



Review Article

Volume 15 Issue 05

May 2026

DOI 10.5281/zenodo.20442847

ANATOMICAL INTERPRETATION OF BASTI AS THE MOOLASTHANA OF MUTRAVAHA STROTAS

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ABSTRACT:

Ayurveda considers the human body as an intricate network of channels known as *Strotas* which are responsible for transportation, nourishment and elimination within the body. Among these channels, *Mutravaha Strotas* are specifically related to the formation, conduction, storage and excretion of urine. Classical *Ayurvedic* texts describe *Basti* as the principal *Moolasthan* of *Mutravaha Strotas*. *Acharya Charaka* mentions *Basti* and *Vankshana* as the roots of these channels while *Acharya Sushruta* describes *Basti* and *Medhra* as their *Moolasthan*. The present article aims to explore the anatomical significance of *Basti* in relation to the urinary bladder through both *Ayurvedic* and modern anatomical perspectives. Literary references from *Ayurvedic* classics along with modern anatomical concepts indicate that *Basti* is not merely a storage organ for urine but an important anatomical and physiological center essential for urinary function and maintenance of life.

KEYWORDS:

Basti; *Mutravaha Strotas*; *Moolasthan*; Urinary Bladder; *Ayurveda*; Anatomical Correlation.

INTRODUCTION:

Ayurveda explains the human body as "*Srotomayam hi Purusham*," meaning that the body is composed of innumerable channels responsible for physiological and metabolic activities

and these channels transport nutrients, wastes and other essential substances throughout the body.¹ Among the excretory channels, *Mutravaha Strotas* hold special importance because they govern the production, storage and elimination of urine. Classical texts describe *Basti* as the chief organ associated with *Mutravaha Strotas*.^{2,3} The term *Basti* refers to the structure that retains urine and is therefore regarded as *Maladhara*.⁴ *Ayurvedic Acharya's* also describe it as *Pranayatana*^{5,6} and one among the *Trimarma*⁷ emphasizing its vital importance. According to *Acharya Sushruta*, the shape of *Basti* resembles an *Alabu*⁸ (gourd) indicating its hollow and expandable nature. Modern anatomy correlates this structure with the urinary bladder which serves as a muscular reservoir for urine in the pelvic cavity. Thus, the concept of *Basti* provides a strong anatomical and physiological foundation for understanding the urinary system in *Ayurveda*.

CONCEPT OF MUTRAVAHA STROTAS:

In *Ayurveda*, *Strotas* are described as channels through which transportation and transformation of body substances occur. *Mutravaha Strotas* are the channels responsible for urine formation and excretion. *Acharya Charaka* explains that the *Moolasthanas* of *Mutravaha Strotas* are *Basti* and *Vankshana*⁹ whereas *Acharya Sushruta* identifies *Basti* and *Medhra* as their roots.¹⁰ The presence of *Basti* in both references indicates its major importance in urinary physiology. The term *Moolasthana* refers to the principal anatomical site where the activities of a particular *Strotas* are mainly performed and where pathological manifestations first become evident. Therefore, *Basti* is considered the primary organ involved in urinary regulation and pathology.

ANATOMICAL DESCRIPTION OF BASTI IN AYURVEDA:

Ayurvedic texts provide detailed descriptions regarding the structure and significance of *Basti*. It is situated in the pelvic region and functions primarily as the reservoir of urine.¹¹ Since, it stores waste material in the form of urine and it is referred to as *Maladhara*. *Basti* is also considered the seat of *Apana Vayu*^{12,13} which governs excretory functions. *Acharya Sushruta* further describes *Basti* as one of the *Pranayatana* and a *Sadyo Pranahara Marma* indicating that injury to this organ may lead to immediate or rapid death. The organ is described as resembling an *Alabu* in shape because of its hollow and distensible character. *Acharya Sushruta* also mentions that *Basti* develops from *Rakta* and the *Sara Bhaga* of *Kapha*.¹⁴ These classical descriptions closely resemble the modern anatomical features of the urinary bladder.

MODERN ANATOMICAL CORRELATION OF BASTI:

The urinary bladder in modern anatomy is a hollow muscular organ situated within the pelvic cavity behind the pubic symphysis.¹⁵ It functions as a temporary reservoir for urine received from the kidneys through the ureters and expelled through the urethra. In males,

the bladder lies anterior to the rectum while in females it is positioned anterior to the uterus and vagina. The shape of the empty bladder is tetrahedral¹⁶ whereas the distended bladder becomes ovoid which resembles the *Ayurvedic* comparison of *Basti* with an *Alabu*. Structurally, the bladder is divided into apex, body, fundus and neck. Its capacity to store urine and regulate micturition strongly supports the *Ayurvedic* understanding of *Basti* as the principal organ of *Mutravaha Strotas*.

Relations of Urinary Bladder¹⁷:

The urinary bladder maintains close anatomical relations with surrounding pelvic structures. In males, it is related posteriorly to the rectum, seminal vesicles and vas deferens while the prostate gland lies inferiorly. In females, the bladder is related posteriorly to the uterus and vagina. Anteriorly, in both sexes, it is related to the pubic symphysis. Superiorly, loops of intestine may rest upon it. These anatomical relations correspond to the *Ayurvedic* description of *Basti* being situated in the *Shroni Pradesh* and associated with neighboring pelvic organs.

HISTOLOGICAL INTERPRETATION:

Histologically, the wall of the urinary bladder is composed of mucosa, submucosa, muscular layer and outer serosa or adventitia. The muscular layer known as the detrusor muscle enables expansion and contraction of the bladder during filling and voiding of urine. This functional property can be correlated with the *Ayurvedic* concept of *Basti* being controlled by *Apana Vayu* which regulates excretory activities. The distensible and contractile nature of the bladder further supports its identification with *Basti*.

PHYSIOLOGICAL IMPORTANCE OF BASTI:

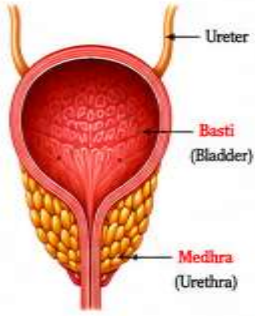
Basti performs several essential physiological functions related to urine storage and elimination. It acts as a temporary reservoir for urine, maintains urinary continence and coordinates with the ureters and urethra during micturition. In *Ayurveda*, these activities are governed primarily by *Apana Vayu*. Disturbances in the normal functioning of *Basti* can lead to disorders such as *Mutrakriccha*, *Mutraghata*, *Prameha* and *Ashmari*. Thus, both *Ayurvedic* and modern sciences recognize the bladder as a central organ in urinary physiology.

BASTI AS PRANAYATANA AND MARMA:

Ayurvedic classics classify *Basti* among the *Pranayatana* and *Trimarma* which emphasizing its vital importance for survival. It is also described as a *Sadyo Pranahara Marma* meaning that severe injury to this structure can cause immediate or early death.¹⁸ From a modern perspective, traumatic injury to the urinary bladder can result in severe hemorrhage, urinary leakage into surrounding tissues, infection, septic complications and shock, all of which may become life-threatening. Therefore, the ancient *Ayurvedic* description of *Basti* as a vital organ is anatomically and clinically justified.

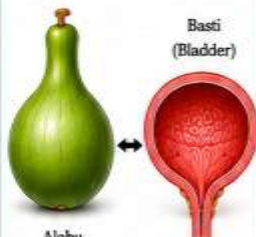
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1. AYURVEDIC VIEW OF BASTI



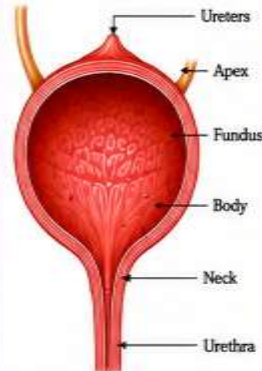
- Situated in *Shroni Pradesh* (pelvic region)
- Acts as *Maiadhara* (reservoir of urine)
- Seat of *Apana Vayu*
- One among *Pranayatana* and *Trimarma*
- Shape resembles *Alabu* (gourd)
- Development from *Rakta* and *Sara Bhaga* of *Kapha*

2. SHAPE COMPARISON (Alabu and Basti)



Basti is compared to *Alabu* (gourd) due to its hollow, expandable and distensible nature.

3. ANATOMY OF URINARY BLADDER (Anterior View)



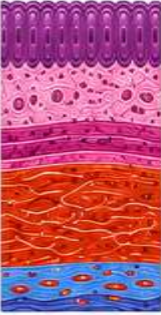
A muscular, hollow and distensible organ situated in pelvic cavity. Average capacity is 300-500 mL.

4. RELATIONS OF URINARY BLADDER

| In Males | In Females |
|---|-------------------------------|
| Superiorly : Loops of intestine | Superiorly : Uterus |
| Posteriorly : Rectum, seminal vesicle, vas deferens | Posteriorly : Cervix, vagina |
| Inferiorly : Prostate gland | Inferiorly : Pelvic diaphragm |
| Anteriorly : Pubic symphysis | Anteriorly : Pubic symphysis |

These relations correspond with *Basti* being situated in *Shroni Pradesh* and associated with pelvic organs.

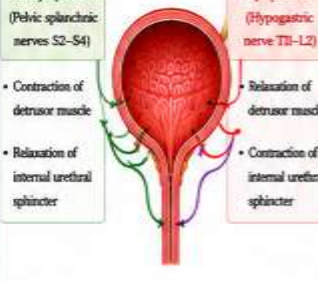
5. HISTOLOGY OF URINARY BLADDER WALL



- Mucosa (Transitional epithelium)
- Submucosa
- Muscular layer (Detrusor muscle)
- Serosa / Adventitia

Detrusor muscle allows expansion and contraction during filling and voiding of urine. This correlates with *Apana Vayu* which regulates excretory activities.

6. INNERVATION OF URINARY BLADDER



Parasympathetic (Pelvic splanchnic nerves S2-S4)

- Contraction of detrusor muscle
- Relaxation of internal urethral sphincter

Sympathetic (Hypogastric nerve T11-L2)


- Relaxation of detrusor muscle
- Contraction of internal urethral sphincter

Somatic (Pudendal nerve S2-S4)


- Contraction of external urethral sphincter

→ Parasympathetic → Sympathetic → Somatic

7. FUNCTION OF BASTI (*Mutravaha Strotas*)




8. BASTI AS PRANAYATANA AND MARMA



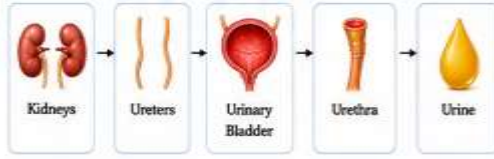
- Basti is *Pranayatana* (seat of life)
- One among *Trimarma*
- *Sadyo Pranahara Marma* – severe injury may cause immediate or early death
- Modern view – injury to bladder may cause haemorrhage, urinary leakage, infection, sepsis and shock – which are life threatening.

9. MUTRAVAHA STROTAS – AYURVEDIC AND MODERN CORRELATION

Ayurvedic Concept



Modern Concept



ROLE OF BASTI

- Chief reservoir of urine
- Regulated by *Apana Vayu* (Ayurveda) and autonomic nerves (Modern)
- *Moolasthana* of *Mutravaha Strotas*
- Disturbance causes *Mutrakriccha*, *Mutraghata*, *Prameha*, *Ashmari* etc.

KEY CORRELATION

- Ayurvedic description of *Basti* matches anatomical position, structure and function of urinary bladder.
- *Basti* is the central organ of urine storage and excretion.
- Confirms *Basti* as *Moolasthana* of *Mutravaha Strotas*.

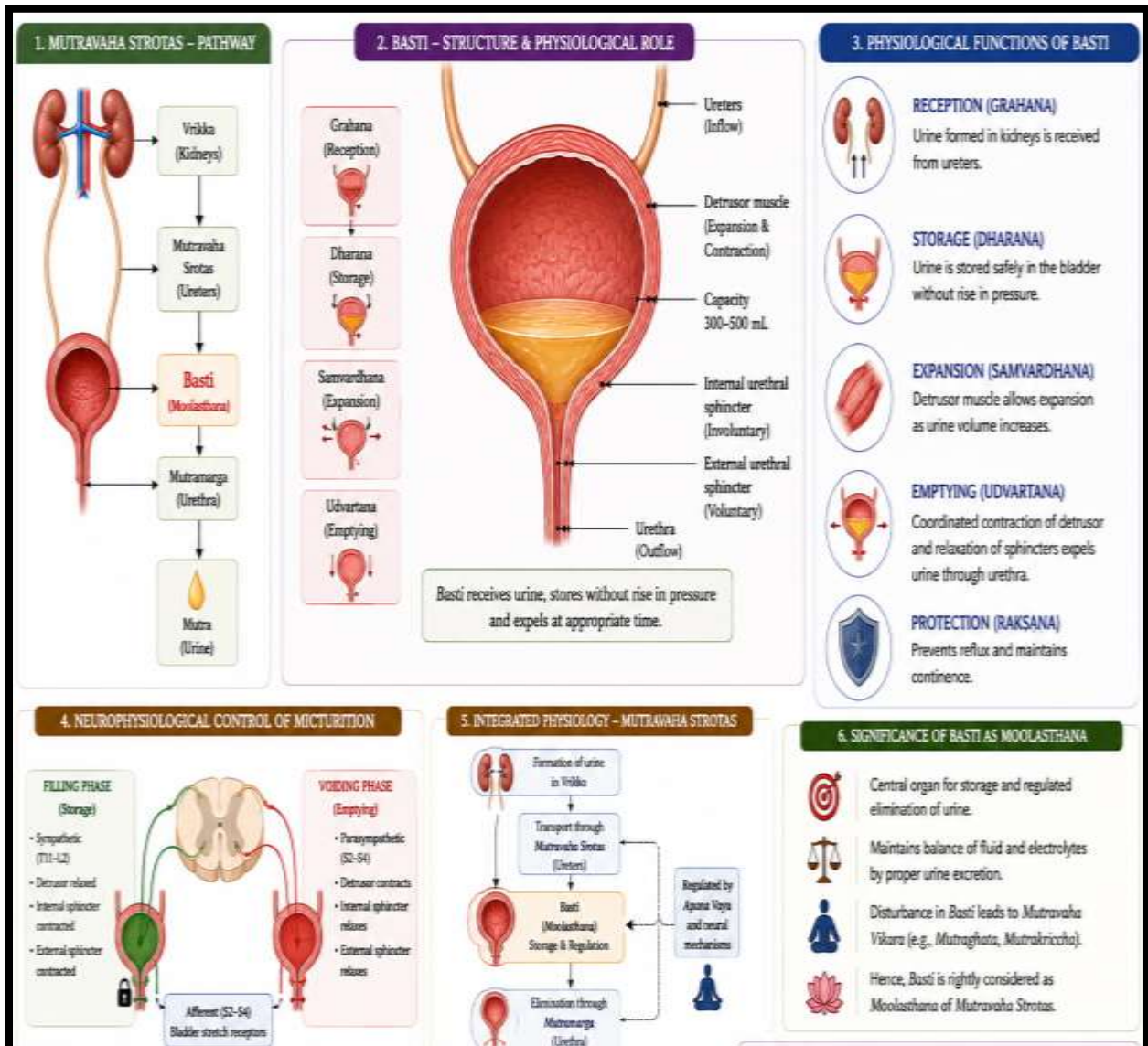
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ANATOMICAL INTERPRETATION OF BASTI AS THE MOOLASTHANA OF MUTRAVAHA SROTAS: PHYSIOLOGICAL CONCEPT



MATERIALS AND METHODS:

The present study was conducted as a literary, conceptual and anatomical review to understand the anatomical interpretation of *Basti* as the *Moolasthana of Mutravaha Srotas*. The study was based primarily on classical *Ayurvedic* literature and modern anatomical texts. Literary references related to *Mutravaha Srotas*, *Basti* and their *Moolasthana* were collected from *Ayurvedic* classics including *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya* and other relevant commentaries. Detailed descriptions regarding the structure, location, physiological functions and clinical importance of *Basti* were critically analyzed and compiled. For modern anatomical correlation, standard textbooks of human anatomy such as

Gray's Anatomy and *BD Chaurasia's Human Anatomy* were reviewed to study the urinary bladder with respect to its location, shape, relations, histology, nerve supply and physiological role in urine storage and micturition. Comparative analysis was then performed between *Ayurvedic* descriptions of *Basti* and the modern anatomical understanding of the urinary bladder.

RESULT:

The present literary and anatomical study revealed that the *Ayurvedic* concept of *Basti* shows strong correlation with the urinary bladder described in modern anatomy. Classical *Ayurvedic* descriptions regarding the location, shape, structure and function of *Basti* correspond closely with the anatomical features of the urinary bladder. The observations of this study demonstrated that the urinary bladder is centrally placed within the pelvic cavity and maintains important relations with structures such as the ureters, prostate gland, uterus and pelvic floor muscles. The expandable and hollow nature of the bladder resembles the *Alabu* shape mentioned in *Ayurvedic* texts. The study also observed that *Basti* acts as the chief reservoir of urine and plays a major role in urinary excretion which supports its identification as the *Moolasthan* of *Mutravaha Strotas*. The vital importance attributed to *Basti* in *Ayurveda* as *Pranayatana* and *Sadyo Pranahara Marma* was also found to be clinically significant because severe injury to the urinary bladder can lead to life-threatening complications. Therefore, the study establishes a clear anatomical and functional correlation between *Basti* and the modern urinary bladder.

| <i>Ayurvedic Description of Basti</i> | Modern Anatomical Correlation | Interpretation |
|---|--|---|
| <i>Basti is the Moolasthan of Mutravaha Strotas</i> | Urinary bladder is the chief organ of the urinary system | Both are primarily concerned with urine storage and excretion |
| <i>Basti is situated in Shroni Pradesh</i> | Urinary bladder is located in the pelvic cavity | Similar anatomical location |
| Shape of <i>Basti</i> compared to <i>Alabu</i> (gourd) | Distended bladder appears hollow and ovoid | Similarity in shape and distensibility |
| <i>Basti acts as Maladhara</i> | Bladder stores urine before micturition | Functional similarity in storage of waste material |
| <i>Basti is the seat of Apana Vayu</i> | Micturition is regulated by autonomic and somatic nerves | Correlation in regulation of urine expulsion |
| <i>Basti is considered Pranayatana and Trimarma</i> | Bladder injury may cause severe complications and shock | Indicates vital physiological importance |

| | | |
|--|--|---|
| Disorders like <i>Mutraghata</i> and <i>Mutrakriccha</i> arise from <i>Basti Dushti</i> | Correlated with urinary retention and dysuria | Similar pathological manifestations |
| <i>Basti</i> is connected with <i>Vankshana/Medhra</i> | Bladder is continuous with urethra and pelvic structures | Structural continuity of urinary passages |
| <i>Basti</i> is described as a hollow and expandable organ | Urinary bladder is muscular and distensible | Structural and functional resemblance |
| <i>Basti</i> is the central organ of urinary physiology | Bladder serves as the principal urine reservoir | Correspondence in physiological role |

DISCUSSION:

The *Ayurvedic* concept of *Basti* extends beyond the idea of a simple urine storage organ. Classical descriptions attribute structural, physiological and vital significance to *Basti*. It serves as the chief center for urine retention and excretion and is closely associated with *Apana Vayu*. The pathological manifestations of urinary disorders are prominently related to this organ. Modern anatomical understanding of the urinary bladder, including its structure, position, relations and function closely parallels the *Ayurvedic* descriptions of *Basti*. Therefore, the concept of *Basti* can be interpreted as the urinary bladder along with its associated urinary passages and supporting structures. This integrative interpretation helps establish a bridge between *Ayurvedic* anatomy and modern medical science.

CONCLUSION:

Basti occupies a central place in the *Ayurvedic* description of *Mutravaha Strotas*. Classical references describing its structure, shape, physiological functions and clinical significance closely correspond to the urinary bladder described in modern anatomy. As the principal *Moolasthan* of *Mutravaha Strotas*, *Basti* plays a major role in urine storage, regulation and excretion. The comparative anatomical interpretation of *Basti* provides a scientific basis for understanding *Ayurvedic* concepts through contemporary anatomy and contributes to the advancement of integrative anatomical and clinical research.

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