

**ANATOMICAL STUDY OF *ADHOSHAKHAGATA VAIKALYAKARA MARMAS*  
WITH SPECIAL REFERENCE TO *URVI MARMA***

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**ABSTRACT**

Concept of *Marma* (vital point) is one element of the divine *Ayurvedic* system of medicine. It is not much developed in modern science. But, *Acharya Sushruta* and *Vagbhata* have elaborated it in detail in *Sharirasthana* of their respective *Samhitas* (Ancient books). They have explained 107 such vital points, injury to which results either in death or some dangerous deformity. *Acharya Sushruta* and *Vagbhata* have mentioned various types of '*Marmas*' depending upon their position, constituents, *viddha lakshanas* (prognosis), number, dimensions etc. Among the prognostic types, '*Vaikalyakara Marmas*' are the points where injury causes structural or functional deformity. These are 44 in number. Out of them, 6 are present in each *Adhoshakha* (lower limb) i.e. total 12 *Vaikalyakara Marmas* in *Adhoshakha*. They are *Kurch*, *Janu*, *Aani*, *Urvi*, *Lohitaksh* and *Vitapa* and injury to them cause symptoms which are very common in present world. And more than 50% *Marmas* in *Adhoshakha* are *Vaikalyakara*. *Urvi Marma*, one of the *Vaikalyakara Marma* of *Adhoshakha* is anatomically described as *Sira Marma* and *Sira* related to *Urvi* is said to be *Avedhya* (should not be punctured). The direct understanding of the word *Marma* in ancient sciences was evident, but there were no sufficient techniques to make out their original structural aspect involved. To extend the knowledge of *Marmas* in clinical fields, it is necessary to know the actual structures present at those sites. So, this topic is selected to study it with modern anatomy, so that the actual structures present at those sites will be known.

**KEY WORDS :** *Ayurveda*, *Marma*, *Vaikalyakara Marma*, *Urvi Marma*, Dissection

## INTRODUCTION

Detail scientific study of the subject *Shareera Rachana* (Human anatomy) is well organized by *Ayurveda*. After going through the available material of *Ayurveda*, we can say that we are really blessed with such a pure science. Although it is very much old by the time frame, its principles are applicable even today as like its earlier era.

The concept of *Marmas* forms a part of *Shareera* and it is not much developed in Modern Science and it lacks a modern scientific back ground. The direct understanding of the word *Marma* in ancient sciences was evident, but there were no sufficient techniques to make out their original structural aspect involved. This science of *Marma* was confined to war only in earlier ages where the warriors used to achieve their target by destroying vulnerable points i.e. *Marmas* of enemies. To extend the knowledge of *Marmas* in clinical fields, it is necessary to know the actual structures present at those sites.

These *Marma Sthanas* (Sites) are specified, so as not to have interference with the surgeon's knife hence considered as the surgical points. In the Modern Surgery, they have not described the *Marmas*. But in Surgical surface markings, they are careful to avoid the nerves, arteries and veins etc. which are vital points.

*Marma* is defined as anatomical site where five structures i.e. *Mamsa* (Muscles), *Sira* (Vessels), *Snayu* (Ligaments), *Asthi* (Bones) and *Sandhi* (Joints) meet together <sup>[1, 2]</sup>. *Acharya Vagbhata* says that those sites which are painful on application of pressure and shows abnormal pulsation should also be considered as *Marmas* <sup>[3]</sup>. These points are seats of life <sup>[4]</sup>. There are 107 such vital points in our body <sup>[5, 6]</sup>.

*Acharya Sushruta* and *Acharya Vagbhata* have mentioned various types of '*Marmas*' depending upon their position, constituents, *viddha lakshanas* (prognosis), number, dimensions etc. Depending upon after-effect of injury to '*Marmas*', there are 5 types like *Sadya pranahara*, *Kalantara pranahara*, *Vishalyaghna*, *Vaikalyakara*, *Rujakara* <sup>[7, 8]</sup>. Out of them, '*Vaikalyakara Marmas*' are the points where injury causes structural or functional deformity <sup>[9]</sup>. These are 44 in number <sup>[10, 11]</sup>. In each lower limb, 6 '*Vaikalyakara Marmas*' are present. They are *Kurch*, *Janu*, *Aani*, *Urvi*, *Lohitaksh* and *Vitapa* and injury to them cause symptoms which are very common in present world. And more than 50% *Marmas* in *Adhoshakha* are *Vaikalyakara*. *Urvi Marma*, one of the *Vaikalyakara Marma* of *Adhoshakha* is anatomically described as *Sira Marma* <sup>[12, 13]</sup> and *Sira* related to *Urvi* is said to be *Avedhya* (should not be punctured). Thus, this topic is selected to study it with modern anatomy, so that the actual structures present at those sites can be known.

## MATERIALS AND METHODOLOGY

### Materials

For literary study:-

1. Available literature regarding *Marmas* from

- a) *Ayurvedic* texts.
- b) Modern texts
2. Previous work done
3. Research Journals
4. Research papers presented on the related topics
5. Authentic Internet sources

For cadaveric dissection Study:-

1. Cadavers
2. Dissection kit

### **Methodology:-**

#### **\*Literature Study:-**

All the information regarding *Vaikalyakara Marma* of lower limbs along with anatomy of lower limb was collected from *Ayurvedic* texts, modern texts, previous work done, research journals, research papers presented on related topic and authentic internet sources.

All the literature material mentioned above was thoroughly as well as critically reviewed, concentrating on the references regarding the *Vaikalyakara Marmas* of *Adhoshakha*.

The collected information was compared and analyzed scientifically.

#### **\*Cadaveric Dissection Study:-**

Cadaveric dissection was done in the dissection hall of department of *Shareera Rachana* of *ADAMC, Ashta*. While studying the dissected cadavers, photo images were taken with the help of digital camera.

2 cadavers were selected based of the inclusion and exclusion criteria explained below.

#### **\*Criteria of selection of cadaver:-**

#Inclusion Criteria:

- Cadaver with fully developed body parts
- Cadavers with whichever gender available
- Having natural death
- Preserved by proper methods of preservation.

#Exclusion Criteria:

- Death due to poisoning, accidental condition and any chronic disease conditions.

Dissection of the lower limbs was done on cadavers by using dissection kit; Cunningham's manual of practical anatomy<sup>[14]</sup> and B. D. Chaurasia's Human Anatomy<sup>[15]</sup> for understanding the *Vaikalyakara Marmas*.

1. On the basis of *Ayurvedic* literature related to the *Urvi Marma*, identification of that *Marma* point was done on cadaver.
2. On the basis of *Pramana* (Dimension) of this *Marma* given in texts, circular area of given *Pramana* was drawn taking *Marma* point as Centre.

3. Neat and detailed dissection was done of the marked site with the help of dissection kit and dissection guides.
4. With the help of superficial and deep dissection, the structures present at that site were identified.

## OBSERVATIONS AND RESULTS

Following observations were obtained during the study-

**Table no. 01: Observations obtained from literature study of Urvi Marma**

Particulars	<i>Acharya Sushruta</i>	<i>Acharya Vagbhata</i>
Number (termed as <i>Bahavi</i> in upper limb)	04 01 in each limb	04 01 in each limb
Type	<i>Sira Marma, Vaikalyakara Marma</i>	<i>Sira Marma, Vaikalyakara Marma</i>
Position	located at the middle of <i>Uru</i>	located at the middle of <i>Uru</i>
Dimension	01 <i>Angula</i>	01 <i>Angula</i>
Viddha Lakshana (Prognosis of injury)	Wasting, dysfunction of the muscles because of bleeding	Wasting, dysfunction of the muscles because of bleeding

(Source: Primary Data)

**Table no. 02: Anatomical structures seen at the site of Urvi Marma**

Sr.No.	<i>Ayurvedic View</i>	Modern co-relation
01.	<i>Mamsa</i>	Adductor magnus, Rectus femoris, Sartorius, Vastus medialis
02.	<i>Sira</i>	Femoral artery with its branches, Femoral vein with tributaries, Some part of superficial inguinal lymph nodes, Saphenous nerve, Subsartorial plexus of nerves
03.	<i>Snayu</i>	No direct observation regarding Snayu was obtained
04.	<i>Asthi</i>	According to dimension of <i>Marma</i> , no direct observation regarding <i>Asthi</i> was obtained. But, deeper structure i. e.

		Middle part of shaft of Femur can be considered.
05.	<i>Sandhi</i>	No direct observation regarding Sandhi was obtained

(Source:Primary Data)

**Photo no. 01: Location of *Urvi Marma***



[Source: Internet resource <sup>[16]</sup>]

**Photo no. 02: Dissection of *Urvi Marma* on a male cadaver**



[Source: Primary Data, Camera]

## DISCUSSION

Almost all our ancient sages have mentioned about the *Marma-Shareera*. There are many quotations in variable ancient *Ayurvedic* texts regarding 107 *Marmas* (vital points) in our body. But, *Acharya Sushruta* and *Acharya Vagbhata* have given a separate chapter on the description of *Marmas* in *Shareera sthana* in their respective *Samhitas*. If we keenly observe the references, it is seen that *Acharya Sushruta* has given emphasis on surgical point of view. He has clearly mentioned that *Marmas* are the structures that should be preserved during surgery to save the life

of person. *Acharya Charaka* has given more emphasis on *Tri-Marma* i.e. *Shira*, *Hridayam* and *Basti* from treatment point of view. *Acharya Vagbhata*, the recent of all Main authors, have mentioned a specific variety of *Marma* i.e. *Dhamani Marma*. *Acharya Vagbhata* is well-known for detailed understanding of any concept through simple recitations. From this, we can say that continuous research was going at that time also and from such research there was invention of new variety of *Marma*. But, the basic concept regarding the word *Marma* is same in all the text.

*Marmas* are the vital points in our body where five structures i.e. *Mamsa*, *Sira*, *Snayu*, *Asthi* and *Sandhi* meet together. Although it is said that at a time there is simultaneous presence of all five structures, sometimes some of the structures are seen to be recessive. Based on the five criteria, the *Marmas* are placed in different groups and given some special names. Out of those five criteria, one is prognostic importance. The prognosis of injury depends upon the site of injury, depth of injury, force at which the injury is caused etc. Based on prognosis of injury at the site of *Marma*, they are classified under five headings as *Sadya-Pranahara*, *Kalantara Pranahara*, *Vishalyaghna*, *Vaikalyakara* and *Rujakara*. Each of these words has got a specific meaning indicating the prognosis.

The word '*Vaikalyakara*' is derived from '*Vaikalya*' which means deprived of some part or abnormality or deformity or disability to do something. Thus, the *Vaikalyakara Marmas* are those points in the human body, injury to which can result in structural or functional deformity. Such 06 *Vaikalyakara Marmas* that are present in each lower limb are *Kurch*, *Janu*, *Aani*, *Urvi*, *Lohitaksh* and *Vitapa*. Each of these has got unique significance if injury occurs to them. As per the dominant anatomical structure involved, the prognosis of injury varies from disfigurement of leg to paralysis or sometimes even death.

The word *Urvi* is formed from *Urnu* + *Ku Nalopaha* (FhÉÑĩ + MÑülÉsÉÉámÉ: |) Its meaning is given as empty space or wide area. The *Urvi Marma* is described under *Sira Marma* by *Acharya Vagbhata* and *Acharya Sushruta* with dimension of 01 *Angula*. The *Vaikalya* that occurs is wasting, dysfunction of the muscles because of bleeding.

In case of *Urvi Marma*, the structures that were seen are- *Mamsa*- Adductor magnus, Rectus femoris, Sartorius, Vastus medialis, *Sira*- Femoral artery with its branches, Femoral vein with tributaries, Some part of superficial inguinal lymph nodes, Saphenous nerve, Subsartorial plexus of nerves. According to dimension of *Marma*, no direct observation regarding *Asthi* was obtained. But, deeper structure i. e. Middle part of shaft of Femur can be considered. No direct observation regarding *Snayu* and *Sandhi* was obtained. The position of *Marma* can be said to be in Adductor canal. The femoral artery and femoral vein are very prone to get damaged in this area because of injury. It can result in severe bleeding.

From both of these considerations, it can be said that the dominant structure at this site can be considered as Femoral artery, Femoral vein (*Sira*) along with other recessive structures (*Mamsa*, *Asthi*).

## CONCLUSION

Following conclusions has been drawn from the observations obtained during the conceptual and cadaveric study.

*Acharya Sushruta* and *Acharya Vagbhata* have mentioned the terminologies in detail. *Acharya Sushruta* has given more importance for *Marmas* through surgical point of view, whereas *Acharya Vagbhata* has mentioned a unique division of *Marmas* as *Dhamani Marma*.

Total number of *Marmas* is 107. Out of them, 44 are the *Vaikalyakara Marmas* i.e. the points, injury to which causes structural or functional deformity.

Total number of *Marmas* present in *Adhoshakha* is 11. Out of them, 6 are *Vaikalyakara*. They are *Kurch*, *Janu*, *Aani*, *Urvi*, *Lohitaksha* and *Vitap*.

According to *Ashraya*, *Kurch* and *Aani* are *Snayu Marma*, *Lohitaksh* and *Urvi* are *Sira Marma* and *Janu* is *Sandhi Marma*. *Vitap* is *Snayu Marma* according to *Acharya Sushruta*. But, *Acharya Vagbhata* has mentioned it as *Sira Marma*.

*Kurch Marma* is 1 *Paanitala* in dimension. *Janu Marma* is 3 *Angula* in dimension. *Urvi* and *Vitap* are 1 *Angula* in dimension, whereas *Aani* and *Lohitaksh* are  $\frac{1}{2}$  *Angula* in Dimension.

The dominant structure at the site of *Urvi Marma* is femoral artery, femoral vein (*Sira*) along with other recessive structures- Adductor magnus, Rectus femoris, Sartorius, Vastus medialis, Middle part of shaft of Femur (*Mamsa*, *Asthi*).

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