



## A Comparative Clinical Study to Evaluate the Effect of *Trutyadi Choorna* and *Apamarga Paneeya Kshara* in the Management of Moothrashmari (Urolithiasis)

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### ABSTRACT

**BACKGROUND :** Mankind has been affected by renal calculi or *Moothrashmari* since centuries and has been the silent cause of renal failure. Acc to Ayurveda *Moothrashmari* is a combined terminology which constitutes *moothra* + *ashmari*. *Ashmari* comprises of two words, i.e. *Ashmari*, where Ari refers to the pain as given by an enemy, pain due to *Moothrashmari* is known as worse than that of labour pain. This disease is dreadful and hence considered one of the 'Mahagada' by *Sushruta*, may be owing to its potentiality to disturb the anatomy and physiology of urinary system. Acc to modern the word renal calculus is derived from Latin language, according to which *Renes* means kidneys and *calculi*, means pebble or stone. It is a solid concretion or crystal aggregation formed in the kidneys from dietary minerals in the urine. Urinary stones are typically classified by their location in the kidney (nephrolithiasis), ureter (ureterolithiasis) or urinary bladder (systolithiasis) or by their chemical composition (calcium containing, uric acid, struvite or another compound). **OBJECTIVE OF THE STUDY:** To compare the effect of *Trutyadi choorna* and *Apamarga paneeya kshara* in the management of *Moothrashmari* (Urolithiasis). **METHODS:** Study Design: An open label Randomised Comparative Clinical Trial. Sample Size: A total 40 cases of *Moothrashmari* coming under inclusion criteria were included for the study. These 40 cases are randomly allotted into 2 groups namely group A and group B with 20 patients in each group. **INTERVENTION:** Group A: Patients given with *Trutyadi choorna*. Group B: Patients given with *Apamarga paneeya kshara*. **RESULTS:** Patients treated with both *Trutyadi choorna* and *Apamarga paneeya kshara* showed highly significant changes with respect pain, burning micturation, obstructed to flow of urine and Haematuria. **CONCLUSION:** On comparing the results of Group-A and Group-B, the test shows that the treatment is statistically not significant P value > 0.05.

**Key words:** Moothrashmari, Urolithiasis, *Trutyadi choorna*, *Apamarga paneeya kshara*.

### INTRODUCTION

Ayurveda, the system of Indian medicine and science of life deals with the wellbeing of mankind. According to *Acharyas* the foremost aim of *Ayurveda* is to maintain health in the healthy and to cure the ailment of the ailing<sup>1</sup>.

*Ayurvedic* texts have mentioned many diseases as well as use of innumerable Plants, Minerals and Animal oriented preparations in the treatment of diseases. *Samhitas* and *Nighantu*'s have contributed many new drugs to Indian material medica. The three great authors namely *Sushruta*, *Charaka* and *Vagbhata* followed the scientific methods of study to enhance the perception of *Ayurveda* towards humanity.

*Mutrashmari* is considered as one of the most distressing diseases among the group of urinary disorders. Due to its dreadfulness and excreting great suffering to men like *Yama*<sup>2</sup>, 'The God of Death', the disease is considered as one of the "Mahagadas" by *Acharya Sushruta*<sup>2</sup>.

There are a lot of references about *moothra* in all over the *Ayurvedic* classics and in many of the old literature like *Vedas* and *Puranas*. Thousands of years ago *Acharya Sushruta* and *Charaka* identified the disease and named it as *Ashmari*. *Ashmari* comprises of two words, i.e. *Ashma* and *Ari*, where *Ashma* means stone and *Ari* means enemy, pain due to *Ashmari* is known as worse than that of labour pain. This disease is dreadful and hence considered to be one of the eighth most troublesome diseases (*Mahagada*) by *Sushruta*<sup>3</sup>, may be owing to its potentiality to disturb the anatomy and physiology of urinary system.

*Moothrashmari* is a disease of *Mootravaha Srotas* and according to *Sushruta* it is formed due to the drying up of *Kapha* because of the action of *Vata* and *Pitta* *Acharya Sushruta* mentioned 4 types of the *Moothrashmari*. Depending upon the *Nidana* for which a particular *Dosha* gets vitiated and leads to that type of *Moothrashmari*. These are *Vatajashmari*, *Pittajashmari*, *Sleshmajashmari* and *Shukraja Ashmari*. *Sushruta*, *Charaka*, *Bhela* and *Harita* devoted separate chapter for *Ashmari*, where *Harita* says formation of *Ashmari* is may be hereditary. All most all *Acharyas* described its *Nidana*, *Purvarupa*,

*Roopa, Chikitsa (Aushadha and Shastra karmas) and Upadrava* and they mentioned that it is *Krusta Sadhya Vyadhi*. For same purpose so many *Yogas* of medicines have been explained in our ancient *Ayurvedic* literatures.

Kidney stones are common across the world, with a prevalence of about 12% worldwide. Their prevalence in India also reflects worldwide prevalence and stands at approximately 12% and relatively more common in the northern part of India, where it is 15%<sup>4</sup>.

Urolithiasis is a global problem spanning all geographic regions with an estimated annual incidence of 1%, prevalence of 3–5% and a lifetime risk of 15–25%. Once afflicted, urolithiasis tends to be recurrent in the majority of cases. The 50% of kidney patients have reappearance within 10 years. In a recent study the recurrence rates are estimated at about 10% per year, totaling 50% over a 5–10 years period<sup>5</sup>.

The *Trutyadi choorna* and it is having *laghu, ruksha guna and tridosahara, moothrajanana* properties.

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## MATERIALS AND METHODS

### SOURCE OF DATA:

#### a. Literary source:

Literary aspect of study was collected from Library of S.J.G.A.M.C Koppal, Classical Ayurvedic texts, modern texts, recent journals and e-medical journal, related websites about the disease and the drug.

#### b. Sample Source:

For the clinical study, Patients were selected from OPD and IPD of Department of *Shalya Tantra* of S.J.G.A.M College and Hospital, Koppal and other available Source. Patients fulfilling the criteria for selection were involved into the study Irrespective of Caste, Religion and Demographic criteria.

#### c. Drug Source:

The drugs required for the study were procured from a GMP certified Pharmacy under the supervision of Department of *Dravyaguna* and Medicine was prepared in *Rasashastra and Bhaishajya Kalpana* department of S.J.G.A.M college and Research centre Koppal.

### Method of collection of Data:

#### Study Design:

An open Label Randomised Comparative Clinical Trail.

#### Sample size

Study of 40 Patients fulfilling the diagnostic and Inclusion Criteria were selected and allotted Randomly into two equal groups A and B, Consisting of 20 patients each.

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## SELECTION CRITERIA:

### A. Diagnostic Criteria:

Patient will be selected based on ultrasonography reports along with anyone of the following clinical features.

- Pain

Associated symptoms:

- Burning micturition
- Hematuria
- Urine flow obstruction.

### B. Inclusion criteria

- Patients with urolithiasis between the age group of 25-60yrs with less than 9mm stone size.
- Number of calculi less than or equal to 3.

### C. Exclusion criteria

- K/C/O urolithiasis associated with other renal diseases like renal failure, sever Hydronephrosis, Tuberculosis, Polycystic kidney, AKD, CKD and Neoplasms are excluded.

- K/C/O Other obstructive diseases of urinary system like urethral stricture, CA ureter, CA prostate, Meatal stenosis, Bladder neck contracture will be excluded.
- Pregnant and lactating women
- Patients with Diabetes and with other major systemic disorder such as Rheumatoid arthritis, Tuberculosis and other which interfere with treatment will be excluded.
- Serology positive and cardiac cases.

#### D . Withdrawal Criteria

- If creatinine level goes more than normal limit, then we will be excluded for the study.

#### E. Acute pain management due to calculi

If the pain is intolerable, then patient is sent to Allopathic surgeon for pain management with analgesics, after symptomatic relief, we took under study.

#### Investigation:

- CBC
- Serum creatinine

If needed – Urine Routine

ESR

- Ultrasonography: Abdomen and Pelvis
- Before treatment
- After treatment

#### STUDY GROUP :

STUDY GROUP A	CONTROL GROUP (B)
Group A-20 members	Group B-20 members
Drug:Trutyadi choorna	Drug-Apamarga paneeya kshara
Dose:6gms BD	Dose-1gm,BD
Anupana:Nimbu swarasa	Anupana-Ushna jala
Treatment duration:21 days	Treatment duration:21 days
Follow up – 30 <sup>th</sup> and 60 <sup>th</sup> day	Follow up – 30 <sup>th</sup> and 60 <sup>th</sup> day

#### ASSESSMENT CRITERIA:

##### SUBJECTIVE PARAMETER:

1. **Pain-** Nabhipradesha, Bastipradesha, Seevanipradesha, Mehanapradesha.

##### Visual analog scale

Grade 0	No pain (absence of pain abdomen)
Grade 1	Mild pain (present, but does not disturb routine)
Grade 2	Moderate pain (present, which disturbs routine)
Grade 3	Severe pain (intolerable pain)
Grade 4	Worst pain (patient rolls on bed)

**2. Urine flow obstruction** Urine flow obstruction Grading

Grade 0	No urine flow obstruction
Grade 1	Obstruction in flow of urine present

**2. Haematuria**

Grade 0	No Haematuria
Grade 1	Haematuria present

**3. Burning Micturition**

Grade 0	Absence of Burning micturition
Grade 1	Presence of Burning micturition

**OBJECTIVE PARAMETER:**

According to USG findings

- Size of the calculus**

Grade 4	No change
Grade 3	From 9mm – 7mm
Grade 2	From 6mm- 4 mm
Grade 1	From 3mm – 1mm
Grade 0	No calculi

- Number of calculi**

Grade 4	No response
Grade 3	3-2
Grade 2	2-1
Grade 1	1-0
Grade 0	No calculi

**Follow up period**

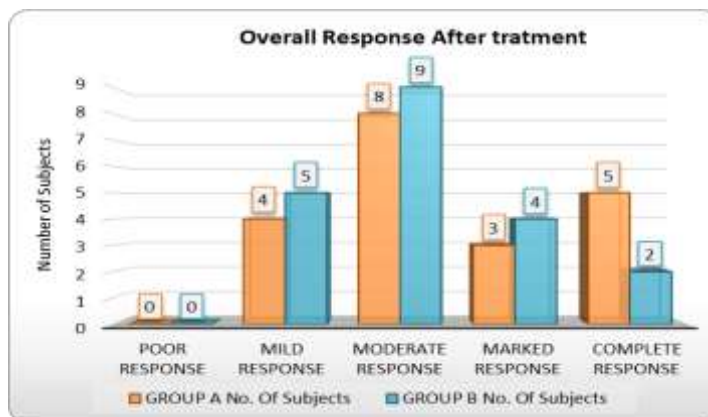
Follow up was scheduled on 30<sup>th</sup> and 60<sup>th</sup> day and observations were recorded in the concerned proforma.

**Statistical test used**

All the parameters and observations data will be analysed statistically by using ANOVA and Mann-Whitney U test.

**OVERALL RESPONSE AFTER TREATMENT**

Overall Response After treatment					
Response Grouping	Response	GROUP A		GROUP B	
		No. Of Subjects	%	No. Of Subjects	%
(0%-25%)	Poor Response	0	0%	0	0%
(25%-50%)	Mild Response	4	20%	5	25%
(50%-75%)	Moderate Response	8	40%	9	45%
(75%-99%)	Marked Response	3	15%	4	20%
(>99%)	Complete Response	5	25%	2	10%
	Total	20	100%	20	100%



## EFFECT OF THERAPY

### Effect of Trail drug on Subjective Parameters

Before the treatment all patients (20) had renal pain with different intensity. After completion of the therapy, it was observed that 12 patients got complete relief from this symptom and 8 patients had the pain.

Among 17 patients Burning mictration was found but after the completion of therapy, It was observed that 14 patients got complete relief from symptoms and only 3 patients had complaint.

Among 16 patients of urine flow obstruction the treatment was found but after the completion of therapy, 9 patients had completely cured, 7 patients had complaint.

Among 12 patients of urine flow obstruction the treatment was found but after the completion of therapy, 8 patients had completely cured, 4 patients had complaint.

### Effect of Trail drug on Objective Parameters

#### 1. SIZE OF STONES:

Among 20 patients, there are remaining 11 patients had completely cured. And 9 patients were having stone with symptomatic relief.

#### 2. NUMBER OF STONES :

Among 20 patients, there are remaining 11 patients had completely cured. And 9 patients were having stone with symptomatic relief.

## PROBABLE MODE OF ACTION OF TRUTYADI CHOORNA

All most all *Acharyas* described the theory of urine formation but in different ways. They considered the *Moothra* as a mala which is absorbed in the *Pakvashaya* and continuously fills up the *Basti*.

*Mutrashmari*, therefore understanding the *samprapti* is essential for treatment of disease, because disintegration of *samprapti sanghatan* is *chikitsa*. Where *Trutyadi choorna* having *laghu, ruksha, teekshna guna, kashaya rasa, ushna-sheeta veerya, katu vipaka* and *tridosahara* mainly *kapha-vatahara* properties.

## MODE OF ACTION OF APAMARGA PANEEYA KSHARA

*Kapha* and *Vata* always play a major role in urolithiasis. As *Apamarga Paniya Ksharaa* is *Kapha-vataghna* in its *Doshaghata*, it is helpful for *Shaman* of associated *Doshas* taking part in etiopathogenesis of calculus.

*Ruksha, Laghu, Tikshna, Shighragami* properties of *Apamarga Paniya Kshara* reduces the chances of nidus formation as well as reduces the growth of stone by inhibiting the binding property of *Kapha dosha*.

*Apamarga Paniya Kshara* has *mootrala* effect there- by increasing intra-luminal pressure. Because of this pressure, calculus is expelled quickly as a whole from urinary system. As earlier stated, hyper- concentration of the urine results into formation of urolithiasis.

*Apamarga Paniya Kshara* removes obstruction from urinary tract by flushing the urine by its *Sarak* property. They increase peristaltic movements of smooth muscles in urinary system and in turn help in expulsion of urinary calculus.

Active ingredient of *Apamarga* seeds is saponine acts as a diuretic so it increases intraluminal pressure & flow of urine in ureter and helps to wash out calculus."

As Acaranthine one of the principal constituents of *Apamarga Paniya Kshara* is anti-inflammatory in nature it reduces pain in abdomen associated with calculus.

The pH of *Apamarga Paniya Kshara* is 10.63. This alkaline nature of the drug reduces acidic condition of the urine, which is one of the main causes of calculus formation. The normalization of pH of urinary passage helps to dislodge the lithus.

*Apamarga Paniya Kshara* reduces burning micturition, pain in abdomen associated with calculus by maintaining urine pH and anti-inflammatory action.

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## CONCLUSION :

**Ayurvedic review:** Deals with etymology of the term *Moothrashmari*, synonyms. Definition, anatomical description of the organ related to *Moothravaha Samsthan* and physiology of urine formation etc. Next deals with *nidana*, *Samprapti*, *Purvarupa*, classification, *Laxanas*, *Upadrava* etc. Finally, the different aspects of *ashmari Chikitsa* are also explained.

**Modern review:** Contains anatomy of urinary system and ultrasonographic appearance of kidney. The disease part consists of etiological factors, geographical distribution, and pathogenesis type of calculi with their incidence in India, clinical features, radiographic appearance of calculi, and prognosis up to the management of Urolithiasis. The detailed description of the diagnostic method and newer non operative mechanical methods for stone management in the urinary are also explained.

**Drug review:** Includes the reasoning for selection of compound followed by brief description of its ingredients from *ayurvedic* point of view.

1. Briefly this study suggests that the age group of third and fourth decades of life is more likely to get *Moothrashmari* in which male are more prone to this disease as compare to females.
2. In the study, it was found that there is not direct relation of occupation and religion with this disease.
3. While going to the socio-economic status, 65% of the patients belonged to middle class who shows higher incidence in this group as addiction of alcohol is recorded in all the male patients including smoking and tobacco chewing. Moreover, in this class, people are more prone to tea and coffee to relieve their tension which are again rich in oxalates and become predisposing factor of the *Moothrashmari*.
4. Regarding diet, maximum patients (55%) take mixed diet including red meat, milk, ice creams in large quantity which also plays a very important role in the formation of *ashmari* due to presence of minerals in all these food stuffs which lead to *Moothrashmari*.

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