



## Review Article

### A STUDY ON PRANAVAHA SROTAS AND ITS MULASTHANA

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#### ABSTRACT

Human body is said to be made up of *Srotas*. The unvitiated state of *Srotas* is the material cause for diseases to not affect the body and for maintaining healthy state of the body. Hence the *Ayurvediya* clinical foundation is based on thorough knowledge of these *Srotas*. Right from birth to death *Swasuchhvasa Kriya* is one of the utmost sign of life. The *Shwasa Kriya* is one of the main functions of *Prana Vata*. *Pranavaha Srotas* means the channel, which carries the external air into the body to sustain the life. Thus the *Pranavaha Srotas* is most important for maintaining life and longevity. *Hridaya* and *Mahasrotas* are the *Mula Sthana* of *Pranavaha Srotas*. The diseases like *Shwasa* and *Hikka* have their origin from the *Mulasthana* of *Srotas*. The *Mulasthana* of *Srotas* is important area for proper functioning of *Srotas*. Hence the treatment of any disease should also include intervention for the betterment of *Srotas*. It implies the necessity of a thorough knowledge of *Srotas*, its *Mulasthana*, its normal functioning etc. In this respect here an effort is made to thoroughly understand the *Pranavaha Srotas*, its *Mula Sthana* and *Shawashan Prakriya* etc.

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#### INTRODUCTION

In *Ayurveda*, the concept of *Srotas* is mentioned very specifically. Body is composed of numerous *Srotas* like *Pranavaha Srotas*, *Rasavaha Srotas* etc, which play important role in maintenance of the equilibrium of the body elements. *Pranavaha Srotas* is one of the most important systems regulating many of the vital activities of the body. The vitiation, depletion and maintenance of body structures are never possible without the involvement of *Srotas*<sup>[1]</sup>. Hence it is important first to thoroughly understand *Srotas* in all its respects, its *Mulasthana*, substance or the element they carry, its *Dushti Lakshana* etc.

**Srotas:** The *Srotas* are defined as the channels through which the conduction of various substances or elements takes place. *Srotas* are the channels which carry the *Dhatu* or the tissue elements or their constituents undergoing transformation to their destination<sup>[2]</sup>. That is these *Srotas* carry only such of the mobile *Dhatu* which are destined to be transformed to another *Dhatu* like *Rasa* transforming into *Rakta*<sup>[3]</sup>.

The *Swaroopa* of these *Srotas* is described as their colour is similar to that of the *Dhatu* they carry, these are tubular either large or small in size, and either straight or reticulated in shape<sup>[4]</sup>. These are the hollow organs predominantly constituted by *Aakash Mahabhuta*.

In spite of existence of numerous *Srotas* *Aacharya Charaka* has categorised 13 *Srotas*<sup>[5]</sup> and *Aacharya Sushruta* has described 11 pair of *Srotas*<sup>[6]</sup> on the basis of clinical utility. These *Srotas* or channels are named

according to the substance which they carry in them like *Pranavaha Srotas*, *Udakavaha Srotas*, *Rasavaha Srotas* etc.

**Prana:** *Prana* has many levels of meaning from breath to the energy of consciousness itself. *Prana* is not only the basic life force; it is the master form of all energy working on all the level of mind, life and body.

The word *Prana* is derived from the Sanskrit root "An" with a prefix "Pra". "An" means to breath, to live<sup>[7]</sup>. One of the meanings of the root "Pra" is to fulfil<sup>[8]</sup>, where as one of the meaning of "Na" is the nasal. Thus, the whole word *Prana* means the fulfilment through the nasal part, which is necessary for the prolongation of life.

*Aacharya Sushruta* has described *Dwadash Pranaas*.<sup>[9]</sup>

The *Pitta* or the fiery, *Sleshma*, *Vayu*, the three primary qualities of *Sattva*, *Rajas* and *Tamas*, the five sense organs, and the self are termed as *Prana*.

*Aacharya Charaka* in various contexts has said *Vata*<sup>[10]</sup>, *Anna*<sup>[11]</sup> and *Rakta*<sup>[12]</sup> as *Prana*. The all the activities of the body are done by *Vata* and it is the *Prana* of the living entities.

*Prana* is also one of the five types of *Vayu*. *Vata* with its five divisions *Prana*, *Udana*, *Samana*, *Vyana*, and *Apana* appropriately sustains the body by its unimpaired movements in the locations concerned.<sup>[13]</sup>

In *Bhagwatgeeta*<sup>[14]</sup> and *Ayurveda*, *Prana* and *Apana* are considered as expiration and inspiration.

Hence, in all *Prana* can be understood as the life driving force which keeps the organisms alive.

**Pranavaha Srotas-** As the *Srotas* are named according to the substance or the element they carry; the *Pranavaha Srotas* carry *Prana* in them. *Aacharya Chakrapani* in their commentary have described *Pranavaha Srotas* as the channels which carry *Vata* named *Prana*<sup>[15]</sup> in them.

In other words, the organs of the body which carry *Prana Vayu*, its assimilation and transportation to other parts of the body and elimination of *Vayurupa Mala* constitute the *Pranavaha Srotas*.

**Prana Vayu** - *Prana Vayu* which is transported by *Pranavaha Srotas* is located in *Murdha* (head), *Ura* (chest), *Kantha* (throat), *Jihva* (tongue), *Asya* (mouth), *Nasika* (nose). It performs functions like *Sthivana* (spitting or salivation), *Kshavathu* (sneezing), *Udgara* (eructation), *Shawasa* (respiration), *Ahara* (deglutination of food) etc<sup>[16]</sup>.

*Prana Vayu* is also called as *Dehadhrika*<sup>[17]</sup> or which holds the body by virtue of the functions it performs.

#### Chief functions of *Prana Vayu*:

As *Charaka* has described following functions:

**Sthivan:** To forcefully clear the tracheal and pharyngeal passage of mucous-sputum expulsion. Commentator *Dalhana* explain it as spitting sputum.

**Ksavathu-** To sneeze

**Udgara-** To belch

**Nisvasa-** Respiration

**Annapravesakrit-** Ingestion, Intake of food through mouth. This word indicates other not mentioned functions beside ingestion like propagation of food etc.

In addition to functions listed by *Caraka*, *Astanga-Hridaya* added some more as functions of *Prana Vayu*: Control on intellectual level, Control on heart, Control on all sensory and motor organs, Control on mind.<sup>[18]</sup>

All functions considered together by all compendia can be enumerated and explained as follows:

- **Pranavalambana**<sup>[19]</sup>: As long as this *Vayu* is functioning in body, it lives.

This function is expressed through respiratory movements. It can therefore be derived that *Prana Vayu* keeps a living person alive.

- **Svasanam:** *Nisvasa* is name given by *Vagbhata* to inhalation of air through nose. He states inhalation is due to *Prana Vayu*. *Prasvasa* is exhalation. Respiration comprises inhalation and exhalation. *Sharangdhar* proposes that process of respiration is due to *Prana Vayu*<sup>[20]</sup>. *Caraka-Samhita* has described channel for *Prana* and names it as *Pranavaha Srotas*.

Commentator *Cakrapani* elaborated this verse. He added that existence of special channel is necessary for such important *Vata*- type as *Prana*. He

comments that all types are circulating through all channels yet *Prana Vayu* has separate channel.

- **Annapravesa:** Ingestion of food is *Annapravesa*. Since area of functions of *Prana Vayu* extends from mouth towards abdomen, this function comes under territory of *Prana Vayu*. Once food is taken in mouth *Prana Vayu* directs this food to stomach. Food is one of three '*Bahyaprana*' namely, air, food and water. *Prana Vayu* helps this *Prana* to enter inside body through mouth and inside digestive organ, stomach, through esophagus.
- **Hridaya Dharanam:** *Cetana* principle abides in heart. *Rasa* and *Rakta* are circulated by heart. Heart is one of the ten *Pranayatanani*. Digested food is converted into *Ahararasa*. This *Ahararasa* is responsible for strengthening heart. Role of *Prana Vayu* in ingestion of food is mentioned above. *Prana Vayu* gets involved in strengthening heart more by way of looking after *Ojas*, which is located in heart. Since heart is site of *Prana*, *Pranavayu* takes care of heart and takes care of *Oja* as well.
- **Control of intellectual functions of mind** considered as *Urogata Hridaya* is important, as mind is one of the sites of pathogenesis of disease. Heart is site of *Pranavayu*. Heart is site of *Jivatma*. As *Pranavayu* takes care of heart, it looks after requirements of *Jivatma*. Mind is an instrument for *Jivatma* to grasp feeling of pleasure and misery. Movement of mind is supposed to be through channels, which cover entire body. Mind is '*Indriya*' and *Prana Vayu* takes care of all *Indriyani* of body. This is how this function is included in responsibilities of *Prana Vayu*. Control on sensory and motor organs is the function of *Prana Vayu*. *Pranavayu* take care of all *Indriyani*, controls and strengthens them.

- **Sputum expulsions, sneezing and belching**

Mucous expulsion accumulated in airways of neck and thorax, through oral cavity is function of *Pranavayu*. This, along with sneezing and belching is specific functions of *Pranavayu* due to its typical '*gati*' or direction. Since functions of *Prana Vayu* are inhalation, ingestion etc. direction could be from outside towards inside of body.

Direction of expectorating mucous is from inside to outside. Direction of belching is from inside out. Same way is for sneezing. Whenever there is any obstruction to its direction, since *Prana Vayu* is vitally important for life, clearance of obstruction is supposedly immediate. This could be reason of allotting functions like expulsion of mucous, sneezing, and belching by *Prana Vayu*.

**Mula Sthana of Pranavaha Srotas-** *Aacharya Charak* has described *Hridaya* and *Mahasrotas* as the sites of origin of channels carrying *Prana Vata* or the *Pranavaha Srotas*<sup>[21]</sup>.

*Aacharya Sushruta* has described *Hridaya* and *Rasavahini Dhamani* as *Mula* of *Pranavaha Srotas*<sup>[22]</sup>.

**Hridaya:** Charaka and Sushruta both have mentioned Hridaya as a Mula of Pranavaha Srotas because of its role in Pranavahan Karma. Hridaya (heart) is responsible for taking impure blood and propel it to lungs for purification (oxygenation). After receiving this oxygenated or the pure blood, heart propels it to all body tissues. Acharya Sharangdhar while explaining Shvasana Kriya that the Pawana named Prana goes out to take Ambarpiyush after coming in contact with Hridaya<sup>[23]</sup>. Thus role of Hridaya can be understood as Mula of Pranavaha Srotas.

Also in Siddhi Sthana chapter 9 Acharya Charaka has described Hridaya as- as the spokes of a wheel are attached to the centre, similarly the ten vessels, Prana Vayu, Apana Vayu, Manas, Buddhi (wisdom), Chetna (consciousness) and Mahabhuta are attached or associated to the heart<sup>[24]</sup>. The ten vessels attached to the heart are the carriers of Ojas.

Prana Vayu and Apana Vayu referred to above represent the expiration (Uchvasa) and inspiration (Nisvasa) respectively. According to some scholars these represent two varieties of Vayu. This verse also favours heart as the site of Prana and thus proves indulgement of heart in Pranavahan Karma.

In the context of Vega Dharana also Acharya Charaka mentioned about Hridroga in Sramaswasa Dharana<sup>[25]</sup>, which are having direct relation with Pranavaha Srotas.

**Mahasrotas-** Acharya Charaka has mentioned Mahasrotas as Mula of Pranavaha Srotas. Acharya Charaka has given Mahasrotas as a synonym of Kostha<sup>[26]</sup>. Acharya Sushruta has mentioned Kostha includes Amashaya, Agnyasaya, Hridaya, Unduka, Puppusa etc. Therefore, it can be concluded that, Mahasrotas is an organ of respiration.

Some Acharya also consider Puppusa by the term Mahasrotas by Lakshanavritti, because it is the main site where the Prana Vayu Vyapara takes place (gaseous exchange). In Sharngadhara Samhita, it is mentioned that Puppusa is the Adhara for Udanavay<sup>[27]</sup>. Moreover, Udanavayu is the one, which helps in Uchwasakriya. This also supports Puppusa as Mahasrotas.

Aaharyacharaka while explaining Shawas & Hikka diseases associated with Pranavaha Srotas have given their Prabhav Sthana in Kostha as Amashya<sup>[28]</sup> or Nabhi which are parts of Mahasrotas, this justifies the role of Mahasrotas as Mula of Pranavaha Srotas.

**Rasavahini Dhamani:** Origin of Rasvahini Dhamani is Hridaya and these are said as the carrier of rasa from Hridaya to all the body parts. Acharya Sharangdhar has explained Rasavahini Dhamani as having origin from Hridaya or heart and is responsible for propelling Pawana or Vata in whole body<sup>[29]</sup> (or these are mainly responsible for taking pure or oxygenated blood rich in nutrients to all the body tissues).

### **Pranavaha Srotodushti Lakshana**

Acharya Charaka has described the Pranavaha Srotodushti Lakshana<sup>[30]</sup> as

- *Atishrushtam* : Prolonged respiration
- *Atibadham* : Too restricted respiration
- *Kupitam* : Painful or exacerbated Dyspnoea
- *Alpalpam*: Breathing with interruption (Distinct pause)
- *Abheekshanam* : Continuous breathing or Continuous Dyspnoea
- *Sashabdham*: Auscultatory sounds like Ronchi, Crepitation etc.
- *Sasholam*: Painful respiration.

### **Shvasana Prakriya**

Acharya Sharangdhar has described the Shvasana Prakriya very clearly.

In Shwasa Kriya two phases Prana and Apana are given. Prana as inspiratory phase and Apana as expiratory phase is described by Acharya Charaka while explaining characters (Guna) of Aatma<sup>[31]</sup>.

The movement of Prana Vayu between Nabhi through interior of heart, Kantha, exterior and then again back to heart and then entire body. Thus this can be taken as the alternative flow of gases between exterior and body.

Exchange of gases between ambient air (*Vishnupadamruta*) and then its supply to various tissues is also explained in the same verse by Acharya Sharangdhar.

This verse explains all the four basic components of respiration as described in contemporary sciences, as Ventilation-exchange of respiratory gases between atmosphere and lungs.

Diffusion-exchange of gases between lungs and blood.

Perfusion- circulation of blood to all the body cells.

Cellular respiration or metabolism- by *Prinana* of *Jatharaagni*.

**Shwasa Kriya Dar (rate):** In *Varahopnishad*, *Kanthopnishad* and *Shatpath Brahmana* the total number of respirations are given 21,600 per day<sup>[32]</sup>, which works out to be 15 per minute which is very close to the present day normal average 16 -18 per minute for healthy adults.

### **CONCLUSION**

The Pranavaha Srotas is of very vital importance in maintaining normal functioning of human body. It plays multidimensional role by virtue of very vital substance it carries through it that is Prana Vayu. Its Hridaya and Mahasrotas are the Mulasthanas of Pranavaha Srotas and are mainly vitiated in the diseases of Pranavaha Srotas and the Rasavaha Dhamani are involved in transportation of Prana Vayu in the body.

Pranavaha Srotas should not be studied only with the correlation of respiratory system but it must be studied in context to other major systems like nervous system (regulation of respiration), cardiovascular system



(transportation of *Prana*), and alimentary canal (diseases of *Pranavaha Srotas* like *Shwasa*, *Hikka* have their origin in *Mahasrotas*).

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