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ORIGINAL ARTICLE

Correlation of benign prostatic obstruction-related complications with clinical outcomes in patients after transurethral resection of the prostate



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KEYWORDS

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Abstract We aim to investigate the correlation of benign prostatic obstruction (BPO)-related complications with clinical outcomes in patients after transurethral resection of the prostate in China. We reviewed the medical history of all patients who underwent surgery from 1992 to 2013. We assessed the preoperative clinical profile, clinical management, and operative complications. Overall, 2271 patients were enrolled in the study. Of these patients, 1193 (52.5%) had no BPO-related complications and 1078 (46.3%) had BPO-related complications. Compared with patients without BPO-related complications, those with BPO-related complications were older ($p = 0.001$) and usually had other urologic comorbidities ($p = 0.003$). Additionally, they tended to have more tissue resected ($p < 0.001$), a higher American Society of Anesthesiologists grade ($p = 0.002$), and larger prostates ($p < 0.001$). Nonetheless, there was no obvious difference in surgical complications between both groups ($p > 0.05$). Among patients with BPO-related complications, compared with the bladder stone group, only the bladder stone+ group tended to have a greater urinary infection risk after transurethral resection of the prostate. Compared with patients with one or two BPO-related complications, those with three BPO-related complications tended to have a higher risk of pulmonary embolism and acute coronary syndrome ($p < 0.05$). Despite the widespread use of medication, patients with BPO-related complications were older and had larger prostates; however, transurethral resection of the prostate is still considered a safe and

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recommended surgical treatment. Nevertheless, those with three or more complications were at a higher risk of severe complication after surgery, and active surgical intervention is needed once BPO-related complications develop.

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Introduction

Benign prostatic obstruction (BPO), benign prostatic enlargement (BPE), and benign prostatic hyperplasia (BPH) usually create progressive and chronic complications or lower urinary tract symptoms (LUTSs), which encourages many male patients suffering from these conditions to seek treatment [1–3]. For a long period of time, transurethral resection of the prostate (TURP) has been the most effective surgical intervention for BPH [4] because it provides a more advantageous effect 5 years after surgery in terms of LUTSs and BPO-related complications without a greater risk of erectile dysfunction or incontinence compared with waiting without intervention [2].

In contrast, over the last 20 years, pharmaceutical therapy has been introduced and has fundamentally changed the treatment provided to symptomatic BPH patients. The efficacy of 5- α -reductase inhibitors and α -antagonists for treating patients with symptomatic BPH has been demonstrated in both short- and long-term randomized clinical tests [5–7]. As such, these drugs have become a major agent for treating male patients with LUTSs. However, many patients cannot tolerate long-term pharmaceutical therapy, do not respond to the therapy, or experience progression. As a result, they continue to seek surgical treatment for BPH.

Despite progress in surgical and medical treatments, many patients are still suffering from BPH and related complications. Undoubtedly, medical treatment has had a great impact on general BPH management. As the primary therapy, the growing use of medical treatment has led to a delay in surgical interventions. In fact, when patients suffer from an upper urinary tract dilatation with or without renal insufficiency or recurrent urinary tract infection (UTI), overflow incontinence, refractory or recurrent urinary retention, treatment-resistant macroscopic hematuria, and bladder stones because of BPO, further treatment is needed. In addition to these reasons, an operation becomes necessary when patients have had inadequate LUTS relief after medical treatment [8]. From this perspective, we used our experience to investigate the correlation between BPO-related complications and clinical outcomes in patients after TURP and have discussed our findings in this report.

Methods

A retrospective review was conducted in all the patients who underwent TURP at Peking University First Hospital from January 1, 1992 to December 31, 2013. At our insti-

tution, continuous-flow resectoscopes, such as the Iglesias model, have been used. Besides, we prefer to use a Reuter's suprapubic trocar and cannula for establishing continuous flow during resection of larger prostates (>80 g), following the technique of Dr Paul O. Madsen of Madison, Wisconsin. Electroresection and coagulation for TURP are performed by a monopolar, high-frequency current with a maximum cutting power of 200 W and a coagulating power of 80 W. A microprocessor-controlled electrical unit with an active electrode that transduces permanent signals to the processor allows for real-time power adjustment. Urologists with more than 1 year of surgical experience in BPH performed all the operations. A patient who underwent open prostatectomies was not included in this surgical analysis. Approval from the Institutional Review Board of Peking University First Hospital was obtained for medical record review to collect retrospective clinical data, and all aspects of the study complied with the Declaration of Helsinki. The study was specifically approved so that no informed consent was required because the data were going to be analyzed anonymously.

Patients were eligible for inclusion only if their primary reason for TURP was BPH/BPE. If prostate cancer was diagnosed preoperatively or their postoperative pathology was not compatible with a BPH diagnosis, the patient was excluded. All patients were categorized into BPO-related complications+ and BPO-related complications- groups. The BPO-related complications included recurrent urinary retention, recurrent hematuria, recurrent UTI, bladder stones, and dilation of upper urinary tract with/without renal insufficiency. Patients with BPH and concomitant bladder stones received TURP with cystolithotripsy simultaneously.

Inpatient charts; anesthetic, operation, and pathology reports; and discharge summaries were reviewed. Preoperatively, we evaluated age, body mass index, International Prostate Symptom Score, quality of life score, maximum/average urinary flow rate, voided volume, prostate-specific antigen level, and prostate volume. Comorbidities were also recorded. The previous treatment for BPH (not including antibiotics), whether continuous, intermittent, or combined, was identified by examining the clinical data. Each patient's physical status classification was determined at the time of the surgery based on the criteria from the American Society of Anesthesiologists and was used as an evaluation of the patient's overall health status. The weight of each resection was collected from the operation report. The total surgical time was used as an indicator of operation complexity. During the operation, blood transfusion and suprapubic cystostomy were also assessed as operation parameters.

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