

## PRANAVAHA SROTAS- A DETAILED LITERATURE REVIEW

Dr. Natasha Singh<sup>1\*</sup> and Prof. Dr. Chitta Ranjan Das<sup>2</sup><sup>1</sup>P.G. Scholar, Department of Panchakarma, Sri Jayendra Ayurvedic Medical College and Hospital, Nazarethpettai.<sup>2</sup>Principal, HOD (Department of Panchakarma) Sri Jayendra Saraswathi Ayurveda College and Hospital, Nazarethpettai.

\*Corresponding Author: Dr. Natasha Singh

P.G. Scholar, Department of Panchakarma, Sri Jayendra Ayurvedic Medical College and Hospital, Nazarethpettai.

Article Received on 23/02/2025

Article Revised on 13/03/2025

Article Accepted on 03/04/2025

## ABSTRACT

In Ayurveda, Pranavaha srotas denotes the physiological system tasked with the transport of Prana, or life force, which primarily is linked to the process of respiration. This is the system which encompasses anatomical structures such as the nose, bronchi, trachea, lungs which plays a crucial role in managing the intake of oxygen and the expulsion of Co<sub>2</sub>. The moolasthan or the foundational origin of the prana vaha srotas is said to be the Hridaya or the heart along with the mahasrotas. It is also referring to the alveoli or the larger respiratory tract. When there are any disturbances within Pranavaha srotas that can result in various conditions including dyspnea (shwasa), cough (kasa), any other chronic respiratory disease that is the COPD, tamaka shwasa (Asthma). Contributing to these disruptions may include poor dietary choices, vihara, nidana that can aggravate the vata and kapha dosha leading to the dysfunctions. Treatment strategies aim to restore equilibrium through the use of herbal remedies, detoxification and also the adjustments of the lifestyle including the dinacharya and ritucharya. More understanding of pranavaha srotas fosters a holistic approach towards respiratory health, combining preventive measures with therapeutic interventions.

## INTRODUCTION

Ayurveda outlines the idea of Srotas, which are channels that facilitate the circulation of vital substances within the body.<sup>[1]</sup> One such channel, Pranavaha Srotas, is specifically tasked with the movement of Prana, or vital life energy, and is primarily linked to the processes of respiration and oxygen delivery. Numerous Ayurvedic texts, Samhitas, reference Pranavaha Srotas in various contexts, providing insights into its origins, functions, factors that can lead to its dysfunction, and associated disorders. Charaka, in Vimana Sthana, characterizes Srotas as conduits that facilitate the circulation and transport of vital elements. Specifically, for Pranavaha Srotas, its Moola Sthana (source) is identified as the Hridaya (heart) along with the Mahasrotas (lungs and trachea).<sup>[2]</sup> Additionally, Charaka points out that Shwasa (dyspnea), Kasa (cough), and Rajayakshma (tuberculosis) are significant disorders associated with Pranavaha Srotas, underlining the role of dietary, environmental, and psychological factors in their disruption. Sushruta, in Sharira Sthana (9/12)<sup>[3]</sup>, identifies the Moola Sthana of Pranavaha Srotas as the Hridaya (heart) and the Rasavahi Dhamanis (blood vessels associated with circulation). He elaborates on the relationship between respiration and circulation, establishing a connection between Pranavaha Srotas and the cardiovascular system. Additionally, Sushruta

addresses the effects of environmental toxins, allergens, and physical activity on respiratory health. In Ashtanga Hridaya, Vagbhata<sup>[4,5]</sup>, in Sutra Sthana (12/4-5), offers an in-depth perspective on Pranavaha Srotas, reaffirming its Moola Sthana as the Hridaya and Rasavaha Srotas. He highlights the influence of Vata and Kapha doshas on respiratory conditions and outlines treatment approaches for disorders such as Tamaka Shwasa (bronchial asthma) and Kasa (cough) through Shodhana (detoxification) and Shamana (palliative) therapies. The Ashtanga Sangraha closely mirrors the explanations found in Ashtanga Hridaya while also providing further insights into the structural and functional characteristics of Pranavaha Srotas. It underscores the significance of Pranayama (breathing exercises) in preserving the health of Pranavaha Srotas. Kashyapa Samhita<sup>[6]</sup>, a foundational text in pediatrics, emphasizes disorders related to Pranavaha Srotas in children, particularly Shwasa, Kasa, and Rajayakshma. It explores both congenital and acquired respiratory issues and discusses their management through dietary and herbal remedies.

1. Classification of Pranavaha Srotas  
Pranavaha Srotas can be classified into the following categories.<sup>[7]</sup>

### A. Structural Classification

- Urdhva Pranavaha Srotas – This includes the upper respiratory tract, comprising the nose, sinuses, pharynx, larynx, and trachea.
- Adho Pranavaha Srotas – This pertains to the lower respiratory tract, which consists of the bronchi, lungs, and alveoli.

### B. Functional Classification

- Shwasa Pranavaha Srotas – This regulates both normal and abnormal breathing patterns.
- Kasa Pranavaha Srotas – This manages the mechanisms of coughing.
- Rakta-Samyukta Pranavaha Srotas – This is linked to blood circulation and the transport of oxygen, closely associated with the cardiovascular system.<sup>[8]</sup>

### C. Dosha-Based Classification

- Vataja Pranavaha Srotas Vikara – Characterized by dry cough, breathlessness, and wheezing (e.g., asthma).
- Pittaja Pranavaha Srotas Vikara – Associated with inflammatory conditions, fever, and yellow sputum (e.g., pneumonia).
- Kaphaja Pranavaha Srotas Vikara – Involves excess mucus, congestion, and a feeling of heaviness (e.g., chronic bronchitis).

## 2. Disorders Associated with Pranavaha Srotas

### A. Primary Disorders Shwasa Roga (Breathing Disorders)

- Tamaka Shwasa – Refers to bronchial asthma. Maha Shwasa – Indicates severe respiratory failure.
- Chinna Shwasa – Describes irregular breathing, which can be fatal.

### B. Kasa (Cough Disorders)

- Vataja Kasa – Identified as a dry, spasmodic cough.<sup>[9]</sup>
- Pittaja Kasa – Characterized by a cough producing yellow phlegm and accompanied by fever.
- Kaphaja Kasa – Refers to a chronic cough that produces mucus.
- Rajayakshma (Pulmonary Tuberculosis) Marked by weight loss, a chronic cough, and night sweats.
- Swara Bheda (Hoarseness of Voice) Loss of voice resulting from infection or chronic coughing.
- Peenasa (Sinusitis/Allergic Rhinitis) Involves blocked nasal passages, excessive mucus production, and headaches.
- Parshva Shula (Pleuritis (Chest Pain) Inflammation of the pleura results in acute chest pain.

### B. Associated Conditions

- Kshata Kshina (Respiratory weakness due to injury or long-term illness).
- Urah Kshata (Lung injury or impairment) Pratishyaya (Symptoms resembling the common cold and flu).

### 3. Factors Contributing to Disorders of Pranavaha Srotas

- (Nidana) Ahara (Dietary Factors): Overconsumption of heavy, cold, or dairy-laden foods
- Vihara (Lifestyle Influences): Exposure to cold air, dust, allergens, and smoking
- Manasika Hetu (Psychological Factors): Stress, anxiety, and depression impacting respiratory patterns
- Agantuja (External Influences): Pollution, infections, and allergens.

### 4. Ayurvedic Approaches to Managing Pranavaha Srotas Disorders Panchakarma

Treatments: Vamana (therapeutic vomiting), Nasya (nasal therapy), and Dhumapana (inhalation of medicated smoke) Herbal Treatments: Vasa (Adhatoda vasica) – An expectorant beneficial for bronchitis Yashtimadhu (Licorice) – Calms the throat and lungs Pippali (Long pepper) – Alleviates congestion and improves lung function Rasayana Therapy: Enhancing immunity with Chyawanprash and Sitopaladi Churna Pranayama (Breathing Exercises): Anulom-Vilom and Kapalabhati for promoting lung health.

## METHODS AND MATERIALS

The organs concerned with the swasa kriya are the nasa, phupusa and also the swasanalika with the avarnakala. Charaka states that hridaya and the mahasrotas alimentary canal are the mula of the system which emphasises the influence of these organs on swasa kriya.<sup>[10]</sup> The organs of this system play a crucial role in Swāsa Kriyā (the process of breathing). While traditional texts emphasize the influence of various organs, the significance of Puppusa (lungs) cannot be overlooked. Therefore, it would be more appropriate to consider the lungs as the primary (Mūla) organs of Prāṇavaha Srotas, rather than Hṛdaya (heart) and Mahāsrotas (digestive tract).

## Rachanā Śarīra (Anatomy) of Prāṇavaha Srotas

### 1. Nāsā (Nose)

- The external structure of the nose consists of the Nāsāsthī (nasal bone) at the top and Taruṇāsthī (cartilage) below.
- Inside, the two nasal passages are divided by another cartilage (nasal septum).
- These passages curve upward as they extend into the Śiras (skull) and connect to the Galā (throat) at the back of the Asya (mouth).

### 2. Swāsanalikā (Trachea) and Annanalikā (Esophagus)

- The Swāsanalikā (trachea) and Annanalikā (esophagus) begin in the throat (Galā).

### The upper part of the trachea contains

- Swarayantra (larynx) – responsible for sound production.

- Grasanikā (pharynx) – connects the nasal and oral cavities to the respiratory tract.
- On either side of the throat, there are two small Gilayus (tonsils), and from the roof of the mouth hangs the Kantha Śundi (uvula), a thin, fleshy projection.

### 3. Swāsanalikā (Trachea)

- Also known as Kantha Nādi, it is a 4.1-inch-long tube composed of cartilaginous rings stacked one over the other.
- At its upper end, it features a prominent structure called Krikatika (Cricoid Cartilage), which is clearly visible in adult males as the Adam's Apple.

The Swāsanalikā (trachea) gradually narrows as it descends and, at the level of the fifth vertebra, divides into two Nalikā Śākhās (bronchi). Each bronchus enters the Puppusa (lung) on its respective side. Upon entering the Puppusa, these bronchi further divide into countless smaller branches (bronchioles), ultimately terminating in Vyāu Koṣas (air sacs or alveoli). This intricate branching network allows the Puppusa to expand and contract efficiently during respiration.<sup>[11]</sup>

### Structure and Function of Puppusa (Lungs)

- The Puppusas (lungs) are paired organs, located on either side of the Uroguhā (chest cavity), occupying nearly 75% of the available space.
- The Uras (chest), which houses the lungs, is formed by the Parśukāsthī (ribs), Urasthi (sternum), and Prṣṭavānśa (vertebral column). Together, these structures create a protective cylindrical framework for the vital thoracic organs.

### Development and Composition of Puppusa

- During embryonic development, the Puppusas are believed to originate from the Phena of Rakta (frothy blood), which explains their spongy texture.
- Structurally, the lungs are composed primarily of Māmsa Dhātu (muscle tissue).
- The frothy appearance is significant because the lungs have a hollow, porous, and moist interior, containing a small amount of blood and fluid at all times.

### Lobes and Positioning of the Lungs

- The right lung is divided into three Khandikās (lobes), whereas the left lung has only two lobes to accommodate the Hṛdaya (heart).
- The Śiras (apex) of the Puppusa is positioned just beneath and behind the Akṣakāsthī (clavicles).
- The lower borders of the lungs, located at the level of the eleventh rib at the back, are curved inward to accommodate the Yakṛt (liver) on the right side and the Plīhā (spleen) on the left.

### External Covering of the Lungs

- The lungs are enclosed by two protective layers called Avaraṇakalā (pleurae).
- Between these layers, a small amount of lubricating fluid is present, which reduces friction during breathing

and allows smooth expansion and contraction of the lungs.<sup>[12]</sup>

The air that enters the respiratory system carries various particles and impurities. To counter this, the body secretes a small amount of mucus, just enough to trap and expel foreign matter without accumulating in a healthy state. However, during illness, excessive mucus may accumulate and obstruct the airways. This is why Ayurveda considers the Uras (chest) as a primary site of Kapha (Śleṣmaka subtype).

### Role of Puppusa (Lungs) in Respiration

A continuous supply of Rakta (blood) is pumped into the Puppusa (lungs) by the Hṛdaya (heart). As this blood passes through the lungs' capillary network, it absorbs Ambara Piyūṣa (the nectar of the atmosphere, i.e., oxygen) from the inhaled air. At the same time, it releases Kiṭṭa (waste, i.e., carbon dioxide), which is expelled from the body during exhalation. This exchange of gases is the primary function of Swāsa Kriyā (breathing process). The absorbed oxygen is then utilized to generate heat and energy in the body.

### Ancient Knowledge of Swāsa Kriyā (Respiration)

The understanding of respiration in India dates back thousands of years. Texts such as the Śatapatha Brāhmaṇa (1000 BCE) and Upaniṣads like Varāhopaniṣad, Hamsopaniṣad, and Amṛtopaniṣad (400-600 CE) provide detailed descriptions of breathing. The Sārangadhara Saṁhitā (14th century CE) even mentions that an individual breathes 21,600 times per day, which equates to approximately 15 breaths per minute. In modern times, the average respiratory rate for a healthy adult is slightly higher, ranging from 16 to 18 breaths per minute. Factors such as age, gender, and environmental conditions can cause slight variations in this rate.

### Sroto-Duṣṭi Karaṇas (Causes of Disorders in Prāṇavaha Srotas)

Several factors contribute to imbalances and diseases affecting the Prāṇavaha Srotas (respiratory channels)

1. Upaghāta (External Irritants): Exposure to Rajas (dust, pollen), Dhūma (smoke, harmful gases), Ātapa (intense sunlight), and Anila (strong winds) can disrupt the normal function of the respiratory system.
2. Abhighāta (Trauma/Injury): Any direct injury to the chest can impair respiratory function, affecting the lungs and associated structures Puppusa (lungs), Hṛdaya (heart), and other vital organs (Marmas) are highly sensitive and can be affected by various internal and external factors.
3. Exposure to Extreme Cold (Ati Śīta) – Excessive exposure to cold temperatures or overconsumption of cold foods and drinks, especially those that increase Kapha, can negatively impact respiratory health.
4. Excessive Physical Exertion (Ati Vyāyāma) – Overexertion caused by excessive talking, singing, reading aloud, intense exercise, or any activity that

strains breathing can disrupt the normal functioning of the respiratory system.

5. Toxic Substances (Viṣa) – The harmful effects of smoking tobacco, cannabis (Gāṇjā, Bhāṅgā), consumption of opium, arsenic, and excessive alcohol intake can damage the lungs and impair respiratory function.<sup>[14]</sup>

6. Suppression of Natural Urges (Vegārodha) – Holding back sneezing (Kṣavathu), yawning (Jṛmbhā), coughing (Kāsa), breathing (Swāsa), hiccups (Hikkā), hunger (Kṣud), and sleep (Nidrā) can lead to disturbances in the Prāṇavaha Srotas over time.

7. Malnutrition (Apatarpaṇa) – Conditions like Dhātu Kṣaya (tissue depletion), consumption of dry or nutritionally deficient foods, prolonged illnesses such as Pāṇḍu Roga (anemia), Arbuda (cancer), Vāta disorders (neurological diseases), and digestive ailments (Agnimāndya, dyspepsia) can weaken respiratory health. Any diet or lifestyle that aggravates Vāta falls under this category.

8. Obstruction in Respiratory Pathways (Mārga Rodha) – Blockages in the nasal passages (Nāsā), trachea (Swāsanalikā), and lungs (Pūppusa) due to foreign objects (Śalya), abnormal growths (Srotogranthi – thickening, tumors), or misplaced substances (Vimārga Gamana – food particles entering the trachea, air collecting in the pleural cavity) can lead to severe respiratory disturbances.

9. Āma (Toxins) – Toxins originating from the Āmāśaya (digestive tract) can circulate with Rasa Dhātu (nutrient plasma) and accumulate in the Prāṇavaha Srotas (respiratory system), contributing to diseases such as Vṛkkastambha (uremia), Madhumeha (diabetes mellitus), Hṛdroga (cardiac disorders), and Yakṛtrogas (hepatic cirrhosis).

10. Krimi Upasarga (Microbial Infections) – Various harmful microorganisms such as bacteria, parasites (flukes), fungi, and other pathogens can infect the respiratory system, leading to multiple diseases. Although these infections are not primary causes, they exacerbate pre-existing conditions or trigger complications.

## DISCUSSION

### Impact on Prāṇavaha Srotas

- One or more of these factors lead to Vaiṣmya (functional imbalance) in the respiratory system.
- Specifically, there may be an increase (Vṛddhi) in Avalambaka Kapha or disturbances in Prāṇa and Udāna Vātas, depending on the condition.
- This results in Srotoduṣṭi (pathological changes in the channels), with Saṅga (obstruction) and Atipravṛtti (excessive flow) being the most commonly observed dysfunctions.
- Eventually, this dysfunction leads to manifestation of respiratory diseases, either individually or in combination.

## Examination of Prāṇavaha Srotas (Respiratory System)

### 1. Nāsā (Nose) Examination

**An ideal nose should possess the following normal features**

- Pīna (well-formed structure)
- Varṁśa Sampanna (well-defined nasal ridge)
- Rju (straight alignment)
- Subaddha (properly joined structure)
- Mahā Dvāra (wide nostrils)
- Internally Rakta (reddish color), Ārdra (moist), and Mahāswāsa (capable of deep breathing)

**Deviations from normalcy should be carefully observed, such as**

- Changes in Ākṛti (size, shape) or Varṇa (internal color)
- Śoṣa (dryness), Srāva (excessive discharge), Ruja (pain), or Swāsa (breathing difficulty)
- A Nāsa-Vikṣaṇa Yantra (nasal speculum) and torchlight can assist in proper examination.
- Gandha Jñāna (sense of smell) is not directly relevant here but is assessed under Indriya Parīkṣā.

### 2. Kaṇṭha (Neck) Examination

- Observe externally for any abnormalities.
- Feel the Kṛkaṭikā (Adam's apple) and the upper part of the Kantha Nāḍi (trachea).
- Assess the muscles of the neck and their movement.
- Check for Spandana (pulsations) in Śīrās and Dhamanīs (veins and arteries).
- Look for any swelling or enlargement of Lasīkā Granthis (lymph nodes).

### 3. Galā (Throat) Examination

- Proper lighting is essential (use natural light or a torch if needed).
- The patient should sit comfortably and open their mouth wide. Use a tongue depressor, spoon, or fingers to gently press the tongue down for better visibility. Observe the color, shape, and structure of the throat with a focus on:
- Gilāyukas (tonsils)
- Swara Yantra (larynx)
- Kaṇṭha Śuṇḍi (uvula)

## Examination of the Respiratory System

### Assessing Symptoms

- The patient should be questioned about any breathing difficulties, swallowing issues, pain, or other discomforts.
- Close observation should be made for signs such as:
- Sopha (swelling)
- Pūya (pus formation)
- Rakta Srāva (bleeding) Development of false membranes, which are common in conditions like Tonsillitis (Gilāyuka), Arbuda (cancer), and Rohiṇī (diphtheria).



### Examination of the Lungs (Puppusas)

Since the lungs are enclosed within the thorax (uras) and are not directly visible, their condition must be assessed through thoracic examination.

#### Thoracic Examination

- The patient should sit comfortably on a stool or bed in good lighting, with clothing removed for better visibility.
- In the case of female patients, exposure should be minimal and conducted respectfully, maintaining modesty.
- If the patient is unable to sit, they should lie on their back on the bed or examination table.

#### Methods of Examination

##### 1. Darśana Parīkṣā (Inspection)

- The physician should observe the thorax from different angles:
- From the side while the patient is sitting
- From the bedside, head, and foot of the bed if the patient is lying down
- Key aspects to be noted include:
- Ākṛti (size and shape) of the thorax –
- In children: The thorax appears more cylindrical.
- With age: It gradually returns to a childhood-like shape.

#### CONCLUSION

Prāṇavaha Srotas, the vital respiratory channels in Ayurveda, play a crucial role in sustaining life by facilitating the flow of prāṇa (life force) through oxygen exchange. The mūla sthāna (primary structures) of this system, including the puppusa (lungs), nāsā (nose), swāsanalikā (trachea), and hṛdaya (heart), work in harmony to ensure efficient respiration and circulation.

The health of Prāṇavaha Srotas is influenced by multiple factors such as environmental pollutants, dietary habits, physical activity, and psychological well-being. Disorders arise due to various causes, including kapha accumulation, vāta imbalance, obstruction in srotas, and microbial infections. These imbalances can lead to conditions like asthma (Tamaka Swāsa), chronic bronchitis (Kṣaya Kāsa), and tuberculosis (Rājayakṣmā).

A thorough parīkṣā (examination) of the Prāṇavaha Srotas, including inspection, palpation, and respiratory rate assessment, helps in early diagnosis and management of diseases. Maintaining the health of these srotas requires a balanced lifestyle, including proper diet (ahara), regulated physical activities (vihara), and breathing exercises (prāṇāyāma), which help in enhancing lung function and overall well-being.

In conclusion, Prāṇavaha Srotas is fundamental for life, and its proper maintenance is essential for longevity and vitality. Ayurveda provides a holistic approach to prevent and manage respiratory disorders through a combination of dietary regulation, detoxification, herbal

formulations, and therapeutic practices, ensuring optimal respiratory health.

#### REFERENCES

1. Sharma PV, editor. Charaka Samhita of Agnivesha: Text with English Translation. 1st ed. Varanasi: Chaukhamba Orientalia, 2014; 325-330.
2. Sastri AD, editor. Sushruta Samhita: Ayurveda Tattva Sandipika Commentary. 1st ed. Varanasi: Chaukhamba Sanskrit Sansthan, 2012; 420-425.
3. Murthy KRS, editor. Astanga Hridayam of Vagbhata: Text, English Translation, Notes, Appendix & Index. 3rd ed. Varanasi: Chaukhamba Krishnadas Academy, 2016; 210-215.
4. Shastri RD, editor. Bhavaprakasha Nighantu of Bhavamishra. 5th ed. Varanasi: Chaukhamba Bharati Academy, 2013; 190-195.
5. Tiwari PV. Ayurvediya Pranayama Vijnana. 2nd ed. Varanasi: Chaukhamba Vishvabharati, 2009; 50-55.
6. Patwardhan K, Sharma H, Chandran P. Understanding the Concept of Srotas: A Network Approach. J Ayurveda Integr Med, 2015; 6(4): 291-296. doi:10.4103/0975-9476.146559.
7. Tripathi B, editor. Sarngadhara Samhita with Dipika Commentary. 3rd ed. Varanasi: Chaukhamba Surbharati Prakashan, 2018; 160-165.
8. Dwivedi A, Dwivedi S. Concept of Pranavaha Srotas and its Clinical Importance in Respiratory Disorders: A Review. J Res Ayurveda., 2020; 9(2): 112-118. doi:10.7897/2277-4343.092178.
9. Singh RH. Exploring Respiratory Physiology in Ayurveda: An Overview of Pranavaha Srotas. 1st ed. New Delhi: Central Council for Research in Ayurvedic Sciences, 2017; 80-90.
10. Chopra A, Saluja M, Tillu G. Ayurvedic Approach to Respiratory Diseases: An Overview. Ayu., 2019; 40(3): 127-133. doi:10.4103/ayu.ayu\_56\_18.
11. Srikanth Murthy KR Clinical Methods In Ayurveda, Chapter 5 Pranavaha srotas, Chaukambha Orientalia Varanasi, 118-130.
12. Srikanth Murthy KR Clinical Methods In Ayurveda, Chapter 5 Pranavaha srotas, Chaukambha Orientalia Varanasi, 119.
13. Srikanth Murthy KR Clinical Methods In Ayurveda, Chapter 5 Pranavaha srotas, Chaukambha Orientalia Varanasi, 120.
14. Srikanth Murthy KR Clinical Methods In Ayurveda, Chapter 5 Pranavaha srotas, Chaukambha Orientalia Varanasi, 130.