



## CONCEPTUAL REVIEW ON GREEVA MARMA

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## ABSTRACT

*Marma Vigyan* was developed as a science of war. There are so many references from *Veda* regarding attack on *Marma Sthana* of enemies and protecting one's *Marma* by wearing metallic protectants. *Marmas* are the vital points in the body which turn out to be fatal when exposed to trauma. To cope with surgical procedures like *Agnikarma*, *Ksharakarma*, and *Shastrakarma*, in-depth knowledge of *Marma* is necessary. In case of trauma the knowledge of trauma site, structures involving, and deformity identification is very essential. So, *Marma* study is important from both treatment and surgical point of view. This article is an attempt to present the concept of *Greeva marma* in detail which has not done yet. *Ayurveda* has evolved dynamically in recent years and so its branches. Many of the treatments mentioned in classics are becoming popular now days like *Agnikarma*, *Jalauka Avcharana*, *Panchakarma*, etc. and many new dimensions are also explored like *Marma chikitsa*, *Punsavan sanskara*, etc. Therefore, it becomes quite mandatory to update the till date existing knowledge and present it in a clear-cut manner. *Acharyas* has described *Marma* which literary means "vital region" of the body. Any direct or indirect trauma to these sites may prove fatal or can result in disability of the person.

**Keywords:** *Marma, Matraka, Neela, Manya*

## INTRODUCTION

The principles or concepts of *Ayurveda* are standing in modern era also. The concept of *Marma* is a very important and unique principle of *Ayurveda*. The human race is burdened with many problems, of them the medical problems are of more concern. The main aim of *Ayurveda* is the maintenance of health and treatment of disease and to fulfill this aim the doctor should have proper & sound knowledge of *Sharira* (human body). While describing *Sharira*, *Marma* is given out most importance by all *Acharyas*, but *Acharya Sushruta* had described it in great detail as he belongs to school of surgeons & the knowledge of *Marma* becomes mandatory for surgery for the management of wounds. In comparison to a detailed & tedious description of all structures of the body, knowledge of regional anatomy finds its better scope in management of the injuries involving the *Marma*. Even if the specifics of anatomical techniques were not given as much priority in the subject of *Marma*, a complete understanding of *Marma* enabled the *Acharya* to perform surgery with brilliance.

### GENESIS OF MARMA

- The word *Marma* is derived from *Sanskrit* root word '*Mri (Ek)*' which means the sense of vital part of the body.
- In *Shabdostam* it is a first singular form of the word *Marman*, which is often used in the sense of *Jeevsthan* (seat of life), *Sandhisthan* and *Tatparya*.
- *Halayudh Kosh* recognized it in the sense of *Jeevsthan* (seat of life) jointly represented the juncture of *Sira* (veins), *Snayu* (nerves), *Sandhi* (joints), *Mamsa* (muscles) and *Asthi* (bones).
- In *Shabda Kalpdrum* the term has been also represented in the sense of *Jeevsthan* (seat of life).
- According to *Dalhan* - Injuries to '*Marma*' are likely to result fatal.
- According to *Vridhdha Vagabhata (Astang Sangraha)* - which leads to or causes death.
- According to *Aruna datta* the *Marma* is a particular place which brings on death on any trauma or injury.

- In other context, with a view to make the concept of '*Marma*' more generalized he has stated that which causes death is called *Marma*.

### DEFINATION OF THE MARMA

**1. According to Charak** - *Marma* are essential bodily parts and the location of *Prana* or *Chetna*. *Charaka* had advocated that the *Marma* must be safeguarded cautiously and for this he considered *Svastharitta* to be the best method<sup>1</sup>.

**2. According to Sushruta** - The *Marma* is (anatomical site) juncture (meeting) place of *Mamsa* (muscular tissue), *Sira* (blood vessels), *Snayu* (nervous tissue), *Asthi* (osseous tissue) and *Sandhi* (joints). Due to the fact that these *Marma* contain *prana* by virtue of their very nature, any trauma to one of these *Marma* would necessarily result in physical diseases of the corresponding type<sup>2</sup>.

*Marma* are the seats of three *Dosha* i.e., *Soma* (*Jal mahabhut*) *Maruta* (*Vayu mahabhut*) and *Tejas* (*Agni mahabhut*) (representing the three *dosha* in the body i.e. *Sleshma*, *Vata* and *Pitta* accordingly) and three *Guna* (mental forces) i.e. *Raja*, *Satwa* and *Tama*, and the *Bhutatma* (supreme power or force controlling the body. and mind or life principle). Therefore, any trauma to these *Marma* can cause death<sup>3</sup>.

**3. According to Vridhdha Vagabhata** - *Marma* is an agglomeration of *Mamsa* (muscular tissue), *Sira* (blood) vessels), *Snayu* (nerves), *Asthi* (bones) and *Sandhi* (joints), and any trauma to these specific structures of the body is likely to cause death, hence such area or spots in the body have been designated as "*Marma*"<sup>4,5</sup>.

**4. According to Vagbhata** - *Marma* is that part of body which shows irregular pulsation and generates pain on applying pressure and it is composed of *Mamsa*, *Snayu*, *Dhamani*, *Sira*, *Sandhi* and also said it as seat of *Jiva*<sup>6</sup>.

### NUMBER OF MARMA

*Acharya Sushruta* has classified *Panchatamaka marma*, *Shadangshariranusaar*, *Parinaamanusaar*, *Rachna anusaar* and *Parimaan anusaar*.

According to *Acharya Shushruta*, classification of *Marma* according to *Shadangsharir* is as follows.

- *Shakhagatmarma-44*
- *Madhyasharirgatmarma-26*
- *Urdhavajatrugatmarma-37*

According to *Ashtang Ayurveda*, there are 14 *Marma Sthana* presents in neck region constituting *Greeva Marma*<sup>7</sup>.

### 1. *Nila Marma and Manya Marma*

- Region : Neck
- Number : Two *Nila* & Two *Manya*
- Anatomical site: Four *Dhamanias* out of which two are *Nila* and two *Manya* situated in the neck on either side of the *Kanthnadi*<sup>8</sup>.
- Measurement : 4 *Angul*
- Structural anatomy : *Sira*
- Prognostic Status : *Vaikalyakara*
- Injury results : *Mookta* (Loss of speech), *Swar vikriti* (defective voice), *Arasa-grahita* (loss of taste)

#### Regional anatomy:

Underlying important anatomical structures & their applied anatomy-

- Superior thyroid artery
- Lingual artery

#### Superior thyroid artery-

The first anterior branch of the external carotid artery is the superior thyroid artery. In close proximity to the external laryngeal nerve, it runs forward and downward. The artery passes through the peritracheal fascia to reach the lobe's apex, where the nerve deviates medially, after branching out to nearby tissues. The artery splits into anterior and posterior branches at the upper pole.

The anterior branch descends on the lobe's anterior border before continuing along the isthmus' top border and anastomosing with the branch on the other side.

The ascending branch of the inferior thyroid artery anastomoses with the posterior branch, which descends on the posterior edge of the lobe.

**Lingual Artery:** The larger cornual of the hyoid bone is where the lingual artery emerges from the external carotid artery. Its progression is tortuous. The hyoglossus muscle separates it into three sections. The carotid triangle contains the first component. It creates a dis-

tinctive upward loop that the hypoglossal nerve crosses. The hyoid bone can move freely because of the lingual loop. Along the upper border of the hyoid bone, the second portion is located deep in the hyoglossus. The pharynx's main constrictor is only briefly affected. Arteria profunda linguae, or the deep lingual artery, is the name of the third component. The fourth section of it extends horizontally forward on the underside of the tongue after running upward along the anterior edge of the hyoglossus. Its vertical trajectory places it between the inferior longitudinal muscle of the tongue laterally and the genioglossus medially. The lingual nerve runs parallel to the artery's horizontal portion. Suprahyoid, dorsal lingual, and sublingual branches are provided.

### 2. *Matrika Marma*

- Region: Neck
- Number: Eight
- Anatomical Site: It is situated at the root or lower portion of the neck<sup>9</sup>.
- Measurement: *Swapanitala*
- Structural Anatomy: *Sira marma*
- Prognostic Status: *Sadhyapranhara Marma*
- Injury results: On trauma to the *Marma*, it results into sudden death.

#### Regional Anatomy

Important anatomical structures & their applied anatomy as mentioned below-

- Common carotid artery along with internal and external
- Internal and external jugular veins

*Matrika marma* corresponds to four main blood vessels viz. common carotid artery along with internal and external artery and external jugular veins.

#### Common carotid artery

The carotid system, which consists of the common carotid artery and its terminal branches, the internal and external carotid arteries, is located in the anterior cervical area. It also includes the anterior jugular veins, the IJV, and its tributaries. The primary arterial vessels in the carotid triangle are the common carotid artery and the external carotid artery, one of its terminal branches. The carotid triangle is also where the superior thyroid artery, one of the external carotid's

branches, originates. Along with the IJV and vagus nerve, each common carotid artery ascends within the carotid sheath to the level of the superior thyroid cartilage border. The internal and external carotid arteries separate at this point, marking the end of each common carotid artery. There are multiple branches of the external carotid artery in the neck but none of the internal carotid artery.

The brachiocephalic trunk's bifurcation marks the beginning of the right common carotid artery. The other branch of this trunk is the right subclavian artery. The left common carotid artery rises into the neck from the arch of the aorta. As a result, before entering the neck, the left common carotid travels for about 2 cm in the superior mediastinum. The internal carotid arteries are direct extensions of the common carotids that are located at the level of the superior thyroid cartilage border, above the origin of the external carotid artery. The carotid sinus is located at the proximal end of each internal carotid artery. The internal and exterior carotid arteries are separated from one another by the carotid body. The primary arteries of the brain and the structures in the orbits are formed by the internal carotid arteries, which enter the cranium through the carotid canals in the petrous portions of the temporal bones. The internal carotid arteries in the neck have no designated branches. The orbit and the portion of the forehead and scalp fed by the supraorbital artery are the main exceptions to the general rule that the external carotid arteries supply most areas outside of the cranium. Additionally, there is a deep distribution (such as the middle meningeal artery). Each artery travels posteriorly until it reaches the area between the lobule of the auricle and the neck of the jaw, where it is implanted in the parotid gland and finishes by splitting into the superficial temporal artery and maxillary artery.

**Internal jugular vein (IJV)**- Blood is drained from the brain, frontal cranium, cervical viscera, and deep neck muscles by the IJV. It begins as a straight extension of the sigmoid sinus at the jugular foramen in the posterior cerebral fossa. Following the internal carotid artery superior to the carotid bifurcation and the

common carotid artery and vagus nerve inferiorly, the vein descends in the carotid sheath from dilatation at its origin, the superior bulb of the IJV. Within the sheath, the vein is lateral, while the nerve is posterior. The carotid sheath is located anterior to the cervical sympathetic trunk. Although similarly linked, the trunk is located in the deep cervical fascia's prevertebral layer rather than the sheath. As it travels deep into the SCM, the IJV exits the anterior cervical area. The vein's inferior end extends deep into the space between this muscle's sternal and clavicular heads. The IJV joins the subclavian vein to produce the brachiocephalic vein posterior to the sternal end of the clavicle. The inferior bulb of the IJV is formed when the inferior end of the IJV enlarges. This bulb has a bicuspid valve that allows blood to move toward the heart while avoiding backflow into the vein, which could happen if one were to be inverted (for example, by standing on one's head or when intrathoracic pressure is elevated). The inferior petrosal sinus, facial and lingual veins, pharyngeal vein, superior and middle thyroid veins, and inferior petrosal vein are the tributaries of the IJV. The occipital vein may drain into the IJV, but it typically drains into the suboccipital venous plexus, which is drained by the deep cervical vein and the vertebral vein.

### 3. *Krikatika Marma*

- Region : Neck
- Number : Two
- Anatomical Site : *Krikatika marma* is present at junction of head and neck<sup>10</sup>.
- Measurement/Size : *Ardhangula pramana*
- Structural Anatomy : *Sandhi marma*
- Prognostic Status : *Vaikalya kar marma*
- Injury Results: An injury this *Marma* make the head unfixed or disbalanced.

### Regional Anatomy

Underlying important anatomical structures & their applied anatomy-

- Atlanto-occipital joint
- Atlano-axial joint

As *Acharya Shusruta* had stated it as *Sandhi marma* and is present at junction of neck and head. From trauma point of view, any injury to this *Marma* leads

to unfixing of head. Since all the features suggest that this *Marma* is area around Atlanto- occipital and Atlanto axial articulation.

### Atlanto-Occipital Joints

The Atlanto-occipital joints, which connect the superior articular surfaces of the lateral masses of the atlas and the occipital condyles, allow head nodding, similar to the neck flexion and extension used to express assent. Additionally, the head can tilt to the side thanks to these joints. With some lateral bending and rotation, flexion is the primary motion. They feature thin, flimsy articular capsules and are condyloid synovial joints. Additionally, anterior and posterior-occipital membranes connect the anterior and posterior edges of the foramen magnum to the anterior and posterior arches of C1 and the cranium. The posterior membranes are broad but not as strong as the anterior membranes, which are made of large, densely woven fibers (particularly in the middle where they are connected with the anterior longitudinal ligament). These joints are kept from moving too much thanks to the atlanto-occipital membranes.

### Atlantoaxial Joints

There are three atlantoaxial articulations: one middle atlantoaxial joint (between the dens of C2 and the anterior arch of the atlas) and two (right and left) lateral atlantoaxial joints (between the inferior facets of the lateral masses of C1 and the superior facets of C2). The median atlantoaxial joint is a pivot joint, while the lateral atlantoaxial joints are gliding-type synovial joints. The head may turn from side to side, as it does when turn the head to show disapproval. Movement is possible at all three atlantoaxial joints. The cranium and C1 spin together on C2 during this motion. The transverse ligament of the atlas, a powerful band extending between the tubercles on the medial aspects of the lateral masses of the C1 vertebrae, forms the anterior arch of the atlas' socket, which the dens of C2 serves as the axis or pivot held in during head rotation. Superior and inferior longitudinal bands, which are vertically orientated but considerably weaker, travel from the transverse ligament superiorly to the occipital bone and inferiorly to the body of C2. The cruciate ligament, formerly known as the

cruciform ligament, is made up of the transverse ligament and the longitudinal bands put together. It is so called because it resembles a cross.

## CONCLUSION

*Marma* is regarded as the more delicate part of the surgical field since any damage to them might be deadly; however, this risk can be reduced if the patient receives immediate medical attention from a qualified practitioner. A person suffering an injury that damages their head, viscera, causes them to lose a limb, or even causes harm to their entire body may still survive if their *Marma* survives the injury, according to the *Acharya*. Any injury to the *Marma* will undoubtedly cause pain or perhaps result in death, and any sickness that affects the *Marma* will always be challenging to treat.

- Injury results described by *Susruta* are previously of larynx and neatly of tongue. The above fact helps to determine that *Nila* is related with the problem of the larynx whereas *Manya marma* with the problems of the tongue.

Arteries-Superior thyroid artery, Lingual Artery Supplying the larynx and tongue and justifies that damage to these can result phonic alteration as well as loss of taste sensation.

- *Matrika marma* is *Sadhya pranahar marma*, is present in area of root of neck, and is a *Sira marma*, so the major blood vessels around this region viz. common carotid artery and common jugular vein.
- The *Krikatika marma* is present at junction of head and neck, this area precisely indicates towards the atlanto-occipital joint, but this joint is in close proximity to the atlanto-axial joint. Since both these joints are major contributors to the movement of neck. Any trauma to any of these leads to dislocation of the neck or deformity of the move of the neck.

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