

THE RELATIONSHIP BETWEEN BENIGN PROSTATIC HYPERPLASIA AND UROLITHIASIS

Ermamatov Muhammadali Dilshodjon o'g'li

Central Asian Medical University

First-Year Resident in Urology.

muxa0407@icloud.com +998945561757

<https://doi.org/10.5281/zenodo.23612475>

Introduction. Benign prostatic hyperplasia (BPH) and urolithiasis may coexist in older men, particularly when impaired bladder emptying contributes to the development or retention of bladder calculi. However, urinary stasis alone does not fully explain stone formation. Prostatic anatomy and metabolic characteristics may also influence this process. Distinguishing secondary bladder stones from calculi originating in the upper urinary tract is essential because their coexistence with BPH does not necessarily indicate the same causal mechanism.

Aim. To evaluate the relationship between BPH and urolithiasis through published evidence on anatomical and metabolic risk factors, and to discuss the implications for treatment and prevention.

Keywords: *benign prostatic hyperplasia; bladder stones; urinary obstruction; intravesical prostatic protrusion; metabolic abnormalities.*

Materials and methods. A narrative review of selected PubMed-indexed clinical studies and European Association of Urology guidelines was conducted. Four investigations addressing bladder stone formation and treatment in patients with BPH were examined. Information on patient numbers, study design, anatomical characteristics, urinary metabolic findings, and treatment outcomes was extracted and compared descriptively. Statistical results were obtained from the original publications.

Results and discussion. Kim and colleagues evaluated 271 men undergoing transurethral resection of the prostate (TURP) and reported bladder stones in 9.9% of patients. Older age, greater intravesical prostatic protrusion, and lower maximum urinary flow were independently associated with stone presence. Huang and colleagues examined 332 surgical patients, including 94 with bladder calculi and 238 without calculi. Intravesical prostatic protrusion was significantly greater in the stone group ($P < 0.001$). These findings suggest that prostatic configuration contributes information beyond the presence of enlargement alone. Nevertheless, proportions from surgical cohorts should not be interpreted as population prevalence.

Metabolic findings provide an additional explanation. In the study by Childs and colleagues, evaluable 24-hour urine collections from 27 stone formers and 21 controls demonstrated lower median urinary pH in the stone group (5.9 versus 6.4; $P = 0.02$) and greater uric acid supersaturation (2.2 versus 0.6; $P < 0.01$). These observations support a multifactorial mechanism involving both impaired drainage and a lithogenic urinary environment.

Conclusion. BPH-associated bladder stone formation involves anatomical, functional, and metabolic factors. Diagnostic evaluation should establish stone location, assess clinically relevant obstruction, and identify individual stone-forming susceptibility. Combined treatment may benefit appropriately selected patients, while preventive measures should reflect stone composition and metabolic risk. The reviewed evidence does not establish BPH as a direct cause of kidney stones.

References

1. Kim JW, et al. Intravesical prostatic protrusion is a risk factor for bladder stone in patients with benign prostatic hyperplasia. *Urology*. 2014;84(5):1026–1029. doi:10.1016/j.urology.2014.06.038.
2. Huang W, et al. Risk factors for bladder calculi in patients with benign prostatic hyperplasia. *Medicine (Baltimore)*. 2017;96(32):e7728. doi:10.1097/MD.00000000000007728.
3. Childs MA, et al. Pathogenesis of bladder calculi in the presence of urinary stasis. *J Urol*. 2013;189(4):1347–1351. doi:10.1016/j.juro.2012.11.079.
4. Hasan AM, et al. Synchronous transurethral cystolitholapaxy and TURP reveals better results than transurethral cystolitholapaxy plus medical therapy for BPH: a randomized prospective study on 100 patients with concomitant urinary bladder stone(s) and BPH. *World J Urol*. 2022;40(2):483–487. doi:10.1007/s00345-021-03882-4.