

The Literary Study of Adhoshakhagat Avedhya Siras

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ABSTRACT

Background- The ‘Sira’ term is used collectively for blood vessels (Arteries, Veins, Capillaries, and lymphatics) which denote the circulatory system. Some siras are not suitable for venepuncture. These siras are called Avedhya sira. A surgeon should not perform venesection on this siras which definitely can cause disability or death. The sites are available in classic texts but the exact location and anatomical description not yet described. Therefore, it requires great research work to get a clear concept. **Aim & objectives-** To correlate Adhoshakhagat Avedhya Siras mentioned by our mentors with modern anatomical structures and review in contemporary science. **Materials and methodology-** Ancient Ayurvedic classics were reviewed and compiled references for said subject were critically studied to comprehend the Avedhya siras in lower extremities. **Observations & Results** – Scattered references are available in Ayurvedic classics and Modern Anatomy (surgical & clinical) texts regarding Avedhya Sira.

Preliminary knowledge of Avedhya Siras is very important for Physicians as well as surgeon. The Avedhya Siras stated in Ayurveda compendia can be correlated with blood vessels, vein in Modern Anatomy.

Keywords: Sira, Avedhya Siras, Siravedha, Venesection.

INTRODUCTION:-

The term Sira, at one place reflects a meaning of blood vessels while at other place, it means nerve. In such condition it is very difficult to know doubtlessly about it [like Modern Anatomy]. ‘Sira’ is one of such structures with its structural, clinical & surgical significance. The important descriptions about ‘Sira’ are mentioned by our mentors in Ayurvedic classical text like; Sushruta Samhita, Charak Samhita, Ashtang Hridaya and other text books. In Sushruta Samhita 4 types of Sira – Aruna Varna (Crimson), Neela Varna (Blue), Gour Varna (White) and Rohini (Red) which are relevant with Dosha –Vatta, Pitta, Kapha, Rakta.¹ The term Sira stands for channels through

which substances or physical forces flow.² Siras carries the Rakta Dhatu which helps to nourish the body and maintain healthy state.³ Their ramifications are like venations of the leaf. The Siras begins from the umbilicus from which they spread upwards, downward and obliquely throughout the body.^{1, 2, 3,}

Among the 700 Siras in the body as per the classics which are classified on the basis of Dosha, Adhishtana, Vedhya and Avedhya which is mentioned in Sushruta Samhita, 98 Siras are Avedhya; which are strictly prohibited for puncturing, if by mistake or by stupidity of the Chikitsak these are punctured it leads to harmful results.^{1, 2, 3} There are several examples of disease those are cured by Sira Vedhan process like Grudhrasi (Sciatica), Vishvachi (Eczema), Unmad (Insanity or Madness), Apasmar (Epilepsy or seizure disorders) etc.⁴

According to Sushruta, Marma is the vital spot in the body where confluence of Mamsa (Muscles), Sira (Blood Vessels), Snayu (Ligaments), Asthi (Bones) and Sandhi (Joints) present. In these places prana resides specially by nature, therefore any trauma on any one of these Marmas invariably causes death.^{1, 5, 6} The Sira which are located over the vital points (Marmas) are Avedhya (contra-indicated for puncture). Sushruta has clearly mentioned the Vedhya siras especially in connection with the diseases which are cured by Siravedha. There are 100 Siras in each Shakha (Limbs/Extremities) of which 4 Siras are Avedhya, they are; Jaaladhara-1, Urvi-2 and Lohithaksha-1. Jaaladhara Siras are deep blood vessels

where as Urvi and Lohithaksha siras are superficial blood vessels.¹ Acharya Dalhana in his commentary on Lohithaksha and Urvi Siras, mentions that these Siras are similar to the Lohithaksha and Urvi Marmas and its Viddha Lakshana may also be taken as the same.^{5, 6} Lohithaksha and Urvi are Sira Marmas and are said to be Vaikalyakara Marmas.⁷ The knowledge of Marmas is said to be half of study of Shalya Tantra.⁸ Acharya Vagbhata also had the same opinion on the total number of Siras. He then further explains that those Siras which are fused together, formed in to lumps, very minute, curved and those located inside the joints should not be Vedha.⁹

Even though the descriptions of these siras are available in Ayurvedic Samhita the structures which are related to this region, their anatomical description and their surgical importance need further more explanations. As per our mentors mentioned Avedhya Siras not suitable for Siravedha, if done so leads to disability or death. Siravedha is the half of treatment in Shalya Tantra. Therefore Avedhya siras are to be taken care of during surgery & clinical procedures.

AIM & OBJECTIVES:-

- To correlate the Adhoshakhagat Avedhya Siras mentioned by our mentors with modern anatomical structures.
- Review of Adhoshakhagat Avedhya Siras in contemporary science.

- To study the Avedhya Siras in lower extremities with its clinical and surgical significance

MATERIALS & METHODOLOGY:-

All sorts of references has been collected and compiled from various available Ayurvedic classic texts like Samhita, available commentaries and text books along with modern science. Research articles from various websites related to Avedhya Siras (Contra Indicated Vein) were accessed. The collected literature was critically revived and it an attempt was made to correlate the Adhoshakhagat Avedhya Siras with the structural aspect of the lower extremities. Based on the correlation and, the conclusions were drawn.

REVIEW OF LITERATURE

Structure of Sira

According to Sushruta, Structure of Siras are like the fine fibers in the leaf of a tree, thick at their roots and becoming finer towards the end, the branches of the Sira resemble the tendrils, the first branch gives out a branch and this again gives out another branch and so on. The blood flows in all the sira which are “like water channels going out to the different areas of a garden or agricultural field.”^{6, 9}

This drushant of leaf very well correlates with the structural aspect of blood vessels. Large arteries leave the heart and branch into smaller ones that reach out to various parts of the body. These divide still further into smaller vessels called arterioles that penetrate

the body tissues. Within the tissues, the arterioles branch into a network of microscopic capillaries. Substances move in and out of the capillary walls as the blood exchanges materials with the cells. Before leaving the tissues, capillaries unite into venules, which are small veins. The venules merge to form larger and larger veins that eventually return blood to the heart. The walls of arteries, veins, and capillaries differ in structure. In all three, the vessel wall surrounds a hollow center through which the blood flows. The walls of both arteries and veins are composed of three coats, but they differ in thickness. The inner and middle coats of arteries are thicker than those of veins. This makes arteries more elastic and capable of expanding when blood surges through them from the beating heart. The walls of veins are more flexible than artery walls. This allows skeletal muscles to contract against them, squeezing the blood along as it returns to the heart. One-way valves in the walls of veins keep blood flowing in one direction. The walls of capillaries are only one cell thick. Of all the blood vessels, only capillaries have walls thin enough to allow the exchange of materials between cells and the blood.^{10, 11, 12, 13}

Adhoshakhagat Avedhya Siras

Some Siras are not suitable for venepuncture. These Siras are called Avedhya Sira. If a surgeon performs Vedhya Karma on there Siras, it would definitely cause disability or death. Any venesection which is direct cause of severe blood loss or falling of blood pressure can cause death. To avoid these mis happenings our mentors had

mentioned these ninety eight restricted veins for the venesection at particular sites. Rest of the veins can be a choice for the vedhya karma in certain diseases.^{1, 9}

There are 16 Avedhya Siras present in the Shakhas (Extremities).^{1, 9} Amongst the 16 Avedhya Siras of the extremities named as 1 Jaldhara, 2 Urvi and 1 Lohitaksha in each lower extremities.

Jaal:-

Network of each muscles, blood vessels, ligaments, and bones are four, they are situated in ankles bound & mixed together with holes by which the entire bony is falling net like holes.¹⁴

Modern science: -

There are no specific guidelines for Avedhya Siras (contra indicated veins). All veins can be considered for puncturing as per necessity & emergency.

Structure of Vein–

Venous return to the lower extremity is provided by two sets of veins namely the superficial and the deep veins. The main superficial veins are superficial to the deep fascia and are often located at or below the investing layer of superficial fascia in the subcutaneous tissue. Deep veins are situated deep to the deep fascia and often accompany the artery and the nerves supplying the lower limb forming a neurovascular bundle.^{10, 11}

Venous blood flow is a passive flow (not supported by a smooth muscle pump such as the heart). The direction of the flow is maintained by the valves within

the vein which prevents flow reversal. The valves found near the entry of a tributary. Venous channels are smaller, return blood from different tissue of body. The wall of vessels is thin and transparent, it carries of elastics fibers (hence its property of contraction & dilation).^{11,}

Veins consist of three layers:

1) Tunica adventitia- outer layer & consist of connective tissue which surrounds, protected & support vessels.

2) Tunica media –middle layer & consist of muscular tissue & nerves fibres which stimulate to contract or relax. (Stimulation by medulla oblongata)

3) Tunica intima- inner layer & constructed of smooth endothelial cells which facilitates the blood cells etc. endothelial cells develops fold known as semilunar valves. These valves noticeable bulges in veins, mostly present in larger blood vessels & which purpose of blood move toward heart by preventing back flow.^{11, 12, 13,}

Venesection Indications, location and causes¹⁵

Indications: -

- Thrombosed veins – these feel hard and cord.
- Tortuous, sclerosed, fibrosed, inflamed, fragile veins

Location:-

- Veins that cross over joints, bony prominences and those with little.

Causes:-

- Medications – (e.g.-anticoagulants, steroids, thrombocytopenia)

- Injury, disease or treatment may prevent the use of a limb (e.g. amputation, fracture, cerebrovascular accident).
- Surgery on one side of the body, for example, mastectomy and axillary node dissection, as this can lead to impairment of lymphatic drainage.
- Hematological factors decreased level of Hb% (Hemoglobin) and PLC (Plate Late Counts)

DISCUSSION:-

Profound knowledge of any science is obtained by critical review, observations and researches in the field. Adhoshakhagat Avedhya Siras is the functional complex part of over body. It is need of hour to highlight the every aspect related to Adhoshakhagat Avedhya Siras in our science.

Jaaldhara in lower extremities can be considered as great saphenous vein. Due to siravedha causes severe blood loss which leads to death or deformities, harmful effect. In Marma Sharir there is 41 sira marma considered out of which 2 Urvi & 1 Lohitaksha belong to that category. Urvi is considered as femoral vein in lower extremities, which can cause severe blood loss by puncturing them. Lohitaksha is considered as profunda femoris vessels in lower extremities. In Sushruta Samhita it is considered as “Lohitakshyem Marnam”.^{1, 5, 6, 9, 17, 18} Weinstein, et al (2007), Venepuncture of veins in the lower limbs is associated with a higher risk of complications due to the increased presence of valves and the fact that, comparatively, the blood flow in the lower limb is diminished.¹⁹

Table 1: showing Avedhya Siras which should not be punctured

Regions/ locations	Numbers	Sanskrit names	According to Dr. B. G. Ghanekar (Sushruta Sharirasthana commentary) modern Science correlation of Avedhya Siras (16)
Sakthies (lower Extremities)	8	(a) Jaaladhara-1 (b) Urvi -2 (c) Lohitaksha-1	Great sephanous veins, Femoral veins, Profunda femoris

The main symptoms of Marma injuries are bleeding and unconscious. In this contest Sushruta said that – “there are four types of siras in the body.”¹⁷ They generally lie in the site of Marmas and supply nutrition to Snayu (Ligaments), Asthi (Bones), Mans (Muscles), and thus maintain the body.¹⁸ When Marmas are

injured the vayu is increased and encircles the siras, it causes severe pain. Because of this, pain consciousness is gradually lost”. Here sira is the structure that gives nutrition to the body and maintains the body. Same point is noted in Modern science ever structure in the body receives blood supply for nutrition & nerve supply

for motor and sensory functions. Every structure is supplied by neurovascular bundle; it contains artery, vein & nerve. In sira marma concept all these structures are considered under the term of sira.¹⁸

B.M.N. Kumar (2013) et al Sushruta considered the 4 types of siras that is Vata, Pita, Kapha and Raktha where as Vatavaha siras seeing the colour Aruna Varna (Crimson Red) and character filled with vayu (pulsation) denotes that in Modern Anatomy these two are characters of artery. In Pittavaha siras seeing the colour Neela Varna (Blue), it suggests that in Modern science veins are blue in colour because these carry deoxygenated blood. In Kaphavaha siras seeing the colour Gowra Varna (White), it suggests that in Modern science lymphatics are white in colour because these carrying clear fluid lymph. In Rakthavaha siras seeing the colour Rohini (Red) and function nourishes the Dhatus, it suggests that in Modern science capillaries are red in colour and exchange the nutrients in tissue level.¹⁸

The dilating vein causes stretching of the valve base precipitating valve dysfunction. These stretched valves are less mobile and produce intra luminal flow obstruction. Due to the high flow and shear stress, they also develop inflammatory changes (thickening often referred to as myxoid degeneration by pathologists) which in turn can lead to fibrosis and eventually the development of stenosis of the vein wall.²⁰ A combination of altered flow, increased pressure and inflammation; all triggered by intra luminal obstruction caused by a dysfunctional valve, results in a plethora of problems including neo-intimal hyperplasia. Such stenosis can increase the pressure within the needle access

segment (pressure is a function of volume flow and diameter of the stenotic outflow).²¹ The vascular access surgeons routinely destroy any valves they come across in the operative field. This produces stasis of blood in some of the tributaries resulting in thrombosis and eventual scarring down the tributaries. The inflammatory response from thrombosis could result in variable amounts of structural alteration in the main out flowing veins. Valves open in the direction of the flow; valves have to be incompetent for a tributary to act as an outflow. Similarly, any valve in a vein branch has to be rendered incompetent to obtain a reversal of blood flow direction. Due to the development of a “swing point stenosis”, could result in the obliteration of the deep venous outflow to the extremity. This places the limb at a higher risk for venous hypertension with any other kind of peripheral access, thus limiting the further access options. Dorsal venous plexus Vedhan (punctured) leads to direct cause of severe blood loss or falling of blood pressure can cause death or deformity.^{22, 23, 24}

CONCLUSION:-

Adhoshakhagat Avedhya Siras is emphasized as a preventive measure as well as therapeutics for several disorders. Adhoshakhagat Avedhya Siras and Marmas are not same in extremities, but they are anatomically closely related. Sira are one of the important components of Marma, according to definition of Marma. Avedhya Siras are the anatomical structures which are either deep vessels or superficial vessels which can be leaded the harmful affect by

Siravedhaya them. So these are the guidelines for surgeon & physician to avoid the Siravedhaya of these 8 Avedhya Siras in lower extremities.

REFERENCES:-

1. Ghanekar Bhaskar Govind, Susruta; Susruta Samhita; Sharirasthanam, Reprint 2012, Meharchand Lachhmanda, Adhyay 7. Shloka no. 18- 21, Page .no- 210 and 213,
2. Sharma P.V. Charak Samhita; Sutrasthanam. Chaukhambh. Reprint 2011. Adhyay 30. Shloka no. 12. Page. No. 237.
3. Murthy Shrikantha, K.R. Astang Samgraha of Vagbhata. Edi. 2007. Chaukhambha. Reprint: 2010. Adhyay 6. Shloka. No. 3, 4 & 6. Page. No.76 - 77
4. Ibidem 1. Adhyay 8. Shloka. No.10, 29, page no. 218, 223
5. Acharya Jadvji Trikamji. Susrutha Samhitha with Nibandha sangraha commentary of Dalhanacharya, edited by. Varanasi: Chaukhambha, Reprint: 2010; Page no. 375-378 824.
6. D.G. Thatte, Sushruta Samhita text with English translation, IInd edition, Varanasi, Chaukhambha Orientalia Publisher, 2007, Volume-III: 140 p.
7. Mishra. J.N, Marma and Its Management, Varanasi, Chaukhambha publisher, 2005; Page. No. 38, 63, 81,106.
8. Ibidem 1. Sharirasthanam. Adhyay 6. Shloka no. 44. Page. No.202.
9. Kunte Anna Moreshwara & Shastri Navre Krishna Ramachandra. Ashtanga Hridayam with the commentaries Sarvangasundara of Arunadatta and ayurveda Rasayana of Hemadri annotated Varanasi: Chaukhambha Surbharati. Reprint: 2007. Shloka. No.20-22, 33-34. Page no- 391, 956.
10. Chaurasia B.D., Handbook of General Anatomy, 3rd edition, New Delhi, CBS Publishers, 2000, Page no 81.
11. Henery Gray. Gray's anatomy, 40 edition, Elsevier churchil living stone, 2002; Page. No., 700,703, 942, 1451, 1518.
12. Singh Vishram, Clinical & surgical anatomy. 2nd Edi. London, Elsevier publications; Page no.83
13. Das. S, A manual on clinical surgery. Edit 3rd. Standring Susan. 2009; Page no.23.
14. Ibidem 1. Sharirasthanam. Adhyay 5. Shloka no. 11. Page. No.153.
15. Judy C. Arbique BHSC, ART (CSMLS), MLT (CSMLS), and CLS (NCA) Halifax, NS-venipuncture: part 3 vein assessments and selection version date January 2008.
16. Cunninham D.J. Cunningham's Manual of Practical Anatomy Volume-1, edited by C.J.Romanes 15th edition. New York: Oxford University Press 1999. Churchill Livingstone, 40th edition, 2008; Page no 775-906.
17. Sharma Ashok Kumar et al, Review on Contra-Indicated Veins for Vein

- Puncture (Avedhya Sira) in Ayurveda, Jour. of Ayurveda & Holistic Medicine, Volume-I, 2014.
18. Kumar BMN, Awasthi HH et al , Anatomical considerations on Sira in Ayurveda with special reference to Sushruta Samhita, International Journal of Ayurvedic Medicine, 2013, 4(4), 320-327- 320.
 19. Weinstein S et al, Plumer's Principles and Practice of Intravenous Therapy. 8th edition., Philadelphia: JB Lippincott; 2007.
 20. Johnson D, Collins P, Healy JC et al. In: Standring S, 5th edition, Gray's anatomic basis for clinical practice. Elsevier Moore KL. Upper limb. In: Moore KL, Dalley AF, eds. clinically oriented anatomy. Lippincott, Williams & Wilkins, 5th, edition, 2006; Page no 726-884.
 21. Pansky B. Upper extremity. In: Pansky B, ed. Review of gross anatomy. McGraw Hill, 6th edition 1996; Page no 231-324.
 22. Shenoy S, Middleton WD, Windus D, et al. Brachial artery flow measurement as an indicator of forearm native fistula maturation. In: Mitchell L Henry, ed. Vascular Access for Hem dialysis VII. W.L. Gore and Associates, Precept Press, 2001; pp 233-239.
 23. Surendra Shenoy, Washington University School of Medicine, Barnes Jewish Hospital, St. Louis, MO – USA, Surgical anatomy of upper arm: what is needed for AVF planning, The Journal of Vascular Access 2009; 10: 223-232 © 2009 Wichtig Editore.
 24. Loukas M, Myers C.S, et al; The clinical anatomy of the cephalic vein in the deltopectoral triangle, Folia Morphol, Vol. 67, No. 1, P. 72–77, ISSN 0015–5659.

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