



# A Review On Mutrakuchra (Urinary Tract Infection) In Children: An Ayurvedic And Modern Perspective

<sup>1</sup>Dr Karuna S. Ratnaparkhi

Guide & HOD, Kaumarbhritya Dept. CSMSS Ayurvedic Collage , chh. Sambhajinagar

<sup>2</sup>Dr Jyoti Kailasrao Bais

PG Scholar, Kaumarbhritya Dept. CSMSS Ayurvedic Collage ,chh. Sambhajinagar

## Abstract

Mutrakuchra is an important urinary disorder described in Ayurveda, characterized by painful, difficult, or burning micturition. In children, Mutrakuchra can be clinically correlated with urinary tract infection (UTI), which is one of the most common bacterial infections in the pediatric age group. Pediatric UTIs may lead to significant morbidity, recurrent infections, and long-term renal complications if not diagnosed and managed appropriately. Ayurveda explains Mutrakuchra as a condition caused by vitiation of mainly Vata and Pitta dosha, along with involvement of Mutravaha srotas. Nidana such as improper dietary habits, inadequate fluid intake, suppression of natural urges, infections, and poor hygiene play a significant role in children. Classical Ayurvedic texts describe various types of Mutrakuchra along with their lakshana, samprapti, and chikitsa principles. Management includes Nidana parivarjana, Shamana therapies using Mutrala, Shothahara, and Pittashamaka drugs, along with supportive dietary and lifestyle measures. This review article aims to compile and analyze classical Ayurvedic concepts of Mutrakuchra in children and correlate them with modern understanding of pediatric urinary tract infections. An integrative approach based on Ayurvedic principles may help in effective management, prevention of recurrence, and improvement of overall urinary health in children.

**Keywords:** Mutrakuchra, Urinary Tract Infection, Children, Pediatric UTI, Mutravaha Srotas, Ayurveda

## Introduction

Mutrakrucchra is a well-described disease entity in Ayurveda, characterized by pain, burning sensation, difficulty, or increased frequency of micturition<sup>1</sup>. The term *Mutra* denotes urine, while *Krucchra* indicates difficulty or pain, thus collectively describing distress during urination<sup>2</sup>. Classical Ayurvedic texts such as *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya* have elaborately explained the etiology, classification, clinical features, and management of Mutrakrucchra<sup>3</sup>. The condition primarily involves vitiation of Vata and Pitta dosha, with direct involvement of Mutravaha srotas<sup>4</sup>.

In pediatric age groups, disorders of the urinary system are commonly encountered due to anatomical, physiological, and behavioral factors such as immature immune response, poor perineal hygiene, inadequate fluid intake, and suppression of natural urges<sup>5</sup>. Urinary tract infection (UTI) is one of the most frequent bacterial infections in children and is associated with symptoms like dysuria, frequency, urgency, fever, and abdominal pain<sup>6</sup>. If recurrent or untreated, pediatric UTIs may result in serious complications such as renal scarring, hypertension, and chronic kidney disease<sup>7</sup>.

Although Mutrakrucchra is not described exclusively as a pediatric disease in Ayurveda, its clinical presentation closely resembles urinary tract infections seen in children<sup>8</sup>. Ayurveda emphasizes early diagnosis, identification of causative factors (*Nidana*), and holistic management to prevent recurrence and complications<sup>9</sup>. The principles of treatment include *Nidana Parivarjana*, *Shamana Chikitsa*, use of *Mutrala* and *Pittashamaka* drugs, and appropriate dietary and lifestyle modifications<sup>10</sup>. Therefore, understanding Mutrakrucchra in children through both Ayurvedic and modern perspectives is essential for developing an effective, safe, and integrative approach to pediatric urinary tract infections.

## Aims

1. To review the classical Ayurvedic concept of Mutrakrucchra and its description in different Samhitas with special reference to children.
2. To correlate Mutrakrucchra with urinary tract infection (UTI) in the pediatric age group based on clinical features and pathogenesis.
3. To analyze Ayurvedic principles of management of Mutrakrucchra in children and their relevance in prevention of recurrence and complications.

## Methodology

This study is a literary review based on classical Ayurvedic texts including *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya*, along with their commentaries. Relevant modern medical literature, pediatric textbooks, and published research articles on urinary tract infection in children were also reviewed. Information was collected, compiled, and critically analyzed to understand Ayurvedic concepts of Mutrakrucchra and their correlation with pediatric urinary tract infection.

## Nidana Panchaka of Mutrakruchha (Ayurvedic View)

### 1. Nidana (Causes)

Nidana are the factors that disturb doshas and produce disease. In Mutrakruchha, mainly **Vata and Pitta dosha** are involved and the **urinary system (Mutravaha srotas)** is affected.

#### Diet related causes:

- Eating very spicy, sour, salty food
- Excess intake of hot and dry food
- Junk food and preserved food
- Drinking less water
- Drinking impure or contaminated water

#### Habit related causes:

- Suppression of urge to pass urine
- Holding urine for a long time
- Irregular toilet habits
- Poor genital hygiene, especially in children
- Excess physical activity

#### Other causes:

- Urinary tract infection
- Injury to urinary passage
- Worm infestation
- Congenital urinary problems

### 2. Purvarupa (Early symptoms)

These are the early signs seen before the disease is fully developed:

- Mild burning during urination
- Slight pain in lower abdomen
- Passing urine frequently
- Change in color of urine
- Irritability and crying during urination in children

### 3. Rupa (Signs and symptoms)

Main features of Mutrakruchha are:

- Painful urination
- Burning sensation while passing urine
- Difficulty in urination
- Passing urine in small quantity
- Increased frequency of urination
- Cloudy or foul-smelling urine

- Blood mixed urine in severe cases

In children, fever, restlessness, abdominal pain, and crying during urination may be present.

#### 4. Upashaya – Anupashaya

##### Upashaya (Relieving factors):

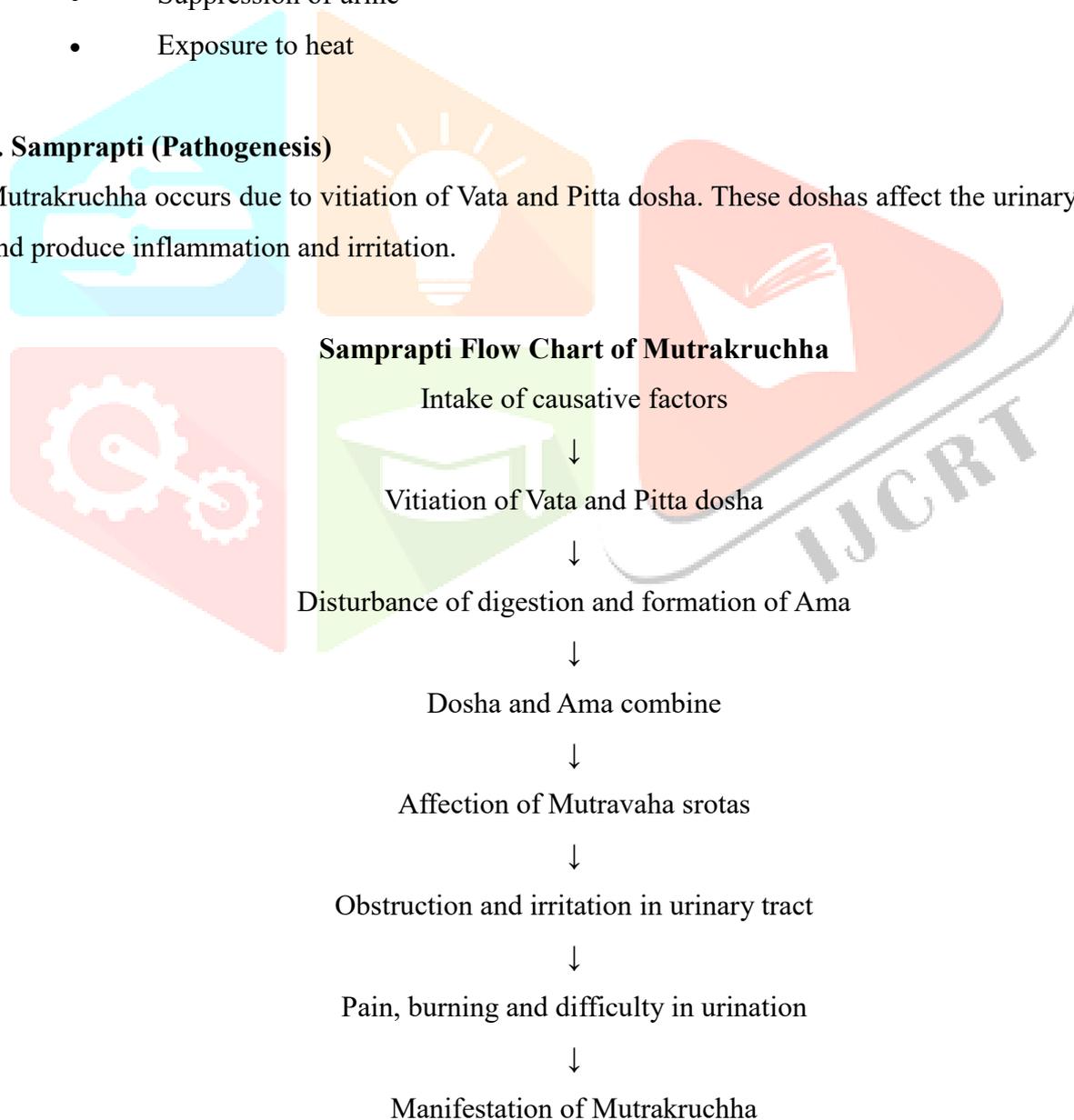
- Drinking adequate water
- Cold, sweet, and liquid diet
- Use of Mutrala and Pitta-shamaka medicines
- Proper hygiene

##### Anupashaya (Aggravating factors):

- Spicy, salty, sour food
- Less water intake
- Suppression of urine
- Exposure to heat

#### 5. Samprapti (Pathogenesis)

Mutrakruchha occurs due to vitiation of Vata and Pitta dosha. These doshas affect the urinary system and produce inflammation and irritation.



## Chikitsa of Mutrakrucho (Ayurvedic Management)

The main aim of treatment in Mutrakrucho is to **relieve pain and burning during urination, correct vitiated Vata and Pitta dosha, clear urinary infection, and prevent recurrence**. Treatment should be gentle and safe, especially in children.

### 1. Nidana Parivarjana

- Avoid spicy, salty, sour, and hot foods
- Avoid suppression of urge to pass urine
- Maintain proper personal hygiene
- Encourage adequate water intake

### 2. Shamana Chikitsa

Shamana therapy is the main line of treatment in children.

#### Principles of treatment:

- Pitta-shamana
- Vata-anulomana
- Mutrala (diuretic)
- Shothahara (anti-inflammatory)
- Dahaprashamana (relieves burning)

#### Commonly used Ayurvedic drugs and formulations:

- Dhanyak heema
- Gokshuradi Kwatha
- Chandraprabha Vati (in adjusted pediatric dose)
- Punarnavadi Kwatha
- Ushira, Chandana, Gokshura, Yavasa, Musta

These medicines help in reducing burning sensation, pain, inflammation, and infection in the urinary tract.

### 3. Panchakarma (When indicated)

In chronic or recurrent cases (mainly in older children):

- **Avgaha Swedana**
- **Mridu Virechana** – for Pitta elimination
- **Uttara Basti** – only in selected cases and under expert supervision

### 4. Supportive Measures

- Adequate hydration
- Timely urination habits
- Maintenance of cleanliness
- Monitoring for fever or recurrent symptoms

## Pathya–Apathya of Mutrakruchha

### Pathya (Wholesome diet and habits)

#### Diet:

- Lukewarm or cool water
- Coconut water
- Milk
- Rice gruel (Peya)
- Green gram (Moong dal)
- Barley water
- Fruits like banana, pomegranate

#### Habits:

- Passing urine regularly
- Proper perineal hygiene
- Wearing clean cotton undergarments
- Adequate rest

### Apathya (Unwholesome diet and habits)

#### Diet:

- Spicy, salty, sour foods
- Fried and junk food
- Pickles and fermented food
- Carbonated drinks
- Excess tea or coffee

#### Habits:

- Suppression of urine
- Less water intake
- Exposure to excessive heat
- Poor hygiene

### Modern Review of Urinary Tract Infection (UTI) in Children

Urinary tract infection (UTI) is one of the most common bacterial infections in the pediatric age group and represents a significant cause of morbidity in infants and children. It involves infection of any part of the urinary system, including the urethra, bladder, ureters, and kidneys. In children, UTIs are clinically important because delayed diagnosis or improper management can lead to recurrent infections and long-term renal damage.

## Epidemiology

UTIs are more common in infants and young children. During the first year of life, UTIs are more frequently seen in male infants, especially those who are uncircumcised. After infancy, the incidence is higher in female children due to a shorter urethra and closer proximity of the urethral opening to the anus. By the age of seven years, approximately 8% of girls and 2% of boys experience at least one episode of UTI.

## Etiology and Causative Organisms

Most pediatric UTIs are caused by bacteria originating from the gastrointestinal tract. The most common causative organism is **Escherichia coli**, accounting for nearly 70–90% of cases.

Other organisms include:

- Klebsiella species
- Proteus species
- Enterococcus
- Staphylococcus saprophyticus

In hospital-acquired or recurrent infections, resistant organisms may be involved.

## Risk Factors

Several factors increase the risk of UTI in children:

- Poor perineal hygiene
- Inadequate fluid intake
- Infrequent voiding or holding urine
- Constipation
- Vesicoureteral reflux (VUR)
- Congenital abnormalities of urinary tract
- Neurogenic bladder
- Previous history of UTI

These factors promote bacterial growth and ascent of infection in the urinary tract.

## Pathogenesis

UTIs usually occur due to an **ascending infection**. Bacteria from the perineal area enter the urethra, multiply in the bladder, and may ascend to the kidneys if untreated. The immature immune system in children and urinary stasis further facilitate bacterial multiplication. In severe cases, renal parenchymal involvement may lead to pyelonephritis and renal scarring.

## Clinical Features

Clinical presentation varies with age.

### In infants:

- Fever
- Poor feeding
- Vomiting
- Irritability
- Failure to thrive

### In older children:

- Painful urination (dysuria)
- Burning sensation during micturition
- Increased frequency and urgency
- Lower abdominal pain
- Foul-smelling or cloudy urine
- Fever

Recurrent UTIs may present with growth retardation and hypertension.

## Classification

UTIs in children can be classified as:

- **Lower UTI (Cystitis):** Involves bladder and urethra
- **Upper UTI (Pyelonephritis):** Involves kidneys and is more serious
- **Uncomplicated UTI:** Occurs in a normal urinary tract
- **Complicated UTI:** Associated with structural or functional abnormalities

## Diagnosis

Diagnosis is based on:

- Clinical features
- Urine examination
- Urine culture (gold standard)

Significant bacteriuria along with pyuria confirms the diagnosis. Imaging studies like ultrasonography and voiding cystourethrogram may be required in recurrent or complicated cases.

## Management

Modern management mainly includes:

- Appropriate antibiotics based on culture sensitivity
- Adequate hydration
- Antipyretics for fever
- Treatment of underlying causes like constipation or reflux

Early treatment is essential to prevent complications.

## Complications

If untreated or recurrent, pediatric UTIs can lead to:

- Renal scarring
- Hypertension
- Chronic kidney disease
- Recurrent infections
- Reduced renal function

## Preventive Measures

Prevention plays a key role and includes:

- Adequate water intake
- Regular bladder emptying
- Proper perineal hygiene
- Early treatment of constipation
- Follow-up in recurrent cases

## Discussion

Mutrakruchha is a common urinary disorder described in Ayurveda, characterized by pain, burning, and difficulty during micturition. When these classical features are analyzed in the pediatric age group, they show a close resemblance to urinary tract infection (UTI) described in modern medicine. Both systems recognize that early diagnosis and proper management are essential to prevent recurrence and long-term complications, especially renal damage in children.

From the Ayurvedic perspective, Mutrakruchha is mainly caused by vitiation of Vata and Pitta dosha, with involvement of Mutravaha srotas. Dietary factors such as excessive intake of spicy, salty, and sour foods, along with behavioral factors like suppression of the urge to urinate and poor hygiene, play a major role in disease causation. These factors are also well recognized in modern medicine, where dehydration, poor perineal hygiene, and infrequent voiding are important risk factors for pediatric UTI. Thus, the Nidana described in Ayurveda can be directly correlated with modern etiological factors.

The samprapti of Mutrakruchha explains how vitiated doshas disturb the normal function of the urinary system, leading to inflammation, irritation, obstruction, and pain. This concept closely aligns with the modern understanding of UTI, where bacterial invasion leads to inflammation of the urinary tract mucosa, resulting in dysuria, frequency, and burning sensation. The Ayurvedic concept of Agnidushti and Ama formation can be compared to

impaired immunity and metabolic disturbances that allow bacterial proliferation in the urinary tract.

- Clinical features described under Rupa of Mutrakruchha such as Dukha Mutra Pravritti, Daha, Muhurmuhu Mutra Pravritti, and Alpa Mutra Pravritti are commonly seen in children with UTI. In infants and young children, Ayurveda's emphasis on early subtle symptoms is particularly relevant, as modern pediatrics also notes that UTIs may present with nonspecific symptoms like fever, irritability, and poor feeding. This highlights the importance of vigilant observation in pediatric patients.
- Ayurvedic management of Mutrakruchha focuses on Nidana Parivarjana, Shamana Chikitsa, and appropriate Pathya-Apathya. These principles aim to correct the root cause rather than only suppress symptoms. Drugs having Mutrala, Pittashamaka, and Shothahara properties help in flushing the urinary tract, reducing inflammation, and relieving burning sensation. From a modern viewpoint, this is comparable to increasing urine flow, reducing mucosal irritation, and supporting the body's natural defense mechanisms. In children, the gentle nature of Shamana therapy makes Ayurveda particularly suitable and safe.
- Pathya and Apathya play a vital role in both prevention and management. Adequate hydration, regular voiding habits, and proper hygiene are strongly emphasized in Ayurveda and are equally important in modern preventive guidelines for pediatric UTI. Avoidance of spicy food, dehydration, and urine retention helps in reducing Pitta aggravation and bacterial growth. This dietary and behavioral regulation is crucial in preventing recurrent infections, which are a major concern in children.
- One of the major strengths of Ayurveda lies in its preventive approach. By correcting lifestyle habits, strengthening digestion, and improving tissue resistance, Ayurveda aims to prevent recurrence rather than repeated dependence on antibiotics. Modern medicine also recognizes the growing problem of antibiotic resistance in recurrent UTIs, making integrative and preventive strategies increasingly important. Ayurvedic interventions may help reduce recurrence, improve quality of life, and minimize long-term complications when used judiciously along with modern care.
- Thus, Mutrakruchha in children can be effectively understood as a condition that parallels pediatric UTI, with strong conceptual and clinical correlations between Ayurveda and modern medicine. An integrative approach combining Ayurvedic principles of dosha balance, dietary regulation, and lifestyle correction with modern diagnostic and emergency management can offer a comprehensive, safe, and child-friendly strategy for managing urinary tract infections in children.

## Conclusion

Mutrakrucchha described in Ayurveda closely correlates with urinary tract infection in children as understood in modern medicine. Both systems recognize the importance of early diagnosis, proper management, and prevention of recurrence to avoid long-term complications. Ayurvedic principles emphasize correction of causative factors, balancing of Vata and Pitta dosha, and strengthening of the urinary system through appropriate diet, lifestyle, and gentle medications. Along with modern diagnostic and therapeutic measures, an integrative approach can provide safe, effective, and holistic management of urinary tract infections in children.

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