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## Critical Review On *Nidana Of Mutrashmari*

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### Abstract :

*Mootrashmari* is one of the most common disorders of *Mootravaha srotas*. In Ayurvedic literature *Mootrashmari* is defined as, 'The stone like structure formed in *Mootravaha srotas*'. It is *Kaphapradhana tridoshaja vyadhi*. *Mutrashmari* is one among the major reason for abdominal pain these days. *Sushruta Samhita* has mentioned it as '*Antaka pratima*' as it causes intolerable pain. It is included under *Ashtamahagada* because of its *Marmashrayatwa* and various complications caused by the disease. In contemporary medical science it can be compared to Urolithiasis. Urolithiasis is the condition where urinary stones are formed and located anywhere in the urinary system. Urinary stones frequently occur worldwide. Prevalence rate of 1-5% are reported in Asia, 12% in India. Among the affected population, 50% may end up with renal damage. Though the disease can be treated with various *shamaoushadhi* and *shodhana karma*, it is very much important to prevent occurrence of the disease because of the dreadful complications caused by *Mutrashmari* and its high chances of recurrence. This can be achieved by avoiding *Nidana sevana* i.e the factors responsible for formation of *Mutrashmari*. Hence in this article an attempt is made to critically review and analyze *Mutrashmari nidana* mentioned in different Ayurveda texts.

**Key words :** *Mutravaha srotas*, Urolithiasis, *Nidana*, *Asamshodhana*, *Apathya*.

## Introduction:

*Mutrashmari* is the condition characterized by formation of the structure resembling stone which is formed in *Basti* by solidification of *Kapha*, *Pitta*, *Vata* and *Shukra*, by the *Ushma* guna of *Pitta* in combination with *Shoshana Karma* of *Vayu* is further coated by *Dosha* to form *Mutrashmari*.<sup>1</sup> *Mutrashmari* is included under *Ashtamahagada*<sup>2</sup> which indicates the severity of the disease. Though the disease can be treated with various *shamaoushadhi* and *shodhana karma*, it is very much important to prevent occurrence of the disease because of the dreadful complications caused by *Mutrashmari* and its high chances of recurrence. This can be achieved by avoiding *nidana sevana*.

*Nidana* is the first and foremost factor which initiate the pathology and crucial in diagnosis as well as management of the disease. *Nidana* includes the disease causing factors such as diet, lifestyle, environmental factors and injuries as source of any disease which results into imbalance of *dosha*. As it is said in *Sushruta samhita*, “*Sankshepatah Kriya Yogo Nidana parivarjanam*.”<sup>3</sup> i.e even after the manifestation of the disease *Nidana parivarjana* is mandatory in all forms of *Chikitsa*. Apart from being preventive measure, *Nidana parivarjana* plays an important role in management of the disease as well. Hence understanding the *Nidana* of *Mutrashmari* is needed. Here an attempt is made to critically analyze the *nidana* mentioned in various texts of Ayurveda.

## Materials and methods:

A detailed review of the available literature on *Mutrashmari*, in classical texts such as, *Sushruta samhita*, *Charaka samhita*, *Ashtanga hridaya*, *Ashtanga samgraha* was done. The data was also collected from text books of contemporary science and papers published in different national and international journals.

## Observation and results:

*Sushruta samhita* is the only classical text among *Brihatrayi*, which described *Mutrashmari* as a separate disease entity.<sup>4</sup> *Charaka samhita* explained it under *Mutrakrichra* and *Ashtanga hridaya* included in *Mutraghata*<sup>6</sup> other texts such as *Madhavanidana*,<sup>7</sup> *Bhavaprakasha*,<sup>8</sup> *Bhaishajya Ratnavali* and *Yogaratanakara*<sup>9</sup> have explained as separate disease.

*Sushruta samhita* mentioned *Asamshodhana sheelata* and *Apathya sevana* as *Nidana* for the formation of *Mutrashmari*.<sup>10</sup> *Sheeta*, *Snigdha*, *Guru*, *Madhura ahara* and *Diwaswapna* are also described as *Nidana* in the formation of *Mutrashmari*.<sup>11</sup> *Ashtanga hridayakara* included *Mutravegarodha* as one of the *Nidana*.<sup>12</sup>

*Charaka samhita* included *Mutrashmari* as one of the types of *Mutrakrichra* and named it as *Mutrashmarijanya* *Mutrakrichra*. Hence, *Samanya Nidana* mentioned for *Mutrakrichra* is considered as *Nidana* of *Mutrashmari* which includes, *Teekshna aushadha sevana*, *Rooksha madyapana*, *Anoopa matsya sevana*, *Adhayashana*, *Ajeerna bhojana*, *Ativyayama*, *Ashwayana* and *Prasanga*.<sup>13</sup>

The general *Mutravaha Srotodusti Nidana* mentioned in *Charaka samhita* are also relevant in the context of *Mutrashmari*. It includes the intake of water, food and performing coitus when there is an urge for micturition, withholding the urine when there is an urge and external injury to *Mutravaha Srotas*. The individual who is emaciated is prone to *Mutravaha sroto dushti*.<sup>14</sup>

*Madhava nidana*, *Yoga Ratnakara*, *Gadanigraha*<sup>15</sup> and *Bhavaprakasha*<sup>16</sup> quote etiological factors which are almost identical to that of *Charaka samhita*

*Hareeta Samhita* is another primary source of information regarding the causative factor of *Mutrashmari*, the author includes *Pitru matruka Dosha* and *Mutra vegavarodha* as *Nidana* for *Mutrashmari*.<sup>17</sup>

*Maithuna vighata* and *Ati maithuna* are considered as *Nidana* for *Shukrashmari*.<sup>18</sup>

The etiological factors involved in the formation of Urolithiasis as per contemporary science includes, infections, dietary factors, hot climate, immobilization, metabolic causes such as hyperparathyroidism, decreased urinary citrate, genetic factors. Other systemic diseases such as crohn's disease, diabetes mellitus and hypertension.

Table no. 1 – showing *nidana* of *mutrashmri*

Sl.no	Nidana	C.S	S.S	A.H	M.N	Y.R	B.P	G.N	H.S
1	<i>Asamshodhana Sheelatha</i>	-	+	-	-	-	-	-	-
2	<i>Apathya sevana</i>	-	+	-	-	-	-	-	-
3	<i>Mutravegavrodha</i>	-	-	+	-	-	-	-	+
4	<i>Pitrumatrika Dosha</i>	-	-	-	-	-	-	-	+
5	<i>Samashana</i>	-	+	-	-	-	-	-	-
6	<i>Adhayashana</i>	+	+	-	-	-	-	-	-
7	<i>Viruddha Ahara sevana</i>	-	-	-	-	-	-	-	-
8	<i>Sheeta Ahara sevana</i>	-	+	-	-	-	-	-	-
9	<i>Snighdha Ahara sevana</i>	-	+	-	-	-	-	-	-
10	<i>Guru bhojana</i>	-	+	-	-	-	-	-	-
11	<i>Madhura Ahara</i>	-	+	-	-	-	-	-	-
12	<i>Mutrite annapana</i>	+	-	-	-	-	-	-	-
13	<i>Mutrite Maithunacharya</i>	+	-	-	-	-	-	-	-
14	<i>Tikshana Aushadha Sevana</i>	+	-	-	+	+	+	+	-
15	<i>Ruksha Madyapana</i>	+	-	-	+	+	+	+	-
16	<i>Anupamatsayamamsa sevana</i>	+	-	-	+	+	+	+	-
17	<i>Ajeerna bhojana</i>	+	-	-	+	+	+	+	-

18	<i>Ativyayama</i>	+	-	-	+	+	+	+	-
19	<i>Ashwayana</i>	+	-	-	+	+	+	+	-
20	<i>Atimaitihuna</i>	+	-	-	+	+	+	+	-
21	<i>Maithuna Vighata</i>	-	+	-	-	-	-	-	-
22	<i>Diwaswapna</i>	-	+	-	-	-	-	-	-

## Discussion:

### Analysis of *Ashmari nidana* with available research references:

“*Asamshodhana sheelasya apathyakarinah*” quoted in *Sushruta samhita* can be interpreted in two ways,

1. Indulgence in *apathya ahara vihara* by the person who is not undergoing proper *shodhana*,
2. *Asamshodhana* and *apathya sevana* as separate entities.

The term *Asamshodhana sheelata* can be understood as follows:

- Nonperformance of *Shodhana karma* in whom it is indicated,
- *Panchakarma apachara* in terms of *Heena yoga*

If the person is not getting *Rutu shodhana* done and continues to indulge in *Apathya ahara and vihara*, it results in *Dosha sanchaya* there by predisposing *Mutrashmari* formation.

*Mithya* or *hinayoga* of *shodhana* results in residual accumulation of *Dosha* in body in the form of *leena Dosha*.

When these *Dosha* get favourable condition or because of *khavaigunya* in *Mutravaha srotas*, they collectively result in the formation of *Mutrashmari*.

Considering available information about *Mutrashmari nidana*, it can be classified into following categories :

1. *Aharaja nidana*
2. *Viharaja nidana*
3. *Beeja dushti janya nidana.*

**Table.No 2: showing *nidana* of *Mutrashmari***

Type of <i>nidana</i>	Factors involved
<i>Aharaja Nidana</i>	<i>Apathya sevana, Teekshna oushadha sevana, Ruksha madyapana</i> <i>Anupa mamsa sevana, Matsya sevana</i>
<i>Viharaja nidana</i>	<i>Ativyayama , Ashwayana</i>
<i>Beejadushti janya nidana</i>	
<i>Vishesha nidana</i>	<i>Asamshodhana sheelata</i>

#### **AHARAJA NIDANA:**

##### ***Apathya sevana***

*Apathya sevana* includes *samashana, adhyashana, vishmashana*<sup>19</sup> and indulging in food having *madhura, snigdha, guru guna*.

Improper diet patterns such as *samashana, adhyashana and vishamashana* impair *agni karma* resulting in improper *sarakitta vibhajana* which later contributes in forming *Mutrashmari*.

Nutritional habits play a relevant role in genesis and recurrence of kidney stones.

Certain vegetables such as spinach, mushroom, green peas, broccoli, sprouts and cauliflower are rich in purine. Regular intake of these foods leads to higher production of monosodium urate which is relatively insoluble and can precipitate when urine pH is low.<sup>20</sup>

Foods such as peanuts, rhubarb, spinach, beets, chocolate and sweet potatoes, soy products, legumes and beans, dates are rich in oxalate. Consumption of oxalate rich food articles with low calcium diet will increase absorption of oxalate in the body and thereby increasing chance of formation of oxalate stones.<sup>21</sup>

Whereas high content of fruits and vegetables associated with a balanced intake of low-fat dairy products carries the lowest risk for incident kidney stones.<sup>22</sup>

***Teekshna oushadha sevana*** – *teekshnam pittakaram prayo lekhanam kaphavatahrut.*<sup>23</sup>

The *oushadhi dravya* having *teekshnaguna* such as, *Rajika*,<sup>24</sup> *Maricha*,<sup>25</sup> *Pippali*,<sup>26</sup> *Hingu*,<sup>27</sup> *Sarshapa taila*,<sup>28</sup> *Gomutra*<sup>29</sup> etc. will increase *pittadosha*, particularly *ushnata* of *pitta* which is responsible for solidifying the contents of *Mutra*.

***Anupamamsa*** is kaphakara by nature.<sup>30</sup>

***Matsya sevana*** is one of *aharaja nidana* for *Mutrashmari*. *Matsya mamsa* is having *madhura rasa*, *guru snigdha guna*, *ushna veerya*. It is *vatahara* and is considered to be *bahuDoshakara*.<sup>31</sup> Available scientific evidence agrees on the harmful effects of high meat/animal protein intake and low calcium diets.<sup>32</sup>

The food substances such as meats especially organ meat (beef kidney, pork) or sweet meat, sea food (shell fish, scallops) are rich in purines.<sup>33</sup>

Animal protein, dairy products, fat diet produce acidic urine. Most of the solutes are insoluble in highly acidic urine and thereby results in precipitation of salts and crystallization which helps in the formation of phosphate stones. Foods containing saturated fats, high fructose such as soda that tends to inhibit the body's ability to metabolize the purine. Whereas high content of fruits and vegetables associated with a balanced intake of low-fat dairy products carries the lowest risk for incident kidney stones.<sup>34</sup>

***Guru Snigdha Madhura ahara*** is *kapha prakopaka hetu*. As *Kapha* is *upadana karana* in the formation of *Mutrashmari*, *guru snigdha madhura ahara* also one among the important *nidana*.

*Ruksha madya sevana* is another cause of *Mutrashmari*. *Madya* are generally having *amalarasa* with *ushnaveerya*.<sup>35</sup> Among different varieties of *Madya* following preparations have *ruksha guna*.

*Jagala – bhakta kinvakruta sura*<sup>36</sup>

*Mrudweeka-ikshurasakruta asava*<sup>37</sup>

*Suramanda – yavatandulakruta*<sup>38</sup>

Beer and whiskey are high in purines but some research works shows that all alcohol consumption can raise uric acid levels. Alcohol also causes dehydration which hampers the body's ability to flush out uric acid. It also alters pH further facilitating formation of *Mutrashmari*. Other factors associated with excessive alcohol use such as weight gain and poor diet can be risk factors for kidney stones.<sup>39</sup>

#### **VIHARAJA NIDANA:**

*Ati vyayama* can be taken as *vataprapakopa nidana*. This *vataprapakopa* causes *rookshana* of *dravadhātu* in *shareera* increasing concentration of urine which facilitates aggregation of urinary solutes.

Studies suggest that, moderate physical exercise, without increased fluid intake to compensate for excessive sweating, may cause the crystallization of uric acid and calcium oxalate in urine and may enhance the risk of the formation of renal calculi composed of these salts.<sup>40</sup>

*Mutra vegadharana* i.e., holding the urge of micturition has been emphasised as one of the major cause of *Mutrashmari* in *Ayurveda texts*. It causes *apanavata prakopa* and at the same time results in stasis of urine leading to super saturation of solutes. This leads *Kleda* to remain in one place and attributes to aggregation of solutes finally results in formation of *Mutrashmari*. While, urinary precipitation due to any cause has been mentioned as a cause of Urolithiasis, as it leads to increased urinary concentration of calcium oxalate and uric acid there by results in the reduction of urinary colloids which adsorb solutes, or excess of mucoprotein which may chelate calcium predispose to the formation of an insoluble complex.<sup>41</sup>



Inadequate urinary drainage and urinary stasis leads to stagnation of urine which provides fertile field for bacterial growth leading to infection also. This in turn causes *khavaigunya* in *Mutravaha srotas*.

*Divaswapna* is the *kapha prakopaka viharaja nidana*. Thus contributes in the formation of *Mutrashmari*. Studies have shown that, sleeping in day time for more than 1 hour are linked with risk of excess midline fat and poorly regulated blood pressure.<sup>42</sup> *Diwaswapna* is one of the factor in sedentary life style which leads to obesity and Obesity is one of the risk factors for the formation of calcium oxalate and uric acid stones.<sup>43</sup>

*Ashwayana* is *Vataprakopaka nidana*. *Ashwayana* or any other type of travelling may not directly involve in production of *Mutrashmari*, it may aggravate pain by displacing or compressing already formed *Mutrashmari*.

### **BEEJA DOSHAJA NIDANA:**

*Dosha* already existing in *beeja* and *bheeja bhaga avayava* of father or mother brings about inheritance of *Dosha* in offspring there by making him susceptible for the formation of *Mutrashmari*. More than 30 genetic variants with Mendelian inheritance are known for causing kidney stones, and polygenic involvement in idiopathic stone formers is even more frequent.<sup>44</sup> A common genetic variation in a gene called claudin-14 recently has been linked to a substantial increase in risk roughly 65% of getting kidney stones.<sup>45</sup>

A family history of urinary stones is associated with an increased incidence of renal calculi. A patient with kidney stone is twice as likely to have at least one first degree relative with renal stones. Those with a family history of stones have an increased incidence of multiple stones and early recurrence.<sup>46</sup>

### ***Mutrakrichra* and *Mutrashthila* as *nidana* of *Mutrashmari*:**

*Mutrakrichra* and *Mutrashmari* are complimentary to one another. Repeated attacks of *Mutrakrichra* will create a platform for the formation of *Mutrashmari*. *Mutrakrichra* can be understood as painful or difficulty in micturition because of functional or structural abnormality in the urinary system. Infection favors the formation of urinary calculi. Females are more prone to UTI, due to their shorter length of urethra. Staphylococci and E.coli are predominant bacteria found in nuclei of urinary stones, which favors stone formation by splitting urea in urine into ammonia and CO<sub>2</sub> and leading to alkaline urine in which phosphate stones are prone to form.

Infection disturbs the colloid contents and also increases concentration of crystalloids in urine. Hence there is a more chance of stone formation.<sup>47</sup>

**Mutrashthila** or BPH causes stasis of urine which further causes infection there by brings about *khavaigunya*. Stones are more prone to form when there is an obstruction in the free passage of urine. It also causes shift of pH of urine to alkaline side and allows the crystalloids to precipitate and thus helps in urinary stone formation.<sup>48</sup>

### Conclusion:

It is evident from above analysis that most of *nidana* mentioned are of *Dosha hetu* variety, especially they cause *kapha prakopa* and *apana vata vikruti*. Because in the formation of *Mutrashmari* neither the etiological factor responsible for vitiation of *kapha* alone nor the factors responsible for the provocation of *vata* alone can independently cause the disease. *Mutrashmari* can result only by the combination of above said etiological factors.

Some of the *nidana* such as *Mutravegadhara* and diseases such as *Mutrakrichra* and *Mutrashthila* also act as *vyadhi hetu* along with being *Doshahetu*. *Pitrumatruka Dosha* is the factor responsible for *khavaigunya* in *Mutravahasrotas*.

**Table no.3: Showing classification of *Nidana* as *Doshahetu* and *Vyadhi hetu***

Type of <i>hetu</i>	<i>Doshahetu</i>	<i>Vyadhi hetu</i>	<i>Ubhaya hetu</i>
Factors	<i>Asamshodhana sheelata,</i> <i>Apathya sevana,</i> <i>Guru-madura-snigdhaahara,</i> <i>Anupa mamsasevana,</i> <i>Anupa matsyasevana,</i> <i>ruksha madyapana,</i> <i>Teekshna oushadhi sevana,</i> <i>Ati vyayama</i>	<i>Pitru matruka Dosha</i>	<i>Mutravega dharana</i> <i>Mutrashthila</i> <i>Mutrakrichra</i> <i>Diwaswapna</i>

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