

## Physiological Concept of *Srotas* and It's Clinical Aspect in Ayurveda

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### ABSTRACT

An endless number of structures known as "*Srotas*" combine to form the living organism. A *Srotas* in plural form is called a *Srotamsi*, and it refers to both distinct organ systems (*Sthula Srotas*) and tiny individual cells (*Anu Srotas*). In reality, *Srotas* is a conduit. Its etymology can be traced back to the Sanskrit root "*Stru-strabane*," *Dhatu*, which can indicate "to exude, ooze, filter, penetrate, flow, move, etc." *Srotas* is a structure through which *Sravanam* transpires, according to Charaka Samhita. The internal transport system of the body is represented by *Srotas* and has been given a place of fundamental importance in Ayurveda - both in health and disease - an importance which recent developments in the field of medicine have begun to emphasize. The structural and functional integrity of this system to physiological states and likewise, the impairment of their integrity to pathological state were correlated by Charaka Acharya. He says- "No structure in the body can grow and develop or waste and atrophy, independent of *Srotas* that transport *Dhatu*s, which latter are constantly subjected to (metabolic) transformations. They subserve the needs of transportation. Their role is to carry substances that either excite or alleviate *Doshas* (*Prakopa* and *Shamana*, respectively). Surgeons have identified the following as vital signs: those that may be pierced during surgical procedures with sharp tools, or they may suffer traumatic injury. In cases of *Srotodushti* (pathological involvement of *Srotas*), specific types of pain are manifested, and these pain types are crucial for understanding the prognosis of the condition as well as for treating its underlying causes.

**KEY WORDS:** *Srotas*, *Mulasthanas*, Channels, Repertories, Sites

### I. INTRODUCTION

The *Chetana*, which is one of the two fundamental parts of the living body, is what gives life. A body made up of *Panchamahabhuta* is another element, represented by a figure or shape.<sup>[1]</sup> To preserve equilibrium, the many structures created by *Panchamahabhuta* remain together and cooperate with one another. From *Akasha*, various *Mahabhutas* develop as the fundamental one. Because of this *Mahabhuta*, space exists wherever it does. Internal and external molecular space, various channels, words, ears, and other body parts are examples of entities with *Akasha Mahabhuta* qualities.<sup>[2]</sup> It is clear from this that there was once thought to be a concept of many tiny separate living units inside the body that are invisible to the senses. These tiny living entities are now referred to as "cells," which are the fundamental structural and functional elements of the human body and are also known as "*Anu srotas*." Tissues are a collection of comparable cells in both structure and function that cooperate to form an organ system; they are referred to as "*Sthula srotas*" and are sense organ observable. The dictionary definition of "*Srotas*" is "a current, a stream, or a river." Since *Akasha Mahabhuta* causes *Srotas* to form, these qualities include patency, porousness, cleanliness, softness, slight unctuousness, thinness, colorlessness, and transparency.<sup>[3]</sup> *Kala* is a structure which is limitation between *Dhatu* and *Ashaya*.<sup>[4]</sup> *Kala* acts as semi-permeable membrane and only selected substance are allowed to pass through it. The *Kalas* are seven in all and are situated at the extreme borders (forming encasement and support) of the different fundamental principles (*Dhatu*s) of organism. *Srotamsi* of body are channels of different kinds. It includes all canals - big or small, perceptible or

imperceptible, minute or gross - that compose internal transport system of the body.<sup>[5]</sup>

The concept of *Srotas* can be understood with the help of synonyms.<sup>[6]</sup>

- ❖ *Srotamsi*- Channels
- ❖ *Sira*- Veins
- ❖ *Dhamanis*- Arteries
- ❖ *Rasayanis*- Lymphatics, ducts
- ❖ *Rasavahinis*- Capillaries
- ❖ *Nadis*- Tubular Conduits
- ❖ *Panthanas*- Passages
- ❖ *Marga*- Pathways, Tracts
- ❖ *Sharirchhidrani*- Body Orifices
- ❖ *Samvrutta*- *Asamvruttani*- Open or Blind-Passages
- ❖ *Sthanani*- Sites, Locus
- ❖ *Ashayas*- Repertories
- ❖ *Niketas*- Resorts

Although these terms appear to be synonyms, they actually denote distinct structures and functions. The *Drushya* and *Arushya* channels, which provide passage for the movement of *Sharira Dhatus*, are maintained by the nomenclature already explained. The purpose of each space in the body appears to be distinct, despite the fact that all of these body entities are defined and show the same common function of moving materials from one location in the live body to another.<sup>[7]</sup>

#### Aim

To research the physiological and therapeutic relevance of *Srotas* in relation to disease pathogenesis.

#### Objectives

1. To understand concept of *Srotas* in detail by review of literature.
2. To get knowledge of functions of *Srotas*.
3. To understand clinical significance of *Srotas* in disease condition.

#### Need of study

The factors that lead to the *Prakopa* (excitation) or *Shamana* (alleviation) of *Doshas* are transported by *Srotas*. *Apathya Ahara-Vihara* vitiates *Dosha*, leading to *Khavaigunya* and the onset of disease. It is essential to understand *Strotas* in order to treat the illness and determine the prognosis.

## II. MATERIALS AND METHODS

Classical texts which were available in the library of Government *Ayurved* College, Udaipur (Raj.)

were reviewed. PubMed database available from net surfing was also reviewed as per the title. Four research articles are included in review of this article.

## III. REVIEW OF LITERATURE

### Genesis of *Srotas*

*Srototpatti* occurs in intrauterine life. The creation of *Srotas* is the responsibility of *Vayu Mahabhuta*. *Vayu* produces *Srotas* when differentiation occurs with the right *Agni*.<sup>[8]</sup> In this way, a great number of *Srotas* which give rise to different body entities are formed during the intrauterine life as a result of the differentiation of the fertilized zygote.

### Types of *Srotas*

According to law, '*Bhetta hi Bhedyam Anyatha Bhinnatti*'- categorization of *Srotas* is done different ways. They are structurally similar to their corresponding tissues they transport (*Svadhatusamavarnani*), but the size may differ as per morphology of *Dhatu* some of them may be round (*Vrutta*), some may be gross (*Sthula*) or minute (*Anu*), some may be slender (*Dirgha*) or reticular (*Pratansadrushyani*).<sup>[5]</sup>

*Srotas* can be classified on following basis:

#### 1. According to number:

- i) Numerable
- ii) Innumerable

#### 2. According to perceptibility:

- i) *Drushya* (perceptible)
- ii) *Arushya* (imperceptible)

#### 3. According to *Adhishthana*:

- i) *Sharirika*
- ii) *Manasika*

#### 4. According to *Sthanabheda*:

- i) *Bahirmukha* (Opening outside): -These are seven in number: - 2 *Akshi* (eyes), 2 *Nasika* (nose), 2 *Karna* (ears), 1 *Mukha* (oral cavity).
- ii) *Antarmukha* (Opening inside): -These are thirteen in number: -*Pranavha Srotas*, *Annavaha Srotas*, *Udakavaha Srotas*, *Rasavaha Srotas*, *Raktavaha Srotas*, *Mamsavaha Srotas*, *Medovaha Srotas*, *Ashtivaha Srotas*, *Majjavaha strotas*, *Shukravaha Srotas*, *Mutravah strotas*, *Purishavaha Srotas*, *Swedavaha Srotas*.

Movement of *Tridosha* i. e. *Vata*, *Pitta* and *Kapha* is through entire body and through different *Srotamsi*. Even *Manasika Guna Sattva* and *Manasika Dosha Rajaand Tama*, which are

imperceptible by sense organs, use the entire body as vehicle and field of operation.<sup>[9]</sup>

### Physiological Concept of Srotas

There is much diversity in the *Srotamasi*, as there is in the elements that compose the structure of the body. All body entities which are present in the body possess their own 'Srotas'. All body entities get replenished in own *Srotas*. We can understand from this quotation that, at the time of Charaka Samhita, knowledge of the internal transport system of the body had reached a high degree of development. The living body is nothing but the resultant of aggregation of innumerable 'Srotamsi', that are transporters of factors which causes *Prakopa* (excitation) or *Shamana* (alleviation) of *Sharira Doshas*.<sup>[10]</sup>

*Srotas* are concerned with the metabolic state of their corresponding tissues through different communicating mechanisms. Infact all *Srotas* are conveyers of body entities, which are under process of bioconversion. Charaka Acharya says 'Srotas' serves as *Ayanamukhas* to both the *Mala* and *Prasada* part of *Dhatu*. *Ayana* is derived from *engatou* root, meaning, to go or to move, that is, hat through which movement of materials takes place.<sup>[11]</sup> The word *Mukha* is derived from root *Muchmokshane*, meaning to leave or to be free. Also *Mukha* is used as a synonym of *Nihsarana*, meaning a structure through which things get out or get in. In this way *Srotas* nourish *Sthayidhatu*. This is exact nature of and main function performed by *Srotas*.

Let us understand functions of *Srotas* point wise in physiological condition:

#### ➤ *Sravanam* (Oozing)

The nutrient material of a particular *Dhatu* does not nourish it through a *Srotas* other than its own. E.g. the nutrients necessary to nourish *Asthidhatu*, if reaches to *Mamsadhatu* while circulating with *Ahararasa*, may not be allowed to ooze through *Ayanamukhas* of *Mamsavaha Srotas*. According to Ayurvedic point of view, *Parthivatva* related to nourishment of *Mamsa Dhatu* is different from that of *Parthivatva* related to nourishment of *Asthidhatu*. The concerned *Srotas* apparently decide as to which kind of *Parthiva Dravya* should be allowed to pass through their *Ayanamukhas*. All body entities get replenished in its own *Srotas*. also, we can take the example of digestive system. Release of bile from gall bladder, produced in liver is necessary for digestion of fats.

#### ➤ *Vahanam* (Transportion)

*Ahararasa* is fluid, which circulates through different channels in entire body. This fluid reaches every *Srotas* and supplies required material for that part of *Dhatu*, which undergo catabolism. The *Prasada* part of *Dhatu* and also *Mala Dhatu* (waste products or products of degradation) is transported. If *Dhatu* is not mobile then actual motility of that *Dhatu* is not expected. Transport of material needed for nourishment of that *Dhatu*, from one place to another is strongly indicated. The channels which serve as vehicles of transport of both *Prasada* and *Mala Dhatus* also serve the purpose of their egress and ingress. E.g. Nutrients from *Rasa Dhatu* are transported to *Raktavaha Srotas* to replenish *Rakta Dhatu*.

#### ➤ Site of Biotransformation

*Srotas* is meant to carry *Dhatu* in stage of metabolism. It means that during process of metabolism, one *Dhatu* gets transformed into further *Dhatu* in *Srotas*. *Srotas* is a device in which biotransformation of previous *Dhatu* to next *Dhatu* occurs. E.g. *Rasa* can be replenish *Rakta* only where *Rasa* gets bio-transformed into *Rakta*; this happens only in *Srotas*. If *Rasa* goes somewhere else and tries to get transformed in *Rakta*; *Rasa* is unable to increase quantity of *Rakta*. *Mamsa Dhatu* is generated in *Mamsavaha Srotas* by nutrients coming from *Rakta Dhatu* and so on.

#### ➤ Excretion

The term *Malakhya Dhatu* is used for waste products or the degraded elements of tissues, which are not meant to be discarded entirely. A part of *Malakhya Dhatu* is utilized for the synthesis of some structural elements of the body as well as sub-serve some of the vital functions of the organisms while a part is utilized to compose excrements which are periodically thrown out of the body. *Sthayidhatu*s are seldom without *malas*. E.g. *Mala* of *Asthidhatu* is *Kesha* (hair) and *Shmashru* (beard) are structural elements of the body while sweat is *Mala* of *Medo Dhatu* which is excreted out of the body.

#### ➤ Absorption

*Srotas* are also has power of selective absorption. Nutrients of different *Dhatus* are present in *Ahararasa* while travelling through it. But only concerned *Srotas*'s nutrient gets selectively absorbed there. E.g. In the *Mootra-nirmiti* process (urine formation), at the site of

*Pakvashaya* only *Mootraposhaka* part gets absorbed and it oozes in Basti (urinary bladder) where urine is stored.

### Typical functions

*Poshana* or nourishment of *Sthayi Dhatu* is one of the main functions of *Srotas*. Nutrient substances which nourish *Sthayi Dhatus* undergo *Paka* by *Ushma (Agni)* of *Dhatus*. They are then made available to *Dhatus* through their own *Srotas*.<sup>[12]</sup>

#### ➤ *Mulasthanas of Different Srotas*

In classical Ayurvedic texts, concept of *Srotomula* is focused. Although they have different opinions regarding *Mulasthana*, they consider it to be *Prabhavsthanam*,<sup>[13]</sup> meaning from where almost all the activities of that particular *Srotas* takes place and also which is affected most during pathological conditions. Although purpose of stating *Mulasthana* of *Srotas* is not mentioned directly, the commentator of Charaka Samhita, Chakrapanidatta says- 'If root of the tree is destroyed, it will cause harm to the whole tree, likewise if harm is caused to *Srotomula*, it will lead to damage to whole *Srotas*.

### Clinical Aspect of Srotas

#### General Srotodushti Hetu

In general, all food and activity that are promotive of the morbid tendencies of the *Doshas* and deleterious to the body elements are vitiated of the body channels i.e. *Srotas*.<sup>[14]</sup>

#### Characteristics of Srotodushti

The characteristics of the morbidity of the body channels are the increased or decreased flow of their contents, knotted condition of the passages or flow of their contents in abnormal channels.<sup>[15]</sup>

#### 1. *Atiprvrutti*

The term *Atiprvrutti* means excessive flow. When the *Srotas* gets vitiated due to *Dosha*, it may lead to functional deformity which causes *Atiprvrutti*. E.g. in *Prameha* due to *Medovaha Srotodushti*, there is *Bahumutrata* (excessive passage of urine).

#### 2. *Sanga*

*Sanga* means obstruction/retention or holding up. Due to vitiated *Dosha*, *Srotas* gets affected functionally. It cannot perform its routine function of *Sravanam*/transport. The flow is obstructed and leads to diseased condition. E.g. In case of *Mutrakruchha*, there is obstruction in the passage

of voiding urine, so there is retention or dribbling micturition.

#### 3. *Sira-Granthi*

It means dilatation of veins causing obstruction to normal flow through *Srotas*. E.g. Atherosclerosis is a condition in which plaque builds up inside arteries, which causes obstruction to flow of blood.

#### 4. *Vimarga Gamana*

Due to some pathology, at the level of *Srotas*, there is the flow of fluid in the affected area through channels other than its own. E.g. according to *Jwara Vyadhi Samprapti Udakavaha* and *Sweadavaha Srotas* are obstructed and vitiated *Doshas* causes *Srotodushti*, *Agni* gets out of its original place and resides in *Twaka* causing *Jwara*.

### Concept of Srotovaigunya

*Srotas* perform function of the transmission of materials from one side to the other. The nutrient substances which nourish the *Dhatus* undergo *Paka* by the *Ushma (Agni)* of *Dhatus*. This kind of *Agnivyapara* and *Paka* takes place at the level of *Dhatuvaha Srotas*. The *Dushti* or impairment of *Agni* may, lead to *Khavaigunya* or *Srotovaigunya* i.e. the impairment of the function integrity of the *Srotas*. It causes its inability to perform its normal functions. The *Doshas* get vitiated and they interact with *Dushyas* of the affected region. This phenomenon is called as *Dosha-Dushya Sammurchana*. At the site of interaction, the process of disease initiates. According to Sushruta Samhita- this process in detail explained under the heading of *Shatkriyakala*. In which *Chaya*, *Prokopa*, *Prasara* and *Sthanasamshraya*, relate to accumulation, excitation, spread and initiation of symptoms of diseases. This fourth stage of *Shatkriyakala* is due to *Khavaigunya* or *Srotovaigunya*.<sup>[16]</sup> Thus, all pathological lesions - acute or chronic, have their beginning at the level of *Srotas*.

### Understanding Concept of Srotas in Modern Point of View

In *Vatakalakaliya Adhyaya* of Charaka Samhita, function of *Vata Dosha* is described as '*Sthulanu Srotasam Cha Bhetta*'.<sup>[17]</sup> This is the evidence to say that classification of '*Srotas*' into *Sthula Srotas* and *Anu Srotas* existed. If this theme is taken into consideration, *Anu Srotas* at cellular level. The cell membrane permits only some selective substances to pass through it and acts as a barrier for other

substances. The nutrients are also absorbed into the cell through the cell membrane. The metabolites and other waste products from the cell are excreted out through the cell membrane. Also gaseous exchange takes place through the cell wall, oxygen passes inside the cell from blood while carbon dioxide comes out of the cell. So, at the cellular level *Anu Srotas* performs all its functions as per Ayurvedic texts, if there is no evidence of any pathology. Likewise at the level of *Sthula Srotas*, for example *Annavaha Srotas*, all the physiological functions e.g. Deglutination, digestion, secretion, absorption, excretion are carried out routinely in normalcy. But if functional integrity is hampered due to vitiated *Doshas*, all the functions are disturbed. There is *Srotovaigunya* at the site of *Dosha-Dushya Sammurchhana* which initiates disease process. Manifestation of a disease occurs in the body as a result of the defective *Srotas* of the body. Hence, any defect of *Srotas* must be corrected quickly, for the restoration of normal health.

#### IV. DISCUSSION

*Srotas* is a processing unit that performs the biotransformation of one *Dhatu* into the next. disease that manifests in the body due to faulty *Srotas* that support the *Dosha-Dushya Sammurchhana*. Since we now know the causes of *Srotodushti*, the best course of action is to avoid the causing factors. In other words, "Prevention is better than cure." The process by which "*Swasthasya Swasthya*" is maintained, which can be crucial in maintaining homeostasis, is known as *Nidana Parivarjana*.

#### V. CONCLUSION

The focus of this article is on developing a systematic understanding of the concept of *Srotas*, including its functions in physiological conditions, its *Mulasthanas*, the causes of *Srotodushti*, its characteristics, and its clinical significance. Almost all Ayurvedic texts include extensive discussions of *Srotas'* role in the onset of disease as well as its significance in maintaining normal physiological functions, which form the cornerstone of good health. An Ayurvedic Doctor must be fully knowledgeable about *Srotas* in order to treat a patient holistically. Clinically, at the *Srotovaigunya* stage, illness symptoms are practically ready to manifest. We can determine the location of a disease based on its symptoms, and by treating the vitiated *Doshas* found in the *Mulasthana*, the disease can be completely managed from the ground up.

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