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## A Critical Review of *Mutraghata* with Special Reference to Bladder Outlet Obstruction (BOO)

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### ABSTRACT

*Mutraghata* is one of the complicated and less understood term in *Ayurvedic* classics. Earlier, various authors have related various types of *Mutraghata* with various uropathies. Considering that into mind, this research work focuses on, “how and up to what extent, clinical conditions under *Mutraghata* are related to Bladder outlet obstruction (BOO)”. Bladder outlet obstruction (BOO) is a generic term for all forms of obstruction to the bladder outlet including benign prostatic obstruction (BPO). It is a urodynamic concept based on the combination of low flow rate, low voided volumes and high voiding pressure. For that, we have collected classical data mainly from *Sushruta Samhita*, *Charaka Samhita*, *Ashtanga Hridaya* and their commentaries by *Dalhana*, *Chakrapani* and *Arundatta* respectively. As per modern texts, details on Bladder outlet obstruction (BOO) have explained first. Only on the basis of clinical features and pathogenesis mentioned in our classical texts, correlation of clinical entities under *Mutraghata* with Bladder outlet obstruction (BOO) has established later. This research work concludes that clinical manifestations of *Mutraghata* are mainly confined to lower urinary tract system (LUTS). Clinical entities in *Mutraghata* are clinical manifestations of Bladder outlet obstruction due to mechanical blockage at the base of the bladder or malfunction of vesico-ureteric coordination during act of micturition or functional failure due to neuro-deficit or muscular/detrusor instability. It stops or reduces urinary flow into urethra. Clinical entities under *Mutraghata* except *Mutrasteeta* and *Mutrashukra* are correlated with Bladder outlet obstruction (BOO).

### KEYWORDS

*Mutraghata*, *Bladder outlet obstruction*, *BOO*.



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## INTRODUCTION

*Mutrarogas* (urinary disorders) were vividly described in the literature of *Vedic* period; where one can find a wide range of references related to various uropathies. *Vagbhata* has classified the *Mutraroga* into two categories viz. *Mutra-atipravrittija* and *Mutra-apravrittija*<sup>1</sup>. The disease *Prameha* falls under the first group whereas *Ashmari*, *Mutrakricchra* and *Mutraghata* into the other. Broadly speaking, metabolic diseases marked by polyuria can be grouped under the caption of *Prameha* while diseases of bladder and urethra marked by some obstruction either mechanical or functional, resulting into partial or complete retention of urine, oligouria or anuria fall under the heading of *Mutraghata*. The clinical manifestations of both *Mutrakricchra* and *Mutraghata* seem to be superimposed on each other but *Dalhana*, *Chakrapani* and *Vijayarakshita* have demarcated the difference between two. The difference is based on the severity of *Vibandha* or *Avarodha* (obstruction) which is more noticeable in *Mutraghata*<sup>2</sup>.

*Dalhana* quoted that “*Mutraghaten mutravarodhah*” i.e. obstruction to the flow of urine can be considered as *Mutraghata*. He further quoted that some experts refer the term “*Dushti*” instead of “*Aghata*”<sup>3</sup> because a few types of *Mutraghata* like

*Mutrashukra*, *Vidvighata*, *Ushnavata* and *Mutraukasada* do not present the symptoms of urinary obstruction.

*Chakrapani* commented on *Mutraghata* as- “*Mutraghatenmutramshoshyatepratihanya teva*” i.e. a condition characterized by drying up or retention of urine, which can be mechanical or functional<sup>4</sup>.

*Sushruta* and *Vagbhata* have mentioned 12 types<sup>5</sup> of *Mutraghata* while *Charaka* has mentioned its 13 types<sup>6</sup>.

Bladder outlet obstruction (BOO) is a generic term for all forms of obstruction to the bladder outlet including benign prostatic obstruction (BPO). It is a urodynamic concept based on the combination of low flow rate, low voided volumes and high voiding pressure. Urodynamically proven BOO may result from benign prostatic hyperplasia (BPH), bladder neck stenosis, carcinoma prostate, functional obstruction due to neuropathic conditions<sup>7</sup>. Other causes include bladder tumour, pelvic tumour, urethral stricture, urethral spasm, cystocele, pelvic floor dysfunction and detrusor muscle instability. With the increasing age the chances of getting affected by these diseases increases gently. The resulting obstruction frequently produces lower urinary tract symptoms (LUTS).

LUTS<sup>8</sup> can be described as voiding (obstructive) and storage (irritative)



symptoms. Voiding symptoms are hesitancy (worsened if the bladder is very full), poor flow (unimproved by straining), intermittent stream, dribbling (including after micturition), sensation of poor bladder emptying and episodes of near retention.

## AIMS AND OBJECTIVES

Aim of this study is to define *Mutraghata* and clinical entities described under it in context of Bladder Outlet Obstruction (BOO) as per today's science of urology. Objective of the study is to define various technical terms related to *Mutraghata* and BOO.

## MATERIALS AND METHOD

Collection of data was done mainly from *SushrutaSamhita*, *CharakaSamhita*, *AshtangaHridaya* and their commentaries by *Dalhana*, *Chakrapani* and *Arundatta* respectively. Along with it modern urology books, websites and research articles have also been searched to elaborate the work.

### Modern review

Bladder outlet obstruction is a blockage to or below the level of base of the bladder.

### Aetiology<sup>9</sup>

Urodynamically proven bladder outlet obstruction may result from:

1. Benign prostatic hyperplasia (BPH)
2. Bladder neck stenosis

3. Bladder neck hypertrophy
4. Prostate cancer
5. Urethral stricture
6. Functional obstructions due to neuropathic conditions (Neurogenic bladder)

The primary effect of BOO on the bladder are as follows:

1. *Urinary flow rates decrease*- (for a voided volume more than 200ml) A peak flow rate of more than 15 ml/s is normal, between 10 and 15 ml/s is equivocal and less than 10 ml/s is low.
2. *Voiding pressure increase*-Pressure more than 80 cmH<sub>2</sub>O are high, pressure between 60 and 80 cmH<sub>2</sub>O are equivocal and pressure less than 60 cmH<sub>2</sub>O are normal.

Patients affected with BOO in long term may appear with features like:

1. The bladder may become unable to maintain its normal functions. Efficiency of detrusor contraction decreases and volume of residual urine develops progressively.
2. During filling phase, the bladder may become irritable. There may be decrease in functional capacity of bladder. It can be due to detrusor over activity.

### Clinical features

Lower urinary tract symptoms (LUTS) are a distinct phenotype of group of disorders affecting the prostate and bladder that share a common clinical



manifestation. LUTS (Lower urinary tract symptoms) can be described as:

*Voiding (Obstructive) symptoms:* Hesitancy (worsened if the bladder is very full), poor flow (unimproved by straining), intermittent stream, dribbling (including after micturition), sensation of poor bladder emptying, Episodes of near retention.

*Storage (Irritative) symptoms:* Frequency, nocturia, urgency, urge incontinence, enuresis.

Depending on the severity of BOO, it may also present with infections (UTI), retention and other adverse events.

### **Complications<sup>10</sup>**

They are as follows:

1. *Acute retention:* Postponement of micturition is a common cause; overindulging in beer and confinement to bed, on account of intercurrent illness or operation are other causes.

2. *Chronic retention:* In patients having residual urine more than 250 ml, the tension in the bladder wall increases. The increased tension in the bladder results in functional obstruction of the upper urinary tract. It can also cause bilateral hydronephrosis leading to upper urinary tract infection and renal impairment. Such patients may present with outflow enuresis, incontinence and renal insufficiency.

3. *Impaired bladder emptying:* It can lead to urinary infections and development of calculi.

4. Haematuria.

5. Pain due to urinary retention.

### **Ayurvedic review**

#### **1. *MutrAGRAnthi<sup>11</sup>/RaktagRAnthi<sup>12</sup>***

Manifestation of small, round and immovable tumor (*vritta-alpa-sthira*) in the bladder which leads to obstruction to the flow of urine (*Aabhayantarebasti-mukhemutra-marga-nirodhanah*). Sushruta has not mentioned the *Dosha* involved in *MutrAGRAnthi* but *Dalhana* in his commentary believes *Pitta Dosha* involvement for the same. As per *Charka*, three *Doshas* *Rakta*, *Vata* and *Kapha* are causative factors (*Rakta-vata-kaphat-dushtam<sup>12</sup>*). It also causes continuous pain (*Vedanavaan*), difficulty and pain during micturition (*Kricchrena-srijet-mutram*) and symptoms similar to that of urinary calculus (*Ashmari-sama-shoolam*)

In *Charaka Siddhithana*, it is stated that *Rakta* and *Vata* both are vitiated in *MutrAGRAnthi*. Therefore it can also be concluded that if in *MutrAGRAnthi*, there is an association of *Rakta*, the clinical features would be similar to Carcinoma prostate as its main feature is Haematuria. Vitiating of *Vata* along with *Kapha* will lead to symptoms like BPH. Carcinoma prostate



and BPH both obstruct bladder outlet leading to BOO.

## 2. *Ashtheela*<sup>13</sup>

Aggravated *Vata* gets localized between the passage of feces (rectum) and urinary bladder and produces a hard tumor/swelling (*Achala-unnata-granthi*) like a cobbler's stone. (*Shakrita-margasya baste cha ashthila-baddhanamgranthi*), which leads to retention of urine, feces and flatus (*Vit-mutra-anila-sanga*), inflation/blowing/swelling (*Adhmaan*) and severe pain in urinary bladder/in suprapubic region (*Vedana-cha-para-bastau*)

As *Ashtheela* is present in between bladder and rectum, it either could be a pelvic mass/tumor (cervix, prostate, uterus, rectum leading to bladder outlet obstruction) or hard compacted stool in constipated patients (neurogenic bladder and bowel dysfunction) leading to urinary retention and other urological conditions.

## 3. *Mutrotsanga*<sup>14</sup>

Vitiated *Vata* and abnormality of urinary outlet (*Kha-vaigunya*, *Chhidra-vaigunya*) causes obstruction in the urine flow at the level of bladder (*Basti*), urethra (*Nala*) and glans penis/ external urethral meatus (*Mani*) that leads to obstructed flow of urine (*Mutramprivrattamsajjet*), urine mixed with blood after straining (*Saraktamvaappravahata*),

intermittentmicturition in little quantities (*Sthitvasravetshanaihalpamalpam*), pain or without pain (*Sarujamvanirujam*) and dribbling micturition (*Vicchinnam*). The residual urine is also responsible for heaviness of the penis (*Guru-shephasa*).

These clinical features are alike to that of "Urethral stricture". Abnormal narrowing of urethra causes obstruction to the bladder outlet leading to BOO.

## 4. *Vatakundalika*<sup>15</sup>

Excessive ingestion of *RukshaAhara* (Food deficient in fulfilling daily requirement of fat in body), intentionally holding the natural urge of micturition, defecation etc, leads to vitiation of *Vata* that enters in the bladder and traverses in circular manner. It leads to obstruction in urinary flow and severe pain. Affected individual also passes scanty urine with pain that too slowly.

The condition is very similar to Detrusor sphincter dyssynergia (DSD) and primary bladder neck obstruction. DSD is the urodynamic description of BOO. It occurs as consequences of neurological pathology like spinal cord injury or multiple sclerosis, which disrupts functions of central nervous system, which regulates the micturition reflex. Hence it results into disorientation of external urethral sphincter muscles and the detrusor muscle of the bladder. Normally these two separate muscles act in synergistically. Here in DSD, urethral



sphincter muscle is in dyssynergia, contracts along with contractions of detrusor causing the flow to be interrupted. Bladder pressure rises as a result of it.

In Primary bladder neck obstruction, bladder neck fails to open properly during voiding. It results into increased activity of striated sphincter or obstruction of urine flow in the absence of another anatomic obstruction like muscular dysfunction, neurological dysfunction or fibrosis.

#### 5. *Vatabasti*<sup>16</sup>

Holding micturition urge beyond physiological capacity of bladder for longer time (*Mutra-vega-dharana*) leads to vitiation of *Vayu*. It enters the bladder causing the obstruction to the bladder outlet (*Niruddhanimukhamtasya baste bastigatoanila*). Clinical features are retention of urine (*Mutra-sanga*), pain in hypogastric and loin region (*Basti-kukshinipiditah*), itching sensation (*Kandu*).

These features are similar to the conditions like Detrusor areflexia, motor paralytic bladder and autonomous bladder. All three are neurogenic conditions of bladder, where damage to the sacral cord (S2,S3,S4) or peripheral nerve injury occurs.

#### 6. *Bastikundala*<sup>17</sup>

Excessive running (*Druta*), excessive pedestrian walking (*Adhva-gamana*), fasting (*Langhana*), exertion (*Ayaasa*), trauma (*Abhighata*) and compression,

compaction (*Prapidana*) are the causative factors for *Mutrajathara*. By indulging in above mentioned factors, the bladder is displaced upwards and become enlarged and it appears like a gravid uterus (*Svastaanaat-bastiudvritta-sthoola-tishthati-garbhavata*).

Clinical features include colic (*Shoola*), throbbing pain (*Spandana*), burning pain (*Daaha-arti*), dribbling micturition (*Bindu-bindu-sravati*). When the bladder region is pressed, urine comes out in jets. (*Piditahtusrijetdhara*)

Autonomous bladder or detrusor areflexia can be related to *Bastikundala*. It has explained only by *Charaka*. The clinical features of it are very similar to that of *Vatabasti* explained by *Vagbhata*. For instance: *Basti-udvritta-sthoola-tishthati-garbhavata* (Large bladder capacity, no detrusor contractions), *Peedita-tu-srijetdhara* (Crede's maneuver) and *Bindu-bindu-sravatyapi* (Overflow incontinence). *Charaka* has also explained involvement of *Pitta* and *Kapha*.

*Pitta* involvement leads to burning sensation (*Daha*), pain (*Shoola*) and discoloration of urine. It is similar to infections (UTI) caused by high residual urine.

*Kapha* involvement causes oedema (*Shopha*), heaviness (*Gaurava*) and changes in nature of urine (unctuous and dense). All



these symptoms can be related to renal damage caused by hydronephrosis due to vesico-ureteric reflex.

### 7. *Mutrajathara*<sup>18</sup>

Holding urge of micturition (*Mutrasyavihatevege*) vitiates *Apana Vayu* which causes pain and distention in abdomen (*Apaanahkupitovaayuudarampurayetbhrisham*). Clinical features are retention of urine and faeces (*Adhah-sroto-nirodhanam*). This distention leads to severe pain in lower abdomen (*Naabhiadhastaadaadhmaanjanayettivradanam*) and indigestion (*Apakti*).

It is related to spinal cord lesion leading to spinal shock. In this, flaccid paralysis is experienced by the affected individual below the level of injury. The somatic reflex activity might be depressed or absent. The anal and bulbocavernosus reflex activities typically are absent. Urinary retention and constipation occurs. This condition is justified by “*Adhah-sroto-nirodhanam*”. Flaccid paralysis leads to large residual urine in bladder, which is related to “*Udaram-poorayet-bhrisham*” and “*Naabhe-adhastad-aadhmaan*”.

### 8. *Ushnavata*<sup>19</sup>

Excessive exercise (*Ativyayam*), excessive walking (*Ati-adhva-gaman*) and excessive wandering (*Ati-atapasevana*) causes aggravation of

*Pitta* (*Vyayam-adhva-atapaih pittam prapya anilaavritam, bastimedhragudamchaivapradahansravay etadhah*). When *Pitta* is obstructed by *Vata*, it produces symptoms of *Ushna-vata* like yellow coloured urine (*Mutramharidram*), hematuria or red coloured urine (*Saraktam*) or only blood comes out from urethra (*Raktamevava*) and difficulty in urination (*Kricchratpravartate*).

The condition could be inflammatory conditions of bladder and urethra, cystitis, urethritis, ureteritis or prostatitis. When due to obstruction, amount of residual urine remains persistent in the bladder, it irritates wall of the bladder leading to inflammation of the related structures. So it can be a complication of Bladder outlet obstruction.

### 9. *Mutrauksada*<sup>20</sup>

Passage of non-slimy, thick and yellow-coloured urine along with burning sensation are the features of *Pittaja* variety of *Mutrauksada*. When urine is dried, sediments deposited resembles to *Rochanapowder*. In *Kaphaja* variety, when urine is dried, pale sediments similar to the powders of conch-shell (*Shankha Churna*) gets deposited. Individual feels pain during urination and the urine is white in color, thick and slimy in nature.

The condition is alike to urinary tract infections (UTI), cystitis, urethritis or prostatitis. These could manifest as a



complication of BOO because of chronic high residual urine.

#### 10. *Mutrakshaya*<sup>21</sup>

In Dehydrated and fatigued person (*Ruksha-klanta-dehasya*), *Pitta* and *Vata* located in the bladder gets aggravated leading to drying up of urine (*Bastisthau-pitta-marutaukuryaatmutra-sankshayam*)

It causes burning micturition(*Sadaah*), Painful micturition(*Vedanam*) and difficulty in micturition/ urination in small quantities(*Kricchram*).

It can be correlated with acute kidney failure (AKF) which is a complication of BOO. When the bladder becomes over distended as a result of BOO, the bladder is thickened and kinked the terminal ureter as it traverses it. Hockey stick deformity of terminal ureters occurs. It also results into failure of uretero-vesical valves. It ultimately leads to vesico-ureteric reflux, bilateral hydroureters and hydronephrosis. All this leads to destruction of renal papilla nephrons and parenchyma ultimately leading to impaired renal failure<sup>22</sup>.

#### 11. *Vidvighata*<sup>23</sup>

Indehydrated and malnourished individuals (*RukshaDurbala*), the vitiated *Vata* along with faeces enters the urinary passage producing foul smelling urine because of urine which is mixed with faeces(*Vaatenudavrittamshakrityada*,

*mutrasrotahprapadyetavit-sansrishtamtada*).

This condition can be compared with entero-vesical or recto-vesical fistulas. However the main etiological factor of these fistulas are Irritable bowel disease, colitis, colonic diverticulitis and Crohn's disease, there are a few case studies showing that these fistulas may form after rectal invasion by carcinoma prostate occurs in significant number of cases (10%)<sup>24</sup>. The condition is definitely rare, but *Vidvighata* may manifest, resulting from carcinoma prostate which is one of the cause for BOO.

#### 12. *Mutrashukra*<sup>25</sup>

Performing coitus in presence of micturition urge (*Prati-upasthitamutramtumaitahunamyoabhinandati*) causes *Mutrashukra*. Here, seminal fluid ejected by *Vata* will either precede or follow the urine stream and it is ash colored looks like *Bhasmodaka* (*Tasyamutrayutamretahsa hsaasampravartate*).

The condition is retrograde ejaculation of semen into bladder due to various causes such as Congestive prostatitis, patients pass sticky and cloudy urine because of presence of semen.

Normally bladder neck muscles tighten to prevent ejaculate from entering in the bladder. With retrograde ejaculation,



bladder neck muscle does not tighten properly. Because of it semen enters into the bladder and urine becomes white in color.

### 13. *Mutrataeta*<sup>26</sup>

It is caused by suppression of micturition urges (*Vegamsandharyamutram*). Individual, who has suppressed the urge of urine for a long time and then desires to eliminate it, then the urine does not come out or comes out in a little quantities (*Punahpunah*) after straining, accompanied with mild pain (*Pravahatomanda-rujam*). It comes out in small quantities (*Alpamalpam*) often.

The condition is altered temporary neurophysiologic conditions of bladder where patient tries to pass urine after holding micturition urge for a long time.

**RESULTS AND DISCUSSION:** On the basis of clinical features, organic/ non-organic lesions in *MutravahaSrotasa* and site of obstructions, It has been revealed that diseases mentioned under title *Mutraghata* are closely related to various conditions leading to Bladder outlet obstruction. This is summarized in the table:

**Table 1** Table showing *Mutraghata* types and their correlation with urological conditions under Bladder outlet Obstruction (BOO)

Sr.N o.	Types of <i>Mutraghata</i>	Underlying conditions	Relation with Bladder Outlet Obstruction (BOO)
1	<i>Mutraranthi</i>	Benign prostatic hyperplasia Carcinoma prostate	A type of Bladder outlet obstruction (BOO)
2	<i>Ashtheela</i>	Pelvic masses causing compression on adjacent organs. Pelvic tumors (cervix, uterus, rectum leading to BOO).	A type of Bladder outlet obstruction (BOO)
3	<i>Mutrotsanga</i>	Urethral stricture	A type of Bladder outlet obstruction (BOO)
4	<i>Vatakundalika</i>	Detrusor sphincter dyssynergia primary bladder neck obstruction	A type of Bladder outlet obstruction (BOO)
5	<i>Vatabasti</i>	Motor paralytic bladder (neurogenic bladder) Autonomous bladder (neurogenic bladder) Detrusor areflexia	A type of Bladder outlet obstruction (BOO)
6	<i>Mutrathara</i>	Neurogenic bladder (Spinal shock phase in spinal cord injury)	A type of Bladder outlet obstruction.
7	<i>Bastikundala</i>	Detrusor areflexia Autonomous bladder (a type of neurogenic bladder) Neurogenic bladder leading to acute retention of urine	A type of Bladder outlet obstruction (BOO)
8	<i>Ushnavata</i>	Inflammatory conditions of bladder and urethra. Cystitis, urethritis, ureteritis, Prostatitis	A complication of Bladder outlet obstruction (BOO)
9	<i>Mutrauksada</i>	Urinary tract infections Cystitis, urethritis, prostatitis	A complication of Bladder outlet obstruction (BOO)



10	<i>Mutrakshaya</i>	Acute kidney failure (AKF) characterized by anuria	A complication of Bladder outlet obstruction (BOO)
11	<i>Vidvighata</i>	Entero-vesical fistula Recto-vesical fistula	It can very rarely occur as a complication of carcinoma prostate, a cause for bladder outlet obstruction.
12	<i>Mutrashukra</i>	Retrograde ejaculation due to various causes such as Congestive prostatitis, patients pass sticky and cloudy urine because it contains semen.	No relation with Bladder outlet obstruction (BOO).
13	<i>Mutrasteeta</i>	The altered neurophysiologic conditions of bladder where patient tries to pass urine.	No relation with Bladder outlet obstruction (BOO).



## CONCLUSION

After reviewing the literature part, it can be concluded that:

1. Clinical manifestations of *Mutraghata* are mostly confined to lower urinary tract system.

2. Clinical entities in *Mutraghata* are clinical manifestations of Bladder outlet obstruction due to mechanical blockage at the base of the bladder or malfunction of vesico-ureteric coordination during act of micturition or functional failure due to neuro deficit or muscular/detrusor instability. It stops or reduces urinary flow.

3. All the types of *Mutraghata* can be divided into three major categories on the basis of clinical features, organic/non-organic lesions to *MutravahaSrotasa* and site of obstruction.

a) Direct correlation with Bladder outlet obstruction (BOO)

b) Complication of Bladder outlet obstruction (BOO)

c) No relation with Bladder outlet obstruction (BOO)

a) **First category** i.e. direct **relation with bladder outlet obstruction** includes diseases of *MutrAGRAnthi*, *Mutrotsanga*, *Ashtheela*, *Vatakundalika*, *Vatabasti*, *MutrAjathara* and *Bastikundala*. Because BOO is mainly caused by BPH, urethral

stricture, carcinoma prostate and neurogenic bladder respectively.

b) **Second category** includes *Ushnavata*, *Mutraukasada*, *Mutrakshaya* and *Vidvighata* and they are indirectly related to BOO. They can occur **as complication of Bladder outlet obstruction (BOO)** because high residual urine in bladder can lead to UTI, cystitis, urethritis, proctitis and at last to renal failure. However, enterovesical fistulas can occur as a complication of carcinoma prostate and bladder carcinoma in rare cases.

c) **Third category** includes *Mutrashukra* and *Mutrasteeta*. They have **no relation with bladder outlet obstruction (BOO)**.



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