

REVIEW ARTICLE

Concept of *Srotas*, *Srotodushti*, and its Applied Clinical Aspects

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ABSTRACT

The *Triguna*, *Tridosh*, *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 *srotodusti* (histopathology) no disease can occur.

1. INTRODUCTION

According to *Acharya Charaka* "*Sravanata Srotamsi*" means the structure through which *Sravanam* takes place",^[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] 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-Vihara*, 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.

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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]

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), *Rasayani* (lymphatics), *Rasavahini* (capillaries), *Nadi* (Tubular conduits), *Pantha* (passages), *Sthana* (sites, locus), *Ashayas* (repositories), *Niketa* (resorts), *Marga* (pathways, tracts), *Samvrita-Asamvrita* (open or blind passages), and *Sharir Chidra* (body orifices, openings).^[3]

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

with the proper *Agni*.^[4] In this manner, the differentiation of the fertilized zygote during intrauterine life leads to the creation of several *Srotas*, from which various bodily entities derive.

3.4. Characterization of Srotas

Color - The color of the *Srotas* is of *Dhatu* that they carry

Size - *Anu* (microscopic in size) and *Sthula* (macroscopic in size)

Shape - *Vritta* (cylindrical), *Dirgha* (long), and *Pratan* (reticulated).^[5]

3.5. Classification of Srotas

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):^[6] 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).^[7]

In females, there are 3 more openings – 2 breasts and 1 vaginal opening.

- ii. *Antarmukha* (opening inside):^[7] These are thirteen in number *Pranavaha srotas*, *Annavaaha srotas*, *Udakavaha srotas*, *Rasavaha srotas*, *Raktavaha srotas*, *Mamsavaha srotas*, *Medovaha srotas*, *Ashtivaha srotas*, *Majjavaha srotas*, *Shukravaha srotas*, *Mutravaha srotas*, *Purishavaha srotas*, and *Swedavaha srotas*^[8] [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* (alleviation) of *Sharira Doshas*. *Poshana* or nourishment of *Sthayi dhatu* is one of the main functions of *Srotas*. Nutrient substances which nourish the *Sthayi dhatus* undergo *Paka* by *ushma (Agni)* of *Dhatu*. They are then made available to *Dhatu* through their own *Srotas*.^[9] Let us understand the functions of *Srotas* point wise in physiological condition.

3.6.1. (Oozing) Sraavanam

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*' *Ayanamukhas* when they are circulated with *Ahararasa*. From an Ayurvedic perspective, *parthivatva* connected to *mamsa dhatu* feeding differs from *parthivatva* related to *asthi 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 *Ayanamukhas*. 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

Ahararasa is a fluid that travels through various pathways throughout the entire body. This fluid reaches every *Srota* 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 Dhatus* also function as their points of escape and entry. For instance, to restock *Rakta*, nutrients from *Rasa Dhatu* are sent to *Raktavaha 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*. *Rasa* 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 *Dhatu*s are present in *Ahararasa* 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 *Malakhya Dhatu*. *Malakhya 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 dhatus*, e.g, *Kesha* (hair) and *Shmashru* (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 Vagbhata 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/*Sraavanam* 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, *Jwaravyadhi Samprapti* claims that *Udakavaha* and *Swedavaha 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 *Dhatus* while they go through *Paka*. In this manner, *Agnivyapara* 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 *Dosha-Dushya Sammurchana*. Any slight disturbance at the level of *Srotas* either structurally or functionally (sudden or gradual) leads to *Sammurchana* of *Dosha* and *Dushya*. 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 “*Sthanasamshraya*” refer to the buildup, stimulation, spread, and beginning of disease symptoms. This fourth phase of *Shatkriyakala* is due to *Srotovaigunya*.^[12] Hence, *Srotodushti* plays a major role in pathogenesis of the disease, according to *Dalhan Tika* of *Sushruta Samhita*.

When *Dosha* and *Dhatus* 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 *Dhatus*. *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, *kustha*, impotency, urine problem, *Arbuda* with respect 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 *Mulasthanas*, 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, *Sadvritta* 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*.

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7. AUTHORS’ CONTRIBUTIONS

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9. ETHICAL APPROVALS

This study does not require ethical clearance as it is a review study.

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.

12. PUBLISHERS NOTE

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Table 1: Name of Srotas by different Acharya

Name of Srotas	Mula		
	Charak (Ch. VI 5/7)	Vagbhatta (A.S. SA.6/34-50)	Sushruta (SU. SA. 9/12)
Pranavaha Srotas	Hridaya and Maha Srotas	Hridaya and Maha Srotas	Hridaya and Rasavahi Dhamani
Annavaha Srotas	Amasaya and Vama Parsva	Amasaya and Vama Parsva	Amasaya and Annavahi Dhamani
Udakvaha Srotas	Talu and Kloma	Talu and Kloma	Talu and Kloma
Rasavaha Srotas	Hridaya and Ten Dhamani	Hridaya and Ten Dhamani	Hridaya and Rasavahi Dhamani
Raktavaha Srotas	Yakrt and Pliha	Yakrt and Pliha	Yakrt a, Pliha and Raktvahi Dhamani
Mamsavaha Srotas	Snayu and Twaka	Snayu and Twaka	Snayu , Twaka and Raktvahi Dhamani
Medovaha Srotas	Vrkka and Vapavahana	Vrkka and Mamsa	Kati and Vrkka
Asthivaha Srotas	Meda and Jahgan Pradesa	Meda and Jahgan Pradesa	-
Majjavaha Srotas	Asthi and Sandhi	Asthi and parva	-
Sukravaha Srotas	Vrsana and Sepha	Stana, Muska, Majja	Stana and Vrsana
Mutravaha Srotas	Basti and Vanksana	Basti and Vanksana	Basti and Medhara
Purishvaha Srotas	Pakvaasya and Sthula Guda	Pakvaasya and Sthula Guda	Guda and Pakvaasya
Svedavaha Srotas	Meda and Loma kupa	Meda and Loma kupa	-
Artavavaha Srotas	-	-	Garbhasaya and Artavavaha Dhamni

Table 2: Types of Sroto Dushti and disease

Type of Srotodushti	Disease
Atipravritti	Atisara, Prameh, Kamala, Jalodara, Amlapitta,
Sangh	Jwar, Rajkshama, Alsaka, Grahani, Mutrakrichra, Vibandh, Baddhagudodar, Aanah
Sira Granthi	Shoth, Arsh , Arbuda, Granthi, Varicose Vein,
Vimaargamana	Gulm, Vaat Vyadhi, Raktpitta, Udavarta, Tamak Shwas, Bhagandara

Table 3: Types of Srotas and related disease

Type of Srotas	Related disease
Pranavaha srotas	Swasa, kasa, Hikka, Urahksata, Swarabhanga
Annavaha srotas	Chardi, Udarashool, Ajirna, Adhmana, Anaha , Atopa, Gulm
Udakavaha srotas	Trshna, Ap-Dhatukshaya, Jalodara, Sotha
Rasavaha srotas	Hypertension, Hypotension , Jwara, Pandu, Hridroga
Raktavaha srotas	Yakrdudara, Plihodara, Kustha, Vrana, Mada, Moorcha, Samnyasa
Mamsavaha srotas	Arbuda, Muscular dystrophies, Snayugata Rogas
Medovaha srotas	Medovrdhi, Ekadesiya vridhi, Sthaulya
Asthivaha srotas	Amavata, Vatarakta, Sandhigata vata, kasha Roga
Majjavaha srotas	Bone marrow related disorders
Sukravaha srotas	Klaibya, Sigra-skalana, Gynaecomastia,
Artavaha srotas	Anartava, Artavakshaya, kastartava, Yonikandu, Artava Atipravritti
Mutravaha srotas	Mutrakricchra, Raktamutrata, Swetamutra, Puyameha
Purishvaha srotas	Malabaddhata, Atisara, Grahani, Arsa, Udarakrimi, Gudagata Rakta
Swedavaha srotas	Asweda, Atisweda