REVIEW ARTICLE

Concept of Srotas, Srotodushti, and its Applied Clinical Aspects

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ABSTRACT

The Triguna, Tridosha, Saptadhatu, Oja, Agni, and Srotas are the foundation of Ayurveda’s holistic biology. The body’s internal transportation system, or Srotas, serves as a platform for the actions of other significant bio-factors, such as the three Doshas, the seven Dhatus, the Oja, and the Agni. In the Ayurvedic classics in addition to the circulatory system, the term “Srotas” is used to describe the dynamic interior transport system of the body-mind-spirit organization. According to Ayurvedic Acharyas, an unhealthy lifestyle and unwholesome diet can cause the Srotas system to lose its integrity, which affects the entire range of life processes in both health and sickness. According to Acharya Charak, “Without the help of the Srotas that transport the Dhatus, which are continually undergoing (metabolic) transformations, no structure in the body can grow and develop or waste away and atrophy. To comprehend Ayurvedic biology and medicine, it is necessary to learn both the theoretical and practical aspects of Srotas as without srotodushti (histopathology) no disease can occur.

1. INTRODUCTION

According to Acharya Charak “Sravanata Srotamst” means the structure through which Sravanam takes place”,1,1 it states that the living body is a channel system and/or is made up of countless channels that are intended to serve as an interior transport system for a variety of functions, including biological and energy. Srotas are the canal or channels through which nutrients, Dhatu, and waste product are transported within the body.2,3 They are also responsible for transportation of Dosha.

1.1. Need of Study
Srotas are carriers of elements that excite or calm down the Doshas, respectively, through Prakopa and Shamana. Due to Apathya Ahara-Vahara, which results in khavaigunya and the disease process, Dosha becomes vitiated. Understanding Srotas is crucial to diagnose and treat the disease.

1.2. Aims and Objectives
1. To understand the concept of Srotas as per classic literature.
2. To understand Srotodushti and its role in the manifestation of disease.
3. To explore its importance in clinical aspects.

2. MATERIALS AND METHODS

Classical texts (Samhitas) were available. PubMed database available from net surfing was also reviewed as per the title. Two research articles are included in review of this article.

3. LITERATURE REVIEW

3.1. Nirukti

Acharya charak referred Srotas as communicating channels, especially for nutrients and tissues which are to be utilized for the formation of permanent Dhatu.1,1

3.2. Synonyms of Srotas

Analysis of a few of its significant synonyms revealed that the phrase “Srotas” is used to refer to all macro and microchannels and routes operating in the bodily being. Following are the synonyms Sira (vein), Dhamani (arteries), Rasayan (lymphatics), Rasavahini (capillaries), Nadi (Tubular conduits), Pantha (passes), Shana (sites, locus), Ashayas (repositories), Niketa (resorts), Marga (pathways, tracts), Samvrit-Asamvrit (open or blind passages), and Sharir Chidra (body orifices, openings).1,1

3.3. Origin And Panchbhautik Composition of Srotas

Srototpatti occurs in intrauterine life. Vayu mahabhuta is in charge of producing Srotas. Vayu develops Srotas when differentiation occurs.

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3.4. Characterization of Srotas

Color - The color of the Srotas is of Dhatu that they carry
Size - Anu (microscopic in size) and Shhula (macroscopic in size)
Shape - Vritta (cylindrical), Dirgha (long), and Pratani (reticulated).

3.5. Classification of Srotas

Srotas can be classified on the 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 nine in number 2 Akshi (eyes), 2 Nasika (nose), 2 karna (ears), 1 Mukha (oral cavity), 1 Guda (anus), and 1 Mutrandriya (urinary tract).
   ii. Antarmukha (opening inside) These are thirteen in number Pranavaha srotas, Annavaha srotas, Udakavaha srotas, Rasavaha srotas, Rakavaha srotas, Mamsavaha srotas, Medovaha srotas, Ashitavaha srotas, Majjavaha srotas, Shukravaha srotas, Mutravaha srotas, Purishavaha srotas, and Swedavaha srotas. [9] [As mentioned in Table 1]

3.6. Physiological Significance of Srotas

The living organism is nothing more than the accumulation of numerous “Srotamsi,” which are carriers of variables that cause Prakopa (excitation) or Shamana (relief) of Sharira Doshas. Poshana or nourishment of Sthayi dhatu is one of the main functions of Srotas. Nutrient substances which nourish the Sthayi dhatu undergo Paka by ushna (Agni) of Dhatus. They are then made available to Dhatus through their own Srotas. [9] Let us understand the functions of Srotas point wise in physiological condition.

3.6.1. (Oozing) Sravanam

A certain Dhatu’s nutrient composition does not nourish it through any Srotas besides its own. For instance, it may not be permitted for the Asthi dhatu – necessary nutrients to leak through the Mamsavaha Srotas’ Ayamukhas when they are circulated with Ahararasana. From an Ayurvedic perspective, parthivatva connected to mamsha dhatu feeding differs from parthivatva related to asthila dhatu sustenance. It appears that the concerned Srotas make the decision regarding the type of Parthiva Dravya that should be permitted to travel through their Ayamukhas. Each body part has its own Srotas where it gets refilled. We can also use the digestive system as an example.

To digest fats, the gall bladder must release the bile that the liver produces.

3.6.2. (Transportation) Vahanam

Ahararasana is a fluid that travels through various pathways throughout the entire body. This fluid reaches every Srotas and provides the materials needed for the parts of the Dhatu that are catabolized. Both the Mala Dhatu (waste products or products of deterioration) and the Prasada half of the Dhatu are transferred. Actual motility of the Dhatu is not anticipated if it is not mobile. Transporting the supplies required to feed that Dhatu from one location to another is highly advised. The conduits that are used to transport Prasada and Mala Dhatu also function as their points of escape and entry. For instance, to restock Rakta, nutrients from Rasa Dhatu are sent to Rakavaha Srotas.

3.7. Biological Transformation Site

Srotas is designed to transport Dhatu during various metabolic stages. This indicates that one Dhatu in Srotas is changed into another Dhatu during the metabolic process. The mechanism known as a Srotas is where the biotransformation of one Dhatu into another takes place. For instance, Rasa can only be replenished by Rakta when Rasa undergoes bio-transformation into Rakta, which only occurs in Srotas. Rakta is unable to produce more Rakta if he travels to a different location and tries to become Rakta. In Mamsavaha Srotas, nutrients from Rakta Dhatu and other sources produce Mamsa Dhatu. Transformation (metabolism) of Poshya Dhatu occurs in Srotas.

3.8. Absorption

Srotas has power of selective absorption. Nutrients of different Dhatus are present in Ahararasana while traveling through it. However, only concerned Srotas’s nutrient gets selectively absorbed there, e.g., in the Mootra-Nirman process (urine formation), at the site of Pakvashaya only Mootraposhaka part gets absorbed and it oozes in Basti (urinary bladder) where urine is stored.

3.9. Excretion

Waste materials or tissues that have degraded but are not intended to be completely eliminated are referred to as Malakhy Dhatu. Malakhy Dhatu is divided into two parts: One part is used to create the body excretions that are periodically expelled from the body, while the other part is used to synthesize various structural elements of the body and support some critical processes of the organisms. Malas are rarely absent from Sthayi dhatu, e.g., Kesha (hair) and Shmashra (beard) are mala of Asthi dhatu, which are structural elements of the body, whereas sweat is Mala of Medo Dhatu, which is expelled away.

3.10. Clinical Significance of Srotas

Acharya Vaghbhatta categorically mentions that body system undergoes normal functioning when Srotas are in equilibrium state. Once Srotas are in wicked state (Srotodushti), it interrupts normal physiology of the body and get prone to diseased condition. Manifestation of disease occurs in the body as a result of defective Srotas.

3.10.1. Srotodushti Hetu

In general, any meal or action that promotes the Doshas’ morbid tendencies and harms the body’s elements is vitiative to the body’s channels, or Srotas. [10]

3.11. Srotodushti’s Characteristics

The increased or decreased flow of their contents, the state of the passages being knotted, or the flow of their contents through aberrant channels is all signs of the morbidity of the body channels. Charaka
enumerated commonly pathological or organic damages to Srotas, i.e., khavaigunya, they are.

3.11.1. Atipravritti (Increased Activity)
Atipravritti stands for “excessive flow.” A functional malformation that results from the Srotas becoming vitiated by Dosha may result in Atipravritti. For instance, Prameha suffers from Bahumutrata (increased urine flow) as a result of Medovaha Srotodushti.

3.11.2. Sanga (Obstruction)
Sanga denotes retention or blockage or standing. The functioning of the Srotas is impacted by vitiated Dosha. It cannot function, its typical transport/Sravanam function. The flow is blocked, which results in a sick condition. For instance, Mutrakrichra causes retention or dribbling micturition because there is restriction in the urine’s path during voiding.

3.11.3. Sira-Granthi (Reduction of the Lumen of the System)
It denotes vein enlargement that prevents Srotas from flowing normally. For instance, atherosclerosis is a condition in which arteries develop plaque, which prevents blood flow.

3.11.4. Vimarga Gaman (Opposite Direction Flow)
A disease at the Srotas level causes the affected area’s fluid to flow through channels other than its own. For instance, Jwarrayadh Samprapti claims that Udakavaha and Svedavaha srotas are blocked[11] [Explained in Table 2].

3.12. Role of Srotodushti/Srotovaigunya in Pathology of Disease
The dietary components which by the Ushma (Agni) of the Dhatus nurture the Dhatu while they go through Paka. In this manner, Agniyapara and Paka occur at the Dhatu vaha srotas level. Khavaigunya or Srotovaigunya, which is the impairment of the function integrity of the Srotas, may result from Dushti or Agni impairment. It prevents it from carrying out its typical activities. The Doshas get vitiated, and they interact with the local Dushyas. The name of this phenomena is Dosh-Dushta Sammurchana. Any slight disturbance at the level of Srotas either structurally or functionally (sudden or gradual) leads to Sammurchana of Dosha and Dushta. The illness process begins at the point of encounter. This procedure is described in depth in the Sushruta Samhita under the heading of Shatkriyakala. In which the terms “Chaya,” “Prokopa,” “Prasara,” and “Sthanasambhaya” refer to the buildup, stimulation, spread, and beginning of disease symptoms. This fourth phase of Shatkriyakala is due to Srotovaigunya. Hence, Srotodushti plays a major role in pathogenesis of the disease, according to Dalhan Tika of Sushruta Samhita.

When Dosha and Dhatu are in their increased state due to their relative causes, but Srotas are unaffected as in obstruction, then Doshas expand to the whole body and cause disease in whole body, i.e., systemic disease. However, when pervert Dosha and Dhatu affects the Srotas, the specific Srotas is garbled and it further distorted the transportation of Dosha, Dhatu due to obstruction in Srotas, it causes localized disease [Explained in Table 3].

4. DISCUSSION
Srotas are essential for sustaining health as well as playing a crucial part in the disease’s appearance, the body’s fundamental physiological process. Srotas play a significant role in the human body. They serve as routes of communication, particularly for the temporary tissues and nutritive tissues that will be used to create permanent Dhatu. Srotas are necessary for all of the Dosha, Dhatu, and Mala to function. Now, we know the factors causing Srotodushti, the best method is to prevent factors responsible for Srotodushti. Hence, “Prevention is better than cure”. Nidana Parivarjana is the method by which “Swasthasya Swasthya” is maintained, which can play a key role in the maintenance of homeostasis.

5. CONCLUSION
Srotas are the channels or canal-like structure performing the process of transportation and distributing nutrition throughout the body. Srotas are specific in their function and each Srotas provide nutrition to their respective Dhatu. Improper functioning of Srotas may lead to breathing difficulty, dryness of mouth, anorexia, kushta, impotency, urine problem, Arbuda with respective to their Srotas. Hence, in the current context, it is important to understand about the Srotas and Srotodushti and its complications. Ayurvedic doctor to treat a patient holistically, one must be fully versed on Srotas. Clinically speaking, at the Srotovaigunya stage, illness signs are almost ready to manifest. The location of the ailment may be determined by its symptoms, therefore by treating the vitiated Doshas that are present in the Mulasthana, a disease can be completely managed from its source. Management of the Srotas is very important for human beings, which can be managed by performing, Sadwritta detoxification, yoga, meditation, Pranayama good conduction of seasonal and daily regimes, and healthy lifestyle, etc. all of which helps to prevent the pathogenesis of Srotodushti.

6. ACKNOWLEDGMENT
None.

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9. ETHICAL APPROVALS
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10. CONFLICTS OF INTEREST
Nil.

11. DATA AVAILABILITY
This is an original manuscript and all data are available for only review purposes from principal investigators.

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Table 1: Name of Srotas by different Acharya

<table>
<thead>
<tr>
<th>Name of Srotas</th>
<th>Charak (Ch. VI 5/7)</th>
<th>Vagbhatta (A.S. SA.6/34-50)</th>
<th>Sushruta (SU. SA. 9/12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pranavaha Srotas</td>
<td>Hrdaya and Maha Srotas</td>
<td>Hrdaya and Maha Srotas</td>
<td>Hrdaya and Rasavahi Dhamani</td>
</tr>
<tr>
<td>Annavaha Srotas</td>
<td>Amasaya and Vama Parsva</td>
<td>Amasaya and Vama Parsva</td>
<td>Amasaya and Annavahi Dhamani</td>
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<td>Udakavaha Srotas</td>
<td>Talu and Kloma</td>
<td>Talu and Kloma</td>
<td>Talu and Kloma</td>
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<tr>
<td>Rasavaha Srotas</td>
<td>Hrdaya and Ten Dhamani</td>
<td>Hrdaya and Ten Dhamani</td>
<td>Hrdaya and Rasavahi Dhamani</td>
</tr>
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<td>Raktavaha Srotas</td>
<td>Yakrit and Pliha</td>
<td>Yakrit and Pliha</td>
<td>Yakrit a, Pliha and Raktivahi Dhamani</td>
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<td>Mamsavaha Srotas</td>
<td>Snayu and Twaka</td>
<td>Snayu and Twaka</td>
<td>Snayu , Twaka and Raktivahi Dhamani</td>
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<td>Medovaha Srotas</td>
<td>Vrka and Vapavahana</td>
<td>Vrka and Mamsa</td>
<td>Kati and Vrka</td>
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<td>Asthivaha Srotas</td>
<td>Media and Jahgan Pradesa</td>
<td>Media and Jahgan Pradesa</td>
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<td>Majivaha Srotas</td>
<td>Asthi and Sandhi</td>
<td>Asthi and parva</td>
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<td>Sukravaha Srotas</td>
<td>Vrsana and Sepha</td>
<td>Stana, Muska, Majia</td>
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<td>Puthravaha Srotas</td>
<td>Gradhi and Sheha Guda</td>
<td>Pakvaarya and Shuula Guda</td>
<td>Guda and Pakvaasya</td>
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<td>Meda and Loma kupa</td>
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<td>Astivaha Srotas</td>
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<td>Garbhhasaya and Artavavaha Dhamni</td>
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Table 2: Types of Srotodushhti and disease

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<thead>
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<th>Type of Srotodushhti</th>
<th>Disease</th>
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<tr>
<td>Atipravritti</td>
<td>Atisara, Prameh, Kamala, Jalodara, Amlapitta,</td>
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<td>Sangh</td>
<td>Jvar, Rajkshama, Alsaka, Grahani, Mutrakrichra, Vibandh, Buddhagudodar, Aanah</td>
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<td>Sirir Granthi</td>
<td>Shoth, Arsh, Arbuda, Granthi, Varicose Vein,</td>
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<tr>
<td>Vimaargama</td>
<td>Gulm, Vaat Vyadhi, Rakpitta, Udavarta, Tamak Shwas, Bhagandara</td>
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Table 3: Types of Srotas and related disease

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<thead>
<tr>
<th>Type of Srotas</th>
<th>Related disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pranavaha srotas</td>
<td>Swasa, kasa, Hikka, Urahksata, Swarabhangha</td>
</tr>
<tr>
<td>Annavaha srotas</td>
<td>Chardi, Udarashool, Ajrma, Adhmana, Anaha, Atopa, Gula</td>
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<tr>
<td>Udakavaha srotas</td>
<td>Trshna, Ap-Dhatukshaya, Jalodara, Sotha</td>
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<td>Rasavaha srotas</td>
<td>Hypertension, Hypotension , Jvara, Pandu, Hridroga</td>
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<tr>
<td>Raktavaha srotas</td>
<td>Ykrudalar, Pihodara, Kashtha, Vrana, Mada, Moorcha, Samnyasa</td>
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<td>Mamsavaha srotas</td>
<td>Arbuda, Muscular dystrophies, Snayugata Rogas</td>
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<tr>
<td>Medovaha srotas</td>
<td>Medovrddhi, Ekadesiya vriddhi, Shhulya</td>
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<td>Asthivaha srotas</td>
<td>Amavata, Vitarakta, Sandhigata vata, kasha Roga</td>
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<tr>
<td>Majivaha srotas</td>
<td>Bone marrow related disorders</td>
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<td>Sukravaha srotas</td>
<td>Klaibya, Sigra-skalana, Gynaecomastia</td>
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<td>Anartava, Artavakshaya, Kustaria, Yonikanda, Artava Atipravritti</td>
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<td>Malabaddhata, Atisara, Grahani, Arsa, Udarakrimi, Guzagata Rakta</td>
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