



## Original Research Article

## Efficacy of tamsulosin and tamsulosin with corticosteroid for distal ureter stone

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## ABSTRACT

**Background:** Urolithiasis (urinary stones) is an ailment affecting 12% of the world population. 70% of urolithiasis is located in the lower third of the ureter. Nowadays to increase the expulsion rate and reduce analgesic consumption, there is great deal of enthusiasm for adjuvant pharmacologic intervention when a conservative therapy. The aim of the study is to evaluate the efficacy of  $\alpha$  1-blocker (tamsulosin) therapy in the management of distal ureteral stones when administered as the only drug or in conjugation with Corticosteroid (deflazecort), when the watchful waiting therapy is considered.

**Material and Methods:** A prospective study performed on 200 patients with distal ureteral stones. The patients enrolled in this study were assigned into three groups: Group A (patients received Tamsulosin and NSAID) Group B (patients received both Tamsulosin and Deflazacort and NSAID) Group C (control)

**Results:** In our study, Majority of patients were in the age group of 21-30 (109 cases). The study showed that 100% (200 patients) complained of pain in abdomen. Mean size of stone in Group A was 6.12mm, mean size of stone in group B was 6.55mm and mean size of stone in group C was 5.88mm. In Group A 42 (64%) patients passed stone, Group B, 56 (88%) Patients passed stone, and in Group C, 25 (37%) patients passed stone.

**Conclusion:** Use of Tamsulosin (alpha1-blocker) with Deflazacort (corticosteroid) proves to be more efficacious than Tamsulosin used alone. In addition, Tamsulosin used on its own as a medical expulsive therapy.

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## 1. Introduction

Urolithiasis was recognized as a major health problem even way back in the 12 century B.C. when Susruta performed perineal lithotomy.<sup>1</sup> Urolithiasis (urinary stones) is an ailment affecting 12% of the world population.<sup>2</sup> Symptomatic urolithiasis represents the most common condition observed by surgeons and urologists in an emergency setting. 70% of urolithiasis is located in the lower third of the ureter. The size of the stone and the initial stone location influence the probability of spontaneous stone passage. For distal ureteral stones of 5 to 8 mm diameter, spontaneous expulsion occurs in 25-53% of the cases.<sup>3</sup> Nowadays to increase the expulsion rate

and reduce analgesic consumption, there is great deal of enthusiasm for adjuvant pharmacologic intervention when a conservative therapy is considered, especially for cases of distal Ureteral stones. Obara et al<sup>4</sup> in 1996, concluded that the predominant alpha-1 adrenoceptor in the ureter was the alpha-1a subtype. The main aim of this prospective study is to evaluate the efficacy of  $\alpha$  1-blocker (tamsulosin) therapy in the management of distal ureteral stones when administered as the only drug or in conjugation with Corticosteroid (deflazecort), when the watchful waiting therapy is considered.

## 2. Material and Methods

A prospective study was performed on 200 patients with distal ureteral stones during September 2018 to June 2020

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admitted to the hospital. The patients enrolled in this study were assigned into three groups by simple randomization:

**Group A:** patients received Tamsulosin and NSAID.

**Group B :** patients received both Tamsulosin and Deflazacort (corticosteroid) and NSAID.

**Group C (control):** received only NSAID.

Inclusion criteria included all patients between age group of 18 to 65 years, Single distal ureteric stone of size of 5 to 8mm visualised on USG. Patients with Known hypersensitivity to tamsulosin, severe hydronephrosis, diabetes/gastric ulcer and History of spontaneous stone expulsion or any previous history of surgery for stones were excluded from the study.

All patients underwent medical examination, white blood cell count and urine analysis, in addition to abdominal ultrasonography and plain abdominal x-ray kidney-ureter-bladder (KUB). All patients received initial treatment with 500ml normal saline and analgesic (Diclofenac). If the stone was localized in the distal ureter, of diameter between 5mm and 8mm and if pain was resolved, the patients were enrolled after agreeing to enter the study by providing a written consent. No antispasmodic/opioids were given as it might intervene with stone expulsion. Three groups of patients were created on the basis of the advised therapy: Group A received oral Tamsulosin (0.4mg)+NSAID, Group B received Tamsulosin (0.4mg) +Deflazacort (30mg)+ NSAID, and Group C (control group) received only NSAID for maximum period of 10 days. All patients were instructed to drink 3 litre of water per day and were advised to use intramuscular injection of Diclofenac sodium if pain did not settle. Corticosteroids were withdrawn by tapering the dose, over five days after completion of therapy. Treatment was given for 10 days or till the stone had passed which ever was earlier. USG was used as modality to find whether stone had passed or not.

### 3. Results

In our study, 28.5% (57 cases) of patients were female patients and 71.5% (143 cases) were male patients. Table 1 shows that majority of patients were in the age group of 21-30 (109 cases) followed by 31 to 40 yrs (41 cases).

The study showed that 100% (200 patients) complained of pain in abdomen, 44% (88 patients) complained of burning micturition, 27% (54 patients) complained of haematuria and 1% (2 patients) complained of fever. Mean size of stone in Group A was 6.12mm, mean size of stone in group B was 6.55mm and mean size of stone in group C was 5.88mm Detailed analysis is seen in Tables 2 and 3.

Table 4 shows among Group A, 42 (64%) patients passed stone, 23 patients did not pass stone, 19 patients underwent surgery and 4 patients lost to follow up. In Group B, 56 (88%) Patients passed stone, 13 patients did not pass stone, 7 patients underwent surgery and 6 patients lost to follow up. In Group C, 25 (37%) patients passed stone, 41

did not pass stone, 29 patients underwent surgery and 12 patients lost to follow up.

### 4. Discussion

Majority of the patients in our study were in the age group of 20-40 years. The mean age group of females was 36.04 and in males were 38.14. The commonest age reported by most of the studies for the presentation of ureteric calculi is between 20-40 years which is concordant with our study.<sup>5,6</sup>

In the present series 77 patients had calculus on the right side and 123 patients had calculus on the left side. Most of the series found calculi with equal frequency on either side.<sup>7</sup>

In this series, 100% (200 patients) had complaints of loin pain, 27% patients (54 patients) had haematuria, 1% had fever (2 patients), 44% (88 patients) had complaints of burning micturition. Mouse and Resnick 1991 reported 87% had loin pain, 17% patients had vomiting and 3% presented with fever.<sup>7,8</sup>

In our study, mean size of stone in patient on Tamsulosin was 6.10 mm, Tamsulosin with Deflazacort was 6.55 mm and on NSAID was 5.88 mm. Study done by done by Dellabella et al mean size of stone in patients on Tamsulosin was 6.4 mm and Tamsulosin with Deflazacort was 6.9 mm.<sup>9</sup>

The stimulation of alpha 1 adrenergic receptors increases the ureteral peristaltic frequency, smooth muscle tones and contractile force, resulting in ureteral spasm and decreased ureteral flow.<sup>10</sup> In our study, expulsion rate (%) in patient on Tamsulosin was 64%, on Tamsulosin and Deflazacort was 88%, and on NSAID was 37% which is concordant with various studies as below.

This study focused on patients with symptomatic distal ureteral stones with a diameter of 5 to 8 mm. Due to the fact that the distal ureter presents the highest concentration of alpha1-receptors,<sup>11</sup> we decided to use tamsulosin. Deflazacort was chosen because it is a good antiedemic drug that is well tolerated and with limited side effects.<sup>14,15</sup> The therapy was administered only up to 10 days for two reasons: first, to prevent the side effects of prolonged corticosteroid therapy, and second in literature, it is reported that therapy efficacy is maximum in the first days.<sup>16</sup> From analysis of these data it is evident that patient on Tamsulosin along with Deflazacort and patient on Tamsulosin alone has good expulsion rate in comparison to patient on NSAID alone (88%, 64% v/s. 37%). Tamsulosin alone is also effective drug and should be used in particular patients with clinical condition such as diabetes, gastric ulcers or steroid intolerance. In terms of safety no side effects related to any of the drug used in this study was recorded.

### 5. Conclusion

We conclude that when medical expulsive therapy for symptomatic and non-complicated distal ureteral stone is considered, the use of Tamsulosin (alpha1-blocker) with

**Table 1:** Distribution of cases of different group by age

Group	Gender	Age group						Total
		≤ 20	21-30	31-40	41-50	51- 60	> 60	
A	Male	4	23	14	4	2	1	48
	Female	3	3	4	5	2	0	17
B	Male	2	24	4	7	5	1	43
	Female	3	9	7	4	3	0	26
C	Male	4	28	10	7	3	0	52
	Female	1	5	2	1	3	2	14
Total	Male	10	75	28	18	10	2	143
	Female	7	17	13	10	8	2	57

**Table 2:** Distribution of clinical complaints in different group

Symptom	A	B	C
Pain	65	69	66
Burning micturition	30	28	30
Haematuria	15	19	20
Fever	0	2	0

**Table 3:** Distribution of patients sample by mean size of stone.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
A	65	6.12	.992	.123	5.88	6.37	5	8
B	69	6.55	.883	.106	6.34	6.76	5	8
C	66	5.88	.773	.095	5.69	6.07	5	7
Total	200	6.19	.926	.065	6.06	6.32	5	8

**Table 4:** Distribution of patients by response to treatment.

	Group A	Group B	Group C
Stone passed	42	56	25
Stone not passed	23	13	41
Underwent Surgery	19	7	29
Lost for follow-up	4	6	12

**Table 5:** Comparison of study by expulsion rate (%)

	Tamsulosin	Tamsulosin with Deflazecort	NSAID
Cervenakov et al.(2002) <sup>11</sup>	80.4	N/A	62.8
Porpiglia et al.(2004) <sup>12</sup>	N/A	80	43
Dellabella et al.(2005) <sup>9</sup>	90	96.7	N/A
Porpiglia et al.(2006) <sup>13</sup>	60	84.5	33.3
Our study	64	88	37

Deflazecort (corticosteroid) proves to be more efficacious than Tamsulosin used alone. In addition, Tamsulosin used on its own as a medical expulsive therapy can be considered as an alternative treatment in those patients who are not suitable for steroid therapy.

## 6. Acknowledgment

None.

## 7. Conflict of Interest

None declared

## 8. Source of Funding

None.

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