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ANATOMICAL STUDY OF SHRINGATAKA MARMA AND ITS CLINICAL SIGNIFICANCE

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ABSTRACT

In *Ayurveda*, total number of 107 *Marmas* are described. The *Marma* is the vital point of the body where *Prana* resides. If it got injured it will lead to sudden pain or even death of the person. *Shringataka Marma* is one of the 107 *Marma* which is located on the Nose. It is a type of *Urdhajatrugat Marma* or *Sira Marma* it has measurement of about 8 centimeter (*four angula*). It is four in number and its injury results into immediate death. So, the *Shringataka Marma* is considered as one of the most crucial *Marma* in our human body. In this article, the *Shringataka Marma* is examined on the basis of contemporary anatomy and its key component located nearby are compared using the *Ayurvedic* and modern literature. Through this article, we express the anatomical-clinical significance of *Shringataka Marma* and the applicability of *Sushruta's* old idea of *Marma* in the present.

Keywords: *Marma, Shringataka Marma, Cavernous Sinus, Intercavernous sinus, arteries, and veins Surrounding this area*

INTRODUCTION

The *Ayurveda* is a branch of medical Science that seeks to preserve the harmony of the body, mind, and soul in order to foster the best possible state of health, has a significant influence on life of humans. The original *Marma* concept and its structure propelled *Ayurveda* to new heights. In the human body, there are 107 *Marmas* which are located at significant vital areas. Any injury to these areas has the potential to significantly reduce the body's overall energy levels or the energy levels of a particular organ or system, which is a significant contributing factor to death.

Maharshi Sushruta, a surgical pioneer, described a crucial aspect of *Marma* in the *Shusruta Samhita's Sharira Sthana* chapter named with "*Pratyeka Marma Nirdeshaniya Sharir*". He defined *Marma* as a physical entity whose vitality is connected with the amount of tissue present or structure present. According to *Maharshi Sushruta*, *Marma* (anatomical area) was the junction (assembly) of the *Mansa* area (muscle tissue), *Sira* (blood vessels and nerves), *Snayu* (ligament, tendon, and nerve tissue), *Asthi* (osseous tissue), and *Sandhi* (joints) [1].

According to *Acharya Sushruta*, *Marmas* is the place where the three *doshas* of body i.e, *Vata*, *Pitta* and *Kapha* as well as the three *Mahagunas* i.e, *Satva*, *Raja*, *Tama*, and

Bhutatma, which are supernatural forces or powers that govern the body and *Mana* [2].

Anatomically the *Marma* can be classified into 5 types i.e. [3]

- ❖ *Mansa Marma*,
- ❖ *Sira Marma*,
- ❖ *Snayu Marma*,
- ❖ *Asthi Marma*
- ❖ *Sandhi Marma*

On the basis of the traumatic impact at this vital points i.e, *Marma* and the prognosis as mentioned in *Ayurveda*, the *Marma* were classified into 5 types i.e. [4]

- ❖ *Sadhyapranhar Marma*,
- ❖ *Kalantarpranhar Marma*,
- ❖ *Vaikalyakara Marma*,
- ❖ *Vishalyaghna Marma*,
- ❖ *Rujakar Marma*.

Shringataka Marma:

Shringataka word means “the places where four roads meet” [5]

Location

It is located in the region of Nose. It is located at the junction of veins between the *ghrana*, *shrota*, *Akshi* and *jivha* and that's why it is considered as *Sira Marma*. It provides nutrition to *ghrana* (nose), *shrotas* (ear), *Akshi* (eyes) and *jihva* (tounge) [6].

Number – Four [7]

Dimension –

According to all *acharya* dimensions of *Shringataka Marma* is Four *Angula* [8].

Structural Anatomy –*Sira Marma* [9]**Prognostic Status –***Sadhyapranahar Marma* [10]

Sadhyapranahar Marma is the type of *Marma* that results into immediate death on injury [11].

Injury Results – It has been said that *Shringataka Marma* functions as a vast nutrition network that feeds the tongue, ears, nose, and eyes. Injury to this *marma* will lead to immediate death. This *Marma* could be understood as a cavernous sinus based on its functional point of view [12].

Anatomical structures:

Figure 1: (Shringataka Marma)

The area of the cavernous sinus and Inter cavernous sinus can be taken into consideration as the location of the *Sringataka Marma*. *Shringataka Marma* has been described as a cavernous nutrition network that supplies nourishment to the tongue, ears, nose, and eyes. One could interpret this *Marma* as a cavernous sinus. Venous blood from the brain, meninges, and

skull bones enters the cavernous sinus. It is filled with CSF. It uses emissary veins to connect with veins outside the skull. The retina's central vein and superior ophthalmic vein occasionally empty into the cavernous sinus.

Via the superior ophthalmic veins, this sinus empties into the facial vein. The facial vein, which drains the mouth, nose, and ears, is

the biggest vein in the face. The word *Santarpan* (nutrition) of the ear, nose, and mouth is made clearer by this anatomy. Thus, any medication administered by the nose travels to the *Shringataka Marma*, which uses *Siras* to perform *Tarpan* of the ear, eye, nose, and throat structures. Thus, from an *Ayurvedic* perspective, the *Nasya* medication is assimilated and transported through *Shringataka Marma*, reaching both the local and wider circulation.

There is a place on the brain's surface called *Shringataka Marma* that corresponds to the nerve centers. From this place, *Nasya Dravyas* spreads into different *Strotasas* (vessels and nerves) and draws out vitiated *Doshas* from the *Shirah*. These nerve cells and fibres are responsible for speech, hearing, taste, smell, and vision.

According to Dr Avinash Lele [13]

- ❖ Supraorbital Artery
- ❖ Frontal diploic vein
- ❖ Superior Sagittal Sinus
- ❖ Occipito Frontalis muscle
- ❖ Ophthalmic nerve

According to Dr. Sandip Sahmrao Lanje [14]

Following structure can be considered under the area of *Shringataka Marma*

- ❖ Cavernous sinus
- ❖ inter-cavernous sinuses
- ❖ ophthalmic nerve
- ❖ supra orbital artery

According to Dr. A. K. Pathak [15]

The anatomical structures underlying the *Shringataka region* are

- ❖ Cavernous Sinus
- ❖ Inter-cavernous Sinus

Modern Perspective (Practical anatomy) of *Shringataka Marma* [16]

The structures falling under the area of *Shringataka Marma*

- ❖ Speech(motor) centres of the brain
- ❖ Visual centres of the brain (sensory and psychic)
- ❖ Auditory centres of the brain
- ❖ Gustatory centres of the brain
- ❖ Olfactory centres of the brain

Regional Anatomy of *Shringataka Marma* [17]

On the upper surface of the sphenoid body, which houses the sphenoid (air) sinus, the cavernous sinus is located on each side of the sella turcica. This sinus is made up of a venous plexus of incredibly thin-walled veins that stretches from the apex of the temporal bone's petrous portion posteriorly to the superior orbital fissure anteriorly. It receives blood from the sphenoparietal sinus, superficial middle cerebral vein, and superior and inferior ophthalmic veins. Through the intercavernous sinuses, venous channels anterior and posterior to the pituitary gland's stalk, and occasionally through veins inferior to the pituitary gland, the venous channels inside these sinuses exchange information with one another. The pterygoid plexuses receive the cavernous

sinuses' posteroinferior drainage via the superior and inferior petrosal sinuses as well as the emissary veins. The internal carotid artery and its minor branches are located inside each cavernous sinus, and the abducent nerve (CN VI) and carotid plexus of sympathetic nerve(s) surround it. The lateral wall of the sinus contains imbedded in it the oculomotor (CN III), trochlear (CN IV), and two of the three divisions of the trigeminal nerve (CN V). Heat exchange is possible to cool the arterial blood or preserve energy as the artery, which is transporting warm blood from the body's core, passes through the sinus, which is loaded with cooler blood returning from the body's periphery capillaries. In sprinting animals (such as horses and cheetahs), the carotid artery takes a longer, more winding path through the cavernous sinuses, allowing blood to cool before it enters the brain. This appears to be less significant in humans. Both gravity and the artery's pulses within the cavernous sinus are thought to encourage the expulsion of venous blood from the sinus.

MATERIAL AND METHODS

For this article, the literary material will be collected from the major *Samhitas* i.e., *Ayurvedic* Textbooks and from modern books of anatomy, national and international journals, and other databases.

DISCUSSION

When analysed in the context of anatomical structures, the sites mentioned by *Shusruta* in the preceding description show the convergence of cavernous and inter cavernous sinuses in the root of the brain. According to *Acharya Shusruta*, the *Shringataka Marma* is the meeting place of the *four Siras*—the nose, ears, eyes, and tongue—that are located inside the boundaries of four *Angulas*. It completely fulfills the anatomical location where the inter cavernous and cavernous sinuses converge. This *marma* has been named a *Sadyah Pranhara Marma*, and damage to it can result in immediate death from cavernous sinus rupture.

From a functional perspective, the *Shringataka marma* is best correlated with the cavernous sinus. situated between the two duras surrounded by Cranial nerves III, IV and VI which are motar and supply eye and Cranial nerve V i.e, Trigeminal nerve which is mixed and supply nose, tongue, ear, etc .The internal carotid artery, which crosses this region, should be interpreted as the anatomical structure beneath the *Shringataka Marma*. The superior pterigoid, inferior, and superior ophthalmic sinuses combine to form the cavernous sinus, which likewise has a triangular appearance. Blows to the front or rear of the head have the potential to transfer force to the cavernous sinus, which can result in cerebral

hemorrhage, a neurogenic consequence, and even death.

CONCLUSION

The *Shringataka Marma* has its very critical anatomy, the area of the cavernous sinus and inter-cavernous sinus can be correlated with the anatomical location of the *Shringataka Marma*.

It is located at the meeting point of tongue, nose, eyes, ears on the soft palate. From the inner side it is ½ inch above *stapani*. It controls *Prana*, *Bodhaka kapha* and sense organ of taste. It has been said that *Shringataka Marma* functions as a vast nutrition network that feeds the tongue, ears, nose, and eyes. Injury to this *marma* leads to severe hemorrhage and death. Because of this reason is called as *Sadyha Pranahara Marma*.

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