



Avedhya Sira of Shankha Marma: A Confluence of Tradition and Anatomy.

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Abstract

Introduction

Ayurveda, India's ancient medical science, describes *Marma* points as crucial anatomical locations where *Prana* (life force) is present. Injury to these points can lead to various outcomes, from pain to immediate death. *Shankha Marma* found in the temporal area of the skull, is classified as a *Sadyapranahara Marma*, meaning it can be fatal if injured. Its traditional description matches the modern anatomical area of the pterion, one of the most at-risk cranial landmarks. **Methods:** This study conducted a thorough review of classical Ayurvedic texts (*Sushruta Samhita*, *Ashtanga Hridaya*) and current anatomical resources. Cadaveric dissection of the temporal area was carried out to link bony structures and vascular elements, particularly concerning the middle meningeal artery. **Results:** The *Shankha* region described in Ayurveda matches the pterion anatomically, located about 4 cm above the zygomatic arch and 3 to 4 cm behind the zygomatic process of the frontal bone. This area is where the frontal, parietal, sphenoid, and temporal bones meet and is structurally weak. The anterior branch of the middle meningeal artery runs below it, making the site highly prone to rupture after trauma. Clinically, this may cause epidural hematoma, increased intracranial pressure, nerve issues, and death. Ayurveda also identifies *Avedhya Sira* in this area, corresponding to superficial temporal vessels, warning against puncture or venesection. **Discussion:** The anatomical and clinical traits of *Shankha Marma* align closely with modern neuroanatomical knowledge of the pterion. This supports the ancient classification of *Shankha* as a *Sadyapranahara Marma* and demonstrates the foresight of Ayurvedic scholars. Using an integrative approach improves both traditional surgical practices and modern clinical methods.

Keywords: Ayurveda, *Shankha Marma*, *Sadyapranahara Marma*, *Avedhya Sira*, Pterion, Middle Meningeal Artery.

Introduction

Ayurveda, India's traditional medical science, covers not just physiology and pathology but also a deep understanding of human anatomy. Within this framework *Marma Sharira* plays a key role. *Marmas* are crucial points where anatomical structures like muscles, vessels, ligaments, bones, and joints meet, and where life energy (*Prana*) is believed to reside.¹ The classical texts identify 107 *Marmas*, each classified by structure, size, number, and recovery potential after injury. Among them, *Shankha Marma* is an important point described in the head area

(*Urdhvajatrugata Marma*). The term *Shankha* means “conch,” symbolizing its curved and delicate position in the temple region of the skull. *Acharya Sushruta* categorizes it as a *Sadyapranahara Marma*, indicating that trauma in this area can lead to sudden death.² This traditional understanding aligns well with modern clinical anatomy, as the pterion is recognized as the most vulnerable cranial area.³

Ayurvedic Classification of *Shankha Marma*

Type:	Pramana (Measurement):	Number:	Prognostic Status:
<i>Asthi Marma</i> (bony Marma)	<i>Ardha Angula</i>	Two (bilateral)	Sadyapranahara (lethal if injured)

Table no.1

This classification emphasizes that *Shankha Marma* is:

Bony in nature (*Asthi Marma*), showing its fragility due to thin cranial plates. Half a finger in size (*Ardha Angula*), small yet precise in anatomical definition. Present on both sides, located at each temple. Classed as *Sadyapranahara*, confirming its potential for fatal injury.⁴

Materials and Methodology

Source Material-

1. Ayurvedic texts: References were taken from *Sushruta Samhita*, *Ashtanga Hridaya*, and related texts that describe *Shankha Marma*.

2. Modern sources: Recent anatomical and neurosurgical literature was reviewed, focusing on the pterion and middle meningeal artery.

Methodology

Literature Review: Compared descriptions of *Marmas* in Ayurveda with modern neuroanatomical accounts.

Cadaveric Dissection: Dissection of the temporal and pterional areas was performed to observe bone thickness, sutural junctions, and the vascular path of the middle meningeal artery.

This combined approach allowed for validation of textual descriptions against anatomical evidence.

Observations

Traditional Location of *Shankha Marma*

Ayurvedic texts place *Shankha Marma* above the end of the eyebrow (superciliary arch), between the *karna* (ear) and *lalata* (forehead). This aligns with the temple area of the skull, suggesting a match with the pterion.⁵ In Modern Anatomical Correlation the pterion is where four bones meet Frontal bone, Parietal bone, Greater wing of sphenoid, Squamous part of temporal bone. Its position is approximately- 4 cm above the zygomatic arch and 3 to 4 cm behind and slightly above the zygomatic process of the frontal bone. This area is structurally thin and therefore fragile. Associated Structures at Pterion Bone, Junction of thin bony plates, especially the sphenoid and temporal bones. Muscle & Fascia, Temporalis muscle and temporal fascia provide little protection. Nerve: Auriculotemporal nerve runs nearby. Vessels: Superficial temporal artery and vein, anterior branch of the middle meningeal artery (beneath the pterion).⁶

Clinical Consequences of Trauma

Rupture of the middle meningeal artery can lead to an epidural hematoma. This results in a rapid increase in intracranial pressure, which compresses brain tissue. Neurological deficits may arise, including hemiparesis, altered sensorium, and seizures. If untreated, hematoma can lead to brain herniation and death.⁷ This series of events supports Ayurveda’s classification of *Shankha Marma* as *Sadyapranahara*. *Avedhya Sira* in the *Shankha* Region. In Ayurveda identifies 700 vessels (*Siras*), of which 98 are *Avedhya* (prohibited) from puncture due to the potential for catastrophic results. Two of these are located in the *Shankha* region, likely corresponding to the superficial temporal artery and vein.⁸



Figure 1

Possible risks from puncture or injury include severe bleeding from superficial vessels. Rapid low blood pressure and shock, Intracranial bleeding from deeper vascular damage. Thus, Ayurvedic surgical wisdom in advising against interventions in this area aligns with modern neurosurgical caution.

Discussion

Ayurvedic Rationale.

Sadyapranahara status conveys the life-threatening nature of trauma at this location. The *Asthi Marma* classification highlights vulnerability due to bony fragility. The ban on *siravyadha* (venesection) in this area shows surgical insight.⁹

Modern Anatomical Justification.

The pterion is recognized as the weakest point on the skull in neuroanatomy. Below it lies the anterior branch of the middle meningeal artery, whose rupture can lead to serious epidural hematoma. Injuries in sports (boxing, martial arts, cricket) often involve strikes to the temple, supporting Ayurveda's prediction of sudden death.¹⁰

Surgical Implications.

Neurosurgeons frequently create burr holes at the pterion for access to the middle cranial fossa. If this area is injured, it needs emergency craniotomy and decompression. Ayurveda's warnings regarding intervention here reflect modern surgical practices.

Comparative Medical Perspectives. In traditional Chinese medicine, the temple region corresponds to acupuncture points like Taiyang (EX-HN5), which are connected to headache relief but avoided for deep needling due to vascular risks. This shared caution across different systems highlights a universal acknowledgment of the temple as a sensitive area.¹¹

Clinical Convergence.

Ayurveda views *Marmas* as centers of *Prana*, where injury disrupts life. Modern science explains this in terms of vascular damage and neurological failure. *Shankha Marma* shows how metaphysical ideas correspond with biomedical realities.

Integrative Value

For Ayurvedic education, linking it with pterion enhances understanding of anatomy. For modern clinicians, recognizing *Marma* concepts demonstrates the depth of ancient observational medicine. For integrative medicine, this reflects the compatibility of traditional wisdom and modern science in ensuring patient safety.

Conclusion

Shankha Marma represents the intersection of Ayurveda and modern neuroanatomy. Its description in classical texts as a *Sadyapranahara Marma* is supported by current knowledge of the pterion's vulnerability and the middle meningeal artery underneath. The identification of this area as containing *Avedhya Sira* parallels modern guidelines against invasive procedures at the temple. This remarkable alignment shows that ancient Ayurvedic scholars had deep anatomical insight, gained through careful observation and clinical experience. Acknowledging the *Shankha Marma* bridges traditional and modern views, enhancing anatomical teaching, surgical safety, and integrative medical practices.

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