

## A CLINICAL STUDY ON EFFICACY OF SHIGRU, VARUN AND PASHANBHED IN THE MANAGEMENT OF UROLITHIASIS

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### ABSTRACT

The clinical study was done in 90 cases of Urolithiasis in randomized controlled pattern to evaluate the efficacy of *Pashanbhed*, *Shigru* & *Varun* decoction in medical management of Renal calculi. The study was conducted at Department of Shalya Tantra, Government Ayurvedic College and Hospital, Guwahati, Assam. Clinical features like Pain, Burning micturition, Haematuria and Strangury were used for assessment along with USG findings. The study reveals that the three drugs have significant efficacy in the management mild to moderate sized Urolithiasis and also give immediate relief to associated features.

**KEYWORDS:** Urolithiasis, *Pashanbhed*, *Shigru*, *Varun*.

### INTRODUCTION

Urolithiasis or urinary calculus understood as *Mutrashmari* in Ayurveda is one of the commonest disorder of urinary tract in India. It is more prevalent in tropical region. A familial predisposition is also encountered and they tend to recur. Approximately 2% of population experience the disease urinary calculus and more often seen in poor section of people. There are lots of treatment modalities available in modern surgery to treat urinary calculus. Preventive measures also play a major role, specially in recurrent cases. The modern procedures used for removal of calculus are mostly invasive and not convenient for all patients. Specially the recurrent cases face more difficulties to undergo repeated surgeries. Some non-invasive techniques like ESWL are only available in higher centres with high failure rate.

In Ayurveda, Acharya Sushruta has vividly described the disease *Mutrashmari* starting from aetiological factors to surgical management. Formation of *asma* (stone) like substances due to vitiation of *dosha* within urinary tract is called *Mutrashmari*. It needs special care and treatment in initial period otherwise it may lead to incurability and even fatal condition.<sup>[1]</sup>

Management of *Mutrashmari* (urinary calculi) includes medicinal preparation of different form, *uttarabasti* (introduction of medicine per urethra) and surgical removal of *ashmari*.<sup>[2,3]</sup> The efficacy of medical management has been studied in various centers with encouraging result. Most of the drugs recommended by Acharya Sushruta are compound in different preparations. *Shigru*, *Pashanbhed* and *Varuna* are the main drugs recommended by Sushruta, Vagbhata & Charak to treat *Mutrahsuari*. The drugs selected for this study are easily available, cost effective and compatible for consumption.

## MATERIALS AND METHODS

### Materials

1. Shigru root bark (*Moringa oleifera*)
2. Pashanbhed all parts (*Bergenia ligulata*)
3. Varuna bark (*Crataeva nurvala*)

### Preparation method of trial drug

Sachet of 20 gm powder of each drugs were made after grinding the dried material in State Ayurvedic Pharmacy, Govt. Ayurvedic College, Guwahati. Patient were instructed to add 160 ml of water to the 20gm powder and boil till 1/4<sup>th</sup> part (40ml) remains. The decoction is filtered and patients were advised to take in luke warm condition in two divided doses.

The physio-chemical analysis were done in DTL, Govt. Ayurvedic College, Guwahati.

### Trial methodology

A total 90 cases were selected randomly & divided equally in three groups. In group A Pashanbhed (*Bergenia lingulata*), group B Shigru (*Molina oleifera*) and group C- Varun (*Crataeva nurvala*) were given for a period of 90 days.

### Parameters for assessment of result

Pain, Haematuria, Burning Micturition and strangury these four symptoms along with finding of USG were recorded for assessment of result preparing a special Care Record Form. Statistical methods like Z test, t test, anova test were applied for analysis of data.

For assessment of Pain, Burning Micturition, Haematuria and Strangury followed gradation pattern were formed –

### Pain

No Pain (0) Bearable without medicine +(1)  
 Bearable with medicine (2) Unbearable with medicine +++ (3)

### Haematuria

No RBC in micro, exam (0) Plenty of RBC in micro exam. +(1)  
 Smoky urine ++ (2) Reddish urine +++ (3)

### Burning Micturition

No burning (0) Mild +(1)  
 Moderate ++(2) Severe +++ (3)

### Selection Criteria

1. Age between 5 to 65 years
2. Patients of both sexes
3. Patients having calculus of size less than 10x20 mm

### Rejection criteria

1. Patient with severe renal function impairment
2. Patient with severe obstructive uropathy.
3. Patient with acute urinary tract infection.
4. Patient with positive virology
5. Patient with any systemic major illness.

## RESULTS AND DISCUSSION

### Demographic study

1. Table showing the incidence of urinary calculus in relation to age.

Sl. No.	Age on year	Shigru		Pashanbhed		Varuna	
		No. of Pt.	%	No. of Pt.	%	No. of Pt.	%
1	5-25	10	33.33	5	16.66	6	20
2	26-45	15	50.00	14	46.66	16	53.33
3	46-65	05	16.67	10	33.33	7	23.33
4	>65	0	0	1	3.3	1	3.3

Highest nos. of patients were found in the age group of 26-45 years in all the three groups i.e. 15 (50%), 14 (46.66%) & 16 (53.33%) in Shigru, Pashanbheda & Varun respectively. But it is difficult to make any comment, as the sample size is small, however people between the age group 26-45 usually become engaged in different outdoor activities for which they may have habit of taking less water & may be susceptible for suffering from renal calculi.

## 2. Table showing the incidence of urinary calculus in relation to sex.

Sl. No.	Sex	Shigru		Pashanbheda		Varuna	
		No. of Pt.	%	No. of Pt.	%	No. of Pt.	%
1	Male	25	83.33	15	50	15	50
2	Female	05	16.67	15	50	15	50

In the Shigru group 25 nos. of patient were male. In the other two groups the ratio of male & female were equal. By this distribution comment cannot be made regarding the incidence ratio between male & female.

## 3. Table showing the incidence of urinary calculus in relation to dietary habit.

Sl. No.	Dietary habit	Shigru		Pashanbheda		Varuna	
		No. of Pt.	%	No. of Pt.	%	No. of Pt.	%
1	Vegetarian	05	16.67	07	23.33	07	23.33
2	Non-veg.	25	83.33	23	76.66	23	76.66

In all the groups it is observed that most of the patient were non vegetarian which may be due to non-vegetarian food has some relationship in the causation of renal calculi or may be due to domination of the non-vegetarian people in the population from where sample were drawn.

## 4. Table showing the incidence of urinary calculus in relation to occupation.

Sl. No.	Nature of occupation	Shigru		Pashanbheda		Varuna	
		No. of Pt.	%	No. of Pt.	%	No. of Pt.	%
1	Sedentary	12	40	14	46.66	15	50
2	Physical	18	60	16	53.33	15	50

In all the groups, the patients doing physical activities & sedentary activities are almost equal, which does not specify any difference in causation of renal calculi this may be due to small size sample taken for the study.

**5. Table showing the incidence of urinary calculus in relation to site of urinary tract.**

Sl. No.	Site	Shigru		Pashanbhed		Varuna	
		No. of Pt.	%	No. of Pt.	%	No. of Pt.	%
1	Kidney	17	55.80	20	66.66	18	60
2	Ureter	12	41.86	8	26.66	11	36.67
3	Vesical	01	02.34	2	6.66	01	3.333

In all the three groups it was observed that maximum number of patient have stone in kidney i.e. 17 (55.8%), 20 (66.66%) & 18 (60%) in Shigru, Pashanbhed, Varuna respectively which indicates that most of the urinary calculi occurs in kidney in comparison to ureter & urinary bladder, moreover kidney is followed by ureter in incidences.

**6. Table showing the presenting symptoms of urinary calculus.**

Sl. No.	Clinical features	Shigru		Pashanbhed		Varuna	
		No. of Pt.	%	No. of Pt.	%	No. of Pt.	%
1	Pain	30	100	30	100	30	100
2	Burning micturition	30	100	29	96.66	28	96.66
3	Haematuria	25	83.33	24	80	26	88.67
4	Strangury	14	46.66	12	40	10	33.33

The chief clinical features in all the groups were pain & burning micturition followed by Haematuria very less number of patients had suffered from strangury.

**7. Table showing the intensity of various symptoms of urinary calculus.**

Sr. No.	Intensity	Symptoms (No. of patients)											
		Pain			B.M.			Haematuria			Strangury		
		No. of Pt.	No. of Pt.	No. of Pt.	No. of Pt.	No. of Pt.	No. of Pt.	No. of Pt.	No. of Pt.	No. of Pt.	No. of Pt.	No. of Pt.	
1	3+	17	19	16	19	20	17	04	03	02	01	02	07
2	2+	12	11	13	10	10	11	11	12	10	10	06	05
3	1+	01	00	01	01	00	02	09	10	14	01	06	04
4	00	00	00	00	00	00	00	06	05	04	18	16	20

In all the three groups most of the patients have grade 3 intensity of pain i.e. 17,19 &16 number of patients in Pashanbhed, Shigru & Varun respectively had grade 3 intensity of pain. This was followed by grade 2 pain intensity & very least number of patient had grade 1 intensity pain. It suggest pain is a leading and troublesome symptoms of urethritis.

In case of burning micturation also it was observed that grade 3 intensity was found in most of the patients.

### 8. Table showing the duration of treatment required.

Sl. No.	Duration	Shigru		Pashanbhed		Varuna	
		No. of Pt.	%	No. of Pt.	%	No. of Pt.	%
1	30 days	11	36.67	13	43.33	12	40
2	60 days	02	06.67	04	13.33	05	16.66
3	90 days	17	56.66	13	43.33	13	43.33

In all the groups moderate number of patients responded within a month of treatment i.e. 11 (36.6%) nos. of patient in Shigru groups, 13 no. of patients (43.33%) in Pashanbhed & 12 no. (40%) of patients in Varun required 30 days of treatment whereas highest nos of patient required 90 days of treatment.

## RESULT OF THE CLINICAL STUDY

### Effect of the drugs on pain

#### Group A

**Table 1: Pashanbheda.**

SL. No.		( $\bar{X}$ )	SD	SE	t	p
1	BT	2.2	0.76	0.1	14	<0.001
2	AT	1.4 (0.8)	0.56			

't' value= 14, P<0.001 hence result highly significant. It implies that Prashanbhed showed significant efficacy in reduction of pain.

**Table 2: Group B (Shigru).**

SL. No.		( $\bar{X}$ )	SD	SE	t	p
1	BT	0.97	0.49	0.08	14.35	<0.001
2	AT	2.10	0.80			

't' value= 14.35, p<0.001 hence result is highly significant. It implies that Shigru has efficacy in management of pain.

**Table 3 Group C (Varuna).**

SL. No.		( $\bar{X}$ )	SD	SE	t	p
1	BT	2.5	0.5	0.008	21.83	<0.001
2	AT	1.9 (0.6)	0.48			

't' value= 21.83, P<0.001, hence result is highly significant. It shows that Varuna is significantly effective in management of pain.

**EFFECT OF THE DRUGS ON BURNING MICTURATION****Group A Pashanbheda****Table 4.**

SL. No.		( $\bar{X}$ )	SD	SE	t	p
1	BT	2.13	0.628	0.08	21.265	<0.001
2	AT	1.73 (1.4)	0.449			

't' value= 21.625, P<0.001 hence result is highly significant. It shows that Pashanbheda is significantly effective on reducing Burning Micturition.

**Group B****Table 5: Shigru.**

SL. No.		( $\bar{X}$ )	SD	SE	t	p
1	1.07	0.52	0.52	0.065	19.6	<0.001
2	AT	2.36	0.66			

't' value= 19.6, P<0.001, hence result is highly significant, it implies that Shigru is effective in the reduction of Burning Micturition.

**Group C (Varuna)****Table No.6.**

SL. No.		( $\bar{X}$ )	SD	SE	t	p
1	BT	2.57	0.82	01	20.3	<0.001
2	AT	2.03	0.557			

't' value= 20.3, P<0.01 hence result is highly significant. This test shows that Varuna is highly effective in reducing burning micturition.

**EFFECT OF THE DRUGS ON HEMATURIA****Table 7: Group A Pashanbheda.**

SL. No.		( $\bar{X}$ )	SD	SE	t	p
1	BT	2	0.587	0.08	20.875	<0.001
2	AT	1.67	0.4			

't' value= 20.875, P<0.001 here result is highly significant. The result showed that Pashanbheda had reduced Haematuria significantly.

**Table 8: Group B (Shigru).**

SL. No.		( $\bar{X}$ )	SD	SE	t	p
1	BT	1	0.69	0.033	7.77	<0.001
2	AT	1.26	0.89			

't' value= 7.77,  $P < 0.001$ , hence result is highly significant. The result shows that Shigru is highly effective in reduction of Hematuria.

**Table 9: Group C (Varuna).**

SL. No.		( $\bar{X}$ )	SD	SE	t	p
1	BT	1.2	0.78	0.154	6.68	<0.001
2	AT	0.03	0.636			

't' value= 6.68,  $p < 0.001$ , here result is highly significant. The result showed that Varuna is highly effective in reduction of Haematuria.

### EFFECT OF THE DRUGS ON STONE (USG findings)

**Table 10: Group A Pashanbhed**

$\bar{X}_{BT}$	$\bar{X}_{AT}$	$\bar{X}_{BT-AT}$	SD	SE	Z	P
8.89	3.75	5.14	4.39	0.65	7.9	<0.001

$n=45$ ,  $Z=7.9$ ,  $P < 0.001$  here result highly significant. It implies that, stone size were significantly reduced or removed by Pashanbhed.

**Table 11: Group B (Shigru).**

$\bar{X}_{BT}$	$\bar{X}_{AT}$	$\bar{X}_{BT-AT}$	SD	SE	Z	P
9.08	3.72	5.36	4.01	0.78	6.84	<0.05

$n=43$ ,  $Z=5.4$ ,  $P < 0.001$  here result highly significant. It implies that Shigru is highly effective in reduction of size or removal of stone.

**Table 12: Group C (Varuna).**

$\bar{X}_{BT}$	$\bar{X}_{AT}$	$\bar{X}_{BT-AT}$	SD	SE	Z	P
8.84	3.56	5.28	3.88	0.572	9.23	<0.001

$n=46$ ,  $Z=9.23$ ,  $P < 0.001$ , here result highly significant. The result showed that Varuna is highly effective in reduction of size of stone.

**Table 13: ANOVA test for stone size.**

Source of variation	Sum of square	Qf	Mean sum of square	Observed value	Table value
Between the group	1.91	2	$1.91/2=0.95$	$0.95/18.46=0.005$	2.99
Within the group	2418.47	(134-3=131)	18.46		

Observed 't' value=0.005 hence difference is non-significant. It indicates that all the three drugs are equally effective. Different amongst them are statistically insignificant. It means all the drugs are equally effective in reduction of the size of the stone.



**Table: 14** anova Test of pain.

Source of Variation	Df	Sum of squares	Means sum squares	Observed value	Table value
Between the group	2	0.006	0.03	0.065	3.10
Within group	87	40.04	0.46		
Total	89	41.0%			

Observed 'f' value is less than table value so the difference is insignificant, means all the drugs are equally effective in relieving pain. It implies than the all the three drugs are equally effective in reduction of pain.

**Table: 15: Anova Test of burning micturition.**

Source of Variation	Df	Sum of squares	Means sum squares	Observed value	Table value
Between the group	2	0.35	0.18	0.569	3.10
Within group	87	27.55	0.316		
Total	89	27.9			

Observed 'f' value is less than table value so the difference is insignificant, means all the drugs are equally effective in relieving Burning micturition.

**Table: 16: anova Test of Haematuria.**

Source of Variation	Df	Sum of squares	Means sum squares	Observed value	Table value
Between the group	2	0.11	0.55	3.08	3.10
Within group	87	15.53	0.178		
Total	89	15.64			

Observed 'f' value is less than table value so the difference is insignificant, means all the drugs are equally effective in relieving Haematuria.

**Table: 17: Anova Test of Strangury.**

Source of Variation	Df	Sum of squares	Means sum squares	Observed value	Table value
Between the group	2	0.006	0.003	0.03	3.10
Within group	87	8.48	0.097		
Total	89	8.486			

Observed 'f' value is less than table value so the difference is insignificant, means all the drugs are equally effective in relieving Strangury.

## DISCUSSION

Urolithiasis is a disease which manifest with various mode and different symptoms complex. Patient usually comes with intolerable pain, burning micturition, haematuria, occasionally strangury or with dull ache and even without any symptoms.

As information regarding the aetiopathogenesis and clinical symptoms are widely available, so, in this study very negligible information are included about the aetiopathogenesis and clinical symptoms of Urolithiasis.

The clinical study was carried out in the dept. of Shalya of Govt. Ayurvedic College, Guwahati during the period of 2013 to 2018 to study the efficacy of Shigru, Pashanbhed and Varun in the management of Urolithiasis.

The maximum incidence of Urolithiasis was observed in the age group of 26 to 45 & least number of cases were found above the age of 65.

The numbers of male patients having Urolithiasis were more than 60 % were male, it may be due to more out door work, lack of fluid intake leading to dehydration & high concentration of crystals in urine.

The incidence of Urolithiasis are found more in non-vegetarian patients then vegetarian group which may be due to high content of purine, sulphur containing proteins, calcium etc.

Those patients who involved in more physical activities are more prone to develop urolithiasis which may be due to improper intake of fluid & dehydration leading to voiding of high concentrated urine paving the way of deposition of crystals.

Incidence of renal calculus was little bit more than ureteric calculus larger as calculi get of triple phosphate variety does not pass down further calculi are not primarily formed in ureter.

Pain and burning micturition are the commonest complain of Urolithiasis. Pain was found in all patients, burning micturition was associated in all cases, may be due to associated secondary infection.

Haematuria and Strangury were other associated features.

In this study, in all the group Pain, Burning Micturition, Haematuria and Strangury were reduced significantly. After 90 days of treatment all the symptoms were almost completely relieved.

In USG finding of significant differences were observed before and after treatment. The numbers of patients getting complete or partial symptomatic relief were more than the

number of patient not getting relief on the basis of USG finding. Some patient experienced complete relief even with existing calculi in urinary tract. It suggest that the drug has very good analgesic, antispasmodic, antibacterial activity giving relief from pain, burning micturition along with litholytic activity.

No complication was observed during the period of study. The patient getting relief could be not followed up after completion of treatment of 90 days because of short duration of study.

## CONCLUSION

1. Three groups of 30 patients in each were given Pashanbhed, Shigru & Varun powder respectively for a period of 90 days.
2. Pain, Burning Micturition and Haematuria were the main presenting symptoms.
3. In patients of all groups Pain & Burning Micturition were common symptoms. Haematuria was observed in less number of patients, most of the patients were having high intensity of pain & burning Micturition but Haemeturia & Strangury were of moderate intensity.
4. In all the groups the clinical symptoms were subsided satisfactorily. Moderate numbers of patient got relief from the symptoms within a period of 30 days but the maximum numbers of patient were needed 90 days of treatment.
5. The effect of all the drugs in the stone size were satisfactory, the stone size were reduced or removed by all the drugs. No side effect was observed in the clinical trial.
6. These three drugs had significant efficacy in the management of renal calculi, but for recommendation this study may be a pioneer as well as ready reference for the future scholars.
7. In this study all the three drugs have shown significant efficacy in all aspect hence a combined drugs formulation may be developed.

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