IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A Critical Study On Vaikalyakara Marma Of Shiras

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ABSTRACT:

Ayurveda believes that marmas are the vulnerable sites or area of body where prana resides. Any trauma on these sites kills the person. This term has been used in general sense. As all the marma points doesn't leads to death, there are some marma points which causes permanent deformity in the body known as Vaikalyakara marma. In traditional Kshatriya warfare, striking an enemy at a vaikalyakara marma was a tactical method to neutralize a threat without necessarily causing fatality. These are the anatomical points where injury does not immediately cause death, but instead results in vaikalya – disabling deformity or irreversible loss of function. According to Sushruta Samhita, there are 44 such vaikalyakara marma among the 107 marmas identified. Therefore study of the science of marma is clinically very important for all medical practitioners to save the life of patients.

Among the Shadanga (six main body parts), Shiras holds paramount anatomical and physiological significance, as it serves as the central controlling and coordinating system of the entire body, often referred as Uttamanga. These marmas lie in proximity to the brain, cranial nerves and major centres, making them highly susceptible to injury in both ancient and modern combat scenarios.

This paper focuses on the Vaikalyakara marmas of shiras such as Apanga, Avartha, Phana and Vidhura. Classical descriptions from samhitas are examined in correlation with modern neuroanatomy and cranio-facial structures. Clinical outcomes of injuries to these marmas are analysed to bridge traditional knowledge with contemporary medical understanding.

Key words: Marma, Vaikalyakara marma, Shiras, Head injury, Disability.

INTRODUCTION:

The concept of Marma represents one of the most sophisticated contributions of Ayurveda to anatomy, surgery, and traumatology. Marma Vijnana explains the structural and functional importance of specific anatomical sites where injury produces predictable and often severe consequences.

Classical Ayurvedic texts describe 107 Marmas, which are classified based on prognostic outcomes. Among these, 44 are Vaikalyakara Marmas, where trauma results in permanent deformity or functional disability (vaikalya) rather than immediate death.

Several Vaikalyakara Marmas are situated in the Siras (head), which is designated as Uttamanga due to its role as the seat of sensory perception, cognition, and vital neurological control. Injury to Shiragata Vaikalyakara Marmas leads to serious sensory and functional impairments such as blindness, deafness, anosmia, and craniofacial deformities. Hence, understanding these marmas is of immense importance in trauma care, surgical practice, and rehabilitation medicine.

OBJECTIVE:

- To review classical ayurvedic literature for identification, classification and characteristic of Vaikalyakara marma
- To study anatomical considerations of Shirogata vaikalyakara marma
- To analyse clinical manifestations of their injury in light of both Ayurvedic and modern medical science

METHODOLOGY:

A conceptual and analytical review was conducted using classical Ayurvedic texts including Charaka Samhita, Sushruta Samhita, Ashṭanga Hrudaya, and Ashṭanga Sangraha. These descriptions were correlated with contemporary literature on neuroanatomy, cranial nerves, and craniofacial structures.

Concept of Marma

Mrun dhatu + manin pratyaya → Jeevasthana / sandhi sthana.

A marma is defined as conglomeration of mamsa, sira, snayu, asthi and sandhi, where prana dwells by its nature, so any injury to theses marma leads to respective consequences[1].

Marma is the site of chetana, so the sense of pain will be more in this region compared to other parts of the body.

Anatomical and functional significance of Shiras.

Shira - sarvendriyanam adhishtanam[2]

This indicates that head is the seat of all sense organs and the seat of higher neurological control.

Sushruta describes Shiras as the seat of manas, indriya and prana vayu.

Though there are 107 marma in the body, three of them (Basti, Hrudaya and Shira) are considered as pradhana as prana take ashraya here and they are called are "Trimarma[3]". Shiromarma abhighata leads to manyastambha, ardita, bhrama, moha, shiroruk, samjnanasha, mookata, swarabheda. Modern anatomy aligns this with the brain, cranial nerves, major sense organs and the skull bones that protects them. Head is also site of significant vascular and nervous convergence.

W.G Aitchison Robertson has written in Medical Jurisprudence that - Life and health depends on the proper action of the heart, lungs and brain, this has been called the "the Tripod of Life"[6]. Similarly, Ayurveda explains "Trimarma".

Classification of marma: (Vikalpanusara bheda – based on prognosis)[4]

1. Sadhyo pranahara marma
2. Kalantara pranahara marma
3. Vaikalyakara marma
4. Rujakara marma

5. Vishalyaghna marma

Vaikalyakara marma:

Vaikalya – "vikalasya bhavah shyan" vikalatwe[5] | (vachaspatya)

Vikalatwam | vikalasya bhava ityarthe shnyapratyayena nishpannamidam[6] | (skd)

Which means disability.

Among the five categories of marmas based on prognosis, Vaikalyakara Marma occupy a distinct position due to their association with permanent or long-term disability following injury. The term Vaikalyakara denotes those marmas whose trauma does not usually cause immediate death but results in deformity, loss of function, or irreversible impairment of the affected part.

Numerical Strength[7]

Vaikalyakara marma are 44 in number:

- Shakha - 24
- Madhya - 6
- Jatrurdwa - 8(shira) + 6(greeva)

Prognosis and Ghataka Kala[8]

Unlike Sadyopranahara or Kalantarapranahara Marmas, the fatal period (ghataka kala) of Vaikalyakara Marmas is not fixed. Classical texts state that death may or may not occur depending upon the severity of injury, associated complications such as infection or hemorrhage, and the overall strength of the individual. However, the most prominent outcome of injury to these marmas is vaikalya - functional disability rather than mortality.

Nature and Functional Attributes[9]

Vaikalyakara Marmas are described as Soumya in nature, possessing qualities such as stability (sthirata) and coolness (sheetalata). Due to these properties, they support the maintenance of prana and bodily function. Despite their Soumya nature, trauma to these marmas leads to significant functional compromise, indicating that their role is more aligned with structural integrity and coordinated movement rather than immediate life preservation.

Dhatu Involvement and Pathophysiology

Injury to Vaikalyakara Marmas predominantly affects Asthi, Sandhi, Snayu, Sira, and Mamsa. Damage to bones may result in fractures and deformities; injury to joints leads to instability or dislocation; trauma to ligaments causes laxity or loss of joint control; vascular damage may impair nourishment; and muscular injury produces abnormal or restricted movements. Collectively, these changes manifest as stiffness, weakness, loss of coordination, or permanent disability of the affected organ or limb.

Vaikalyakara marma of Shiras

Sl no	Vaikalyakara marma of shira	Number
1	Apanga	2
2	Avarta	2
3	Phana	2
4	Vidhura	2
	Total	8

Vaikalyakara Marmas of the Head[10] – Anatomical and Clinical Correlation

Marma	No.	Type of marma	Anatomical location	Associated structure	Effects of injury
Vidhura	2	Snayu	Below and behind the ear	Posterior auricular vessels & nerves, tympanic membrane, middle ear structures, branches of 8th cranial nerve, deep auricular branch of maxillary artery.	Hearing impairment, deafness
Phana	2	Snayu	On either side of nasal cavity(olfactory region)	Nasal passages, orifice of auditory tube, olfactory cells, olfactory nerves & bulb,	Anosmia
Apanga	2	Sira	Outer corner (lateral canthus) of eye	Zygomatic & temporal vessels, optic nerve & branches, ciliary nerves, lacrimal nerve (ophthalmic division of 5th CN), lacrimal gland.	Visual impairment or blindness
Avarta	2	Sandhi	Junction of frontal, malar, and sphenoid bones	Craniofacial bone junctions, supra orbital & trochlear nerve, branches of ophthalmic artery, frontalis muscle, superior rectus, superior oblique.	Visual deformity, loss of vision

DISCUSSION

Shirogata Vaikalyakara Marmas occupy a unique position among the 44 Vaikalyakara Marmas due to their close anatomical relationship with the brain, cranial nerves, major sensory organs, and neurovascular structures. Injury to these marmas does not usually result in immediate death but leads to permanent functional disability, reflecting the Ayurvedic concept of vaikalya. The clinical manifestations described in classical texts show remarkable concordance with modern neurological and sensory deficits following head and craniofacial trauma.

1. Apanga Marma

Apanga Marma is located at the lateral canthus of the eye and is classified as a sira and Vaikalyakara Marma. Classical texts state that injury to this marma results in andhatva (blindness) or impairment of vision. This can be explained anatomically by the presence of critical neurovascular structures in this region.

From a modern anatomical perspective, Apanga Marma corresponds to the lateral orbital region, where the optic nerve, ciliary nerves, lacrimal nerve, and branches of the ophthalmic division of the trigeminal nerve are present. Trauma in this area, such as orbital fractures, blunt force injury, or penetrating trauma, can lead to optic nerve compression, vascular compromise, or disruption of extraocular muscle innervation. Clinically, this results in partial or complete visual loss, diplopia, impaired ocular movements, and in severe cases, permanent blindness. These manifestations closely align with the Ayurvedic description of vaikalya following Apanga Marma injury.

2. Avarta Marma

Avarta Marma is situated at the junction of the frontal, malar, and sphenoid bones and is categorized as a Sandhi and Vaikalyakara Marma. Classical literature attributes visual deformity and loss of vision to injury at this site.

Anatomically, this region corresponds to the fronto-zygomatic-sphenoid junction, forming part of the orbital rim and cranial base. Injury to this marma is commonly observed in high-velocity trauma, road traffic

accidents, and assault-related facial injuries. Fractures in this area may involve the orbital apex, superior orbital fissure, or optic canal, leading to compression of the optic nerve and associated nerves. Clinically, such injuries result in visual disturbances, ptosis, ophthalmoplegia, and irreversible visual impairment. Thus, Avarta Marma exemplifies how joint-based craniofacial injuries produce permanent sensory disability rather than fatal outcomes.

3. Phana Marma

Phana Marma is located on either side of the nasal cavity and is classified as a Vaikalyakara Marma. Classical texts describe loss of smell (gandhanasha) as the primary consequence of injury to this marma.

Modern anatomical correlation Phana Marma in relation to the nasal septum, superior nasal cavity, and olfactory region, where the olfactory nerve filaments traverse the cribriform plate. Trauma to this region commonly seen in nasal fractures, craniofacial trauma, or basal skull injuries and can damage the olfactory nerve fibers or their central connections. Clinically, this manifests as anosmia, which may be temporary or permanent depending on the severity of injury. Loss of olfaction significantly affects quality of life and safety, supporting the Ayurvedic classification of Phana as a Vaikalyakara Marma.

4. Vidhura Marma

Vidhura Marma is located below and behind the ear and is classified as a Snayu and Vaikalyakara Marma. Classical descriptions associate injury to this marma with hearing loss and auditory dysfunction.

Anatomically, this region corresponds to the mastoid and post-auricular area, containing the posterior auricular vessels, middle ear structures, tympanic membrane, and branches of the vestibulocochlear nerve. Trauma to this area such as temporal bone fractures, penetrating injuries, or surgical complications, can damage the tympanic membrane, ossicular chain, or cochlear nerve. Clinically, this results in conductive or sensorineural hearing loss, tinnitus, vertigo, and balance disturbances. These outcomes are often irreversible, clearly illustrating the Vaikalyakara nature of Vidhura Marma.

The Shirogata Vaikalyakara Marmas - Apanga, Avarta, Phana, and Vidhura are predominantly associated with sensory disabilities involving vision, hearing, and smell. Injury to these marmas results in permanent functional impairment rather than immediate mortality, emphasizing Ayurveda's nuanced understanding of trauma-related morbidity. The classical descriptions demonstrate striking concordance with modern clinical entities such as optic nerve injury, orbital apex syndrome, anosmia following skull base fractures, and hearing loss due to temporal bone trauma.

CONCLUSION

The concept of Vaikalyakara Marma reflects Ayurveda's advanced understanding of trauma, disability, and long-term functional impairment. Among these, the Shirogata Vaikalyakara Marmas - Apanga, Avarta, Phana, and Vidhura hold exceptional clinical importance due to their close anatomical relationship with the brain, cranial nerves, major sensory organs, and neurovascular structures. Injury to these marmas does not usually result in immediate death but leads to permanent sensory and functional disabilities, significantly affecting quality of life.

Classical Ayurvedic descriptions of visual loss, auditory impairment, and olfactory dysfunction following injury to these marmas show a remarkable correlation with modern clinical conditions such as optic nerve damage, orbital fractures, temporal bone injuries, and olfactory nerve disruption. This concordance highlights the scientific precision of Marma Vijnana and its relevance even in contemporary medical practice.

Understanding Shirogata Vaikalyakara Marmas is crucial for clinicians involved in trauma management, surgical interventions, and rehabilitation. Awareness of these vital points aids in preventing iatrogenic injury, anticipating clinical outcomes, and planning long-term care for patients with head and craniofacial trauma. Thus, the study of Vaikalyakara Marmas of the head not only enriches anatomical and surgical knowledge

but also provides a holistic framework for understanding disability, bridging classical Ayurvedic wisdom with modern neuroanatomy and clinical medicine.

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