

## CRITICAL APPRAISAL ON CONCEPT OF *SROTAS* IN *AYUVEDA* AND ITS IMPLICATION IN CLINICAL PRACTICE

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### ABSTRACT

According to *Ayurvedic* literature entire body is made up of *Srotas* (micro and macro channels) which transports all types of materials in the body. For normal functioning of the body it is essential that these channels, both micro and macro remains intact. We found detail description of *Srotas* is present in *samhita*. *Srotas* are related with each-other, when one *Srotas* is vitiated other *Srotas* are also get affected. *Srotas* is the systems that carry or circulate the *Doshas* and tissues (*Dhatu*) or their elements to the various organs. During this process of circulation the *Dhatu* are transformed from the first to the last tissue layer (*rasa* through *Shukra*). Each *Dhatu* has two aspects: nutrition for its own tissue layer, and sustenance for the next developing *Dhatu*. *Srotas* (micro channels) are not only responsible for

the dispensing of the food to different tissues and cellular systems of the body but also involved in removal of the waste products. The core of *Ayurvedic* medicine is the *Srotas*, an interconnected web of bodily functions said to conduct a healing, sacred energy from head to toe. The *Srotas* which means channels or path are often through to be different part of the body's transportation system. The utility of the knowledge of the *Srotas* (channels) is not directly described in *Samhita*. So there is a need to elaborate the concept of the *Srotas* in scientific way to realize its importance in clinical practice.

**KEYWORDS:** *Sharir, Srotas, Dhatu, Bhava Padarth, System*, micro and macro channels.

## INTRODUCTION

*Ayurveda* is the most ancient of all medical sciences. It is the only medical science which has withstood the ravages of time and still blooming steadily and gloriously even though the modern medical sciences of the west. According to *Ayurveda* entire body is made up of *Srotas* (micro and macro channels) which transports all types of materials from one part to another part of the body. For normal functioning of the body it is essential that these channels, both micro and macro remains intact.

The term *Srotas* is derived from the root 'Sru' (*Gatyarthak*) *Dhatu* and 'Asrun' suffix to make the term. According to *Charaka* the channels of circulation, carrying the *Dhatu* (tissue elements or their constituents), undergoing transformation, to their destination are called as *Srotas*. *Srotas* are pathway of *Rasadi Dhatus*. To elaborate the concept, *Charaka* has used the term '*Parinamamapadyamananam*' (meaning undergoing alteration), which is suggestive to the fact, that the channels carry such of the tissue elements as are undergoing alteration from their previous state, like *Rasa* to its following state *Rakta*, *Rakta* to *Mamsa* and *Mamsa* to *Meda* etc.

According to *Acharya Sushruta* "The channels, which are widely spread in all the spaces (Intra, Inter and Extra- cellular spaces) of the body, where circulation (Transportation) of the fluid occurs irresistibly and continuously are known as *Srotas*. These are different from the arteries and veins." From this definition it is clear that *Srotas* are different from veins and arteries and are widely spread all over the body

*Srotas* are the systems that carry or circulate the *Doshas* and tissues (*Dhatu*) or their elements to the various organs. During this process of circulation the *Dhatu* are transformed from the first to the last tissue layer (*rasa* through *Shukra*). Each *Dhatu* has two aspects: nutrition for its own tissue layer, and sustenance for the next developing *Dhatu*. *Srotas* micro channels are not only responsible for the dispensing of the food to different tissues and cellular systems of the body but also involved in removal of the waste products.

### Every *Srotas* has three parts

#### 1. *Sroto mula*(root)

This is the main part of *srotas* where formation, storage, or elimination of *Bhava Padarth* of that *Srotas* is take place.

## 2. *Sroto marga* ( passage)

This is the path through which the contents (*Bhava Padarth*) of that *srotas* is carried out.

## 3. *Sroto mukha*(opening)

It is the opening or site through the contents (*Bhava Padarth*) of that *Srotas* are get originate, or eject out.

### Concept of *Srotas* in *Ayurveda*

In *Ayurvedic* classic there are different opinions concerning the concept of *srotas*, because the approach of the *Acharya* has different in their views considering the *Sootas*. *Acharya Charaka* described the *Srotas* on physiopathological (i.e. on functional abnormality) base where as *Sushruta* mention the *Srotas* on anatopathological(i.e. on structural abnormality) base.<sup>[1]</sup>

*Chakrapanidatta* in his commentary explain the *Srawan Karma*. It is that by which *Poshak Rasa* is taken to the *Poshya Dhatu*. He has observed that *Srawana Karma* conveyance *Rasa* and *Poshya Dhatu* (nutrient precursors of tissue) in the body. He observes that '*Srotas*' do not transport *Sthira Dhatus*, but only to the *Dhatus* which are undergoing metabolic transformations. The *Dhatus* which are formed consecutively from the *Poshaka Dhatus* are permanent *Dhatus*. The nutrient materials of a particular *Dhatu* does not nourish it through a *Srotas* other than its own, because of the location of *Poshya Dhatu* in different parts of the body. Thus, nutrients meant *Asthi Dhatu*, while being transported by *Rasa* through *Meda* (indirectly by *Mamsa Dhatu* as being precursor of *Meda*), may be; allowed to run through the *Ayanamukhas* of *Medovaha Srotas*. There may also be an affinity between *Asthi Dhatu* and *Mamsa Dhatu* for nourishment. *Chakrapanidatta*, in his commentary has presented two aspects of *Srotas*.

- (a) Structures through which the *Sravana* (to ooze, to exude, to filter and to permeate through) of fluids takes place.
- (b) Channels through which body fluids are transported from one place to another place.

This view is supported by the root meaning of *Ayana* i.e. *En-Gatau* means as to move or to go, and i.e. '*Mukha*', '*Mukha-Moksane*' to leave or to let free. *Acharya Charaka* defines *Srotas* as '*Srawanat Srotansi*' is also similar to the above. In this way in *Charaka Samhita* the word '*Srotas*' has an extensive meaning. In the course of clarifying this fact, he has stated

that the specific varieties of channels of circulation in the human body are the same in number as the structural entities in it.<sup>[2]</sup>

Acharya Sushruta has clear the Srotas as the hollow channel except Sira and Dhamani which originating from root space spreads in the body and circulate and exude of the specific entities. Dalhan commentator of *Sushruta Samhita*, accepted in his commentary that all the structures through which *Prana*, *Anna*, *Jala*, *Rasa* etc *Dhatus* and *Malas* circulate are called as *Srotas*.<sup>[3]</sup>

Acharya Vagbhatta maintain the *Srotas* as to the extremely fine passages and pores present in the lotus stem. He observed that *Dhatus* separate throughout the body through very fine *Dwar* of *Srotas* which are scattered extensively in the body.<sup>[4]</sup>

According to *Charak* the specific varieties of the channels of circulation in the human body are the same in number as the structural entities of it. Therefore the *Srotas* are innumerable, but the thirteen main *Srotas* (*Pranavaha*, *Udakavaha*, *Annavaha*, *sapta dhatu*, *trimala*) describing their site of origin and causes of vitiation. Instead of these *Srotas*, *Charaka* described *Artavavaha Srotas* in the context of *Garbha Prakaran*. Acharya Sushruta has furnished eleven pairs of *Srotas* especially in the context of injury and has mentioned symptoms of piercing at its root.<sup>[5]</sup>

Sushruta has omitted the *Asthi*, *Majja* and *Swedavaha Srotas* in his counting. Clarifying the different modes of approach made to *Srotas*, by *Shalya Tantra* and *Kayachikitsa*. Dalhan has observed the special kind of pain (*Vedana Vishesh*) exhibited in case of *Srotodushti* (pathological involvement of *Srotas*). *Srotas* is being spread throughout the body are important from the *Kayachikitsa* point of view, on other hand. Special kinds of pain which may manifest on account of either the piercing of or injury to *Srotas* present in certain special parts of the body. They are important to gain knowledge of the prognosis of such conditions. On the contrary *Kayachikitsa* recognizes *Srotas* which are spread throughout the body and which include extremely fine one. Any pathological involvement of them may manifest subtle kinds of pain which may not be recognized or to be help in assessment of prognosis in such involvement.<sup>[6]</sup>

*Srotas* is simply a hollow channel or space present in our body. *Srotas* is independent element in the body which makes or constitutes its own. It is independent of its location and materials

which are transported through it. The *Bhava Padartha* which are transported through it cannot be independently referred to as *Srotas*, but are vital for the *Srotas* to perform its designated function. Generalized treatment of these channels is described in our classic so the physician is also advised to consider the existence of the dosha in that particular condition.<sup>[7]</sup>

### Structure of *Srotas*

According to *Acharya Charaka*, *Srotas* have their color similar to that of the *Dhatu* or *Bhava Padarth* they transport; they may be *Vrintta*(cylindrical), *Sthool* (Gross/Macroscopic) or *Anu* (Atomic in Size/Microscopic), *Dirgha* (Large) or *Pratana* (Reticulated) in shape. According to *Sushruta*, *Dhamni* have pores in their walls very much like the minute passages present in the stem of a Lotus, through which they supply Rasa to all parts of the body.

*Vagbhatta* has followed the view of *Sushruta* and he has compared *Srotas* as fine passages and pores present in the lotus stem. He observes Rasa spreads throughout the body through the *Dwara* (pores) of *Srotas*, which are distributed extensively in the body, very much like the minute channels present in the stem of a Lotus flower.<sup>[8]</sup> *Sushruta* has further stated that the *Pratana* (Reticulate or ramified) *Srotas* are found in *Mamsdhara Kala*.

### *Moolasthan of Srotasa*

The *Moolasthan* or the source is the origin, maintenance and destruction of the specific carrier of the body nutrient cannot be possible and the place which controls the entire functional dealings and processes of that specific carrier. These data lend support to the observation made by *Punarvasu Atreya* that no structure in the body can grow, develop, waste or atrophy, independent of *Srotas* that transports *Dhatu* which later on, are constantly subjected to transformation. The *Srotas* sub serve the needs of transportation. To determine *Moolasthan* of *Srotasa* following points have been logically and categorically mentioned in the our classics such as.

- a. Utpatti Sthana (Moolasthan related with origin point of view)
- b. Sangraha Sthana (Moolasthan related with storage)
- c. Naidanika Drishtikon (Moolasthan related with diagnostic point of view)
- d. Chikitsatmaka Drishtikon (Moolasthan related with clinical point of view)

Among the above mentioned points some points are considered in combination in some texts and considered separately in some contexts to determine the source of *Moolasthan*. But the

clinical standpoint has been considered in all the cases of determination of the *Moolasthanas*. Hence justification of the consideration of *Srotas*, *Moolasthanas* of respective *Srotas* in the preview of above points is the contextual need and subject matter.<sup>[9]</sup>

### Functions of *Srotas*

According to *Ayurveda*, *Srotas* which represent the internal transport system of the body, especially at the level of *Sthayi Dhatu*, exercise a selective discrimination, as regards the supply of nutrition to these *Dhatu*. *Acharya Charaka* observed that nutrient substances which nourish the *Dhatu* undergo *Paaka* process by the *Ushma* of that *Dhatu*. They are then made available to the *Dhatu* through their own *Srotas*.

This pattern of distribution of nutrition to the *Sthayi Dhatu* is comparable to the *Kedarkulya Nyaaya*, in which the supply of water to several plots in a paddy field (*Kedari*) through a system of canals or channels (*Kulya*) or *Khale-Kapota Nyaaya* in which the *Sthayi Dhatu* are like the Pigeons (*Kapota*) choose the kind of substances they need for their nourishment from the nutrient pool, represented by *Rasa*.

As *Dhatu* circulates through *Kulya* (Channels/Canals) represented by *Srotas* has three implications that is-

- The *Srotas* represents a system of channels or canals through which *Paushaka Dhatu* are transported to the *Sthayi Dhatu*.
- Each *Dhatu-Vaha Srotas* is specific in the particular species of *Sthayi Dhatu* to which they transport nutrition.
- The *Sthayi Dhatu* also exhibits a selective discrimination as regards the kind of nutrition they need.

The principle of specificity of *Dhatu Vaha Srotas* in *Ayurveda* is important and a concept similar to that which are seen to emerge from modern scientific research, in the field of physiology and bio-chemistry, relating to the “mechanism and dynamics of exchange of fluid across capillaries” Like *Ayurvedic* concept of *Khalekapota Nyaaya* modern physiology too has recognized the specificity of the substances, different kinds of tissues need. Thus, recent studies in the metabolism of proteins have shown that “The pattern of Amino Acid mixture supplied to the tissue will determine the suitability of these substances for the synthesis of a specific type of cellular protein”.



The views of *Punavasū Aatreya*, cited earlier, that structural peculiarities that is the elements that compose the *Srotas*, the materials they transport, the tissue to which they serve channel of transport, and the regions of the body they cover, constitute the significant features of *Srotas*, finds an echo in modern views relating to the properties of capillary walls and plasma membranes of the cells. The function of *Srotas* are in transportation, most important is to Generate/increase or decrease the *Moortimant Bhava*. Thus structures can be called *Srotas* which transports *Moortimant Bhava Padarth* and produces new *Bhava Padarth* or change the *Bhava Padarth* in different form.<sup>[10]</sup>

### ***Srotodushti of Srotas*<sup>[11]</sup>**

*Acharya Charaka* mention the concept of *Srotodushti*. If we take Food and behavior which is similar to *Guna* of *Vatadi Dosha* and opposite to *Guna* of *Dhatu* it causes *Srotodushti* like *Srotorodha* are day sleep except in summer, taking cold water after process of *Snehapana*, *Anuvasana*, *Vamana*, *Virechana Niruha Vasti* etc. There are four types of manifestation of *srotodusti* occurs viz. *Atipravritti*, *Sanga*, *Siragranthi*, and *Vimarga gamana*. These four types of *srotodusti* may occur either individually or in combined form.

*Atipravritti*- Increased activity of one or more *srotas*. Increase respiratory rate, heart beats, increase peristalsis movement of intestine in *atisara* etc.

2. *Sanga*-Also called *srotorodha*, opposite of the *atipravritti*. Obstruction of pores of sweat in fever, obstruction of *annavahasrotas* causes enlargement of abdomen etc.

3. *Siragranthi*- Thickening, new growth or tumors. *Vidradhi*, *Granthi*, *Arbud*, *Shlepada* etc.

4. *Vimarga Gamana*- – it means leaving its own path and entering into other path e.g. entrance of *mala* into *Mutra Marga* In *Bhagandar*, *Chhardi* (movement of food in upward direction from the stomach).

But *Acharya Sushrut* who described the *Srotas* as surgicoanatomical base, he explained the Symptoms of *Srotoviddha* like *Moha*, *Kampana*, *Adhmana* (flatulence), *Chhardi* (vomiting), *Jwara* (fever), *Pralapa* (delirium), *aand Shula* (pain), obstruction of urine and stool and leading to death. So in the case of *Srotoviddha*, *Vaidhya* should remove that particular *Shalya* or foreign body and treat like acute wound.

### ***Srotas as Vyadhiadhisthan***

The purpose of detail knowledge of *Srotas* is essential to understand the role of *Srotas* in the manifestation of diseases. *Srotovijnana* of *Ayurveda*, on one hand relates to gross pathology

and cure while on the other hand it relates to the physiological functions which are the basis for good health.

*Dosha* get obstructed due to *Srota Vaigunya*, then there disease originates. *Kha" Vaigunyata* means *Sroto Vaiguntata* according to *Dalhana*. There are so many diseases which get originate due to *Sroto Dushti* like *Klama*, *Jwara*, *Rajayakshma*, *Udara Roga*, *Aamvata* etc.

### Role of *Srotas* in developing the disease

If *Srotas* are in healthy state the formation of *Dosha*, *Dhatu*, and *Mala* are good, but when these *Srotas* are vitiated due to any reason then *Dosha*, *Dhatu* and *Mala* also become vitiated and body becomes diseased. *Srotas* act as the transportation system of our body. The *Dhatu* transported through *Srotas* are constantly subjected to metabolism. Without *Srotas* no body part can grow and develop or degenerate. *Srotovaigunya* plays vital role for the *Sammurchhana* of *Dosha* & *Dushya* at a particular site as a result disease manifest inside the body. The role of *Khavaigunya* in the manifestation of the disease is well discussed in all the *Ayurvedic* texts. Due to *Khavaigunya*, *Dosha* & *Dushya* *Sammurchhana* takes place to form the *Samprapti* of the disease inside the body. *Dosha* and *Dushya* undergo either increase or decrease the abnormal *Dosha* and *Dushya* involve the respective *srotas* and then the abnormality in the *Srotas* is manifested in the form of *Srotodushti*. So the detail knowledge of *Srotodusti* is a must for an every *Ayurvedic* clinician to treat a patient in a holistic way.<sup>[12]</sup>

### DISCUSSION<sup>[13,14]</sup>

In *Ayurveda* detail description of *Srotas* are present. *Acharyas* have mentioned *Sthula Srotas* like-*Pranavaha*, *Udakavaha*, *Annavaha*, *Rasa-Raktadi Dhatuvaha*, *Purishavaha*, *Swedavaha*, *Mutravaha* and *Artavavaha*. These are mention as system in modern as -Respiratory System, Digestive System, Circulatory System, Reproductive System etc.

*Srotas* are related with each-other, when one *Srotas* is vitiated other *Srotas* are also get affected. If *Annavaha Srotas* is vitiated it affect other *Srotas* like *Pranavaha*, *Rasavaha* and *Purishavaha Srotas*. Such the effects are also evidently proved in modern medical science that the digestive system is the site which makes availability of a lot of elements, extrinsic factors, vitamins, energy producing molecules etc, useful in the function of other systems as well as eliminate the waste and toxic materials.



There are so many references of *Srotasa* in *Ayurvedic* texts. After considering these references we can understand that *Srotasa* cannot be correlated to the modern equivalents as there are so many concepts that resemble to *Srotasa*, that create confusion and make it difficult to understand.

Some authors think that these are arteries which supply to the particular organs of any system, which can be told as root or *Moola* of any *Srotasa* but according to *Acharya Sushruta Moola* of *Artavavaha Srotasa* are *Garbhashaya* and *Artavavahinidhamani*, so here this concept is not appropriate.

If we think about the other concept of some authors according to which *Srotasa* can be represented by capillaries then it justifies the concept of *Acharya Sushruta* “*Sira Dhamani Vivarjitam*” and perfectly explains the *Artavavaha Srotasa*.

One more opinion is of intracellular spaces. As the function of *Srotasa* is to supply nutrition to various parts of the body i.e. *Udavahana Karma* and not only capillaries but Intracellular spaces also carries nutrition to cells. So, It also justifies the concept of *Acharya Sushruta* “*Sira Dhamani Vivarjitam*”.

To understand the concept of *Srotas* the best example is our house. There are generally (always) two types of ducts in a well planned house- one system is responsible for the carrying of fresh water inside the house and second is to remove the waste products- supply and sanitation system. If any of these systems will occlude to some reasons what will happen. It will only cause disease. The same concept of *Srotas* is mention in *Ayurveda*. As *Ayurveda* is an applied science so this system’s proper working indicates towards ease, towards health and when this transport system of the body is not working properly it causes disease.

Beside this all the cells have their internal circulatory system which is managed by Endoplasmic Reticulum inside the cells. This internal system of cells should also be considered in the same category of the *Srotasa*, if we are considering about the *Poshana Dharma* of the *Srotasa*.

*Srotasa* are some channels which are capable to carry something which are involved in the transportation. This transportation can be that much gross as movement of the food in the intestines and can be that much subtle as is –diffusion of some of the nutrients from the extra cellular fluid or even the movement of the nutrients inside a cell.<sup>[15]</sup>

All the diplomacy above is indicating towards transport system of the body. But the transport system, we are considering is very subtle in nature basically. This system is responsible for the nutritional exchange and transportation and is deeply associated with the tissues. Number of the ducts and transport system cannot be counted because this is incalculable.

## CONCLUSION

- *Srotas* is the transportation system of the body which carries the important Nutriments or *Bhava Padarth* from one place to another place. It includes exchange, transport and excretes not only the materials but also massages, impulses, emotions and thought through macro and micro channels.
- The detail knowledge of *Srotas* is essential for to understand the role of *Srotas* in the manifestation of disease condition.
- Sign symptom of a disease occurs in the body due to vitiation of *Srotas* of the body. So any pathological conditions concerning the *Srotas* must be treated hastily.
- Every *Ayurvedic* clinician must have detail knowledge of concept of *srotas* to treat the patient in holistic way.
- Any disease condition is occurs due to *Srotodushti*. Hence correct the *Srotodushti* quickly.

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