

A REVIEW ON UNDERSTANDING OF DHAMANI

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ABSTRACT :

Interpretation of *Ayurvedic* terminologies in contemporary science remains confusing in many contexts. *Dhamani* is one among such terminologies. *Sushruta*, the father of surgery, clearly explained the constitution of human body from *Twak* (skin) to *Sookshma Srotas* (minute channels) and their enumeration, in which *Sira* (vein), *Dhamani* (artery), *Srotas* (capillaries) are the channels for the transportation of *Rasadi Dhatu* (nutrient components). They are interpreted as blood vessels, lymphatic channels and nervous entity. In many context, *Dhamani* falls under the category of vascular entity. *Mooka* (dumb), *Minmina* (nasal twang) & *Gadgada* (stammering) manifest due to involvement of *Shabdavahini Dhamani*; thus it is considered as neurological entity. There arises confusion whether to consider *Dhamani* as neurological entity or vascular entity. Hence this study is aimed to emphasize on *Dhamani* as a specific anatomical structure by critically reviewing all possible literature, both as per *Ayurveda* and contemporary science.

Keywords : *Dhamani, Srotas, Sira, Rasa, Artery, Nerve*

INTRODUCTION: *Dhamani* is a structure mentioned in *Ayurvedic* classics which carry *Rasa* all over the *Sharira*¹ and maintains the *Poshana* (nutrition) of the *Sharira*. *Sushruta* enumerated that there are seven hundred *Sira* (veins), twenty four *Dhamani* (arteries) and twenty two *Srotas* (capillaries)². The number of the *Sookshma Sira* and *Dhamani* are same as that of the hair-follicles³. *Sushruta* has used the word *Dhamani* for some of the *Mula Sthana* (root of origin) of *Srotas*⁴. It is one of the *Pitruja Bhaava*⁵. Further *Charaka* has stated that the channel which carries the related content (*Dravya*) with *Dhmana* (pulsation) has been named as *Dhamani*, the channel through which the related content flows freely without much pressure has been named as *Sira* and that which helps in *Sravana* (secretion) named as *Srotas*⁶.

REVIEW OF LITERATURE: Concept of *Dhamani* Etymological meaning of *Dhamani* is derived from Sanskrit term—

“*Dhambate Iti*”⁷ that which expands. *Charaka* quotes “*Dhmana at Dhamnyaha*”⁸ - the one which is having the characteristic features of pulsation is *Dhamani*. *Chakrapani* commentary on this, states that “*Dhmanat Poorana at Baahyena Rasaadenetyartha*”⁹ - the one which is hollow & filled with *Rasadi* is considered as *Dhamani*. The characteristic features of the term *Dhmana* and *poorana* should be understood. 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)¹⁰. As per *Vagbhata* - *Sira, Dhamani* and *Srotas* are considered as structure with lumen (*Sharira Chidra*)¹¹ *Sharangadhara* has used the term *Dhamani* in *Naadi Parisksha Vidhi* (pulse examination) and exact position has been mentioned i.e. at the root of *Kara Angushta* (root of thumb). Pulsatile function of these *Naadi* is the *Jeevasaakshi*¹².

Moola of Dhamani: In the context of *Sharira Sankhya Vyakharana*, *Dhamani* originated from *Nabhi* as *Moola*¹³. In the context of *Shonitavarniya Adhyaya* after the formation of *Rasa* it enters the *Hridaya* (heart) from *Hridaya Dhamani* emerges and helps in conducting *Rasa* throughout the *Sharira*¹⁴. *Arthedashamahaamooliyam Adhyaya* of *Charaka* says that *Dhamani Moola* is *Mahat*, for this *Chakrapani* commented *Mahat* is *Hridaya*¹⁵

Review related to classification and enumeration of Dhamani

Dhamani are classified into ten *Urdhwaga*, ten *Adhoga* and four *Tiryakgata*¹⁶. *Urdhwagata Dhamani* carry out special functions like *Shabda* (sensation of sound), *Sparsha*, *Roopa*, *Rasa*, *Gandha*, *Prashwasa* (inspiration), *Uchwasa* (expiation), *Jrimbha* (yawning), *Kshudita* (sneezing), *Hasita* (laughing), *Kathita* (speaking), *Rudita* (weeping) by which it does the *Shareera Dharana*. When it reaches the *Hridaya* each divides into three, thus becoming thirty, out of which two each for conducting *Vata*, *Pitta*, *Kapha*, *Rasa*, *Rakta*, *Shabda*, *Sparsha*, *Roopa*, *Rasa*, *Gandha*, *Bhashya* (speaking), *Gosha* (loud voice), *Swapiti* (sleep) and *Pratibhodana* (wakefulness) by which structures which lie above *Naabhi* (umbilicus) like *Udara* (upper part of abdomen), *Parshwa* (flanks), *Prista* (back), *Uraha* (chest), *Skandha* (shoulder), *Greeva* (neck), *Baahu* (arms) are supplemented and supported¹⁷. *Adhoga Dhamani* carries out the function of *Vatavahana* (flatus), *Mootravahana* (micturition), *Purishavahana* (feces), *Shukravahana* (ejaculation) and *Arthavahana* (menstruation). As it passes downwards it is said to divide into 3 each thus into 30 branches. Further they divide into two each for carrying *Vata*, *Pitta*, *Kapha*, *Rasa*, *Shonita*, *Annavaha*

(solid food), *Toya* (liquid food), *Mootra*, *Varchonirasana* (elimination of feces), *Shukrapradurbhaava* (production of semen), *Shukravisarjana* (ejaculation of semen) in male, *Arthava Pradurbhava* (production of menstrual blood) and *Arthava Visarjana* (menstruation) in female and remaining eight *Dhamani* moves *Tiryagata* (laterally) and supplies the channel of *Sweda* by this way *Adhoga Dhamani* does the *Dharana* of below the umbilicus like *Pakwashaya* (intestine), *Kati* (hip), *Mootra*, *Purisha*, *Guda* (anal region), *Basti*, *Medhra* (penis) and *Sakthi* Sustained and maintained¹⁸. *Tiryagata Dhamani* divides into hundred each further re divide into thousand and there on into minute branches and looks like *Gavakshitha Vibadda* (mesh like appearance), their ends are attached to *Romakoopa* (hair follicles) for *Vahana* (conduction) of *Sweda* (sweat), for *Tarpana* (nourishing) of *Rasa* both inside and outside through this which *Abhyanga* (massage), *Parisheka* (pouring), *Avagaha* (sudation) and *Lepa* (anointing) of drugs get *Vipakwa*. By nourishing the *Twak* (skin) the *Tiryagata Dhamani* are responsible for *Sukha* and *Asukha* *Sparsha*¹⁹.

The nomenclature given for *Dhamanis* like *Shabdavahin* (sense of hearing), *Rasavahini* (sense of taste), etc confuses a reader whether to consider it under vascular structure or under neuronal structure. This article is intended to throw a light on the *Dhamani*.

Srotomoola as Dhamani: According to *Sushruta* in the chapter of *Dhamani Vyakharana* he explained the *Moola Sthana of Srotas*, as they are *Pranavaha Sroto Moola* is *Rasavahini Dhamani*, *Annavaha Srotomoola* is *Annavhini Dhamani*, *Rasavaha Srotomoola* is *Rasavahini Dhamani*, *Raktavaha*

*Srotomoola is Raktavahini Dhamani, Mamsavaha Srotomoola is Raktavahini Dhamani and Arthavavaha Srotomoola is Arthavavahini Dhamani*²⁰.

Dhamani as Marma: Both the *Vagbhata* classified *Dhamani* as a separate *Marma* based on structure. Accordingly there are nine *Dhamani Marma*. They are *Guda Marma* and *Shringhataka Marma* injury of which leads to *Sadhyomarana* (sudden death), *Apasthambha Marma* injury leading to *Shonita Poorna Koshtata* (blood filled lungs), *Shwasha* (breathlessness) and *Kaasa* (cough), *Vidhura Marma* leading to *Badhirya* (deafness)²¹.

Dhamani in the Context of Lakshana, Samprapti & Sthana for Different Vyadhi: *Charaka* in the *Madana Kalpa Adhyaya* explains mode of action of *Guna* (quality) of a *Dravya* by their own *Veerya* (potency) enters the *Hridaya* and following the *Dhamani* reaches the *Sthoola Srotas* (big channels)²². *Dhamani Shaitilya* is one of the *Mamsa Kshaya Lakshana* according to *Sushruta*²³. *Dhamani Praticahya* (atherosclerosis) is one of the *Shleshmaja Nanatmaja Vikara* according to *Charaka*²⁴. *Sira Snaayu Dhamani Spandana* is one of the *Vata Prakopaka Lakshana* according to *sushruta*²⁵. *Mooka Minmina Gadgada Samprapti* explains *Vrudda Vata* does the *Avarana* (blocks) of *Kapha* enters the *Shabda Vahi Dhamani* and produces the disease²⁶. As per *Pakshagata Samprapti*, *Vrudda Vata* enters the *Urdhvaga, Adhoga* and *Tiryagata Dhamani* leading to *Vyadhi*²⁷. In the context of *Arshas* (hemorrhoids) the *Vrudda Dosha* along with *Shonita* enters the *Pradhana Dhamani* and produces *Arshas*²⁸. *Charaka* in the *Pandu* (anemia) and *Visarpa* (herpes) *Roga* the *Prakupita* *Dosha* enters the *Dhamani* and produce these diseases²⁹.

DISCUSSION:

As per the *Nirukti Dhamani* is an anatomical tubular structure having the characteristic features of *Dhmana*(pulsation) and also responsible for conduction of *Rasaadi Dhatu*, only the artery having the pulsation to assess the health of a person, even though nerve conducts the impulse that cannot be felt directly.

The word *Dhmana* signifies the content which is propelled forward with some pressure or rhythmic force. This refers to an organ which is exclusively pumps an amount of *Poshaka Dravya* (nutrient fluid) with graded pressure & force required for supplementation of *Rasadi Dhatu* (*Sookshma Dhatu*) to each and every cellular component of the body based on their need. Hence the organ which is responsible for conducting nutrient fluid along with the *Pranavayu* (po₂) is *Urasthitha Hridaya* (heart). *Hridaya* is referred to be the site for *Para Ojas, Prana, Vyana, Manha, Moola* for *Dasha Dhamani* and *Avalambhaka Kapha*. Emerging from *Hridaya Dhamani* is said to carry *Ojas* which is having an important role in maintaining immune response of the body. Hence *Dhamani* is said to be related with *Hridaya* conducting *Rasa Rakta*, along with *Prana Vayu* by which *Shareera Poshana* will occur.

The structure which can be identified at the root of thumb having palpable pulsation is radial artery which can be taken as suitable tubular structure conducting arterial blood (nutritional fluid) and the frequency of pulsation, number of pulsation and type of pulsation which is described by *Sharnghadhara* like *Sarpavat*(serpant), *Mandookavat*(frog), and *Hamsavat*(swan) goes in favor of *Dhamani* as artery. Further the quality of pulsation is the sympathetic neuronal control of smooth muscles

in the wall of the artery along with volume of cardiac output /min. This is not felt in vein and this may be the reason *Acharya* have defined the *Sara Guna* rather than *Dhmana*. In Circulatory system of human body, artery carries the oxygenated blood to the capillaries, capillaries supplies to each and every cell. The vein receives the deoxygenated blood. *Nabhi* is *Moola*, *Nabhi* is considered in relation to embryological development of fetus and vascular structure as been defined related with fetal nourishment. This is justifiable by observing the order of the chapter *Sharira Sankhya Vyakharana* just after the *Garbha Vyakharana*.

Discussion related to Classification and terms used in identification and understanding of Dhamani.

By observing the description regarding classification of *Dhamani* it shows that the direction of *Dhamani* coursing in upward direction and downward direction divide and redivide into branches resembles that of large arteries related with heart passing upwards supplying upper part of the body and the related structures. The nomenclature given to these *Dhamani* by *Acharya Sushruta* seems to be based on the functional specificity of particular structure and its blood supply like the organ related with production of sound (*Shabda*), speech, vision etc.

This description also stands for *Adhogha Dhamani* based on functional importance of particular organ/ structure and the related blood supply as well. Further the term *Tiryagata Dhamani* has been explained in relation to spreading of blood vessel to the body wall including the modified body parts in the form of upper limb and lower limb ultimately ending in the form of arterial plexus by anastomosis of cutaneous arteries. Each and every root of

hair follicle in the skin needs blood supply which is supplemented by this *Tiryagata Dhamani* along with nourishing the skin.

While explaining the *Moolasthanas* of *Srotas*, *Acharya* have included the conducting channels of a particular *Dravya* related with specific *Srotas*. For example while explaining *Arthavavaha Srotas* as *Garbhashaya* and *Arthavahini Dhamani* clears that *Garbhashaya* is the organal entity responsible for growth of fetus etc, while *Arthavahini Dhamani* in the wall of *Garbhashaya* helps in vascular supply needed for the function of female reproductive organ. *Dhamani Marma* as per *Vagbhata* is based on injury related with vascular component. This goes in favor of blood vessels related with *Guda* (anal region) and *Shringhataka* (cavernous sinus) *Marma* which are categorized under *Sadyopranahara Marma* and *Viddha* (injury) leads to hypovolemia due to hemorrhage or loss of blood causing death. *Shingo oya et al* study shows that injury to anus leading to hypovolemic shock³⁰. *Apasthambha Marma* injury leads to haemothorax. The vital area related with *Vidhura marma* includes facial nerve and stylomastoid artery along with other branches of external carotid artery supplying to various parts of ear and which causes conduction deafness this goes in favor of both neuronal and vascular entity. If blood supply to the nerves is not proper, the nervous function is altered. This may be the reason for categorizing *Vidhuraas Dhamani Marma*. Study conducted by *Nadir Yildirm* shows that local and systemic vascular involvement is responsible for hearing impairment³¹.

Sushruta explains *Dhamani Gata Vata Roga* are *Gridhrasi* (sciatica), *Vishwachi* (brachial neuralgia), *Kroshtuka Shirsha* (knee joint swelling), *Khanjha* (limping),

Panghula (lameness), *Vatakantaka*, *Padadaha*, *Padaharsha* (tingling sensation of foot), *Avabahuka*, *Badhirya*. In all above said conditions there is involvement of nervous component. But while explaining *Chikitsa* of *Dhamani Gata Roga Siravyadha* indicated. the mode of action of *Samanya Vatavyadhi Chikitsa* in the form of *Abhyanga*, *Sweda*, *Anuvasana Basti*, *Matrabasti* etc results in increasing the vascularity there by leading to local blood supply and repair of tissues along with enhancing the function of nervous component,

CONCLUSION: *Dhamani* based on their characteristic feature is a structural media to carry Nutritional components. On the basis of literature review and discussion it is concluded that *Dhamani* is to be understood as artery. Though there is nervous involvement in the functions like speech, perception of sound, conduction of *Rasadi Dhātu* etc by propelling it forward the vascular supply is also equally important in maintaining blood supply and safeguard the integrity of each cellular component of the body and its function.

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Source of support: Nil

Conflict of interest: None

Declared

Cite this Article as: Swapna H N et al.: A Review on Understanding of Dhamani