



COMPREHENSIVE STUDY OF SRINGATAKA MARMA IN RELATION TO ITS RELATED AVEDHYA SIRA

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ABSTRACT Numerous ancient Ayurvedic texts discuss the marma points of human body. These are physio- anatomical structures, not merely surface marks but deeply ingrained parts of the body. Marma, is the seat of Prana is defined as the meeting point of the Mamsa, Sira, Snayu, Asthi and Sandhi. Acharya Dalhana explained that the part of body which on injury leads to death is called Marma. The human body has 107 Marma, according to Ayurveda. Acharya Vagbhatta and Acharya Sushruta dividing the Marma into discrete group according to parameters like measurement (Parimaana), number (Sankhya), prognosis (Parinaama), and structure (Rachana). Sringataka is a important Marma that is vital or delicate point in the body. 'Shira' is referred by Acharya Charaka as Uttamanga because Prana and Indriya are present there. Sringataka Marma is an urdhvajatrugata marma. On the basis of traumatic effect it is Sadhyopranahara Marma and on the basis of structure it is Sira Marma. Avedhya Sira are those which should not be punctured otherwise leads to fatal consequences. According to acharya sushruta, According to Acharya Sushruta, this Marma is junction of of vessels which nourish Akshi, Karna, Ghrana, Jivha. Aim of this paper is to find out the significance of Sira (Avedhya Sira) in Sringataka Marma.

KEYWORDS : Urdhvajatrugata Marma, Sringataka Marma, Sadhyopranahara Marma, Avedhya Sira

INTRODUCTION

Sringataka Marma:

- According to Acharya Sushruta, this Marma is junction of of vessels which nourish Akshi, Karna, Ghrana, Jivha.^[1]
- According to Acharya Dalhana, it is a Sira Marma measuring 4 Angula in size.^[2]
- Acharya Vriddha Vagbhatta and Vagbhatta also explained that at the meeting place of veins supplying the tongue, nose, eyes and ears in the palate, is their confluence, their four orifices are known as Sringataka.
- According to Acharya Sushruta, injury of this Marma leads to sudden death.
- Acharya Vriddha Vagbhatta and Vagbhatta also explained the same Viddhalakshana as explained by Acharya Sushruta.^[3,4]
- Characteristics features of Sringataka Marma:

Marma	Based on Sadanga	Based on Sankhya	Based on Rachana	Based on Parinama	Based on Parmana	Location
Sringataka Marma	Urdhvajatrugata	4	Sira Marma	sadhyopranahara marma	Four angula	Within the confluence of Sira; nourishing Ghrana, Shrota, Akshi and Jivha

- Acharya Sushruta described 98 Avedhya Sira.
- In the Shakhagata, there is 400 total Sira, out of which there are 16 Avedhya Sira. In Kosthagata, there is 136 Avedhya Sira, out of which there are 32 Avedhya Sira. In Urdhvajatrugata, there is 164 total Sira, out of which 50 are Avedhya Sira.
- Avedhya Sira are those which should not be punctures otherwise leads to deformity or death.
- As there is no specific Avedhya Sira at this Marma location but Avedhya Sira of Nasa and greeva can be taken into consideration on the basis of Viddhalakshana of this Marma.
- Marmasagyaka and Aupnasikaya are two Avedhya Sira which can be taken into consideration for this Marma.^[5]

Anatomy of Sringataka Marma in Modern Context:

Marma is the meeting place of 5 elements of body namely -Mamsa (muscles), Sira (blood vessels; arteries, veins), Snayu (ligaments, tendons & nerves), Asthi (bones) & Sandhi (joints). As a natural phenomenon, the pranas (life elements) are seated at these places. Therefore, any injury to these places leads to serious consequences depending on the structure or structures predominantly involved in the Marma.

1. Mansa:

Occipitofrontalis muscle

Origin:- Skin of Eyebrows, Lateral part of superior nuchal line of

occipital bone and mastoid process of temporal bone.

Insertion: Into galea- aponeurotica^[6]

2. Sira:

Cavernous Sinus:

- The right and left cavernous sinuses are situated in the middle cranial fossa, anteroposteriorly on either side of the body of the sphenoid bone.
- Every sinus extends anteriorly to the medial end of the superior orbital fissure.
- It reaches the apex of the petrous part of temporal bone posteriorly.

Communications:

- With transverse sinus – through superior petrosal sinus
- With internal jugular vein – via inferior petrosal sinus
- With pterygoid venous plexus – via emissary vein
- With facial vein – via both superior ophthalmic and angular vein
- With the opposite cavernous sinus – via intercavernous sinuses

Tributaries:

- Superior ophthalmic vein
- Branch from inferior ophthalmic vein
- Superficial middle cerebral vein
- Few inferior cerebral vein
- Sphenopalatine sinus
- Middle meningeal vein

Intercavernous Sinus:

- The right and left cavernous sinuses are connected by anterior and posterior intercavernous sinuses which are located in the anterior and posterior attached margins of the diaphragma sellae respectively.

Internal Jugular Vein:

- It is the largest vein of neck. It starts as the direct continuation of sigmoid sinus at the base of the skull, below the jugular foramen.^[7]

3. Snayu:

Galea Aponeurotica: The middle layer of scalp is formed by tough fibrous sheet of connective tissue known as galea aponeurotica, also referred to as the epicranial aponeurosis.^[8]

4. Asthi:

Sphenoid Bone: The sphenoid bone, which resembles a bat or butterfly with spread wings, is located at the base of the skull. It is made up of a body, lateral and medial pterygoid palates, two lesser wings, and two greater wings.^[9]

5. Sandhi:

Joining of various sinuses

Modern Aspect of Avedhya Sira:

Avedhya Sira are those in which Siravedhan should not be conducted. There are two Avedhya Sira named Marmasagyaka and Aupnasikaya which are correlated with internal carotid artery and angular vein.

Internal Carotid Artery: it arises from the common carotid artery, ascends to base of skull, enters carotid canal, passes into cranial cavity and supplies the brain. The course of artery can be divided into two parts – course in neck and course in the cranial cavity.

Angular Vein: it provides an important anastomosis between facial vein and cavernous sinus.^[10]

Aim

To study the significance of Avedhya Sira in Sringataka Marma.

Objective

- To study Sringataka Marma and Avedhya Sira from Ayurvedic literature.
- To study the modern aspect related to Sringataka Marma and Avedhya Sira.
- To study the clinical aspects of Sringataka Marma.

MATERIAL AND METHODS:

- Literature from Ayurvedic and modern texts.

Methods:

- Integration of Ayurvedic and modern literature.
- Dissection based observation

Dissection Based Observation:

Dissection Steps:

- Place a block under the back of the head to raise it to a convenient angle. Make a median incision in the skin of the scalp, from the root of the nose to the external occipital protuberance. Make a coronal incision from the middle of the first incision to the root of each auricle.
- Continue the coronal incision behind the auricle to the mastoid process, and in front of the auricle to the root of the zygomatic arch. Avoid cutting deeper than the skin to preserve the vessels, nerves, and muscles in the subcutaneous tissue. Reflect the skin flaps superficial to these structures.
- To identify the positions of the main structures in the scalp—the greater occipital nerve, lesser occipital nerve, third occipital nerve, great auricular nerve, superficial temporal artery, supra-orbital and supratrochlear arteries and nerves, and temporal branches of the facial nerve—so that they are not damaged.
- Expose the upper part of the orbicularis oculi.
- Follow the frontal belly of the occipitofrontalis from below upwards.
- Find the branches of the supratrochlear and supra-orbital vessels and nerves. The supratrochlear vessels and nerve lie about a finger breadth from the midline, and the supra-orbital another finger breadth further laterally. The supra-orbital nerves and vessels ascend from the supra-orbital notch.
- Expose the anterior part of the epicranial aponeurosis, and note its extension downwards into the temple.
- Lateral to the greater occipital nerve, find the occipital belly of the occipitofrontalis, and expose the posterior part of the epicranial aponeurosis.
- Make a small incision through the aponeurosis near the vertex. Introduce a blunt probe through it into the loose areolar tissue beneath the aponeurosis, and expose the extent of this tissue by moving the probe in all directions. Note that the aponeurosis is adherent to the periosteum near the temporal and nuchal lines.
- Make two sagittal cuts of the duramater parallel to the midline and two coronal cuts of the duramater from the middle of the sagittal cut to the top of the auricles.
- Reflect the four flaps downward and observe the arachnoid mater covering the brain.
- Identify the right and left cerebral hemispheres and observe the falx cerebri, the fold of duramater that dips into the longitudinal fissure between the two cerebral hemispheres.
- Identify the superior sagittal sinus running along the midline in the falx cerebri and observe the arachnoid granulations on each side of the superior sagittal sinus, cavernous sinus, superior petrosal sinus.
- Use your hand and lift the frontal lobe of cerebrum from the orbital plate of frontal bone on both sides and observe the two optic nerves that emerges from the orbit and identify the optic chiasma and the optic tracts.
- Cut distal to the optic tracts, and you will see the internal carotid arteries, cut the artery on both side and observe the tentorium cerebelli covering the posterior cranial fossa.
- Do it the same way on the opposite side also and reflect the tentorium cerebelli backward and expose the cerebellum on the posterior cranial fossa.
- With the hand, gently free the cerebellum from the posterior cranial fossa and observe the midbrain, pons and medulla oblongata.
- Locate the foramen magnum, make a transverse cut of the medulla

oblongata deeply at the foramen magnum, and now gently remove the brain in single piece, without breaking its parts.^[11]



Fig. – Shows Cavernous Sinus, Sigmoid Sinus, Superior Petrosal Sinu



Fig. Shows Angular Vein, Facial Vein

On the basis of dissection based observation we have seen that Marmasangyaka and Aupnasikaya named Avedhya sira are seen related to this Sringataka Marma.

RESULT

- Sringatkaka marma is located in cavernous and intercavernous sinus.
- It is Sira marma and Sadhyopranahara in nature.
- Marmasangyaka and Aupnasikaya are two Avedhya Sira related to this Marma.
- Injury to Marmasangyaka named Avedhya Sira leads to profuse bleeding and Aupnasikaya named Avedhya Sira are small vessels which could not retract easily if punctured/injured. Therefore these vessels should not be punctured. That is why these vessels considered under Avedhya Sira.

DISCUSSION

- The sole vascular nature of the Sringataka Marma and its anatomical connection to the sense organs are shown by the classical description. Its position must be determined by investigating any arrangement within the head that has a vascular connection to Ghrana, Shrota, Akshi, and Jivha. Regarding this, it appears that only the cavernous sinus has circulatory links, either directly or indirectly, to these sense organs. Internal carotid artery pass through cavernous sinus. Angular vein provide an important anastomosis between facial vein and cavernous sinus. That is why, Sringataka Marma and Avedhya Sira named Marmasangyaka and Aupnasikaya having same location.
- If any injury occurs at this marma location, internal carotid artery can be punctured. Due to which profuse bleeding takes place. Profuse bleeding further leads to unconsciousness, syncope or sudden death. Secondly, angular vein if injured, infection can spread upto cavernous sinus. This leads to a condition of shock, which further results in death. Due to similarity in Viddhalakshana of Avedhya Sira and Sringataka Marma; these Avedhya Sira have close relation with this Sringataka Marma.
- That is why Sira of Sringataka Marma categorized under Avedhya Sira.

CONCLUSION

- It is an Urdhvajatrugata Marma.
- It is located at cavernous and intercavernous sinus in middle cranial fossa.
- It is madeup of five structures named Mamsa, Sira, Snayu, Asthi and Sandhi.

- There are two Avedhya Sira named Marmasangyaka and Aupnasikaya which are correlated with internal carotid artery and angular vein.
- If we assess the Viddhalakshana of this Marma, then we analyze that these symptoms develop due to puncture of these Avedhya Sira.
- That is why, to see their importance of these Avedhya Sira, this Marma categorised under Sira Marma.

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