

The Role of *Rasavaha Strotodushti* in the Etiopathogenesis of *Pandu Roga (Anemia)*: An Ayurvedic Literature Review

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ABSTRACT

Ayurveda undertakes an individualistic approach for each body. Each body type is governed by specific functional units called *Dosha* regulating structural units called *Dhatus* which in return is transformed into excretory units called *Mala*. All of these are carried, transported, metabolized and excreted by macro and micro channels and pathways operating in the living system called *Strotas*. Any discrepancies in *Strotas* can lead to disturbances in the formation, transportation and excretion of the concerned *Dhatu*. This article focuses on the *Rasavaha Strotas* that carries *Rasa Dhatu*, the first product of metabolism, which in turn is transformed to *Rakta Dhatu*. The symptoms of *Rasavaha Strotodushti* leading to *Pandu Roga*, closely related to anemia will be discussed.

Key Words *Ayurveda, Rasavaha Strotas, Pandu Roga, Anemia*

Received 02nd September 2025 Accepted 22nd November 2025 Published 10th January 2026

INTRODUCTION

Ayurveda, the Indian system of medicine dated back to 5000 years, comprises individualistic approach towards diseases and their treatment. All *Dosha, Dhatu, and Mala* perform their functional activities with the help of *Strotas*. The word *Strotas* is etymologically derived from the Sanskrit root '*Stru-Stravane Dhatu* which has different meanings - exudation, oozing, filtration, permeation, to flow, to move, etc.

Characteristics of *Strotas*:

Acharya Sushruta and Acharya Vagbhata have compared *Strotas* to the extremely fine passages

and pores present in the lotus stem, through which *Rasa Dhatu* circulates all over the body and provide nutrition to the body^{1,2}

Strotas may be:

Sthula (Gross/macrosopic),

Anu (Microscopic),

Vrutta (Round),

Deergha (Elongated), and

Pratanasadrusha (Reticulated in nature)³

Classification of *Strotas*:

As per *Acharya Charaka*⁴

A) *Bahirmukha Strotas (Mahanti Strotas)* -9

B) *Antarmukha Strotas (Yogavahi Strotas)* -14

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Grossly following 13 *Srotas*,⁶ are enumerated:

- 1) *Pranahava srotas*
- 2) *Udakvaha srotas*
- 3) *Annavaaha srotas*
- 4) *Rasavaha srotas*
- 5) *Raktavaha srotas*
- 6) *Mansavaha srotas*
- 7) *Medovaha srotas*
- 8) *Asthivaha strotas*
- 9) *Majjavaha srotas*
- 10) *Shukravaha srotas*
- 11) *Mutravaha srotas*
- 12) *Purishvaha srotas*
- 13) *Swedavaha srotas*.

As per *Acharya Sushruta*⁵

Acharya Sushruta stated 11 pairs that are 22 *Srotas*. *Acharya* did not consider *Asthivaha*, *Majjavaha*, and *Swedvaha Srotas*. *Bahya Srotas* are 2 *Nasa Randhra*, 2 *Karna Randhra*, 2 *Nayana Randhra*, 1 *Mehana Randhra*, 1 *Guda Randhra*, and 1 *Vedana Randhra*. In females, 2 *Stana Randhra* and 1 *Rakthapatha*.

Role of *Rasavaha Srotodushti* in the development of *Pandu Roga* or anemia.

Rasavaha Srotas

Mula: Heart and great vessels.

Marga: Venous and lymphatic systems.

Mukha: Arteriole, venous junction in capillaries.

Rasavaha Srotas are considered as main *Srotas* since they supply nutrients to all body parts, they also give *Poshana* to *Rasa Dhatu* and *Rakta Dhatu*. *Yakrita* and *Hrdiya* contributes significantly towards *Ahara Rasa Poshan* through this *Srotas*. *Rasavaha Srotas* perform vital functioning of body in relation to circulatory system The *Rasavaha Srotasa* originated mainly from *Hridaya* and connected to all over the body through *Dhamanis*. These *Dhamanis* circulate *Rasa* all over the body with the help of *Hridaya*

***Rasavaha Srotasa Dushti Hetu* (Etiological factors)⁶**

- *Guru Ahara* - consumption of foods taking longer time to break down including meat, dairy, oily or fatty foods.
- *Sheeta Ahara* - usage of foods having cold potency or cooling efficacy.
- *Atisnigdham* - Eating unctuous ie. oil rich, fatty food like oil, ghee, seeds(sesame), animal fat etc.
- *Samashana* - taking wholesome and unwholesome diet together.
- *Manasika Hetu* - *Chinta* (stress/worry) leads to *Rasavaha Srotodushti*.

***Rasavaha Srotasa Dushti Lakshana* (symptoms)⁷**

Following symptoms are caused by vitiation of *Rasavaha Srotas* :

- *Ashraddha* - unwilling to eat any type of food.
- *Aruchi* - Anorexia or a lack of interest in food.
- *Aasyavairasya* – dysgeusia or altered taste.
- *Arasagyata* - ageusia or loss of taste.
- *Hrillaso* - nausea
- *Gaurava* - feeling of heaviness
- *Tandra* - drowsiness
- *Saangamarda Jwara Tama* - fever with bodyaches and fainting
- *Pandu* - pallor
- *Srotasaam Rodha* - obstruction of channels of circulation
- *Klaibya* - impotency

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- *Saada* - asthenia
- *Krishangata* - emaciation
- *Nashoagneyah* - decreased power of digestion
- *Vali and Paalitya* - premature appearance of wrinkles and grey hair.

Anaemia is not a single disease but a group of disorders in which haemoglobin concentration of blood is below the normal range for the age and sex of the subject. Therefore, anaemia is labelled when haemoglobin concentration is less than:

- 13 g/dL in adult males,
- 11.5 g/dL in adult females,
- 15 g/dL in newborn, and
- 9.5 g/dL at 3 months of age.

Classification

Aetiological (Whitby's) classification.⁸

Types of anaemia depending upon the causative mechanism are:

A. Deficiency anaemias :

- Iron deficiency anaemia,
- Megaloblastic anaemia (pernicious anaemia) due to deficiency of
- vitamin B12,
- Megaloblastic anaemia due to deficiency of folic acid and
- Protein and vitamin C deficiency can also cause anaemia.

B. Blood loss anaemias or haemorrhagic anaemias :

- Acute posthaemorrhagic anaemia as in accidents,

- Chronic posthaemorrhagic anaemia

C. Haemolytic anaemias.

These are relatively uncommon and occur in conditions associated with increased destruction of red blood cells. These can be:

Hereditary haemolytic anaemias:

- Thalassaemia
- Sickle cell anaemia
- Hereditary spherocytosis
- Glucose 6-phosphate dehydrogenase (G6PD) deficiency

Acquired haemolytic anaemias :

Immuno-haemolytic anaemia (due to antibodies against RBCs,

- Microangiopathic haemolytic anaemia (due to mechanical damage to RBCs,

- Haemolytic anaemia due to direct toxic effects (e.g. in malaria, snake venom, toxic effects of drugs and chemicals),
- Haemolytic anaemia in splenomegaly and
- Haemolytic anaemia in paroxysmal nocturnal haemoglobinuria (PNH).

D. Aplastic anaemia.

It occurs due to failure of bone marrow to produce RBCs. It is of two main types:

- Primary aplastic anaemia,
- Secondary aplastic anaemia.

General clinical manifestations of anaemia

- **Generalized muscular weakness:** tiredness and easy fatigability and muscle hypoxia.

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- **Palloriness of skin and mucous membranes:** buccal and pharyngeal mucous membrane, conjunctiva, lips, ear lobes, palm and nail bed occurs due to deficiency of red coloured haemoglobin in the blood.
- **Respiratory symptoms** such as breathlessness with increased rate and force of respiration occur due to compensatory stimulation of respiratory centre.
- **Cardiovascular manifestations** such as palpitation, tachycardia and cardiac murmurs occur as a result of compensatory mechanisms increasing the cardiac output.
- **Central nervous system (CNS) manifestations** due to cerebral hypoxia include lethargy, headache, faintness especially on exertion, tinnitus, restlessness, confusion and drowsiness.
- **Ocular manifestations** include visual disturbances and retinal haemorrhages and cotton wool spots.
- **Gastrointestinal system symptoms** include anorexia, flatulence, nausea, constipation. In pernicious anaemia, there occurs atrophy of papillae on the tongue.
- **Reproductive system** involvement occurs in females in the form of menstrual disturbances such as amenorrhoea and menorrhagia and loss of libido.
- **Renal system** involvement may occur in severe anaemia causing disturbances of renal function and albumin urea.
- **Basal metabolic rate (BMR)** is increased in severe anaemia.

DISCUSSION

Table 1 Comparison of *Rasavaha Strotodushti Lakshana* with clinical symptoms of anemia

<i>RASAVAHA STROTODUSHTI LAKSHANA</i>	CLINICAL COMPARISON WITH ANEMIA SYMPTOMS
<i>Ashraddha & Aruchi</i>	GI system - anorexia
<i>Aasyavairasya & Arasagyata</i>	GI system - atrophy of papillae on the tongue
<i>Hrillaso</i>	GI system - nausea
<i>Gaurava</i>	GI system - heaviness flatulence
<i>Tandra</i>	CNS - drowsiness
<i>Saangamarda Jwara Tama</i>	Fever with bodyaches and fainting
<i>Pandu</i>	Palloriness of skin and mucous membranes
<i>Strotasaam Rodha</i>	Obstruction of channels of circulation as in case of amenorrhoea
<i>Klaibya</i>	Impotency
<i>Saada</i>	Asthenia (generalised weakness and easy fatigability)
<i>Nashoagneyah</i>	Delayed digestion
<i>Vali and Paalitya</i>	Premature wrinkles formation and graying of hair.

Table 1 gives the comparison of *Rasavaha Strotodushti Lakshana* with that of symptoms of anemia. The *Lakshana* named *Ashradha* and *Aruchi* which means unwillingness towards food intake can be correlated with the GI manifestation of anemia. *Aasyavairasya* and

Arasagyata belongs to the loss of sense of taste which can be correlated with the atrophy of papillae on the tongue as seen in pernicious anemia. *Hrillaso* relates to nausea and *Gaurava* to heaviness or flatulence which is commonly seen in anemia. *Tandra* means feeling tired

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without much physical activity that can be related to CNS manifestation of anemia caused by cerebral hypoxia. *Saangamarda Jwara Tama* relates to generalised body aches, fever or fainting. *Pandu* which is the main symptom seen in anemia which relates to pallor of the skin, buccal and pharyngeal mucous membrane, conjunctiva, lips, ear lobes, palm and nail bed due to the deficiency of red coloured haemoglobin in the blood. *Strotasaam Rodha* which means any obstruction in the micro or macro channels for instance as seen in reproductive system involvement in the form of menstrual disturbances such as amenorrhoea or menorrhagia or loss of libido. *Klaibya* relates to impotency. *Saada* is for asthenia (generalised weakness and easy fatigability) which can be due to muscle hypoxia. *Nashoagneyah* votes for delayed digestion process which gives rise to further nutritional disturbances. *Vali and Paalitya* which means premature wrinkles formation and greying of hair is also said to be a manifestation of anemia caused due to nutritional deficiencies. So, all the symptoms explained in the *Rasavaha Strotodushti* relates with the clinical manifestation of anemia.

CONCLUSION

We can conclude that the symptoms described in *rasavaha strotodushti* in *Ayurveda* directly relates to symptoms as seen in clinical manifestation of anemia. Anemia affects all *strotas* in a sequential manner resulting in

systemic dysfunction. So, *chikitsa*(treatment) for the *pandu roga* or anemia should be done keeping in mind the *moola* ie. root cause of pathogenesis ie. *rasavaha strotodushti*.

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