ABSTRACT

While learning Anatomy with Ayurvedic perspective, students encounter number of controversial concepts which has to be clarified e.g. Srotas, Snayu, Sira, Kala etc. Sira is one of the intricate and essential concepts. Vedhan of Sira (Puncturing of veins) i.e. Siravedhan is one of the modality in practice in the management of various diseases. Hence considering its importance a conceptual study has to be carried out to know underlying structure for sites of Adho Shakhagat Vedhya Sira. In this study, it is observed that Sira can correlate with the blood vessels and Lymphatics. The Siravedha sites in Adho shakha are identified in terms of modern nomenclature to particular site. Then the identified site is correlated with the underlying superficial vein at the particular location. Thus the underlying superficial veins are confirmed and considered as Vedhya Sira of that site in particular diseases. The study confirms that, the Adho Shakhagat Sira i.e. 1) Beginning of great saphenous vein has been considered for Siravedhan in Padadaha, Padharsha etc., 2) Great saphenous vein 4 angula above the Gulpha and 4 angula below Gulpha for Siravedhan in Vataj and Pittaj Shlipad respectively. 3) Great saphenous vein 4 angula above the Gulpha in Krostukashirsha, Khanja, Pangu and Vatvedana. 4) Small saphenous vein 2 angula below Indrabasti in Apachi. 5) The great saphenous vein 4 angula below and above at medial aspect of Janu Sandhi in Grudhrasi. 6) Superficial veins present in inguinal region have been considered for Siravedhan in Galaganda.

Keywords: Sira, Siravedhan, Vedhya Sira.

INTRODUCTION

Sira is one of the intricate, controversial but essential concepts that is encountered while learning anatomy with Ayurvedic perspective. Siravedhan is one of the important modality in practice in the management of various diseases like Grudhrasi, Unmad, Apasmar etc\textsuperscript{1}. However, nowadays Siravedhan is found less in practice, may be due to lack of first hand infor-
information as well as experienced Vaidyas or due to lack of confidence. Sushruta has mentioned specific sites for Siravedhan and he also mentioned sites for Avedhya Sira. Sushruta has stated Siravedhan as a half (prime) the Chikitsa in Shalyatantra like Basti in Kayachikitsa. For the desired outcome in treatment and to avoid complications due to puncture of Avedhya Sira, complete knowledge of Siravedhan is essential. So it becomes invariably essential for Siravedhan to find out the anatomical structures to which one can label as Vedhya and Avedhya Sira. Hence considering its importance a conceptual study has to be carried out to know underling structure for sites of Adho Shakhagat Vedhya Sira.

**AIM:** To confirm anatomical structure of Adho Shakhagat Vedhya Sira

**OBJECTIVES:**
1. To confirm exact sites of Siravedha in Adho Shakha as per modern anatomy
2. To correlate Sites of Adho Shakhagat Vedhya Sira with underlying anatomical Structures

**MATERIALS:**
1. Literature: Bhrihadtrayee, Previous Research work
2. Modern Literature: Gray’s Anatomy, B.D. Chaursasia’s Human Anatomy etc.

**METHODOLOGY:**

**Literature study:**
A. Corelation of Sushrutokta Sira with anatomical structure.
B. Findings of anatomical location for Adho Shakhagat sites of Siravedhan and their interpretation with underlying structure.

**A. Corelation of Sushrutokta Sira with anatomical structure:**
According to Ayurveda, Sira nourishes the body and as per the modern science body is nourished by blood vessels and lymphatics. It can be observed easily from following table of comparison On the basis of colour and types of Sira.

<table>
<thead>
<tr>
<th>S.N.</th>
<th>AYURVEDA</th>
<th>MODERN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aruna (Vatavahi)</td>
<td>Capillary</td>
</tr>
<tr>
<td></td>
<td>Convey Vata dosha. Blackish red in colour. Minute, if pressed suddenly get emptied and after removing pressure suddenly fill.</td>
<td>Convey deoxygenated blood. Blackish red in appearance. Minute, if pressed suddenly emptied and after removing pressure suddenly fill.</td>
</tr>
<tr>
<td>2</td>
<td>Neela (Pittavahi)</td>
<td>Vein</td>
</tr>
<tr>
<td></td>
<td>Convey Pitta dosha. Blue in appearance and are warm.</td>
<td>Convey deoxygenated blood. Blue in appearance.</td>
</tr>
<tr>
<td>3</td>
<td>Gauri (Kaphavahi)</td>
<td>Lymph vessel</td>
</tr>
<tr>
<td>4</td>
<td>Rohini (Raktavahi)</td>
<td>Artery</td>
</tr>
</tbody>
</table>

Hence, we can correlate the Sira with the blood vessels and Lymphatics as follows:
1. Aruna Sira can be correlated with Capillaries.
2. Neela Sira can be correlated with Veins.
3. Gauri Sira can be correlated with Lymph vessels.
4. Rohini Sira can be correlated with Arteries.
B. Findings of anatomical location for Adho Shakhagat sites of Siravedha and their interpretation with underlying structure

The Vedhya Sira in Adho Shakha are explained based on following points for Siravedhan indicated Vyadhi.¹

i) Site with justification

1. Padadaha, Padharsha, Chippa, Visarpra, Vatkantak, Vicharchika, and Padadari etc.²

In diseases like Padadaha, Padharsha, Chippa, Visarpra, Vatkantak, Vicharchika, and Padadari etc., the vein situated 2 angula above the Kshipra Marma should be punctured using Vrihimukha.

i) Site with justification: Site of Kshipra Marma³ is in between great toe and first little toe (at the distal part of the first metatarsal space). Here we considered dorsal aspect of foot because here subcutaneous veins are easily seen than the planter aspect. 2 angula above Kshipra Marma this site is a space between 1ˢᵗ and 2ⁿᵈ metatarsal bone.

ii) Structures at considered site: When we see this site, here tributaries of great saphenous veins are present. Great saphenous vein begin from medial end of the dorsal venous arch and runs upwards and backwards anterior to the medial malleolus.⁴

So, as per the above context in all said diseases, medial end of the dorsal venous arch i.e. beginning of great saphenous vein can be considered for Siravedha, which coincides with the site 2 angula above Kshipra Marma.

2. Shlipad: ⁵

In Vataj Shlipad the surgeon should puncture the vein 4 angula, above and in Pittaj Shlipad 4 angula below the Gulpha Sandhi (ankle joint).⁶

i) Site with justification: Here we have to consider that lateral and medial aspect of leg and foot respectively for above and below the Gulpha Sandhi. Lateral aspect of leg is bulky due to multiple muscles but medial aspect is subcutaneous shows dominant vein unlike lateral aspect. Same scenario is observed regarding dorsum of foot. So 4 angula above from the ankle joint considered medial aspect of leg, and 4 angula below considered medial border of dorsum of the foot because, here prominent veins are easily seen than the other aspects.

ii) Structures at considered site: 4 angula below ankle joint is beginning of great saphenous vein and above 4 angula from ankle joint here also great saphenous vein on the medial aspect of leg.

So, in Vataj Shlipad 4 angula above the Gulpha, and in Pittaj Shlipad 4 angula below Gulpha, great saphenous vein can be considered (punctured) for Siravedha.

3. Krostukashirsha, Khanja, Pangu and Vatvedana: ⁷

In Krostukashirsha, Khanja, Pangu, and Vatvedana, Siravedha should be done in Jangha, at 4 angula above the Gulpha (ankle joint).

i) Site with justification: Here we have to consider that lateral and medial aspect of leg above the Gulpha Sandhi. Lateral aspect of leg is bulky due to multiple muscles but medial aspect is subcutaneous shows dominant vein. So we considered medial aspect of leg, because here prominent veins are easily seen.

ii) Structures at considered site: On the medial aspect of leg 4 angula above from ankle joint is great saphenous vein.

So, in above said Vyadhi, we can consider Great saphenous vein for Siravedhan.

4. Apachi: ⁸

In Apachi, Siravedha is done at 2 angula below the Indrabasti Marma.
i) Site with justification: Here we have to finalize the site of Indrabasti Marma. Sushruta has not specified the site of Indrabasti Marma. If we see the treaty of Dalhanacharya, he has stated the site of Indrabasti is 13 angula above the Parshni\textsuperscript{9} (calcaneum). When we observe this considered site there is bifurcation of popliteal artery (at the lower apex of the popliteal fossa.) injury to this site the symptoms of Vidha laksana of Indrabasti Marma is seen, and it is type of Mansa Marma. So location of Indrabasti Marma is on calf muscles.

ii) Structures at considered site: Here the small saphenous vein is easily visible on back of the leg 2 angula below the Indrabasti Marma. The small saphenous vein receives many cutaneous tributaries in the leg\textsuperscript{12}. So, small saphenous vein on back of leg 2 angula below Indrabasti can be considered for Siravedha in Apachi Vyadhi.

5. Grudhrasi:\textsuperscript{8}
In Grudhrasi, Siravedha should be done 4 angula either above or below the Janu (Knee joint).

i) Site with justification: Here, we have to consider four aspect of 4 angula above and below knee region. When we see these sites the prominent veins are seen only from medial aspect. So we considered medial aspect.

ii) Structures at considered site: The great saphenous vein is easily seen in this site. The vein has several communications through the deep fascia with deep veins\textsuperscript{10}. So, the great saphenous vein 4 angula below and above at medial aspect of Janu Sandhi can be considered for Siravedhn in Grudharsi Vyadhi.

6. Galaganda: \textsuperscript{8}
In Galaganda, Siravedha should be done at the Urumula Samistha Sira (root of the thigh).

ii) Site with justification: Groin region (Inguinal ligament) separates abdomen from thigh. So this part is considered as the root of the lower extremity.

ii) Structures at considered site:
The superficial epigastric vein runs downwards and laterally from umbilicus and drain into femoral vein (great saphenous vein). The superficial circumflex iliac vein runs downwards from lateral side of the inguinal ligament, it pierces the fascia lata lateral to the saphenous opening, and drains in to femoral vein\textsuperscript{13}. (Great saphenous vein)
So, any of these veins can be considered for Siravedha in Galaganda Vyadhi. (Veins present in inguinal region).

OBSERVATIONS:
The site of Siravedhan can be interpreted with the modern anatomical structures listed in tables. Here, we have considered superficial veins at that particular site as Vedhya Sira.

### Adhoshakha - Interpretative sites of Vedhya Sira

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Vyadhi\textsuperscript{8}</th>
<th>Sushrutotka sites for Siravedha\textsuperscript{9}</th>
<th>Modern structure and site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Padadaha, Padharsha, Chippa, Visarpa, Vatakantak, Vicharchika, Padadari etc.</td>
<td>2 Angula above Kshipra Marma by Vrhimukha</td>
<td>Begining of great saphenous vein 2 angula above from point between Great toe and first little toe.\textsuperscript{10} See Fig. No. 1.</td>
</tr>
<tr>
<td>2</td>
<td>Shlipada</td>
<td>4 Angula above or below Gulpha</td>
<td>Great saphenous vein 4 angula above or below from ankle joint\textsuperscript{10}. See Fig. No. 1.</td>
</tr>
<tr>
<td>No.</td>
<td>Region</td>
<td>Description</td>
<td>Relevant Details</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>3</td>
<td>Kroshtukashirsha, Khanja, Pangu, Vatvedana</td>
<td>4 Angula above Gulpha</td>
<td>Great saphenous vein 4 angula above from the ankle joint. See Fig. No. 1.</td>
</tr>
<tr>
<td>4</td>
<td>Apachi</td>
<td>2 Angula below Indrabasti</td>
<td>Small saphenous vein 2 angula below the Indrabasti Marma. See Fig. No. 2.</td>
</tr>
<tr>
<td>5</td>
<td>Grudhrasi</td>
<td>4 Angula above or below Janu</td>
<td>Great saphenous vein 4 angula either above or below the Knee joint. See Fig. No. 1.</td>
</tr>
<tr>
<td>6</td>
<td>Galganda</td>
<td>Sira of Urumula</td>
<td>The superficial epigastric veins, The superficial circumflex iliac veins. See Fig. No. 1.</td>
</tr>
</tbody>
</table>

**Fig. 1. Ant. Aspect of Rt. lower extremity**

![Diagram showing the anatomical aspect of the right lower extremity with labels for Galgand, Grudhrasi, Shlipad, Kroshtukashirsha, Khanja, Pangu, Vatvedana, Padadaha, Padaharsha, Chippa, etc.](image-url)
**DISCUSSION**

In this conceptual study, discussion regarding general interpretation of *Vedhya Sira* is essential to further know the underlying structure for *Adho Shakhagat Vedhya Sira*. **Interpretation of Vedhya Sira:** In *Sushruta Samhita*, exact numbers of *Avedhya Sira* are given with their name and site but, while explaining *Siravedha*, specific name and number of *Vedhya Sira* is not mentioned. However, only sites of *Siravedha* are stated. Though the sites of *Siravedha* are mentioned in *Samhita*, the interpretation about underlying structure of these sites is not available in any texts and literary research related to *Vedhya Sira*. So we tried to interpret underlying structure for *Vedhya Sira* through this study for clarity of the concept.

A) On the basis of *swabhav* of *Sira*: In the 8th chapter of *Sharirsthan*, *Sushruta* described about *swabhav* of *Sira* that nobody is trained in puncturing *Sira* as they are unsteady i.e. change their position like fish. Hence has to be punctured skillfully.  

**Feature of Vedhya Sira** is *Matasyavat* means slippery in nature and as we observe practically, superficial veins where deep fascia is absent e.g. dorsum of hand and foot are also slippery. So *Vedhya Sira* has been considered as superficial veins.

B) On the basis of procedure for *Siravedha*: *Sushruta* told that *Sira* must be visible before *Vedhan* and to make them visible should be tied with cloth, leather, inner bark of trees, crpper, slender branch or any other material. In modern treatment tourniquet is applied to make superficial veins prominent. From this context also, it is clear that superficial veins should be considered for *Siravedha vidhi*. With these aforesaid two references - A. *Swabhav* of *Sira* and B. Procedure of *Siravedha*, it is clear that only superficial veins can be considered for *Siravedha*.

**Interpretation of sites of Adho Shakhagat Vedhya Sira:** The probable confirmation of anatomical structure for *Adho Shakhagat Vedhya* has been discussed on the basis of interpretation of observations drawn from Conceptual study. The correlation of *Adho Shakhagat Vedhya Sira* with underlying anatomical structure is carried...
out with the textual references available regarding Siravedha sites in Adho Shakha mentioned in various diseases like Padadaha, Shlipad, Krostukashirsha, Apachi, Grudhrasi, Galaganda. The Siravedha sites in Adho Shakha are identified in terms of modern nomenclature to particular site. Then the identified site is correlated with the underlying surperificial vein at the particular location. Thus the underlying superficial veins are confirmed and considered as Vedhya Sira of that site in particular diseases.

E.g. In Apachi, Siravedhan site is 2 angula below the Indrabasti Marma. As per modern anatomy the location of Indrabasti Marma is on calf muscles. The underling structure 2 angula below this site is small saphenous vein. So, small saphenous vein on back of leg 2 angula below Indrabasti has been considered as Vedhya Sira in Apachi Vyadhi.

CONCLUSION
The present conceptual study confirms that, the Adho Shakhagat Vedhya Sira are the superficial veins of the particular sites as:

1. Medial end of the dorsal venous arch i.e. beginning of great saphenous vein has been considered for Siravedhan in Padadaha, Padharsha, Chippa, Visarpra, Vatkantak, Vicharkha, and Padadari etc.,
2. Great saphenous vein 4 angula above the Gulpha and 4 angula below Gulpha have been considered (punctured) for Siravedhan in Vataj and Pittaj Shlipad respectively.
3. Great saphenous vein 4 angula above the Gulpha (ankle joint) has been considered for Siravedhan in Krostukashirsha, Khanja, Pangu, and Vatvedana.
4. Small saphenous vein on back of leg 2 angula below Indrabasti has been considered for Siravedha in Apachi Vyadhi.

5. The great saphenous vein 4 angula below and above at medial aspect of Janu Sandhi has been considered for Siravedha in Grudhrasi Vyadhi.
6. Superficial veins present in inguinal region have been considered for Siravedha in Galaganda Vyadhi.

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