WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 5, 1088-1094. Review Article ISSN 2277– 7105

A CRITICAL STUDY OF *MARMA* W.S.R. TO *LOHITAKSHA MARMA* IN LOWER LIMB

Dr. Pooja Thakur*

Assistant Professor, Dept. of Rachana Sharir, Abhilashi Ayurvedic College and Research Institute, Chail Chowk, Mandi, Himachal Pradesh.

Article Received on
08 March 2021,

Revised on 29 March 2021,
Accepted on 18 April 2021

DOI: 10.20959/wjpr20215-20397

***Corresponding Author**
Dr. Pooja Thakur
Assistant Professor, Dept. of Rachana Sharir, Abhilashi Ayurvedic College and Research Institute, Chail Chowk, Mandi, Himachal Pradesh.

ABSTRACT

The word *Marma* and its application exist from the Vedic period in India. Marma is important concept of Ayurved, there are total 107 *Marma* present in the body. Injury to these *Marma* points results either death or some kind of deformity in the body. *Acharya Sushruta* and *Vagbhatta* have elaborated the concept of *Marma* in detail in *Sharir sthana* of their respective *Samhitas*. *Acharya Sushruta* solely can be accounted the marma for half of the *Shalya Chikitsa*. So, *Marmas* are the vital points which should be protected during surgeries. Out of the 107 *Marmas* (vital points), one among these is *Lohitaksha Marma* present in each limb. In the lower limb, it is present in the root of thigh. Aim of our study is to understand the anatomical structures through literature present in the site of *Lohitaksha Marma*. After collecting information from various ancient text and modern text, *Lohitaksha Marma* comes under the variety of *Vaikalyakara* resulting in paralysis of the limb. But if the injury is very severe or deep, it can also lead to death of a person because of excess blood loss. The structures present at the site of *Lohitaksha Marma* can be understood as femoral vessels and nerve, superficial inguinal lymph nodes and two muscles- psoas major and pectineus.

KEYWORDS: *Marma, Lohitaksha, Vaikalyakara Marma*.

INTRODUCTION

Knowledge of *Marmas* exists from very ancient time of *Vedas.* The First reference of *Marma* is found in *Rigveda*. Then on the progressive development of this science took place from *Saraswati* culture upto the *Samhita Kaal*. *Marma Sharir*, a unique concept described by

Sushrut Samhita solely can be accounted for half of *Shalya Chikitsa*, as these are the vital points which should be protected during surgeries. *Marma* is defined as an anatomical site where five structures i.e., *Mamsa*, *Sira*, *Snayu*, *Asthi* and *Sandhi* meet together in which particularly *Prana* stays by nature. In an individual, generally *soma*, *maruta*, *tejas* and *satva*, *raja*, *tama* along with *Aatma* stay in *Marmas*. If the *Marmas* are injured, they either can result into death or can cause various disease or deformities which are difficult to cure. Most of the *Ayurvedic Acharyas* are of the view that the total number of *Marmas* are 107 in our body (11 in each limb, 26 in trunk and 37 in region of head and neck). *Acharyas* have also classified *Marmas* into various categories. Such as *Regional Marma*, Structural dominance wise *Marma* and as per the injury effects (5 types as *Sadyopranahara*, *Kalantara pranahara*, *Vishalyaghana*, *Vaikalyakara* and *Rujakara*). Regional *Marmas* are further divided into *Urdhavjatrugat*, *Udargat*, *Shakhagat* and *Prishthagat Marma*. *Shakhagat Marmas* are 44 in numbers and *Lohitaksha Marma* is one of them.

Out of 5 types of *Marma* i.e., depending upon after-effect injury to *Marma*, the *Vaikalyakara Marmas* are the points where injury causes structural or functional deformity. They are total 44 in number. Based on prognosis of injury *Lohitaksha Marma* is explained as *Vaikalyakar Marma*. Based on constitution of *Marma*, it explained as *Sira Marma*. *Lohitaksha Marma* are total 4 in number, present one in each limb.

There is need to understand the ancient science in modern ways as in today's world, incidences of traumas in the form of road accidents, natural calamities, wars etc. have increased. The science of *Marma* is very vast. Out of all the vital points explained, a point in lower limb i.e, *Lohitaksha* is selected. Its prognosis after injury is given in the books as *Pakshavadha* (paralysis) or *Lohitakshayenmaranam* (death due to blood loss). An effort is taken to elaborate it with the help of available ancient and modern text to understand the structures present at its site and prognosis of injury to it.

MATERIAL AND METHODOLOGY

- Available literature regarding *Marmas* in *Ayurvedic* text such as *Sushruta Samhita*, *Ashtang* Hridayam etc. and modern text such as Cunningham's mannual of practical anatomy, Human anatomy by B.D. Chaurasia. Moore clinically oriented anatomy etc.

- Literature study- collection of information regarding *Lohitaksha Marma* from ancient texts like *Sushruta Samhita, Ashtang Hridyam* is done in detail. The information collected from ancient text is co-related to the modern text and conclusion is drawn.

REVIEW

Concept of *Lohitaksha Marma*

The word meaning of *Lohitakṣa* is a part of the arm or of the thigh.[1]

Location

उर्व्या ऊर्ध्वमधो वंक्षणसंधेरूरुमूले लोहिताक्षं, तत्र लोहितक्षयेण मरणं पक्षाघातो वा । (सु0शा0 6/24)

It is located above the *Urvi Marma* and below the hip joint in the *Uru Moola*.[2] In case of arm, the *Marma* is located above the *Bahvi Marma* and below the axilla, since *Bahvi* is homologus with *Urvi* and *Kaksha* is homologus to *Vankshana* in location.

ऊरुमूले लोहिताक्षं हन्ति पक्षमसृक्क्षयात् ।। (अ0हृ0शा0 4/7)

Astanga Hridayakaara explains the location is in root of the thigh.[3]

ऊरुमूले – उर्व्यास्तूर्ध्वं वक्षणसंधेरधस्ताललोहिताक्षं नाम मर्म । (अरुणदत्तः, अ0हृ0शा0 4/7)

Arunadatta explaining the location as similar to that of the explanation in *Sushruta*.

Classification

- *Sira Marma*.[4]
- *Vaikalyakara Marma*.[5]
- *Bahu Marma*[6]
- ½ *Angula Pramana*[7]
- 4 in number

Effect of injury

If injury to this *Sira Marma* occurs person may die because of loss of blood or will lead to paralysis.[8]

Another opinion is that if this *Marma* is injured the function of one side of the body will be lost due to loss of blood.[9]

Modern

Considered Site- just below the *Vankshan Sandhi* (just below the inguinal ligament)

Femoral Vein- it begins as an upwards 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. The vein is medial to the artery at the upper end, posterior to it in the middle, and lateral to it at the lower end.

Tributaries- it receives: 1). the great saphenous vein 2). Veins accompanying the three deep branches of the femoral artery in the femoral triangle, i.e., profunda, deep external pudendal, and muscular, 3). The lateral and medial circumflex femoral veins, and the descending genicular and muscular veins in the adductor canal.

Profunda femoris vein- The profunda femoris vein lies anterior to its artery, and has tributaries corresponding to the branches of the artery. Through these tributaries it connects distally with the popliteal and proximally with the inferior gluteal veins. It sometimes drains medial and lateral circumflex femoral veins. It has a valve just before it terminates.[10]

Femoral Artery- The femoral artery is a continuation of the external iliac. It begins behind the inguinal ligament, midway between the anterior superior iliac spine and the pubic symphysis, descends along the anteromedial part of the thigh in the femoral triangle, enters and passes through the adductor canal and becomes the popliteal artery as it passes through an opening in adductor magnus near the junction of the middle and distal thirds of the thigh. Its first 3 or 4 cm with its vein, in the femoral sheath. The part of the artery proximal to the origin of profunda femoris is often clinically termed the common femoral, while that distal to the profunda origin is termed the superficial femoral artery.[11]

Profunda femoris Artery (deep femoral artery) - It is a large branch that arises laterally from the femoral artery 3.5 cm distal to the inguinal ligament. At first lateral to the femoral artery, it spirals posterior to this and the femoral vein to reach the medial side of the femur. It passes between pectineus and adductor longus, then between the latter and adductor brevis, before it descends between adductor longus and adductor magnus. It pierces adductor magnus and anastomoses with the upper muscular branches of the popliteal artery. This terminal part is sometimes named the fourth perforating artery. The profunda femoris is the main supply to the adductor, extensor and flexor muscles; it also anastomoses with the terminal and external iliac arteries above and the popliteal artery below.[12]

Clinical Anatomy

Regional nerve blocks of the lower limbs[13] - Interruption of the conduction of impulses in the peripheral nerves (nerve block) may be achieved by making perineural injections of anesthetics close to the nerves whose conductivity is to be blocked. The femoral nerve can be blocked 2 cm inferior to the inguinal ligament, approximately a finger's breadth lateral to the femoral artery.

Paresthesia **(tingling, burning, and tickling)** radiates to the knee and over the medial side of the leg if the saphenous nerve is affected.

DISCUSSION

The points to be understood regarding *Lohitaksha Marma* from literature study are.

1. *Lohitaksha Marma* is above the *Urvi Marma*, below *Vankshana Sandhi* (Hip joint) at the root of thigh.
2. They are total 4 in numbers (1 in each limb).
3. It is a *Sira mmarma* (based on predominance of anatomical structure)
4. It is a *Vaikalyakara Marma* (based on prognosis of injury to it)
5. Each *Lohitaksha Marma* measures ½ *Anguli* in dimensions.

The structural study of *Lohitaksha Marma* with the help of modern text shows that there is aggregation of femoral vessels and femoral nerve along with some superficial inguinal lymph nodes and two muscles (psoas major and pectineus). Any injury to the femoral nerve leads to stoppage of conduction of nerve impulses to the muscles innervated by it, resulting in paralysis. An injury to the lymphatic system including superficial inguinal lymph nodes leads to inflammation and oedema of leg with severe pain. Any injury to the blood vessels (femoral vein and artery) can result in blood loss in greater amount ultimately leading to death of a person. When we see this site (site of *Lohitaksha Marma*) in lower extremity, we found femoral artery and femoral vein with femoral nerve. We can consider femoral vein as *Lohitaksha Sira* Any surgical intervention (e.g., TPC- Transfemoral Percutaneous Catheterization) in this region can cause femoral nerve damage. Due to femoral nerve damage, numbness or tingling of the leg, or paralysis of leg, muscle weakness and atrophy of anterior thigh muscle (quadriceps femoris, pectineus) may occur.

CONCLUSION

Lohitaksha Marma is present in the upper part of thigh 2 inches lateral to pubic symphysis. The structures that are present in the region of *Lohitaksha Marma* are- Femoral vein with tributaries, femoral artery, femoral nerve, superficial inguinal lymph nodes, two muscles- psoas major and pectineus. *Lohitaksha Marma* can be termed as *Vaikalyakara Marma* as trauma too it results into disability like paralysis or oedema of leg. But if the injury or haemorrhage is too severe and the femoral vessels are damaged and also there is uncontrolled blodd loss, then it can results in death of a person because of hypovolemic shock. Therefore, although *Lohitaksha Marma* is a *Vaikalyakara* marma but it can also leads to *Pranahara* (death) in severe injuries.

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