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## A comparative study of efficacy of tamsulosin monotherapy vs. combined (Solifenacin + tamsulosin) in treatment of ureteric stent related symptoms

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### Abstract

Ureteric Double J stenting is the most common in endourological practice. The double-J stent, which is the most common form of ureteral stent, is used in obstructive pyelonephritis, intolerable acute renal colic, ureteral edema, ureter perforation following endoscopic procedures. Post stenting commonly reported symptoms include flank pain, haematuria, dysuria, frequency, and urgency. Tamsulosin acts as a selective inhibitor of  $\alpha_{1A/1D}$  and Solifenacin acts as a muscarinic receptor antagonist have been used in alleviating the symptoms and have been proved effective.

**Objective:** To study the efficacy of tamsulosin monotherapy vs. combined (solifenacin + tamsulosin) in treatment of ureteric stent related symptoms.

**Methodology:** The prospective control study conducted in R.L. Jalappa Hospital, Tamaka, Kolar. The study included 60 subjects divided on even and odd method with 30 in each group with a period of 3 months. The subjects in group A received oral Tamsulosin of 0.4mg once daily and group B received oral Tamsulosin+ solifenacin (0.4mg+6mg) once daily. The subjects were observed for post-operative complications like flank pain, dysuria and sexual dysfunction. The dysuria was calculated according to Boysarky score and UTI with grading. The data were collected and analysed statistically.

**Results:** The most common age group of presentation of subjects were less than 40 years i.e 22(36.66%) with next common group was 51-60 years accounting 15(25%) with mean age being 45.5 years. The combined therapy group accounted most of the subjects in grade I 23(38.33%) showing significant reduction of post-operative dysuria compared to monotherapy. The combined therapy group had 6 patients with only one patient had grade III UTI. The monotherapy group had 7 subjects developing UTI with grade II being most common. The commonest organism on culture was E. Coli in 9 subjects. There was a significant difference between two groups in reducing UTI.

**Conclusion:** The present study in treatment of DJ stent related symptoms shows combined therapy being more beneficial in terms of reducing post stenting flank pain, dysuria and UTI development in comparison to monotherapy.

**Keywords:** DJ stent symptoms, monotherapy, combined therapy, tamsulosin, solifenacin

### Introduction

Ureteral stents, which were introduced by Zimskind *et al.* in 1967, are widely used for urinary tract disease [1]. The double-J stent, which is the most common form of ureteral stent, is used in obstructive pyelonephritis, intolerable acute renal colic, ureteral edema, ureter perforation following endoscopic procedures [2].

Ureteric double J stenting is the most common in endourological practice. Post stenting commonly reported symptoms include flank pain, haematuria, dysuria, frequency, and urgency. Flank pain are reported in 80% of patients, with sexual dysfunction and reduced work performance reported in 32% and 58% of those patients, respectively [3].

The pathophysiology of these symptoms remains unclear; however, pain and LUTS caused by stent placement have been attributed to the pressure transmitted to the renal pelvis during urination, and lower ureteric and bladder spasm due to local irritation [4].

Tamsulosin acts as a selective inhibitor of  $\alpha_{1A/1D}$ -mediated contraction of the smooth muscles in the distal ureter, trigone and bladder neck and Solifenacin acts as a muscarinic receptor antagonist have been used in alleviating the symptoms and have been proved effective [5].

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**Materials and Methods**

The prospective control study conducted in R.L. Jalappa Hospital, Tamaka, Kolar. The study included 60 subjects divided on even and odd method with 30 in each group. The study was conducted for a period of 3 months. The patient satisfying inclusion criteria was included in the study.

**Methodology**

The patients in either Local or Spinal anaesthesia in lithotomy position Double J stent was placed under cystoscopy guidance.

The subjects in group A received oral Tamsulosin of 0.4mg once daily and group B received oral Tamsulosin + solifenacin (0.4mg+6mg) once daily. The subjects were observed for post-operative complications like flank pain, dysuria and sexual dysfunction. The complications were treated symptomatically. The stent was removed after 14 days under local anaesthesia. The dysuria was calculated according to Boysarky score and UTI with grading. The data were collected and analysed statistically.

Boysarky score	
Grade 0	No symptoms
Grade 1	burning sensation during urination
Grade 2	Frequent burning or pain during urination, more than 50% of times
Grade 3	Continuous burning sensation or pain during urination

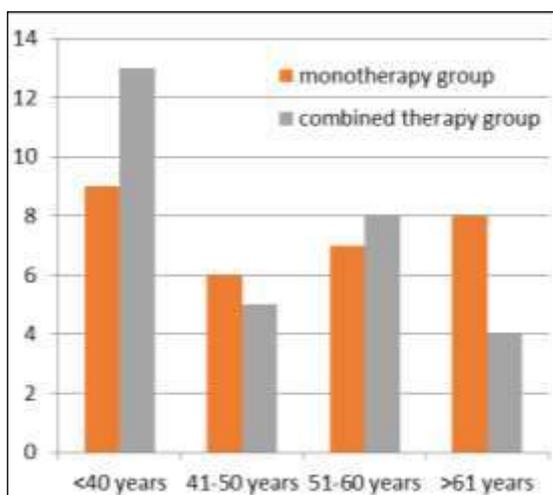
UTI Grading	
Grade I	Pyelonephritis
Grade II	Cystitis
Grade III	Asymptomatic bacteriuria

**Results**

**Table 1:** Age distribution comparison between two groups

Age	No. of Subjects Overall	No. of subjects in Monotherapy group	No. of subjects in combined therapy group
<40 years	22(36.66%)	9(15%)	13(21.66%)
41-50 years	11(18.33%)	6(10%)	5(8.33%)
51-60years	15(25%)	7(11.66%)	8(13.33%)
>61years	12(20%)	8(13.33%)	4(6.66%)

The study shows most of the subjects were in the age group of less than 40 years i.e. 22(36.66%) with next common being 51-60 years of age i.e. 15(25%). Among the groups, the most common of age group in monotherapy group as well as in combined therapy group was less than 40 years accounting to 9(15%) and 13(21.66%) respectively. The mean age of presentation in the study was 45.5 years.

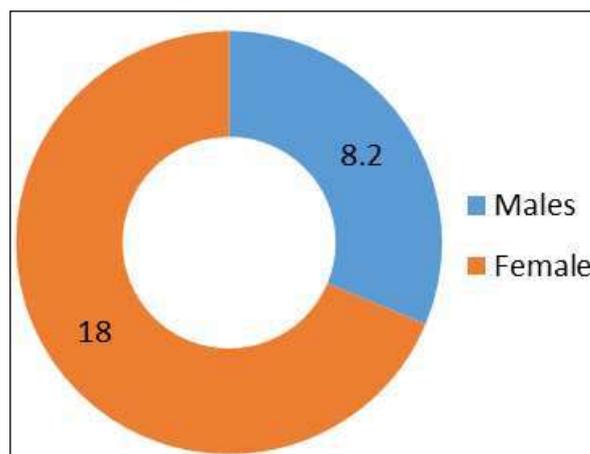


**Fig 1:** Bar diagram showing age distribution comparison between two groups

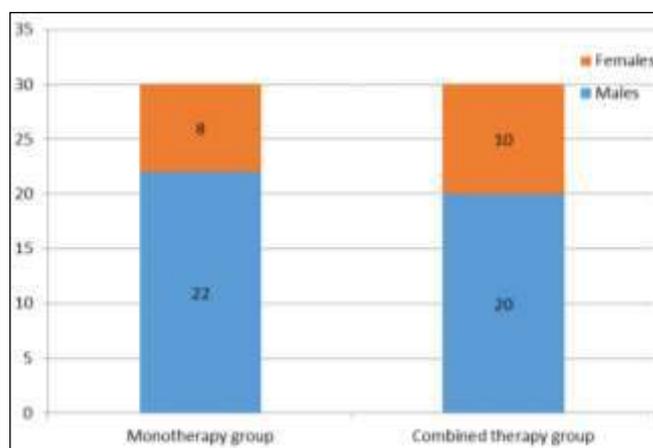
**Table 2:** Sex distribution comparison between two groups

Gender	Overall	Monotherapy group	Combined therapy group
Males	42(70%)	22(36.66%)	20(33.33%)
Females	18(30%)	8(13.33%)	10(16.66%)

In the sex distribution, most of subjects were males constituting 42(70%). The monotherapy group accounted to 22(36.66%) male subjects and combined therapy group of 20(33.33%).



**Fig 2:** Doughnut diagram showing Sex distribution in the study

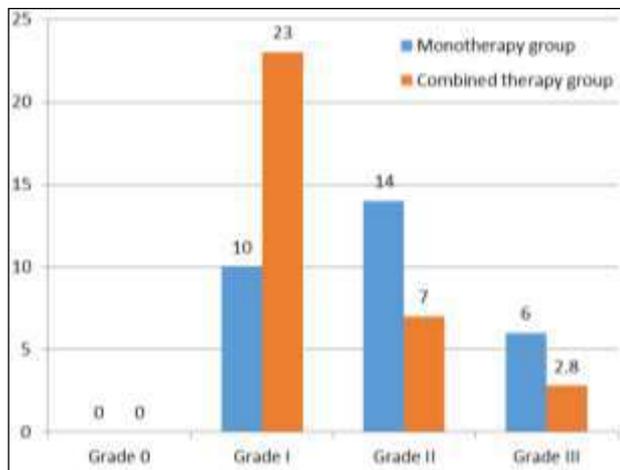


**Fig 3:** Bar diagram showing sex distribution comparison between the two groups

**Table 3:** Comparison of Boysarky grading of dysuria between two groups

Boysarky grade	Overall	Monotherapy group	Combined therapy group
0	0	0	0
I	33(55%)	10(16.66%)	23(38.33%)
II	21(35%)	14(23.33%)	7(11.66%)
III	6(10%)	6(10%)	0

The subjects developing dysuria as a post-operative complications were graded into 4 grades with most common being the grade I with 33(55%) subjects with next common being grade II with 21(35%). Among the groups, the monotherapy group had most of the patients in grade II with 14(23.33%) and the combined therapy had in grade I i.e. 23(38.33%). There was a significant difference between the groups.

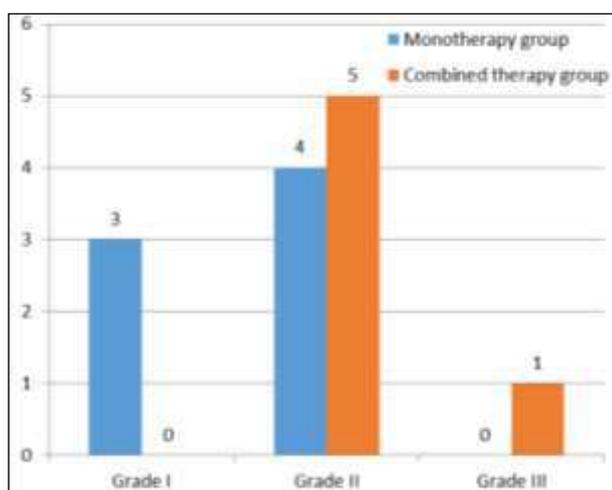


**Fig 4:** Bar diagram showing comparison of Boysarky grading of Dysuria between two groups

**Table 5:** UTI grading comparison between two groups

Grade	Overall	Monotherapy group	Combined therapy group
I	3(5%)	3(5%)	0
II	9(15%)	4(6.66%)	5(8.33%)
III	1(1.66%)	0	1(1.66%)

Among 60 subjects included in the study 13(21.66%) subjects had urinary tract infection. The monotherapy group had 7 subjects with UTI with grade II as most common i.e. 4(6.66%). The combined therapy group with 6 subjects with UTI, the most common grade being II with 5(8.33%). There was significant difference between the groups.



**Fig 5:** Bar diagram showing UTI grading comparison between two groups

**Discussion**

The urethral stent has been introduced nearly three decades ago. During this period, it has been popularized as a useful device to relieve the obstruction, divert urine, dilate ureter and allow faster

tissue healing [6]. The most common complication is “stent syndrome”, for which patients experience symptoms like irritative urinary symptoms, flank pain, suprapubic discomfort and hematuria [7].

Alpha-1 antagonists have been the most valuable for the relief of stent-related symptoms and improving the quality of life. The mechanism of alpha-1 adrenergic receptor antagonist involves the reduction of ureter and trigone smooth muscle activity and the mechanism of the anticholinergic drug involves relief of involuntary bladder contraction that is mediated with muscarinic receptors.

The study with a sample size of 60 conducted in R.L. Jalappa Hospital, Tamaka, Kolar for a duration of 3 months. The most common age group of presentation of subjects were less than 40 years i.e. 22(36.66%) with next common group was 51-60 years accounting 15(25%) with mean age being 45.5 years. In similar study by Yuan-Ju *et al.* Sung Won Jung *et al.* [8] showed similar results. Our study results are in consistent with similar compared studies. The study shows male predominance constituting 42 (70%).

The dysuria was calculated according to Boysarky grade with most of the subjects in grade I 33(55%) and followed by grade II 21(35%). The combined therapy group accounted most of the subjects in grade I 23(38.33%) showing significant reduction of post-operative dysuria compared to monotherapy.

The subjects developing UTI were 13(21.66%). The combined therapy group had 6 patients in total with only one patient had grade III UTI. The monotherapy group had 7 subjects developing UTI with grade II being most common. The commonest organism on culture was E. coli in 9 subjects followed by Proteus in 4 subjects. There was a significant difference between two groups in reducing UTI with combined therapy being better than monotherapy in comparison. Zhang YM *et al.* in a meta-analysis study showed similar results with combined therapy being more beneficial.

**Conclusion**

The symptoms post DJ stenting and its treatment is multifactorial and varied. There are many medical line of treatment available and none of them proved accurate. The present study with a comparison of monotherapy (tamsulosin) with combined therapy (tamsulosin + solifenacin) in treatment of DJ stent related symptoms shows combined therapy being more beneficial in terms of reducing post stenting flank pain, dysuria and UTI development in comparison to monotherapy.

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