

# “Mutrakrichchhra (UTI): A Literature Review Based On Ayurveda and Modern Perspective”

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## ABSTRACT

*Mutrakrichchhra* is one of the commonest health problems in community practice and it is a broad term which covers all most all the conditions of urinary tract infection (UTI), that is described in modern medical science. The *pratyatma lakshana* of *Mutrakrichchhra* is “*Dukhena mutra pravritti*” means discomfort during micturition. UTI may be defined as a condition in which bacteria enter, persist and multiply within the urinary tract. *Mutrakrichchhra* is also found as a *lakshana* in other diseases like *Ashmari*, *Mutraghata*, *Mutraja vriddhri*, *Arsha*, and *Gulma* etc. Description of this disease is given in almost all-important texts that deliberate its commonness in ancient period. *Acharya Sushruta* has been described *Mutraghata* and *Mutrakrichchhra* separately in *Uttar-tantra*. In *Mutrakrichchhra*, *prakupit pitta dosha* along with *vata* (mainly *Apana vayu*) goes into *Vasti* (Urinary bladder) and affect the *Mutravaha Srotas* due to which the patient feels difficulty in urination with the symptoms like *Daha*, *Ruja*, *Basti-gurutva*, *Shotha*, *Muhurmutrata*, *Peet mutrata*, *Sarakta mutrata*. The above mentioned symptomatology resemble more closely to symptoms of LUTI (i.e. Urethritis and Cystitis). The present study was done to assess the literature review of *mutrakrichchhra* according to various texts and to find out inter-relation between *mutrakrichchhra* and UTI. In this literature review of the *mutrakrichchhra* has been illustrated in accordance with *Ayurvedic* classics, and research papers collected from indexed journals accessed physically and through the internet.

**Keywords:** *Mutrakrichchhra*, Urinary tract infection (UTI), *Mutraghata*, *Ruja*, *Apan-vayu*.

## INTRODUCTION

Good urination habits are important for a healthy life. Persons, that having healthy urinary tract is generally resistant to infections. Incidence of UTI is higher in women than men, 40% to 50% of whom suffer at least one clinical episode during their lifetime<sup>1</sup>. UTI is a common distressing and occasionally life-threatening condition. It occurs more in female than male, at a ratio of 8:1.<sup>2</sup> Female sex, obstructive uropathy, severe vesico ureteric reflux, constipation and repeated catheterization, poor hygienic conditions and environment, poverty and illiteracy these are the predisposing factors, which causes recurrent urinary tract infection. They also contribute their roll in increasing the percentage of urinary tract infections.

*Trimarmas* (Vital parts) described by *Ayurveda* classics, *Basti* (Bladder) is one of them.<sup>3</sup> *Basti* is seat of urine and faeces, known as the best *prana ayatana* (where life resides)<sup>4</sup>. *Hridaya* (Heart), *Shira* (Head), and *Basti* (Urinary bladder) are the live essence of person, so we should try to save them by treating the diseases and by following the rules of *swastha vritta* (Daily healthy routines)<sup>5</sup>. Many diseases like *Mutraghata*, *Prameha*, *Shukra doshas* and *Mutra doshas* occurred in *basti*<sup>6</sup>. *Mutrakrichchhra* is a disease of affecting *basti* and *mutra marga* (urinary passage). Diseases of *mutravaha srotas* (channels carrying the urine) included *Mutrakrichchhra*, *Mutraghata*, *Prameha* and *Ashmari*. When a *mutravaha srotas* is injured, the treatment is explained as a *Mutrakrichchhra chikitsa*<sup>7</sup>.

The term *Mutrakrichchhra* originates from two words -*Mutra* and *Krichchhra* and is self-explanatory. The word *mutra* is derived from ‘*prasrava*’ means to ooze<sup>8</sup>. The word ‘*krichchhra*’ is derived from ‘*kashte*’ means causing trouble or painful. Difficulty or painful micturition is called as *Mutrakrichchhra*.

All the classical texts have explained its silent feature is “*Dukhen mutra pravritti*”. Any type of ‘*Dukha*’ (Discomfort) during micturition is included under *Mutrakrichchhra*<sup>9</sup>. *Mutrakrichchhra* is a broad term which covers the conditions described in modern medical science as urinary tract infection. In Urinary tract infection (UTI), parts of the urinary tract are affected by the infection. When this infection affects the lower urinary tract then it is called as a simple cystitis (i.e. Urinary bladder infection)

and when it affects the upper urinary tract then it is called as pyelonephritis (i.e. kidney infection). There for, urinary tract infection is also called as acute cystitis or urinary bladder infection<sup>10</sup>.

*Mutrakrichchhra* can also be seen as an independent disease as well as *purvarupa* and *rupa* of the other diseases. *Mutrakrichchhra* may also occur as a result of *Mutrakshaya*. *Mutrakrichchhra* is found as a *lakshana* in following diseases i.e. *Pakvasayastha vata*<sup>11</sup>, *Mutranirodhajanya udavarta*<sup>12</sup>, *Sukrashmari*<sup>13</sup>, *sAshmari purvarupa*<sup>14</sup>, *Mutraja vridhi*<sup>15</sup>, *Vataja ashmari*<sup>16</sup>, *Mutra kshaya*<sup>17</sup>, *Ushnavata*<sup>18</sup>, *Mutrasada*<sup>19</sup>, *Kaphaja arsha*<sup>20</sup>, *Gulma*<sup>21</sup>.

### Ayurvedic Perspective

An outcome product of digestion of food and metabolism in the body which is passed through urethra is known as *Mutra*<sup>22</sup>. *Krichhrata* (i.e. dysuria) and *Mutra-vibandhta* are simultaneously present in both *Mutraghata* and *Mutrakrichchhra*, but *krichhrata* (dysuria) is predominance in *Mutrakrichchhra*.

### Definition of *Mutra Krichha*:

*Mutrakrichchhra* is known as “The painful voiding of urine”. In this disease patient has urge to micturate, but he passes urine with pain.

### *Nidana* (Etiology):

It can be concluded that *Vyayama*, *adhyashan*, *ruksha sevana*, *yana gamana* are causative factors for *vata prakopa*<sup>23</sup>. *Tikshna aushadha*, *amla sevana* causes *pitta prakopa*<sup>24</sup>, and *Anupa mamsa sevana*, *vyayama*, *adhyashan* causes *kapha prakopa*<sup>25</sup>. So these *Nidanas* cause vitiation of *Doshas* along with *Stroto-dushti* of *Mutrvaha strotas*. *Stroto-dusti* will cause *kha-vaigunya* in *Mutrvaha strotas*. These factor leads to *Mutrakrichchhra*.

These etiological factors can be summarized as:

<i>Aharaja Nidana</i>	<i>Viharaja Nidana</i>	<i>Partantra Nidana</i>
1. <i>Adhyashana</i> ,	1. <i>Yana gamana</i>	1. <i>Kaphaja arsha</i> <sup>26</sup>
2. <i>Ajirna</i>	2. <i>Ativyayama</i>	2. <i>Ajirna</i> <sup>27</sup>
3. <i>Ruksha anna sevana</i>	3. <i>Aghata</i>	3. <i>Vasti vidradhi</i> <sup>28</sup>
4. <i>Tikshna aushadha sevana</i>		4. <i>Gulma</i> <sup>29</sup>
5. <i>Ruksha madya sevana</i>		5. <i>Udavarta</i> <sup>30</sup>

### Types of *Mutrakrichchhra*:

All the *Acharyas* except *Acharya Vagbhatta* have described eight types of *Mutrakrichchhra*. *Acharya Vagbhatta* has mentioned only *Doshaja Mutrakrichchhra*.

### *Rupa* (Symptomatology):

#### *Pratyatma lakshana*

मूत्रकृच्छ्रमिति मूत्रस्य कृच्छ्रेण महता दुःखेन प्रवृत्तिः |<sup>31</sup>

रोमहर्षो अंगहर्षश्चमूत्रकाले च वेदना |

मूत्रकृच्छ्रेदशत्योष्टौबस्तिस्पृशितपाणिना ||<sup>32</sup>

### *Chikitsa* (Management):

1. *Shamana chikitsa*: It includes *Mutra-vishodhaniya*, *mutra-virechaniya*, *mutra-viranjaniya* and *ashmarihara dravyas*.
2. *Shodhana chikitsa*: It includes diuretic drugs & *uttara vasti* which dilutes and flushes various infective agents along with urine.
3. *Bahirparimarjana chikitsa*: It includes medicines that can be used externally in the form of douches, fomentation, showers, poultices and ointment etc.

### Specific Management

#### 1. *Vataja Mutrakrichra chikitsa*

##### *Bahirparimarjana chikitsa*:

*Abhyanga*, *Svedana*, *upanaha*, *Vatashamaka dravyas* like *dashmool*, *Eranda*, *Nirgundi*, *Parisheka on Kati Pradesh* with *Vatashamak Taila* and *Kwatha*.<sup>33</sup>

##### *Antahparimarjana chikitsa*

- ♦ *Shodhana- Niruha vasti*, *Uttara vasti* with *vata shamak kwath* like *dashmoola kwath*.
- ♦ *Shamana- Amritadi kwatha*, *Sthiradi aushadha*, *Shwadanshra taila*, *traivritta taila* (Su.), *Mishraka sneha*.

#### 2. *Pittaja Mutrakrichra chikitsa*

*Bahirparimarjana chikitsa*– *Sheeta Parisheka*, *Avagahana* in cold water, *pralepana* with *chandan* and *karpur*.<sup>34</sup>

##### *Antahparimarjana chikitsa*

- ♦ *Shodhana- Virechana* with *tikta evam Madhur kashaya*, *Uttara vasti*.

♦ **Shamana-** *Shatavaryadi kwatha (Ch.), Haritakyadi kwatha, Trinapanchmula kwatha (Y.R.), Trinapanchamula churna (Su.),ervaru beeja,yashtimadhu,devdaru with tandul dhavan.*

### 3.Kaphaja Mutrakrichha chikitsa

#### **Bahirparimarjana chikitsa**

*Svedana, Abhyanga with taila containing tikta ushna dravya.*

#### **Antahparimarjana chikitsa**

♦ **Shodhana-** *Vamana, Niruha vasti with kshara,tikshna,and katu dravya.*

♦ **Shamana-** *Vyoshadi churna praval bhasma(Ch.),shwadanshtradi kwatha,trikankantakadi ghrita,yava bhaksh,takra.*

### 4.Sannipattaja Mutrakrichha chikitsa

In Sannipataja Mutrakrichra the treatment should be done according to *vata sthana.*

*Gudadugdha yoga, dhatriyadi yoga.*

**“The dosha which is more dominant is treated first”**

#### **Antahparimarjana chikitsa**

★ **Shodhana-** If *kapha* is predominant then *vamana*, if *pitta* is predominant then *virechana* and if *vata* is predominant then *vasti karma* should be performed.

★ **Shamana-** *Pashanbhedadi yoga, Brihatyadi kwatha,*

### 5.Raktaj Mutrakrichha chikitsa

It should be managed as *sadyovrana.*

### 6.Shakritajanya Mutrakrichha chikitsa

*Vatahara kriya* is done in *shakritjanya Mutrakrichra.*

#### **Bahirparimarjana chikitsa**

*Abhyanga, Svedana, Avagahana.*

#### **Antahparimarjana chikitsa**

★ **Shodhana:** *vasti*

★ **Shamana:** *Churna kriya*

#### **Some other important formulations include**

★ *Varunadi kwatha*

★ *Varunshigruadi kwatha*

★ *Gokshuradi guggulu*

★ *Gokshuradi kwatha*

★ *Chandanasava*

★ *Chandraprabha vati*

★ *Trivikrama rasa*

★ *Chandrakala rasa*

#### **Pathya:**

**Ahara:** *Purana shali, yava, kshara,takra, dugdha,dadhi, jangal mamsa, mudga yusha, trapusha,nadeya jala, sharkara, kushmanda, patola patra,ardraka, gokshura, puga, narikela, laghu ela,karpura.*

**Vihara:** *Abhyanga,Swedana,Avagahana.*

#### **Apathya:**

**Ahara:** *Tambula, matsaya, lavana, pinyaka,hingu, tila, sarshapa, masha, karira, tikshna, vidahi,ruksha, amla dravya, virudhashana, vishamashana,*

**Vihara:** *Yana gamana, vega dharana, Ativyayama, Ativyavaya, Riding on elephant and horse.*

#### **Upadrava:**

Only *Acharya Kashyapa* has mentioned the *Upadravas* of *Mutrakrichchhra*.<sup>35</sup>

Emaciation, uneasiness, anorexia, un-stability (of mind), thirst, pain, melancholy (nervousness), and discomfort are the complications of *Mutrakrichchhra*.

#### **Prognosis:**

Disease affecting *Marma* are among *Yapya Rogas*.<sup>36</sup>

#### **Modern Perspective**

Urinary tract infections have plagued mankind long before bacteria were recognized as the causative agents of disease and before urology became an established medical specialty. The Ebers papyrus from ancient Egypt recommended herbal treatment to ameliorate urinary symptoms without providing insight into pathological mechanism. Hippocrates believed that disease was caused by disharmony of the four humors and accordingly diagnosed urinary disorders.<sup>37</sup> Urinary tract infection refers to both microbial colonization of the urine and tissue invasion of any structure of the urinary tract. Bacteria are most commonly

responsible, although yeast, fungi and viruses may produce urinary infection. Infants and young children with UTI may present with few specific symptoms. Older paediatric patients are more likely to have symptoms and findings attributable to an infection of urinary tract.<sup>38</sup> Differentiating cystitis from pyelonephritis in the paediatric patient is not always possible, although children who appear ill or who present with fever should be presumed to have pyelonephritis if they have evidence of UTI. *Escherichia coli* are the most common causative organism of this disease causes approximately 80% of acute infections in patients without catheters. Other gram-negative bacilli, especially *Proteus* and *Klebsiella* and occasionally *Enterobacter*, account for a smaller proportion of uncomplicated infections. Gram-positive cocci play a lesser role in urinary tract infections, nonetheless *Staphylococcus saprophyticus*, *Enterococci*, *Staphylococcus aureus* are associated with acute urinary tract infection in young females and in-patient with renal stone or previous instrumentation.<sup>39</sup>

### Definition

“Multiplication of organisms in the urinary tract is known as Urinary tract infection.”

Infection that affects the part of urinary tract is generally known as Urinary tract infection. Infections of the urinary tract can be subdivided into two general anatomic categories; lower tract infection (urethritis and cystitis) and upper tract infection (acute pyelonephritis, prostatitis and internal and perinephric abscesses)<sup>40</sup>. Symptoms of a lower urinary tract infection include painful micturition, frequent urination, and feeling of incomplete voiding despite having an empty bladder. Superficial or mucosal infections include infection of urethra and urinary bladder, where as signify tissue invasion include pyelonephritis and renal suppuration<sup>41</sup>. Basically, there are 3 forms of UTI i.e. pyelonephritis, cystitis and asymptomatic bacteriuria<sup>42</sup>. Less common conditions are Focal pyelonephritis and renal abscess. From a microbiological perspective, when pathogenic microorganisms are present in the urine, urethra, bladder and kidney then the urinary tract infection exists. When the symptoms like dysuria, urgency and frequency unaccompanied by significant bacteriuria has been called as acute urethral syndrome. Although widely used, the term acute urethral syndrome lacks anatomic precision because most of the cases which is designated are actually urinary bladder infections. Moreover, in these patients, the causative agent can usually be identified, so that the term syndrome- implying unknown causation is inappropriate.

### Aetiology

In our society, a common medical complaint is urinary tract infection (UTI). It is estimated that at some times in their lives up to 40% of women will have a UTI. Urinary tract infections are caused mainly by colonic bacteria. In females, 75-90% of all infections are caused by *Escherichia coli*, followed by *Klebsiella* and *Proteus*<sup>43</sup>. *Enterococcus* species, *Staphylococcus*, *saprophyticus* especially in female adolescent and sexually active females and *Streptococcus* group B especially in neonates are included in other bacterial sources of UTI. Especially after instrumentation of urinary tract, Fungi (*Candida* species) may also cause UTIs. A rare cause of UTI is Adenovirus and it may cause haemorrhagic cystitis.

### Treatment<sup>44</sup>

Acute cystitis must be treated instantly to prevent possible progression to pyelonephritis. A specimen of bladder urine is taken for culture, but the symptoms are severe then immediately started the treatment without waiting the result of urine culture. But when the symptoms are mild or the diagnosis is not clear, then the treatment can be delayed until the results of culture are known. If the result is uncertain then the culture can be repeated. For example, if a gram-negative organisms grow between  $10^4$  and  $10^5$  colonies in a midstream culture, then a second culture may be taken by catheterization before the treatment is started. If treatment is started before the availability of results of a culture and sensitivities, then a 3 to 5 days course of therapy by trimethoprim-sulfamethoxazole is effective against most strains of *E. coli*. Nitrofurantoin (5–7 mg/kg/24 hr in 3 to 4 divided doses) is also effective and having the advantage of being active against *Klebsiella-Enterobacter* organisms. Amoxicillin (50 mg/kg/24 hr) is also effective as initial therapy but having no clear advantages over sulfonamides or nitrofurantoin.

In a case of acute febrile infections suggestive of pyelonephritis, a 10- to 14-day therapy of broad-spectrum antibiotics are able to reaching significant tissue levels is preferable. Children who are dehydrated, having vomiting, or are not able to drink fluids, are below or equal to the age of one month, or in whom urosepsis is a possibility must be admitted to the hospital for intravenous rehydration and intravenous antibiotic therapy. Ceftriaxone (50–75 mg/kg/24 hr, not more than 2 g) or ampicillin (100mg/kg/24 hr) along with an aminoglycoside like gentamicin (3–5 mg/kg/24 hr in 1 to 3 divided doses) is preferable as a parenteral treatment. The probable ototoxicity and nephrotoxicity of aminoglycosides would be considered, and serum creatinine and through gentamicin levels must be obtained before starting the treatment, as well as daily thereafter as long as therapy continues. Treatment by aminoglycosides is especially effective against *Pseudomonas* spp., and alkalinization of urine by sodium bicarbonate increases their effects in the urinary tract. Oral 3rd-generation cephalosporins such as cefixime are effective against a variety of gram-negative micro-organisms other than the

*Pseudomonas* as effective as parenteral ceftriaxone, and these medications are considered by some supermacy as the treatment of choice for oral therapy. In children with a febrile UTI Nitrofurantoin should not be used routinely because it does not gain significant renal tissue levels. For resistant micro-organisms, especially *Pseudomonas*, in patients more than 17 year, the oral fluoroquinolone ciprofloxacin is used as an alternative agent. It is also used in younger children with cystic fibrosis and pulmonary infection secondary to *Pseudomonas* and is occasionally used as short-course therapy in children having *Pseudomonas* UTI. However, in children the clinical use of fluoroquinolones should be restricted due to potential cartilage damage which has been seen in research with immature animals. In children the efficacy and safety of oral ciprofloxacin is under study. Intramuscular injection of a loading dose of ceftriaxone along with oral therapy with a 3rd generation cephalosporin is effective in those children that having febrile UTI. One week after the termination of treatment of a UTI a urine culture confirm that the urine is sterile; in most of the children, this is useless, because the cultures often are negative.

Children require surgical or percutaneous drainage along with antibiotic therapy and other supportive measures, that suffering from renal or perirenal abscess or obstructed urinary tracts with infection.

Identification of predisposing factors is beneficial in a child, having recurrent UTIs. Most of the school-going girls have voiding dysfunction; in this condition treatment often reduces the likelihood of recurrent UTI. Some children that having urinary tract infections void infrequently, and some also having severe constipation. Counseling of parents and patients to establish more normal patterns of urination and defecation may be helpful in controlling recurrences of UTIs. Use of sulfamethoxazole-trimethoprim, trimethoprim, or nitrofurantoin at  $\frac{1}{3}$  of the normal therapeutic dose once a day is effective as prophylaxis against re-infection. Amoxicillin or cephalexin also may be effective as prophylaxis against re-infection, but the risk of breakthrough UTI may be higher because bacterial resistance may be induced. There is interest in probiotic therapy, that replaces normal vaginal flora, and cranberry juice, that prevents bacterial adhesion and biofilm formation, but these agents are not proved beneficial in preventing UTI. The main emphasis of chronic renal damage is due to pyelonephritis, arterial hypertension and renal insufficiency; when these are found, then they must be treated appropriately.

## CONCLUSION

- ❖ In the present time, a global issue of concern due to associated long term compromise in the quality of life is “increasing prevalence of UTI.”
- ❖ *Mutrakrichchhra* having similarity with Urinary Tract Infections, which is mentioned in Modern Medicine.
- ❖ Increment in renal damage, school absentees and frequent visit of the paediatricians, clinics or hospital, *Mutrakrichchhra* is an important cause.
- ❖ *Mutrakrichchhra* is a *Vata Predominant, Tridoshaj* disease that involving the *Mutravaha Srotas* with the *dushti of Mutra* and *Ambu*.
- ❖ *Nidanprivarjanam* (i.e. primary prevention) strategy has been given priority, in both *Ayurveda* as well as in modern medicine.
- ❖ In the first 3 months of life an uncircumcised male infant seen to be at increased risk of UTI.
- ❖ A girl with voiding dysfunction, due to the reflux of urine which is laden with bacteria from the distal urethra in to the bladder, is at higher risk for recurrent of UTI.
- ❖ Boys with true phimosis without abnormal voiding, particularly in the form of pyelonephritis, was noted to be at high incidence of Urinary Tract Infection.
- ❖ Urinary Tract Infection causes by micro-organism, so patient should maintain their proper hygiene to decrease the risk of UTI. Parent, Caregivers can help in prevention of UTI in children by teaching them about good hygiene, maintaining healthy hydration and by being aware your child’s daily bathroom habits.

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