A literature review of Lohitaksha Marma with special reference to anatomical structure

Pooja Vitthal Chandurkar¹, G.B. Sharma²

¹Post Graduate Scholar, Dept. of Rachana Sharir, Government Ayurved College, Nagpur, Maharashtra, India.
²Professor, Dept. of Rachana Sharir, Government Ayurved College, Nagpur, Maharashtra, India.

ABSTRACT

According to Sushruta, Marma are constituted by confluence of Mansa, Sira, Snayu, Aasthi and Sandhi. They are the Sthana of Prana. According to Acharya Sushruta, Marma comprises of Jala, Vayu, Tej, Satva, Raja, Tama and Bhootatma, so that injury of Marma may lead to death. The concept of Marma is important in the clinical and surgical point of view. The science of Marma is called as half part of whole surgery. In this article an attempt is made to study the Lohitaksha Marma and its Viddha Lakshana (Traumatic effect) by considering the related literature.

Key words: Lohitaksha, Marma, Prana, Viddha

INTRODUCTION

According to some Acharyas, Marmas are defined as the anatomical places where Mansa, Sira, Snayu, Asthi, Sandhi meet together.[1] Marmas are body's vital points where prana resides, injuries to them cause death or disability in the body which is difficult to cure. Marma the word comes from Sanskrit origin word 'Mri' meaning death and the Sanskrit phrase 'Maryante Iti Marmani' also means death.[2] Marma are structurally classified as Mansa Marma, Sira Marma, Snayu Marma, Asthi Marma and Sandhi Marma according to their Rachna. All the ancient classics mentioned, total forty-one Sira Marma are present in the body in which Lohitaksha Marma is situated in the Shakha region.[3,4]

Knowledge of the Marma is described as half the knowledge of Shalyatantra (Science of surgery), as persons injured in the vital spot die immediately or suffer from unforeseen ailment which is life threatening; if anyone survives by the efficiency of the physician, is sure to suffer from deformities.

Acharya Sushruta mentioned that Lohitaksha Marma is situated in Urdhvshakha above the Bahvi Marma and below the Ansa Sandhi and in Adho Shakha above the Urvi Marma and below Vankshan Sandhi at Urumool, thus it implies that there are four Lohitaksha Marma in all four Shakha. Ashtang Sangraha, Ashtang Hridaya and Bhavprakash Samhita also mentioned the same. Injury to the Marma leads to paralysis due to blood loss.

AIM AND OBJECTIVES

1. To study the anatomical structure present in the Lohitaksha Marma.
2. To study the traumatological effect (Viddha Lakshan) of Lohitaksha Marma which results in Marana (death) due to blood loss, and Pakshaghata (paralysis).

MATERIALS AND METHODS

1. Classical texts including Sanhitas and Tikas as well.
2. The modern anatomy literature from the books like grants atlas, BD Chaurasiya, greys anatomy etc. to
study the underlying and surrounding structures around the Lohitaksha Marma.

**Review of literature**

Marmas are the sites where Pran resides. Shushrut has given a broad meaning to the word Prana, that is Soma (Kapha), Maruta (Vata), Teja (Pitta) and Manasika Dosha that is Satva, Raja and Tama are at the place of Marma. So, if the Marma gets injured all the Dosha gets vitiated. Shareera Dosha (Agni, Soma, Vayu), Manasika Dosha (Satwa, Rajah, Tamah), Bhuthatma and Panchendriyas are called as components of Prana.

The sites which are painful, tender and show unbearable throbbing pain after injury is considered as Marma.  

Description of Lohitaksha Marma is as follows:

1. Sthan Urvy Urdhva, Adho Vankshana Sandhi, Uru Mule
2. Rachana Sira Marma
3. Parinam Vaikalyakara Marma
4. Pariman Ardha Angula
5. Viddha Lakshanas Lohita-Kshaya, Maran/Pakshghat
6. Sankhya 4

Lohitaksha Marma are Sira Marma, each in Urdhav and Adho Shakha, so four in number Ardhangul Parimaan. In Urdhvshakha, it is located above Bahvi Marma and below the Ansa Sandhi. In Adho Shakha, it is located above Urvi Marma and below Vankshan Sandhi in Urumool. Injury to this Marma causes Pakshaghat or even death due to Rakta Kshaya.

**Discussion**

As described in classical texts, in Urdhwa Shakha the Marma is described to be present above the Bahavi Marma and below the Kaksha Sandhi, at the root of Bahu, this can be correlated as between the surgical neck of humerus and the shoulder joint. Here the anatomical structures present are axially artery, axillary vein and the cords and branches of brachial plexus.

**Axillary Artery**

Axillary artery is the continuation of the subclavian artery. It extends from the outer border of 1st rib to the lower border of the teres major muscle where it continues as the brachial artery. Axillary artery is divided into 3 parts by teres minor into 1st, 2nd and 3rd parts. According to location, the 3rd part of axillary artery can be more correlated.

**Branches of axillary artery**

1st part - 1. Superior thoracic artery
2nd part - 2. Thoracoacromial artery
3rd part - 4. Anterior circumflex humeral artery
5. Posterior circumflex humeral artery
6. Subscapular artery

**Axillary Vein**

The Axillary vein is the continuation of basilic vein. It lies on the medial side of the brachial artery. At the outer border of the 1st rib it becomes the subclavian vein. It receives 5 out of 6 tributaries corresponding to the branches of axillary artery and the cephalic vein. The axillary vein is joined by the venae comitantes of the brachial artery a little above the lower border of the teres major.
Nerves Associated

Branches of the brachial plexus: Axillary nerve, medial cutaneous nerve, ulnar nerve, radial nerve, median nerve. All these nerves are in relation with 3rd part of axillary artery.

Marmas are formed by congruence of 5 factors. Those as per Lohitaksha Marma are as follows

1. **Mansa** - Teres major, Latissimus dorsi, Biceps brachii, Pectoralis major and minor, Coracobrachialis.


3. **Snayu** - Median and ulnar nerve, Radial nerve.

4. **Asthi** - Humerus

5. **Sandhi** - Closer to Shoulder joint

In Adho Shakha the Marma location is described as above the Urvi Marma and below the Vankshana Sandhi, at the root of the Uru. This can be corelated anatomically as between the hip joint and the neck shaft angle of femur where structure called femoral triangle lies. The important anatomical structures located here are femoral artery, femoral vein and femoral nerve. Uru Moola can be understood in terms of either, inguinal fold or angle between the neck and shaft of the femur.

**Femoral Triangle**

It is a triangular depression on the front of upper one-third of thigh.

**Boundaries**

Laterally - by medial border of sartorius

Medially - by medial border of adductor longus

Base - is formed by Inguinal ligament

Roof - by skin, superficial fascia, deep fascia

Floor - Iliacus, Psoas major, Pectineus and Adductor longus muscles

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2. Femoral artery is quite superficial in the femoral triangle. Injury to this vessel and its branches will result into fatal haemorrhage.

3. Femoral vein and its tributaries- The femoral vein accompanies the femoral artery. The vein is medial to the artery at base of triangle, but posteromedial to artery at the apex.

4. The femoral vein receives the great saphenous vein, circumflex veins and veins corresponding to the branches of femoral artery.

5. Nerves - a) Femoral nerve, b) nerve to the pectineus, c) femoral branch of genitofemoral nerve, d) lateral cutaneous nerve of thigh.

6. Deep inguinal lymph nodes and 5. Femoral sheath

**Marmas** are formed by congruence of 5 factors. Those as per Lohitaksha Marma in lower limb are as follows;

1. **Mansa** - Pectineus, Adductor longus, Psoas major, Iliacus

2. **Sira** - Femoral artery and its branches
3. Snayu - Femoral nerve, nerve to the pectineus, femoral branch of genitofemoral nerve, lateral cutaneous nerve of thigh.

4. Asthi - Femur

5. Sandhi - Closer to hip joint

As these locations seems to be highly vascular and also shows involvement of nerves, can be concluded that the injury to these structures can lead to loss of blood and ultimately can lead to the deformities or paralysis of limbs.

According to commentator of Sushruta Samhita Dr. Ghanekar, at the place of Lohitaksha Marma following structures are involved in Urdhvashakha - axillary vessels and axillary nerve of upper limb and in Adhoshakha - femoral vessels and femoral nerve. Injury to Lohitaksha Marma of upper limb causes Pakshaghat and Bahushosh. Injury to Lohitaksha Marma of lower limb causes Pakshaghat and Sakthishosh.[13]

Also, the injury effect of Lohitaksha Marma is mentioned as there will be Marana due to Rakta Kshaya. As the structures have large arteries associated it can be explained and concluded that injury to these can cause death.

The term Lohitaksha is made of Lohita + Aksha. These terms can be explained as Lohita has correspondence with Rakta and ‘Aksha’ is derived from ‘Kshee Dhatu’ i.e., Ksheeksheyate ‘Kshaya’ is an equivalent to the injury effects (Upasarga) of the Lohitaksha Marma. The consequences of injury to the structures associated with Lohitaksha Marma seem to be equivalent to the injury effects (Viddha Lakshan) of the Lohitaksha Marma mentioned in the texts.

CONCLUSION

Lohitaksha Marma is considered as Sira Marma and Vaikalyakar Marma. According to the explained structures, in upper limb the structures associated with the Marma are the axillary artery, axillary vein and chords and branches (median, ulnar, radial nerves) of the brachial plexus and in lower limb the structures are femoral artery, femoral vein and femoral nerve. These are the large and chief vessels and nerves of limb; hence these structures can cause severe blood loss on injury leading to the paralysis and death which are the mentioned Viddhalakshanas of Lohitaksha Marma. The consequences of injury to the structures associated with Lohitaksha Marma seem to be equivalent to the injury effects (Viddha Lakshan) of the Lohitaksha Marma mentioned in the texts.

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