

Is It Time for a Paradigm Shift for the Prevention of the Recurrence of Acute Urinary Retention?

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Acute urinary retention (AUR) is a sudden inability to voluntarily void urine. After an initial AUR episode, approximately 30% of patients experience AUR recurrence (AURr) within 6 months. The issue is significant, especially in aging men, with AUR affecting approximately 10% of men in their 70s and 30% in their 80s. In the United States, around 1 million AUR events occur annually among men with benign prostatic hyperplasia (BPH) without advanced prostate cancer.¹ Among these patients, only approximately 7% proceed to surgery or minimally invasive surgical treatment (MiST) within the following year.¹ Consequently, the majority rely on pharmacotherapy, leading to a high recurrence rate, accounting for 60% (n = 600,000) of all AUR cases annually.¹ Given the projected 40% growth in the male population aged 70+ years over the next decade (from 38 million to 53 million), the number of AUR cases is expected to increase.

After each episode, patients undergo catheterization, followed by a trial without catheter (TWOC). Catheterization is often painful and affects quality of life. The unpredictable nature of AURr further adds to the patient's distress and anxiety. Frequent episodes can also lead to bladder damage, increasing the risk of kidney damage, UTIs, incontinence, and bladder stones. If TWOC fails, patients may require long-term use of indwelling or intermittent catheters while awaiting surgery. Catheter-associated UTIs, among the most

prevalent infections, are particularly concerning because they carry risks of secondary bloodstream infections. Extended waiting times for urological surgeries worsen the reliance on catheters, affecting patient well-being. AURr is associated with a significantly 4 to 5 times greater risk of mortality after 3 months of an episode and 2 to 3 times greater risk after 1 year.²

Currently, there are no treatments indicated for preventing AURr. Transurethral resection of the prostate, the gold standard surgical procedure, is often a last resort because of its high complication rates, including urinary incontinence, urethral strictures, erectile dysfunction, bleeding during or after surgery, UTIs, and urinary retention. In particular, retrograde ejaculation, which affects infertility and sexual satisfaction, affects an estimated 70% to 90% of men, although preserving the bladder neck may help reduce this risk.³ However, as men seek to avoid these life-affecting complications by opting out of surgery, there has been an increase in AURr episodes.⁴ Many men still ultimately require surgery later after pharmacotherapy because AURr is a significant predictor of reduced TWOC success, necessitating close follow-up and potentially early surgical intervention for those at higher risk.⁴

Because AUR commonly occurs with BPH, pharmacotherapies for BPH are often applied to most nonneurological AUR cases. These include α 1-blockers, 5-alpha reductase

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inhibitors (5-ARIs), and phosphodiesterase 5 inhibitors, although each has notable limitations. For example, α 1-blockers prescribed to improve TWOC outcomes do not reduce the risk of AURr and may increase cardiovascular risk,⁵ which in older adults with comorbidities may be a concern for long-term use. 5-ARIs (eg, finasteride and dutasteride) can be subsequently used to prevent AURr, but they require months to take effect, leading to poor adherence to 5-ARIs because of delayed relief and sexual dysfunction, especially decreased libido and erectile dysfunction. Moreover, 5-ARIs have been associated with increased risks of depression⁶ and type 2 diabetes,⁷ and the labels include a warning for a potential increased risk of high-grade prostate cancer. There is currently a lack of evidence supporting the effectiveness of phosphodiesterase 5 inhibitors in preventing AURr.

Alternatives to transurethral resection of the prostate include aquablation or MiSTs. Aquablation has shown benefits, especially for patients with larger prostates, but remains a surgical procedure requiring hospitalization and general anesthesia, with commensurate higher costs; MiSTs such as UroLift and Rezūm water vapor therapy offer less invasive options for managing BPH and are often performed in an outpatient setting without general anesthetic, with a lower risk of complications and shorter or no hospital stay. However, the pivotal trials for both systems excluded patients with urinary retention. In addition, high reintervention rates have been reported for UroLift (~5% to 6% at 1 year), and high complication rates have been reported for both procedures.⁸ Rezūm may show potential for AURr, but research on this topic is still limited. The recent Optilume BPH Catheter system uses a combined mechanical and pharmacological (paclitaxel) approach, showing promise for treating BPH-related symptoms.⁹ Although its mechanism of action involves separating the lateral prostate lobes and opening the prostatic urethral lumen while also transferring paclitaxel to the dilated area to maintain urethral patency, it may have some potential; however, it is not yet known whether the Optilume BPH Catheter system will be tested in men with AUR. As with the other MiSTs, there is no evidence that it will be effective for preventing AURr, and indeed, the salvage of continued detrusor function for such interventions is not trivial.

Given the limitations of current interventions, there is an urgent need to recognize a treatment of AURr independent of long-term BPH management. A pertinent finding regarding the development of new pharmacotherapies is that prostate size is an important prognostic factor in determining AURr. McNeill et al¹⁰ found that 75% of patients with medium-to-large prostates (>20 g) experienced an AUR episode, whereas 29% of patients with small prostates (<20 g)

experienced an AUR episode. This finding suggests the potential to prevent AURr through rapid prostate size reduction. Emerging pharmacological treatments show promise in achieving this reduction swiftly (<4 weeks) and potentially preventing AURr in patients with BPH. Compared with traditional therapies, novel pharmacological approaches, such as gonadotropin-releasing hormone antagonists, which are currently in trials, may offer faster onset of action and aim for a safer profile, minimal effects on sexual function and satisfaction, convenient administration, and cost-effectiveness.

In conclusion, to alleviate the burden on patients and health care resources, it is surely time for a paradigm shift in the prevention of AURr. In cases where an enlarged prostate is the primary cause, more effective pharmacological treatments or minimally invasive procedures are needed that can relieve the obstruction and restore normal urine flow without the need for surgery by immediately shrinking the prostate and slowing the rate of prostate regrowth.

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