

ANATOMICAL EXPLORATION OF LOHITAKSHA MARMA OF URDHWA SHAKHA

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ABSTRACT

Concept of *Marma* is well explained in *Ayurveda*. There are 107 *Marma* points present in our body which are the vital areas in our body. *Acharya Sushruta* has been said that while performing any surgical procedures these vital points should be avoided as a little injury results in fatal consequences. *Acharya Sushruta* and *Vagbhata* have explained about *Marma* in detail in *Sharir Sthana*. They have classified *Marmas* based on Structural composition, regional, effect of injury and measurements. Each and every *Marma* has its own structural and clinical importance according their location and structures involved within. *Lohitaksha Marma* is present in both the extremities and it is classified under *Vikalyakara Marma*, *Sira Marma* and *Ardha Angula* in *Pramana*. Injury to this *Marma* causes *Pakshaghata* (paralysis) or even *Marana* (death) due to *Lohitakhsaya* (blood loss). During surgical procedure to withhold the importance of these vital areas one must have gross knowledge regarding specific *Marma* and its anatomical aspect. Present research work is an attempt to study the *Lohitaksha Marma* of upper extremity to know its anatomical position, structures present in that region and fate of injury on that region.

KEYWORDS: *Marma*, *Vaikalyakara Marma*, *Lohitaksha Marma*, *Pakshaghata*.

INTRODUCTION

Marma is one of the unique and important topics discussed in *Ayurveda*. It is important from surgical point of view, hence called as *Shalya Vishyardha*. Injury over these vital points results in fatal consequences like death, hence to perform surgical procedures knowledge of these Vital points is essential. *Acharaya Charaka*, *Sushruta* and *Vagbhata* have explained 107 *Marmas* in our body. *Acharya Charaka* has explained *Trimarma* (*Hridaya*, *Shiras* and *Basti*) in detail among 107 *Marmas* from treatment point of view. *Acharya Vagbhata* has explained 9 *Dhamani Marma*, apart from *Acharya Sushruta*. *Marmas* are the conglomeration points of *Mamsa*, *Sira*, *Snayu*, *Asthi* and *Sandhi* and *Pranas* are naturally present in it.^[1] Hence a trauma to anyone of these *Marmas* hampers the activity of the body depending upon the peculiarity of that particular *Marma*. *Acharya Dalhana* defined *Marmas* are such points which leads to death.^[2] *Acharya Charaka* has not defined the word *Marma* but has explained that *Marmas* are such points where the sense of pain will be felt more intensely compared to other parts Of the body.^[3]

Lohitaksha Marma which is present in both the extremities, is classified under *Vaikalyakara Marma*^[4] based on the results of the injuries on this *Marma*. It is a *Sira Marma*^[5] and is *Ardha Angula*^[6] in *Pramana*. The classical description about its location in lower limb is

explained as, it is located Above *Urvi Marma*, below *Vankshana Sandhi* and *Uru moola*.^[7] *Acharya Sushruta* said that corresponding site to be taken for its location in the upper extremity.^[8] Hence *Lohitaksha Marma* is located above *Urvi Marma* of upper extremity, below *Kaksha Sandhi* and *Bahumoola*. The *Viddha Lakshanas* are *Marana* (death) due to *Lohitakshaya* (blood loss) and *Pakshaghata* (paralysis).^[9]

Anatomical features of *Lohitaksha Marma* in upper limb

Considering its location as mentioned above the location of *Lohitaksha Marma* can be approximated at the centre of the axilla. The axilla is a pyramidal region between the upper thoracic wall and the arm. Its blunt apex continues into the root of the neck (cervico-axillary canal) between the external border of the first rib, superior border of the scapula, posterior surface of the clavicle and the medial aspect of the coracoid process. Its base, which is virtual, can be imagined as facing downwards: it is broad at the chest and narrow at the arm, and corresponds to the skin and a thick layer of axillary fascia between the inferior borders of pectoralis major anteriorly and latissimus dorsi posteriorly. It is convex upwards, conforming to the concavity of the armpit. Anterior wall is formed by the pectoralis major and minor. posterior wall is formed by subscapularis above, teres major and latissimus dorsi below. Medial

wall by first four ribs with their intercostal muscles and upper part of serratus anterior. Laterally anterior and posterior walls converge, very narrow, consisting of the humeral intertubercular sulcus, the lateral angle lodges the coracobrachialis and biceps.^[10]

Main Contents of the axilla

The axilla contains

1. Axillary vessels, The subclavian artery in the neck becomes the axillary artery at the lateral margin of rib I and passes through the axilla, becoming the brachial artery at the inferior margin of the teres major muscle.
2. Infraclavicular part of the brachial plexus and its branches. The brachial plexus is a somatic plexus formed by the anterior rami of C5 to C8 and most of the anterior ramus of T1 (Fig. 7.51). It originates in the neck, passes laterally and inferiorly over rib I, and enters the axilla.
3. The long thoracic and intercostobrachial nerves
4. Five groups of axillary lymph nodes and the associated lymphatics.
5. Axillary fat, loose adipose areolar tissue and in many instances, the 'axillary tail' of the breast.

The axillary vessels and brachial plexus run from the apex to the base along the lateral wall, nearer to the anterior wall.^[11]

Relation of the brachial plexus to the axillary artery

The pectoralis minor muscle crosses it and divides it into 3 parts. First part proximal to the muscle, second part posterior to the muscle, third part distal to the muscle.

First part: The artery with cords of brachial plexus is enclosed in axillary sheath, laterally-lateral and posterior cord, posteriorly –medial cord.

Second part: the three cords are placed according to their names.

Laterally-lateral cord, medially –medial cord, posteriorly- posterior cord.

Third part: laterally- musculocutaneous nerve in the upper part and median nerve in lower part. Medially-medial cutaneous nerve of forearm, ulnar nerve, axillary vein in the order from lateral to medial side.^[12]

Applied anatomy of Axilla

1. Except for the popliteal, the axillary artery is more frequently lacerated by violence than any other, being most susceptible when diseased.
2. It has been ruptured in attempts to reduce old dislocations, especially when the artery is adherent to the articular capsule.^[13]
3. The brachial plexus may be injured in falls on the side of the head and shoulder, nerves in the plexus being violently stretched, its upper trunk sustains the greatest injury and paralysis may be confined to

muscles supplied by fifth cervical ramus: deltoid, biceps, brachialis and brachioradialis. The arm typically hangs in medial rotation, with the forearm extended and pronated. It cannot be abducted, flexion of the elbow and supination of the forearm are lost. This is Erb's paralysis.

4. A Second variety is Klumpke's paralysis, in which C8 and T1 are injured, before or after they join to form lower trunk. Paralysis mainly affects the intrinsic muscles of the hand and the flexors of the wrist and fingers.
5. The plexus is often damaged in the axilla by pressure of a crutch, producing crutch paralysis, in which the radial is most frequently implicated followed by ulnar.
6. The median and radial nerves often suffer 'sleep palsies', paralysis due to pressure during alcoholic or narcotic stupor.

The axillary nerve in its course round the surgical neck of the humerus, is liable to injury in fractures and dislocations, paralysis of the deltoid and anaesthesia of the skin over the lower part of the muscle result. Effective abduction of the arm is impossible.^[14]

DISCUSSION

Entire body gets nourished by *Sira*. So it is included in *Marma*. Whenever they are injured, *Rakta Kshaya* leads to *Vata Vriddhi* producing severe pain and may lead to death. *Kaksha Sandhi* denotes Shoulder joint and *Bahumoola* can be understood in terms of axilla, whose apex is directed towards the root of the neck. Here shoulder joint is referred as a link which connects the arm with the thorax. On the basis of above description the location of *Lohitaksha Marma* can be located at the centre of the axilla i.e. at the inferior part of the lateral wall of the axilla. The injury over this *Marma* leads to *Pakshaghata* (paralysis) and *Marana* (death) due to *Lohitakashaya* (blood loss). The axillary vessels and nerve are the representative of *Lohitaksha Marma* in axilla. There also axillary artery, the axillary vein and cords of brachial plexus, which can be damaged due to *Marmaghata*. In axilla close relationship of cords of brachial plexus with axillary vessels are important to understand the *Viddha Lakshanas* of this *Marma*. Injury to the axillary artery may cause severe hemorrhage. The artery can be effectively compressed against the humerus in lower part at the lateral level of movements. Occasionally it is ruptured during the reduction of an old dislocation of shoulder. This may cause severe hemorrhage leading to hypovolemic shock and death. In axilla the roots coming out from C5, C6, C7, C8 and T1 contribute in the formation of brachial plexus. These roots join to form trunks. Each trunk divides into ventral and dorsal divisions. These divisions join to form three cords which are medial, lateral and posterior cords. The different branches of these cords supply the muscles of the upper limb. Injury to the roots, trunk and cord of the brachial plexus may produce characteristic defects. The

applied anatomy of Axilla also seems to resemble the *Viddha Lakshanas of Lohitaksha Marma*.

CONCLUSION

The anatomical position of *Lohitaksha Marma* of upper extremity is Present at the inferior part of the lateral wall of axilla. The following structures are present in that vicinity.

1. Axillary vessels.
2. Infraclavicular part of the brachial plexus and its branches.
3. The long thoracic and intercostobrachial nerves.
4. Five groups of axillary lymph nodes and the associated lymphatics.
5. Axillary fat, loose adipose areolar tissue and in many instances, the 'axillary tail' of the breast.

Depending upon the dominance of anatomical structure present in that site, it termed as *Sira Marma*. It is classified under *Vaikalyakara Marma* as it leads to disability like Paralysis. But if the injury is very deep it can also lead to death due to severe blood loss even though it is *Vaikalyakara Marma*.

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