

Investigating Medication vs. Prostatic Urethral Lift: 3-Month Results of the IMPACT Trial

Gregg Eure

greure@me.com

Urology of Virginia <https://orcid.org/0000-0002-1110-5591>

Sheldon Freedman

Sean Heron

Brian Mazzearella

Nilay Gandhi

Todd Bertoch

CenExcel JBR

Philip Brodak

Tri Valley Urology Medical Group

Shadi Tarazi

Edward Jenner Research Group

prithipal Sethi

Michael Trotter

Midtown Urology

Tom Mueller

Dean Elterman

University of Toronto <https://orcid.org/0000-0003-1507-7783>

Claus Roehrborn

UT Southwestern Medical Center at Dallas

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Abstract

BACKGROUND: Randomized controlled trials (RCTs) comparing minimally invasive surgical therapies (MISTs), such as Prostatic Urethral Lift (PUL), with tamsulosin for the treatment of lower urinary tract symptoms (LUTS) secondary to benign prostatic hyperplasia (BPH) are limited.

METHODS: The Investigating Medication versus Prostatic Urethral Lift: Assessment and Comparison of Therapies (IMPACT) trial is a prospective, multicenter, 1-to-1 nonblinded RCT conducted in men with symptomatic BPH randomized to PUL or tamsulosin 0.4 mg daily. The primary endpoint was 3-month International Prostate Symptom Score (IPSS) change. Secondary endpoints included Quality-of-Life (QoL), sexual function, adverse events (AEs), and medication adherence.

RESULTS: 259 subjects were randomized (PUL n = 128, tamsulosin n = 131). Baseline demographics were similar between groups. PUL mean IPSS improved by 40 and 46 percent at 1 and 3 months versus 18 and 16 percent with tamsulosin ($p < 0.001$). QoL improved by 37 and 47 percent with PUL versus 11 and 24 percent with tamsulosin ($p < 0.001$). AEs were generally mild to moderate in both groups, and sexual function was preserved. Ninety-one percent of subjects self-reported medication adherence at 3 months while only 80 percent were adherent on pill counts.

CONCLUSIONS: PUL produced greater symptom improvement and more favorable quality-of-life outcomes than tamsulosin at 3 months in the largest-to-date RCT of MIST versus medication for BPH.

INTRODUCTION

Benign prostatic hyperplasia (BPH) and associated lower urinary tract symptoms (LUTS) affect up to half of men aged 50–60, a prevalence that continues to increase with patient age.[1] Most BPH subjects (62 percent) receive medical therapy, and the majority report resultant improvement in their symptoms; however, up to 71 percent of subjects discontinue their medication after one year of treatment. Additionally, nearly half of subjects on BPH medication do not experience clinically significant symptom improvement and report side effects including headaches, congestion, dizziness, loss of libido, ejaculatory and erectile dysfunction. [2, 3]

Minimally invasive surgical therapies (MISTs) such as the Prostatic Urethral Lift (PUL) are designed to offer safe and effective relief from bothersome LUTS without the need for daily medication. Controlled and real-world studies have demonstrated significant International Prostate Symptom Score (IPSS) improvement following PUL, with rapid recovery, sexual function preservation, a favorable safety profile compared to transurethral resection of the prostate (TURP), and consistent durability through 5 years across numerous study designs.[4, 5] Although MISTs are well-established in the American Urological Association (AUA) treatment guidelines, there have been few head-to-head comparisons between BPH medical therapies and MISTs such as PUL. Comparisons of past disparate clinical trial results are problematic, given different inclusion criteria, follow-up regimens and adverse event definitions.[6] Here we report the largest randomized controlled trial directly comparing PUL to medication in the treatment

of BPH-associated LUTS: the Investigating Medication versus Prostatic Urethral Lift: Assessment and Comparison of Therapies for Benign Prostatic Hyperplasia (IMPACT) trial.

MATERIALS AND METHODS

Study Protocol and Objectives

IMPACT is a prospective, multicenter, two-arm, 1-to-1 non-blinded RCT in BPH subjects treated with PUL or medication (tamsulosin 0.4 mg daily) comparing safety, efficacy, and post-procedural patient experience. The study was performed at 13 participating sites in the United States. The primary endpoint was BPH symptom change at 3 months as measured by the total International Prostate Symptoms Score (IPSS) [7]; secondary endpoints included Quality-of-Life (QoL)[8], sexual function assessments including the Male Sexual Health Questionnaire - Ejaculatory Dysfunction (MSHQ EjD) and Male Sexual Health Questionnaire – Bother (MSHQ Bother)[9], International Index of Erectile Dysfunction (IIEF)[10], medication adherence, and safety outcomes. After 3-month assessment, subjects randomized to medical therapy were allowed to crossover to PUL treatment; PUL patients were also allowed to crossover to medical therapy after the 3-month follow-up visit (Fig. 1). Independent reviewers adjudicated all adverse events and maximum urinary flow rate (Qmax) waveforms.

Patient randomization was conducted immediately before treatment using the Electronic Data Capture (EDC) system. Eligible subjects were men aged 45 years or older, diagnosed with symptomatic BPH, and willing to wash out of any BPH medications they may have been taking. The following were exclusion criteria for the study: subjects treated for BPH with alpha-blockers or phosphodiesterase type 5 inhibitors (PDE5-inhibitors) that could not be washed out for 30 days, those treated with 5-alpha-reductase inhibitors for BPH within 6 months of therapy initiation, current urinary tract infection (UTI) or prostatitis, current gross hematuria, urinary incontinence, catheter-dependent urinary retention within 1 month of enrollment, prostate volume > 100 grams, or subjects previously treated with minimally invasive or surgical intervention for BPH.

Statistical Methods

Efficacy analyses were conducted on the per-protocol (PP) population, defined as all randomized subjects excluding those with significant protocol violations affecting data integrity and those who underwent surgical intervention or used prohibited BPH medication during the 3-month follow-up period. Safety analyses were conducted on the safety population, defined as all randomized subjects who received their assigned BPH therapy (placement of at least one UroLift implant for PUL; at least one dose for tamsulosin). The primary endpoint was the median percent change in IPSS from baseline to 3 months, assessed for non-inferiority of PUL to tamsulosin against a margin of 12 percent. The difference in medians was estimated by quantile regression with percentile bootstrap confidence intervals (2,000 resamples); non-inferiority was concluded if the upper bound of the one-sided 95 percent confidence

interval fell below the margin (one-sided $\alpha = 0.05$). A sample size of 125 subjects per arm was determined by simulation to provide 90 percent power at the one-sided 0.05 alpha level. Between-arm comparisons of secondary and exploratory endpoints are descriptive, with two-sided p-values unadjusted for multiplicity. Analyses were performed using R version 4.5.2.

RESULTS

128 subjects were randomized to PUL and 131 to tamsulosin treatment (Fig. 1). 20 subjects randomized to PUL did not receive treatment (7 lost to follow-up, 13 withdrew consent) and 2 patients randomized to tamsulosin did not receive treatment (2 subjects withdrew consent) (Fig. 1). Baseline demographics including IPSS, QoL, Qmax, PSA, and prostate volume were similar between groups (Table 1).

Primary Endpoint

The primary endpoint was non-inferiority of PUL to tamsulosin in median IPSS percent change from baseline to 3 months, against a margin of 12 percent (i.e., PUL non-inferior if the one-sided 95 percent upper confidence bound for the PUL–MED difference in median percent change fell below 12 percent). Non-inferiority was met: the median IPSS percent change was –54.7 percent for PUL versus –16.0 percent for tamsulosin, a difference in medians of –37.8 percent (one-sided 95 percent upper confidence bound –28.6 percent), well below the margin.

Efficacy

PUL subjects experienced significantly greater IPSS improvements of 40% and 46% at 1 and 3 months, respectively, compared to 18% and 16% for medication ($p < 0.001$) (Fig. 2). Higher baseline symptom severity was associated with a corresponding greater improvement in IPSS total score at 3 months. QoL score improvement was also significantly better in the PUL arm, 37% and 47% at 1 and 3 months vs. 11% and 24% for the medication group ($p < 0.001$) (Figure 3).

Qmax increased by 25% in PUL subjects vs. 9% in medication subjects at 3 months ($p = 0.04$).

At 3 months, sexual function was largely stable in both arms, but differences were noted (table 2). IIEF total score improved 27% in PUL vs. a nominal reduction of -1.4% for medication ($p < 0.001$). In the PUL arm, there was one case of *de novo* erectile dysfunction that resolved without intervention within 1 month. Greater difference was noted in ejaculatory function, with 3-month MSHQ-EjD function improving by 58% for PUL vs 4.9% for medication ($p < 0.001$) and bother scores improving 56% for PUL vs. 6.2% for medication ($p < 0.001$).

Post Hoc Analyses

Because the two-sided 95 percent confidence interval for the difference (–46.7 percent, –27.2 percent) excluded zero, a post-hoc analysis found PUL superior to tamsulosin in symptom improvement.

Twenty-nine (28%) subjects randomized to the PUL arm and 15 (12%) subjects randomized to the medication arm of the per-protocol population had received BPH medication (alpha-blockers, 5-ARIs, PDE5 inhibitors, or combination therapy) prior to study enrollment. Among subjects randomized to medication, those with prior BPH medication exposure had greater baseline symptom severity than subjects not on medication prior to study enrollment. In the PUL arm, subjects with prior BPH medication exposure demonstrated greater improvement in IPSS at 1 and 3 months than subjects not on medication prior to study enrollment. Among subjects treated with medication, IPSS improvement was similar regardless of prior BPH medication exposure.

Safety & Medication Adherence

Within the first 3 months, there were 60 related adverse events (AEs) in the PUL group and 17 in the medication group. Most PUL AEs occurred during the peri-procedural period (0-2 days), while most medication AEs occurred during the first month of treatment. The majority of AEs were mild to moderate for both groups. PUL AEs were concentrated in the peri-procedural period (67% of related PUL AEs began within 2 days of the procedure), whereas medication AEs accrued throughout follow-up, consistent with ongoing medication exposure. One related serious adverse event was reported in the PUL arm: a pelvic hematoma in the PUL group managed with inpatient monitoring (Table 3). Although 91% of medication arm subjects self-reported taking their medication as prescribed at 3 months, 80% were found to be adherent through objective measures (proportion of days covered (PDC) $\geq 80\%$ on pill counts). The most common patient experiences leading to medication non-adherence were nasal congestion, dizziness, sexual side effects, and lack of symptom improvement (Table 4).

Composite Efficacy and Safety Responder Analysis

Through 3 months, the proportion of subjects classified in the worst outcome category - non-responder with any adverse event - was lower for PUL than medication (6.9% vs 11.4%) (Table 5). Nonresponse without adverse events was also substantially less common in the PUL arm than in the medication arm (5.9% vs 50.4%). Overall, 87.3% of PUL-treated subjects were responders compared with 38.2% of medication-treated subjects. Among responders, 3.9% of PUL-treated subjects and 1.6% of medication-treated subjects experienced at least one serious adverse event, while 27.5% and 6.5%, respectively, experienced only non-serious adverse events. The most favorable outcome category, defined as an IPSS improvement of at least 3 points without adverse events, was achieved by a greater proportion of subjects treated with PUL than medication (55.9% vs 30.1%).

DISCUSSION

This randomized controlled trial demonstrates that PUL provides significantly greater symptom relief, quality-of-life improvement, sleep quality improvement, and patient satisfaction compared to tamsulosin in men with symptomatic BPH during the initial 3 months of treatment. Despite comparable baseline characteristics, PUL subjects experienced nearly triple the symptom improvement at both 1 and 3 months relative to those receiving medical therapy, with similarly robust benefits observed in quality-of-

life scores. While PUL showed favorable symptom improvement regardless of baseline IPSS, differences in symptom improvement between therapies were more pronounced as baseline symptom scores increased. Preservation of sexual function following PUL was demonstrated consistent with previous data, and some improvement in sexual function was observed in PUL patients. A potential mechanism may be increased time from previous medication exposure, or mechanical disobstruction of the prostate. These findings are consistent with previous prospective studies of PUL, including LIFT, BPH6, and a large real-world analysis, and extend the existing body of evidence by directly comparing outcomes to a standard alpha-blocker.[11–14]

The 3-month IPSS improvement of 3.3 pts observed in the tamsulosin arm of this trial is modest relative to the CombAT study (4.5 pts at 3 months) which excluded participants based on maximum urinary flow rate and post-void residual thresholds.[15] The higher baseline IPSS in IMPACT compared with CombAT (19.3 vs. 16.4)[16] indicates a greater symptomatic burden in this cohort and may be consistent with a diminished response to medical therapy and the willingness to undergo randomization, including the possibility of MIST. Additionally, there may have been more subjects entering this study that had suboptimal alpha blocker response prior to enrollment.

Subjects with prior BPH medication exposure who were randomized to medical treatment entered the study with greater baseline symptom severity than those not on medication prior to study enrollment and experienced symptom improvements similar to subjects not on medication prior to enrollment. This suggests that previous exposure to BPH medication did not enhance subsequent responsiveness to tamsulosin. In contrast, among subjects randomized to PUL, those with prior medication exposure demonstrated greater improvements in IPSS at 1 and 3 months than PUL subjects not previously treated with medication. These findings suggest that PUL remains highly effective even in patients who have previously received medical therapy and may provide particular benefit for men with persistent urinary symptoms despite prior pharmacologic treatment.

Sexual function outcomes in the IMPACT trial were broadly consistent with prior studies of alpha-blocker therapy. Retrograde ejaculation was reported in 2.3% of tamsulosin-treated subjects in IMPACT, somewhat higher than the 1.1% incidence observed in both the CombAT trial (tamsulosin, 2-year follow-up) and the MTOPS trial (doxazosin, 1-year follow-up). Declines in erectile function were modest across studies, with a 1.8-point reduction in total International Index of Erectile Function (IIEF) score in the med arm and a 1% decrease on the Brief Male Sexual Function Inventory (BMSFI) in MTOPS. Notably, erectile dysfunction was not reported in the analyzed IMPACT medication cohort, in contrast to rates of 3.8% in CombAT and 3.6% in MTOPS.[17, 15] This absence may reflect the shorter 3-month follow-up period in IMPACT.

The early and substantial symptom relief seen in the PUL cohort may be attributed to the immediate mechanical decompression of the prostatic urethra achieved with implant placement. In contrast, the modest improvements in the tamsulosin group reflect the known pharmacodynamics of alpha-blockers, which do not significantly alter prostate anatomy and require continuous adherence for effectiveness.

[18] Despite high self-reported adherence rates, objective adherence measures (pill counts) revealed significant gaps, highlighting a key limitation of pharmacologic therapy in real-world settings where effectiveness relies on consistent adherence. These findings reinforce the value of definitive, procedure-based therapies like PUL - particularly for subjects seeking durable relief and reluctant to remain on lifelong daily medication.

Adverse events in both groups were generally mild to moderate and consistent with previously established safety profiles.[19] However, the timing and duration of adverse events differed notably: PUL-related events were predominantly perioperative and transient, while tamsulosin-related adverse events such as nasal congestion persisted and were a frequent cause of medication discontinuation. These results echo previous reports that medication side effects can reduce long-term adherence[2], an important consideration for chronic conditions like BPH. When treatment success was evaluated using a composite endpoint incorporating both symptom improvement and adverse events, PUL demonstrated a more favorable overall benefit-risk profile than medical therapy. More than half of PUL-treated subjects achieved clinically meaningful symptom improvement without adverse events, compared with fewer than a third of subjects receiving tamsulosin. Overall, nearly 90% of PUL-treated subjects met the responder definition vs. fewer than 40% of medication-treated subjects. Although the nature and potential severity of adverse events associated with procedural and pharmacologic therapies differ, integrating efficacy and safety into a single outcome provides a more patient-centered assessment of treatment success.

In contrast to earlier studies of BPH medications with more restrictive inclusion criteria, the IMPACT trial utilized broad eligibility criteria to reflect a real-world patient population. This enhances the external validity of the findings and increases their applicability to routine urological practice. The broader selection criteria may also explain the comparatively modest improvements observed.[15] Medication adherence in the tamsulosin arm of IMPACT was higher than in previous studies, suggesting improved compliance in the clinical trial setting, which may have affected outcomes observed in this cohort.[2]

Consistent with AUA guidelines[20], IMPACT included early therapeutic assessment of medication effect and an opportunity for crossover if initial treatment goals were not met. A majority of subjects randomized to tamsulosin opted to crossover to PUL once eligible after the primary endpoint three-month visit; outcomes for this group of crossover subjects will be presented in the future after the trial concludes. Understanding the motivations behind these decisions and comparing post-crossover outcomes to both the pre-crossover and PUL-randomized groups, may inform shared decision-making and support timely transitions to more effective therapies when indicated.

This study is limited by its short-term follow-up and lack of long-term outcome data. While it is common for primary randomized endpoints to be at 3 months for BPH medications and devices, this study will also continue follow-up to 12 months. Due to the high crossover from tamsulosin to PUL, this study will not test the long term durability of tamsulosin, but will offer a comparison to previous studies that have demonstrated sustained symptom relief and durability of PUL for up to five years.[4] It is also worth noting that participants in this trial consented to randomization with the possibility of undergoing a

procedure, which may have selected for subjects with more bothersome symptoms or a lack of enthusiasm for medical therapy. On the other hand, 12 subjects after randomization to PUL elected not to undergo the procedure highlighting also the difficulties in randomizing patients to invasive treatments vs. medication in any disease state. The study employed an open-label design, as blinding would have required a sham cystoscopic procedure that was considered ethically unjustifiable.[21] Additionally, randomization was programmed using permuted blocks of four stratified by site rather than permuted blocks of two and four stratified by site which represented a minor protocol deviation. Although a 30-day washout of BPH medications was required for study inclusion, information regarding the timing of prior BPH medication use was not collected. Thus, while prior BPH medication use was documented, it is not possible to determine whether treatment occurred remotely or immediately before the required washout period. The generalizability of the results of this study to other minimally invasive procedures is potentially problematic, since they have not demonstrated noninferiority to PUL in regard to catheterizations, sexual function preservation, patient experience or satisfaction.

CONCLUSIONS

This randomized, prospective trial demonstrates that the Prostatic Urethral Lift (PUL) provides significantly better symptom relief, quality-of-life improvement, patient satisfaction and goal achievement compared to alpha-blocker therapy in men with LUTS secondary to BPH through 3 months. These benefits extended beyond urinary symptom resolution to include preservation of erectile function, significant improvements in ejaculatory function, and enhanced quality-of-life - outcomes that align closely with common patient priorities when selecting therapy. Taken together, these findings underscore the importance of individualized, goal-oriented care and reinforce the clinical value of shared decision-making, wherein treatment success is defined not only by symptom scores but by a therapy's ability to help subjects achieve their personal health goals.

Declarations

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Author Contributions

All authors were investigators in this study, contributed to results interpretation, and provided critical review of the manuscript.

Ethics Statement

The trial was approved by Advarra, a central Institutional Review Board (CIRBI protocol number Pro00057158). All subjects provided written informed consent prior to enrollment, and the study was conducted in accordance with Good Clinical Practice guidelines, the Declaration of Helsinki, and the Consolidated Standards of Reporting Trials (CONSORT) guidelines. The trial is registered at ClinicalTrials.gov (NCT04987892, <https://clinicaltrials.gov/study/NCT04987892>, registered July 9, 2021).

Data Availability Statement

De-identified participant data, the study protocol, and statistical analysis outputs are available from the corresponding author upon reasonable request.

Conflicts of Interest

Drs. Eure, Mazzarella, Gandhi, Sethi, Trotter, Mueller, Elterman, and Roehrborn are current or former paid Teleflex consultants.

Artificial Intelligence Statement

The authors did not use generative AI or AI-assisted technologies in the development of this manuscript.

References

1. Berry, S. J., Coffey, D. S., Walsh, P. C., & Ewing, L. L. (1984). The development of human benign prostatic hyperplasia with age. *The Journal of Urology*, 132(3), 474–479.
2. Cindolo L, Pirozzi L, Fanizza C, et al. Drug adherence and clinical outcomes for patients under pharmacological therapy for lower urinary tract symptoms related to benign prostatic hyperplasia: population-based cohort study. *Eur Urol*. 2015;68(3):418–425.
3. Yu ZJ, Yan HL, Xu FH, et al. Efficacy and Side Effects of Drugs Commonly Used for the Treatment of Lower Urinary Tract Symptoms Associated With Benign Prostatic Hyperplasia. *Front Pharmacol*. 2020;11:658.
4. Roehrborn CG, Barkin J, Gange SN, et al. Five year results of the prospective randomized controlled prostatic urethral L.I.F.T. study. *Can J Urol*. 2017;24(3):8802–8813.
5. Kaplan S, Kaufman RP Jr, Mueller T, et al. Retreatment rates and postprocedural complications are higher than expected after BPH surgeries: a US healthcare claims and utilization study. *Prostate Cancer Prostatic Dis*. 2024;27(3):485–491.
6. Miller LE, Chughtai B, Dornbier RA, McVary KT. Surgical Reintervention Rate after Prostatic Urethral Lift: Systematic Review and Meta-Analysis Involving over 2,000 Patients. *J Urol*. 2020;204(5):1019–

1026.

7. Barry MJ, Fowler FJ Jr, O'Leary MP, et al. The American Urological Association symptom index for benign prostatic hyperplasia. The Measurement Committee of the American Urological Association. *J Urol*. 1992;148(5):1549–1564.
8. Epstein RS, Deverka PA, Chute CG, Oesterling JE, Lieber MM, Schwartz S, Patrick D. Validation of a new quality of life questionnaire for benign prostatic hyperplasia. *Journal of clinical epidemiology*. 1992;45(12):1431–45.
9. Rosen RC, Catania J, Pollack L, Althof S, O'Leary M, Seftel AD. Male Sexual Health Questionnaire (MSHQ): scale development and psychometric validation. *Urology*. 2004;64(4):777–782.
10. Rosen RC, Riley A, Wagner G, Osterloh IH, Kirkpatrick J, Mishra A. The international index of erectile function (IIEF): a multidimensional scale for assessment of erectile dysfunction. *Urology*. 1997;49(6):822–830.
11. McVary KT, Gange SN, Shore ND, et al. Treatment of LUTS secondary to BPH while preserving sexual function: randomized controlled study of prostatic urethral lift. *J Sex Med*. 2014;11(1):279–287.
12. Roehrborn CG, Gange SN, Shore ND, et al. The prostatic urethral lift for the treatment of lower urinary tract symptoms associated with prostate enlargement due to benign prostatic hyperplasia: the L.I.F.T. Study. *J Urol*. 2013;190(6):2161–2167.
13. Sønksen J, Barber NJ, Speakman MJ, et al. Prospective, randomized, multinational study of prostatic urethral lift versus transurethral resection of the prostate: 12-month results from the BPH6 study. *Eur Urol*. 2015;68(4):643–652.
14. Eure G, Gange S, Walter P, et al. Real-World Evidence of Prostatic Urethral Lift Confirms Pivotal Clinical Study Results: 2-Year Outcomes of a Retrospective Multicenter Study. *J Endourol*. 2019;33(7):576–584.
15. McConnell JD, Roehrborn CG, Bautista OM, et al. The long-term effect of doxazosin, finasteride, and combination therapy on the clinical progression of benign prostatic hyperplasia. *N Engl J Med*. 2003;349(25):2387–2398.
16. Siami P, Roehrborn CG, Barkin J, et al. Combination therapy with dutasteride and tamsulosin in men with moderate-to-severe benign prostatic hyperplasia and prostate enlargement: the CombAT (Combination of Avodart and Tamsulosin) trial rationale and study design. *Contemp Clin Trials*. 2007;28(6):770–779.
17. Roehrborn CG, Wilson TH, Black LK. Quantifying the contribution of symptom improvement to satisfaction of men with moderate to severe benign prostatic hyperplasia: 4-year data from the CombAT trial. *J Urol*. 2012;187(5):1732–1738.
18. Djavan B, Marberger M. A meta-analysis on the efficacy and tolerability of alpha1-adrenoceptor antagonists in patients with lower urinary tract symptoms suggestive of benign prostatic obstruction. *Eur Urol*. 1999;36(1):1–13.
19. Cantwell AL, Bogache WK, Richardson SF, et al. Multicentre prospective crossover study of the 'prostatic urethral lift' for the treatment of lower urinary tract symptoms secondary to benign

prostatic hyperplasia. BJU Int. 2014;113(4):615–622.

20. Sandhu JS, Bixler BR, Dahm P, et al. Management of lower urinary tract symptoms attributed to benign prostatic hyperplasia (BPH): AUA Guideline amendment 2023. J Urol. 2023;10.1097/JU.0000000000003698.

21. Baboudjian M, Nunzio C, Elterman D, et al. What is the Standard Comparator of Minimally Invasive Surgical Therapies (MIST) for Benign Prostatic Obstruction? Medical Versus Surgical Treatment. Eur Urol. Published online June 12, 2026.

Tables

Tables 1 to 5 are available in the supplementary files section.

Figures

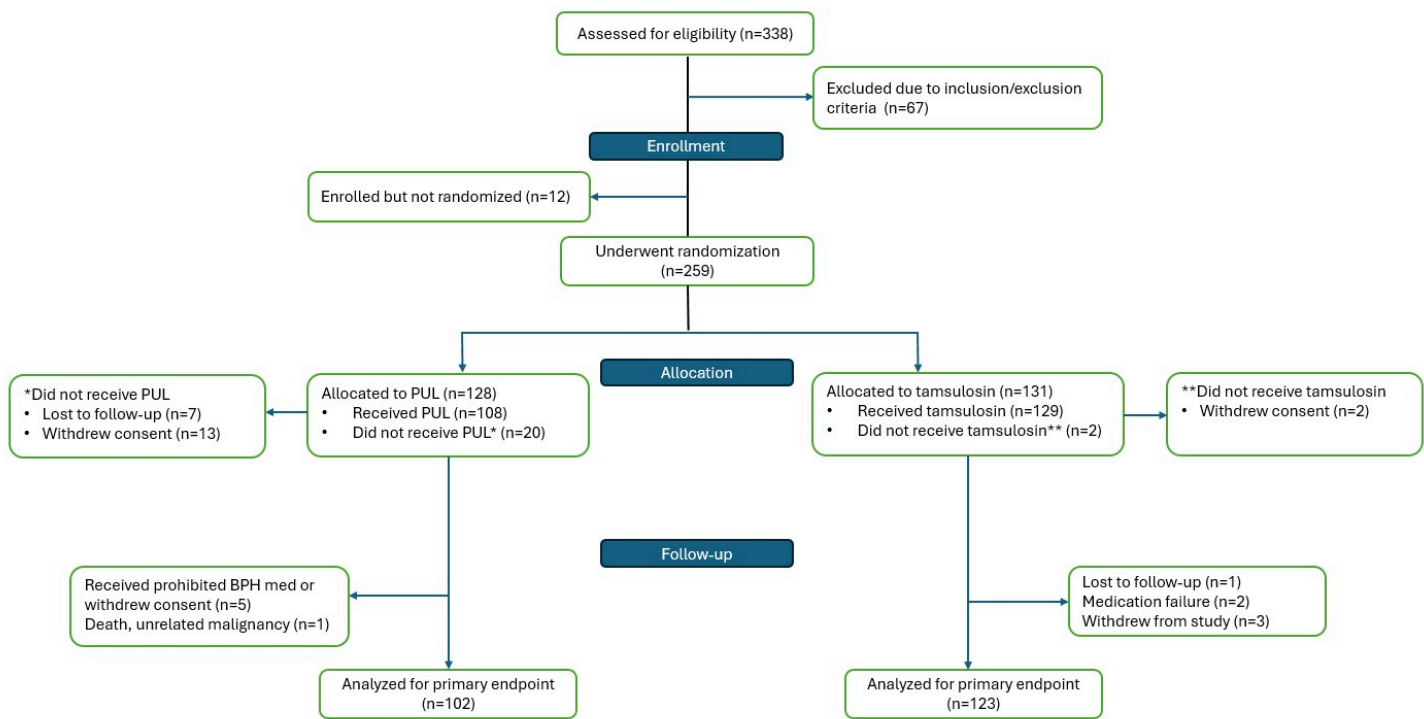


Figure 1

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Fig. 2. IPSS

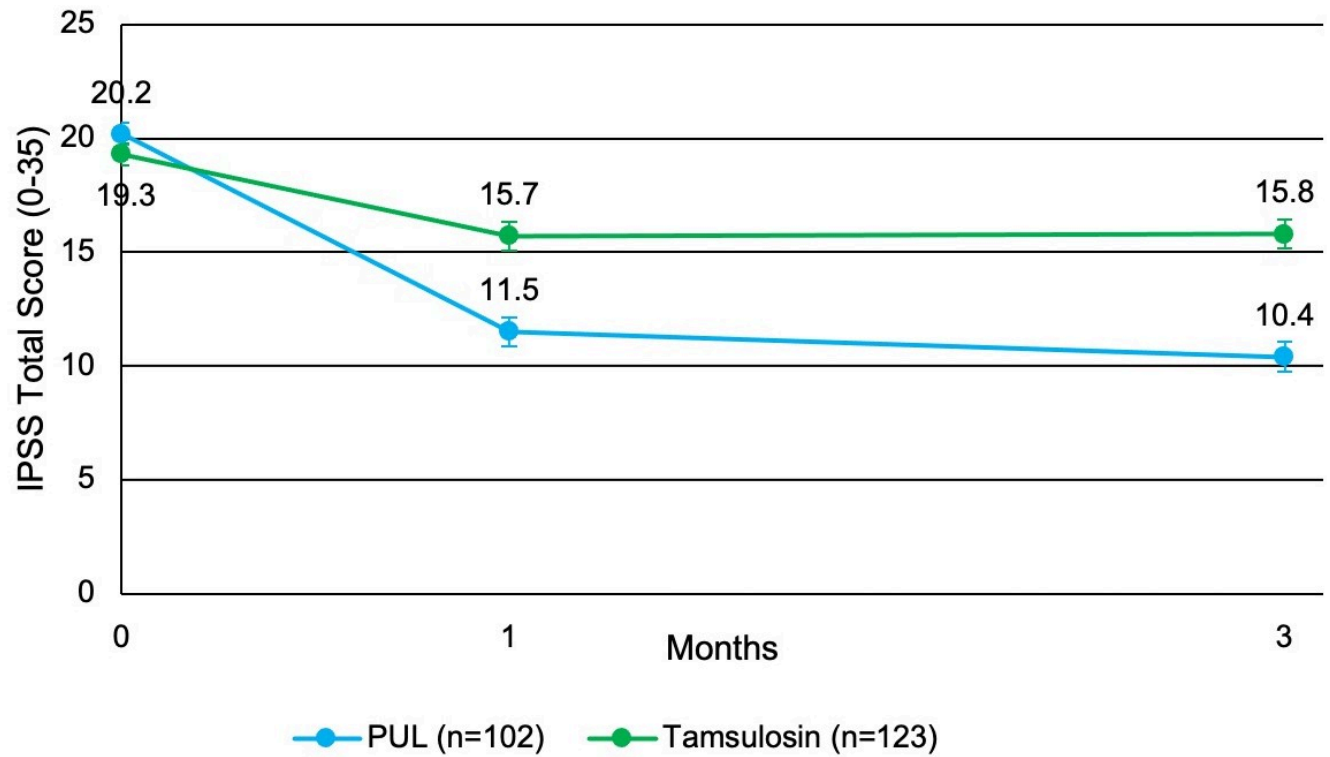


Figure 2

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Fig. 3. QoL

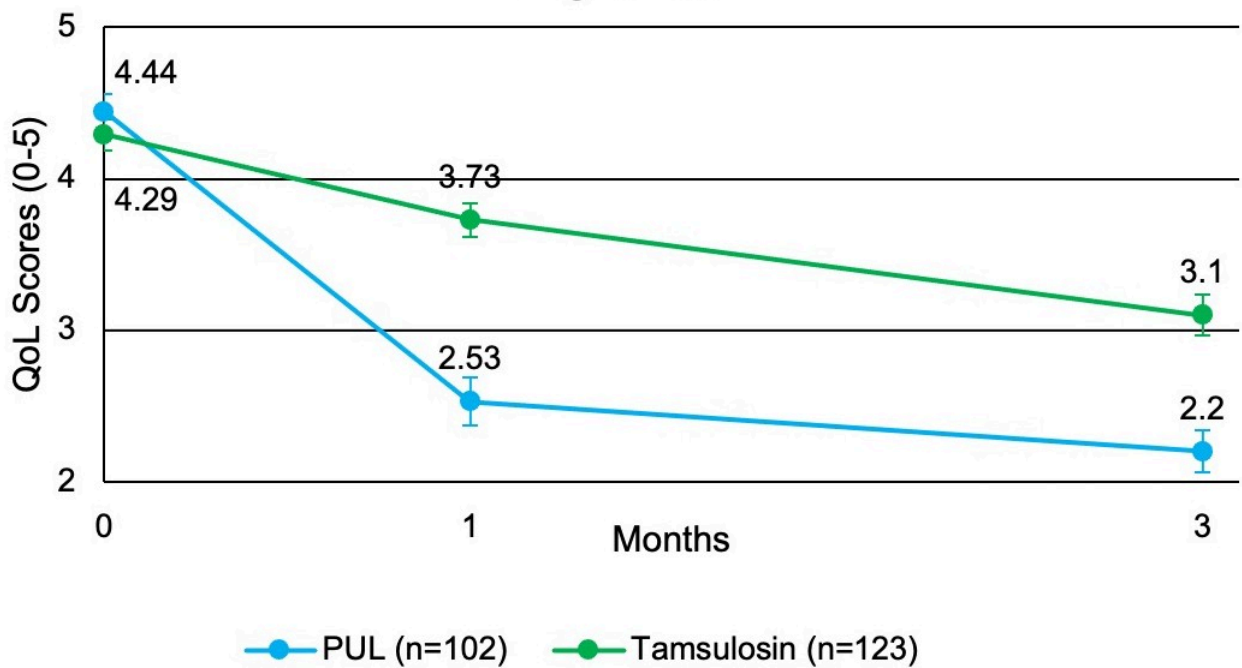


Figure 3

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Supplementary Files

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