

## “ANATOMICAL STUDY OF ADHOSHAKHAGATA VAIKALYAKARA MARMAS WITH SPECIAL REFERENCE TO VITAPA 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. Depending upon after-effect of injury to ‘*Marmas*’, there are 5 types like *Sadya pranahara*, *Kalantara pranahara*, *Vishalyaghna*, *Vaikalyakara*, *Rujakara*. Out of them, ‘*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*. The *Vitapa Marma* is explained as *Snayu Marma* by *Acharya Sushruta* and *Sira Marma* by *Acharya Vagbhata*. Thus, this topic is selected to study it with modern anatomy, so that the actual structures present at those sites can be known and the point of difference between the structural classification by *Acharya Sushruta* and *Acharya Vagbhata* can be discussed thoroughly.

**Key Words:** *Ayurveda*, *Marma*, *Vaikalyakaramarma*, *Vitapa*, 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*. 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. In earlier ages, this science of *Marma* was more developed in

wars 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. *Mam-*

sa(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 *Sadyo-pranahara*, *Kalatarapranahara*, *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*, *Lohitakshand Vitapa* and injury to them cause symptoms which are very common in present world. And more than 50% *Marmas* in *Adhoshakha* are *Vaikalyakara*. Depending upon the structural classification, the *Vitapa-Marma* is explained as *Snayu Marma* by *Acharya Sushruta*<sup>12</sup> and *Sira Marma* by *Acharya Vagbhata*<sup>13</sup>. Thus, this topic is selected to study it with modern anatomy, so that the actual structures present at those sites can be known and the point of difference between the structural classification by *Acharya Sushruta* and *Acharya Vagbhata* can be discussed thoroughly.

## MATERIALS AND METHODOLOGY

### materials

For literary study:-

1. Available literature regarding *Marmas* from
  - *Ayurvedic* texts.
  - Modern texts
2. Previous work done

3. Research Journals
4. Research papers presented on the related topics
5. Previous dissertations
6. Authentic Internet sources

For cadaveric dissection Study:-

1. Cadaver: 2 cadavers, 1 male and 1 female
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, previous dissertations 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 *YAC PGT & RC, Kodoli*. While studying the dissected cadavers, photo images were taken with the help of digital camera.

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

\*Criteria of selection of cadaver:-

#Inclusion Criteria:

- Cadaver with fully developed body part
- Cadavers of either sex
- 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 prac-*

tical 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 *Vitapa 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

Following observations were obtained during the study-

Table no.- 01- Observations obtained from literature study of <i>Vitapamarma</i> :-	<i>Sushruta</i>	<i>Vagbhata</i>
<b>Number</b>	02 (01 in each lower limb)	02 (01 in each lower limb)
<b>Type</b>	<i>Snayu Marma</i> <sup>16</sup> <i>Vaikalyakara Marma</i> <sup>18</sup>	<i>Sira Marma</i> <sup>17</sup> <i>Vaikalyakara Marma</i> <sup>19</sup>
<b>Position</b>	located in between <i>Mushka</i> and <i>Vankshana</i> <sup>20</sup>	located in between <i>Mushka</i> and <i>Vankshana</i> <sup>21</sup>
<b>Dimension</b>	01 <i>Angula</i> <sup>22</sup>	01 <i>Angula</i> <sup>23</sup>
<b>Viddha Lakshana (Prognosis of injury)</b>	Impotency or deformities in spermatogenesis or oogenesis <sup>24</sup>	Impotency or deformities in spermatogenesis or oogenesis <sup>25</sup>

**Table no.- 02- Anatomical structures seen at the site of *Vitapa Marma* in males:-**

Sr. No.	<i>Ayurvedic View</i>	Modern co-relation
01.	<i>Mamsa</i>	External oblique aponeurosis, Internal oblique muscle of abdomen, Internal spermatic fascia, Cremasteric fascia, External spermatic fascia
02.	<i>Sira</i>	Ilio-inguinal nerve, Spermatic cord
03.	<i>Snayu</i>	Part of Inguinal ligament, Part of lacunar ligament
04.	<i>Asthi</i>	Pecten pubis of Hip bone
05.	<i>Sandhi</i>	No direct observation regarding Sandhi was obtained

**Table no.- 03 Anatomical structures seen at the site of *Vitapa Marma* in females:-**

Sr. No.	<i>Ayurvedic View</i>	Modern co-relation
01.	<i>Mamsa</i>	External oblique aponeurosis, Internal oblique muscle of abdomen
02.	<i>Sira</i>	Ilio-inguinal nerve
03.	<i>Snayu</i>	Round ligament of Uterus
04.	<i>Asthi</i>	Pecten pubis of Hip bone
05.	<i>Sandhi</i>	No direct observation regarding Sandhi was obtained

### DISCUSSION

Almost all our ancient sages have mentioned about the *Marma-Shareera*. There are many quotations in variable ancient *Ayurvedic* texts regarding 107 *Mar-*

*mas* (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 *Sadyo-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 '*Vitap*' is formed from '*VitamVistaramvaPaatiPibati*' or '*Vetati-ShabdayateIti*'. Its meaning is Branch of tree or Bush or New seed or covering of Testis. The *Vitapa Marma* is described under *Sira Marma* by *Acharya Vagbhata* and *Snayu Marma* by *Acharya Sushruta* with dimension of 01 *Angula*. The *Vaikalya* that occurs is infertility or deformities in spermatogenesis and oogenesis.

In case of *Vitapa Marma*, the structures that were seen are- In males- *Mamsa*(Muscles and fasciae)- External oblique aponeurosis, Internal oblique muscle of abdomen, Internal spermatic fascia, Cremasteric fascia, External spermatic fascia, *Sira*- Ilio-inguinal nerve, Spermatic cord, *Snayu*- Part of Inguinal ligament, Part of lacunar ligament, *Asthi*- Pecten pubis of Hip bone. No direct observation was obtained regarding the presence of *Sandhi* (Joint) at the site of *Marma*. In females- *Mamsa*- External oblique aponeurosis, Internal oblique muscle of abdomen, *Sira*- Ilio-inguinal nerve, *Snayu*- Round ligament, *Asthi*- Pecten pubis of Hip bone. No direct observation was obtained regarding the presence of *Sandhi* (Joint) at the site of *Marma*.

From both of these considerations, it can be said that the dominant structure at this site should be considered as Femoral nerve, Spermatic cord, Round ligament of Uterus along with other recessive structures (*Mamsa*, *Asthi*). The point of difference in the opinion of both *Acharyas* can be justified. In males, spermatic cord, al-

though a cord like structure, has function of conduction of sperms. Thus it can be termed as *Sira*. Because of its appearance, it can also be termed as *Snayu*. Thus, same structure is affected in case of trauma to *Marma*, although named as *Sira* or *Snayu*. In females, incompetence of round ligament of uterus can result in abnormalities of uterus, thus resulting in infertility. It can be considered under the heading of *Snayu*. In females, it is difficult to term *Vitapa Marma* as *Sira Marma*.

## 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 each *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 *Vitapa* is Spermatic cord or Round ligament. Some other structures that are present differ in males and females. Males have External oblique aponeurosis, Internal oblique muscle of abdomen, Internal spermatic fascia, Cremasteric fascia, External spermatic fascia, Ilio-inguinal nerve, Part of Inguinal ligament, Part of lacunar ligament, Pecten pubis of Hip bone. Females have External oblique aponeurosis, Internal oblique muscle of abdomen, Ilio-inguinal nerve, Pecten pubis of Hip bone.

### Photo No. 01- Dissection of *Vitapa Marma* on Cadaver (Male)



### Photo No. 02- Dissection of *Vitapa Marma* on Cadaver (Female)



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