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AN ANATOMICAL INTERPRETATION OF KRIKATIKA MARMA AND ITS CLINICAL SIGNIFICANCE

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ABSTRACT

Sharir Rachana is a branch of *Ayurveda* that provides a detailed description of the structures in the human body. Marma points are vital points in the body that are constituted by the confluence of *Mamsa*, *Sira*, *Snayu*, *Asthi*, and *Sandhi*. Manipulating and stimulating *Marmas* in a proper manner improves the flow of *Prana* (life force) in the body. **Introduction**: *Krikatika Marma*, a vital point in Ayurveda, holds significant importance due to its anatomical location in the neck region. **Methods**: This review synthesizes information from classical Ayurvedic texts and contemporary medical literature to explore the anatomical interpretation and clinical significance of *Krikatika Marma*. **Results**: Anatomically, *Krikatika Marma* is situated at the cranio cervical junction. It encompasses essential structures such as blood vessels, nerves, and the thyroid gland. Clinical conditions associated with *Krikatika Marma* include cervical spondylosis, thyroid disorders, nerve impingement syndromes, and vascular abnormalities. **Discussion**: Proper understanding of *Krikatika Marma's* anatomical correlation aids in the diagnosis and treatment of neck-related disorders. Therapeutic practices like *Marma Chikitsa* utilize stimulation of *Krikatika Marma* to alleviate pain, improve circulation, and promote overall well-being. **Conclusion**: Integrating traditional Ayurvedic knowledge with modern medical understanding enhances our ability to address neck-related health issues comprehensively. Further research is needed to validate the therapeutic efficacy of *Krikatika Marma* and explore its potential applications in contemporary medicine.

KEYWORDS: *Marma, Krikatika marma,* cranio-cervical junction, atalanto-occipital joint *Marma chikitsa, Yoga.*

INTRODUCTION

The word *Marma* is derived from "*Mri dhatu*" + "*Manin" prataya* which means which causes death, *Jeeva sthana, Sandhi sthana*. *Marma* are very important from traumatological point of view, any trauma at these points can cause death or pain equivalent to pain of death. The science of Marma is a form of ancient traumatology that focuses on 107 specific points in the body. These anatomical locations are vital, and any injury to these points can lead to sudden death, debilitation, pain, or death within a few days. Out of these 107 vital spots, the ***Krikatika Marma*** is one of the most important. It is located at the cranio-cervical joint, specifically the atlanto-axial joints and the atalanto-occipital joint. These joints are situated on the neck, making them a vital point constituted by joints, which is known as *Sandhi Marma*.

METHODS

Conceptual Analysis

It is formed by the combination of the words ***Krika*** and ***Atika***. The word *Krika* is derived from the **root kr"** by adding the suffix ***kak*** which means 'that which does or makes' but here, it is gererally used in the meaning 'neck'. The word *atika* is derived from the root at by adding the suffix nvul which means 'that which does or moves'. So the word ***krikatika*** means **'that which moves or goes around the neck'.**

KARKATIKA MARMA

The human body has 107 Marmas, which include *Shakha* (limbs) and *Skandha (*trunk and neck). There are total of 37 Marma scattered over the head & neck.

Greeva Marma (Marma of Neck) -14

Krikatika, located on both sides of the junction of the head and neck or base of the skull bone (occipital protuberance). There are two veins in this group.

Name	*Krikatika* (the joint of the neck)
Number	2 *Marma* points (one on each side of the neck)
Type	*Sandhi Marma* (joint) *Vaikalyakara Marma-Soma*
Measure	½ *Anguli* (finger unit)
Site	At the junction of the neck and the head, immediately

	inferior to the external occipital protuberance.
Involved anatomical structures	Atlanto- occipital joint. Occiput and first cervical bone. Anterior longitudinal, anterior and posterior primary ramus nerves. Vertebral artery and vein. Rectus capitis lateralis and rectus capitis anterior muscles.
Effect Of Injury	'***Chala Moordhata***' i.e. instability of the head.
Krikatika Marma chikitsa	Treat cervical spondylosis, cervical rediculopathy and maintain the balance of the cervical spine region.

ANATOMY OF *KRIKATIKA MARMA*

The locations in the body where various tissues, including muscular, vascular, nerve or connective tissue, bone or cartilage, and joints, converge are called vital points, or *marma*. It is also at these points that the vital energy, or prana, is found. There are two *Krikatika Marma* in the neck region, located at the junction of the head and neck. They are tiny, measuring just 1 cm, and consist of joints.

Cranio-cervical Junction

The cranio cervical junction, which is where the *Krikatika Marma* is situated, is an important area that connects the cranium and cervical spine. The atlanto-axial and atlanto-occipital joints are the two main joints in this region. These joints, which are composed of bony components joined by synovial joints, intrinsic ligaments, membranes, and muscles, provide for the majority of mobility in the cervical spine. It is important to remember that the vasculature that supplies the brain and cervical spinal cord, as well as the spinal cord and several cranial nerves, are located in this area.

Atlanto-occipital joint

The occipital bone of the skull and the cervical spine are joined by the atlanto-occipital joint, a paired articulation. It is a joint of the synovial ellipsoid type. Within the greater craniovertebral joint group, the atlanto-occipital junction is one of two articulations located at the base of the skull between the occipital bone and the first two cervical vertebrae: the atlas (C1) and axis (C2). When considering other joints in the axial skeleton, these junctions offer a rather large range of motion.

Ligaments that help stabilize joints-

Transverse ligament- The strongest and largest of the cranio cervical junction ligaments, works with the alar ligaments to prevent excessive rotation while allowing rotation at the

atlanto-axial joints. It is the main barrier preventing the atlas from moving anteriorly in respect to the lower cervical spine.

Tectorial membrane- The posterior longitudinal ligament extends upward into this thin tissue. The tectorial membrane is a thin superior extension of the posterior longitudinal ligament. The membrane extends between the clivus of the occipital bone and the posterior aspect of the dens and vertebral body of the axis (C2). It lies posterior to the cruciform ligament of the atlas.

Anterior atlanto-occipital ligament (membrane) –The anterior atlanto-occipital ligament (membrane) is a broad and dense band. It connects the upper aspect of the anterior arch of the atlas to the anterior margin of the foramen magnum. The lateral sides of the ligament merge with the fibrous joint capsules. This ligament prevents excessive neck extension and is a continuation of the anterior longitudinal ligament.

Posterior atlanto-ocipital ligament (membrane)

The posterior atlanto-occipital ligament is a broad and thin band. This connects the foramen magnum's posterior edge to the posterior arch of the atlas. This membrane is punctured by the vertebral artery, so it is crucial to take it into account when assessing injuries to this part of the cranio cervical junction.

Nuchal ligament - Ligamentum nuchae also known as the nuchal ligament. Nuchal Ligament is a triangular sheet-like band that stretches between the external occipital protuberance and the tip of the spinous process of the seventh cervical vertebra (C7). It limits flexion of the head and cervical spine, prevents hyperflexion and promotes returning the head to its anatomical position.

Alar ligament – alar ligaments are short and strong fibrous bands that extend between the lateral margins of the upper posterior aspect of the dens of the axis (C2) to the lateral margins of the foramen magnum (medial to the occipital condyles). They limit axial rotation and lateral flexion of the head to the opposite (contralateral) side.

Accessory ligaments –These comprise the capsular ligaments of the atlanto-axial and atlanto-occipital joints, the Barkow ligament, the apical ligament, the lateral atlanto-occipital ligament.

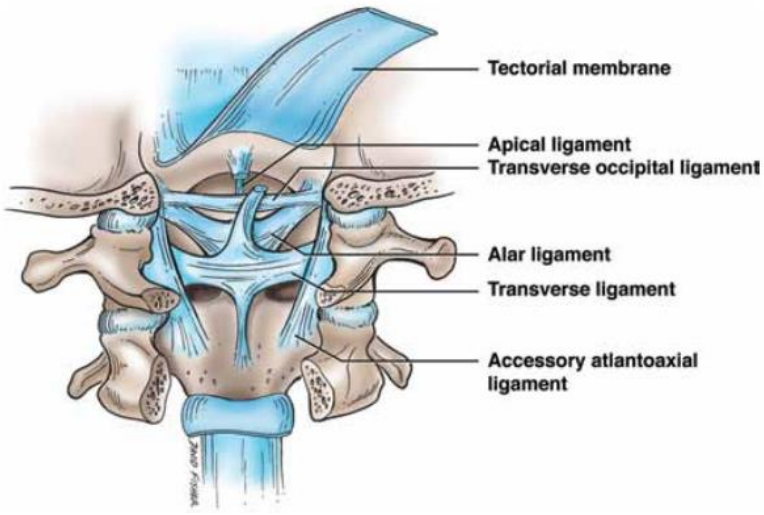

Fig. Ligaments of Atlento Occipital Joint.

Muscles Movements at atlanto-occipital joint-

MUSCLES	MOVEMENT
Rectus capitis anterior	**Flexion.**
Rectus capitis posterior major and minor with assistance from the obliqus capitis superior, semispinalis capitis, splenius capitis, sternocleidomastoid, and upper trapezius fibres.	**Extension**
Rectus capitis lateralis along with the trapezius, splenius capitis, semispinalis capitis, and sternocleidomastoid of the same side.	**Lateral flexion**

Neurovascular supply

Arterial supply	Branches of the deep cervical, vertebral, and occipital arteries.
Venous drainage	Pharyngovertebral veins
Lymphatic drainage	Retropharyngeal lymph nodes Cervical lymph nodes
Nerve Supply	First cervical spinal nerve's anterior ramus (C1).

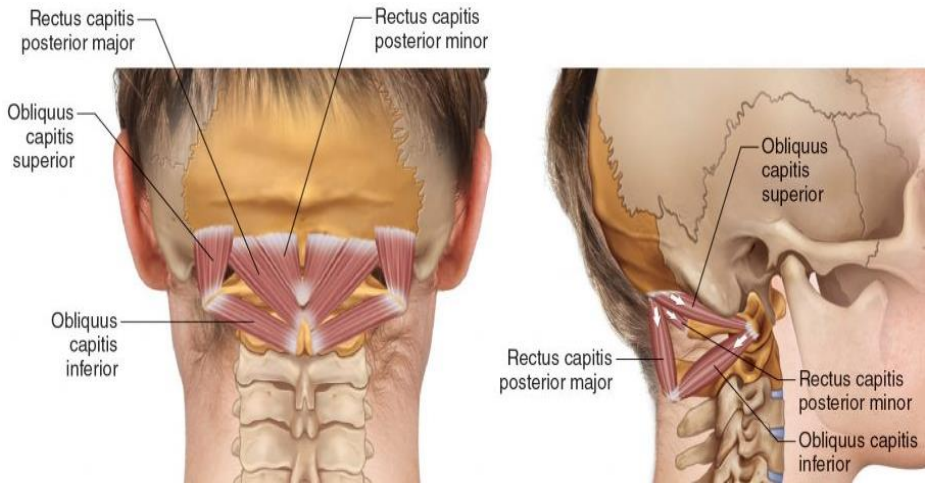

Fig: Deep Muscles of Neck.

CLINICAL SIGNIFICANCE

The clinical significance of *Krikatika Marma* lies in its role in regulating various physiological functions and its vulnerability to injury or trauma. Here are some aspects of its clinical significance:

Regulation of Thyroid Function: *Krikatika Marma's* proximity to the thyroid gland suggests its influence on thyroid function. In *Ayurveda*, disturbances in this *Marma* point may be associated with imbalances in thyroid hormone production and metabolism, leading to conditions such as hypothyroidism or hyperthyroidism.

Neck Disorders: Due to its location in the neck region, any injury or trauma to *the Krikatika Marma* can lead to various neck disorders such as cervical spondylosis, cervical disc herniation, or muscle strain. These conditions can cause pain, restricted movement, and discomfort in the neck region. *Krikatika Marma* chikitsa can assist treat cervical spondylosis and preserve the cervical spine region's equilibrium in addition to relieving discomfort.

Krikatika Marma chikitsa can help treat cervical spondylosis and maintain the balance of the cervical spine region.

Vascular Health: The *Krikatika Marma* is also in close proximity to the carotid arteries, which supply blood to the brain. Injury to this *Marma* point may pose a risk of vascular damage or impairment of blood flow to the brain, potentially leading to cerebrovascular disorders such as stroke or transient ischemic attacks (TIAs).

Nerve Function: The nerves passing through the neck region can be affected by injuries to the *Krikatika Marma*, leading to conditions such as cervical radiculopathy or neuropathy. These conditions can cause pain, numbness, tingling, or weakness in the upper extremities.

Respiratory Disorders: Some Ayurvedic texts suggest that disturbances in *Krikatika Marma* may influence respiratory function. Injury or imbalance in this *Marma* point could potentially contribute to respiratory disorders such as asthma, bronchitis, or difficulty in breathing.

Overall, the clinical significance of *Krikatika Marma* underscores its importance in maintaining the health and well-being of individuals, particularly in relation to thyroid function, neck health, vascular integrity, nerve function, and respiratory health. Ayurvedic practitioners may employ various therapeutic approaches such as herbal remedies, massage,

and Marma therapy to address imbalances or disorders associated with this vital Marma point.

***Karikatika Marma* and Yoga**

In the context of yoga, the *Krikatika Marma* holds significance primarily in terms of its association with the neck region and its influence on energy flow within the body. The *Krikatika Marma*, being situated in the neck region, is believed to play a role in regulating the flow of prana and supporting overall health and well-being. Here are some ways in which yoga practitioners may approach the Krikatika Marma:

Asana Practice: Yoga poses that stretch, strengthen, and release tension in the neck and shoulder region can indirectly influence the *Krikatika Marma*.

Yogaasana like ***Bhujangasana*** (Cobra Pose), ***Matsyasana*** (Fish Pose), ***Gomukhasana*** (Cow Face Pose), and simple neck stretches can help improve flexibility, alleviate stiffness, and promote circulation in the neck area.

Pranayama: Breathwork practices in yoga, such as Nadi Shodhana (Alternate Nostril Breathing), *Ujjayi Pranayama* (Victorious Breath), and *Bhramari Pranayama* (Bee Breath), can help balance the flow of prana in the body, including the neck region where the Krikatika Marma is located. These practices can also help calm the mind and reduce stress, which may indirectly benefit the *Krikatika Marma's* functioning.

DISCUSSION

Anatomically, *Krikatika Marma* is located at the junction of the neck and shoulder region, specifically where the cervical vertebrae meet the thoracic vertebrae. This point is considered as the seat of vital structures such as blood vessels, nerves, and muscles. Its precise location corresponds to the convergence of various anatomical structures, making it vulnerable to injury or trauma. In Ayurvedic terms, *Krikatika Marma* is associated with the *Kapha dosha* and is believed to govern functions related to the head, neck, and upper extremities.

From a clinical perspective, understanding the significance of *Krikatika Marma* is essential in diagnosing and treating a wide range of conditions related to the neck and shoulder region. Injuries or trauma to this *Marma* point can result in severe consequences such as nerve compression, vascular compromise, or musculoskeletal dysfunction. Ayurvedic practitioners

utilize specific techniques such as *Marma therapy*, herbal remedies, and lifestyle modifications to address imbalances in *Krikatika Marma* and restore health.

The *Krikatika Marma* in the neck has a complex anatomical structure that balances stability and mobility. It is an important area for surgery because it supports the head, which is the most critical organ in the body.

Ligament injuries that result in head dislocation, subluxation, hypermobility, and loss of balance are the cause of craniocervical instability, or *chalmurdhata.* Instability may result directly or indirectly from damage to the craniocervical junction.

Chalmurdhata, or head instability, can also result from a feeling of instability and an inadequate awareness of head and neck posture, as in the case of an injury to the alar ligament. Because ligaments do not often recover organically and have a weak blood supply, trauma-induced deformities are often permanent. When stabilisers, or *snayu*, are destroyed, an irreversible destabilising deformity known as *Vikalata* is created.

Moreover, *Krikatika Marma* is also considered to be closely linked to the functioning of vital organs such as the thyroid gland, which regulates metabolism and energy balance. Imbalances in this Marma point may manifest as thyroid disorders or other conditions affecting the neck and throat. Therefore, proper assessment and management of Krikatika Marma are crucial in maintaining overall health and well-being.

Furthermore, understanding the clinical significance of *Krikatika Marma* extends beyond Ayurveda to other alternative medicine systems such as acupuncture, acupressure, and traditional Chinese medicine. These systems also recognize the importance of specific points in the neck and shoulder region for promoting health and treating various ailments.

CONCLUSION

The study of *Krikatika Marma* provides valuable insights into the intricate relationship between anatomy, physiology, and clinical significance in Ayurveda and alternative medicine systems. Its precise anatomical interpretation elucidates the complex network of structures located in the neck and shoulder region, while its clinical significance underscores its role in maintaining overall health and well-being. *Krikatika marma,* as a sandhi marma, is comparable to the cranio-cervical junction. *Chalmurdhata* is a term used to describe craniocervical instability, which includes craniocervical instability caused by atalanto-axial

instability, atalanto-occipital instability, or both. Ligament injuries that result in dislocation, subluxation, hypermobility, and loss of head equilibrium can cause *Chalmurdhata*.

It has been found that having knowledge about the *Krikatika Marma* can help in reducing the cases of neck injuries, and the resulting deaths or health issues.

By integrating knowledge from diverse medical traditions, practitioners can develop comprehensive treatment approaches for addressing conditions related to *Krikatika Marma* and promoting holistic healing. Further research and exploration of Marma points hold the promise of enhancing our understanding of traditional medical practices and improving healthcare outcomes for individuals worldwide.

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