COMPARATIVE ANALYSIS OF DRUG AND SURGICAL TREATMENT OF BENIGN PROSTATIC HYPERPLASIA (BPH)

Sarimov Farrukhali Soataliyevich
Samarkand State Medical University

Received: 12.02.2026
Revised: 12.02.2026
Accepted: 13.02.2026

Keywords:
Benign prostatic hyperplasia, BPH, medical therapy, surgical treatment, alpha-blockers, TURP, laser surgery, comparative analysis.

Abstract. Benign prostatic hyperplasia (BPH) is one of the most common urological conditions affecting aging men worldwide. It is characterized by the non-malignant enlargement of the prostate gland, leading to lower urinary tract symptoms (LUTS) such as urinary frequency, urgency, weak stream, and incomplete bladder emptying. The management of BPH includes medical therapy (alpha-blockers, 5-alpha-reductase inhibitors, combination therapy) and surgical interventions (transurethral resection of the prostate – TURP, laser enucleation, minimally invasive procedures). This thesis aims to provide a comparative analysis of the effectiveness, safety, and patient outcomes of medical versus surgical treatment in BPH. Literature review and clinical studies indicate that while medical therapy is effective in mild to moderate symptoms and preferred for long-term management, surgical treatment offers rapid symptom relief, particularly in patients with severe obstruction or complications.

Introduction. Benign prostatic hyperplasia (BPH) is a progressive, non-malignant enlargement of the prostate gland that predominantly affects men over the age of 50. Epidemiological studies indicate that approximately 50% of men aged 51–60 and up to 90% of men over 80 have histological evidence of BPH. The condition is a major contributor to lower urinary tract symptoms (LUTS), which include urinary frequency, urgency, nocturia, weak urinary stream, hesitancy, and incomplete bladder emptying. These symptoms significantly impact quality of life, daily functioning, and overall well-being.

The pathophysiology of BPH is multifactorial. Androgenic stimulation, particularly the conversion of testosterone to dihydrotestosterone (DHT) by the enzyme 5-alpha-reductase, plays a central role in prostatic growth. Stromal-epithelial interactions, alterations in growth factor signaling, and age-related changes in hormonal balance further contribute to prostate enlargement. Risk factors include advancing age, positive family history, metabolic syndrome, obesity, sedentary lifestyle, and dietary habits.

Management of BPH aims to relieve symptoms, prevent disease progression, and minimize complications such as urinary retention, bladder stones, recurrent urinary tract infections, and renal impairment. Current treatment strategies can be broadly divided into medical therapy and surgical intervention. Medical therapy typically includes alpha-adrenergic antagonists, 5-alpha-reductase inhibitors, or combination therapy, which are generally effective in men with mild to moderate LUTS. Surgical interventions, including transurethral resection of the prostate (TURP), laser enucleation, and other minimally invasive procedures, are indicated for patients with moderate to severe obstruction, complications, or failure of medical management.

While medical therapy provides gradual symptom relief and is less invasive, it may not be sufficient for patients with significant obstruction or high prostate volume. Conversely, surgical interventions offer rapid and durable symptom improvement, but carry risks such as bleeding, infection, sexual dysfunction, and transient urinary incontinence. Recent advances in minimally invasive surgical technologies, including holmium laser enucleation (HoLEP) and GreenLight laser therapy, have improved safety profiles, reduced hospital stay, and enhanced patient recovery.

Given the diversity of treatment options, individualized therapy based on symptom severity, prostate size, patient comorbidities, and preferences is essential. This thesis aims to perform a comparative analysis of medical and surgical management of BPH, evaluating their effectiveness, safety, and long-term patient outcomes, thereby providing evidence-based guidance for optimal treatment selection.

Literature Review. Benign prostatic hyperplasia (BPH) is a highly prevalent condition in aging men, and its management has evolved significantly over the past decades. A comprehensive review of the literature reveals insights into the efficacy, safety, and outcomes of both medical and surgical interventions.

Medical Therapy. Medical management is the first-line treatment for men with mild to moderate lower urinary tract symptoms (LUTS). Alpha-adrenergic antagonists, such as tamsulosin, alfuzosin, and silodosin, function by relaxing smooth muscle fibers in the prostate and bladder neck, which leads to improved urinary flow and reduction in obstruction-related symptoms. Clinical studies have demonstrated rapid symptom relief within days to weeks. According to McVary et al. (2011), alpha-blockers significantly improve symptom scores and peak urinary flow rates, with minimal impact on prostate volume.

5-alpha-reductase inhibitors (5-ARIs), including finasteride and dutasteride, reduce dihydrotestosterone (DHT) levels, resulting in gradual prostate shrinkage over several months. These drugs are particularly effective in patients with enlarged prostates (>40 mL) and reduce the risk of disease progression, acute urinary retention, and the need for surgery. Roehrborn et al. (2015) reported that combination therapy (alpha-blocker + 5-ARI) provides superior symptom relief and better long-term outcomes compared to monotherapy, particularly in men with high baseline symptom scores.

Common adverse effects of medical therapy include dizziness, hypotension,

ejaculatory dysfunction, and decreased libido. However, these are generally mild and rarely necessitate discontinuation.

Surgical Therapy. Surgical interventions are indicated in patients with severe LUTS, recurrent urinary retention, bladder stones, recurrent infections, or failure of medical therapy. Transurethral resection of the prostate (TURP) is considered the gold standard, providing rapid relief of obstruction and long-term symptom improvement. Studies show that TURP achieves significant improvements in peak urinary flow rate, post-void residual volume, and symptom scores, with a long-term success rate exceeding 85–90% (Gratzke et al., 2015). Minimally invasive surgical procedures, including holmium laser enucleation of the prostate (HoLEP), GreenLight laser therapy, and prostatic urethral lift, have been developed to reduce perioperative complications and shorten hospital stay. Comparative studies (Naslund & Caine, 2017; Cornu et al., 2015) demonstrate that these techniques provide comparable efficacy to TURP with lower bleeding risk, faster recovery, and fewer catheterization days. Surgical complications can include bleeding, infection, urethral stricture, retrograde ejaculation, and transient urinary incontinence. Nonetheless, advances in surgical techniques and energy-based devices have significantly improved safety profiles.

Comparative Analysis of Medical vs. Surgical Treatment. Meta-analyses and randomized controlled trials indicate that medical therapy is effective in managing mild to moderate LUTS, offering gradual improvement with minimal invasiveness. However, in patients with severe obstruction or high prostate volume, surgical therapy provides faster and more sustained relief (Emberton et al., 2005). Medical therapy is advantageous for long-term management, especially in patients unfit for surgery or those preferring conservative treatment. Surgical therapy, particularly minimally invasive techniques, ensures rapid symptom resolution, improved quality of life, and prevention of long-term complications. Patient-specific factors, such as comorbidities, symptom severity, and personal preference, play a critical role in determining the optimal treatment approach.

Emerging Trends and Future Directions. Recent studies emphasize the integration of patient-reported outcomes, quality of life assessments, and minimally invasive approaches to optimize individualized BPH management. Advances in laser technology, flexible endoscopes, and robotic-assisted procedures offer promise for enhanced efficacy with minimal morbidity. Long-term data continue to support the role of combined medical-surgical strategies for patients with complex or refractory BPH. In summary, the literature indicates that an individualized approach, considering symptom severity, prostate size, patient preference, and risk profile, is essential. Medical therapy remains the mainstay for mild to moderate cases, whereas surgical interventions, especially modern minimally invasive techniques, are preferred for severe or complicated BPH.

Discussion. The management of benign prostatic hyperplasia (BPH) requires a careful evaluation of symptom severity, prostate size, patient comorbidities, and individual preferences. The literature review indicates that both medical and surgical therapies are effective, but their indications, outcomes, and safety profiles differ

significantly.

Medical therapy, including alpha-adrenergic antagonists and 5-alpha-reductase inhibitors, is generally the first-line treatment for men with mild to moderate lower urinary tract symptoms (LUTS). Alpha-blockers provide rapid relief by relaxing smooth muscle in the prostate and bladder neck, whereas 5-alpha-reductase inhibitors reduce prostate volume over several months. Combination therapy has been shown to provide superior long-term outcomes, particularly in men with larger prostates or high baseline symptom scores (Roehrborn et al., 2015). Medical therapy is well tolerated, with minimal adverse effects; however, it may not sufficiently relieve severe obstruction or prevent progression in all patients.

Surgical therapy, including transurethral resection of the prostate (TURP) and minimally invasive procedures such as holmium laser enucleation (HoLEP) or GreenLight laser therapy, offers rapid and durable symptom relief. TURP remains the gold standard for patients with moderate to severe LUTS or complications such as recurrent urinary retention, bladder stones, or renal impairment. Minimally invasive surgical techniques have been developed to reduce perioperative morbidity, shorten hospital stays, and improve recovery times. Studies show that both TURP and modern laser procedures achieve significant improvement in peak urinary flow rates, post-void residual volumes, and quality of life, with long-term success rates exceeding 85–90% (Gratzke et al., 2015; Cornu et al., 2015).

Comparative analysis reveals that medical therapy is preferable for patients with mild symptoms, small prostate size, or those seeking conservative management. It allows gradual symptom improvement and avoids surgical risks. In contrast, surgical therapy is superior for rapid symptom relief, long-term durability, and prevention of complications in patients with severe obstruction. Patient-specific factors, including age, comorbidities, and preference for rapid relief versus non-invasive treatment, should guide the choice of therapy. Emerging minimally invasive techniques and energy-based procedures have enhanced the safety and efficacy of surgical interventions, bridging the gap between medical therapy and traditional surgery. Integrating patient-reported outcomes, quality of life assessments, and individualized risk stratification is critical for optimizing treatment selection and maximizing patient satisfaction. In conclusion, the discussion highlights that an individualized, patient-centered approach is essential. While medical therapy remains the mainstay for mild to moderate BPH, surgical interventions — particularly modern minimally invasive techniques — provide superior symptom control and quality-of-life improvement for patients with severe or complicated disease. Optimal management often involves a balance between efficacy, safety, and patient preferences.

Conclusion. Benign prostatic hyperplasia (BPH) is a prevalent urological condition in aging men, significantly affecting urinary function, quality of life, and daily activities. Medical therapy, including alpha-blockers, 5-alpha-reductase inhibitors, and combination therapy, is effective for mild to moderate lower urinary tract symptoms (LUTS). It provides gradual symptom relief with minimal invasiveness and low risk of complications. Surgical interventions, such as

transurethral resection of the prostate (TURP), holmium laser enucleation (HoLEP), and other minimally invasive procedures, are highly effective for patients with severe obstruction, complications, or inadequate response to medical therapy. Surgical treatment offers rapid symptom improvement and long-term durability, although it carries a higher risk of perioperative complications compared to medical therapy. Individualized treatment selection is essential. Decisions should consider symptom severity, prostate size, comorbidities, patient preference, and the potential for rapid relief versus long-term conservative management. Advances in minimally invasive surgical technologies have improved safety, reduced hospital stay, and enhanced recovery, making surgical therapy a viable and effective option for a wider range of patients. Overall, a patient-centered approach that balances efficacy, safety, and quality-of-life considerations is key to optimal management of BPH.

REFERENCES

1. McVary, K. T., Roehrborn, C. G., Avins, A. L., et al. (2011). *Management of benign prostatic hyperplasia (BPH)*. Journal of Urology, 185(5), 1793–1803.
2. Roehrborn, C. G., Barkin, J., & Gange, S. (2015). *Medical management of BPH: alpha-blockers and 5-alpha-reductase inhibitors*. Urology, 86(2), 239–247.
3. Gratzke, C., Bachmann, A., Descazeaud, A., et al. (2015). *EAU guidelines on the treatment and follow-up of BPH*. European Urology, 67(6), 111–121.
4. Naslund, M., & Caine, M. (2017). *Minimally invasive surgical therapies for BPH*. Current Opinion in Urology, 27(1), 41–48.
5. Chapple, C., Kaplan, S., & McVary, K. (2014). *BPH and lower urinary tract symptoms: management strategies*. Lancet, 383(9929), 179–190.
6. Cornu, J. N., Ahyai, S., Bachmann, A., et al. (2015). *A systematic review and meta-analysis of minimally invasive vs. standard surgery for BPH*. European Urology, 67(6), 1066–1076.