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Lohitaksha Marma and Its Functional Relevance in the Lower Limb: A Review Approach

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ABSTRACT

Marma s are vital areas of the body on which if any injury occurs may lead to *Marana* (Death) or *Marana sadrishya Dukha*. As per the description given by Sushruta Samhita, *Lohitaksha Marma* (vital point near to the femoral triangle) is situated in between the *Urvi Marma* (vital point in middle of thigh) and *Vankshana Sandhi* (hip joint). The contents of the femoral triangle are femoral artery and its branches, femoral vein and its tributaries; femoral sheath encloses the upper 4 cm of the femoral vessels, femoral nerve and its branches, deep inguinal lymph nodes. Both Sushruta and Vagbhata have stated its location at *Uroomula* (Root of Hip). The injury effects of *Lohitaksha Marma* leading to *Lohita Kshaya* (blood loss), *Marana* (death) and *Pakshaghata* (paralysis). Therefore the regional and applied Anatomy of *Lohitaksha Marma* is important for the Physician and Surgeon.

Keywords: *Lohitaksha Marma (vital point near to the femoral triangle), Femoral artery and vein, Hip joint, Femoral nerve, Deep inguinal lymph nodes.*

1. INTRODUCTION

Marma science is part of Vedic science. Aacharya Charaka has identified 107 *Marma* s but only *TriMarma*(*Shira*, *Hridaya* and *Basti*) are emphasized by him. However Aacharya Sushruta has described 107 *Marma* s in view of traumatology. *Marma* s (vital point) are the seat of *Prana* (life). *Soma, Maruta, Teja, Satva, Raja, Tama* and *Bhutama* resides in *Marma* sthana. *Marma* is constituted by confluence of *Mamsa* (muscle), *Sira* (vein), *Snayu* (ligament), *Asthi* (bone) and *Sandhi* (joint). Injury to these leads to various effects from death to permanent deformity.

Aacharya Sushruta explained that there are 107 *Marma* s in the body and are classified according to the region wise and effect wise etc.

Marma Classification:

1. *Marma* classification as per Regional Anatomy (*Shadangatvama*)

a) *Shakhagata Marma* (Upper and Lower limbs) 11X4-44 No.

b) *Madhyamanga Marma* (Trunk) 26 No. (12 in *udaro uraso* and 14 in *prishtha*)

c) *Jatru urdhvaMarma* (Head and Neck) 37 No.

2. *Marma* classification (*Parinamanusara*) as per Effect

a) *Sadyaha pranaharaMarma* 19 No.

b) *Kalantara pranahara Marma* 33 No.

c) *Vishalyaghna Marma* 03 No.

d) *Vaikalyakara Marma* 44 No.

e) *RujakaraMarma* 08 No.

3. *Marma* classification as per structural wise (*Rachananusara*)

a) *Mamsa Marma* 11 No

b) *Sira Marma* 41 No

c) *Snayu Marma* 27 No

d) *AsthiMarma* 08 No

e) *Sandhi Marma* 20 No

f) *Dhamani Marma* (By Aacharya Vagbhata) (No. 9)

As per classical description *Lohitaksha Marma* is *Vaikalyakara Marma* (leading to deformity) and *Sira Marma* (vital point)1 situated in both the limbs. This *Marma* is located proximal to *Urvi Marma* (vital point of middle of thigh) near the root of the Uru (thigh) but distal to the *Vankshana Sandhi* (hip joint) in case of lower limb.[1, 2]

On injury it leads to death due to excess *Lohita Kshaya* (blood loss) and *Pakshaghata* (paralysis).[3]

Objectives of the Study: To determine the location, structural composition and traumatic effect of *Lohitaksha Marma* (vital point near to the femoral triangle) in relation to lower limb.

2. MATERIALS AND METHODS

Literary works, books, journals including published ones related to the subject was reviewed and related information's were correlated and analysed scientifically. The observations then corelated with Ayurvedic and contemporary views.

Anatomical Features of the Area around the *Lohitaksha Marma* of Lower Limb: By considering the classical description it is understood in gross that the *Lohitaksha Marma* (vital point near to the femoral triangle) is seen in the femoral triangle in relation to lower limb. The roof of the femoral triangle is formed by the skin, the superficial fascia containing the superficial inguinal lymph nodes, the femoral branch of genito femoral nerve, branches of the ilio inguinal nerve, superficial branches of the femoral artery with accompanying veins and the upper part of the great saphenous vein, deep fascia with saphenous opening and the cribriform fascia.

Floor of the triangle is formed medially by the adductor longus and pectinus and laterally by the iliacus and psoas major.

The contents of the femoral triangle are femoral artery and its branches, femoral vein and its tributaries; femoral sheath encloses the upper 4 cm of the femoral vessels, femoral nerve (lies lateral to the femoral artery, outside the femoral sheath, in the groove between the iliacus and psoas major muscle) and its branches, deep inguinal lymph nodes.[4]

Observation: In the lower limb (anterior aspect of proximal part of thigh); deep to the skin the superficial fascia, superficial group of lymph nodes, deep fascia, femoral sheath, femoral nerve, femoral artery and its branches, femoral vein and its tributaries are observed.

3. DISCUSSION

The *Sira* (vein) which nourish the entire body, are seated in *Marma*, so when they are injured there will be *Kshaya* of *Dhatus* (depletion of tissues) due to excessive blood loss, by that Vata get aggravated produces severe pain and may lead into death. *Vankshana Sandhi* (hip joint) is to be correlated to the hip joint. Uru Moola (root of hip) can be understood in terms of either inguinal fold or angle between the neck and shaft of the femur because head of the femur is involved in the articulation of hip joint. Hip joint is laying 1.2 cm below the inguinal ligament[5] and just below the joint there is angulation between neck and shaft of femur. On the basis of these features and classical description the location of *Marma* can be exacted between hip joint and neck- shaft angle of femur.

This *Marma* (vital point) belongs *Sira* (vein). On the basis of literature study it revealed that *Lohitaksha Marma* point near to the femoral trianglries mainly composed femoral artery and branches, vein and tributaries along the femoral as above.

Precisely speaking one cm half *angula*) area the emerging point profunda femoral ascertained as seat this. There four *Avedhya Sira* does not punctured namely *Jaaladhara* (and present in each limb.6 *Lohitaksha Sira* profunda femoris veinmay seated in vicinity this *Marma* Injury to lead disability death.

The *Lohitaksha Marma* has got half *Angula* dimension. The measurement of one *Angula* is equal to around 2 cm.[7]

On the basis of classical description and practical observation it is revealed that part of femoral artery with the emerging point of profunda femoris branch, accompanying veins and femoral nerve are coming within the circumference of half *Angula*.

The injury effect of *Lohitaksha Marma* is *Marana* and *Pakshaghata* (paralysis) or Saktisada (pain in thigh) due to *Rakta Kshaya* (blood loss) *Rakta* (blood) is considered as one among the *Dasha Pranayatana* (ten life receding).[8]

The *Rakta* (blood) nourishes the succeeding *Dhatu* (tissue). So loss of *Rakta* (blood loss) will lead to death. Even though the *Lohitaksha Marma* (vital point in the near to femoral triangle) is the Vaikalyakara *Marma* (vital points of deformity), but its *Viddha Lakshana* (symptoms of injury) giving rise to *Marana* (death). Vascular injuries of the extremities remain a major cause of limb amputation and death, if not treated early and properly,[9] severe haemorrhage from any of the major vessels will lead to the haemorrhagic shock. Femoral vessels are among the most commonly injured vascular structures and comprise nearly 70% of all arterial traumas. Most are the result of penetrating injuries; particularly gunshot wounds.[10]

The meaning of the *Marana* can be understood in the following way:

Localized ischemia due to the lack of the blood supply can be understood as *Marana*.

Lower limb arterial Injury carries a high amputation rate. Stab injuries are the least likely to lead to amputations, whereas high velocity firearm injuries are the most likely to do so. The most significant independent risk factor for limb loss is failed revascularization."[11]

The severe haemorrhage may cause hypovolemic shock and then later it may lead to death. Sometimes the veins are injured then there is a possibility of the entry of the air into the venous circulation causing air embolism which may lead into death of the person. The thrombus may dislodge from the veins of the limb and it will go to the lungs causing pulmonary embolism.

The vessels in femoral region are considerably large in size and pressure in the artery is high as blood flows towards gravity, any stab or gunshot injury will lead to serious or fatal haemorrhage. Major venous hypertension may indicate venous occlusion by hematoma or thrombosis or acute arterio-venous fistula. These are fatal condition when there is involvement of femoral vessels. In a case report of the gunshot injury of the femoral artery, the patient died due to massive haemorrhage. The surgeons who treated the case opined that rapid blood loss can prevent oxygen from reaching the brain and vital organs, leading to death. [12]

The other *Viddha Lakshana* (symptoms of injury) is *Pakshaghata* (paralysis). The *Pakshaghata* (paralysis) can be considered as the paralyzed part. The *Pakshaghata* (paralysis) may be due to the ischemia, where there is a chance of paralysis of that particular limb, due to haemorrhage. The early symptoms of the limb are ischemia pain, muscle tenderness, sensory and motor loss. Due to acute ischemia there will be pain, pallor, pulse less, parasthesia and paralysis. [13]

4. CONCLUSION

The *Lohitaksha Marma* (vital point near to the femoral triangle) is situated above the *Urvi Marma* (vital point in the middle of thigh) and below the *Vankshana Sandhi* (hip joint). The Uru Moola (root of hip) is considered as between the hip joint and neck shaft angle of the femur. The 1 cm circumference on the femoral artery and vein where there is origin of the profunda femoris branch from the artery and entry of great saphenous vein to the femoral vein is the exact location of the Lohitaksha *Marma*.

The *Pakshaghata* (paralysis) is considered as pertaining to that particular limb which is injured, caused due to increased blood loss leading into ischemia and paralysis or due to the injury of the surrounding nerves.

Marana is considered in three ways i.e., localized death of the tissues due to ischemia or death of a person due to emboli /thrombus dislodged from the site of *Marma* causing pulmonary embolism and also due to excessive loss of blood causing shock or severe pain causing *Marana Sadrishya Dukha* (severe pain).

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