A Critical Review of *Dhamani Sharir* in the Modern Perspective

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**ABSTRACT:**

*Ayurveda* is a treasure trove of information developed and discovered by our forefathers. To fully comprehend and apply the concept of dhamani sharir, we must first understand *Sharira*. For students of any system of medicine, understanding of *Rachana Sharira* (anatomy) is required. *Srotas, Siras, and Dhamani* are terms from the Vedas. The terms *Siras* and *Dhamani* is referred to blood vessels in general. However, according to commentators, *Dhamani* is a thick blood vessel connecting to the heart, and *sira* is a thin blood vessel. According to *Sushruta*, ten *Dhamani* spread upward, ten downward, and four sideward emerging from the *nabhi*. According to *Charak*, *hridaya* produces ten *Dhamani*. *Dhamani* (arteries) described in *Ayurveda* represent a tubular channel taking origin from the *Hridaya*(heart) and possess the characteristics of pulsation and circulation of *Rasa* (lymph chyle or plasma) and *Rakta* (blood) throughout the body. The up-coursing *Dhamani* prefers to maintain the body’s integrity by performing particular body functions such as sound, touch, taste, smell, sneezing, laughter, speech, and so on. The *Dhamani* that come down establish a pathway for *Vata*, urine, excrement, semen, and contained food to flow downward. The *Tiryaggami-Dhamani* can be taken as the cutaneous or peripheral vessels supplying the superficial and deep layers of the skin. This essay will assist in learning more about *Dhamani* through ancient science.

**Keywords:** Arteries *Dhamani, Hridaya, nabhi, Sira, Tiryaggami-Dhamani*

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**INTRODUCTION**

*Ayurveda* is a treasure trove of information developed and discovered by our forefathers. To fully comprehend and apply the concept of *dhamani sharir*, we must first understand *Sharira*. For students of any system of medicine, understanding of *Rachana Sharira* (anatomy) is required. Acharya Sushruta has been referred to as the ‘Father of Surgery.’ He has placed a higher value on practical knowledge. *Srotas, Siras, and Dhamani* are terms from the Vedas. They’ve all been used in the same way, but...
they're all different. The terms Siras and Dhamanis can be traced back to the Vedas. They've both been used in the same context. These terms, however, are not interchangeable. The terms Siras and Dhamani is referred to blood vessels in general. However, according to commentators, Dhamani is a thick blood vessel connecting to the heart, and Siras is a thin blood vessel. Both Siras and Dhamani are associated with the heart, yet their relationships are distinct. Many instances in the Sushruta Samhita use the word Dhamani, such as Moola of Srotas, Nabhinadi, and so on. The up-coursing Dhamani prefers to maintain the body's integrity by performing particular body functions such as sound, touch, taste, smell, sneezing, laughter, speech, and so on. The Dhamanis that come down establish a pathway for Vata, urine, excrement, semen, and contained food to flow downward. Rasa is carried by Dhamanis all over their bodies and filled with air; it is significant that Rasa is only conveyed by Dhamanis.

**Dhamani in Ancient Ayurvedic Texts**

Dhamani's etymological meaning is derived from the Sanskrit verb ‘DhamyateIti’ which means ‘to expand’. ‘DhamaanatDhamanyaha’ says Charaka, ‘the one who has the distinguishing traits of pulsation is Dhamani’. ‘DhmanatPooranaatBaahyenaRasaaadenevant hahaa’, according to Chakrapani’s commentary. ‘Dhamani is the hollowed-out one that is filled with Rasadi’. It's important to understand the differences between the terms Dhamana and Poorana. As per the commentary of Chakrapani Dhamani does Poorana (fills) Karma, Srotas (capillaries) does the Poshana Karma and Sira (vein) does Deshantara Gamana’karma (taking away from the site). According to Vagbhata, Sira, Dhamani, and Srotas are structures having lumen (Sharirachidra). In Naadi Parisksha Vidhi (pulse examination), Sharangadhara used the term Dhamani, and the exact location was given, namely near the root of Kara Angusha (root of thumb). The Jeevasakshi is the pulsatile function of these Naadis. Origin of Dhamani

Both Dhamani and Siras are said to have originated in nabhi, according to Sushruta. The word nabhi has been employed in connection to foetal life in ayurvedic samhitas as charak Samhita, ashtanga samgraha, ashtanga hridaya etc. In the sutras than sonitavarniyaadhyaya, Sushruta had changed his mind on the genesis of Dhamanis from nabhi to hridaya. Charaka has also mentioned in 30th chapter of sutras than that the Dhamani arise from the hridaya. According to Sushruta, ten Dhamani spread upward, ten downward, and four sideward among the Dhamanis emerging from the nabhi (transverse). According to Charak, hridaya produces ten Dhamani. According to ashtangasangraha sharira 6/9, there are twenty-four Dhamani; they provide nourishment to the entire body, similar to canals carrying water supplying nourishment to a vast plot of land; the nabhi is surrounded by them (Dhamani), just as an axle hole is surrounded by spokes (of a wheel); life is designed to dwell at that umbilicus (centre); thus, it is the seat of internal fire. Bhavprakash further stated that Dhamanis are twenty-four in number and are descended from nabhi (24). 10 spread upwards, ten below, and four in various directions from among them. These capillaries feature tiny openings through which Rasa (nutrients) flow, very similar to the pores found in the blossom stalk of a lotus flower.

**MATERIAL AND METHOD**

To approach the objectives scientifically, data from Ayurveda samhitas and modern books, national and international journals, magazines, conferences, online resources, prior work done, presented papers, etc. will be critically analyzed and relevant information will be sought. Author tried to figure out what term was used in ancient literature and to grasp it. This essay will assist in learning more about Dhamanis through ancient science.

**DISCUSSION**

Blood vessels are referred to as Siras and Dhamanis in general. However, according to acharyas, Dhamani is a thick blood vessel connecting to the heart, and Siras is a thin blood vessel. In sutras than sonitavarniyaadhyaya, Sushruta himself has changed his mind about the genesis of Dhamanis from nabhi to hridaya. According to Sushruta, ten Dhamani spread upward, ten downward, and four sideward among the Dhamani emerging from the nabhi (transverse). The Dhamanis come from the hridaya, according to Charak in the 30th chapter of the Sutrasthan. According to Charak, hridaya produces ten Dhamani. According to astangasangraha sharira 6/9, there are twenty-four Dhamani; they provide nourishment to the entire body, similar to canals carrying water supplying nourishment to a vast plot of land; the nabhi is surrounded by them (Dhamani), just as an axle hole is surrounded by spokes (of a wheel); life is designed to dwell at that umbilicus (centre); thus, it is the seat of internal fire. Bhavprakash further stated that Dhamanis are twenty-four in number and are descended from nabhi (24).
upwards, ten below, and four in various directions from among them. These capillaries feature tiny openings through which Rasa (nutrients) flow, very similar to the pores found in the blossom stalk of a lotus flower. Table 1 shows classification of Dhamani by Acharyas ‘Dhamani’, used for the arteries, are thick walled, elastic vessels, pulsation of which can be felt at various places in the body and the physician have always used its pulsating action, particularly at the root of the thumb of the hand, as a sign of life and to determine and happy and painful states of the body, diagnosis of various diseases and the death of a person. According to Ayurveda, the specific characteristics attributed to Dhamani (artery) can be put forth and described under four broad headings:

1) **Dhamani is a hollow tube-like porous channel:** Characterizing and specifying the structure of the Dhamanis, Maharshi Sushruta has said that as the lotus stem and its constituting components have natural pores (channels), similarly, the Dhamanis also have the pores through which Rasa (or chyle), Rakta (or blood) is carried out (and distributed in the body). This above statement clearly speaks that the Dhamanis are porous structure like short and big lotus stem through which Rasa is carried out all over the body. In ancient treatise like Vedas, Upanishadas, Smritis and Mahabharata, the term Dhamani used in the texts conveys the meaning of artery. The etymological genesis of ‘Dhamani’ has been rightly given in Upodghata of Rasayogasangraha by Pt. Hariprapanna Shastrijii. It is said that ‘Which pulsate or performs throbbing movement, fulfils the requirement and nourish the body, is recognized as Dhamani. Hence, Dhamanis because of performing only throbbing flow function of Rasa (lymph chyle or plasma) of the body have been called to be a purified (oxygenated) blood carrying channel.

2) **Dhamanis are attached to the Hrdaya (heart):**

Though, ‘Dhamanis’ have been said to be ‘Nabhiprabhava’ (S.S.9/2) even then generally they are always stated to be attached with the Hridaya (heart). It is evident that both, the Hridaya (heart) and Nabhi (umbilicus) are quite separate and single organ situated in different regions of the body. The umbilicus is situated in the centre of the abdominal wall, through which the umbilical cord, consisting of both the Dhamanis (arteries) and ‘Siras’ (veins) keeps connected the fetus with the uterine wall of the mother and maintains the nutritional supply of the former, till its full-term growth and delivery. Because of this above-mentioned fact of nutritional supply during intra-uterine life of the foetus both the Dhamanis and ‘Siras’ have been stated to be Nabhiprabhava (related or having origin with the umbilicus or naval).

3) **Dhamanis carry Rasa and Rakta both:**

Charak has rightly stated that the root of the Rasavaha-Srotas (channels for carrying the lymph chyle or plasma) is the Hrdaya (heart) and the Rasa is carried out throughout the body by ten Dhamanis Sushruta has also clearly expressed the relationship in between the Hrdaya (heart), Dhamanis (arteries) and the Rakta (blood) along with their functional aspects of saturation of body tissues, nutritional supply, maintenances of growth and development, formation of milk in the breast, certain breast diseases found in younger and adult age of women and their periodical menstrual flow.

4) **Dhamanis pulsate: Characterizing the ‘Dhamanis’, Srotasas and Siras**

Maharshi Charaka has distinctly differentiated that out of these three body channels, it is only the first one which constantly pulsate, till life is there. The applied aspects of ‘Dhamanis’ are of general importance in everyday today practice. Enlightening the clinical significance of ‘Dhamanis’ Sharangadhara has nicely stated that whether a person is living or dead and healthy or diseased, are decided by examining the pulse on the root of the thumb and it is always found to be rapid and warm during provocation of fever. In short it can be said that the Dhamanis (arteries) described in Ayurveda represent a tubular channel taking origin from the Hridaya (heart) and possess the characteristics of pulsation and circulation of Rasa (lymph chyle or plasma) and Rakta (blood) throughout the body.

**Divisions of Dhamanis (arteries) and their functions:**

Maharshi Sushruta has nicely stated that the Rasa (lymph chyle or plasma) situated in the Hrdaya is carried out by twenty-four Dhamani, out of which ten go up and ten downwards and four obliquely and thus governed by destiny it keeps growing, maintains and nourishes the entire body constantly day and night. In Sharirsthana, the described functions of these twenty-four Dhamanis taking origin from Nabhi (umbilical region), though appears to be very much hypothetical, but when thought upon and critically analyzed on scientific basis, the approach stands substantial and meaningful. Details of the upwards, downwards and oblique Dhamani and their functions are being given below:
A) Urdhvagāmi (upwards) going Dhamanis (arteries) and their functions:

The Dhamani going upwards carry specifically the impulses of Shabda (sound), Sparsha (touch), Rupa (vision), Rasa (taste), Gandhi (smell), Prashvas (inspiration), Ucchvasa (expiration), Jrimbha (Yawning), Kshut (Sneezing), Hasita (laughing), Kathita (speech) and Rudita (weeping), etc., and thus maintain the body. These ten Dhamani after reaching the Hridaya (heart) get divided into three and thus become thirty in total. Out of them, each Vata, Pitta, Kapha, Rakta and Rasa are carried by two Dhamanis, thus becoming ten in total; those which are meant to carry Shabda (sound), Rupa (vision), Rasa (taste), and Gandhi (smell) are eight in number (i.e., two for each); two are meant for speech, two for rhythmic phonation, two for sleep, two for keeping awake, two for flow of tears and two for flow of milk (externally) from the breasts in females and the corresponding two carry the semen (internally) from the breasts in the males. Thus, all these thirty described Dhamanis perform their functions accordingly. They nourish and maintain the parts above the umbilicus i.e., abdomen, lateral sides of the trunk, back, chest, shoulders, neck and superior extremities, some of the modern synonymous terms which are possible for certain Dhamani as well as their simultaneous recognition like corresponding nerves as advocated by Pt. Gangadhur Shastri ji are being given below. They are:

1. Sabdavaha-Dhamani-Internal auditory artery (Acoustic nerve).
2. RupavahaDhamani-Central retinal artery (optic nerve).
3. Rasavaha-Dhamani-Lingual artery (nerves of tastes which are branches from glossopharyngeal and lingual);
4. Gandhavaha-Dhamani- Sphenopalatine branch of the internal maxillary artery (olfactory nerve);
5. Ghosakara-Dhamani-Laryngeal arteries (Inferior laryngeal nerve);
6. Bhasana-Dhamani-Sublingual artery (Hypoglossal nerve);
7. Ashruvahi-Dhamani-Lacrimal artery (lacrimal nerve);
8. Stanyavaha-Dhamani-Mammary artery (No secretary nerves of the mammary gland have yet been described.

[B] Adhogami (downward) going Dhamanis (arteries) and their functions:

The Dhamani going downwards, perform the functions of carrying the Vata (gaseous components), Mutra (urine), Purisha (faeces), Shukra (seminal fluid) and Artava (menstrual blood) etc. in lower part of the body. Reaching the Pittashaya (region of the gallbladder) they take up and carry the well digested AnnapanaRasa (chyme) and nourish the body; they supply the Rasa to upwards and oblique going Dhamani, fill up the reservoirs of Rasa, separate the Mutra (urine), Purisha (faeces) and Sveda (sweat) from the Anna-Rasa and get divided into three parts between the Amashaya (stomach) and Pakvashaya (small intestine) and thus, they result into thirty Dhamani. Out of these the Vata, Pitta, Kapha mucoid components), Rakta (blood components) and Rasa, each are carried out by two Dhamanis and result total in ten (numbers); two situated in intestines carry the Anna (solid food matter); two the Jala (fluid components); there are two Mutravaha-Dhamani going towards the Mutravasti (urinary bladder), two Shukravaha-Dhamanis are there for Shukrotpatti (formation of seminal fluid) and two are for its ejaculation. These (seminal fluid carrying Dhamanis) function as the ArtavavahaDhamani, in female; related to Sthulantra (large intestines) there are two Dhamanis for removal of faecal matter and remaining eight Dhamani supply (blood) to the oblique running Dhamani for the formation of Sveda (sweat). In this way, these described thirty Dhamanis with their branches maintain and nourish the Pakvashaya (small intestine), Kati (waist), Mutra (urine), Purisha (faeces), Guda (rectum) Vasti (urinary bladder), Medhra (penis) and Sakthis (lower extremities). We know that the ‘Vatamutradi’ get generated in the abdominal area and their natural moving directions are downwards. After receiving the necessary requirements through the Dhamanis, these substances get produced in their respective organs and accordingly move downwards. Probably, based on this very fact, the text has stated that they are carried down by the Dhamanis. The words ‘Pittashayamabhiprapanna’ used in the text, is suggestive of the edible things after reaching the Amashaya (stomach) and Ksudrantra (small intestines), said to be the seat of Pittadharakala, get digested and absorbed in the form of AnnaRasa (chyle) which nourishes the whole body. The stomach and intestines are capable to accomplish the process of digestion and absorption only when the supply of blood in properly maintained over there. This is the reason that in the text, the Dhamani have been stated to be the discriminator and carrier of the AnnapanaRasa (chyle). The mention of ‘ArpayantiUrdhvaganamitiryanaman’ in the text meant that the upwards and oblique going Dhamanis are nourished by it. We know that the formation
of *Rasa* (chyle) is furnished after digestion of eatables by the help of *Adhogami-Dhamani* and the same reaching to the *Hridaya* (heart) through the *Siras* (veins) and *Rasayunis* (lymphatics) nourish the *Urdh vagami* (upwards) and *Tiryaggami* (oblique going) *Dhamani*. This suggests that the nourishing of the upwards going *Dhamanis*, are indirectly accomplished by the downwards going *Dhamanis*.

*Artavavaha- Dhamanis* in ladies should also be taken as uterine and ovarian arteries (hypogastric and ovarian plexus) as the process of genesis of *Artava* (menstrual cycle) commences in the *Bijakoshas* (ovaries) and *Garbhashaya* (uterus). With the term, *VarconiRasanyausthulantrapratibaddha*, the *Dhamani* like inferior mesenteric arteries, middle colic and right colic arteries (pelvic visceral plexus) should be taken as they facilitate the function of *Sthulantra* in carrying down and evacuating the fecal matter outside, hence they have been designated as *'VarchonitiRasani'*. The remaining eight *Dhamani* are supposed to provide (nourishment to the) sweat (glands) through their oblique running routes. Thus, these thirty *Dhamani* with their branches and sub-branches maintain and provide the nourishment to the colon, rectum, urinary bladder, penis and inferior extremities, situated below the umbilical region. These above said *Adhogami-Dhamani*, in the light of modern anatomical descriptions are found to be mainly concerned with abdominal aorta and its branches.

**[C] Tiryaggami (oblique going) Dhamanis (arteries) and their functions:**

Each of the four oblique going *Dhamani* divide and redivide into hundreds and thousands of branches, when they proceed further. Thus, (divided into branches and sub-branches) they become countless in number and make the entire body bounded and pervaded with a network of window. The (terminal) openings of these *Dhamani* are connected with the hair pits(follicles) through which they carry the sweat and nourish them (by supplying) internally and externally with *Anna-Rasa*. The essences of *Abhyangas* (oily ointments), *Pariseka* (irrigation or spray of oils), *Avagahana* (immersion bath) and *Alepana* (pastes of drugs) applied to the skin are absorbed by these *Dhamanis*. Through these, the experiences of pleasant and painful touches are perceived (by *Jivatma*). Thus, the four *Dhamani* and their branches spread all over the body have been described with their functions. Based on modern anatomical description, the *Tiryaggami-Dhamanican* be taken as the cutaneous or peripheral vessels supplying the superficial and deep layers of the skin. The term *Romakupa* is suggestive of *Sveda-granthi* (Sweat glands) and *Ayurveda* has always established their close inter relationship. *Romakupa* (hair pits) and *Sveda-granthis* (sweat glands) have their independent status and places devoid of *Romakupai.e.*, palmar and planter aspects of the hand and feet, respectively, are found to have plenty of sweat glands.

The term *'Vacivipakvani'* in the text is suggestive of the metabolism by its heat for the substances applied over and absorbed in the system. Many *Abhyangas* (massages) of different medicated oils, the *Pariseka* (spray) of various indicated decoctions, the *Avagaha* (bath) with medicated water and for *Alepa* and *Pralepa* (ointments, paints and pigments) of different medicated juices and pastes are used. The absorption of these medicines, through *Romakupas* (pores) has been also approved by the modern medicine. It has been decided by certain researchers on their own experience that when patients are incapable of taking meal through their mouth, then their nutritional supply could be maintained for some period by application and absorption of particular cereal pastes on the surface of his skin.

The term *Sparsamsukhasukhamava* though is indicative of pleasant and painful experiences (perceived by *Jivatma*) through *Dhamani* but as per modern physiological approaches, the *Nadis* (nerves) are mainly held responsible for such experiences of touch etc. even then the close relationship of blood in this respect cannot be denied. This is well known that 'the loss of blood supply' produced experimentally by compressing an artery digitally or with a pneumatic cuff, and in diseases by embolism, thrombosis, arterial spasm etc. also causes an orderly succession of sensory disturbances resembling those of mechanical compression (of the nerve trunk). The term *'Sparsa* (touch) incorporates *Guda-gudi* (feeling of manually provoked laughing sensation), *Kandu* (itching), *Jhunajhuni* (tingling), *Sunnata* (insensibility or numbness) and *Jalana* (burning) like various sensations of the body.

**CONCLUSION**

The *Urdh vagami-Dhamani* have concerned with internal functions of the head, neck, thorax and upper extremities, the *Adhogami-Dhamani* remain connected with the abdominal organs and lower extremities and the *Tiryaggami-Dhamani* have relationship with the outer surface or skin of the body. Based on modern anatomical description, the *Tiryaggami-Dhamani* can be taken as the
cutaneous or peripheral vessels supplying the superficial and deep layers of the skin. The pulsing of the Dhamani symbolizes the presence of life, as well as health and illness.

The micro-anatomical relationships between the cells and the blood arteries are of special importance in a tissue whose activity is so dependent on its blood supply. These Dhamani allow elements applied to the body's surface in the form of liquids or pastes to enter the body's interior. Dhamani perceives both pleasant and unpleasant touches. The Dhamani are panchabhouitika, which aid in the establishment of touch between the sense organs and their associated objects throughout life. Equating Dhamani with nerve is impossible since its characteristics are diametrically opposed to those of those arteries. The activities of Dhamanis (arteries) and nerves appear to be similar since they are interconnected and complementary to one another. Nerve functions in any portion of the body that is not supplied with blood by arteries will be ineffective.

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Table 1 Classification of *Dhamani* by *Acharyas*

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