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Review Article

SIGNIFICANCE OF *URDHWAJATRUGATA VEDHYA SIRA*: AN INTEGRATIVE ANATOMICAL AND AYURVEDIC PERSPECTIVE

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ABSTRACT

Acharya Sushruta emphasises *Siravedha* (venesection) for localised diseases of the craniofacial, oral, nasal, ocular, and palatal regions as well as for disorders of the *Manovaha Srotas* like *Apasmara* and *Unmad*. Anatomical correlations can be used to validate its classical indications. **Material and Methods:** Conceptual study carried out by reviewing classical texts, contemporary science, journals, published research works. **Results:** At the *Hanu Sandhi*, venesection targets the facial, retromandibular, and pterygoid venous plexus, which communicate with intracranial sinuses, justifying its use in *Apasmara*. Sites such as *Shankh-Keshant Sandhi*, *Apang*, and *Lalat* involve branches of the superficial temporal, supraorbital, supratrochlear, and angular veins, explaining their role in cranial disorders. *Urogata Siras* near the chest influence *Prana Vayu* and *Sadhaka Pitta* via their proximity to the *Hridaya* region. Localized interventions include the *Adhojihva Sira* (deep lingual vein) in tongue and gum diseases, *Talu Sira* (palatal veins) in palatal disorders, *Karnyorupari Siras* (superficial temporal and posterior auricular veins) in ear pathologies, *Phana Marma* (lateral nasal vein) in nasal conditions, and *Apang Marma* (angular and infraorbital venous networks) in ocular and head diseases. **Conclusion:** These sites correspond to venous junctions with extensive extracranial–intracranial connections, enabling evacuation of vitiated *Doshas*, decongestion, and modulation of vascular and neural activity. Thus, *Siravedha* emerges as a rational therapeutic intervention for neurological and localized craniofacial disorders.

INTRODUCTION

Ayurveda has a long and distinguished history, and its medical literature is well-documented. In *Ayurveda*, the *Rachana Sharir* discipline developed almost 3,000 years ago. While the *Charaka Samhita* stresses *Rachana Sharir*'s metaphysical elements, the *Sharir Sthana* of the *Sushruta Samhita* presents it with a surgical orientation. It is believed that *Acharya Sushruta* was the first scholar-scientist to outline the methodical process of dissecting human cadavers and to emphasise how important it is to the study of anatomy. He underlined that becoming a competent doctor or surgeon requires mastery of both theoretical and practical knowledge of the human body. *Rachana Sharir* proficiency is therefore regarded as essential for all medical professionals[1].

In the *Sushruta Samhita*, Acharya Sushruta highlighted that certain terms were not always clearly defined, and at times, different structures were used interchangeably as synonyms. Among these, *Sira*, *Dhamni*, and *Shrotas* are often the most misunderstood. Some scholars have incorrectly treated them as synonymous, though in reality, they are distinct entities, differing in their structure, origin, *Moola*, and *Karma*. Their resemblance arises only at the microscopic level[2]. For this reason, Acharya Sushruta devoted separate chapters in the *Sharir Sthana* to explain each of them individually. In addition to it *Acharya Sushruta* quoted the importance of *Siravedhana* as "Just as diseases are pacified through properly performed *Siravedhana,* they are not pacified in the same way through *Snehana-Swedana* or *Lepas.* So, properly performed *Siravedhana* can be considered

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as half treatment in *Shalya Tantra* like *Basti* in *Kayachikitsa*[3] ''.

Siravedhan has close similarity with bloodletting technique used by ancient western medical practitioners. Bloodletting is the withdrawal of blood from patient to prevent or cure illness and diseases. Therapeutic uses of bloodletting were reported in 60 distinct cultures/ethnic groups, like in ancient Egypt, Greece, Rome, Arab, Europe etc. This technique also gradually declined in popularity over the course of the 19th century, becoming rather uncommon in most places[4]. Similarly, the zenith of surgical prowess in ancient India, flourishing from 600 B.C. onwards, faced a gradual decline with the advent of Buddhism. Buddhist philosophy emphasized non-violence (*Ahimsa*) and compassion, which created philosophical conflicts with invasive surgical procedures that involved cutting, bleeding, and causing pain to patients, due to which the proper technique of *Siravedhan* (bloodletting/venipuncture) gradually became extinct. The knowledge and techniques of this traditional procedure were lost over time.

MATERIALS AND METHODS

Primary Sources

- Classical textbooks of Ayurveda (*Brihattrayi* and *Laghutrayi*) with their available commentaries.
- Other literature related to *Rachana Sharir.*

Secondary Source

A systematic search was conducted in databases including PubMed, Google Scholar, and Ayurvedic research journals using keywords: "*Sira Sharir*," "*Vedhya Sira*," "*Urdhwajatrugata*," "bloodletting," and "Ayurvedic anatomy." Publications from 2000-2024 were included.

Observation and Result

On the basis of conceptual and cadaveric study, following observations were made.

1. Comparison of *Sira, Dhamani* and *Srotas* Points of Similarity

- *Sira, Dhamani* and *Srotas* all have a dominance of *Akasha Mahabhuta* and hence are hollow[5].
- All of these are a part of conducting system. The three *Doshas* circulate through the *Siras*[6], *Rakta* through the *Dhamanis*[7] while *Srotas* are passages for *Rasa* (nutrient fluids) *Samvahan*[8]
- *Sira, Dhamani* and *Srotas* divide themselves into minute branches, some of which are invisible and are present side by side[9].

Points of Dissimilarity

- Difference in characteristic feature *Sira* (veins) carrying *Vata, Pitta, Kapha* and *Rakta* are described as *Aruna Varna* (crimson red), *Neela Varna* (blue), *Gaura Varna* (white), *Rohini Varna* (red) in colour respectively, whereas *Dhamani* are described as having *Anukta Varna* (unexpressed colour) and *Srotas* as having the same colour of the *Dhatu* (tissues) in which they are present.
- Difference in number at origin *Sira* is described as forty, whereas *Dhamani* are twenty-four and *Srotas* are twenty-two at their site of origin (the umbilicus).
- Difference of Function- Performing all the functions of the body, mind and intellect without any hindrance (interruption) are the functions of the *Sira*, whereas functions of *Dhamani* are perception of objects of senses (such as sound, light, taste, smell and touch) and those of *Srotas* are purveying air, water, food, *Rasa* etc.

Table 1: Number of *Sira, Dhamani, Srotas* and its Functions

	Colour	Number at site of origin	Function
Sira	*Aruna Varna* (crimson red), *Neela Varna* (blue), *Gaura Varna* (white), *Rohini Varna* (red)	40	Performing all the functions of the body, mind and intellect without hindrance (interruption) any.
Dhamani	*Anukta* (unexpressed colour) *Varna*	24	Perception of objects of senses (such as sound, light, taste, smell and touch).
Srotas	Same colour as that of respective *Dhatu*	22	Purveying air, water, food, *Rasa* etc.

2. Comparison of *Sira* with Vessels

On the Basis of Functions

The body is sustained by 700 *Siras*, just as a garden is nourished by water carriers and a field by irrigation channels, while also supporting functions like contraction and relaxation. Similarly, the cardiovascular system consists of numerous tubular vessels that distribute nutrients, oxygen, hormones, and other essential substances throughout the body to maintain its vitality.

On the Basis of Types

Sira are classified according to *Doshas* as *Vatavahi, Pittavahi, Kaphavahi* and *Raktavahi*, each having its distinct colour and characteristics. These four types of *Siras* can be correlated with the vessels as follow.

Table 2: Type of *Sira* and Modern Correlation

Type of *Sira*	Colour	Character	Modern Correlation
Vatavahi	*Aruna Varna* (crimson red)	Filled with *Vayu*	Capillaries
Pittavahi	*Neela Varna* (blue)	Warm touch	Veins
Kaphavahi	*Gaura Varna* (white)	Cold to touch and steady	Lymphatics
Raktavahi	*Rohini Varna* (red)	Neither too hot nor too cold	Arteries

3. Considerations in Relation to *Sira* and *Marma*[10]

The findings highlight the vital connection between *Marma* points and the practice of *Siravedhan* in Ayurvedic medicine as explained by *Acharya Sushrut*. Rather than simply listing the veins to be punctured, *Acharya Sushrut* adopts a broader perspective by linking the sites of *Siravedhan* with particular *Marma* points. This method emphasizes the importance of knowledge of *Marma* points to ensure precision in venepuncture.

Table 3: Site for *Siravedhan* in the disease

S.No.	Diseases	Site For *Siravedhan*	Related Marma
1.	*Apasmar*	Middle of *Hanu*	
2.	*Apasmar- Unmad*	*Shankh, Keshant sandhigata, Vakhsthal, Apang, Lalat*	*Shankh Marma, Apang Marma*
3.	*Jihwa- Dant rog*	Below the *Jihwa*	
4.	*Talu*	Vein of *Talu*	
5.	*Karn peeda, Karn rog*	Above the ear	*Vidhur Marma*
6.	*Gandh agrahan*	Tip of nose	*Phana Marma*
7.	*Timir, Akshipaak, Shirorog, Adhimanth*	Near the nose, *Lalat, Apang*	*Phana Marma, Apang Marma*

4. Conceptual Considerations with respect to *Vedhya Sira* in *Urdhwajatru* region

In discussing *Siravedha Vidhi* (the procedure of venepuncture), *Acharya Sushrut* in *Sharir Sthan*, chapter 8, identified the sites of venepuncture in relation to *Marma Sthans*, without specifying the exact names or numbers of the *Vedhya Siras*. In ancient practice, different techniques such as using cloth, creepers, or thin bark were employed to make veins more prominent for puncture, suggesting that superficial veins were primarily targeted in *Siravedhan Karma*. *Acharya Sushrut* also compared the nature of veins to being unsteady and slippery like a fish, highlighting the need for precision during puncture. This further supports the idea that the *Vedhya Siras* referred to are superficial veins, particularly in regions lacking deep fascia, such as the dorsum of the hand and foot. Hence, the sites for *Siravedhan* can be correlated as follows:

Table 4: Site for *Siravedhan* in various diseases and its Modern correlation

S.No.	Diseases	Site for *Siravedhan*	Modern correlated site
1.	*Apasmar*	Middle of *Hanu*	The facial vein and anterior division of retromandibular vein.[11]
2.	*Apasmar- Unmad*	*Shankh, Keshant sandhigata, Vakhsthal, Apang, Lalat*	Tributaries of superficial temporal vein, middle temporal vein, supratrochlear vein and thoracic veins.[12]
3.	*Jihwa- Dant rog*	Below the *Jihwa*	Deep lingual vein [13]
4.	*Talu*	Vein of *Talu*	Palatal vein which drains into pterygoid plexus. [14]
5.	*Karn peeda, Karn rog*	Above the ear	The superficial temporal and posterior auricular veins. [15]
6.	*Gandh agrahan*	Tip of nose	Lateral nasal vein (vein from ala nasi). [16]
7.	*Timir, Akshipaak, Shirorog, Adhimanth*	Near the nose, *Lalat, Apang*	angular vein (formed by union of supra- trochlear and supra- orbital veins), facial vein (continuation of angular vein) and infraorbital vein. [17]

5. Applied Exploration of *Vedhya Siras*

- Diseases are not alleviated as rapidly through treatments such as *Snehana* and *Swedana* etc. as they are by the procedure of *Siravedha*.
- *Acharya Sushrut* has recommended *Siravedhan* in many diseases associated with *Vata* and vitiated *Rakta*. For example, in ear disorders such as *Raktaja Karnashoola*, and in head diseases like *Sooryavarta*, *Anant Vata*, and *Ardhavbhedaka*, etc. In all these diseases pain is the chief complaint of a patient. The symptoms of *Samyak Siravedha* are *Laghavam* (body and painful area) and *Vedanashanti* (pain reduction), *Visravit Rakta* stop itself. This shows that there is a reduction in disease condition and therefore reduction in pain can be observed in such patients. Hence, *Siravedhan* can be performed in pain predominant conditions.
- Diseases exhibiting symptoms like *Pidika* and *Daha* indicate involvement of *Rakta* and *Pitta*. According to Ayurveda, *Siravedhan* is a highly effective therapy for *Rakta* and *Pitta*-related diseases. As *Rakta* is considered *Ashraya Sthan* of *Pitta*, through its expulsion a relief in *Pitta* related symptoms is also seen.
- It is a simple, economic and highly effective procedure with fairly instant results.
- The therapeutic impact of *Siravedha* may be explained by several mechanisms. To begin with, the removal of blood might stimulate the production of new red and white blood cells, thereby strengthening the body's immune response. In addition, enhanced blood flow to the diseased area can provide better nourishment to the tissues, helping to ease symptoms. Moreover, bloodletting may assist in eliminating toxins from the circulation, which further contributes to its healing effect.

DISCUSSION

In *Apasmar*, *Acharya Sushrut* has described *Siravedha* at the *Hanu Sandhi* as an important therapeutic intervention. The anatomical basis of this site highlights its clinical significance. The *Hanu Sandhi* region is richly supplied by a venous network, mainly the facial vein, the anterior division of the retromandibular vein, and the pterygoid venous plexus. These veins maintain both direct and indirect communications with the intracranial venous sinuses, particularly the cavernous sinus, through the ophthalmic and pterygoid venous plexuses. This continuity establishes a vital channel between extracranial and intracranial venous systems, making the region highly effective for draining pathological accumulations. From an Ayurvedic perspective, such venous connections are interpreted as routes through which vitiated *Vata* and *Kapha Doshas* from the head can be eliminated. By puncturing the veins in this area, morbid *Doshas* obstructing *Prana Vayu* and disturbing the *Manovaha Srotas* are removed, thereby aiding in the restoration of normal neurological functions. The structures specifically considered at this site include the facial vein and the anterior division of the retromandibular vein, both of which are easily approachable and serve as suitable targets for venesection. Therefore, on the basis of both anatomical and Ayurvedic reasoning, the *Hanu Sandhi* region, particularly the facial vein and the anterior division of the retromandibular vein, is justified as the most appropriate site for *Siravedha* in the management of *Apasmara*.

In the management of *Unmad* and *Apasmar*, *Acharya Sushrut* has indicated *Siravedha* at specific craniofacial and thoracic sites owing to their close relation with the *Shira*, *Indriyas* and *Hridaya*. The veins at *Shankh–Keshant Sandhi*, *Apang* and *Lalat* regions represent branches of the superficial temporal, middle temporal, supraorbital, supratrochlear and angular venous networks, which are intimately connected with the craniofacial venous plexus and the sensory distribution of the trigeminal nerve. These sites act as key channels for relieving local *Raktadushti*, thereby reducing congestion, pressure and irritative stimuli within the cranial field, which in turn helps pacify the aggravated *Vata–Pitta* influencing the *Manovaha Srotas*. Clinically, this correlates with decongestion of head-channels, reduction of nociceptive drive and modulation of autonomic overactivity, thereby alleviating restlessness, agitation or seizure propensity. Similarly, the veins on the *Vakshasthala* (anterior chest), identified as *Urogata Siras*, are situated in proximity to the *Hridaya–Marma* field, the *Moolasthana* of *Manovaha Srotas*. Bloodletting here influences *Prana Vayu* and *Sadhaka Pitta* directly, steadying the fluctuations of *Rajas* and *Tamas* and exerting a calming effect on neuro-cardiac autonomic regulation. Thus, *Siravedha* at these craniofacial and thoracic sites can be interpreted as a therapeutic intervention to drain localized vitiated blood, normalize vascular and neural excitability, and thereby restore balance in *Manas* and *Indriyas*.

In *Jihva* and *Danta Rogas*, *Siravedha* is advised beneath the tongue as this region provides a direct route to eliminate *Raktadushti* localized in the tongue and gums. The *Adhojihva Sira* at this site corresponds to the deep lingual vein, which drains venous blood from the tongue and adjacent oral structures. By puncturing here, vitiated *Rakta* accumulated in the local tissues is released, thereby reducing congestion,

heat, swelling, and pain that are characteristic of inflammatory conditions of the tongue and gums. This targeted approach not only addresses the site of pathology but also ensures quick symptomatic relief by improving local circulation and pacifying aggravated *Pitta* and *Rakta Dosha*. Thus, in conditions of *Jihva* and *Danta Rogas*, *Siravedha* beneath the tongue at the level of the deep lingual vein serves as an effective therapeutic measure to control inflammation, relieve pain, and promote restoration of normal oral functions.

In diseases that originate and manifest within the palate tissues, *Siravedha* at the *Talu-Sira* is considered highly effective as it directly addresses the site of pathology. By puncturing the palatal veins, the vitiated *Rakta* accumulated in the local tissues is expelled, thereby reducing congestion, inflammation, and associated discomfort more rapidly. Anatomically, the veins of the palate drain into the pterygoid venous plexus, while those of the soft palate additionally communicate with the pharyngeal plexus, which further connects with the internal jugular vein. This extensive venous communication highlights the significance of palatal venesection, as it allows efficient clearance of local *Raktadushti* and prevents its spread to deeper venous channels. Therefore, the *Talu-Sira* can be considered as the venous network of the palate linked to the pterygoid plexus, and *Siravedha* here provides localized as well as systemic benefit in palatal disorders by ensuring effective drainage of vitiated blood and pacification of aggravated doshas at the root site.

The *Vidhur Marma* is located behind and below the ear and, as described by *Acharya Vagbhatt*, is classified as a *Dhamani Marma*, highlighting its vital arterial and vascular importance. Hence, *Siravedha* is indicated in the region surrounding and above the ear to expel vitiated *Rakta* and to regulate the disturbed *Doshas* affecting the ear and adjacent cranial structures. Anatomically, this area is drained by the superficial temporal and posterior auricular veins, which form significant venous channels around the auricular and temporal regions. These veins communicate with the broader craniofacial venous plexus, thereby influencing circulation in both auricular and cranial fields. Thus, the *Karnyorupari Samantat Sira* mentioned in the classics can be correlated with the superficial temporal and posterior auricular venous networks. Performing *Siravedha* here not only helps in clearing localized *Raktadushti* but also relieves congestion, pain, and inflammatory conditions of the ear and head region, supporting both functional and symptomatic improvement.

The *Phana Marma* is located on either side of the nasal passage, and injury to this vital point is said to cause loss of the sense of smell. *Acharya Sushrut* classifies it as a *Sira Marma*, emphasizing its vascular nature and clinical significance. In cases of anosmia and other nasal disorders, *Siravedha* is therefore advised at the anterior part of the nose to directly eliminate vitiated *Rakta* from the site most closely associated with olfactory and nasal functions. Anatomically, this corresponds to the lateral nasal vein, which drains the ala nasi and communicates with both the facial and ophthalmic venous systems, thus maintaining extensive connections between superficial and deep venous channels of the face and orbit. This strategic venous linkage explains the therapeutic importance of this site, as bloodletting here not only clears localized *Raktadushti* but also relieves congestion and inflammation in the nasal passages, thereby improving airflow and restoring olfactory capacity. Hence, the *Nasagra Sira* mentioned in Ayurveda can be correlated with the lateral nasal vein, making *Siravedha* at this point a rational intervention in nasal pathologies.

The *Apang Marma*, located near the outer canthus of the eye and extending towards the nose, forehead, or the end of the eyebrows, is described as an important site for *Siravedha* in the management of eye and head disorders. This region is richly vascularized, with the presence of the angular vein (formed by the union of the supratrochlear and supraorbital veins), the facial vein (continuation of the angular vein), and the infraorbital vein. These veins form critical venous communications between superficial facial circulation and deeper orbital as well as intracranial venous channels. Bloodletting at this site allows for the direct evacuation of vitiated *Rakta* and decongestion of vascular channels that are often implicated in ocular and cranial pathologies. Therapeutically, this helps in relieving inflammation, pain, congestion, and pressure within the eye and head region, thereby pacifying aggravated *Doshas* and restoring normal sensory function. Thus, the *Apang Marma* serves as a rational site for *Siravedha*, with its rich venous connections explaining its clinical efficacy in ocular and cephalic diseases.

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