

## Original Research Article

# A comparative study of morbidity and symptom severity among double-J stented patients with and without tamsulosin administration

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## ABSTRACT

**Background:** The insertion of a double-J (DJ) stent is considered a routine and necessary urological procedure. The symptoms produced by the stent are predominantly irritative in nature and the use of alpha blockers like tamsulosin have shown considerable in treating the stent associated symptom. Aim of the study was to assess tamsulosin's impact on ureteral stent-associated morbidity.

**Methods:** A comparative cross-sectional study. All the patients with ureteric calculi admitted in the department of urology, Narayana Hospital, Nellore, Andhra Pradesh.

**Results:** A total of 80 patients who met the inclusion criteria, were divided into two groups. Group A receiving placebo and group B receiving tamsulosin 0.4 mg. Among the study population, there was statistically significant difference between the means of parameters between the groups during the stent removal. The means of group B were significantly lower than the means of group A which shows that tamsulosin is very effective in managing the pain and also the stent related morbidity.

**Conclusions:** Tamsulosin is very effective in managing the pain and also the stent related morbidity, which was measured by international prostate symptom score (IPSS) score – both obstructive and irritative. The quality of life was suggestively better in tamsulosin group.

**Keywords:** Tamsulosin, DJ stent, Lower urinary tract symptoms, Endourology

## INTRODUCTION

Urological stone disease is a highly widespread issue, Endourological research could benefit from improved visibility, stone-breaking/dusting methods, and access. The urinary system has been accessed more effectively and with less morbidity ever since the Young performed the first cystoscopy.<sup>1,2</sup> Although overwhelming evidence supports stent-less ureteroscopies.<sup>1</sup> For drainage enhancement, stone and debris clearance, and to avoid stricture formation, the majority of urologists still prefer the placement of stents in the majority of straight forward stone removal procedures. Ureteric stents are linked to a variety of symptoms, and 80 to 98% of patients have

severe morbidity and mortality as a result.<sup>1,2</sup> The symptoms produced by the stent are predominantly irritative in nature and seems to produce significant bother so as to affect the quality of life (QoL) of the patient, warranting removal in some cases.<sup>2,3</sup> Alpha adrenergic receptor like  $\alpha 1A$  and  $\alpha 1D$  have been documented to be distributed in the lower tract and the distal ureter and the use of alpha adrenergic receptor blockers like tamsulosin have shown considerable promise in treating the stent associated symptoms.<sup>4-6</sup>

This study, was done in an effort to determine the efficacy of tamsulosin in improving double-J stent associated symptoms and QoL following ureteral stent placement.

## METHODS

This was a comparative cross-sectional study conducted in the department of urology, Narayana Medical College and Hospitals, Nellore for a period of 24 months (June 2021 to June 2023). All 80 patients with ureteric calculi admitted in the inpatient department.

### Inclusion criteria

Patients with uncomplicated ureteric calculi, who were willing to give informed consent, and who underwent semi-rigid ureteroscopy with DJ stenting were included.

### Exclusion criteria

Patients excluded were with symptomatic urinary tract infection, urine culture positive status, who may need bilateral stent insertion for acute obstruction/obstructive uropathy, male patients with history of prostatic enlargement, prostatitis or prostatic cancer and females with related lower urinary tract symptoms. Patients with history of chronic or recent  $\alpha$ -blocker or analgesic drug, pregnancy, and bleeding disorders, also patients who underwent open surgery for ureteric calculi previously and who were not willing to give informed consent were excluded.

Patients were divided into two groups - group A (n:40) and group B (n:40). Group A comprised of patients who received tablet Cefpodoxime 200 mg twice daily and tablet Diclofenac 100 mg twice daily for seven days and tablet placebo for 21 days. Group B comprised of patients who received Cefpodoxime 200 mg twice daily and tablet Diclofenac 100 mg twice daily for seven days and tablet Tamsulosin 0.4 mg once daily for 3 weeks (21 days).

Questionnaire based on international prostate symptom score (IPSS) scores, QOL and visual analog pain scale (VAS) was filled on postoperative day one after stenting and then on 21st day at stent removal. IPSS scores were divided into four obstructive IPSS (incomplete emptying, intermittency, poor stream, straining), and 3 irritative IPSS scores (frequency, urgency, nocturia). This division is to estimate each sub-score alone to determine which part of

IPSS is the affected the most in this study. These scores were compared of both groups (placebo and tamsulosin).

### AUA symptom score

The American Urological Association (AUA) has developed the following questionnaire to help men determine how bothersome their urinary symptoms are and to check how effective their treatment is. It is also known as IPSS.

### VAS score

VAS is a psychometric response scale that can be used in an inquiry form. It is a measurement tool for subjective characteristics or outlooks that cannot be measured directly. It is for adults and children 10 years old or older. Rating included: pain level 0 no pain, 1–3 mild pain (nagging, annoying, interfering little with ADLs), 4–6 moderate pain (interferes significantly with ADLs), and 7–10 severe pain (disabling; unable to perform ADLs).

### Data entry and analysis

The data was entered in Microsoft excel 2010 version. Data was analyzed using Microsoft excel 2010 and Epi Info 7.2.0. Descriptive and inferential statistical analysis were used in the present study. Results on continuous measurements were presented on mean $\pm$ SD (min-max) and results on categorical measurements were presented in number (%). Significance was assessed at 5% level of significance. Analysis of variance (ANOVA) was used to compare inter group variation for continuous variables. Chi square test was used to compare categorical variables. A p value of <0.05 was considered as statistically significant.

## RESULTS

The study included 80 patients (40 men and 40 women) of which 80 (100%) had ureteral stents inserted following ureteroscopy. Patient demographic data were comparable between the two groups (Table 1). None of the patients had any lower urinary tract symptoms prior to the start of the study.

**Table 1: Characteristics of the 80 patients who underwent semi rigid ureteroscopy with DJ stenting and uncomplicated ureteric calculi whether they received tamsulosin 0.4 mg/day for 21 days (tamsulosin, group I) or placebo (group II, control).**

Characteristic	Tamulosin (group I)	Placebo (group II)	Chi square value	P value
<b>Patients</b>	40	40		
<b>Age</b>				
Mean	45	45	0.5229	0.9
Range	30-60	30-60		
<b>Gender</b>	40	40		
Male	26	24	0.21	0.32
Female	14	16		

Continued.

Characteristic	Tamulosin (group I)	Placebo (group II)	Chi square value	P value
Location of ureteric calculus				
Lower	22	21	0.26	0.87
Middle	12	14		
Upper	06	05		
Side of ureter involved				
Left	13	11	0.23	0.31
Right	27	29		

**Table 2: Pre-operative and stent removal parameters of group A.**

Parameter	Pre-operative	Stent removal	P value
<b>IPSS score</b>	8.23±0.84	12.92±3.42	<0.0000001
<b>Obstructive IPSS</b>	4.24±1.36	4.43±1.49	0.9
<b>Irritative IPSS</b>	3.94±0.98	8.43±1.69	<0.0000001
<b>Quality of life</b>	4.56±1.2	4.04±0.34	0.01
<b>VAS</b>	5.20±1.48	5.68±1.30	0.12

**Table 3: Pre-operative and stent removal parameters of group B.**

Parameter	Pre-operative	Stent removal	P value
<b>IPSS score</b>	8.12±0.98	4.92±0.98	<0.0000001
<b>Obstructive IPSS</b>	4.14±1.47	1.98±0.98	<0.0000001
<b>Irritative IPSS</b>	3.73±1.09	1.97±0.46	<0.0000001
<b>Quality of life</b>	4.58±1.4	2.46±0.46	<0.0000001
<b>VAS</b>	5.72±1.23	1.92±1.42	<0.0000001

Among the group A, there was significant worsening of the irritative symptoms there by obtaining a significant p value for IPSS score total and irritative IPSS score. The quality of life also improved to significant level with p value of 0.01. There was no difference statistically observed between the means of VAS score (Table 2).

Among the group B, there was statistically significant difference between the means of all the parameters which shows the improvement in all the parameters – IPSS score (both obstructive and irritative), quality of life and also VAS with a p value of <0.0000001 (Table 3).

## DISCUSSION

The DJ stent is a common tool used in urological surgery.<sup>7</sup> Improved design and materials, many patients still develop stent-related symptoms, sometimes necessitating early removal.<sup>8-11</sup> DJ ureteral stenting has become a routine practice for every urologic procedure to prevent ureteral obstruction, permitting ureteral healing, and preventing ureteral stricture. Despite its useful effects, short-term use of a DJ stent is associated with mild complications. Patients usually complain of various stent-related symptoms, such as frequency, urgency, dysuria, incomplete emptying, flank pain, suprapubic pain, incontinence, and hematuria. These symptoms negatively affect the patient's activities, work performance, and QoL.<sup>12</sup>

Multiple theories were proposed to describe these symptoms' mechanisms; it might be due to smooth muscle spasm in the lower ureter, irritation of nerve endings located in the trigone of urinary bladder submucosa, and bladder instability.<sup>13-15</sup> Pharmacologic management is one of many trials to improve those problems; many medical drugs have been tested, such as anticholinergics, analgesics, and alpha-blockers.

The mean quality of life was 2.46±0.46 and the mean VAS was 1.92±1.42. There was a significant difference between the means of parameters between the groups during the stent removal. The means of group B were significantly lower than the means of group A which shows that Tamsulosin is very effective in managing the pain and also the stent related morbidity, which was measured by IPSS score – both obstructive and irritative. The quality of life was also considerably better in tamsulosin group.

The findings of the present study can be compared with the following studies Shah et al and Singh et al.<sup>16,17</sup>

The IPSS irritative and obstructive symptom scores at 21 days were significantly lower and the QoL scores were significantly better in patients who received tamsulosin compared with the control group. These results were consistent with other studies.<sup>16</sup>

## CONCLUSION

Tamsulosin is very effective in managing the pain and also the stent related morbidity, which was measured by IPSS score-both obstructive and irritative. The quality of life was suggestively better in tamsulosin group.

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