“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, ‘Vai-kalyakara 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 VaikalyakaraMarmas 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 AdhoshakhaareVaikalyakara. 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\(^1, 2\). Acharya Vagbhata says that those sites which are painful on application of pressure and shows abnormal pulsation should also be considered as Marmas\(^3\). These points are seats of life\(^4\). There are 107 such vital points in our body\(^5, 6\). 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 Sadyopranahara, Kalatarapranahara, Visha-lyaghna, Vaikalyakara, Rujakara\(^7, 8\). Out of them, ‘Vaikalyakara Marmas’ are the points where injury causes structural or functional deformity\(^9\). These are 44 in number\(^10, 11\). In each lower limb, 6 ‘Vaikalyakara Marmas’ are present. They are Kurch, Janu, Aani, Urvi, Lohitaksh and Vitta- pa 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\(^12\) and Sira Marma by Acharya Vagbhata\(^13\). 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\textsuperscript{14} and B. D. Chaurasia’s Human Anatomy\textsuperscript{15} 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.

### OBSERVATIONS

Following observations were obtained during the study-

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

<p>| Table no.- 02- Anatomical structures seen at the site of Vitapa Marma in males:-- | | |</p>
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Ayurvedic View</th>
<th>Modern co-relation</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.</td>
<td>Mamsa</td>
<td>External oblique aponeurosis, Internal oblique muscle of abdomen, Internal spermatic fascia, Cremasteric fascia, External spermatic fascia</td>
</tr>
<tr>
<td>02.</td>
<td>Sira</td>
<td>Ilio-inguinal nerve, Spermatic cord</td>
</tr>
<tr>
<td>03.</td>
<td>Snayu</td>
<td>Part of Inguinal ligament, Part of lacunar ligament</td>
</tr>
<tr>
<td>04.</td>
<td>Asthi</td>
<td>Pecten pubis of Hip bone</td>
</tr>
<tr>
<td>05.</td>
<td>Sandhi</td>
<td>No direct observation regarding Sandhi was obtained</td>
</tr>
</tbody>
</table>

<p>| Table no.- 03 Anatomical structures seen at the site of Vitapa Marma in females:-- | | |</p>
<table>
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<tr>
<th>Sr. No.</th>
<th>Ayurvedic View</th>
<th>Modern co-relation</th>
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<tbody>
<tr>
<td>01.</td>
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<td>External oblique aponeurosis, Internal oblique muscle of abdomen</td>
</tr>
<tr>
<td>02.</td>
<td>Sira</td>
<td>Ilio-inguinal nerve</td>
</tr>
<tr>
<td>03.</td>
<td>Snayu</td>
<td>Round ligament of Uterus</td>
</tr>
<tr>
<td>04.</td>
<td>Asthi</td>
<td>Pecten pubis of Hip bone</td>
</tr>
<tr>
<td>05.</td>
<td>Sandhi</td>
<td>No direct observation regarding Sandhi was obtained</td>
</tr>
</tbody>
</table>

### 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 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 ‘VetatishabdayateIti’. 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 Dhama-ni 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, Cre- masteric 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)
REFERENCES
1. Bhaskar Govind Ghanekar, Sushrut Samhita (Sharir sthana), Chapter 6, Citation no.22, Reprint, Nov.2008, Meharchand Lachhmandas Publications, Page no. 186.
2. Kaviraj Atridev Gupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.38, Reprint, Chaukhambha Prakashan Varanasi, Page no.269.
3. Kaviraj Atridev Gupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.37, Reprint, Chaukhambha Prakashan Varanasi, Page no.268.
4. Kaviraj Atridev Gupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.38, Reprint, Chaukhambha Prakashan Varanasi, Page no.269.
5. Bhaskar Govind Ghanekar, Sushrut Samhita (Sharir sthana), Chapter 6, Citation no. 02-04 , Reprint, Meharchand Lachhmandas Publications, Page no. 183-184.
6. Kaviraj Atridev Gupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.1-2, Reprint, Chaukhambha Prakashan Varanasi, Page no.265.
7. Bhaskar Govind Ghanekar, Sushrut Samhita (Sharir sthana), Chapter 6, Citation no.14, Reprint, Nov.2008, Meharchand Lachhmandas Publications, Page no. 185.
8. Kaviraj Atridev Gupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.52-59, Reprint, Chaukhambha Prakashan Varanasi, Page no.270-271.
9. Bhaskar Govind Ghanekar, Sushrut Samhita (Sharir sthana), Chapter 6, Citation no. 23, Reprint, Meharchand Lachhmandas Publications, Page no. 186.
10. Bhaskar Govind Ghanekar, Sushrut Samhita (Sharir sthana), Chapter 6, Citation no. 02-04, Reprint, Nov.2008, Meharchand Lachhmandas Publications, Page no. 185.
11. Kaviraj Atridev Gupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.57-59, Reprint, Chaukhambha Prakashan Varanasi, Page no271.
12. Kaviraja Ambikadutta Shastri, Sushrut Samhita, Sharir sthana, Chapter 6, Citation no.07, Reprint, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 68.
13. Kaviraj Atridev Gupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.42-44, Reprint, Chaukhambha Prakashan Varanasi, Page no269.


16. KavirajaAmbikaduttaShastri, Shrutsamhita, Sharir sthana, Chapter 6, Citation no.07, Reprint, 2009, Chaukhambha Sanskrit Sanstan, Varanasi, Page no. 68.

17. KavirajAtridevGupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.42-44, Reprint, 2009, ChaukhambhaPrakashan Varanasi, Page no.269.

18. KavirajaAmbikaduttaShastri, Shrutsamhita, Sharir sthana, Chapter 6, Citation no.12-13, Reprint, 2009, Chaukhambha Sanskrit Sanstan, Varanasi, Page no.69.

19. KavirajAtridevGupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.57-59, Reprint, 2009, ChaukhambhaPrakashan Varanasi, Page no. 271.

20. KavirajaAmbikaduttaShastri, Shrutsamhita, Sharir sthana, Chapter 6, Citation no.25, Reprint, 2009, Chaukhambha Sanskrit Sanstan, Varanasi, Page no.72.

21. KavirajAtridevGupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.8, Reprint, 2009, ChaukhambhaPrakashan Varanasi, Page no. 265.

22. KavirajaAmbikaduttaShastri, Shrutsamhita, Sharir sthana, Chapter 6, Citation no.29, Reprint, 2009, Chaukhambha Sanskrit Sanstan, Varanasi, Page no.76.

23. KavirajAtridevGupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.60, Reprint, 2009, ChaukhambhaPrakashan Varanasi, Page no.271.

24. KavirajaAmbikaduttaShastri, Shrutsamhita, Sharir sthana, Chapter 6, Citation no.25, Reprint, 2009, Chaukhambha Sanskrit Sanstan, Varanasi, Page no.72.

25. KavirajAtridevGupt, Ashtang Hridayam (VidhyotiniTika), Sharirasthana chapter 4, Citation no.8, Reprint, 2009, ChaukhambhaPrakashan Varanasi, Page no. 265.

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