

Conservative Treatment for Benign Prostatic Hyperplasia in Patients With Bladder Stones

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OBJECTIVE	To determine whether conservative management of benign prostatic hyperplasia (BPH) is an appropriate option for patients with bladder stones.
METHODS	The study cohort comprised 34 men who underwent endoscopic bladder stone removal with subsequent conservative management of BPH, including watchful waiting and medical therapy (alpha-blocker $\pm$ dutasteride), between April 2006 and January 2014. We recorded BPH-related complications after stone removal and compared International Prostate Symptom Scores, quality of life scores, and postvoid residual urine volume before and after treatment. Cumulative BPH-related complication-free survival and the preoperative parameters associated with the occurrence of BPH-related complications were also analyzed.
RESULTS	Twenty-six patients (76.5%) treated with conservative management had no BPH-related complications, during a mean follow-up of 52.6 ± 30.9 months. Mean International Prostate Symptom Scores fell from 13.5 ± 7.1 before treatment to 9.7 ± 6.3 after treatment ($P = .025$). One of the 34 patients (2.9%) experienced recurrent urinary infections, 2 (5.9%) had urinary retention, and 6 (17.6%) developed recurrent bladder stones. The cumulative BPH-related complication-free survival was 97.0% at 1 year, 81.8% at 3 years, and 70.5% at 5 years. Six of the men (17.6%) underwent invasive intervention for BPH after occurrence of these complications. Prostate volume was the only preoperative parameter associated with the occurrence of complications after stone removal ($P = .035$).
CONCLUSION	Conservative management of BPH can be an appropriate treatment option in men with bladder stones and concurrent mild-to-moderate lower urinary tract symptoms. UROLOGY ■: ■–■, 2015. © 2015 Elsevier Inc.

In the Western world, bladder stones account for 5% of urinary stones.¹ Bladder outlet obstruction (BOO), chronic urinary tract infection (UTI), foreign bodies, bladder diverticula, bladder augmentation, and neurogenic bladder can all cause bladder stones.²

Studies have found that BOO is the cause of bladder stones in 88% of patients and have thus concluded that the presence of bladder stones should be considered an absolute indication for surgical management of benign prostatic hyperplasia (BPH) to prevent new stone formation and facilitate the elimination of stone fragments.^{3,4} However, another prospective study found that only 51% of patients presenting with bladder stones had urodynamic evidence of BOO.⁵ The total number of BPH

surgeries has gradually declined since its peak in 2005.⁶ This decline may have resulted from the development of effective medical treatments, including alpha-blockers, 5-alpha-reductase inhibitors, and combination therapy. The success of medical treatments has raised the question of whether routine surgical management of BPH is necessary in patients with bladder stones.

The present retrospective study was undertaken to determine whether conservative management of BPH is an appropriate option for patients with bladder stones and to evaluate the long-term natural history of patients who have had bladder stones removed.

METHODS

After obtaining institutional review board approval, we identified 42 patients with bladder stones secondary to BPH who were counseled regarding the indication for prostate surgery and who elected to undergo conservative treatment of BPH between April 2006 and January 2014 at our hospital. All patients underwent endoscopic transurethral stone removal with or without previous medical treatment for BPH. None of the patients had

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Table 1. Patient characteristics (n = 34)

Characteristic	Value
Age (y), mean $\pm$ SD	71.9 $\pm$ 6.5
Serum PSA (ng/mL), mean $\pm$ SD	4.9 $\pm$ 4.3
Prostate volume (cm ³), mean $\pm$ SD	57.7 $\pm$ 38.7
Diameter of largest stone (mm), mean $\pm$ SD	23.5 $\pm$ 13.0
Medical therapy, n (%)	23 (67.6)
Alpha-blocker alone*	20 (58.8)
Alpha-blocker + dutasteride	3 (8.8)
Watchful waiting, n (%)	8 (23.5)
Duration of follow-up (mo), mean $\pm$ SD	52.6 $\pm$ 30.9

PSA, prostatic-specific antigen; SD, standard deviation.

* Alpha-blockers included tamsulosin, naftopidil, and silodosin.

evidence of urinary tract complications, including renal failure (serum creatinine level >1.5 mg/dL), hydronephrosis, UTIs, urinary retention, or neurogenic bladder, at the time of stone removal. Of the 42 men, 8 (17.0%) had undergone radical prostatectomy after stone removal because of prostate cancer diagnosed by biopsy. The remaining 34 men who underwent conservative management of BPH were included in this retrospective analysis.

Data collected during the follow-up period included the International Prostate Symptom Score (IPSS), quality of life (QOL) score, postvoid residual (PVR) urine volume, and BPH-related complications. IPSS, QOL scores, and PVR urine volume before and after treatment were compared with the paired *t* test. Cumulative BPH-related complication-free survival was analyzed with the Kaplan-Meier method, with censoring for recurrent bladder stones, urinary retention, recurrent UTIs (>2 episodes), and renal failure. Similarly, cumulative invasive intervention-free survival was analyzed, with censoring for delayed transurethral resection of the prostate (TURP), indwelling urethral catheter, and intermittent self-catheterization. To determine the association between the occurrence of BPH-related complications and preoperative parameters (age, diameter of largest stone, PVR urine volume, IPSS, QOL score, prostate volume, and prostate-specific antigen), patients were classified into a complications group and a noncomplications group and analyzed with the Student *t* test. A *P* value $<.05$ was considered statistically significant; values are presented as the mean $\pm$ standard deviation.

RESULTS

A total of 34 men were evaluated in this study, with a mean follow-up of 52.6 months. The baseline characteristics of all patients are listed in Table 1. Of the 34 men, 23 (67.6%) had already received medication before transurethral stone removal; 8 (23.5%) received dutasteride postoperatively. Two men (5.9%) began taking alpha-blockers and 1 (2.9%) began alpha-blocker plus dutasteride after stone removal.

All urinary symptom parameters, including IPSS, QOL score, and PVR urine volume, significantly improved after stone removal (Table 2).

BPH-related complications after stone removal and subsequent interventions other than medication are summarized in Table 3. Nine complications occurred in 8 patients. Six patients (17.6%) developed recurrent stones

Table 2. Improvements in IPSS, QOL, and PVR after stone removal

Variable	Before, Mean $\pm$ SD	After, Mean $\pm$ SD	<i>P</i> Value
IPSS	13.5 $\pm$ 7.1	9.7 $\pm$ 6.3	.025
QOL score	3.8 $\pm$ 1.3	2.4 $\pm$ 1.7	$<.001$
PVR (mL)	41.4 $\pm$ 25.8	26.1 $\pm$ 27.0	.03

IPSS, International Prostate Symptom Score; PVR, postvoid residual urine volume; QOL, quality of life; other abbreviations as in Table 1.

Table 3. BPH-related complications and subsequent invasive interventions after bladder stone removal

Variable	Patients	Time of Occurrence (mo)
Complications		
Recurrent UTIs (>2 episodes)	1 (2.9)	36
Urinary retention	2 (5.9)	24.0 $\pm$ 17.0
Recurrent bladder stones*	6 (17.6)	37.7 $\pm$ 24.1
Renal failure	0 (0.0)	N/A
Invasive intervention		
TURP	4 (11.8)	31.5 $\pm$ 13.3
Indwelling urethral catheter	1 (2.9)	36
Intermittent self-catheterization	1 (2.9)	12

BPH, benign prostatic hyperplasia; N/A, not available; TURP, transurethral resection of the prostate; UTI, urinary tract infection.

Values presented as mean $\pm$ standard deviation or number (%).

* Main component of all stones was calcium oxalate.

and underwent repeat transurethral stone removal and 2 (5.9%) experienced urinary retention; 1 (2.9%) of these also suffered from recurrent UTIs. The cumulative BPH-related complication-free survival was 97% at 1 year, 81.8% at 3 years, and 70.5% at 5 years. Twenty-six patients (76.5%) had no complications during the follow-up period.

Six patients (17.6%) required invasive intervention for BPH after occurrence of complications: 4 (11.8%) underwent TURP because of recurrent stones, and 2 (5.9%) received indwelling or intermittent catheterization because of urinary retention. The other 2 patients (5.9%) with recurrent stones continued medical therapy. The cumulative invasive intervention-free survival was 100% at 1 year, 85.0% at 3 years, and 73.6% at 5 years.

Patients were divided into 2 groups according to occurrence of BPH-related complications to evaluate relevant preoperative parameters. Prostate volume was the only significant parameter identified (*P* = .035; Table 4).

COMMENT

According to current guidelines,^{7,8} surgical treatment of BPH is recommended in patients with bladder stones. However, the need for routine surgery to relieve BOO in such patients has recently been questioned.⁵ Our results confirmed that patients who receive conservative management of BPH after stone removal experience

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