

## ***A CRITICAL REVIEW ON CONTEMPORARY ASPECT OF KURCHA SHARIR***

**Govind Malik<sup>1</sup>, Mannat Marwaha<sup>2</sup>**

<sup>1</sup>Assistant Professor, Department of Sharira Rachna, Uttaranchal Ayurvedic College (U.A.C), Rajpur, Dehradun, Uttarakhand, India.

<sup>2</sup>Assistant Professor, Department of Swasthvritta, U.A.C., Rajpur, Dehradun, Uttarakhand, India.

**Email:** [dr.govindmalik@gmail.com](mailto:dr.govindmalik@gmail.com)

### ABSTRACT

*Marma* science and therapy is an untouched chapter of Indian Surgery & Anatomy. With the exploration of *Marma* science the whole scenario of Indian Surgery may change in multidimensional approaches. Among the hidden science of India, *Marma* science is the most important. Before explaining *Marma* in chapter named "*Pratyekamarmanirdeshyam*", *Acharya Sushruta* has explained "*Sharira-sankhyavyakarana*" which comprises "*Kurcha*" (aponeurosis) as one of the important part of body. The human body is the basis of all types of activities. *Sharir*, which is a branch of Ayurveda, is no exception to this truth. The work of *Acharya Sushruta* (the father of surgery) in his famous treatise *Sushruta Samhita* is indeed remarkable. The significance of the *Sharirsthana* in explaining the anatomy of human body still remains note worthy. There are mainly three references available regarding *Kurchashareera* in *Sushruta Samhita Shareersthana*, *Ashtanga Samgrah*, and *Bhavaprakashaprathamkhanda*. According to their opinion *KURCHAS* are six in numbers- they are found in *Hastha*, *Pada*, *Greeva* and *Medhra*. They are two each in *Hasta* and *Pada*; while one each in *Greeva* and *Medhra*. In dictionaries we find various word meanings related to *Kurcha*. Such as A bunch of anything; a bundle, a handful of *Kusa* grass, A peacock's feather, etc. In *Susruta Samhita* it is mentioned as *Kunchika*, *Kunchala* means brush like structure. This study is an attempt to create a bridge of understanding between concept of Ayurvedic *Kurcha* and modern anatomical structure resembling it with the help of Ayurvedic literature and from anatomical, physiological and clinical point of view.

**Keywords:** *Marma*, *Kurcha*, *Kurchashira*, Palmar – Planter Aponeurosis.

### INTRODUCTION

*Ayurveda* is a well known Indian system of medicine. It is not just a Life Science, but it is a treasure of knowledge. Although it is very much old by the time frame, its principles are

applicable even today as like before. *Sharir*, which is a branch of *Ayurved*, is no exception to this truth. The work of *Sushruta* (the father of surgery), in his famous treatise *Sushruta Samhi-*

ta is indeed remarkable. The significance of the *Sharirsthana* in explaining the anatomy of human body still remains note worthy. The knowledge of Anatomy is essential for the benefit of the body itself, as this knowledge gives the sight for treatment. An expert physician craves for the knowledge of Anatomy. The knowledge of anatomy deals with the information regarding different parts of the body.

For the appropriate knowledge of *Ayurved*, it is necessary to know the exact meaning of the words/ terminologies that are used to describe any fundamental Concept. Similarly, this rule may be applied to every concept of *Sharir*, because the words in *Ayurveda* and *Sanskrit* have wide meanings in it and it may not match with the contemporary texts. The present study is an attempt to create a bridge of understanding between concept of *Ayurvedic Kurcha* and modern anatomical structure resembling it with the help of *Ayurvedic* literature and from anatomical, physiological and clinical point of view.

### AIMS AND OBJECTIVE

1. To explore various views and exact meaning of *Kurcha* in classical texts.
2. To find similar and different views in classical texts & compare them.
3. To find correlated structures as per modern texts and confirm them.

### MATERIALS AND METHODS

A thorough literary review of *Ayurvedic* as well as modern texts was carried out by compiling the references related to *Kurcha*. It was carried out, concentrating on the following materials

### DETAIL DESCRIPTION OF THE TERMS IN THE REFERENCES OF “KURCHA SHARIRA”

The important terminologies used in the context of “*Kurcha*” are elaborated in relation to its *Vyutpatti* (formation of the words), *Nirukti* (meaning of the word), and its translation in the terminology of the modern science.

There are mainly three references available regarding *Kurchashareer* in *Sushruta a Shareersthana*<sup>1</sup>, *Ashtang Samgrah*<sup>2</sup>, and *Bhava-prakasha Prathamkhanda*<sup>3</sup>. According to their opinion *KURCHAS* are six in numbers- they are found in *Hastha*, *Pada*, *Greeva* and *Medhra*. They are two each in *Hasta* and *Pada*; while one each in *Greeva* and *Medhra*<sup>4</sup>.

In dictionaries we find various word meanings related to *Kurcha*. Such as a bunch of anything; a bundle, a handful of *Kusa* grass, a peacock’s feather, etc<sup>5</sup>. In *Susruta Samhita* it is mentioned as *Kunchika* means brush like structure, *Kunchala*<sup>6</sup>. According to *Charak*, in *Chikitsasthan*, used a word ‘*Shstra*’ for ‘*Kurch*’<sup>6</sup>. In *Asthanghridaya*, word *Kurcha* is used for suchi (needle) i.e. it meaning become sharp-ended needle<sup>7</sup>. One of the important reference given by *Sushruta* where number of *Kurchas* in human body are mentioned as six which are having brush like structures. In relation to the *Kurcha Sharira*, two *Marmas* are mentioned<sup>8</sup>-

- *Kurcha Marma* (Region in between the two eyebrows.)
- *Kurcha-Shira Marma* (The upper part of *Kurcha*)

### STRUCTURE CORRELATED WITH KURCHA IN ‘HAND’

**The palmar aponeurosis:**

This strong, well-defined triangular part of the deep fascia of the hand covers the soft tissues and overlies the long flexor tendons of the palm. The proximal end of the palmar aponeurosis is continuous with the flexor retinaculum and the tendon of the palmaris longus muscle. The distal end of the aponeurosis divides at the roots of the digits into four longitudinal bands. Each band is attached to the base of the proximal phalanx and is fused with the fibrous digital sheath<sup>9</sup>.

#### **Applied Anatomical Aspects:**

Dupuytren's disease (contracture) is a progressive condition of uncertain etiology resulting from fibrous contracture of the palmar aponeurosis where the little and ring fingers are especially affected.

#### **STRUCTURE CORRELATED WITH KURCHA IN 'FOOT'**

##### **The plantar aponeurosis:**

The central part of the plantar fascia is greatly thickened to form the plantar aponeurosis. It consists of a strong, thick central part and weaker and thinner medial and lateral portions. The plantar aponeurosis, which covers the whole of the sole, consists of longitudinally arranged bands of dense fibrous connective tissue. It arises posteriorly from the tuber calcanei and fans out over the sole, where it becomes broader and somewhat thinner. The plantar aponeurosis divides into five bands that split to enclose the digital tendons. They are attached to the margins of the fibrous digital sheaths and to the sesamoids of the great toe. From the margins of the central part of the plantar aponeurosis, vertical septa extend deeply to form three compartments of the sole of the foot: a medial compartment, a

lateral compartment, and a central compartment<sup>10</sup>.

#### **Applied Anatomy Aspects:**

Palpation of the dorsalispedis pulse is essential, particularly in suspected cases of intermittent claudication (cramps in the calf brought on by exercise and relieved by rest). The dorsalispedis pulse can usually be felt on the dorsum of the foot, where the artery passes over the navicular and cuneiform bones just lateral to the extensor hallucis longus tendon. It may also be felt distal to this at the proximal end of the first interosseous space. A diminished or absent dorsalispedis pulse suggests arterial insufficiency. In 14% of people the dorsalispedis artery is absent or is too small to palpate, or it may not be in its usual position. Consequently, failure to detect a dorsalispedis pulse does not always indicate the presence of arteriosclerotic disease.

#### **STRUCTURE CORRELATED WITH KURCHA IN 'NECK'**

##### **Ligamentum nuchae:**

The ligamentum nuchae is a bilaminar fibroelastic intermuscular septum which is often considered homologous with, but structurally distinct from, the supraspinous and interspinous ligaments in the neck. Its dense bilateral fibroelastic laminae are blended at its posterior free border. This border is superficial and extends from the external occipital protuberance to the spine of C7. The fibroelastic laminae are attached to the median part of the external occipital crest, the posterior tubercle of C1 and the medial aspects of the bifid spine of cervical vertebrae as a septum for the bilateral attachment of cervical muscles and their sheaths. There is also a midline attachment to the posterior spinal dura at atlanto-occipital and atlanto-axial levels (Dean and Mitchell 20020). In bipeds the liga-

mentum nuchae is the reduced representative of a much thicker. Complex elastic ligament which in quadrupeds aids suspension of the head and controls its flexion<sup>11</sup>.

#### **Applied Anatomy Aspects:**

The *ligamentum nuchae* is that well-developed portion of the supraspinous ligament in the cervical region. It runs from the external occipital protuberance along the tips of the spinous processes of the cervical vertebrae, to the tip of the spinous process of the vertebra prominens (usually C7). The supraspinous ligament can be considered the superficial continuation of the interspinous ligament. This latter ligament runs between the adjacent vertebrae extending from the base to the tip of each spinous process. The *ligamentum nuchae* is formed primarily from the aponeurotic attachments of the adjacent and subjacent musculature. From superficial to deep, these muscles are the trapezius; *rhomboideus minor*; *splenius capitis*; and the serratus posterior superior. Fibrous attachments between the *ligamentum nuchae* and the spinal dura - between the occiput and C1, and between C1 and C2. They found attachments to the *ligamentum flavum* and the spinal dura between C2 and C3. These were not as prominent as the attachments at superior levels. They did not find any direct connections between the spinal dura and the *rectus capitis posterior minor* (RCPM), as had been previously reported. This thin membrane runs from the posterior margin of the *foramen magnum* to the upper border of the posterior arch of C1. It is interesting to note that although most of the cranial dura are innervated by the trigeminal nerve (CNV), the infratentorial portion (the portion inferior to the cerebellar tent) is innervated by upper cervical nerves. The cranial dura is com-

prised of two layers: the outer or endosteal layer, and the inner or meningeal layer. These two layers are contiguous throughout most of the cranial cavities, except where they part to allow for the formation of the dural sinuses. The outer layer also ends at its attachment around the foramen magnum. However, at this latter point, the inner layer continues through the foramen magnum to become the spinal dura. The periosteum of the vertebral canal is the equivalent of the outer layer of cranial dura. In summary, we see several cervical elements associated with the cranial dura mater by their connection to the spinal dura. The *ligamentum nuchae* directly attaches to the spinal dura, as does the *ligamentum flavum*, to a lesser degree. The upper cervical nerves serve the sensory innervation of both the cervical spinal dura and the cranial dura in the posterior cranial fossa. These same nerves supply the sensory elements of the muscles of the deep back and skin over the back. Although the trapezius is innervated by the accessory nerve, its sensory innervations derives from the upper cervical nerves.

A therapist could spend quite some time on the back of a client's neck, and achieve results well-worth the time spent.

#### **STRUCTURE CORRELATED WITH KURCHA IN 'PUBIC REGION'**

##### **Suspensory ligaments of penis:**

The body of the penis is supported by two ligaments, the fundiform and triangular ligaments, which are continuous with is fascia and consist largely of elastin fibers. The fundiform ligament, stems from the lowest part of the linea Alba, and splits into two lamellae which skirt the penis and unite below with the scrotal septum. The triangular suspensory ligament, deep to the fundiform ligament, is attached

above to the front of the pubic symphysis, and blends below, on each side, with the fascia penis. But, the above two structures do not seem or appear to be more of a brush-like, as that in *Hasta* and *Pada* regions. Though, *Sushruta* may have come across these structures by his ancient methodology of dissection and noticed their appearance as “*Kunchi*” thus naming them- “*Kurchas*”. The ancient methodology of dissection (i.e.) was quite different and the instruments used were unique from that of today’s era. Also, at the *Medhra Pradesha* (penile region), it is described that it has *Dhamani Sannipata*, which may be compared with the arterial structures that run across the penile region, seeming to be brush-like<sup>12</sup>.

#### Applied Anatomy Aspects:

In males, the suspensory ligament of the penis is attached to the pubic symphysis, which holds the penis close to the pubic bone and supports it when erect. Surgically cutting this ligament allows more of the penis to hang outside the body, thereby increasing its length. The ligament is then encouraged to heal in an extended state, promoting a longer penis overall. Until this ligament is properly healed, the penis cannot achieve a high angle of erection when engorged. At the base of the body of the penis, identify the fundiform ligament of the penis. This ligament is derived from the membranous Scarpa's fascia of the anterior abdominal wall. The fundiform ligament of the penis extends from the linea Alba to the penis and surrounds it laterally and it ends in the scrotal septum. The fundiform ligament supports the penis in a sling-like fashion. Deep to the fundiform ligament - identify the suspensory ligament of the penis. This short, strong ligament that arises from the anterior surface of the pubic symphysis

attaches to the deep fascia (Buck's fascia) of the penis.

#### DISCUSSION

According to Ayurvedic literature, the study of human cadaver has two major aims:

1. *Sharir Vichaya*- Dissection.
2. *Sharir Shodhana*- To explore or search.

One is supposed to do this by keeping in mind that the purpose is only for “*Sharir-Upakarartha*”. Here, a term “*Kurcha*” from *Sushruta's Sharir Sthana* is explored and been tried to elaborate. It is a subject of *Sandigdha* and *Upaman Sharir*.

With the reference to *Kurcha Sharira*, there are three commentaries- one by *Dalhana* and the other by *Haranachandra* and *Indu*. First let us see the commentary by *Dalhana*, regarding “*Kurcha*”. *Kurchas* are six in number. They are like *Kurcha* (brush-like appearance). *Kurcha*, the name itself, explains regarding its appearance. It is the union of *Mamsa*, *Asthi*, *Sira* and *Snayu*. These appear as *Jalaka* (*Jalareticular network*) and they are continuous with their above structures. Here by the opinion of *Dalhana*, this combination of structures seen in forearm and leg i.e. muscles, bones, vessels & ligaments are similarly continued below to the hand and foot respectively. So, these combined structures together form a reticular network in hand and foot that appears as brush-like, therefore *Dalhana* refers it to as *Kurcha*.

In modern anatomy, it is described that the *Palmaris longus* muscle phylogenetically generates into palmar aponeurosis. The concept of *Kurcha* as per *Sushruta* is explained earlier in review of Literature. Further the commentary of



*Haranachandra* says that, *Kurchas* appear to be brush-like structures, and are in fact the *Sannipata* union or of Ligaments. Here it is Fibrous or Aponeurotic structures. These structures are found as five fibrotic or aponeurotic structures, i.e. one at the neck region (*Greeva*), two at *Kaksha*, and two at *Vankshana*. Here, the meaning of *Kaksha* and *Vankshana* may be taken as *Hasta* (Hand) and *Pada* (foot) respectively. All the three commentaries describe *Kurcha Sharira* related to *Hasta* and *Pada* as palmar and plantar aponeurotic (or fibrotic) structures respectively.

## CONCLUSION

*Kurchas* are like '*Kunchi*' in appearance i.e. brush-like structures, six in number, present

<i>Kurcha</i>	Total (Six)	According to Ayurveda	Modern Anatomical correlation
<i>Hasta</i>	2	<i>Hasta Kurcha</i>	Palm of hand Transverse fibres of Palmer aponeurosis
<i>Pada</i>	2	<i>PadaKurcha</i>	Sole of foot Transverse of the plantar aponeurosis
<i>Greeva</i>	1	<i>GreevaKurcha</i>	Ligamentum nuchae of Back
<i>Medhra</i>	1	<i>MedhraKurcha</i>	Suspensory ligament and fundiform ligament of penis

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## PHOTOGRAPHS



Hasta Kurcha  
(Transverse fibers of Palmer aponeurosis)



Pada Kurcha  
(Transverse of the plantar aponeurosis)



Greeva Kurcha  
(Ligamentum nuchae of Back)



Medhra Kurcha  
(Suspensory ligament and fundiform ligament of penis)

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