www.jahm.in
(ISSN-2321-1563)

REVIEW ARTICLE

CRITICAL REVIEW OF SHANKHA MARMA WITH SPECIAL REFERENCE TO PTERION

CHANNAMALLIKARJUN DAVERGAON[1]

ABSTRACT

Marma Sharira is an ancient traumatological anatomy presented by both *Sushruta* and *Vagabhata.* Though the presentations are grossly similar, whereas Charaka given *Trimarma. Shankha Marma* is considered as *Sadhyapranahara Marma*, injury to this area leads to sudden death which is located in head region plays a important role in clinical aspect during the head injuries, the head injuries are considered serious part due to the brain involvement, where in most of the head injury occurs during the road accidents, patients dies or get the serious deformities. Here in *Shankha Marma* the structures like anterior branch of middle meningeal artery which supplies to brain part, due to its injury the person may dies or may get physical deformities. The pterion which marks the union of 4 bones of the cranium is located superior to the zygomatic arch and posterior to the frontozygomatic suture. It is an important neurosurgical landmark for the lateral/pterional approach and has racial differences in both its location and pattern of union of the bones. In *Ayurveda* also head region is considered the *Uthamanga* compare to other body part. We need the detail anatomical structures of *Shankha Marma* to diagnose and treat the diseases especially in surgical aspect. In our routine work specially in driving the vehicles we can prevent from head injuries. The pterion which marks the union of 4 bones of the cranium is located superior to the zygomatic arch and posterior to the frontozygomatic suture. It is an important neurosurgical landmark for the lateral/pterional approach and has racial differences in both its location and pattern of union of the bones.

Keywords: *Ayurveda, Marma, Shankha Marma,* Pterion, *Sadhyapranahara Marma.*

Professor & HOD, Dept of Rachana Sharir (Anatomy), G J Patel Ayurveda College & Research centre, New Vallabha Vidya Nagar, Anand, Gujrat, INDIA
Corresponding Email id: mdavergaon@gmail.com Access this article online: www.jahm.in

Published by Atreya Ayurveda Publications under the license CC-by-NC.

INTRODUCTION:

Ayurveda the ancient science where it deals with maintaining the good health and treatment of diseases. The *Marma sharir* is the part it deals with vital parts of body, the person should prevent these areas from injuries. In *Ayurveda* it is included because in olden days during war injuries each person should have the knowledge of *Marma* to prevent vital parts from all type of injuries. *Acharya Sushrut* and *Vagbhata* mentioned 107 *Marmas* in all over body, during different classifications of *Marma* both *Acharya Suhruta* and *Vagbhata* consider Shankha *Marma* under *Sadhyapranahara Marma* (leads to sudden death) in *shaarirasthan*, located in *shiras pradesh* injury to this area leads to sudden death. During sport injuries especially in boxing, there is a chance to have injury to it, if injury occurs the person may die or may have serious deformities. Pterion a cranio-metric point has been described according to its location, type and relationship with the surrounding bony landmarks. Approach through pterion is mostly used to treat lesions of anterior and middle cranial fossa. Pterion ossicle or Epipteric bone are sometimes mistaken as a fracture at this point.

SHANKHA MARMA:

Acharya Sushrut included *Shankha Marma* in *Sadhyapranahara Marma* and *Asthi Marma*, located in *urdhvajatru pradesh. Abhighata* to this *Marma* leads to sudden death.

Puchanthayorupari karna lalatayormadhye shankhounama, tatra sadhyomaranam.

Its anatomical place is just superior to lateral part of outer canthus, in between ear and forehead. This place is taken as temporal region where temporal bone is present, even its classification is also *asthi marma.*

Pterion is usually indicated by an H-shaped formation of sutures that unite the frontal, parietal, sphenoid(grater wing), and temporal bones. Less commonly, the frontal and temporal bone articulate, sometimes all bones meet at a point. The pterion corresponds to the site of anterolateral fontanelle of neonatal skull which closes in the third month after birth. The joints of the cranial vault are sutural joints which ossify in membranes. As the bones are growing, the non-ossified sutural membranes connect the periosteum covering the outer and inner surface of the bone, which helps in growth as well as binding the bones together to their apposed margins. A sutural bone is sometimes present at the pterion. This bone is called pterion ossicle or Epipteric bone or flower's bone.

Underlying structures:

Anterior branch of middle meningeal artery, branch of maxiilary artery, it is one of the terminal branch of external carotid artery is passing just beneath to shankha marma which

supplies to dura mater (meninges, covering of brain), and it enters the cranium through foramen spinosum. Injury to this artery leads to extradural haematoma.

MATERIALS AND METHEDOLOGY:

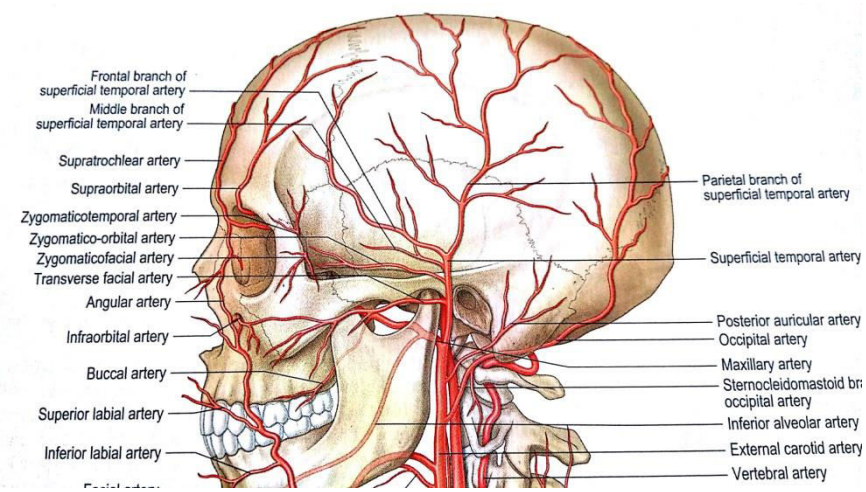
Literature of *Ayurvedic* and modern science available from vedic era to present era.

Cadaver, dissection set, study conducted at department of *Rachana Sharir*, G J Patel *Ayurveda* College and Research center New Vallabha Vidya Nagar, Anand, Gujarat.

OBSERVATION:

Location: *Shankha Marma* is situated about 3 cm. behind, and a little above the level of the zygomatic process of the frontal bone.It marks the junction between four bones. The parietal bone, temporal bone, sphenoid bone and frontal bone. The point corresponding with the posterior end of the sphenoparietal suture is named the pterion. The pterion is known as the weakest part of the skull. 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. A blow to the pterion (e.g. in boxing) may rupture the artery causing an extradural haematoma. The pterion may also fracture indirectly. Blows to the top or back of the head may not cause fracture at the site of impact, but may place sufficient force on the skull that its weakest part, the pterion, will fracture.

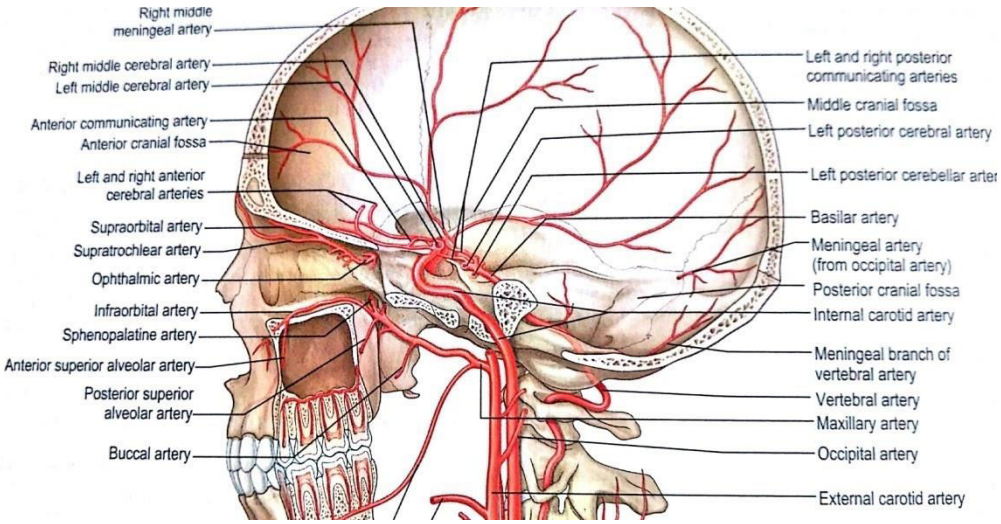
Figure 1: Overview of the superficial arteries of the head & neck



The temporal lobe, located on either side of the brain just above the ear, plays an important role in hearing, language, and memory. The *Shankha Marma* is the area where four bones, the parietal and

frontal bones, the greater wing of the sphenoid bone, and the squamous part of the temporal bone, approach each other.

Figure 2: Overview of the deep arteries of the head & neck



The pterion overlies the anterior branch of the middle meningeal artery on the internal aspect of the skull, and it corresponds to the stem of the lateral sulcus of the brain.

The center of the pterion is about 4 cm above the midpoint of the zygomatic arch and nearly the same distance behind the zygomatic process of the frontal bone. Clinically, the pterion is relevant because the anterior division of the middle meningeal artery runs beneath it, on the inner side of the skull, which is quite thin at this point. The combination of both a vital artery in this area and the relatively thin bone structure has lent itself to the name "God's little joke" by some physicians. Pterion is an area of bone junction in the anterior part of the temporal fossa. Pterion lies two fingers superior to the zygomatic arch and a thumb's breadth posterior to the frontal process of the zygomatic bone.

DISCUSSION & CONCLUSION

Shankha Marma is considered by both *Sushruta* and *Vagbhata* where it is classified under *sadhypranahara marma* and *asthi marma*. *Acharya Sushruta* told injury to this leads to sudden death, on observation during the study I found the anterior branch of middle meningeal artery which supplies to duramater. To become sudden death there should be such structure by its injury leads to death, for this most common we find the arteries, because by the damage of artery there will be profuse bleed, the supply will be

stopped where it is supplies, here it supplies to brain part which we consider as a *uttamanga* among all. By the loss of blood supply to meninges leads to loss of its function and there will be formation of blood clot, this will irritate the brain and leads to loss of function of perticular part. In modern anatomy this area is taken as a pterion part.

Pterion is less likely to be diagnosed as a fracture site due to non occurrence of epipteric type of pterion in human skull can be easily located with its relation to bony landmarks, and is most preferable approach in neurosurgery. It is the region mostly used as a guiding point where the position of deeper structures and their relations to the surface of the head are explained. This point is an important clinical landmark because the calvarium is thin and gets fractured easily. It overlies anterior branch of the middle meningeal artery which is the most common artery to be damaged producing extradural haematoma, requiring burr hole surgery to evacuate haematoma. It is the point where the greater wing of the sphenoid meets the anterio-inferior angle of the parietal bone and is not marked by an eminence or a depression, In neurosurgery, it is important to have the most suitable bony aperture in order to be minimally invasive.

We can say in day today life like in motor driving everyone should wear helmets to prevent such incidences, even in olden days during the war they use to do such materials to prevent from all type of injuries.

REFERENCES

1. B G Ghanekar (editor), *Sushrut Samhita Sharir sthana,* Chapter 6, verse no.37, page no. 198, Meharchand Lachhmandas Publications, New Delhi, 2007.

2. Bramhanand Tripathi (editor), *Astanga Hridaya, Sharirasthana* chapter 4, verse no.32, page no. 393, Chaukambha Sanskrit Pratisthan, New Delhi, 2011.

3. Elaine N. Marieb, Human Anatomy and Physiology, 6th edition, Dorling Kindersley India Pvt Ltd

4. Neeta V Kulkarni, Clinical anatomy, 2nd edition, Jaypee brothers medical publishers Pvt Ltd.

5. Anne Waugh, Editor.Ross and Wilson, Anatomy and Physiology in Health and illness, 10th edition, Churchill Livingstone publisher.

6. Susan Standring, Editor. Gray's Anatomy, 48th edition, 2008, Churchill Livingstone, Elsevier publisher.

7. Sunday A. Adejuwon, Funmilayo E. Olopade, and Modupe Bolaji Study of the Location and Morphology of the Pterion in Adult Skulls ISRN Anatomy Volume 2013, Article no. 403937.

8. Anurag, Shashi Munjal, Puja Chauhan, Alok Chaudhary, Pterion its location and clinical implications, Journal of evolution of medical and dental sciences, Volume 2, issue 25, June 2013.

Cite this article as: Channamallikarjun Davergaon. Critical review of Shankha marma with special refferance to pterion, *J of Ayurveda and Hol Med (JAHM)*.2017;5(2):24-28

Source of support: Nil

Conflict of interest: None Declared.