

## MOOLASTHANA OF PRANAVAHA SROTAS: A REVIEW

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### ABSTRACT

*Srotas* is defined as the passages through which the various *dhatu*s that are undergoing the process of metabolic transformation are transported. The process of transformation of *dhatu* requires the action of *Agni*. *Srotorodha* is one of the *samalakshana* by *Vagbhata*. *Srotas* are related to the metabolic state of their corresponding tissues through different tissues. *Srotas* are also described to be the structures from which the contents move out, or ooze out, or transude out. Nutrient substances are supplied to various tissues via *Srotas*. Concept of *srotas* is similar to functional system indicated in physiology of living body. When organs carrying out same function are working together, they collectively comprise a system. *Pranavaha* system deals with inhaled flow of air. Since heart is principle organ of this system, all active entities working for heart can be considered supportive to this system. Commentator *Chakrapani* straight away indicates respiratory system should be considered as *Pranavaha* *srotas*. He also states that *Prana* indicates one of five types of *Vatadosha*. Diseases of this system match respiratory diseases hence it can be concluded that *Pranavaha* *srotas* indicates respiratory system. It is interesting that *Charak Samhita* has added entire gastrointestinal tract or *Mahasrotas* in this principle organ or *mula* of system. Such comments are treatment based evidence. It is clinically observed that when heart and gastrointestinal system gets disturbed, respiratory symptoms appear without fail.

**Keywords:** *Prana, Pranavaha srotas, Mahasrotas, Moolasthana*

### INTRODUCTION

*Ayurvedic* clinical foundation is based on thorough knowledge of *srotas*. *Srotas* are the Channels that convey the body elements, which are undergoing metabolic processes, sub serve the purpose of circulation. The vitiation, depletion and maintenance of existed bodily structures are never possible without *Srotas*. The *Srotas* are that channels by which con-

duction of the respective nutrients to their respective destinations is possible.<sup>1</sup> After that only that specific organ gets the pacification or depletion. Hence any organ cannot be maintained or can't get vitiated without *Srotas*, so there is a need to study the fundamental and applied aspect of *Srotas* in order to

understand *Ayurvedic* biology and disease processes in depth.

*Srotas* are the channel or structure through which *Shrovanam Karma* i.e. flowing, moving, oozing and permeation of different constituents and nutrients of body takes place. *Pranavaha srotas* is obviously the transport system of *prana* which has been narrated as vital air inhaled and also be the vital energy of the body responsible for each and every activity of living being. Most of the *lakshanas* explained in the *dushti* of *Pranavaha srotas* are related to the respiratory system so it has been related to respiratory system. Therefore concept of *Pranavaha srotas* also is understood in the light of these facts. *Moolasthanas* is the place from where it is being distributed and regulated.

Right from birth to death *Swasochchhvasa kriya* is the one of major sign of life. The *swasakriya* is one of the main functions of *pranavaha*. *Pranavaha srotas* is the channel, which carries the external air in to the body to sustain the life. Thus the *pranavaha srotas* is most important for life and longevity.

*Moolasthanas* 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 *moolasthanas*, its normal functioning etc. In this respect here an effort is made to thoroughly understand the *moolasthanas* of *Pranavaha srotas*.

## MATERIALS AND METHODS

For this study, the basic and conceptual materials have been collected from the *Ayurvedic* classics i.e. *Brihatrayee* and *Laghutrayee* mainly the *Susruta Samhita*, *Charak Samhita* and other classics with the available commentaries, as well as various reference books to be reviewed.

## DISCUSSION

In the textbooks, the term '*Prana*' has been used in different contexts: ten locations of *Prana*, twelve types of *prana*. '*prana*' also means breathe as it has

been described as an attribute of *Atma*, It is also a subtype of *Vayu*. There has been diverse of opinion, even among the authentic texts of *Charak* and *Susruta Samhita*. Based on the description of the texts, the commentators express their own views in their own line of thinking.

According to *Charak*, the *Hridaya* and *Mahasrotas* are at the *Moola* of "*Pranavaha srotas*".<sup>2</sup> The symptomatology described by *Charak*, regarding *Pranavaha srotas* when it gets deranged, appear to be supportive of Respiratory system of the body. The diseases like *Swasa* and *Hikka* have their origin from the *Moolasthanas* of *srotas*. The organs described in *Pranavaha srotas* according to *Gangadhar* commentary are *Hridaya* and *Vaksha* (*Phupphusa* i.e. lungs.). *Chakrapani* says the passage through which "*vayu*" in terms of "*pranavaha*" passes through the body is known as *Pranavaha srotas*.

In *Susruta Samhita*, the description of *Pranavaha Srotas*, its number, origin and location are somehow different than the description available in the *Charak Samhita*. According to *Susruta*, there are two *pranavaha srotas* originating from *Hridaya*(heart) and *Rasavahini dhamanis*.<sup>3</sup> In connection with *Rasavahini dhamanis*, there is difference of texts, where we find *Pranavahi Dhamanis* in its place. Considering this *Pranavahi Dhamanis*, Dr B.G. Ghanekar states that there are just "*Swasavahinis*" representing the bronchi of respiratory tract. In this view these are the *Pranavaha srotas* in to which *pranavayu* gets in. Almost all the ancient authorities opines that the head or *moordha* being the main seat of *prana*.

### 1) Moordha-

In *Charak samhita* it was mentioned that, "*Siras*" (head) is the seat of all *indriyas* and the *pranavahi srotas* concern with these *indriyas* shoot out or diverge from this center controlling the life just similar to the rays of sun<sup>4</sup>. *Pranavaha* initiates impulses from *siras* and travels through nose, tongue, pharynx, neck till *uras* understood as reticular formation from medulla oblongata with higher center connect-

ed especially “respiratory center” which promotes intake of air, food and expulsion of phlegm, gas (respiration). The function of *Prana* is “*Hridayendriyachittadruk*”,<sup>5</sup> *Pranavayu* controls heart, senses and mind. It suggests the brain center in medulla oblongata does the control of respiration. So *moordha* is the seat of *Prana*. Other active sites of *Prana Vayu* are: the chest and throat. It controls and regulates the intellectual functions, sensory and motor activities, cardiovascular, mental processes and activities such as spitting, belching, respiration and deglutition. Therefore *Pranavaha srotas* stands for the system concerned with the activities of *Prana vayu*. Head is the region where all *Prana*'s are situated and all the sensory and motor activities are controlled from. That is why the head is called the most superior organ of the body. All sensory organs along with their *Pranavaha srotamsi* are basically situated in the head region in a fashion similar to the connection between Sunrays and sun.

*Pranavaha srotas* stands for the *srotas* which is concerned with the passage of the specific type of *vayu*, i.e. *Prana Vayu*, which is located in the head. The injury to *Pranavaha Srotas* leads to the manifestation of various neurological system and abnormal rate and depth of respiration. The treatment of many respiratory disorders is done using the drugs that act on nervous system hence; the protocol prescribed for the disorders of *Pranavaha Srotas* is that of *Swasa*.<sup>6</sup>

## 2) *Hridaya*

*Charaka* and *Sushruta* both have mentioned *Hridaya* as a *moola* of *Pranavaha srotas* because of its role in *pranvahan karma*.<sup>7</sup> *Hridaya* is responsible for taking impure blood and propel it to lungs for purification (oxygenation). After receiving this oxygenated or pure blood, heart propels it to all body tissues. From *Acharya Sharangdhara*'s explanation about *swasankriya*, it is understood that “*Hridaya*” is the *moolasthana* of *Pranavaha srotas*. According to him “*PranaPavana*” situated at *Nabhi*, after leaving *Hritkamala* comes out through *Kantha* mixed with *Vishnupadamruta*.<sup>8</sup> Supporting *Acharya Sharangdhar* view the term “*Pranvahadve*” Prof.

*Ghanekar* says that both the lungs situated on either side in the thorax, should be regarded. In this view the term “*Moolam Hridayam*” signifies the pulmonary arteries originating from the heart and transverse towards the lungs. He also accounts the bronchioles branching out from both the bronchi. Thus the deoxygenated blood, brought by pulmonary arteries gets spread over the surface of the lungs and after getting oxygenated with the “*Pranavayu*” carried in by bronchioles the blood goes back in to the heart through the pulmonary veins. This description concludes that the take up and carry of the “*Pranavayu*” are mainly conducted by lungs and its accessory channels.

The commentator *Adhamalla*, in his commentary “*GudharthSandipani*” over the above verse describes that “*Nabhisthapranpavana*” means ‘*Nabhistha-Iti- Hridayasth*’ Heart with vessels is called *Nabhi* in Ayurveda, not only lungs concern with the respiration but lungs along with heart are responsible for respiration.

It is also known that heart has its own autonomous conduction system, which regulates cardiac cycle. The conduction system of heart and the respiratory center of brain ultimately govern the process of respiration, which is done by lungs. In many of cardiac diseases it is observed that *Swasa* and *Kasa* as common cardinal feature. Which can be regarded as *Partantra Swasa* or *Kasa*, there are many of cardiac disorders resulting from *Pranavaha srotovyadhis* which are placed under *Swasa* particularly *Maha*, *Urdwa* and *Chinnaswasa*.<sup>9</sup>

In the context of *Vegadharana* also *Acharya Charaka* mentioned about *Hidroga* in *Sramaswasadharana* and *kasadharana*, which are having direct relation with *Pranavaha Srotas*. Lungs looks active during the process of respiration, but it is vitalized by heart, so there is a proportion with heart rate and respiratory rate in the ratio of 4:1. Therefore, *Hridaya* comes as the *Moolasthana* of *Pranavaha srotas*.

### 3) ***Mahasrotas***

The *Pranavayu* is an utterly essential component of the *Pranavaha srotas*. The word *Mahasrotas* according to *Acharya Charaka* is one of the two *moolas* of *Pranavaha srotas*<sup>10</sup>, which indicates that it is a large tube and large in diameter. The *mahasrotas* is associated with *Phupphusa* (lungs), the trachea, its two branches, bronchi and their further branching in to bronchioles to the alveoli; all these structures can be included under *Mahasrotas*. According to *Acharya Charaka*, *Mahasrotas* is a synonym of *Koshtha*. *Acharya Sushruta* has mentioned *Koshtha* includes *Amashaya*, *Agnyasaya*, *Hridaya*, *Unduka*, *Phupphusa* etc.<sup>11</sup> Therefore, it can be concluded that, *Mahasrotas* is an organ of respiration. While explaining the organogenesis of the body – *Acharya Susruta* opines, *Phupphusa* as “*sonitaphenaprabhava*”.<sup>12</sup> Here the *phenadhatu* resembles the lightest part of blood which is rich in *Vayu* and *Aakashamahabhutas*, by that the lungs resemble a cluster of bubbles or multiple air filled sacs for providing a large surface area for gaseous exchange as in alveoli. So it is clear that *shonitaphenaprabhava* indicates the functional anatomy of lungs.

*Acharya Charaka* while explaining *Pranavaha srotodushti lakshanas*, all *lakshanas* clearly shows the functions of lung hence indirect reference to involvement of lung in the *Pranavaha srotas* is there.<sup>13</sup> Further he told that *pranavaha srotovyadhis* should be treated similar to *Swasaroga*, which establishes Lungs and function of breathing are integral to *pranavaha srotas*. In *Sharangdhara samhita* it is mentioned that *Phupphusa* is the *adhara* for *Udanvayu*. Moreover, *Udanvayu* is the one, which helps in *ucchwasakriya*. This also supports *Phupphusa* as *Mahasrotas*.

### 4) ***Rasavahi dhamani*** –

It is the name given to the arteries which helps in taking pure and nutritionally rich blood from *phupphusa* to *Hridaya* and then to all body tissues. *Hridaya* is the seat of *Ojas*, *Prana* and root of the *Rasavaha srotas* also.<sup>14</sup> Hence, it is clear that these

*siras* carry the *Ojas* or the *Prana* from heart to the smallest unit of body as they further divide into numerous branches and attain the name *Mahaphala*. *Prana* reaches to every corner of the body through *Rasavahi dhamani* and then performs the categorical functions. So thereby *Rasavahi dhamani* is considered as *Moolasthana* as mode of transportation.

### 5) ***Phupphusa*** –

*Phupphusa* is an organ that is situated on the left side of the heart while *Kloma* is an organ that is situated on the right of it.<sup>15</sup> *Todaramalla*, in his commentary on *Trishna Nidana* of *Astanga Hridaya*, has mentioned that ‘*Kloma* means *Phupphusa*’. Therefore it seems that these terms have been used to indicate the left lung and right lung respectively. Further, *Kloma* is also the *mula* of *Udakvaha srotas*. The role of lungs is water and electrolyte balance, acid-base balance. Dryness of the structures such as tongue, palate, lips, throat and *kloma* along with severe thirst has been mentioned by *Charaka* as the symptom of the pathological manifestation in the *Udakvaha srotas*. The dryness in the lower respiratory tract is a symptom that is seen in many conditions associated with excessive water loss through lungs. Thirst is a physiological mechanism that helps in the water and electrolyte homeostasis in terms of regulating plasma osmolarity. This homeostasis, in turn can have influences in respiration.

## CONCLUSION

Concept of *Srotas*, in all different contextual meaning, is still relevant in the present scenario and might give further insights if revisited. *Hridaya*, *Mahasrotas* and *Murdha* are *Moolasthana* of *Pranavaha srotas* and *Rasavaha dhamani* are involved in transportation of *pranavayu* in the body. Neuronal control of respiration falls under the purview of *Pranavayu* whereas chemical control of respiration, acid-base balance and water electrolyte balance fall under purview of *Udakvahasrotas*. *Pranavahasrotas* should not be studied only with the correlation of respiratory system but it must be stud-

ied in context to other major systems like nervous system, cardiovascular system and alimentary canal.

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