse effects.[8] Since its introduction into the BPH treatment modalities, the perioperative and postoperative complications of M-TURP have been hemorrage, hyponatremia and urinary retention, postoperative bleeding with clot retention, urinary tract infection, urethral stricture, and erectile dysfunction, respectively.[9] Technical improvement of conventional M-TURP generators and advances in anesthesia have already ensured a significant decrease in bleeding rates.[10] To reduce complications of M-TURP, various technologies have been introduced with varying success. PK-TURP using bipolar energy has demonstrated promising early results among these modalities. Its perioperative results are comparable with those obtained with M-TURP, whereas its postoperative outcomes are more favorable. There are some studies reporting that TUR syndrome disappeared after bipolar resection of prostate, and that almost bloodless resection was possible.[11,12] However, several other studies reported similar operation times, bleeding scores, and resected tissue.

Catheterization time, irrigated volume data, and comparable long-term clinical outcomes for both modalities suggest that the main advantage of PK-TURP is only to decrease the risk of TUR syndrome, making it convenient for larger prostate resection, with no time limitation.[13,14] In larger series, 12-month postoperative $Q_{max.}$, IPSS, and complication rates were generally comparable between the 2 treatment groups, with no statistical difference.[15]

In our study, despite older age, larger prostate volumes, higher IPSS and high incidence of comorbidities in PK-TURP group, variations in Hb level at postoperative 24-hour, serum sodium at perioperative 2-hour and IPSS in postoperative 12-hour follow-up were significantly lower in PK-TURP group. Furthermore, the similarity of resection time in both groups suggested that the time interval for a given unit of resected tissue seemed to be shorter in the PK-TURP arm, as the prostate volume were higher in the second group. Thus, we believe that PK-TURP resulted in benefits postoperatively compared with monopolar TURP, with better long-term improvement in urinary symptoms. Finally, the postoperative IPSS and $Q_{max.}$ rates were similar and urethral stricture rates were not significantly higher in the PK-TURP group, although 8 cases in 71 PK-TURP and

Table 3. Postoperative 12-month patient data

	Patients With Comorbidities		All Patients	
Group Modality	M-TURP	PK-TURP	M-TURP	PK-TURP
IPSS	10.9 ± 8.1	9 ± 7.9	10.0 ± 7.34	8.4 ± 7.7
$Q_{max.}$, mL/s	18.9 ± 4.8	18.8 ± 6.4	20.0 ± 4.9	19.2 ± 6.3
IIEF	14.5 ± 6.9	*17.4 ± 8.9	15 ± 6.5	*18.1 ± 8.7
Urethral Stricture	3/62 (5%)	8/71 (11%)	3/85 (4%)	8/80 (10%)

IPSS = International Prostate Symptom Score; $Q_{max.}$ = maximum flow; IIEF = International Index of Erectile Function; other abbreviations as in Table 1.
* $P < .05$.

3 cases in 62 M-TURP patients developed urethral stricture. To assess whether this increase in the PK-TURP arm is due to comorbidities or to the procedure itself, we analyzed the data of all patients, and found out that all of the stricture cases were among the patients with comorbidities.

The impact on M-TURP of erectile function alone was studied so far in many series; the rate of impotence for M-TURP alone varies from 3.4% to 32% in the literature.[16] However, there are also reports of improved erections after M-TURP.[17] M-TURP was also found to be associated with a lower incidence of ED compared to transurethral electrovaporization (TUEVP) ($P = .04$) but not to holmium laser treatment (HLT).[18] A recent study including 204 patients undergoing either M-TURP or plasmakinetic enucleation of the prostate (PKEP) suggested that postoperative sexual function in these patients did not depend on the procedures.[19] However, this issue has not been thoroughly analyzed for the PK-TURP procedure. Considering the previous studies reporting the improved safety profile of the PK-TURP procedure, the patients with older age, larger prostate volumes, and severe comorbidities such as HT, CAD, DM, and COPD underwent the PK-TURP procedure in our institution. We evaluated the preoperative and postoperative 12-month IIEF scores besides the above-mentioned clinical parameters, comparing them with those of M-TURP patients. Postoperative 12-month IIEF scores of PK-TURP patients were significantly higher than those of M-TURP patients. The mechanism of this improved effect in favor of PK-TURP is unclear, but it can be explained with the findings of previous studies. First, bipolar energy use may offer some advantages with respect to the reduction of conductive trauma (ie, tissue charring), for the high-frequency current generated by a bipolar instrument tends to remain superficial (0.5-1-mm depth) compared to monopolar device (3-5-mm depth.).[5] Second, unintended stimulation of nearby nerves during monopolar resection may be avoided with bipolar resection.[20]

Our study had some limitations. Besides being in retrospective nature, the patients in M-TURP and PK-TURP treatment groups were unmatched in terms of comorbidities, and the sample size was not large enough to evaluate the impact on postoperative 12 month erectile status and urethral stricture rates accurately.

In conclusion, although M-TURP is still the gold standard for treatment of BPH and results in the best improvement of symptoms and urine flow rates, many authors of recent papers have agreed that PK-TURP is associated with superior clinical outcomes compared with M-TURP with respect to hemorrage and hyponatremia. Early catheter removal with early discharge from the hospital, as well as very rare complications, were also reported by several authors. Beyond supporting the previous reports, our study suggests that PK-TURP is a safe and effective procedure in patients with older age, larger prostate, and more serious comorbidities. Furthermore, it seems to have a favorable impact on erectile status compared with M-TURP in this specific patient group. However, urethral stricture rates should be evaluated in prospective randomized studies with groups with similar comorbidities, to determine whether it is due to the procedure itself or to accompanying disorders.

References

1. Madersbacher S, Alivizatos G, Nordling J, et al. EAU 2004 guidelines on assessment, therapy and follow-up of men with lower urinary tract symptoms suggestive of benign prostatic obstruction (BPH guidelines). *Eur Urol.* 2004;46:547-554.
2. Madersbacher S, Marberger M. Is transurethral resection of the prostate still justified? *BJU Int.* 1999;83:227-237.
3. Collins JW, MacDermott S, Bradbrook RA, et al. A comparison of the effect of 1.5% glycine and 5% glucose irrigants on plasma serum physiology and the incidence of transurethral resection syndrome during prostate resection. *BJU Int.* 2005;96:368-372.
4. Erturhan S, Erbagci A, Seckiner I, et al. Plasmakinetic resection of the prostate versus standard transurethral resection of the prostate: a prospective randomized trial with 1-year follow-up. *Prostate Cancer Prostatic Dis.* 2007;10:97-100.
5. Dincel C, Samli MM, Guler C, et al. Plasma kinetic vaporization of the prostate: clinical evaluation of a new technique. *J Endourol.* 2004;18:293-298.
6. Frieben RW, Lin H-C, Hinh PP, et al. The impact of minimally invasive surgeries for the treatment of symptomatic benign prostatic hyperplasia on male sexual function: a systematic review. *Asian J Androl.* 2010;12:500-508.
7. Mishriki SF, Samuel JS, Grimsley T. Lam, et al TURP and sex: patient and partner prospective 12 years follow-up study. *BJU Int.* 2011.
8. Lowe FC. Goals for benign prostatic hyperplasia therapy. *Urology.* 2002;59(Suppl 1):1-2.
9. Rassweiler J, Teber D, Kuntz R, et al. Complications of transurethral resection of the prostate (TURP)—incidence, management, and prevention. *Eur Urol.* 2006;50(5):969-979; discussion 980.
10. Haupt G, Pannek J, Benkert S, et al. Transurethral resection of the prostate with microprocessor controlled electrosurgical unit. *J Urol.* 1997;158:497-501.
11. Starkman JS, Santucci RA. Comparison of bipolar resection of the prostate with standard transurethral prostatectomy: shorter stay, earlier catheter removal and fewer complications. *BJU Int.* 2005;95:69-71.
12. Bhansali M, Patankar S, Dobhada S, et al. Management of large (>60 g) prostate gland: PlasmaKinetic superpulse (bipolar) versus conventional (monopolar) transurethral resection of the prostate. *J Endourol.* 2009;23:141-145.

13. Seckiner I, Yesilli C, Akduman B, et al. A prospective randomized study for comparing bipolar plasmakinetic resection of the prostate with standard TURP. *Urol Int*. 2006;76:139-143.
14. Yang S, Lin WC, Chang HK, et al. Gyrus plasmasect: is it better than monopolar transurethral resection of prostate?. *Urol Int*. 2004; 73:258-261.
15. Ho HS, Yip SK, Lim KB, et al. A prospective randomized study comparing monopolar and bipolar transurethral resection of prostate using transurethral resection in saline (TURIS) system. *Eur Urol*. 2007;52:517-522.
16. Transurethrale Resektion HR. (TURP) und trans-urethrale inzision (TUIP) der prostata. In: Hoffmann R, ed. *Endoskopische Urologie*. Heidelberg: Springer; 2005:50-84.
17. Wasson JH, Reda DJ, Bruskewitz RC, et al. A comparison of transurethral surgery with watchful waiting for moderate symptoms of benign prostatic hyperplasia. The Veterans Affairs Cooperative Study Group on Transurethral Resection of the Prostate. *N Engl J Med* 1995;322:75-79.
18. Zong HT, Peng XX, Yang CC, et al. The impact of transurethral procedures for benign prostate hyperplasia on male sexual function: A meta-analysis. *J Androl*. In press.
19. Zhao Z, Zeng G, Zhong W, et al. A prospective, randomised trial comparing plasmakinetic enucleation to standard transurethral resection of the prostate for symptomatic benign prostatic hyperplasia: three-year follow-up results. *Eur Urol*. 2010;58:752-758.
20. Martis G, Cardi A, Massimo D, et al. Transurethral resection of prostate: technical progress and clinical experience using the bipolar gyrus plasmakinetic tissue management system. *Surg Endosc*. 2008;22:2078-2083.

EDITORIAL COMMENT

This study compares a traditional technique of monopolar transurethral resection of the prostate (M-TURP) using a wire loop electrode with PK-TURP using a wire loop configuration but with the PK electrode design (Gyrus PK System). As the authors note, this study is limited by its retrospective nature and by clearly unmatched study cohorts. Still, it offers some interesting and valid observations.

The main take-away point appears to be that patients with greater comorbidities, more advanced age, and larger prostate volumes can benefit from PK-TURP, most particularly in term of improved postoperative sexual function. The rationale, as outlined by the authors, in terms of the mechanism of action of PK-TURP (lower conductivity with less tissue necrosis, charring, and potential nerve impairment) may indeed play a role. Yet, this may not be the whole story.

In terms of erectile function, it may well be that other factors are also at work. We know that there are reports, as cited by the authors, of improved sexual function after traditional TURP. Clearly the technology used in those reports was not the cause.

Also, we know that there is a strong link between erectile dysfunction (ED) and BPH-lower urinary tract symptoms (LUTS), as noted in several studies, both community based and clinical. Therefore, it may well be that resolution of symptomatic benign prostatic hyperplasia (BPH) with LUTS may be the cause for the finding of improved sexual function. Thus, we may speculate that the presence of significant BPH with LUTS in patients with advanced age and comorbid conditions is of greater significance in predisposing that group to ED. Thus, it would be expected that this group would see great benefit from treatment that addresses the underlying BPH pathology and LUTS symptomatology.

There is also statistical benefit in terms of hemoglobin levels and sodium levels, both favoring PK-TURP. Still, there was no difference shown, in either catheterization time or length of stay, between the procedures. However, it is not clear whether this is due to a real difference or is simply a function of postoperative institutional protocol.

Differences in technique between traditional M-TURP and bipolar-TURP are not addressed, so no conclusions can be drawn in this regard. However, it is likely safe to assume that bipolar technologies will favor less blood loss and reduced risks of fluid absorption with potential attendant complications.

It is clear that male sexual function in terms of ED is a complex process that can easily be affected by BPH, its associated symptoms, and the various medical and surgical therapies used in treatment.

Only further study, preferably on a prospective basis, will be able to more fully define the true benefits of newer technologies (and medications) in the treatment of symptomatic BPH and their effects, both good and bad, on sexual function.

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http://dx.doi.org/10.1016/j.urology.2012.02.032
UROLOGY 80: 406, 2012. © 2012 Elsevier Inc.

REPLY

Although it is the gold standard surgical treatment for benign prostatic hyperplasia (BPH), M-TURP is limited to prostate weighing less than 100 g and is associated with significant complications, including ED.[1-3]

Therefore, a demand for technological innovations was increased in the last decades to minimize the risks of M-TURP. Among these, the Gyrus plasmakinetic (PK) system in prostate resection gained ground in the last decade, as the urologists began to prefer PK-TURP, particularly in patients with cardiovascular risks and larger prostates, for the reasons that TUR syndrome disappeared after PK-TURP and almost bloodless resection was possible in many cases.[4,5]

It is certain that the cure of symptomatic BPH contributes to improvement in sexual function. However this domain is open to biases. For example, in our clinical experience, a previous medical treatment for BPH, such as the use of a 5α reductase inhibitor for a large prostate gland, may alter (erectile function) EF, and withdrawal of the drug after surgery may have positive effect on EF. In this case the postoperative improvement in EF would not be linked with TURP modalities.

In addition, we do not know whether the presence of significant BPH, the severity of the accompanying disease per se, or both have an impact on EF. However, the previous studies reported that the depth of electric current penetration in PK systems are 3- to 4-fold lower compared with M-TURP. Furthermore, histologic examination of the resected prostate revealed only mild to moderate cautery artefacts in PK-TURP instead of severe artefacts in M-TURP.[6] All of these data lead us to think that the superficial depth of currency and tissue charring aids in avoiding impairment of nearby nerves in contrast to TURP, and this fact might contribute to EF improvement in conjunction with the cure of BPH itself.

Besides the benefits in terms of hemoglobin and sodium levels in accordance with other studies, several authors have reported shorter catheterization and hospital stay postoperatively.[4,5] Indeed, our postoperative institutional protocol specified catheterization for a minimum of 2 days, as early catheter removal in both treatment modalities caused postoperative urinary/clot retention previously in most cases following M-TURP, PK-TURP, as well as holmium laser prostatectomy.

The PK system is also easier for the surgeon to manipulate, as the resected tissue does not stick to the bipolar loop, and the coagulation process is quicker with better vision assured by the balanced fluid inflow and outflow, which makes the procedure more rapid and safer compared with M-TURP.

Finally, a prospective study enrolling a great number of patients with matched comorbidities in both treatment arms will reveal the impact of PK-TURP, not only on EF but also on serious long-term postoperative issues, such as urethral strictures and reoperation rates.

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References

1. Madersbacher S, Alivizatos G, Nordling J, et al. JJMCH. *EAU* 2004 guidelines on assessment, therapy and follow-up of men with lower urinary tract symptoms suggestive of benign prostatic obstruction (BPH guidelines). *Eur Urol.* 2004;46:547-554.
2. Madersbacher S, Alivizatos G, Nordling J, et al. EAU 2004 guidelines on assessment, therapy and follow-up of men with lower urinary tract symptoms suggestive of benign prostatic obstruction (BPH guidelines). *Eur Urol.* 2004;46:547-554.
3. Rassweiler J, Teber D, Kuntz R, et al. Complications of transurethral resection of the prostate (TURP)—incidence, management, and prevention. *Eur Urol.* 2006;50:969-980.
4. Starkman JS, Santucci RA. Comparison of bipolar resection of the prostate with standard transurethral prostatectomy: shorter stay, earlier catheter removal and fewer complications. *BJU Int.* 2005;95:69-71.
5. Bhansali M, Patankar S, Dobhada S, et al. Management of large (>60 g) prostate gland: PlasmaKinetic superpulse (bipolar) versus conventional (monopolar) transurethral resection of the prostate. *J Endourol.* 2009;23:141-145.
6. Ayyildiz A, Nuhoğlu B, et al. Comparison of transurethral prostate resection and plasmakinetic prostate resection according to cautery artefacts in tissue specimens. *Int Urol Nephrol.* 2007;39:1091-1096.

http://dx.doi.org/10.1016/j.urology.2012.02.033
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