



Monotherapy Of Tamsulosin Vs Monotherapy of Solifenacin in The Treatment Of Ureter Stent Discomforts In Urology Patients: A Retrospective Study

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ABSTRACT

DJ stent placement is a common and necessary urological procedure that can be used in a variety of ways to treat a variety of urinary tract conditions. It can cause lower urinary tract symptoms (LTUS). Pharmacologic therapy is one of several experiments that have been conducted to alleviate these symptoms, specifically the use of alpha-1A blockers (tamsulosin) and antimuscarinics (solifenacin) in the treatment of LUTS associated with DJ stents. The aim of our study was evaluating the monotherapy of tamsulosin vs monotherapy of solifenacin in ureter stent discomfort patients in department of Urology Sri Venkateswara Institute of Medical Sciences south Indian tertiary care teaching hospital Tirupati, Andhra Pradesh. A retrospective study was conducted in 187 patients with ureter stent discomfort patients. The data collected from 187 patients was initially assessed for their USSQ questionnaires, QoL and efficacy of monotherapy of tamsulosin vs monotherapy of solifenacin was assessed.

Keywords: *Ureteral Stent Symptom Questionnaire (USSQ), Double J stent (DJ-STENT), Lower Urinary Tract Symptoms (LUTS), Pre-Cutaneous Nephrolithotomy (PCNL), Ureteroscopy and Laser stone Fragmentation (URSL), Stent Related Symptoms (SRS), Muscarinic Receptor Antagonist (MRA).*

INTRODUCTION

The Double-J (DJ) ureteral stent, a well-known urological treatment, is shown. With the first mention of a cystoscopically implanted temporary ureteral stent in 1967, more than 50 years have elapsed [1]. The placement of a DJ stent is a typical and important urological procedure that can be utilized to treat a number of urinary tract illnesses in various ways [2].

It is used to treat ureteral blockage brought on by stones or tumors in addition to post-ureteroscopy lithotripsy, pre-shock wave lithotripsy, and post-percutaneous nephrolithotomy (PCNL). Although stents are widely used in urology, they present a number of challenges for surgeons and patients. Uncomfortable lower urinary tract symptoms include infection, crusting that requires periodic

replacement, sexual dysfunction, hematuria, stent discomfort, frequency, dysuria, urgency, suprapubic pain, and others (LUTS). This will focus on complaints of ureteral stents and irritable voiding symptoms, which are believed to affect at least 80% of patients and impact patients' quality of life (QoL). [3,4,5]

While the reasons of stent-related symptoms are still up for debate, discomfort and LUTS can be explained by spasms of the lower ureter and irritation of the trigone. [6,7] The precise length of the DJ stent, the positioning of the top and bottom coils, switching the polyurethane stent material to silicone or another polymer, and altering the coating material or stent design have all been tried in attempts to reduce LUTS caused by DJ stents. [5]

The USSQ has to be employed since it was the only reliable scoring system for ureteral stent-related symptoms when comparing various treatments for symptom reduction. [8] One of the research that has been done to reduce these symptoms is pharmacologic therapy, specifically the use of alpha-1A blockers (tamsulosin) and antimuscarinic medications (solifenacin). Injections of B. periureteral anesthesia have been used as another treatment to alleviate these symptoms. [9]

The use of alpha-1A blockers was justified by the fact that the symptoms connected to DJ stents are comparable to LUTS connected to benign prostatic hyperplasia. Tamsulosin is a selective α -1 receptor antagonist, favoring the prostate's α -1A receptor over the blood arteries' α -1B receptor. Smooth muscle tissue relaxes when the alpha-1 receptors in the prostate, ureter, bladder neck, and urethra are blocked. This method eases kidney stone passage, lessens resistance to urine flow, and lowers BPH and LUTS symptoms. [10,11]

Antimuscarinics (solifenacin) is a competitive cholinergic receptor antagonist as well as a selective M3 receptor antagonist. Acetylcholine needs to bind to these receptors, specifically M3, for the smooth muscle to contract.[12]

Solifenacin lowers smooth muscle tone in the bladder by inhibiting acetylcholine from binding to these receptors, allowing the bladder to hold

more urine while lowering frequency of urination, urinary urgency, and incontinence episodes. [12]

Since a double-J stent causes symptoms in the lower urinary tract, the purpose of this study was to compare how well an alpha-1A blocker (tamsulosin) and an antimuscarinic (solifenacin) treated such symptoms. To do this, the ureteral Stent Symptom Questionnaire (USSQ) was employed.

MATERIALS AND METHODS

Study Design

The study was a Retrospective study.

Study Settings

The study was conducted at Sri Venkateshwara institute of medical sciences in the department of Urology. This study got ethical approval from the Institutional Ethical Committee of SVIMS, Tirupati.

Study Period

The study was conducted at a period of 6 months.

Inclusion Criteria

1. Patients with the >18yrs <70yrs of age
2. Patients with both genders (male, female).
3. Patients who are interested to participate in the study.
4. Patients who had undergone ureter stenting.

Exclusion Criteria

1. Patients with Age<18years or >70 years.
2. Patients with any pelvic malignancy.
3. Patients with auto immune disorders like HIV, AIDS are excluded.

Statistical Analysis

All the collected data was entered into excel software of Microsoft windows and analyzed using SPSS software version 25. Continuous variables were presented as mean \pm SD. Categorical variables was presented as

percentages. In group comparison, categorical variables were compared with Chi Square test and continuous variables were compared with Student's t test. In all analyses a P-value of < 0.05 was considered as criterion of statistical significance. All data will be assessed and compared by using Pie diagrams, Graphs and Bar diagrams.

RESULTS

Age & Gender wise distribution among patients

A total 187 patients were included in the final analysis. There are 27 (28.42%) males and 29 (31.53%) females and % within age 20-40 was 48.22% (male), 51.78% (female). In the age 40-60 range 47 (49.47%) male 43 (46.74%) female and percentage within age was 52.23% (male), 47.77% (female). There are 21(22.11%) male, 20(21.73%) female and % within age 60-70. Coming to the gender wise distribution a total of 187 participants were included among them about 96 (51.34 %) were male and 91 (48.66 %) were females.

Drugs Prescribed to The Study Population

Among 187 patients, 103 patients have prescribed tab. tamsulosin and 84 patients were prescribed tab. solifenacin.

Response of Tamsulosin by using USSQ scale

By administering the tamsulosin there is a decrease in the stent-related discomforts. Tamsulosin reduced the urine frequency in 65 subjects, it reduced the hematuria condition in 71 individuals, and 58 subjects reported that by administering the tamsulosin their burning sensation and feeling of not emptying bladder during micturition is reduced, the effect of tamsulosin on postponing of urination is more effective (74) among subjects, 66 members are comfortable in performing their daily activities, some subjects administer analgesics to reduce pain, due to stent some subjects experience lower back pain(42).

Response of Solifenacin by using USSQ scale

By administering the solifenacin there is a decrease in the stent-related discomforts. Solifenacin reduced the urine frequency in 49 subjects, it reduced the hematuria condition in 46 individuals, 53 subjects reported that by administering the solifenacin they are not experiencing burning sensation, and 47 subjects reported a feeling of not emptying bladder during micturition is reduced, the effect of solifenacin on postponing of urination is not much effective as only 44 members were able to postpone among 85 subjects, 44 members are comfortable in performing their daily activities, some (48) subjects administer analgesics to reduce pain due to stent and some subjects experiences lower back pain(38).

Comparison of the effectiveness of both drugs

Where the above graphical representation shows that the tamsulosin group obtained Yes (270) No (347) and the solifenacin group obtained Yes (277) No (318). By comparing both the tamsulosin group and the solifenacin group the use of tamsulosin is more effective when compared to the use of solifenacin in treating the ureter stent discomforts.

DISCUSSION

DJ ureteral stenting has become a routine practice for every urologist. The main advantages of stenting are preventing ureteral obstruction, permitting ureteral healing, and preventing ureteral stricture. Despite its useful effects, short-term use of a double-J stent is associated with mild complications. In contrast, the complications became more severe in long-term usage, particularly when placed for more than 6 months.

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.

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.

Trials to overcome the DJ stent-related LUTS included using the suitable length of the stent, appropriate placement of upper and lower coils, changing stent material from polyurethane to silicone or other polymers, and changing the coating substance or stent design. Pharmacologic management is one of many trials to improve those problems; many medical drugs have been tested, such as anticholinergics, analgesics, and alpha-blockers.

In this Retrospective study, we investigated the effectiveness of monotherapy of tamsulosin vs monotherapy of solifenacin in ureter stent discomfort patients.

From this study, it was observed that tamsulosin is the one which is prescribed more and tamsulosin has effectively reduced the symptoms of ureter stent-related symptoms. Solifenacin has also reduced the stent-related symptoms but not more than tamsulosin.

Essayed M. Salih et al., conducted a prospective study they concluded that the alpha-1A blocker (tamsulosin) or antimuscarinic (solifenacin) monotherapy effectively improves the DJ stent-related LUTS and the QoL of patients with no advantage with either drug.

Limitations

Inadequate follow up period.

Time limitation.

CONCLUSION

In this study, we have concluded that, Tab. Tamsulosin was more effective when compared to Tab. solifenacin was less effective in decreasing the stent-related symptoms which are caused by the DJ-stent. It was concluded that males were affected more than compared to females with stent-related discomforts.

In patients with indwelling DJ stents, Tamsulosin monotherapy causes an improvement in patients' urinary symptoms.

Where the tamsulosin monotherapy causes an improvement in patients' USSQ scores, urinary symptoms, pain, and general health thereby improving the quality of life.

Conflict of interest statement

We declare that we have no conflict of interest

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TABLE 1: Gender wise distribution among all patients

Gender	No. Of Patients	Percentage %
MALE	96	51.34
FEMALE	91	48.66

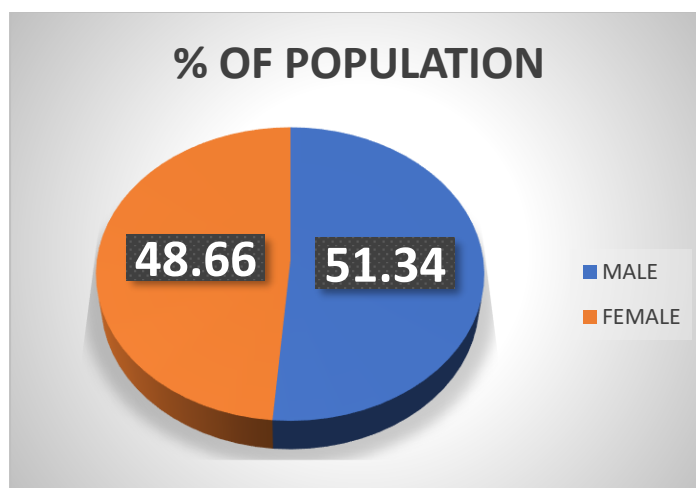


FIG 1: Gender wise distribution among the patients

TABLE 2: No. of patients based on age-wise and gender-wise distribution and their percentages

		SEX			Total% within age
			MALE	FEMALE	
Age	20-40	Count	27	29	56
		% Within age	48.22%	51.78%	100.00%
		% Within sex	28.42%	31.53%	59.95%
	40-60	Count	47	43	90
		% Within age	52.23%	47.77%	100.00%
		% Within sex	49.47%	46.74%	96.21%
	60-70	Count	21	20	41
		% Within age	51.22%	48.78%	100.00%
		% Within sex	22.11%	21.73%	43.84%
Total within the sex	Count	95	92	187	
	% Within age	151.67%	148.33%	300.00%	
	% Within sex	100.00%	100.00%	100.00%	

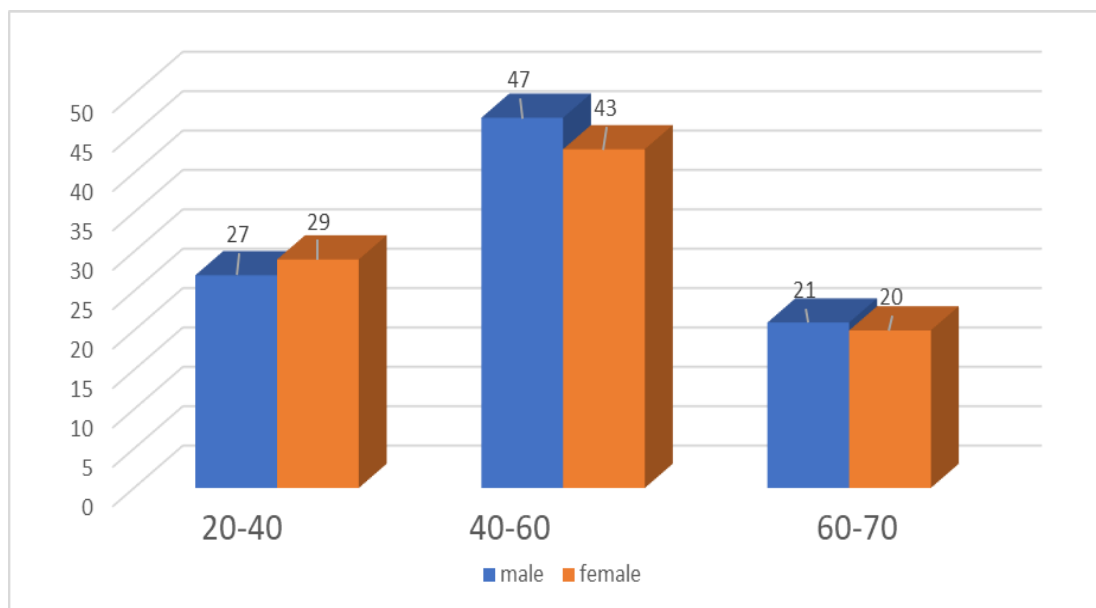


FIGURE 2: No. of patients based on age-wise and gender-wise distribution and their percentages

TABLE 3: Distribution of drugs to the study population

Brand Name	Generic Name	No. Of Patients
Flomax	Tamsulosin	103
Vesicare	solifenacin	84

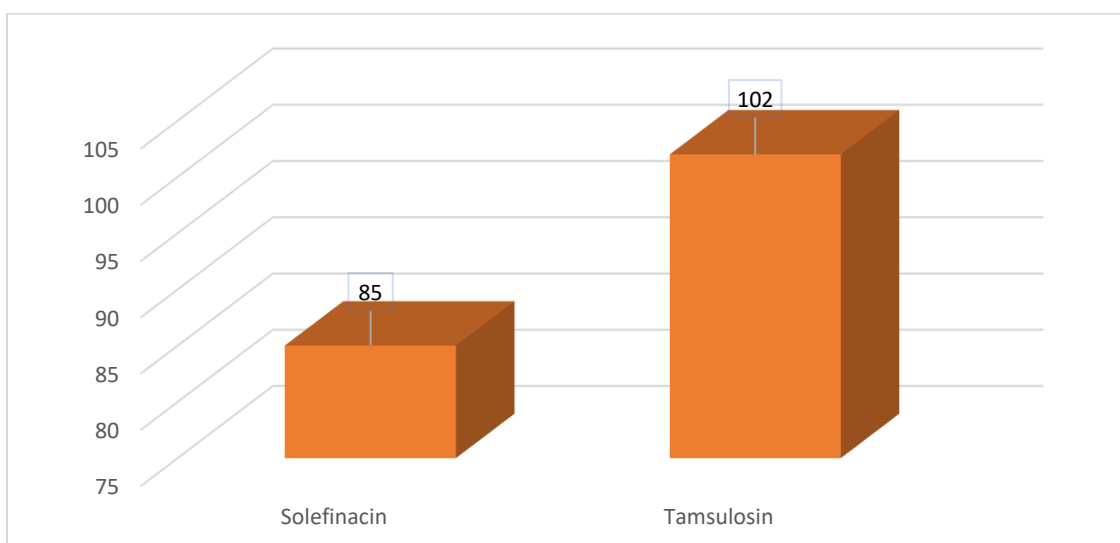


FIGURE 3: Drug distribution among the population

Response of Tamsulosin by using USSQ scale

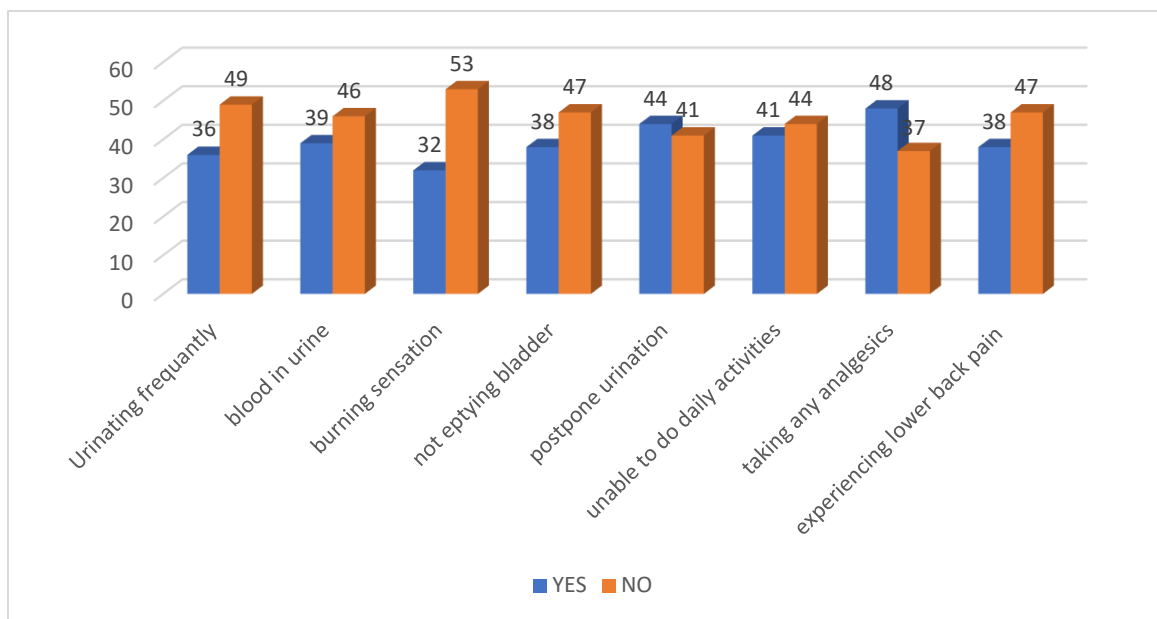


FIGURE 4: Symptomatic analysis of ureter stent discomfort test for Tamsulosin

Response of Solifenacin by using USSQ scale

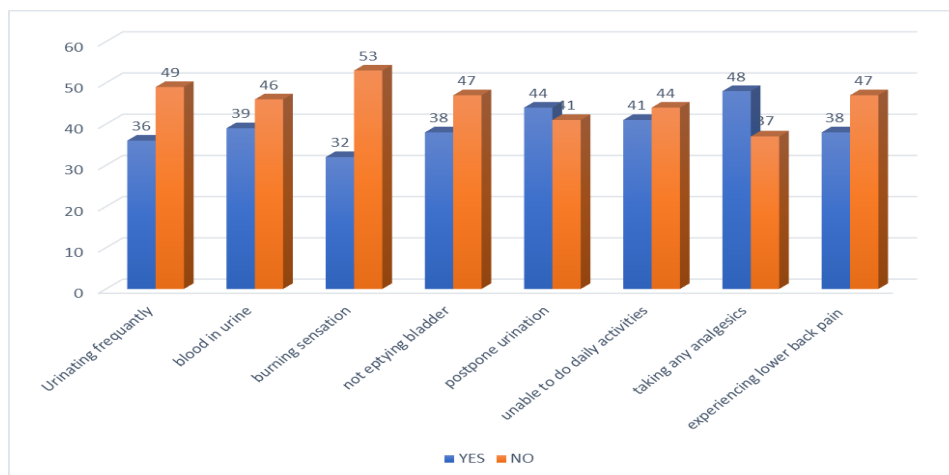


FIGURE 5: Symptomatic analysis of ureter stent discomfort test for Solifenacin.

TABLE 4: Comparison of the effectiveness of both drugs:

Drugs	No. of Yes	No. of No
Tamsulosin	270	347
Solifenacin	277	318

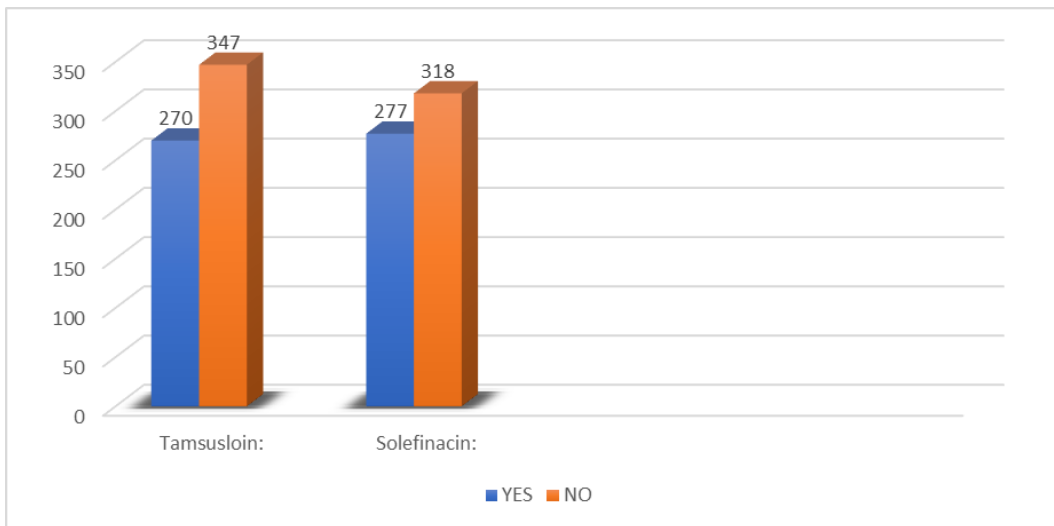


FIGURE 6: overall comparison of the effectiveness of both drugs