

**Original article:**

## **Role of Tamsulosin in the Management of Lower Ureteric Stone**

**Dr Jai Narayan Khatri, Dr Rohitaswa Khatri**

Government Hospital, Churu , Rajasthan

Corresponding author\*

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### **ABSTRACT**

**INTRODUCTION-** Various types of interventional (e.g., ESWL, ureterorenoscopy, the Holmium: YAG laser and basket devices) as well as expectant (watchful waiting) treatments exist for the management of lower ureteric calculi. Use of Tamsulosin is the recent addition in management of distal ureteral calculi,

**AIMS AND OBJECTIVES-** To study role of tamsulosin in expulsion of lower ureteric stones and control of ureteral colic pain.

**METHOD-** 50 Patients (Group A (25patients) Patients given Tab. Tamsulosin 0.4 mg, 1 daily up to 4 weeks while group B (25patients) patients given regularly practiced treatment without Tamsulosin) with distal ureteric stone included in the study. Study duration was 3 months and study was performed at District Hospital, Churu.

**RESULTS-** Group A showed higher stone expulsion rate. The mean pain episodes were statistically significantly lower in Group A as compared to Group B.

**CONCLUSION-** It is concluded that tamsulosin can be considered for management of lower ureteric stones

**KEYWORDS-**Tamsulosin, lower ureteral calculi

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### **INTRODUCTION**

Symptomatic ureteric calculi represent the most common condition encountered by an urologist in an emergency setting<sup>1</sup>. Among all ureteral stones, 70% are found in the lower third of the ureter<sup>2</sup>. The goal of the surgical treatment of patients suffering from ureteral calculi is to achieve complete stone clearance with minimal morbidity<sup>3</sup>. Many minimally invasive interventional (e.g., ESWL, ureterorenoscopy, the holmium: YAG laser and basket devices) as well as expectant (watchful waiting) treatments exist for the management of lower ureteric calculi. But the choice of the ideal method to be taken up largely depend on the type of equipment available, location, type and size of stone, needs of the patient and skills of the surgeon<sup>4</sup>. The stone burden remains the primary factor in deciding the appropriate treatment for a patient with ureteral calculi<sup>5</sup>. Most ureteral calculi pass and do not require intervention. Spontaneous passage depends on stone size, shape, location and associated ureteral edema. Ureteral calculi 4–5 mm in size have a 40–50% chance of spontaneous passage. In contrast, calculi >6 mm have a <5% chance of spontaneous passage. This does not mean that a 1cm stone will not pass or that a 1–2 mm stone will always pass uneventfully. The vast majority of stones that pass do so within a 6 weeks period after the onset of symptoms. Ureteral calculi discovered in distal ureter at the time of presentation have a 50% chance of spontaneous passage, in contrast to a 25% and 10% chance in the mid and proximal ureter, respectively<sup>6</sup>. Ureteral calculi of any size may be associated with renal obstruction, and care must be taken to prevent, irreversible damage to the kidney, whether the patient selects expectant or active treatment.

Several groups have investigated the role of pharmacologic therapy to facilitate spontaneous stone passage. Different drugs (e.g., nifedipine and prednisolone) are used for this purpose.  $\alpha 1$  receptors are the most abundant adrenergic receptors in the ureteral smooth muscle cells. The blockage of adrenergic receptors by a specific antagonist inhibits basal tone, peristaltic activity and ureteral contraction.  $\alpha 1$  receptors are divided into four groups, with  $\alpha 1D$  being found mostly on the lower intramural portion of the ureter. Based on these findings, different groups have tried Tamsulosin (selective  $\alpha 1$  adrenergic receptors blocker) to facilitate spontaneous passage of distal ureteral calculi<sup>7</sup>.

In our county the modern interventional facilities are concentrated at tertiary care centres and are rarely available at district level medical centres.

**AIM AND OBJECTIVE**

To study role of tamsulosin in expulsion of lower ureteric stones and control of ureteral colic pain.

Methodology: A comparative prospective hospital based study at Department of Surgery, District Hospital Churu was conducted including 50 patients of 18-60 year age group, stone size 4-10 mm reporting with distal ureteric calculi for 3 months (Feb 2015-Apr 2015) through convenience sampling and divided into 2 groups: Group A & Group B (25 each). Group A patients were given cap. Tamsulosin 0.4 mg, 1 daily up to 6 weeks or till spontaneous passage of stone (whichever is earlier). Group B patients were given usually prescribed treatment like high fluid intake, analgesic diclofenac tab 50mg as on demand during study. Results were observed in terms of basic investigations report, IVP, MRI, CT and stone passage and pain episode nature, number and any other complications. Statistical analysis was done with help of statistical software SPSS 16.0 considering  $p < 0.05$  statistically significant.

**RESULTS:**

Table-1: Sociodemographic and Clinical Profile of Group A (Tamsulosin) and Group B (Regular) treatment patients

Age groups (years)	CASES (group A) n=25		CONTROLS (group B) n=25	
	No.	%	No.	%
18-30	6	24.0	5	20.0
31-40	9	36.0	8	40.0
41-50	9	36.0	11	44.0
51-60	1	4.0	1	4.0
<b>SEX</b>				
Male	12	48.0	10	40.0
Female	13	52.0	15	60.0
<b>OCCUPATION</b>				
Agriculture	14	56.0	11	44.0
Self employed	3	12.0	2	8.0
Govt service	5	20.0	6	24.0
Students	3	12.0	6	24.0
<b>STONE SIZE</b>				

4-6 mm	17	68.0	16	64.0
7-10 mm	8	32.0	9	36.0
NO. PAIN RELAPSES				
0	15	60.0	16	64.0
1-3	8	32.0	3	12.0
4-7	2	8.0	3	12.0
>7	0	0	3	12.0

Table 1 shows in group A maximum number of patients were in age group 31-40 and 41-50 year (36% in each), both groups had almost equal proportions of males and females. Majority of patients were from agriculture occupations. Tamsulosin showed better stone expulsion rate in 4-6 mm size category as well as fewer pain episodes.

**Table-2: Distribution of patients in both groups according to expulsion of stone:**

Stone size (in mm)	CASES (group A) n=25			CONTROLS (group B) n=25		
	No. of patients	No. of patients expelled stone	% of patients expelled stone	No. of patients	No. of patients expelled stone	% of patients expelled stone
4-6	17	9	52.94%	16	7	43.75%
7-10	8	4	50.0%	9	4	44.44%
Total	25	13	52.0%	25	11	44.0%

Table 2 states distribution of patients in both groups according to expulsion rate; 52.0% & 44.0% patients in group A & B respectively expelled stone successfully,

In patients with 7-10 mm calculus size expulsion rate of group A was higher as compared to group B as 13 (50.0%) & 11 (44.0%) respectively.

The number of patients in both groups when analysed for size of stone expelled were observed to be statistically highly significant. (p<0.05)

Overall the diclofenac dosage required in group A was observed to be 2.11 tablets whereas in group B it was 2.86 tablets. The variation between doses required by patients in both groups was found to statistically significant (p<0.05).

**DISCUSSION:**

In present study, among both groups, in group A maximum number of patients were in age group 31-40 and 41-50 year (36% in each), both groups had almost equal proportions of males and females. Majority of patients were from agriculture occupations. Tamsulosin showed better stone expulsion rate in 4-6 mm size category as well as fewer pain episodes. Ahmed H et al<sup>8</sup> (2015) observed in a randomized control trial including 100 patients over 18 years of age with stone size 4-8mm in distal 1/3 of ureter, that mean age of the patients was 36.34 years (range 18-57 years). Regarding stone size, Resim S et al<sup>9</sup> observed no significant difference between the group

A and B. Ferre MR et al<sup>10</sup>(2009) found in their study that 80 subjects were enrolled in the study, with 77 completing the trial. Mean stone size was 3.6 mm (95% confidence interval [CI] 3.4 to 3.9). Sebastein V et al<sup>11</sup> (2010) studied that out of total 129 patients, at inclusion, mean stone diameters were 3.2 and 2.9 mm in the placebo and Tamsulosin groups. 52.0% & 44.0% patients in group A & B respectively expelled stone successfully. In patients with 7-10 mm calculus size expulsion rate of group A was higher as compared to group B as 13 (50.0%) & 11 (44.0%) respectively

ResimS et al<sup>9</sup> observed that as group 1 patients were passing their stones, they had more ureteral colic episodes than group 2 patients. This difference was statistically significant and correlated well with the administration of tamsulosin (P = 0.038). Group 1 patients reported higher scores according to a visual analog scale than group 2 patients. Also, this difference was statistically significant (P = 0.000). Mohammed AB et al<sup>12</sup> (2008) found in their study that the number of pain episodes was significantly lower in Group B(tamsulosin group) and mean use of analgesics was lower for Group B (0.14±0.5 vials) than Group A (2.78±2.7 vials).M S Griwanet al<sup>13</sup>(2010) observed that Group II(tamsulosin group) showed a statistically significant advantage in terms of mean no. of pain episodes.

#### **CONCLUSION:**

Tamsulosin is proved beneficial in treatment of lower ureteric stones in terms of spontaneous expulsion of distal ureteral stone, stone expulsion time, reduces number of colicky painful episodes.

#### **REFERENCES:**

1. Kupeli B, Biri H, Isen K et al. Treatment of ureteral stone: Comparison of extracorporeal shock wave lithotripsy and endourologic alternative. *Eur Urol.* 1998;34:474-9.
2. Hollingsworth JM, Rogers MAM, Kaufman SR et al. Medical therapy to facilitate urinary stone passage: a metaanalysis. *Lancet.* 2006;368:1171-9.
3. Lingeman JE, Matlaga BR, Evan AP. Surgical management of upper urinary tract calculi. In: Kavoussi LR, Novick AC, Partin AW, Peters AC, Wein AJ, eds. *Campbell- Walsh urology.* Saunders Elsevier, Philadelphia 2007;1431–1507.
4. Finlayan B, Ackermann D. Overview of surgical treatment of urolithiasis with special reference to lithotripsy. *J Urol* 1989;141:778–9.
5. Eisenberger F, Fuchs G, Miller K, Bub P, Rassweiler J. Extra corporeal shock wave lithotripsy (ESWL) and endourology: an ideal combination for the treatment of kidney stones. *World J Urol* 1985;3:41–7.
6. Stoller ML. Urinary stone disease. In: Tanagho EA, McAninch JW. *Smith's general urology.* 17th ed. McGraw hill, New York 2008;246–77.
7. L. Borghi, T. Meschi, F. Amato. Nifedipine and methylprednisolone in facilitating ureteral stone passage: a randomized double-blind placebo-controlled study. *JUrol*, 152 (1994), pp. 1095–1098.
8. Ahmad H, Azim W, Akmal M, Murtaza B, Mahmood A, Nadim A, Shahzad K. Medical expulsive treatment of distal ureteral stone using tamsulosin. *J Ayub Med Coll Abbottabad.* 2015 Jan-Mar;27(1):48-50.

9. RESIM, S., EKERBICER, H. and CIFTCI, A. (2005), Effect of tamsulosin on the number and intensity of ureteral colic in patients with lower ureteral calculus. *International Journal of Urology*, 12: 615–620. doi:10.1111/j.1442-2042.2005.01116.x
10. Ahmad H, Azim W, Akmal M, Murtaza B, Mahmood A, Nadim A, Shahzad K. Medical expulsive treatment of distal ureteral stone using tamsulosin. *J Ayub Med Coll Abbottabad*. 2015 Jan-Mar;27(1):48-50.
11. Ferre M, Jessica MW, Tania DS. Tamsulosin for Ureteral Stones in the Emergency Department: A Randomized, Controlled Trial. *Annals of Emergency Medicine* Volume 54, Issue 3, September 2009, Pages 432–439.e2
12. Efficacy of tamsulosin in medical expulsive therapy for distal ureteral calculi. Mohamed Abdel-Basir Sayed, Ahmad Abolyosr, Medhat Ahmad Abdalla, and Ahmad Shehata El-Azab. *Scandinavian Journal Of Urology And Nephrology* Vol. 42 ,Iss. 1,2008
13. Tamsulosin Hydrochloride vs Placebo for Management of Distal Ureteral Stones. A Multicentric, Randomized, Doubleblind Trial. Sébastien V et al. *JAMA Network, JAMA Internal Medicine*. 2010. 170(22)
14. M.S. Griwan, Singh SK, Paul H, Pawar DS, Verma M. The efficacy of Tamsulosin in lower ureteral calculi. *Urol Ann*.2010 May-Aug;2(2)63-66.