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 pleural 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 emphasis. 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 function that cooperate to form an organ system; and they are referred to as ”cells,” which are the fundamental structural and functional elements of the human body and are also known as "Anu strotas.” 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 strotas" 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.[²] Kala is a structure which is limitation between Dhatu and Ashaya.[³] 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 (Dhatus) of organism. Srotamsi of body are channels of different kinds. It includes all cannels - big or small, perceptible or

KEY WORDS: Srotas, Mulasthana, 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.[¹] 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.[¹] 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 strotas.” Tissues are a collection of comparable cells in both structure and function that cooperate to form an organ system; and they are referred to as "Sthula strotas" 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.[³] Kala is a structure which is limitation between Dhatu and Ashaya.[⁴] 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 (Dhatus) of organism. Srotamsi of body are channels of different kinds. It includes all cannels - big or small, perceptible or

imperceptible, minute or gross - that compose internal transport system of the body.\(^5\)

The concept of Srotas can be understood with the help of synonyms,\(^6\)

- **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
- **Sthananis**- Sites, Locus
- **Ashayas**- Repertories
- **Niketas**- Resorts

Although these terms appear to be synonyms, they actually denote distinct structures and functions. The *Drushya* and *Adrushya* 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.\(^7\)

**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 Srotas 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*.\(^8\) 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 (Svadhatu samavartani), 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).\(^5\)

**Srotas can be classified on following basis:**

1. **According to number:**
   i. Numerable
   ii. Innumerable
2. **According to perceptibility:**
   i. *Drushya* (perceptible)
   ii. *Adrushya* (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).

Movement of Tridosha i. e. *Vata*, *Pitta* and *Kapha* is through entire body and through different Srotamsi. Even *Manasika* *Guna* *Satva* and *Manasika* *Dosha* *Rajaaad* *Tama*, which are
imperceptible by sense organs, use the entire body as vehicle and field of operation. [9]

**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 ‘Srotamasi’, that are transporters of factors which causes Prakopa (excitation) or Shamana (alleviation) of Sharira Doshas. [10]

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 Ayannakhas 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. [11] The word Mukha is derived from root Muchmokshane, meaning to leave or to be free. Also Mukha is used as a synonym of Nisharana, 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 Ashtidhatu, if reaches to Mamsadhatu while circulating with Ahararasa, may not be allowed to ozone 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 Ashtidhatu. 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 (Transportation)**
  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 Rakotava 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 another 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 Rakta 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 Malakhyha Dhatu is used for waste products or the degraded elements of tissues, which are not meant to be discarded entirely. A part of Malakhyha 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 are seldom without malas. E.g. Mala of Ashtidhatu is Kesha (hair) and Shmarshru (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 Mootranirniti 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 Dhatu undergo Paka by Ushma (Agni) of Dhatu. They are then made available to Dhatu through their own Srotas.[12]

- **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,[13] 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 Srotodushhti Hetu**

In general, all food and activity that are promotive of the morbid tendencies of the Doshas and deleterious to the body elements are vitiative of the body channels i.e. Srotas. [14]

**Characteristics of Srotodushhti**

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. [15]

1. **Atipravruddhi**

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

2. **Sanga**

   Sanga means obstruction/retention or holding up. Due to vitiated Doshha, 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 Vyaydi Samprupti Udakavaha and Sweadavaha Srotas are obstructed and vitiated Doshas causes Srotodushhti, 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 Dhatu undergo Paka by the Ushma (Agni) of Dhatu. This kind of Agniivyapara and Paka takes place at the level of Dhatuvaha Srotas. The Dushhi 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 Doshasha-Dushhya Samsrucha. At the site of interaction, the process of disease initiates. According to Sushruta Samhita- this process in detail explained under the heading of Shatkriyaka. In which Chaya, Prokopa, Prasara and Shhanasamsnya, relate to accumulation, excitation, spread and initiation of symptoms of diseases. This fourth stage of Shatkriyaka is due to Khavaigunya or Srotovaigunya. [16] 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 Vatakalamakaliya Adhyaya of Charaka Samhita, function of Vata Doshha is described as ‘Sthulanu Srotasam Cha Bhetta’.[17] 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 Dhātu 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 Svasthya" 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 Mulashanas, 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 Srotovaigyna 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 Mulashana, the disease can be completely managed from the ground up.

REFERENCES


