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"Understanding *Talu* as *Udakavaha Srotomula* w.s.r.to *Sadyomarana* as a *Viddha lakshana* "

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ABSTRACT

Background-*Udaka* is a specific entity used in *Ayurveda* for denoting fluid and water component of body refers to the *Jala, Sweda* and *Lasika*. *Ayurveda* describes *Udakavaha Srotas* as the channels responsible for the regulation, transportation, and maintenance of body fluids i,e. *Udaka. Srotas* are minute channels present within the body. According to classical texts, *Talu* (palate) and Kloma are considered the *mulasthana* (root) of *Udakavaha Srotas*. Injury to these structures leads to characteristic manifestations such as *Pipasa* (excessive thirst, dryness of the oral cavity, and disturbances in fluid homeostasis) and *Sadyomarana* (Sudden death). *Talu* is enumerated among the vital anatomical structures where trauma may result in severe consequences, including *Sadyomarana* (instant or immediate death), as described under *Viddha lakshana* . **Aim**- This study aims to analyse the anatomical and physiological significance of *Talu* as *Udakavaha Srotomula* and explore the rationale behind its classification as a site whose injury may lead to fatal outcomes. **Objectives-** To analyze the significance of *Talu* as *mulsthana* of *Udakavaha Srotas* and the rationale behind *Sadyomarana* as a consequence of injury. **Methodology-** Classical *Ayurvedic* literature, including *Charaka Samhita, Sushruta Samhita,* and their commentaries, was reviewed and correlated with contemporary anatomical concepts. The present review aims to critically analyze the anatomical and physiological significance of *Talu* as *Udakavaha Srotomula* and explore the rationale behind its classification as a site whose injury may lead to fatal outcomes. Understanding *Talu* from both *Ayurvedic* and modern perspectives may provide valuable insights into the clinical relevance of *Udakavaha Srotas*.

Keywords – *Talu*, *Udakavaha Srotas*, *Viddha lakshanas.*

INTRODUCTION

The concept of *Srotas* occupies a central position in *Ayurvedic* anatomy and physiology, serving as the channels responsible for the transportation and maintenance of various bodily constituents. *Acharya Charaka* fixed the *mulsthana* according to the sign and symptom caused due to vitiation of *dosha*[1] and *Acharya Sushruta* fixed *mulsthana* of *Srotas* considering trauma to the *mulsthana* as per surgical approach.[2] Among the thirteen internal *Srotas* described in the classics, *Udakavaha Srotas* is responsible

for the transportation and regulation of *Udaka*, which is crucial for maintaining hydration, tissue nourishment, and physiological equilibrium. Classical *Ayurvedic* texts describe *Talu* and *Kloma* as the *mulasthana* (root) of *Udakavaha Srotas*, emphasizing their importance in the perception and regulation of thirst (*Trishna*) and fluid balance.[3]

Talu (palate) is not only a structural component of the oral cavity but is also considered a vital anatomical region. The palate serves as an important site for the perception of thirst and facilitates the initial stages of swallowing and fluid intake. *Talu* occupies a strategic anatomical position between the oral and nasal cavities and contributes significantly to speech, deglutition, respiration, and gustatory functions. *Ayurvedic* literature further highlights its clinical significance by describing severe consequences following its injury. In the context of *Viddha lakshana* , trauma to *Talu* is associated with grave manifestations and is even considered capable of causing *Sadyomarana* (instant death).[4] This description underscores the vital nature of *Talu* and requires a deeper understanding of its anatomical and physiological relevance.

From a modern anatomical perspective, the palate is closely related to important vascular, neural, respiratory, digestive and cranial structures.[5] Damage to this region may result in airway obstruction, aspiration, neurovascular damage, severe hemorrhage, and other life-threatening complications which may prove fatal if not managed promptly. Therefore, a critical review of classical *Ayurvedic* references along with modern anatomical correlations is necessary to understand the significance of *Talu* and to elucidate the rationale behind the description of *Sadyomarana* as a *Viddha lakshana* . This may provide valuable insights into the scientific and clinical significance of *Ayurvedic* concept of Srotov*iddha lakshana s* .

AIM

To evaluate the concept of *Talu* as *Udakavaha Srotomula* on the basis of *Sadyomarana* as a *Viddha lakshana* associated with injury to *Talu* (Palate).

OBJECTIVE

1. To review the classical *Ayurvedic* references pertaining to *Talu* as the Mula of *Udakavaha Srotas*.

2. To analyze the anatomical and physiological significance of *Talu* in maintaining fluid balance and related functions according to *Ayurvedic* principles.

3. To study the concept of *Viddha lakshana* of *Talu* described in *Ayurvedic* literature.

4. To explore the rationale behind *Sadyomarana* as a consequence of injury to *Talu* as *mulsthana* of *Udakavaha Srotas*.

METHODOLOGY

A literary review was conducted using classical *Ayurvedic* texts including *Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya,* and relevant commentaries. Modern literature related to Palate and Oral Cavity (Otorhninology) was also reviewed. Comparative analysis was performed to establish rationale behind *Sadyomarana* as a consequence of injury to *Talu* as *mulsthana* of *Udakavaha Srotas*.

DISCUSSION

Udaka refers to the water content of body and includes *Jala, Sweda* and *Lasika* (Intracellular and Extracellular Fluid). The *Pramana* of *Udaka* described by *Acharya Charaka* as Ten (*Anjali*), indicating the total amount of water present in the human body.[6] When it reduces by means of quantity, it results in *Trushna* roga (*Pipasa*) and if gets excessive in amount, eliminated by *Mutra* and *Purish*.[6] *Trushana* is described in *Ayurvedic* texts as a separate disease, while in contemporary science it is mentioned as a symptom only. It is closely associated with the *Jala/Aap Mahabhuta*, which contributes to qualities such as liquidity, softness, cohesiveness, nourishment, and life support.[7] *Acharya Charaka* describes *Udaka* as a vital factor responsible for maintaining the body's moisture, facilitating digestion, transportation of nutrients, and preservation of tissue integrity. plays a crucial role in *Tridosha* balance, particularly

influencing *Kapha Dosha*, which possesses qualities similar to water such as unctuousness, coolness, and stability.[6]

Udakavaha Srotas is concerned with the regulation and maintenance of body fluids, thereby playing a crucial role in preserving physiological homeostasis. *Mulsthana* of Udakvaha *Srotas* are *Talu* and *Kloma* were *Talu* referred as *Palate* while *Kloma* is a controversial organ.[3] These structures are closely associated with the perception of thirst and regulation of fluid balance. Any injury, obstruction, or dysfunction of *Udakavaha Srotas* manifests as symptoms such as excessive thirst (*Pipasa/Trishna*), dryness of the mouth and throat and disturbances in fluid metabolism.[3] The *Viddha Lakshnas* of *Udakavaha Srotas* includes *Pipasa* and *Sadyomarana*.[4] *Udakavaha Srotas* represents an important anatomical and physiological system in *Ayurveda*, highlighting the significance of fluid regulation in health and disease.

Talu/Palate – Holistic Approach as _mulsthana_ of _Udakavaha Srotas_

According to *Shabdakalpdruma*, it is a seat of *Jivhendriya.*[8]

According to Apte (Sanskrit-English Dictionary), it is Palate.[9]

According to *Vatchaspatya,* the varna □□□□□□□□ are articulated with the help of *Talu*.[10]

Varuna is the *devata* of *Talu*. In *Sushrut Samhita*, *Varuna* is considered as *Adidaivata* of *Aap Mahabhuta.*[11]

Talu (palate) is an important anatomical structure described in *Ayurvedic* literature and occupies a significant position in the anatomy of the head and neck region. The term *Talu* refers to the roof of the oral cavity and floor if nasal cavity,[5] which separates the oral and nasal cavities and plays an essential role in deglutition, speech, respiration, and perception of taste. Owing to its strategic location and functional importance, *Talu* has been extensively discussed in the context of *Sharira Rachana* as *Srotomula* and various pathological conditions. The close association of *Talu* with thirst perception is evident from the manifestation of dryness of the palate during dehydration and disorders of water metabolism. This highlights its importance as a physiological indicator of the body's hydration status.

From an anatomical perspective, *Talu* can be correlated with the hard and soft palate, which contain a rich supply of blood vessels, nerves, and mucous glands.[5] These structures contribute to lubrication, sensory perception, swallowing, and communication between the oral and pharyngeal regions. Modern studies also suggest that receptors present in the oral cavity and palate participate in the regulation of thirst and fluid intake,[12] supporting the *Ayurvedic* view of *Talu* as a significant component of *Udakavaha Srotas*.

The palate acts as a dynamic valve that separates the respiratory and digestive tracts, directly regulating the path and flow of air into the lungs. Structurally divided into the anterior bony hard palate and posterior muscular soft palate, this tissue forms both the roof of the oral cavity and the floor of the nasal cavity. Its precise movements isolate specific respiratory channels during daily activities like resting, eating, or exercising.[13]

Airflow Regulation and Breathing Routes-

Nasal Breathing (Resting State): During standard nasal breathing, the muscles of the soft palate (specifically the palatoglossus) lower the structure until it is pressed against the back of the tongue. This action seals the oral cavity, ensuring that inhaled air bypasses the mouth entirely and moves smoothly through the nasopharynx to the trachea**.**

Oral Breathing: When you switch to mouth-breathing—often due to physical exertion or nasal blockage—the levator Veli palatini muscle contracts. This elevates the soft palate to seal off the nasopharynx, clearing a large, unobstructed path for air to enter directly through the mouth.

Airway Protection During Eating- The palate plays a critical defensive role in preventing pulmonary aspiration. When you swallow food or liquid, the soft palate swings upward and backward to tightly touch

the posterior pharyngeal wall. This dynamic seal blocks food or fluids from backing up into the nasal passages or leaking into the respiratory tract before the epiglottis covers the larynx.[13]

Receptors-

Several receptors in the oral cavity and palate contribute to the regulation of thirst and fluid intake, The primary osmoreceptors responsible for thirst are located in the hypothalamus, particularly in the Organum Vasculosum of the Lamina Terminalis (OVLT) and Subfornical Organ (SFO).

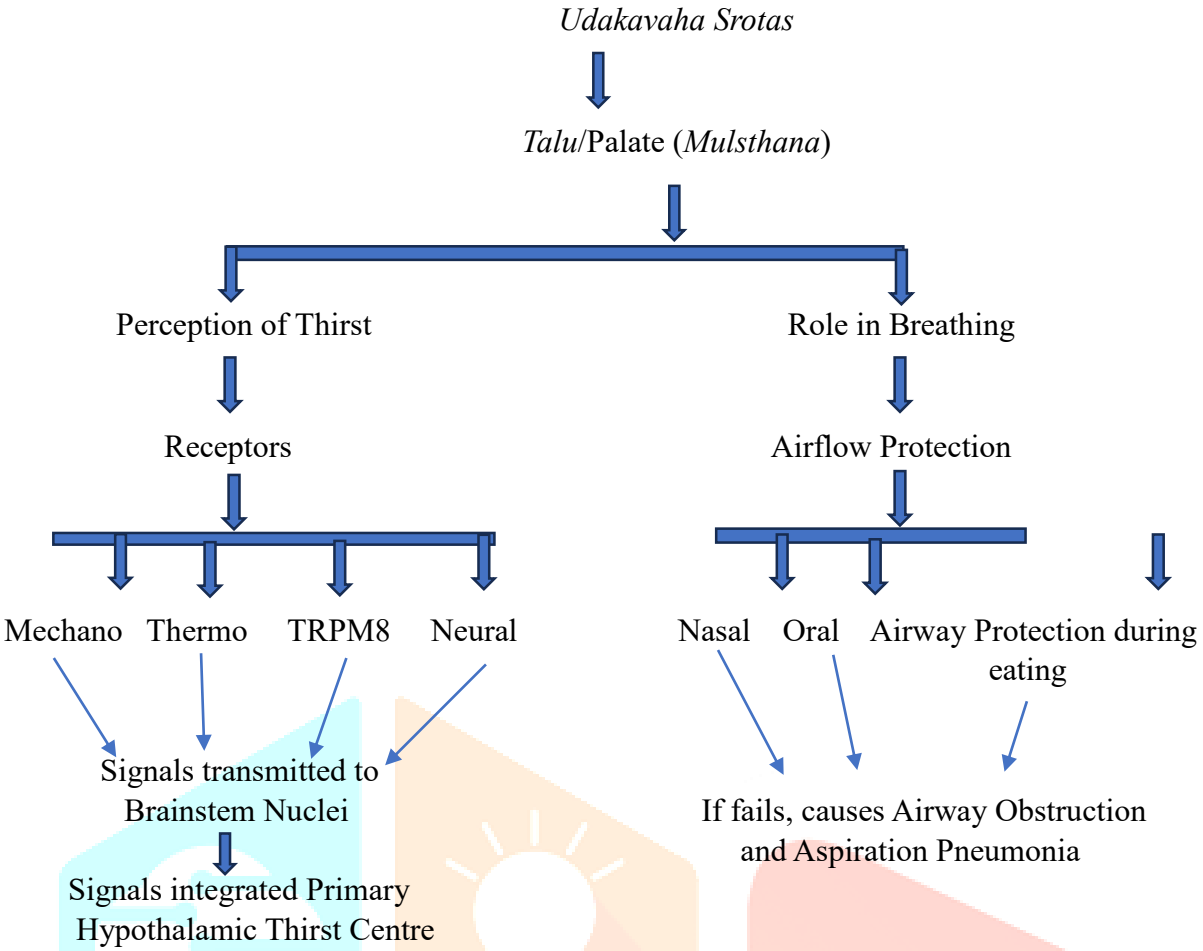
Oropharyngeal and Palatal Mechanoreceptors- Present in the mucosa of the palate, tongue, pharynx, and oral cavity. Activated during drinking and swallowing. Provide immediate feedback to the brain that fluid intake has occurred, leading to temporary suppression of thirst even before blood osmolarity changes. **Thermoreceptors-** Located in the oral and palatal mucosa. Sensitive to the temperature of ingested fluids. Cold water stimulates these receptors and produces a greater sensation of thirst relief than warm water. **TRP (Transient Receptor Potential)** Channels TRPM8 receptors are cold-sensitive receptors found in the oral and palatal mucosa. Activation by cold water or menthol creates a sensation of freshness and contributes to thirst satiation. Dryness of the oral and palatal mucosa is sensed by sensory nerve endings. Reduced salivation stimulates the sensation of thirst. **Nerve Pathway-** Sensory information from the palate and oral cavity is carried mainly through: Trigeminal nerve (CN V) – especially palatine branches, Glossopharyngeal nerve (CN IX), Vagus nerve (CN X). These signals are transmitted to brainstem nuclei and then integrated with hypothalamic thirst center.[12]

Embryological Development:

The anterior pituitary gland is directly controlled by the hypothalamus develops from the same primitive tissue (Rathke's pouch) is forms during 3rd and 4th week of gestation the primitive oral cavity- Stomodeum. The Palate Connection: The tissue immediately surrounding and giving rise to Rathke's pouch eventually forms the primitive oral ectoderm, which directly differentiates into the epithelial lining of the hard and soft palates.[14]

Anatomical Variations-

High-Arched Palate: Structural narrowness or a high arch in the hard palate pushes upward into the nasal cavity, reducing the vertical and horizontal space available for nasal airflow.
Cleft palate- significantly impairs both breathing and swallowing because it removes the physical barrier between the nasal cavity and the oral cavity. Without this structural separation, the mouth and nose function as a single, open chamber, disrupting the pressure dynamics required to move air and food properly. **Airway Obstruction**: In many congenital conditions (such as Pierre Robin Sequence), a cleft palate is paired with a small lower jaw, causing the tongue to fall backward into the throat and block the airway.[15].



CONCLUSION

According to *Ayurvedic* texts, *Talu* is described as a *Mula* (root) of *Udakavaha Srotas*. Injury to the root of a *Srotas* produces severe disturbances in its function and can be fatal leading to sudden death (*Sadyomarana*). Furthermore, the palate lies in close proximity to several vital structures of the head and neck, which are considered highly important for the maintenance of life.

The palate forms the floor of the nasal cavity and lies close to: Internal maxillary artery and its branches, Greater palatine vessels, Pterygoid venous plexus, Nasopharynx and upper airway, Base of the skull, Cavernous sinus region (through potential spread of trauma or infection). Severe penetrating trauma involving the palate can:

- Cause profuse haemorrhage leading to hypovolemic shock.
- Obstruct the airway due to bleeding, oedema, or displaced tissues.
- Pulmonary aspiration, if fails to block the food or fluids from backing up into the nasal passages
- Extend to the cranial cavity causing brain injury.
- Damage major vessels resulting in sudden death (*Sadyomarana*).
- Produce intracranial infection or thrombosis if untreated leading to death.

Thus, *Talu* itself is not a vital organ whose isolated injury invariably causes immediate death. However, due to its anatomical proximity to major vascular, neural, respiratory, and intracranial structures, severe trauma to the *Talu* region may rapidly compromise airway patency, cerebral circulation, and neurological functions, thereby explaining the *Ayurvedic* description of *Sadyomarana* or *Sadyapranahara* associated with injury to *Talu*, the *Mula* of *Udakavaha Srotas*.

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