

ANATOMICAL CONSIDERATION OF SHAKHAGAT AVEDHYA SIRA

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ABSTRACT

Ayurved is the science of healthy life. Ayurved learners face number of controversial concepts in sharir like Srotas, Snayu, Sira, Kala etc. which need to be resolved among there, Sira is one of the important but controversial concept. Acharya Sushruta has described the sira in sharir sthana chapter seven. Acharya Charak has defined the Sira as "Sarnat Sira" in sutra sthan chapter thirty. Sushruta has mentioned four types of sira -Aruna, Neela, Shweta, Lohita. These are relevant respectively with the Dosha Vata, Pitta, Kapha and Rakta. Vedhan of Sira i.e Siravedhan is one of the modalities in practice in the management of various disease. Sushruta has mentioned specific sites for siravedhan and sites for Avedhya sira vedhan of Avedhya sira leads to either grievous deformity or death. The word meaning of Avedhya is unpierceable, not to be pierced and meaning of sira is any tubular vessel of the body. Avedhya sira should not damage during siravedhan procedure because their damage can cause severe complication or even death. Sushruta has described total 700 sira and 98 siras as Avedhya sira are divided in 3 regions i.e Shakhagata 16, Koshtagata -32, Urdhwajatrugat- 50. Avedhya sira in Shakha are Jaaldhara, Urvi dna Lohitaksha. Modern correlation of these sira in upper limb, are Jaaldhara as cephalic vein, Urvi as Brachial vessel and lohitaksha is related with Axillary vein & artery and in lower limb jaaldhara as great saphenous vein, Urvi and Lohitaksha as femoral artery and femoral vein.

INTRODUCTION

Sira Vyutpatti

सृ + क + टप्

Derivation of word sira reflect to Raktavahini nadi i.e, blood vessels.

Sira description

सरणात् सिरा ।

सरणात् देशान्तर गमनात् ।

सिरा देह प्रतिपालयन्ति ।

(च०सू०-30)

(चक्रपाणि)

(काश्यप)

Here the structure responsible for movement of substance is called "Sira". It is also responsible for the pratipalan of deha (nourishment of body).

Sira mool

नाभिस्थाः प्राणिना प्राणाः प्राधन्नाभिर्युपाश्रिता ।

सिराभिरावृता नाभि चक्रनाभिरिवारक ॥ (सु०शा० 7/5)

Prana resides in the nabhi and nabhi is the seat of sira in a manner that similar to axle hole being surrounded by spoke.

दशमूलसिरा हस्त्यास्ता ॥ (अ०ह०शा० 3/18)

दशमूल सिरा हृदयप्रतिबद्धा ॥ (अ०सं०सू० 6/3)

In A.H. & A.S. Hridaya is mool of sira.

Types of Sira

तत्रारुणा वातवहाः पूर्यन्ते वायुना सिराः ।

पित्तादूष्णाश्च नीलाश्च, शीतागौर्यः स्थिराः कफात् ॥

असृग्गतास्तु रोहिण्यः सिरा नात्युष्णशीतलाः ॥ (सु०शा० 7/17)

According to Dr. B.G. Ghanekar -Correlation of Sushrutokta sira with anatomical structure:

- **Aruna (Vatavaha)** Aruna Sira convey vata dosha Aruna in color, minute, if pressed suddenly get emptied and after removing pressure suddenly fill, in modern it is compared with capillary.
- **Neela (Pittavahi)**: Neela Sira convey pitta dosha Blue in appearance compare with vein because vein convey deoxygenated blood and blue in appearance.
- **Gauri (Kaphavahi)** Gauri Sira convey kapha dosha, white in color, steady sheet and nutritive in modern it is compared with lymph vessel, lymph is white in appearance.
- **Rohini Sira** – Rohini Sira convey suddha Rakta, red in color, neither warm nor cold. It is compared with artery.

In this reference term Sira goes towards blood vessels.

संख्या –

तासां मूलसिराश्चत्वारिंशत् : तासां वातवाहिन्यो

पित्तवाहिन्यो दश, कफवाहिन्यो दश, दश रक्तवाहिन्यो : ।

(सु०शा०-7/6)

सप्तसिराशतानि भवन्ति। (सु०शा०-७/६)

शाखा	—	400
कोष्ठ	—	136
ऊर्ध्वजत्रुगत	—	164

Sushruta has described in total 700 siras and 98 siras as Avedhya sira are divided in 3 regions i.e.

Shakhagat	-	16
Koshthagat	-	32
Urdhvajatrugat	-	50

Vedhya Sira

According to Acharya Sushruta "Sira vedhan as "Chikitsardh" means half treatment.

Siravedhan is a type of **Raktamokshan** in unpierceable, this process deeply rooted doshas in pure blood are removed in order to treat the disease. Vedhya sira are considered to be puncturable vein. They are the vein which used in venepuncture.

Now here are some diseases which are cured by venipuncture like –Padadaha, padaharsha, cippa, erysipelas, vicharchika, kanja pangu.

It is process of vein puncture in veins of human body here term Sira is specified for vein.

Avedhya Sira

The word meaning of Avedhya is not to be pierced and meaning of sira is any tubular vessel of the body. Avedhya sira should not be damaged during siravedhan procedure because their damage can cause severe complication or even death.

शरीर की अवेध्य सिरायें—

तथा क्षुत्रिका: कुटिला: संकीर्णा: ग्रथिता संधिषु चाशस्त्रकृत्या। (अ०स०शा०-६/१९)

अवेध्यास्तत्र कात्स्न्येन देहेऽप्यनवास्थिता।

संकीर्णा ग्रथिता: क्षुद्रा वक्रा: संधिषु चाश्रिता।। (अ०ह०शा०-३/३४)

Apart from these 98 avedhya sira, those which are fused together, formed into lumps, very minute, curved and located around joints are considered as Avedhya sira.

अवेध्य सिरा संख्या –शाखागत –

अधःशाखागत	—	8
ऊर्ध्वशाखागत	—	8
कुल	—	16

कोष्ठगत –

श्रोणिप्रदेश	—	8
पार्श्व	—	4
पृष्ठ	—	2
उदर	—	4
छाती	—	14
कुल	—	32

ऊर्ध्वजत्रुगत –

ग्रीवा	—	16
हनु	—	4
जिह्वा	—	4
नासा	—	5
नेत्रां में	—	2
कान	—	2
ललाट	—	7
शंख	—	2
सिर	—	8
कुल	—	50

Location	Name	Modern correlation
अधः शाखा	जालधरा	Great Saphenous vein
	ऊर्वी	Femoral Artery & vein
	लोहिताक्ष	Femoral Artery & vein
ऊर्ध्वशाखा	जालधरा	Cephalic vein
	ऊर्वी	Brachial vessel
	लोहिताक्ष	Axillary vessel
श्रोणी	वितप	Spermatic vessels
	कटीकतरुण	Gluteal vessels
पृष्ठ	बृहती	Subscapular artery
उदर	मेढ्रोपरि	Inferior epigastric vessels.

Location	Name	Modern correlation
वक्ष	स्तनमूलादि	Internal mammary and lateral thoracic vessels
ग्रीवा	मातृका	Carotid artery and jugular vein
	कृकटिका	Occipital vessels
	विधुर	Posterior auricular vessel

हनु	हनुसन्धि	Internal maxillary vessel
जिह्वा	रसवह, वाग्वह	Deep lingual vessels
नसा	औपनासिका	Angular vessels
नेत्र	अपांग	Zygomatico- temporal vessels
कर्ण	शब्दवाहिनी	Anterior tympanic vessels
ललाट	केशान्तानुगता	Superficial temporal vessels
	आर्वत	Frontal branch of the superficial temporal

स्थपनी		Nasal branch of the frontal vein
शखसन्धिगत		Superficial temporal vessels
उत्क्षेप		Parietal branch of the superficial temporal
सीमान्त अधिपति		Branches of the occipital and superficial vessels.

Avedhya Sira in Urdhva Shakha

Jaaldhara: The name *jaaldhara* denotes formation of *jaal* of *sira*. According to modern science *Jaaldhara* is considered as **cephalic vein**. By Dr. B.G. Ghanekar.

Cephalic Vein

It is **principal vein** of upper limb, it is most important **superficial vein** of upper extremities. Cephalic vein begins from the lateral end of the **dorsal venous arch**. Through the roof of the anatomical snuff box. Winds round the lateral border of the forearm and continues upwards in front of the elbow and along the lateral border of the biceps brachii. Pierces the deep fascia at the lower border of the pectoralis major.

It is superficial vein run in the deltopectoral groove up to the infraclavicular fossa then pierces the clavipectoral fascia and joins the axillary vein. In superficial region of upper extremities circulation conducted by cephalic vein than it is form plexus of vein.

Jaaldhara sira of upper extremities is consider as cephalic vein if puncture occur in this vein severe blood loss is formed.

The severe blood loss makes it impossible for the heart to pump a sufficient amount of blood to our body. Hypovolemic shock is life-threatening condition that results when we lose more the 20 percent of our body fluid. Hypovolemic shock can lead to organ failure.

Urvi: The name Urvi is considered as **Brachial Artery** according to Dr. B.G. Ghanekar.

Brachial Artery

The brachial artery is the **major blood vessel** of arm. It is **continuation of the axillary artery** beyond the lower margin of teres major muscle. It continues down the ventral surface of the arm until it reaches the cubital fossa at the elbow. Then it divides into the radial and ulnar arteries. Which run down the forearm. Surgeons may also need to apply compression of the brachial artery to control blood loss in trauma patients.

Urvi sira considered as brachial artery so puncture to these can cause severe blood loss which may leads to death of a person.

Urvi is a **sira marma** present in upper extremity. An injury to this marma cause bleeding. The blood loss leads to **Bahushosh** (deformity) and the **uncontrolled bleeding** (*shonitkshaya*) leads to death.

Lohitaksha

Lohitaksha sira is considered as **Axillary artery** and **Axillary vein** by Dr. B.G. Ghanekar.

Axillary Artery

Axillary artery is the continuation of the subclavian artery. It extends from the outer border of the first rib to the lower border of the teres major muscle. It continues as the brachial artery. Its direction varies with the position of the arm. The pectoralis minor muscle crosses it and divides it into three parts. First part, superior to the muscle. Second part, posterior to the muscle. Third part, inferior to the muscle.

The axillary artery is a large blood vessel that conveys oxygenated blood to the lateral aspect of the thorax, the axilla and upper limb.

Axillary Vein

The axillary vein is the **continuation of the basilic vein**. It lies on the medial side of the axillary artery, at the outer border of the first rib it becomes the subclavian vein. There is no axillary sheath around the vein which is free to expand during time of increased blood flow.

Lohitaksha is considered as axillary artery & axillary vein so puncture to these can cause severe blood loss which may leads to death of a person.

Lohitaksha is a **sira marma** hence site of Lohitaksha marma can be consider as site of Lohitaksha sira just below the Kaksha sandhi. Injury to this marma cause **Lohitakshaya maran** and **pakshaghat** (deformity).

Avedhya Sira in Adhowaha Shakha

Jaaldhara - Jaaldhara is considered as **great saphenous vein** in lower extremities by Dr. B.G. Ghanekar.

Great Saphenous Vein

The great saphenous vein is the **largest vein** of the human body. It is also known as the long saphenous vein. The greater saphenous vein starts from the medial marginal vein of foot, run superficially along the length of the lower limb to finally empty into the femoral vein.

The greater saphenous vein is capable of returning blood back to the heart against gravity.

There is a special pumping mechanism and the pressure of valves that ensure venous return. The purpose of this vein is to carry blood from feet and legs up to the deep vein system of body.

Jaaldhara sira of Lower extremities is consider as great saphenous vein if puncture is in ccurring this vein severe blood loss found.

Urvi and Lohitaksha

Urvi and Lohitaksha sira of adhogata shakha is consider as **femoral artery & femoral vein** in modern anatomy by Dr. B.G. Ghanekar.

Femoral Artery

It is the continuation of **external iliac artery**. It begins behind the inguinal ligament at the mid inguinal point. It passes downward and medially first in the **femoral triangle** and then in the **adductor canal**. At the lower end of the adductor canal i.e, at the junction of middle and lower thirds of the thigh.

It passes through an opening in the **adductor magnus** to become continuous with the popliteal artery. The primary function of this artery is supply blood to the lower section of the body.

Femoral Vein

It begins as an upward continuation of the **popliteal vein** at the lower end of the adductor canal and ends, by becoming continuous with the external iliac vein behind the inguinal ligament, medial to the femoral artery.

Urvi and Lohitaksha is consider as femoral artery and femoral vein so puncture to these can cause severe blood loss which may leads to death of a person. Urvi and Lohitaksha are **sira marma** present in Lower extremity. Injury in Urvi marma causes **shoritkshaya** and **sakthishosha**, Injury in **Lohitaksha** marma causes **Lohitkshaya, maran and pakshaghat**.

DISCUSSION

In this conceptual study, discussion regarding general interpretation of Avedhya is essential to know the underlying structure for Shakhagat Avedhya sira.

While Siravedha, Sushruta might have observed that puncture of some specific structure cause deforming or death. Such structures were categorized under Avedhya sira. Because of this, Sushruta has given more importance to the Avedhya sira than the vedhya sira. So Sushruta might have mentioned exact number of Avedhya sira only with its name and site.

Avedhya sira means the vessels which are not to be punctured or cut. As after puncturing their vessels it may lead to either deformity or death some of the cause of deformity or death are.

Since, the arterial pressure is more than venous pressure, there is risk of heavy and profuse bleeding in puncturing artery which may lead to deformity or death.

Nutrition of the body is carried out by arterial supply. If artery is damaged then the part supplied by it will not be nourished well and deformity may occur.

Thus, we have considered Avedhya sira as arteries, layer vein (e.g, femoral vein and axillary vein) and terminal part of some specific vein (great saphenous and cephalic vein) having many tributaries.

CONCLUSION

This conceptual study confirms that, the Avedhya sira of shakha are the arteries, larger veins and terminal part of specific superficial veins having many tributaries.

In upper limb (in urdhwa shakha)

1. Urvi to brachial artery
2. Lohitaksha sira is Axillary artery and Axillary vein.
3. Jaaldhara sira is cephalic vein.

In Lower limb (in adhogata shakha)

1. Urvi - as femoral artery and femoral vein.
2. Lohitaksha - as femoral artery and femoral vein.
3. Jaaldhara is great saphenous vein.

Acharya Charak called them the sarnat sira as saran kriya occurs among them. Sira carrying all the dosha with rakta as they are importance for staying healthy.

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