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Review Article

A Correlational Literature Review On *Urvi* and *Bahavi Marma* with Special Reference to *Urvi Avedhya Sira*

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Abstract: *Ayurveda's physiological and anatomical concepts are among the unique features of Ayurveda therapeutics.* The concepts of *Sharira*, such as *Sira* (Vein), *Snayu* (Ligaments), *Srotas* (Channels), *Peshi* (Muscles), *Marma* (Vital points), etc., and their relation with Sharira Dosha, can help in understanding pathophysiology given Ayurveda. While studying these, it is essential to understand their exact structure and location. Marma's are the vital spots in the human body means any injury to that point can lead to symptoms like pain, blood loss, deformity, and death. Concepts like *Marma* and *Sira Sharir* are very important and have many contributions while treating patients. Hence, knowing this particular part's exact structure and location is essential in treating related diseases. So, this review study aims to determine the exact structure of *Urvi* and *Bahavi Marma* w.s.r *Urvi Sira.* The objectives of this study are to determine the exact location and structure and to evaluate the correlation between *Urvi* and *Bahavi Marma* w.s.r *Urvi Sira* with the help of all available relevant literature from *Ayurvedic Samhita*, modern science, and journals.

Keywords: Avedhya *Sira, Sira, Marma, Urvi Sira, Urvi Marma, Bahavi Marma.*

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1. INTRODUCTION

Ayurveda is based on various basic concepts of *Sharir* explained in *Ayurveda* literature. One of the most significant and fundamental subdisciplines of *Ayurveda* is *Rachana Sharir*. It is called the "Root Secret of Medical Science" since understanding the human body's normal external and interior structure is essential for spotting abnormalities in it[1]. *Acharya Sushrut* has presented a new *Rachana Sharir* ground in *Ayurveda.* The *Sushrut Samhita* explains the human body's intricate construction by *Acharya.* The various concepts of *Sharir* include *Sira* (Vein)*, Snayu* (Ligaments)*, Srotas* (Channel)*, Peshi* (Muscles)*, Marma* (Vital points), etc. While studying these concepts, learners usually need clarification about their structure and location. The concepts like *Marma* and *Sira Sharir* are very important concepts that contribute much to treating patients. *Marma's* are the vital spots in the human body means any injury to that point can lead to symptoms like pain, blood loss, deformity, and death[2]. There is a total of 107 *Marma* points explained by *Acharya* [3]. Among all the *Marma*, *Urvi, and Bahavi, Marma* is one of the *Marma* in our body, located in *Shakhapradesha* (extremities)[4]. According to the structural classification of *Marma*, *Urvi*, and *Bahavi* are *Sira Marma* (vessel type). *Sira* is the structure that goes from one place to another in the body and carries body elements [5]. Among the total 700 *Sira*[6] in the human body, some *Sira* should not be punctured during the treatment, known as *Avedhya Sira*[7]. In addition to these 98 *Avedhya Sira*[8], those fused, shaped into lumps, extremely small, curved, and found around joints are also regarded as *Avedhya Sira* [9]. *Marmachikitsa* [10] and *Siravedhan*[11] are among the most effective treatments *Vaidyas uses* to treat various disease manifestations. *Urvi* and *Bahavi* are among the *Marma* in the *Shakhapradesha* (extremities)[12]. Any injury to both of these *Marma* mainly produces atrophy of muscles of that region, hemorrhage, and finally, if not treated properly, may lead to death[13]. *Urvi Sira* is one of the *Avedhya Sira*, present in each *Shakhapradesha* (upper and lower extremities)[14]. This *Urvi Sira* is also known as *Marmashrit Sira*[15]. *Avedhya sira* is the anatomical structures that are either deep vessels or vessels that can lead to harmful effects by puncturing them. Thus, being the same name, location, and number creates confusion in learners to study the exact structures related to the *Marma*, *Marmashrita Sira*, and *Avedhya Sira*. Hence, knowing this particular part's exact structure and location is essential in treating related diseases. Many articles relate to *Avedhya Sira*, but only a few relate to *Urvi Avdhya Sira*. Also, most articles are based on *Marma*, but only some show the exact correlation between *Avedhya Sira* and *Marma*. Therefore, there needs to research on *Urvi* and *Bahavi Marma* concerning *Urvi Avedhya Sira*. So, being an anatomist, it is necessary to clear these concepts, which will be helpful to anatomists and clinicians. So, this review study aims to determine the exact structure of *Urvi* and *Bahavi Marma* w.s.r *Urvi Sira.* The objectives of this study are to determine the exact location and structure and to evaluate the correlation between *Urvi* and *Bahavi Marma* w.s.r *Urvi Sira* with the help of all available relevant literature from *Ayurvedic Samhita*, modern science, and journals. Two cadavers were dissected to observe and identify related structures' surface and regional anatomy, which correlated with ayurvedic and contemporary views**.**

2. MATERIALS & METHODS

A literature review was done from classical Ayurveda textbooks, like *Sushrut Samhita, Charak Samhita, Ashtang Hridya*, etc., along with modern anatomy textbooks, like Grey's Anatomy, B. D. Chaurasia, and journals relevant to it. The literature was then correlated by doing practical dissection to determine the exact anatomical structure and location.

3. OBSERVATION

Dissection was carried out on an anterior aspect of the upper and lower limbs to correlate and determine the views of Ayurvedic and contemporary literature. (Fig. 1-2)

3.1. Concept of Urvi and Bahavi Marma – (Table 1)

In the *Pratyek-Marmasharir adhyaya* of *Sushrut Samhita Sharirsthana, Acharya* has given detailed information about *Marma Sharir*[16]. *Marmas* are the fundamental spots in the human body; any injury can cause various symptoms like pain, blood loss, deformity, etc. They are 107 in quantity and classified according to their structure (*Rachana*), region (*Shadang*), measurement (*Pariman*), and injury effect (*Parinam*). For this study, we must first know about the *Bahavi* and *Urvi Marma.*

Table 1: Anatomical location and type of *Bahavi* and *Urvi Marma*

Name of *Marma*	Number	A/c to *Shadanga*	A/c to *Rachana*	A/c to *Parinam*	A/c to *Pariman*
Bahavi	2 One on each arm	*Urdhvashakha*: in the anteromedial side of the upper arm.	*Sira*	*Vaikalykara*	1 *Anguli*
Urvi	2 One on each thigh	*Adhoshakha*: in the anteromedial side of the thigh.	*Sira*	*Vaikalykara*	1 *Anguli*

Bahavi Marma is present in *Urdhvashakha* (upper limb) on the anteromedial side of the upper arm. It is about four and a half *Anguli* (finger units) from the medial epicondyle of *Pragandasthi* (Humerus). *Urvi Marma* is present in *Adhoshkha* (lower limb) in the anteromedial side of the point of the line joining the center of the inguinal ligament and the medial condyle of the *Urvasthi*(Femur)[17]. Both the *Bahavi* and *Urvi Marma* are according to *Rachana*(structure) *Sira*(vessel) type; according to *Parinam* (effect), they are *Vaikalykara* type, and according to *Pariman* (size), they are of 1 *Anguli Marma* means any injury to these *Marma* can lead to disability of the structures present over there. The structures related to *the Bahavi Marma* area are the Brachial artery and vein, lymph vessel drainage to the axillary group of glands, median and ulnar nerves, and the Biceps and Triceps muscles. The structure related to *the Urvi Marma* area is the Femoral artery and Vein, drainage to the superficial inguinal gland: saphenous nerve, Adductor Magnus, and Rectus Femoris muscle. According to *Acharya Sushrut*, any injury to both of these *Marma* mainly produces paleness of the body, wasting or atrophy and dysfunction of muscles of that region, and bleeding [18].

3.2. *Concept of Avedhya Sira*

Saranaat Sira [19] means - *Sira* is the structure that goes from one place to another in the body and carries body elements. In *Sira-varna-vibhaktisharir Adhyaya* of the *Sharirsthana, Acharya* has given detailed information on *Sira* of the human body. In this *Adhyaya*, he explained Sira's definition, types, numbers, distribution, and function. The *Sira* which should not be punctured during venesection is called *Avedhya Sira*. These are the restricted veins to which puncturing them causes harm in full effect. Any venesection to such type of *Avedhya Sira*, which is the straight cause of severe blooding and causes falling blood pressure, can lead to death [20]. The *Sira* (Vein) provides nutrition to the whole body and arteries. As the arterial pressure is higher than the venous pressure, there is a risk of significant and profuse bleeding when an artery is punctured, which could result in death or deformity. So, *Avedhya sira* is the anatomical structures that are either deep vessels or vessels that can lead to harmful effects by puncturing them. *Sushrut Acharya* mentioned 98 *Avedhya Sira* in particular places to avoid these missed endeavors. The *Urvi Sira* is one of them. In the human body, the *Avedhya sira* are distributed in different parts, i.e., in *Shakha*, *Kostha*, and *Jatruurdhwa*, which are mentioned as follows: [21]

Table 2: Location and number of *Avedhya Sira*

Location of *Sira*	Number
Shakha	16
Koshta	32
Jatruurdhwa	50

Avedhya Sira in *Shakhapradesha,* as per *Acharya Sushrut,* are as follows - They are present 4 in each extremity, a total of 16. [22] These are, *Jaldhara, Urvi* & *Lohitaksh*. *Jaldhara* – present superficially and one in number in each extremity, a total of 4. *Urvi* – Two in number in each extremity, a total of 8 -in the *Urdhvashakha* (upper limbs), it can be considered as *Bahavi Sira* (brachial vessels). In *Adhoshakha* (lower limb), it can be considered as *Urvi Sira* (femoral vessels). *Lohitaksh* – One in number in each extremity, a total of 4. *Urvi* and *Lohitaksh* are situated deep in *Jaldhara.*[23] *Acharya Sushrut* mentioned 2 *Urvi Sira* on each side at the upper and lower limbs.

3.3. *Correlation Between Urvi Sira and Brachial and Femoral Vessels*

Considering the *Urvi Sira*, the structures can be correlated with brachial vessels in the upper limb and femoral vessels in the lower limb.

- ***Brachial artery***

The brachial artery is the continuance of the axillary artery. It commences at the inferior border of the tendon of teres major muscle and finishes by dividing into the radial and ulnar arteries at the elbow joint. At first, it is medial to the humerus, but then it spirals anterior to it till it lies midway between the humeral epicondyles. Its pulsation can be felt throughout the arm. The brachial artery is wholly superficial throughout its course, but at the elbow region, it lies deep into the triangular intermuscular cubital fossa. The brachial artery gives blood supply to the muscles of the anterior compartment of the arm and its major proximal branch. In addition, this profunda brachial artery supplies the arm's posterior compartment muscles and the humerus shaft [24].

- ***Brachial veins***

The brachial Vein follows the brachial artery—the Vein as venae comitantes with tributaries similar to the arterial branches. The brachial Vein joins the axillary Vein near the lower margin of the subscapularis. [25]

Fig 1: Brachial artery & Vein

- ***Femoral artery***

It is a continuance of the external iliac artery. It commences behind the inguinal ligament, midway between the anterior superior iliac spine and the pubic symphysis. Then it descends along the anteromedial part of the thigh in the femoral triangle. In the triangle, it enters and passes through the adductor (sub sartorial) canal and becomes the popliteal

artery as it passes through an opening in the adductor Magnus near the junction of the middle and distal thirds of the thigh. [26].

- ***Femoral Vein***

The femoral Vein is the continuance of the popliteal Vein, and it follows its artery. It begins at the adductor opening and ends posterior to the inguinal ligament as the external iliac Vein. The Vein is posterolateral to the femoral artery in the distal adductor canal. At the apex of the femoral triangle, the Vein lies posterior to the artery, and proximally, at the base of the triangle, the Vein lies medial to the artery. The Vein lies in the middle compartment of the femoral sheath, between the femoral artery and femoral canal [27]. According to the conceptual theory of *Avedhya Sira* in *Ayurveda*, *Urvi* is one of the *Avedhya Sira* located in both the extremities, which can be considered brachial vessels in the upper limb femoral vessels in the lower limb according to modern anatomy.

Fig. 2: Femoral artery and Vein

4. DISCUSSION

Sushrut defines *Marma* as sites of *Prana* where muscle, veins, ligaments, bones, and joints meet together, though all these structures need not be present at each *Marma*.[28] *Marma* is an important connection center or crossroads in the physical body[29]. According to *Vagbhatta*, *Marma* is the site where important structures come together along with related structures like muscles and tendons, a similar definition to *Sushrut*[30]. *Marma's* are the fundamental spots in the human body; any injury to them can cause various symptoms[31]. Among the *Marma* present in our body, *Urvi* and *Bahavi Marma* are considered *Shakhagata Marma*, which means they are present in our body's extremities or limbs of our body[32]. *Bahavi Marma* is present in *Urdhvashakha* (upper limb) and *Urvi Marma* in *Adhoshkha* (lower limb) on the anteromedial side of the upper and lower limb, repectively[33]. Both these *Marma* comprises various components. Based on the structure-wise classification, both *Marma* comes under the category of *Sira Marma*(vessel), i.e., it means these *Marma* are related to various vessels (*Sira)* passing through or situated in its area having 1 Anguli effect area. The number of both the *Marma* is a total of 8. According to the literature review on Avedhya, Sira *Urvi* is *one of the Avedhya Sira* also present in *Shakhapradesha*, i.e., at the anteromedial side of our body's extremities. *Urvi Sira* is present in the lower extremity, and its counterpart in the upper extremity is named *Bahavi*. The number of *Urvi Avedhya Sira* is as 02 in each limb, i.e., 8. Practical dissection of the proximal aspect of the upper and lower limbs shows the anatomical structures related to the *Bahavi Marma* area: the Brachial artery and vein[34], lymph vessel drainage to the axillary group of glands, and the *Urvi Marma* area Femoral artery and vein[35]. Marma and Sira's location, type, and number are the same [36]. *Urvi Sira* is 8 in number and present in *Shakhapradesha*, so *Urvi* and *Bahavi Marma* must consider that with *Urvi (Bahavi) Avedhya Sira.* According to *Acharya Sushrut*, it is a *Vaikalyakara* (disability-causing) type *of Marma* based on the effect-wise classification of *Marma* [37]. Any injury to the important structures passing through this vital point-artery, and vein-can cause wasting or atrophy, dysfunction of the muscles, and bleeding, and finally, if not treated properly, may lead to death[38]. *Urvi Sira* is *Avedhya Sira* means it must not be punctured because it can lead to heavy blood loss and death.[39]. At *Marmasthna*, four different forms of *Doshvahi Sira* are combined. All of this *Sira* nourish the *Sira* (vessels), *Snayu* (ligaments), *Asthi* (bones), *Mansa* (muscles), and *Sandhi* (joints), which in turn aids in the body's growth and defense. Any damage to these vessels caused by injury can result in significant blood loss, and the part supplied by it will not be nourished well, and deformity may occur. It vitiates Vayu, which results in pain throughout the body and causes several ailments. Vayu's vitiation destroys consciousness and Panchmahabhoota results in death in the end.[40] Brachial vessels were discovered here in the upper extremities in cadaveric dissection. The Brachial artery and Vein are flanked. The axillary artery continues the subclavian artery, which in turn continues the axillary artery; both arteries are directly connected to the arch of the aorta. The brachial Vein follows a similar path to the brachial artery, connecting to the superior vena cava before joining the heart[41]. Femoral vessels were discovered at this location in the lower extremities. Along with the artery, there is the femoral Vein. The abdominal aorta and femoral Vein above continue, and the inferior vena cava is subsequently connected to the heart. The femoral artery is the continuation of the external iliac artery[42]. As a result of the blood's direct link to the heart, which increases its velocity, any puncture of these veins could result in significant blood loss. Thus, the important components of the circulatory system that transport blood throughout the body are blood vessels, which include arteries and veins. These are crucial in any remedial situation, i.e., treating any disease. Khoshhal KI

et. Al, a systematic review on trauma-related acute compartment syndrome of the forearm shows that blunt traumas were the most common cause of soft tissue injuries-related forearm ACS, and brachial artery injuries were the most common cause of vascular-related forearm ACS[43]. The amputation rate for lower limb arterial injury is high. Stab wounds have the lowest likelihood of requiring amputations, but wounds from high-velocity firearms have the highest likelihood. Failed revascularization is a significant independent risk factor for limb loss[44]. Most medical emergencies start with significant blood loss; bleeding can be fatal. The femoral artery provides arterial flow to the lower limb distal to the inguinal ligament and the gluteal fold, and the brachial artery serves the muscles of the anterior and posterior compartments of the arm. As a result, the muscles in that area may waste away or atrophy if these blood arteries are punctured. So, here *Urvi Sira* can be taken as both brachial and femoral vessels as these two vessels are closely associated, so both can be considered *Urvi Avedhya Sira*. The results of trauma to *Bahavi* and *Urvi Marma* and the puncture of *Urvi Sira* are almost similar; hence, we can establish a relationship between them. Also, we can correlate the *Urvi Avedhya Sira* with the brachial and femoral vessels in the extremities. Also, these vessels should not be punctured because of their structural and functional importance.

5. CONCLUSION

5.1. Role of *Marma* in confirmation of sites of *Avedhya Sira*

According to the definition of *Marma*, *Sira* is one of the important components of *Marma*. Also, mostly the names of *Avedhya Sira* are similar to the *Marma* depending upon their site or vice versa. Therefore, there is a known connection between *Sira Marma* and *Avedhya Sira*. The upper extremity considers *Urvi Avedhya Sira* to be *Bahavi Avedhya Sira*. Based on the structure-wise classification of *Urvi* and *Bahavi Marma*, they are *Sira* (vessel) type of *Marma* present in the extremities. *Urvi Avedhya Sira* is also one of the structures in these *Marma points' affected areas*. Since *Urvi (Bahavi) Avedhya Sira* shares nearly identical structural involvements with *Urvi* and *Bahavi Marma*, it is *Marmashrita Sira*. As it is, *Marmashrita Sira*, i.e., *Urvi Sira*, should not be punctured, and it is stated in the seventh *Adhyaya* of *Sushruta Sharirsthan*. *Urvi Avedhya Sira*, *Urvi*, and *Bahavi Marma* experienced disfigurement or death due to their practically identical injuries. *Urvi Avedhya Sira*, in the upper extremity, can be correlated with the brachial vessel, and in the lower extremity, with femoral vessels, those can cause severe hemorrhage. Again there may be seen as a causality by puncturing them.

6. AUTHORS CONTRIBUTION STATEMENT

Dr. Vidya dole conceived of the presented idea. She developed the theory and performed the computations. Dr. Y. N. Deshpande verified the analytical methods and encouraged Dr. Vidya dole to investigate the concept and supervise the findings of this work. All authors discussed the results and contributed to the final manuscript.

7. CONFLICT OF INTEREST

Conflict of interest declared none.

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