# Evaluation of Lower Urinary Tract Symptoms After One Month of Tamsulosin Treatment; A study in a tertiary care hospital in Sri Lanka

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## Abstract

*Introduction*

Lower Urinary Tract Symptoms (LUTS) encompass a range of urinary complaints commonly seen in men, including increased frequency, urgency, difficulty initiating urination, weak urinary stream, a sensation of incomplete bladder emptying, and nocturia. Men affected with LUTS are commonly linked to benign prostatic hyperplasia (BPH). Tamsulosin, a selective α1A-adrenoceptor antagonist, is widely used to manage LUTS by improving urinary flow with minimal cardiovascular side effects. Studies have shown both short-term and long-term benefits of Tamsulosin, including improvements in symptom scores and flow rates. However, some patients report a temporary worsening of symptoms during the early phase of treatment. This study aims to assess the short-term effectiveness of Tamsulosin by evaluating changes in IPSS scores, urine flow rates, and residual volumes after 30 days of treatment in a cohort of patients at a tertiary care center in Sri Lanka.

*Methodology*

This study took a closer look at patients with Lower Urinary Tract Symptoms (LUTS) using data already available from the Urology Laboratory at the Faculty of Medicine, University of Peradeniya. It included 100 patients, aged between 11 and 90, who had visited the Urology Clinic at the Teaching Hospital, Peradeniya. To keep the data consistent, patients were excluded if they were under 12, had already started medications like Tamsulosin, Sildenafil, or Finasteride, or had undergone any previous urological procedures. Each patient was assessed during their first clinic visit using the International Prostate Symptom Score (IPSS), uroflowmetry, and an ultrasound scan. These tests were then repeated after 30 days of treatment with Tamsulosin 0.4 mg. SPSS software was used for the analysis where a paired t-test used to compare the changes before and after treatment, while descriptive statistics were used to how common each symptom was among the patients.

*Results*

The study included patients with a mean age of 65, with 90% aged between 51 and 90 years. The most prevalent LUTS symptoms were nocturia (88%), urgency (70%), and frequency (64%).When evaluating symptom improvement after 30 days of Tamsulosin treatment, the total IPSS score improved in 58% of patients, while 25% reported worsening. Symptom-wise, the greatest improvements were seen in nocturia (36%), incomplete evacuation (32%), and poor stream (25%), whereas most patients showed no change in straining (80%), urgency (74%), and intermittency (70%).

Statistical analysis revealed significant improvements in poor stream ($p = 0.015$), nocturia ($p = 0.003$), total IPSS score ($p < 0.001$), and both maximum ($Q_{max}$) and average ($Q_{ave}$) urinary flow rates ($p = 0.001$). However, changes in other individual symptoms and post-void residual volume were not statistically significant ($p > 0.05$).

*Conclusion*

Nocturia was the most prevalent symptom where Tamsulosin was able to reduce it significantly supporting continued drug use. But the 2nd and 3rd prevalent symptoms such as urgency and frequency were not reduced significantly which can affect the patients' compliance. Objective measures showed significant increases in maximum and average urinary flow rates ($Q_{max}$ and $Q_{ave}$), but no significant reduction in post-void residual volume. This indicates that while urinary flow improved, bladder emptying remained largely unaffected. Other symptoms may need longer treatment for improvement. Further research with larger samples and longer follow-up is suggested.

***Index Terms*** – IPSS parameters, LUTS, Tamsulosin, Uroflowmetry

## Introduction

Lower Urinary Tract Symptoms (LUTS) refer to a range of urinary problems most of the time observed in men. Increased frequency, urgency, difficulty initiating urination, a weak urine stream, a feeling of incomplete bladder emptying, and nocturia are common symptoms of LUTS. LUTS are commonly associated with benign prostatic hyperplasia (BPH), but can also result from other contributing factors such as bladder dysfunction and neurological impairment. "BPH leads to LUTS through mechanical and dynamic mechanisms, including increased prostate volume and heightened smooth muscle tone due to increased adrenergic stimulation" (John M Hollingsworth, Timothy J Wilt, 2014).

LUTS significantly impacts patients' quality of life, leading to anxiety, depression, and stress, underscoring the need for effective management strategies. Study group consisting of 161 patients at a genitourinary clinic was assessed using DASS-21 for the mental state. 50.35%, 36.17%, 30.5% had anxiety, depression and stress respectively. (Pethiyagoda et al., 2021)

Tamsulosin is a selective α1-adrenoceptor antagonist that primarily targets α1A-adrenoceptors in the prostate. It promotes smooth muscle relaxation and enhancing urinary flow in patients with benign prostatic hyperplasia (BPH). Tamsulosin has minimal activity on vascular α1-adrenoceptors, which reduces the likelihood of cardiovascular side effects compared to other α1-blockers. Tamsulosin is well absorbed and metabolized in the liver. Therapeutically, tamsulosin improves urinary symptoms, increasing maximum urinary flow rate ($Q_{max}$) and reducing LUTS due to BPH. (Dunn, C.J., Matheson, A. & Faulds, D.M., 2012)

Assessing of effectiveness after 06 hours, 01 month, 03 months with Tamsulosin treatment were done using uroflowmetric parameters, where no significant improvement after 06 hours, but significant improvement after 01 month and 03 months were seen. (Moussa et al., 2019)

6-year extension study done to assess the long-term efficacy, safety, and tolerability of tamsulosin in the management of BPH. This phase IIIB, multicenter, open-label trial followed patients who had previously participated in shorter clinical studies. A total of 609 men aged 45–75 years were enrolled in the extension phase, with 109 patients completing the full 6-year duration of treatment. Study results shows "Tamsulosin significantly improved American Urological Association (AUA) symptom scores and peak urine flow rate ($Q_{max}$), with benefits sustained over 6 years. AUA Irritative Score improved from 7.3 (baseline) up to -4.3, AUA Obstructive Score improved from 10.1 (baseline) uo to -6.6, Boyarsky Total Symptom Score improved from 9.7 (baseline) up to -5.8, Patients experienced nocturia >1 time/night reduced from 67.8% (baseline) to 48.6%" (Narayan P, Evans CP, Moon T., 2003)

Although studies have demonstrated significant short-term and long-term improvements in LUTS with Tamsulosin treatment, many patients have reported a worsening of symptoms in the short term. Therefore, evaluating the treatment's effectiveness in the short term is essential. This study aims to observe the changes in IPSS scores, urine flow rates, and residual volumes in a patient cohort in a tertiary care center in Sri Lanka after 30 days of Tamsulosin treatment.

## Methodology

Study was done as a cross sectional study using the pre-existing data of Urology laboratory, Faculty of Medicine, University of Peradeniya. Patients eligible for inclusion in the study were those presenting with complaints of Lower Urinary Tract Symptoms (LUTS). Exclusion criteria included individuals younger than 12 years of age, patients who were already on medications such as Tamsulosin, Sildenafil, or Finasteride at the time of initial presentation, and those who had previously undergone any urological interventions.

All selected patients were attendees of the Urology Clinic at the Teaching Hospital, Peradeniya. The study included 100 participants aged between 11 and 90 years. Each patient underwent assessment using the International Prostate Symptom Score (IPSS), uroflowmetry, and an ultrasound scan during their initial visit. These evaluations were repeated after 30 days of treatment with Tamsulosin 0.4 mg

The seven IPSS parameters considered were incomplete evacuation, frequency of passing urine during daytime, intermittency, urgency, poor stream, straining, and nocturia. The scores were given from 0 to 5, from lowest to highest relevance. The overall score was calculated by adding up the individual scores for the seven symptoms. Maximum flow rate ($Q_{max}$), average flow rate ($Q_{ave}$) and total void volume (TV) were obtained from the uroflowmetry testing while post void residual volume (PVRV) was obtained through an ultra sound scan after performing the uroflowmetry.

The Statistical Package for the Social Sciences (SPSS) was used for data analysis. A paired t-test was conducted to compare IPSS parameters, urinary flow rates, and post-void residual volumes before and after Tamsulosin treatment. Descriptive statistics were applied to examine the prevalence of each individual IPSS symptom among the patients.

## Results

Within the patient cohort, the mean age was 65, and 90% of the participants were aged 51-90. Only 10% were between the ages of 11 to 50.

Prevalence of each symptom,

| | Prevalence |
|---|---|
| Incomplete Evacuation | 57 % |
| Frequency | 64 % |
| Intermittency | 42 % |
| Urgency | 70 % |
| Poor stream | 59 % |
| Straining | 30 % |
| Nocturia | 88 % |

Prevalence of improvement of each symptom and the total score were analyzed,

| | Worsening | No change | Improvement |
|---|---|---|---|
| Incomplete Evacuation | 21 % | 47 % | 32 % |
| Frequency | 12 % | 59 % | 29 % |
| Intermittency | 14 % | 70 % | 16 % |
| Urgency | 10 % | 74 % | 16 % |
| Poor stream | 10 % | 65 % | 25 % |
| Straining | 7 % | 80 % | 13 % |
| Nocturia | 20 % | 44 % | 36 % |
| **Total score** | **25 %** | **17 %** | **58 %** |

Comparison of means in individual symptom improvement, and uroflowmetric parameter changes before and after treatment.

| | Before treatment | After treatment | Sig. (2-tailed) | P value |
|---|---|---|---|---|
| Incomplete evacuation | 2.36 | 1.94 | 0.148 | P>0.05 |
| Increased frequency | 2.14 | 1.90 | 0.166 | P>0.05 |
| Intermittency | 1.78 | 1.75 | 0.871 | P>0.05 |
| Urgency | 3.09 | 2.88 | 0.197 | P>0.05 |
| Poor stream | 2.45 | 1.98 | 0.015 | **P<0.05** |
| Straining | 1.10 | 0.87 | 0.094 | P>0.05 |
| Nocturia | 2.89 | 2.38 | 0.003 | **P<0.05** |
| Total score | 15.78 | 13.67 | 0.000 | **P<0.05** |
| Flow rate ($Q_{max}$) | 12.76 ml/s | 15.03 ml/s | 0.001 | **P<0.05** |
| Flow rate ($Q_{ave}$) | 6.04 ml/s | 6.82 ml/s | 0.001 | **P<0.05** |
| Residual volume | 68.83 ml | 60.60 ml | 0.202 | P>0.05 |

## Discussion

Study was conducted to assess the worsening or improvement of LUTS after a one-month duration of tamsulosin treatment as many patients complains of an initial worsening of symptoms with Tamsulosin. The findings of this study provide insight into the changes in lower urinary tract symptoms (LUTS) among participants over time. The results indicate that while some symptoms showed significant improvement, others remained largely unchanged, with a smaller proportion experiencing worsening of symptoms.

Among the symptoms assessed, poor stream and nocturia demonstrated significant improvement after treatment. Poor urinary stream improved from 2.45 to 1.98 ($p = 0.015$), indicating a significant enhancement in urine flow following the intervention. Similarly, nocturia decreased from 2.89 to 2.38 ($p = 0.003$), suggesting that Tamsulosin effectively reduces the frequency of nighttime urination. Moreover, the total symptom scores significantly decreased from 15.78 to 13.67 ($p < 0.001$), indicating an overall improvement in urinary symptoms. On the other hand, symptoms such as incomplete evacuation, increased frequency, intermittency, urgency, and straining did not demonstrate statistically significant changes post-treatment ($p > 0.05$).

Considering the prevalence of symptoms and their improvement, the most prevalent symptom, nocturia (88%), showed significant improvement, supporting continued drug use among patients. On the other hand, the next most prevalent symptoms, urgency and frequency, had high rates of unchanged severity within one month (74% and 59%, respectively). As only nocturia demonstrated notable improvement, the lack of significant progress in other prevalent symptoms may contribute to drug discontinuation.

Following Tamsulosin treatment, the maximum flow rate ($Q_{max}$) significantly increased from 12.76 ml/s to 15.03 ml/s ($p = 0.001$), and the average flow rate ($Q_{ave}$) also showed a significant rise from 12.76 ml/s to 15.03 ml/s ($p = 0.001$). Although there was a reduction in post-void residual volume, the change was not statistically significant. This suggests that while urinary flow dynamics improved with Tamsulosin, it did not lead to a significant enhancement in complete bladder emptying.

## Conclusion

After one month of treatment, Tamsulosin significantly improved nocturia, urinary stream, and flow rates while reducing overall symptom severity (IPSS scores). Other symptoms, such as incomplete evacuation, urgency, and straining, may require longer treatment durations for measurable improvements. Further studies with larger cohorts and extended follow-ups are recommended to evaluate long-term outcomes.

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