

# Advances in the Treatment of Lower Urinary Tract Symptoms and Benign Prostatic Hyperplasia

*Highlights from the 21st European Association of Urology Congress,  
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**Key words:** Benign prostatic hyperplasia • Lower urinary tract symptoms • Sexual dysfunction • Acute urinary retention • Nocturia • Chronic inflammatory infiltrates • Alfuzosin • Dutasteride • PDE-5 inhibitors • Prostatectomy • TURP • PVP • High-energy transurethral microwave thermotherapy

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The 21st European Association of Urology (EAU) Congress was held in April 2006 in Paris, France. Despite the ongoing demonstrations against the government-imposed youth labor law in France, Paris in the spring was irresistible and once again played a graceful host to the assembly.

As in years past, the program was full of scientific presentations in the form of oral and poster sessions, state-of-the-art lectures, and panel debates in the morning hours and industry-sponsored symposia in the afternoons. The attendants could also choose from an extraordinary number

of the European School of Urology courses offered throughout the meeting.

Lower urinary tract symptoms (LUTS) and benign prostatic hyperplasia (BPH) were covered in 6 poster sessions divided into the categories of basic research (15 posters), evaluation (15 posters), medical therapy (15 posters), and new techniques and interventional therapy, which included a grand total of 45 posters. In this regard, a slight shift seems to have taken place. Over the last decade, medical therapy for BPH was the hot topic in the field, whereas it seems that at present minimally invasive interventions have taken center stage. Nonetheless, with 90 abstracts out of a total of 1200, LUTS and BPH accounted for 7.5% of the total number of abstracts presented, a number similar to that seen in years past.

### Basic Research

The 15 posters on basic research in BPH covered a wide spectrum of topics, and only a few of them can be discussed in this review.

#### *Risk Factors for BPH*

It has been suggested for some time that LUTS and BPH are related in some way to obesity and increased body mass index (BMI). More recently, it has also been suggested that LUTS and BPH and the severity thereof are linked to the metabolic syndrome formally known as syndrome X. Hammarsten and colleagues<sup>1</sup> presented data on insulin, estrogen, and lean body mass as 3 risk factors for the development of BPH. They examined a group of 184 men in Sweden and found that prostate gland volume correlated with fasting plasma insulin, estrogen,

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Reviewed by Claus G. Roehrborn, MD, FACS, Department of Urology, University of Texas Southwestern Medical Center, Dallas, TX

pre-estrogen, and sex hormone-binding globulin levels. Prostate gland volume also correlated with BMI and body weight, as well as lean body mass. According to multivariate analyses, prostate gland volume correlated best with fasting plasma insulin level, pre-estrogen level, and lean body mass. The investigators concluded that these results are in line with the hypothesis that hyperinsulinemia is a primary event in the development of BPH, whereas increased estrogen levels could be a consequence of increased obesity in patients with large prostate glands, through increased activity of the enzyme aromatase converting testosterone peripherally to estrogen. This abstract, by a group of researchers who have published extensively in this field, adds further evidence to the thought that BPH and the extent of its severity are related to the metabolic syndrome.<sup>2-5</sup>

#### *Heterogeneity of Prostatic Tissue*

A significant problem in performing basic and translational research on BPH tissues is the heterogeneity of the gland itself. It has been suggested that, because of this heterogeneity, taking 1, 2, or even more biopsies from distinct areas of the prostate might not suffice to explain fully certain characteristics elaborated by, for example, quantitative image analysis, morphometry, measurement of receptors, and immunohistochemistry. Recognizing this problem, Leung and colleagues<sup>5</sup> morphometrically assessed the prostate and established the importance of locoregional morphology relating to the mechanical characteristics of the gland (Table 1). Their technique consisted of taking a cross-section of the whole prostate, thus enabling localization of areas of interest, such as hyperplastic nodules. They then applied morphometric analyses, which demonstrated a sig-

nificant difference between the percentage of smooth muscle and the percentage of epithelial tissue within the gland, the nodules, and the surrounding stroma. Accordingly, when mechanical testing of the tissues was applied, significant differences were found between the nodular tissue, which was more rich in epithelial tissue, and the stroma, where epithelial and stromal tissues were equally represented. Thus far, not much study has been done on the mechanical characteristics of the gland; this contribution elucidates the relationship between mechanical characteristics and the ratio of epithelial to stromal tissue in nodular versus stromal tissue.

#### *Chronic Inflammatory Infiltrates in BPH Tissue*

A recent observation made in the baseline biopsy specimens of the Medical Therapy of Prostatic Symptoms (MTOPS) trial had to do with the chronic inflammatory infiltrates seen so commonly in BPH tissue obtained both by biopsy and by transurethral resection of the prostate (TURP) or open prostatectomy. An analysis of the natural history of the MTOPS patient population suggested that those men with chronic inflammatory infiltrate suffered an aggravated and accelerated natural history and reached far more endpoints (eg, symptom worsening, retention, and surgery) compared with those men without chronic inflammatory infiltrates. At

this year's EAU Congress, several groups focused on the role of chronic inflammatory infiltrates. Manzarbeitia and coworkers<sup>6</sup> looked at tissue sampling from open prostatectomy and TURP specimens; lymphoimmunohistocytic infiltration of BPH was a constant finding, most commonly seen as interstitial infiltrates in the peri- and paraglandular areas, consisting mostly of T and B lymphocytes.

A very carefully performed contribution to this topic came from the Vienna group of Marberger.<sup>7</sup> This group had previously assessed the role of the infiltrating lymphocytes in prostate tissue.<sup>8,9</sup> In a study presented this year,<sup>7</sup> they focused on chronic inflammation in patients with urinary retention, inasmuch as the MTOPS study had suggested that those with chronic inflammation more commonly suffer urinary retention in the course of the natural history of their disease. Forty-one BPH specimens were obtained after TURP or a suprapubic prostatectomy, and the expression of CD38 and HLA-DR was analyzed. The investigators found a significant correlation between the loss of CD38 and HLA-DR upregulation. Patients with acute retention due to BPH had a significantly higher percentage of CD38-negative and HLA-DR-positive glands compared with those without. The investigators suggested that chronic inflammation might indeed play a prominent role in the progression of BPH, whereas it

**Table 1**  
**Results from Morphometric Analysis of the Prostate**

	Mean % ET	Mean % SM	Mean  E*  (kPa)	Mean tan $\delta$
Nodule	56.92	15.76	187	0.269
Stroma	23.66	28.71	121	0.359
P Value	< .0004	< .0004	< .04	.2

ET, epithelial tissue; SM, smooth muscle; E\*, amplitude ratio (measure of elasticity); tan  $\delta$ , phase difference (measure of viscosity). Reprinted from Leung S et al,<sup>5</sup> with permission from the European Association of Urology.

remains unclear whether alterations of epithelial phenotypes in BPH are a cause or a factor of urinary retention.

In a second contribution from the Vienna group,<sup>10</sup> Hrachowitz and colleagues assessed the expression of co-inflammatory interleukins, most notably interleukin (IL)-17B, -17C, and -17E, as well as their receptors, in prostate tissue and demonstrated a close association between BPH and chronic inflammation. This chronic inflammation leads to an altered microenvironment, which in turn leads ultimately to tissue damage and tumor growth. The investigators stip-

ejaculatory dysfunction symptoms were highly prevalent, with decreased force of ejaculation and decreased amount of semen being the most common. Ejaculatory dysfunction was considered a problem by half of the men, again being related to LUTS severity. This is additional evidence suggesting that health care providers counseling patients with LUTS should also ask these patients about erectile and ejaculatory dysfunction.

#### *Acute Urinary Retention*

An interesting abstract was presented based on an analysis of the Hospital

whether physicians simply recognize worsening of symptoms and advise patients for whom medical therapy is unsuccessful to undertake surgery before they reach AUR as an endpoint. However, the data are comforting to those physicians who fear that the use of medical therapy might be detrimental to their patients' health.

Again using the HES database, the same group from the United Kingdom<sup>13</sup> reported on a relapse in AUR after its first occurrence. In contrast to the prior abstract, these data suggest that the decline in use of surgery for AUR might put more men at risk of experiencing a subsequent episode of AUR, thus highlighting the need to identify men at high risk for failing conservative management after an initial trial without catheter. The data show that of 108,139 men admitted with a first episode of spontaneous AUR between 1997 and 2003, 21.2% underwent conservative therapy and experienced a subsequent episode of AUR within 6 months. In the past, efforts have been made by others to identify risk factors for a failure of a trial without catheter, but in the vast majority of men with either spontaneous or precipitated AUR it is currently the recommended form of management. It has been suggested that the residual volume drained or the bladder capacity at the time of the first occurrence of AUR is a significant predictor of success or failure of trial without catheter, and thus health care providers might choose to offer surgery to those men presenting with excessive amounts of retention or residual urine.<sup>14</sup>

#### *The Impact of Nocturia*

This reviewer found 1 additional abstract of practical interest, reporting on the use of actigraphy in the evaluation of nocturia and its impact on both patient and partner.<sup>15</sup> Simply stated, actigraphy consists of the

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ulate that IL-17 in its isoform might serve as a perpetuator of this state. The tantalizing conclusion is that BPH might be an autoimmune disease lending itself to immunotherapeutic strategies involving novel therapeutic targets.

#### **Evaluation**

##### *LUTS and Sexual Dysfunction*

As in similar sessions in prior years, the poster session on the topic of BPH evaluation focused on symptom severity and frequency, bother, and quality of life; and because the relationship between sexual dysfunction and LUTS severity has now been firmly established, the session also focused on sexual and ejaculatory function.

In fact, a correlation analysis between the International Prostate Symptom Scale (IPSS) and the Male Sexual Health Questionnaire in 2242 sexually active European men with LUTS demonstrated that all components of ejaculation were impaired in men with LUTS suggestive of BPH.<sup>11</sup> The investigators also found that

Episodes Statistics (HES) database of the Department of Health in England.<sup>12</sup> The question posed was whether the decline in surgical treatment for BPH has resulted in an increase in the incidence of acute urinary retention (AUR). The investigators found an overall incidence of primary AUR of 3.06 per 1000 men per year, with 65.3% of these cases being spontaneous. The incidence fell from 3.17 in 1998 to 2.96 in 2003. Despite decreasing utilization of surgery, the authors argue that this shift away from surgery for BPH has not necessarily resulted in an increase in the occurrence of AUR. This abstract deserves consideration and is meritorious because of the very large number of men involved in the HES database, namely 165,527 men who were admitted with AUR over the study period. It is unclear whether these findings are a reflection of proper choice of medical therapy (ie, 5 $\alpha$ -reductase inhibitor therapy for those men with larger glands to prevent retention) or

patient wearing an “acti-watch,” a small device that objectively measures movements on a minute-by-minute basis and keeps an audio diary of the patient for 7 consecutive days. When connected to a computer and printer, the device produces a document not unlike a nocturnal penile tumescence recording. Patients who wake in the night can record the reason for waking into the device by stating something like “I woke up and had to go to the bathroom,” or “I woke up because the dog barked and I went to the kitchen to drink some water.” The document can be analyzed and can provide some objective data concerning actual episodes of waking at night and whether these episodes are triggered by a need to urinate or by another cause. This seems to be a useful and practical tool for enhancing diagnostic ability.

## Medical Therapy

### *Analysis of ALTESS Trial Data*

The poster session on medical therapy of BPH provided some interesting insights, with analyses of large datasets or results from large placebo-controlled trials. The first such trial to be discussed is the so-called ALTESS trial (Alfuzosin Long-Term Efficacy and Safety Study), which was represented in 2 abstracts.<sup>16,17</sup> ALTESS is a 2-year trial comparing alfuzosin 10 mg once daily with placebo in 1522 men aged 55 years or older with a symptom score of 13 points or greater, a prostate size of more than 30 g as estimated by digital rectal examination (DRE), and a prostate-specific antigen (PSA) level of 1.5 ng/mL or greater. The trial was designed to test whether alfuzosin administered over 2 years was able to prevent either symptom progression, urinary retention, or the need for BPH-related surgery. Similar to the MTOPS trial, symptom deterioration was the main progression event, followed by BPH-related

surgery and AUR. Compared with placebo, alfuzosin did not reduce the cumulative incidence of AUR (2.1% vs 1.8%, alfuzosin vs placebo), but it reduced the risk of BPH surgery (5.1% vs 6.5%, alfuzosin vs placebo) and the risk of symptomatic progression (11.7% vs 16.8%, alfuzosin vs placebo). In addition, alfuzosin significantly improved the IPSS score, bother score, and maximum flow rate compared with placebo, and it was well tolerated. Baseline data were analyzed to determine whether they had an impact on the risk of symptom worsening, urinary retention, or BPH-related surgery. Not unexpectedly, the findings were that AUR was predicted by PSA level and DRE-estimated prostate size, and similarly, BPH surgery was predicted by PSA measurements in both groups, as well as by higher IPSS scores (Table 2).

### *PDE-5 Inhibitors for LUTS*

A class of agents very well known to all practicing urologists but novel in the setting of LUTS treatment was presented by McVary and colleagues.<sup>18</sup>

At least 2 placebo-controlled trials have been performed using the phosphodiesterase (PDE)-5 inhibitors sildenafil citrate or tadalafil and have demonstrated superiority in terms of improvement in symptoms, bother, and quality of life, though not improving measures of urinary flow rate. The trial reported at the EAU again demonstrated that tadalafil at doses of 5 mg and 20 mg improved the IPSS score by 2.8 and 3.8 points, respectively, significantly superior to placebo. Similar data were obtained for the BPH Impact Index and quality-of-life score. However, flow rate did not change appreciably in either the placebo or tadalafil group. This dataset is quite similar to that obtained in the sildenafil citrate trial and raises the question, by what mechanism might PDE-5 inhibitors actually influence LUTS? The logical thought is that it would be relaxation of the smooth muscle, not unlike the effect of the  $\alpha$ -adrenergic receptor blockers. However, if this were to be the case, one would expect an effect on the urinary flow rate measures

**Table 2**  
**ALTESS: Impact of Baseline Data on Risk of Symptom Worsening, AUR, or BPH-Related Surgery**

Parameter	Age	PSA	DRE	IPSS	Bother	Q <sub>max</sub>	PVR
IPSS worsening $\geq$ 4 points							
Placebo				↓			↑
Alfuzosin				↓			↑
AUR							
Placebo							
Alfuzosin		↑	↑		↓		
BPH surgery							
Placebo		↑		↑			
Alfuzosin		↑		↑			

ALTESS, Alfuzosin Long-Term Efficacy and Safety Study; PSA, prostate-specific antigen level; DRE, prostate size as estimated by digital rectal examination; IPSS, International Prostate Symptom Scale score; Bother, bother score; Q<sub>max</sub>, maximum urinary flow rate; PVR, postvoid residual volume; AUR, acute urinary retention; BPH, benign prostatic hyperplasia; ↑, higher values associated with a significantly higher risk ( $P \leq .10$ ); ↓, lower values associated with a significantly higher risk ( $P \leq .10$ ). Reprinted from Roehrborn C,<sup>17</sup> with permission from the European Association of Urology.

similar to that seen with  $\alpha$ -blockers. These findings allow for some interesting speculation regarding the actual mechanism of action and will no doubt trigger further clinical research into the mechanistic aspects of PDE-5 inhibitors and their effect on LUTS and BPH.

#### *Data from Dutasteride Trials*

Several abstracts summarized baseline data from a significant number of dutasteride studies. Marberger and coworkers<sup>19</sup> reported on baseline data on 12,464 subjects from dutasteride studies, and Roehrborn and colleagues<sup>20</sup> reported on baseline data from the Combination of Avodart and Tamsulosin (CombAT) trial. This dataset was further analyzed by Montorsi and colleagues,<sup>21</sup> who looked at racial differences.

The data presented by Marberger and colleagues<sup>19</sup> demonstrated a significant relationship between baseline testosterone levels and sexual activity, impotence, lack of libido, and sexual function scores; however, it must be recognized that the effects of testosterone levels on these sexual function parameters were by no means as

significant as the effects of age, IPSS score, or BMI and, indeed, only in the very low testosterone levels (ie, in a hypogonadal state) was the incidence of erectile dysfunction and lack of libido significantly higher than in the rest of the cohort (Table 3).

The CombAT baseline data suggested that a higher BMI was associated with more severe irritative LUTS and higher prostate volume and transition zone volume, as well as higher fasting glucose and insulin levels. These data from a BPH cohort might not be as valuable in this context as a population-based study; however, they lend increasing credence to the suspicion that BPH and LUTS are part of a greater concept (ie, metabolic syndrome), as elucidated above.<sup>20</sup>

#### *A BPH Registry*

A notable effort is currently being made by a group of US investigators sponsored by Sanofi-Aventis. Although there is no lack of cross-sectional or even longitudinal population-based data regarding LUTS and BPH, and although there are abundant data from placebo-controlled, randomized trials, no BPH disease

registry is currently available. Such a BPH registry has been established in the United States and has enrolled 6900 men in the offices of both urologists and primary care physicians. At baseline, the patients were either untreated or receiving medical therapy, and the registry is structured to answer many important questions in such a population.<sup>22,23</sup> For example: What triggers switching from watchful waiting to medical therapy? What triggers switching from one to another medical therapy? How do the treatment decisions differ between primary care physicians and urologists, or do they differ in different geographic areas or patient socioeconomic strata? The 2 abstracts presented<sup>22,23</sup> address some of these questions in a preliminary way, and further data from the BPH registry are eagerly anticipated.

#### *Self-Management for Uncomplicated LUTS*

Another concept, introduced by Brown and colleagues<sup>24</sup> is that of self-management for men with uncomplicated LUTS. This group from London performed randomized

**Table 3**  
Relationship Between Testosterone Levels and Measures of Sexual Dysfunction

Parameter	Testosterone Level (pg/mL)*					
	≤ 2000 (n = 554)	> 2000–3000 (n = 2295)	> 3000–4000 (n = 3143)	> 4000–5000 (n = 2604)	> 5000–6000 (n = 1718)	> 6000 (n = 2013)
Mean age (y)	64.4	63.7	64.1	64.2	64.0	63.8
Mean BMI (kg/m <sup>2</sup> )	29.7	28.6	27.7	27.1	26.7	25.9
IPSS	13.9	13.6	13.4	12.9	12.5	11.6
% Sexually active	67	75	77	77	79	80
% Impotence	41	35	34	32	30	27
% Lack of libido	33	27	27	25	24	22
Mean SFI score	7.4	7.8	8.0	8.1	8.4	8.5

BMI, body mass index; IPSS, International Prostate Symptom Scale score; SFI, Sexual Function Inventory. \*For nmol/L, divide by 288. Reprinted from Marberger M et al,<sup>19</sup> with permission from the European Association of Urology.



controlled trials comparing self-management and standard care versus standard care alone in 140 newly diagnosed men with uncomplicated LUTS. The stunning findings were that self-management in conjunction with standard care significantly improved LUTS and quality of life and reduced the rate of treatment failure when compared with standard care alone. The astounding fact is that self-management is a relatively easy and inexpensive way of teaching pa-

section of the prostate with the Gyrus system (Gyrus Medical, Maple Grove, MN) or the Vista CTR™ system (ACMI Corporation, Southborough, MA) has been investigated because it represents a somewhat safer way of performing a standard TURP.

#### *Office-Based Treatments*

This year, truly office-based procedures were less well represented. Nonetheless, an interesting analysis was presented by Harik and col-

patients will have re-treatments. Therefore, it is of greatest importance to identify those patients who have a greater chance for recurrent symptoms and additional treatment and perhaps offer those patients different treatments upon presentation.

An important contribution was made by Larson and coworkers,<sup>26</sup> who reported on potentially dangerous elevations in blood pressure during office microwave treatments for BPH. The setup of this study was such that data were contributed by several centers using different microwave machines, and a significant rise in blood pressure was found in a troublesome number of patients. The investigators recommended that physicians performing office-based microwave thermotherapy frequently monitor blood pressure and table the use of anesthetic and pain medications accordingly. There is no doubt that even temporary increases in blood pressure in this population of elderly men with associated coronary artery disease can be dangerous and should be avoided. Although the data were not prospectively collected and controlled for, and although every investigator at each site used an individual schema of pain management and vital sign recordings, it is a topic of significant concern, and we are grateful that these investigators brought it to our attention.

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### *Self-management in conjunction with standard care significantly improved LUTS and quality of life and reduced the rate of treatment failure when compared with standard care alone.*

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tients (in 3 structured sessions by a nurse or mid-level provider) about ways to improve their LUTS. These techniques consist of, for example, fluid management, bladder retraining, and avoidance of certain types of fluids and foods. Clearly, this is an exciting new field very worthy of our consideration. Urologists have not used patient education and self-management strategies to the same extent as our colleagues in internal medicine. For example, patient education and self-management regarding diabetic foot care is of paramount importance in the treatment and management of patients with diabetes mellitus, and it is not unlikely that self-management of LUTS will attain a similar status.

#### **New Techniques and Surgical Interventions**

Three poster sessions were dedicated to new techniques and surgical interventions for BPH. Much work is currently being done in the area of Holmium laser ablation and enucleation of the prostate, as well as photoselective or KTP laser ablation of the prostate. In addition, bipolar re-

leagues,<sup>25</sup> who reported on long-term outcomes of 614 patients treated with high-energy transurethral microwave thermotherapy for LUTS and BPH in several European centers. The follow-up ranged from 2 to 8 years, with a mean of 5.1 years. The investigators found that at 8 years of follow-up, 46%, 60%, and 51% of the patients experienced a 50% or greater improvement in IPSS score, maximum flow rate, and quality of life score. Retreatment rates, driving the cost of such treatments, were found to be at 33.2% at 8 years. Patients with a transition zone volume of either greater than 50 mL or less than 20 mL and patients with an intravesical lobe tended to have higher re-treatment rates. These kinds of data are very important for the practicing physician. Clearly, with a well-performed TURP we expect re-treatment rates of 5% to 10% over a period of 10 years. A re-treatment rate of 33% means that 1 out of every 3 patients undergoes some other additional treatment with additional costs. Eight years is not much time in the life span of a patient with LUTS and BPH, and it could be anticipated that with further follow-up, even more

#### *Bipolar Versus Monopolar TURP*

Several groups examined bipolar versus the monopolar TURP. Italian investigators<sup>27</sup> included 50 patients with LUTS symptomatology and reported similar amounts of tissue resected and similar postoperative levels of hemoglobin and sodium. Improvements in maximum flow rate were similar (to 22.2 mL/s vs 20.9 mL/s), and the improvement in IPSS score was also similar. Bipolar TURP, with its advantage of the use of intraoperative saline irrigation, was found to be as

effective as conventional monopolar TURP in this study. This reviewer wonders why the postoperative hemoglobin and particularly sodium values (139.9 mmol/L vs 139.5 mmol/L) were so similar, given that hyponatremia can be observed after monopolar TURP even if 3% sorbitol or 1.5% glycine is used to counteract the hypo-osmolar irrigation of fluid.

Another Italian group<sup>28</sup> evaluated bipolar electrosurgical technology, using the ACMI Evista CTR device. Seventy-four patients were treated with the device. The investigators found it to be safe and effective in the treatment of men with BPH, even men with large glands (up to 90 mL). They did not find any alterations of sodium after the procedure, again indicating that the use of saline during the resection enhances the safety of the procedure.

Tan and Chen from Australia<sup>29</sup> prospectively compared the Gyrus loop with conventional TURP and offered a 2-year follow-up on 51 patients with a conventional and 103 patients with a Gyrus TURP. The investigators found that the Gyrus group required less continued bladder washout time and less manual washout, had a shorter catheterization time, and had no problem with bleeding, blood clots, clot evacuation, or transfusion need. The average drop in hemoglobin was 1.0 g/dL versus 0.2 g/dL with conventional versus Gyrus TURP, respectively. Improvements in IPSS score and peak flow rate were similar in both groups.

A randomized, prospective trial of monopolar versus bipolar TURP was conducted by Bertolotto and colleagues<sup>30</sup> in 100 patients. Again, no significant differences were found regarding the ease of performance of the TURP or the clinical outcome. And again, the investigators emphasized the increased safety of bipolar TURP with saline used as an irrigant.

#### *Photoselective Vaporization of the Prostate*

Many authors reported on photoselective vaporization of the prostate (PVP) or KTP laser prostatectomy, also known as "GreenLight laser." Park and colleagues<sup>31</sup> from Korea reported no significant differences in short-term treatment outcomes in terms of efficacy and complications between PVP and TURP. However, hospital days in the PVP groups were shorter, whereas prostate volume reduction was more pronounced in the TURP group at 6 months of follow-up (40.7% vs 22.2% reduction in prostate volume, PVP vs TURP,  $P < .05$ ).

A group from Norway<sup>32</sup> examined PVP under local anesthesia in 150 patients. None of the patients required a conversion to general anesthesia. The investigators found a hemoglobin drop of only 0.7 g/dL and a 2-hour catheterization after local anesthesia versus a 9-hour catheterization after general or spinal anesthesia. They recommend that PVP be performed with local anesthesia and light sedation because it provides excellent intraoperative safety and expedient postoperative recovery with equal outcomes. At a time when in-office procedures are favorably reimbursed by the Centers for Medicare and Medicaid Services, many US physicians might wish to begin performing PVP in the office, if indeed these data can be corroborated by others. This reviewer is somewhat uncertain as to the possibility of performing PVP in larger-size prostates in the office, considering that the procedure in nearly all cases will take 60 minutes or longer.

The University Hospital in Basel, Switzerland, has fully embraced PVP for BPH, and a group of urologists from that institution presented several abstracts highlighting their experience.<sup>33-36</sup> They reported on a prospective trial of PVP ( $n = 147$  patients)

versus TURP ( $n = 87$  patients) with at least a 12-month follow-up and reported that, in general, outcomes were comparable, whereas the peak flow rate was higher after TURP. Retreatment rates were 3.4% in both groups over a period of 12 months.<sup>33</sup> The same group<sup>34</sup> also reported on PVP performed in men older than 80 years. The functional results were quite satisfactory, and, of particular importance, there were excellent hemostasis and very low intraoperative complication rates in this group of elderly patients. Regarding the issue of erectile function after PVP, the group from Basel<sup>35</sup> reported that there was no significant increases in erectile dysfunction within a follow-up of 12 months after PVP. The group also reported on a comparative cost analysis.<sup>36</sup> They found that the mean operation time was longer in TURP versus PVP, whereas hospitalization and catheterization times were longer in patients undergoing TURP. Costs for the disposable materials were significantly higher for PVP compared with TURP, but costs associated with operating room and recovery room use were higher for TURP. Because of this tradeoff, the overall costs of PVP and TURP are comparable during a hospital stay in Switzerland, and the investigators recommend PVP as an acceptable alternative to TURP, given the increased intraoperative safety parameters.

#### *Surgical Treatments*

Several groups reported on the outcomes of the surgical treatment of men with particularly large prostates or in urinary retention. Reich and colleagues<sup>37</sup> reported on a large survey of 645 patients treated by suprapubic prostatectomy in German urology practices. The bulk of the complications seen were urinary tract infections, surgical revision (in 6%), bleeding requiring transfusions (in 4%),

and inability to void after surgery (in 3%). The mortality rate was 0.2%, and the resected tissue averaged 81 g.

Other investigators focused on performing simple open prostatectomy laparoscopically. Baumert<sup>38</sup> compared 30 consecutively performed laparoscopic simple prostatectomies with the last 30 open simple prostatectomies performed with a Millin or transvesical approach. The operative time was longer in the laparoscopic group by a factor of 2. However, the transfusion requirement was significantly lower in the laparoscopic group (3.3% vs 13%), and catheterization time was also shorter.

Barret and colleagues<sup>39</sup> assessed the outcomes of 60 patients undergoing simple prostatectomy by either the open or laparoscopic approach. Estimated blood loss was similar in both groups (600 mL vs 640 mL, laparoscopic vs open group), and transfusion rates were also similar at 13% and 15%. The only advantages of the laparoscopic procedure, which incidentally took 113 minutes compared with 64 minutes for the open group, were a

shorter duration of catheterization, less postoperative morphine requirement, and a slightly shorter hospital stay. This reviewer is doubtful whether laparoscopic simple prostatectomy will replace open prostatectomy by either the transvesical or the retropubic approach in the near future. This reviewer, for one, uses a modified retropubic prostatectomy approach, which allows removal of the catheter on the second postoperative day, and has achieved excellent results with this modified technique.

There are a significant number of physicians performing Holmium laser enucleation of the prostate (HoLEP) for patients with very large prostates, also with acceptable results. Montorsi and colleagues<sup>40</sup> reported on 80 consecutive patients who were randomized to either HoLEP or standard open prostatectomy. They found that HoLEP is a feasible technique; its efficacy is similar to that of open prostatectomy, and it provides reductions in catheterization time, hospital stay, and blood loss. However, catheter removal took place on aver-

age at 1.5 days versus 4.1 days, and hospital stay was 2.7 versus 5.4 days, which inherently makes these data not comparable to those from other institutions. In this reviewer's experience, the hospital stay after open prostatectomy is 2 to 3 days, again not significantly different from that after HoLEP. Nonetheless, it is quite clear that for those physicians who have gone through the learning curve and who are capable of performing the technically more demanding HoLEP procedure, this is a safe and efficient way of ablating significant amounts of prostate tissue.

This reviewer is of the opinion that KTP laser ablation or PVP for very large prostates is somewhat cumbersome and requires significantly more time and fibers to perform. A group from London<sup>41</sup> reported on 71 patients with prostates larger than 100 mL, of whom 21 were in urinary retention. The patients experienced significant symptom improvement and mean flow rate improvement, and overall there was a 42% volume reduction on transrectal ultrasound. From this

## Main Points

- Results from a study on insulin, estrogen, and lean body mass as 3 risk factors for the development of benign prostatic hyperplasia (BPH) add further evidence to the thought that BPH and the extent of its severity are related to a larger metabolic syndrome.
- An investigation of the expression of co-inflammatory interleukins, most notably interleukin-17B, -17C, and -17E, as well as their receptors, in prostate tissue demonstrated a close association between BPH and chronic inflammation.
- A correlation analysis between the International Prostate Symptom Scale and the Male Sexual Health Questionnaire in 2242 sexually active European men with lower urinary tract symptoms (LUTS) demonstrated that all components of ejaculation were impaired in men with LUTS suggestive of BPH.
- Data from the ALTESS trial show that, compared with placebo, alfuzosin did not reduce the cumulative incidence of acute urinary retention, but it reduced the risk of BPH surgery and the risk of symptomatic progression.
- Tadalafil at doses of 5 mg and 20 mg improved the International Prostate Symptom Scale score by 2.8 and 3.8 points, respectively, significantly superior to placebo.
- Investigators reporting on potentially dangerous elevations in blood pressure during office microwave treatments for BPH recommended that physicians performing office-based microwave thermotherapy frequently monitor blood pressure and table the use of anesthetic and pain medications accordingly.
- Investigators from the University Hospital in Basel, Switzerland recommend photoselective vaporization of the prostate as an acceptable alternative to transurethral resection of the prostate, given the increased intraoperative safety parameters.



reviewer's experience, as well as that of others, it is clear that KTP prostatectomy takes longer and is often associated with the use of more than 1 or even 2 fibers. When the second or third fiber would have to be purchased by the hospital, this would be prohibitive for the hospital in terms of cost efficiency. Fortunately, in many such cases the LaserScope Corporation has agreed to replace the second or third fiber free of charge, making it an economically feasible procedure.

## Conclusion

The 2006 EAU Congress provided a comprehensive overview of what could be considered new, innovative, or controversial in the field of LUTS and BPH. Regarding medical therapy for BPH, there is clearly a lack of new targets. It is also clear that physicians worldwide are still struggling to find the correct indication and role for a variety of minimally invasive and surgical interventions. Much of this has to do with the availability of devices, the individual physician's surgical volume, and the associated learning curves. However, it is safe to say that all the EAU participants enjoyed a wonderful stay in Paris while updating themselves on what is new in the areas of LUTS and BPH. ■

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