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ANATOMICAL EXPLORATION OF *SHANKHA MARMA* W.S.R TO AYURVEDA AND MODERN POINT OF VIEW

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Abstract: *Ayurveda* is the holistic science of treating physical and mental ailments and promote healthy living. *Marma* is a unique concept of Ayurveda and is been explained extensively by *Acharya Sushruta* and *Acharya Vagbhatta* in their respective classical text. *Marma* are said to be the sites where the *Prana* resides. Trauma to these vital points leads to instant death, rigorous pain or enduring disability.

Shankha Marma is one of the *Marma* of *Urdhvajatrugata* region (head region) situated in between the ear and the forehead and just above termination of the superciliary arch/eyebrow. *Shankha Marma* is considered as *Sadhyapranahara Marma*. Injury to this area leads to sudden death. *Acharya Sushruta* described that it is situated between the *Karna* (ear pinna) and the *Lalata* (forehead) above the *Bhru-Puchha* (end portion of eye-brows). It corresponds to the temple area in skull. Pterion, a craniometric point, can also be associated with *Shankha Marma*. The point corresponding with the posterior end of the Spheno-parietal suture is named the Pterion. In this paper, we will discuss all the possible anatomical structures associated with *Shankha Marma* making it as one of the most important *Marma* of *Uttamanga*.

Index terms - *Shankha Marma*, Pterion, *Marma*, *Sadhyapranahara Marma*

INTRODUCTION

Shankha Marma

Shankha means counch or temple.

Anatomical site: *Shankha Marma* is situated in between the ear and the forehead and just Above the termination of the superciliary arch/eybrow.[1]

Type of *Marma*: Depending upon the structural classification it is *Asthi Marma*

Number and Measurement: *Shankha Marma* are two in number and *Ardha Angula* in *Pramana*.[2]

Prognostic status it is *Sadyopranhara Marma* which means any injury to this may cause sudden death of the person.

Anatomical exploration of *Shankha Marma*:

The underlying structures present at this location are: -

Temporal bone

Temporal fascia and muscle

Auriculotemporal nerve

Middle meningeal artery

Superficial temporal artery

The term *Shankha* anatomically depicts the very close relation with the *Shankhaasthi* that is temporal bone which is structurally very thin and weak.in this area there present temporal fascia then temporal muscle along with the branches of superficial temporal artery, auriculotemporal nerve and behind that bone present anterior division of middle meningeal artery. There is a superficial temporal artery and in the interior part of this artery there is a middle meningeal artery relating to this *Marma*, due to the injury on the temple region the death occurs. The chances of laceration of middle meningeal artery are more at the point where it leaves the bony canal at pterion. The area of temporal bone called Pterion is a H shaped irregular suture which is the confluence of 4 bones, namely- frontal, parietal, greater wing of sphenoid, and squamous part of temporal bone. This is the part of temporal bone which is very weak because of the sutures present at that place.

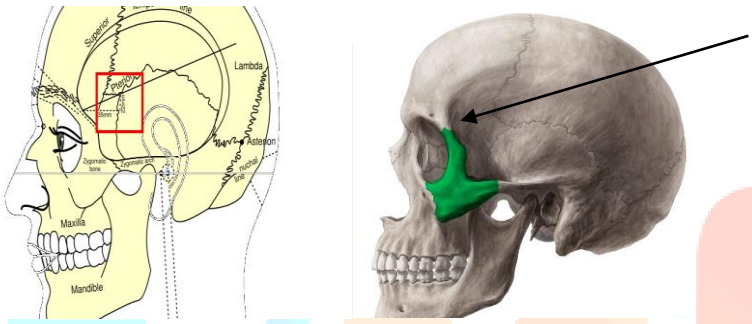
DISCUSSION

Shankha is a bony structure which protects the delicate substance lying under the area of this *Marma*. *Acharya Sushruta* described that it is situated between the *Karna a*nd the *Lalata* above the *Bhru-Puchha*.[3] (*SU.SHA.6/27)* Temple is the area between the temporal line and zygomatic arch. The skull is thin here and it is covered by temporalis muscle, temporalis muscle. There is a Superficial Temporal artery and in the interior part of this artery there is a middle meningeal artery relating to this *Marma*, due to this, injury on the temple region results in death.

Clinically, the Pterion is relevant because the middle meningeal artery runs beneath it, on the inner side of the skull, which is quite thin at this point.

Temple is the area between the temporal line and zygomatic arch. The skull is thin here and it is covered by temporalis muscle, temporalis muscle. There is a superficial temporal artery and in the interior part of this artery there is a middle meningeal artery relating to this *Marma*, due to the injury on the temple region the death occurs. There is an example regarding injury to this *Marma* and its traumatic effect like there was a person in Kanpur city and he was known as '*Kanpatimaar*'. Because he used to hit by a blunt instrument on the *Shankha Pradesh* due that affected person would become unconsciousness or die. This shows the importance of *Shankha Pradesh* which has been classified by *Sushruta* under *Sadyapranhara Marma*.

Pterion - Pterion is a H shaped irregular suture which is the confluence of 4 bones , namely- frontal, parietal, greater wing of sphenoid, and squamous part of temporal bone. It is marked at 4cm above the zygomatic arch and 3.5 cm behind the frontozygomatic suture. It is a important landmark for surface marking of frontal branch of middle meningeal artery. It is similar to the explanation given by *Acharya Sushruta* as *BhruPuchha antyo upari* i.e. it is situated between the *karna (*ear opening) *a*nd the *lalata* (forehead) above the *Bhru-Puchha* which directly points towards Pterion. Deep to the pterion lie, the middle meningeal vein, the anterior division of the middle meningeal artery, and the stem of the lateral sulcus of brain (Sylvian point).



भ्रुवोरन्तयो/ भ्रुपुच्छन्तयो – Frontozygomatic suture.

Surface marking of Pterion

Middle Meningeal Artery

Branch of First part of Maxillary artery. Largest of the meningeal arteries. Ascends b/w the sphenomandibular ligament and lateral pterygoid muscle, passes between roots of auriculotemporal nerve and enters cranial cavity through foramen spinosum. Terminates by dividing into anterior(frontal) and posterior (parietal) branch. The middle meningeal artery enters the skull medial to zygoma's midpoint, dividing 2cm above this. From here the frontal branch runs first up and forward to the pterion and then up and backwards. The parietal branch runs to the back towards the lambda.

Temporalis Muscle

It is a Fan shaped muscle which fills the temporal fossa. Originates from temporal fossa, temporal fascia. Anterior fibres run vertically, Middle fibres run obliquely and Posterior fibres run horizontally and gets Inserted into the deep surface of coronoid process, anterior border of ramus of mandible.

Temporal Fascia

The temporal fascia is a thick aponeurotic sheet that roofs over the temporal fossa and covers the temporalis muscle. Superiorly, the fascia is single layered and is attached to the superior temporal line. Inferiorly, it splits into two layers which are attached to the zygomatic arch. The small gap between the two layers contains fat, a branch from the superficial temporal artery and the zygomaticotemporal nerve.

Result of the Injury to Area Associated with the *Shankha Marma*

Middle meningeal artery present in the area of the *Shankha Marma* so if any injury occurs at these regions, it can be torn and results into extradural haemorrhage.

If the fracture of the skull occurs in the temporal region or separation of dura mater occur without fracture then there will be haemorrhage due to this artery and subdural haematoma will be formed. It is very dangerous as the infection may spread to intracranial region and cause fatal result. If the trauma is deep, it may cause the evulsion of anterior branch of middle meningeal artery resulting in extradural haematoma, leading to fatal complications and death.

The chances of laceration of middle meningeal artery are more at the point where it leaves the bony canal at pterion. This is the part of temporal bone which is very weak because of the sutures present at that place.

Injury to pterion can also lead to rupture of middle meningeal artery. Damage to pterion leads to unobstructed injury of the sphenoidal part of the sylvian fissure (lateral sulcus) which is the access door of the entire anterior and middle skull base. This lateral sulcus (sylvian fissure) separates the frontal and parietal lobes from the temporal lobe and therefore injury to this will lead to injury of various functional areas of brain. The sylvian fissure provides the sole passageway for the middle cerebral artery so if the sylvian fissure is damaged, chances of laceration of this artery are high.

When the trauma is less severe on this *Marma* then there will be the rupture of superficial artery causing sub aponeurotic haematoma it is dangerous because of the infection reaches the intracranial region which produces fatal results.

CONCLUSION

According to Ashtang Sangraha, the agglomeration of all five components i.e. *Mamsa* , *Sira*, *Snayu*, *Asthi* and *Sandhi* makes a *Marma* point as *Sadyapranhara Marma*.[4]

Since all the five elements are present at this *Marma* point, it becomes more fatal and life threatening.

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