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Benign Prostatic Obstruction

Photoselective Vaporization of the Prostate: Subgroup Analysis of Men with Refractory Urinary Retention

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Abstract

Objectives: The purpose of this study was to evaluate the feasibility and efficacy of photoselective vaporization of the prostate (PVP) in patients with refractory urinary retention (RUR) secondary to benign prostate hyperplasia (BPH).
Methods: Perioperative data, postoperative outcomes, and adverse events within 24 months in 70 patients with RUR were compared to 113 men with no urinary retention (NUR) before surgery.
Results: Follow-up for the two groups was as follows (RUR vs. NUR at 1, 3, 6, 12, and 24 months): peak urinary flow rate: 16.9 vs. 19.4 ml/s, 16.3 vs. 20.9 ml/s, 17.7 vs. 19.7 ml/s, 18.2 vs. 21 ml/s, and 19.4 vs. 23.3 ml/s; International Prostate Symptom Score: 7.6 vs. 10.7, 7 vs. 7.5, 5.7 vs. 6.2, 5.5 vs. 6.5, and 4.4 vs. 6.5, respectively. Postoperative urinary retention and complication rates were comparable for the two groups. In five patients (2.7%), a reoperation with PVP or transurethral resection of the prostate was necessary. Bladder neck contracture and urethral stricture developed in 0.5% ($n = 1$) and 4.9% ($n = 9$), respectively.
Conclusion: PVP seems to be a safe and effective surgical tool in patients with RUR caused by prostatic enlargement. The complication rate is comparable to that of patients with NUR before PVP.

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1. Introduction

Lower urinary tract symptoms (LUTS) secondary to benign prostatic hyperplasia (BPH) are encountered with increasing frequency in aging men [1]. The natural history of BPH is one of progression; mild symptoms become more bothersome over time. The ultimate failure of conservative management results in urinary retention and the need for catheterization. According to recently published

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European guidelines on BPH, patients with urinary retention typically require surgical intervention as first-line treatment [2]. Urinary retention occurred in 24%–42% of patients who underwent surgical treatment for BPH [3].

Patients with urinary retention who are undergoing surgical intervention for BPH are usually excluded from studies, since the outcome of treatment is often poor, and they have a higher complication rate than similar patients without urinary retention [3,4].

To minimize transurethral resection of the prostate (TURP)-associated morbidity, only Holmium Laser Enucleation (HoLEP) is a safe treatment alternative for these patients; its effectiveness is comparable to that of TURP. Urinary retention rate and morbidity were comparable to those in patients without urinary retention [5]. Photoselective vaporization of the prostate (PVP) is a promising new surgical technique for patients who suffer from obstructive voiding secondary to BPH. The purpose of this study was to evaluate the feasibility and efficacy of PVP in patients with urinary retention secondary to BPH before surgery.

2. Materials and methods

From September 2002 to November 2004, 183 consecutive patients with LUTS secondary to BPH without (NUR) and with (RUR) refractory urinary retention who needed an indwelling catheter underwent PVP.

According to current BPH guidelines, all patients considered for surgery underwent an initial medical treatment such as an α-blocker for at least six weeks [2]. Patients with indications for mandatory surgery (recurrent urinary tract infections, renal insufficiency, or recurrent prostatic bleeding) were excluded from the medical treatment. In patients with an indwelling catheter in whom surgery was planned, at least one attempt to remove the catheter had failed.

All patients underwent a urological standard evaluation before surgery that included digital rectal examination (DRE), assessment of International Prostate Symptom Score (IPSS) and quality of life questionnaire (IPSS-Qol), peak urinary flow rate (Qmax), postvoid residual volume (Vres), transrectal ultrasound measurement of prostate volume (TRUS), and ultrasound evaluation of the kidneys. Laboratory investigations before DRE and instrumental examinations, including complete blood count, determination of clinical chemistry parameters and serum prostate-specific antigen (PSA), and urinalysis, were performed. In patients with concomitant PSA value >3 ng/ml or a DRE that was suspicious of prostate cancer, at least two eightfold prostate core biopsy cycles were performed. Patients with diagnosis of prostate cancer were excluded from the study.

Thus, besides RUR and the need for an indwelling catheter, inclusion criteria for patients without urinary retention were Vres >100 ml and/or Qmax ≤15 ml/s in combination with an IPSS >7.

Our technique for PVP was recently published in detail [6]. PVP was performed with a GreenLight PV laser generator (GreenLight PV™, Laserscope®, San Jose, CA). The end point is a clearly deobstructed TURP-like prostatic fossa that is lined with "coral-like" stromal residues. Local anesthesia was administered to most patients, which necessitated the insertion of a 20 French Tiemann catheter at the end of the procedure. The catheter was left in place for 24 hours.

2.1. Statistical analysis

All consecutive patients were divided into two groups: patients with urinary retention who needed an indwelling catheter before surgery (RUR) and patients with no urinary retention (NUR) before PVP. The two groups were compared with regard to perioperative parameters such as preoperative prostate volume, operating time (OT), postoperative changes of hemoglobin, and serum sodium. At time of discharge, 1, 3, 6, 12, and 24 months after surgery Qmax, Vres, IPSS, IPSS-QoL, and reinterventions or complications were recorded and compared.

All data presented are expressed as mean ± standard deviation or case numbers. Statistical analysis was performed with the SPSS 11.5 (SPSS Inc., Chicago, IL) statistical software package. Differences between means (demographical data, perioperative parameters, follow-up parameters) of the two groups were assessed by means of the Mann-Whitney U test. The Wilcoxon test was used for statistical analysis of changes during follow-up within the groups (IPSS, QoL, Qmax, Vres, hemoglobin, and serum sodium). The chi-square test was employed to compare categorical data (complications). A two-sided p value <0.05 was considered to be statistically significant.

3. Results

Our study population comprised 70 (38.3%) patients in the RUR group. Patients with an indwelling catheter were significantly older than patients who were not catheterized at the time of admission ($p = 0.001$). Before surgery, patients with RUR had a higher mean PSA value ($p = 0.011$), higher mean Vres ($p = 0.003$) and lower mean IPSS ($p = 0.064$). Mean prostate size was not significantly different in the two groups ($p = 0.267$). Detailed patient characteristics are listed in Table 1.

Intraoperative parameters were (RUR vs. NUR): mean OT 63 ± 28 min vs. 57 ± 26 min ($p = 0.143$), mean energy applied 203 ± 98 kJ vs. 189 ± 86 kJ ($p = 0.305$), average preoperative hemoglobin 14.0 ± 1.3 g/dl vs. 14.7 ± 1.8 g/dl, average hemoglobin one hour postoperatively 14.3 ± 1.7 g/dl vs. 13.8 ± 2.1 g/dl, and average hemoglobin at discharge 12.8 ± 1.4 g/dl vs. 13.5 ± 2.0 g/dl. At the same time, mean preoperative serum sodium was 140 ± 3.2 U/l vs. 140 ± 2.3 U/l, mean serum sodium one hour

Table 1 – Preoperative characteristics of 183 patients

	NUR	RUR	p
Number of patients (subgroups)	113 (61.7%)	70 (38.3%)	
Demographics			
Age (years)	70.0 ± 8.6 (50–90)	74.5 ± 10.4 (46–95)	0.001
ASA	2.3 ± 0.6 (1–4)	2.4 ± 0.6 (1–4)	0.398
Prostate volume (ml)	53.2 ± 29.1 (10–180)	60.8 ± 33.3 (20–130)	0.267
PSA (ng/dl)	3.8 ± 3.6 (0–20)	5.3 ± 4.5 (0–20)	0.011
IPSS	18.6 ± 6.2 (7–31)	15.5 ± 6.6§ (7–23)	0.064
IPSS–Qol	3.5 ± 1.7 (0–6)	3.5 ± 2.0§ (0–6)	0.687
Qmax (ml/s)	7.1 ± 3.1 (0–14)	–	–
Vres (ml)	154 ± 153 (50–800)	318 ± 293 (100–1000)	0.003
Perioperative parameters			
Operation time (min)	57.4 ± 25.5 (15–160)	62.8 ± 27.5 (10–150)	0.143
Applied energy (kJ)	189 ± 86 (20–477)	203 ± 98 (24–530)	0.305
Hospitalization time (days)$	5.3 ± 2.4 (3–16)	5.5 ± 2.3 (3–15)	0.257
Catheterization time (days)	1.8 ± 1.5 (1–10)	1.7 ± 1.2 (1–7)	0.532

Subgroup analysis in patients with (RUR) and without (NUR). Data presented as mean ± standard deviation. Statistical comparison of means by Mann-Whitney U test, SPSS 11.5; p value <0.05 was considered to be statistical significant.
§ Patients who had already an indwelling catheter because of urinary retention completed the score by recollection.
$ Day of admission and operation included.

postoperatively 139 ± 2.6 U/l vs. 139 ± 2.7 U/l, and on discharge 139 ± 3.6 U/l vs. 139 ± 2.2 U/l.

Local anesthesia was used in 135 (73.8%) patients. Usually bladder irrigation was not necessary. Mean catheterization time was 1.7 ± 1.2 days for patients with RUR and 1.8 ± 1.5 days for patients with NUR ($p = 0.532$). After catheter removal, 12 (10.6%) patients with NUR and nine (12.9%) patients with RUR required recatheterization ($p = 0.407$). Of these, 17 (9.3%) were discharged with a catheter, of whom seven were already catheterized at the time of admission (RUR). Usually, the catheter could be successfully removed after an additional three to five days in our ambulatory. One month after operation, all patients were free of any indwelling catheter. Hospitalization time, including admission and operation day, was 5.5 ± 2.3 days (RUR) and 5.3 ± 2.4 days (NUR) ($p = 0.257$).

No severe intraoperative complication was observed. The complication rate within an observation period of 24 months is shown in Table 2. The incidence of major complications was 1.1% ($n = 2$). One patient with known renal dysfunction suffered postoperatively from acute renal insufficiency and needed dialysis. In another patient, a urosepsis occurred that required admission to the intensive

Table 2 – Cumulative rate of complications after 183 PVP in patients with (RUR) and without (NUR) before surgery within a 24-month follow-up

	NUR	RUR	p
Number of patients (subgroups)	113	70	
Indwelling catheter at discharge; n (%)	10 (8.8)	7 (10.0)	0.494
Cumulative complication rate; n (%)			
Transient hematuria	1 (0.9)	1 (1.4)	0.620
Mild-moderate dysuria‡	7 (6.2)	3 (4.3)	0.424
Transient stress incontinence	3 (2.7)	0	0.233
Acute renal failure, requiring dialysis§	0	1 (1.4)	0.383
Urosepsis§	1 (0.9)	0	0.617
Urinary tract infection‡	5 (4.4)	3 (4.3)	0.636
Recatheterization (transient)‡	12 (10.6)	9 (12.9)	0.407
Bladder neck stricture	1 (0.9)	0	0.617
Urethral stricture requiring UTI*	5 (4.4)	4 (5.7)	0.474
Reoperation (PVP/TURP)	3 (2.7)	2 (2.9)	0.635
Total subgroup n/subgroup total (%)	38/113 (33.6)	23/70 (32.9)	0.523

* Internal urethrotomy.
‡ Complications typically afflicted.
§ Major complication.

care unit. The further course of these patients in hospital was uneventful. Mild to moderate dysuria was reported by seven (6.2%) NUR patients and three (4.3%) RUR patients ($p = 0.424$). Patients with occasional smarting that occurred immediately after catheter removal and lasted no longer than 24 hours were excluded. Usually, mild dysuria did not continue for more than seven to 14 days and could be successfully treated by administering nonsteroid anti-inflammatory drugs for a few days. Self-limiting urinary stress incontinence was observed in three (2.7%) patients. In two cases, active pelvic floor training was necessary. Urinary tract infection occurred in five (4.4%) noncatheterized patients and in three (4.3%) catheterized patients ($p = 0.636$), mainly because oral antibiotics were discontinued too early or bacteria were not susceptible to the prescribed medication.

Five (4.4%) patients of the NUR group and four (5.7%) patients of the RUR group required internal urethrotomy during follow-up because of urethral strictures ($p = 0.474$). Within the observation period of 24 months, a reoperation by PVP or TURP was necessary in five patients (2.7%). One patient (0.9%) of the noncatheterized group developed a bladder neck stricture that was successfully treated with KTP-laser incision. The cumulative incidence of complications was comparable between the two groups (Table 2).

Functional outcome parameters are presented in Fig. 1. Data were available for analysis from 68 patients with RUR at the time of discharge, 49 after one month, 42 after three months, 31 after six months, 29 after 12 months, and 16 patients after 24 months. In the NUR group we obtained data from 109, 89, 73, 67, 55, and 19 patients, respectively. The median follow-up for patients with RUR was 12.1 months and 11.2 months for patients with NUR. The main reason for the difference in the number of eligible patients was the insufficient period of time that had elapsed after treatment. Within the observation period, 21 patients were unwilling to participate in the follow-up or were lost to follow-up. Morbidity precluded further follow-up in seven patients. Five patients died within the follow-up period. Six patients already lost at discharge forgot or refused to fill out the questionnaires.

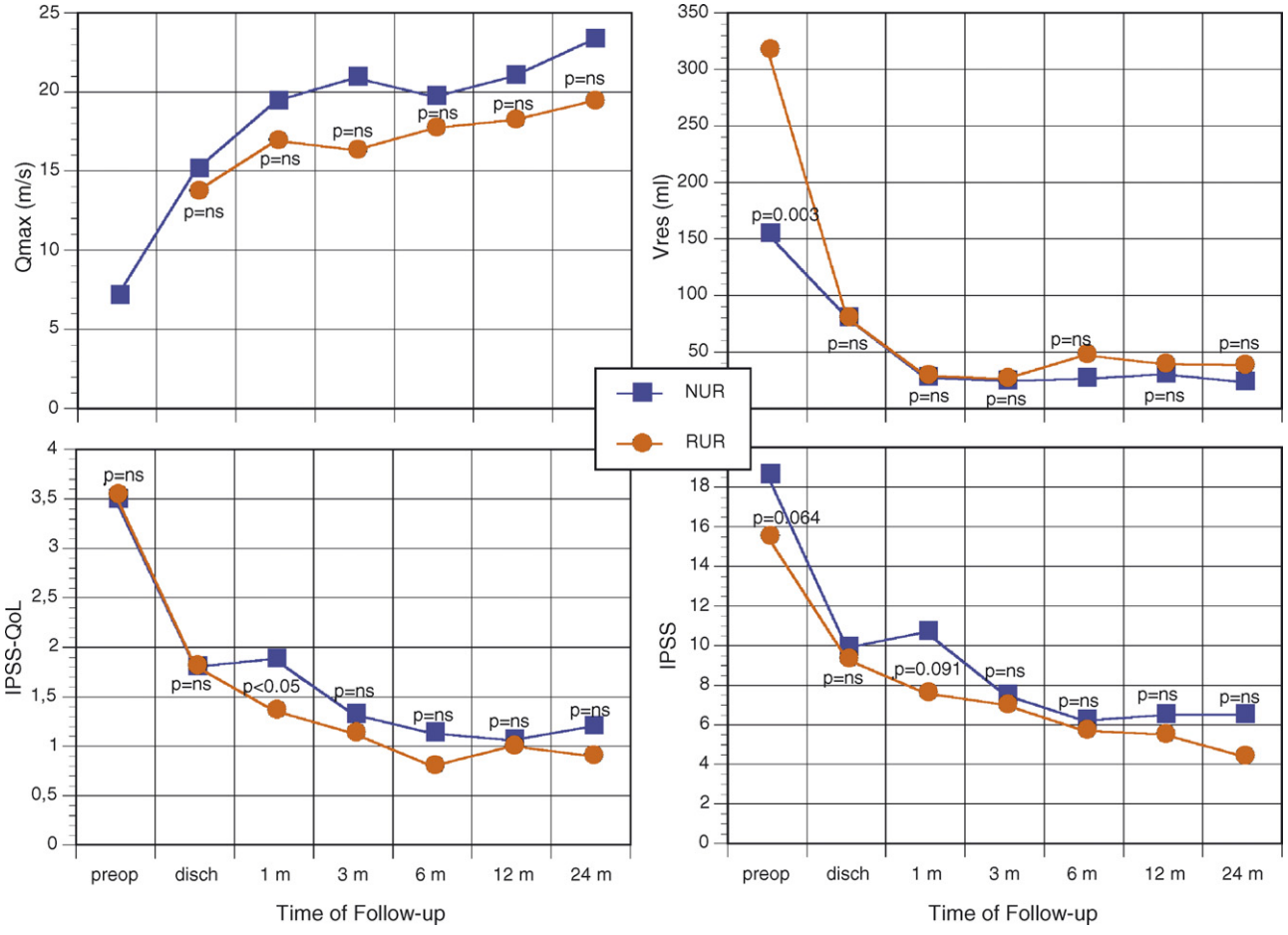

Fig. 1 – Functional outcome after PVP in patients with (RUR) and without (NUR) before surgery.

During follow-up, we did not observe any statistically significant differences between the two groups with regard to Qmax, IPSS, IPSS-QoL, or Vres (Fig. 1). The improvement was sustained throughout the 24-month follow-up period. IPSS, IPSS-QoL, and Vres likewise improved significantly within the groups (Table 3).

Fig. 2 shows functional outcome parameters for the two groups stratified in age groups (<60, 60–75, and >75). Clearly younger patients have a more favorable outcome with respect to Qmax. In older patients, we observed a less favorable outcome of Qmax in the two groups (Fig. 2). Thus, age seems to be an independent parameter of our outcome analysis.

4. Discussion

TURP is regarded as the gold standard for surgical treatment in patients with LUTS secondary to BPH [2]. However, despite good short- and long-term results, TURP-associated side effects include severe bleeding with consecutive blood transfusion, risk of fluid absorption (TUR syndrome), and the costs of hospitalization. Although perioperative mortality could be reduced virtually to zero, perioperative morbidity has remained stable with TURP over recent decades [4,7,8]. To reduce perioperative morbidity of TURP, numerous new techniques were introduced into clinical practice in an attempt to reduce the severe problems that are associated with TURP [9,10]. However, only HoLEP seems to have comparable, or even better, results for prostatic tissue removal and consecutive improvement of voiding parameters [5,11–13].

However, despite the excellent functional results obtained with HoLEP compared to TURP, HoLEP is preferred by only a small number of urologists. A crucial problem seems to be the more difficult learning period and problems associated with removing enucleated prostatic adenoma. Despite excellent three-year data after more than 1,000 procedures, HoLEP does not seem to be widely accepted among urologists [14].

The new PVP procedure is one of the most promising laser treatments available today. The potassium-titanyl-phosphate (KTP) laser emits visible green light at a wavelength of 532 nm, which is strongly absorbed by oxyhemoglobin, but hardly at all by water, which prevents the beam from penetrating into deeper tissue layers [15]. The heat generated by absorption of the KTP laser energy leads to formation of vapor bubbles inside the targeted tissue. Continued exposure of the targeted area to KTP laser energy leads to progressive

Table 3 – Subjective and objective 24-month follow-ups in patients with (RUR) and without (NUR) before PVP

Characteristics	Preoperatively	Discharge	Postoperatively (mo)				
			1	3	6	12	24
RUR							
Patients (n)	70	68	49	42	31	29	16
IPSS	15.5 ± 6.6	9.3 ± 7.2*	7.6 ± 5.0 ns	7.0 ± 3.9 ns	5.7 ± 4.4 ns	5.5 ± 4.2 ns	4.4 ± 2.7 ns
IPSS-QoL	3.5 ± 2.0	1.8 ± 1.7§	1.4 ± 1.1 ns	1.1 ± 1.3 ns	0.8 ± 0.7 ns	1.0 ± 1.1 ns	0.9 ± 0.9 ns
Qmax (ml/s)	–	13.7 ± 10.7*	16.9 ± 10.2#	16.3 ± 5.7 ns	17.7 ± 9.4 ns	18.2 ± 11.8 ns	19.4 ± 6.2 ns
Vres (ml)	318 ± 293	80 ± 156§	29 ± 41§	26 ± 48 ns	47 ± 68 ns	39 ± 53 ns	38 ± 52 ns
NUR							
Patients (n)	113	109	89	73	67	55	19
IPSS	18.6 ± 6.2	9.9 ± 6.4*	10.7 ± 7.9 ns	7.5 ± 5.9*	6.2 ± 4.8 ns	6.5 ± 5.4 ns	6.5 ± 5.8 ns
IPSS-QoL	3.5 ± 1.7	1.8 ± 1.5*	1.9 ± 1.6 ns	1.3 ± 1.4§	1.1 ± 1.1 ns	1.1 ± 1.1 ns	1.2 ± 1.1 ns
Qmax (ml/s)	7.1 ± 3.1	15.1 ± 9.4*	19.4 ± 10.9§	20.9 ± 9.4#	19.7 ± 9.1 ns	21.0 ± 9.4 ns	23.3 ± 9.4 ns
Vres (ml)	154 ± 153	80 ± 108*	27 ± 45*	24 ± 33 ns	26 ± 44 ns	30 ± 40 ns	23 ± 27 ns

Data presented as mean ± standard deviation. Statistical comparison to the previous control, Wilcoxon test, SPSS 11.5; p value <0.05 was considered to be statistically significant. ns = not significant.
* $p < 0.001$.
§ $p < 0.01$.
# $p < 0.05$.

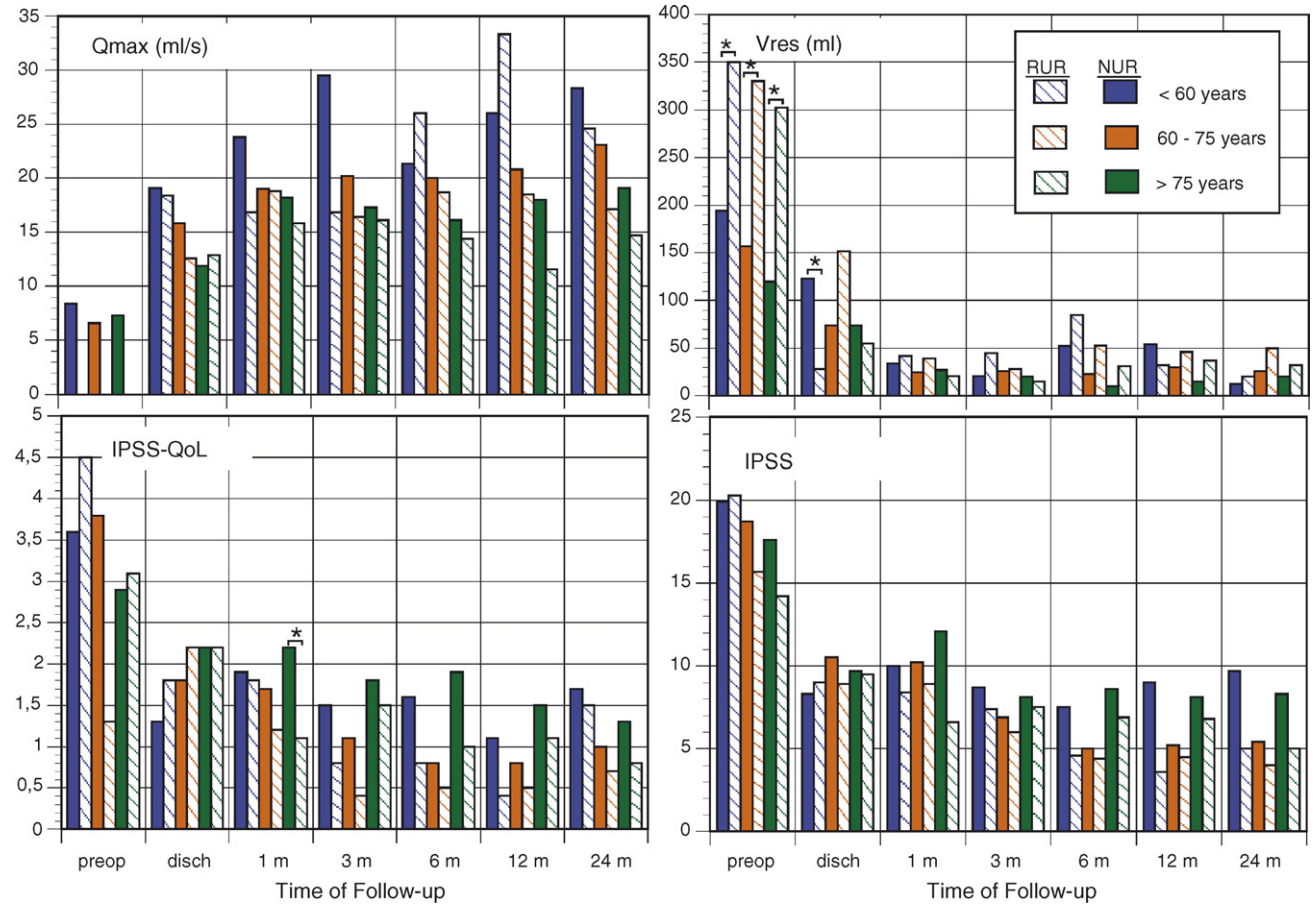

Fig. 2 – Functional outcome parameters of patients with (RUR) and without (NUR) before PVP stratified in age groups.

vaporization of the newly exposed deeper layers of tissue. Tissue ablation is real time visible by continuous release of bubbles from the tissue surface during the laser procedure.

Based on our own experiences, PVP seems to be an effective tool for treating patients who suffer from LUTS secondary to BPH [6]. These results are comparable to other published data that use the 80-W KTP laser vaporization [16,17]. Additionally, we have recently shown that early outcome after PVP is comparable to that of TURP [18]. Moreover, PVP was safe and efficient with excellent hemostatic qualities even in high-risk patients, some of whom were treated with ongoing oral anticoagulant therapy [19,20].

Thus, PVP quickly improves Qmax and symptom scores in small initial series, mostly within a one-year follow-up [21–23]. One of the most important advantages of PVP is the short learning curve, especially compared to TURP and HoLEP. However, PVP is a dangerous tool in the hands of surgeons who are inexperienced in PVP or for residents who are inexperienced in transurethral prostatic surgery (Fig. 3).

According to our daily practice, RUR secondary to BPH is the primary indication for the intervention in 24%–42% of men who undergo surgical treatment for BPH [3]. In a population survey study of men aged 50 or older, a urinary retention

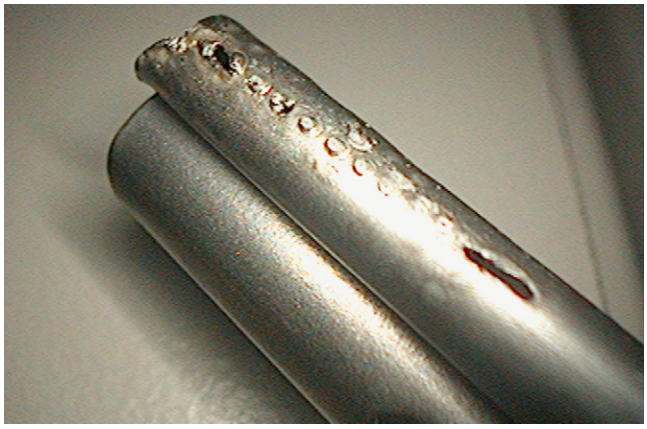

Fig. 3 – The KTP-laser is characterized by efficient PVP. However, applied to the metal sheet of the lasercystoscope or the tip of the optic the high energetic density could cause serious damage.

Table 4 – Comparison of functional outcome and complications of transurethral tissue ablative procedures in patients with urinary retention

Procedure	Author	No. of Patients	Mean Age (years)	Mean Prostate Volume (ml)	Mean Vres at Presentat. (ml)	Follow-up (months)[a]	Mean Qmax (ml/s) at Follow-up	Mean Vres (ml) at Follow-up	IPS score at Follow-up	Recath. (%)	Complications		
											Intraop. (%)	Postop. (%)[b]	Reintervention (%)[c]
PVP	Present series	70	74.5	60.8	318	24	19.4	38	4.4	12.9	0	11.4	8.6
TURP	Gujral et al. 2000 [28]	44	70.6	49.7	545	7.5	17.9	81	5.3	ND	15.9	20.5	ND
	Pickard et al. 1998 [3]	1242	ND	ND	ND	3	ND	ND	6.8	9.2	5.0	21.0	ND
	Mebust et al. 1989 [4]	1052	ND	ND	ND	1	ND	ND	ND	11	ND	24.0	ND
	Chacko et al. 2001 [29]	74	72.7	ND	ND	7.5	ND	ND	5.9	ND	4.1	20.3	ND
HoLEP	Peterson et al. 2005 [5]	164	72.1	107.1	ND	12	34.1	38.1	4.4	1.2	ND	18.3	1.2
	Elzayat et al. 2005 [30]	169	74	101	670	36	19.9	35.7	4.1	1.75	1.8	14.8	1.7
	Kabalin et al. 1997 [13]	36	67	ND	ND	6	22.5	ND	5.7	5.6	0	2.8	2.7

ND = no data.

[a] Upper range of follow-up period.

[b] Including urinary tract infection, dysuria, clot retention, blood transfusion, stress incontinence, TUR syndrome, return to theatre, epididymitis, cardiorespiratory complications.

[c] Bladder neck incision, urethrotomy, re-TURP.

prevalence of 5.1% was found [24]. Furthermore, for men aged 60–69, the risk of developing urinary retention by age 80 is >20%.

According to EAU guidelines, surgery is recommended as a first-line treatment in these patients [2]. However, patients with RUR who require catheterization are mostly excluded from clinical trials, because the outcome of treatment is often poor and they have a higher complication rate than similar patients who were not catheterized [3,4]. Nevertheless, TURP remains the preferred surgical option in patients with RUR caused by LUTS secondary to BPH. Thus, to provide patients with the excellent perioperative safety of PVP, we evaluated the feasibility of PVP in patients who suffered from RUR secondary to BPH. According to our findings, functional outcome and incidence of complications were similar in patients with RUR and NUR. In particular, the urinary retention rate observed was comparable between patients with RUR and NUR. Our results are also similar to published results for TURP and HoLEP (Table 4). The intraoperative and early postoperative safety seems to be the main advantage of PVP compared to TURP.

Compared to other KTP laser studies, which are performed mostly in the United States, our patients had a longer postoperative hospitalization time [17]. In this context we must emphasize that the health insurance arrangements of patients in European and American hospitals are fundamentally different. The personal financial pressure to leave the hospital after surgery in Europe is low. A further observation in hospital for 24 hours after catheter removal was well accepted and mostly desired by the patients.

Our cumulative incidence of secondary endoscopic intervention was 8.2% ($n = 15$) within the observation period of 24 months. In a nationwide long-term analysis of 23,123 cases, Madersbacher et al. recently reported a cumulative incidence of a secondary endoscopic intervention (TURP, urethrotomy, bladder neck incision) after primary TURP that amounted to 5.8% after one year and 12.3% after five years [25]. Thus, the reoperation rate and cumulative incidence of secondary endoscopic interventions seem to be comparable between PVP and published data for TURP.

We observed a slightly higher incidence of urethral strictures in the urinary retention group, but the rates were comparable to those reported in the literature. Three of the patients in our study had urethral strictures and urethrotomy was performed before PVP. These patients are usually likely to be at a higher risk of developing recurrent strictures during follow-up. Furthermore, our results reflect the learning curve of six surgeons. Mucosal injury caused by intensive movement of the laser cystoscope close to the bulbomembraneous urethra, in particular while learning PVP, may be the main reason for that. Because of the visible laser beam, vaporization of the apex can be performed precisely and safely. Therefore, we are convinced that vaporization of the apex does not explain the incidence of urethral strictures observed in our series. In a review of 29 randomized clinical trials that compared less invasive treatment options with TURP that were published between 1986 and 1998, Madersbacher and Marberger reported a mean incidence of postprostatectomy urethral strictures of 3.8% after a follow-up of 14 months [26]. Other studies reported incidences of urethral strictures of 17% after a follow-up of 24 months [27].

The functional results in terms of Qmax, Vres, and IPSS are comparable between patients with NUR and RUR. Furthermore, the functional outcome is comparable to that of patients with urinary retention who undergo TURP (Table 4). Gujral et al. performed 44 TURPs in men with urinary retention and reported a mean Qmax of 17.9 ml/s, mean IPSS of 5.3, and mean Vres of 81 ml after 7.5 months [28].

In this study, we demonstrated that PVP is a surgical tool that is suitable for patients who suffer RUR secondary to BPH. The immediate tissue removal leads to a significant improvement of subjective and objective voiding parameters that is comparable to patients with NUR. We believe that PVP affords improved intra- and postoperative safety to patients with RUR and maintains comparably functional results. This study has shown that PVP is effective, and not only in a well-selected patient population. Compared to HoLEP, we postulate that PVP is associated with a significantly shorter learning curve that makes this technique more attractive to surgeons who are looking for a minimally invasive treatment option to TURP.

The main limitation in our study is the lack of a randomization between PVP and TURP. The present results have to be confirmed by studies that compare PVP with the gold standard TURP in patients with RUR. In view of the objective advantages of PVP, the current costs of laser equipment and laser fibers remain the major drawback of the procedure in clinical practice.

5. Conclusion

PVP is a safe and effective surgical treatment option even in patients with RUR caused by BPH. Functional

results and the complication rates are comparable to those of patients with NUR before PVP. The overall reoperation and secondary endoscopic intervention rates were acceptable to patients with RUR before surgery. Although our data represent preliminary results with a limited follow-up, our findings are comparable to published data after TURP.

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Editorial Comment

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In the last decades a plethora of different laser-based technologies have been proposed as alternatives to TURP, which is still the benchmark for surgical therapy of symptomatic BPH [1]. Although the majority of these techniques (VLAP; ILC; vaporization with Nd:YAG) have shown initial promising outcomes, their popularity decreased rapidly after the unfavourable, long-term reports of postoperative emptying symptoms and urinary retention.

In the last years, several studies have highlighted the safety and efficacy of holmium laser enucleation of the prostate (HoLEP) as possible valid alternative to traditional surgery. However, the training required to gain and maintain surgical proficiency as well as long operative time limited its spreading [2].

High-powered (80-W unit) potassium-titanyl-phosphate (KTP) vaporization is an emerging laser therapy for patients with symptomatic BPH. From 2003 to 2006 only 13 papers have been indexed on PubMed using ''Photoselective Vaporization of Prostate'' as search terms. Most of the studies reported promising results at 12-month follow-up and a single prospective study demonstrated significant improvements in outcomes at long term assessment [3]. Moreover, the best level of evidence is a non-randomized, comparative study recently published by Bachmann et al. [4]. The Authors showed that PVP provided results similar to TURP at a 6-month follow-up.

In this issue of *European Urology*, Ruszat et al. demonstrated for the first time the feasibility of the PVP in the subgroup of patients with refractory urinary retention (RUR). That may be an important issue considering that this subcategory of patients represents up to 42% of men who need surgical treatment for BPH. However, this data come from a prospective, non comparative study.

Patients undergoing the same treatment for LUTS are not a appropriate control group. The lack of a TURP control group is the most relevant drawback of the study. A further one is the low number of patients with adequate follow-up. Consequently, the conclusions about the efficacy of PVP in patients with RUR cannot be given yet.

The promising reports of PVP require confirmation at the light of well-designed randomised clinical trials with a long-term follow-up. History teaches that without a rigorous, formal critical evaluation, most of the innovations lost its popularity when a ''replacement procedure'' became available [5].

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