

## MORPHOMETRIC STUDY OF “VISHALYAGHNA MARMA” ON THE HUMAN DRY SKULL

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### ABSTRACT

*Marma* in *Ayurveda* classics is illustrated as the vital point in human body. These are the junctions of *Mamsa*, *Sira*, *Snayu*, *Asthi* and *Sandhi*. When anyone of them is afflicted, the resultant suffering is very severe. Description of 107 *Marmas* given by all *Acharyas* being classified on the basis of *Shadanga*, *Rachna*, *Parimana*, *Parinama*, and *Sankhya*. “*Vishalyaghna Marma*” is one such vital region in human body, which falls under the classification based on *Parinama*. Totally three “*Vishalyaghna Marmas*” are present in the human body these are two “*Utkshepa Marma*” and one “*Sthapani Marma*”. “*Vishalyaghna Marmas*” fatal after extraction of foreign body. The *Parimana* (dimension) of “*Vishalyaghna Marma*” mentioned in *Ayurveda* classics is “*Ardhangul*” Which is nearer to one cm. The classical books of *Ayurveda* have not mentioned exactly, how to measure the *Parimana* of the *Marma*. The present morphometric study was aimed to identify the precise location and actual dimension of the “*Vishalyaghna Marma*” on the bases of 60 dry human skulls. Researcher had attempted to find the anatomical structures, which are present within the dimension (*Ardhangul Parimana*) of “*Vishalyaghna Marma*” either in periphery or Superficial to deep from the point of glabella and Petriion with the help of Vernier Caliper. The mean distance was measured. The knowledge of dimension and location is useful for proven its *Vishalyaghna* condition.

**Keywords:** Morphometric, *Vishalyaghna*, *Sthapani*, *Utkshepa*

### INTRODUCTION

“*Marma*” is one of the important subjects of *Ayurveda*. Indian *Ayurveda* scientists such as *Atreya*, *Dhanvantari*, their respective disciples & followers have located 107 vulnerable anatomical areas on the surface of human body and labeled them as “*Marmasthal*”.<sup>1,2,3</sup> The word “*Marma*” comes from *Sanskrit* origin “*Mri*” means place for *Prana* (life). If *Vatadi Dosas* vitiate (endogenous factors) or exogenous trauma is inflicted

on these *Marma* points, the *Prana* is disturbed, ultimately producing disease leading to death or death like symptoms.<sup>3</sup> A very interesting description is found in *Sushruta's Marma Sharir* that “*Vishalyaghna*” is a variety of *Marmas*, which is classified under the *Parinama Prakarena* of *Marma*. Totally three “*Vishalyaghna Marmas*” are present in the body these are two “*Utkshepa Marmas*” and one “*Sthapani Mar-*

ma".<sup>3,4</sup>The term "*Vishalyaghna*" coined as, it is not a fatal one, and up to the removal of *Shalya* (foreign body), i.e. the person will be alive until the removal of *Shalya*. It is mentioned in classical books that the measurement of "*Vishalyaghna Marma*" is "*Ardhangul*" which is nearer to one cm.<sup>3,4,5,6,7</sup> here an attempt to clarify the actual underlying anatomical structures at the site of "*Vishalyaghna Marma*" and measurement of these "*Marmasthal*" with the help of morphometric study on dry human skull.

#### Material and Methods

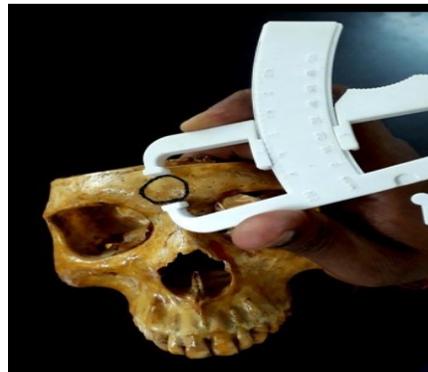
Detailed Study of dry human skull specifically the frontal and temporal regions explored in relation to their applied aspect. This study was conducted on 60 dry human skulls in the department of Rachna Sharir, Pt. Khushilal Sharma Govt. (Autonomous) Ayurveda College & Institute, Bhopal. Department of Anatomy, Gandhi Medical College, Bhopal and Department of Anatomy, L.N. Medical College, Bhopal. Morphometric study was conducted with the help of measuring tools i.e. Vernier caliper etc. Observations were correlated in the view of *Ayurveda* description of

"*Vishalyaghna Marma*" with the help of modern medical science. The mean value and outcomes for the measurement of "*Sthapani*" & "*Utkshepa Marma*" were measured and recorded.

#### DISCUSSION

##### *Sthapani Marma:*

The "*Sthapani Marma*" is a "*Sira Marma*" situated "*Bhruvo-madhye*" (between both eyebrows).<sup>3,4</sup> Anatomically it can be correlated with "glabella point". The *Parimana* (dimension) of "*Sthapani Marma*", mentioned in *Ayurveda classics* is *Ardhangul*,<sup>3,4</sup> which is approximately 1 cm.<sup>8,9</sup> The classical books of *Ayurveda* have not been mentioned exactly, how to measure the *Parimana* of the *Marma*. Therefore, researcher had attempted to find the anatomical structures, which are present within the dimension (*Ardhangul Parimana*) of "*Sthapani Marma*", either in periphery or Superficial to deep from the point of glabella on the 60 dry human skulls. For above purpose a circle of one cm. radius was drawn around glabella by taking it as center point.



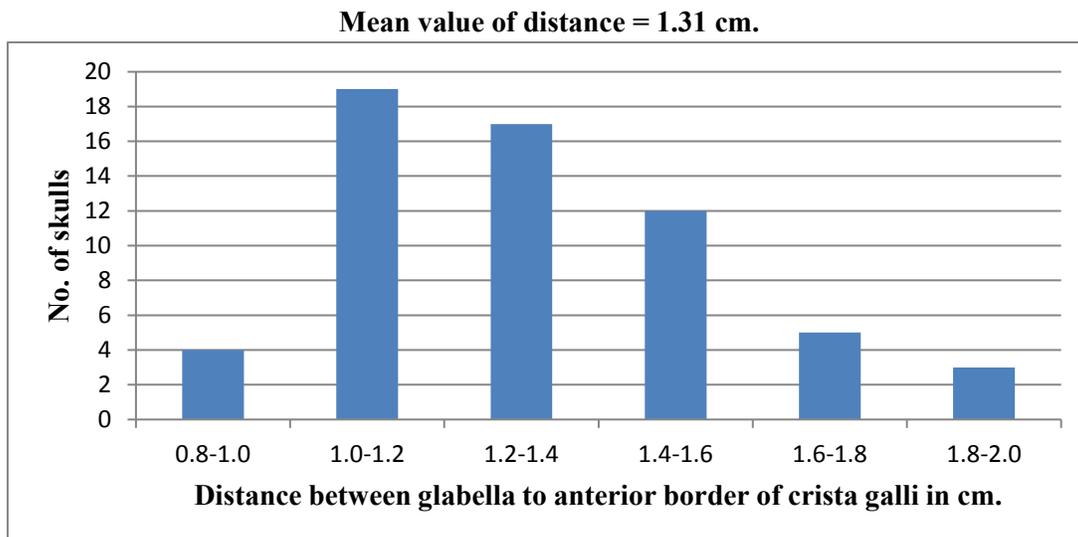
**Photographs showing Morphometric study at the site of Sthapani Marma with the help of vernier caliper**

During observation in periphery researcher did not find any significant and vital anatomical structures superficially, which may cause haemorrhage or any "Vishalyaghnatva" condition. While during study researcher measured the depth (Antero- posteriorly) from glabella to crista galli in horizontal plane in different 60 dry human skulls with the help of vernier

caliper. Researcher found frontal bone, frontal bony sinus, frontal crest and crista galli antero-posteriorly.<sup>10,12</sup> these major anatomical structures are taken in the account present in above area is superior sagittal sinus, which begins anteriorly at the crista galli by the union of tiny meningeal veins and communicates with the veins of the Frontal sinus.<sup>10,11,12</sup> The mean of distance between Glabella to anterior border of crista galli was found 1.31 cm. which is tabulated as follows.

**Table 1:** Distance range between Glabella to anterior border of crista galli in different 60 skulls

S.No.	Distance range between Glabella to anterior border of crista galli (in centimeter)	Number of Skulls
1.	0.8 - 1.0	04
2.	1.0 - 1.2	19
3.	1.2 - 1.4	17
4.	1.4 - 1.6	12
5.	1.6 - 1.8	05
6.	1.8 - 2.0	03

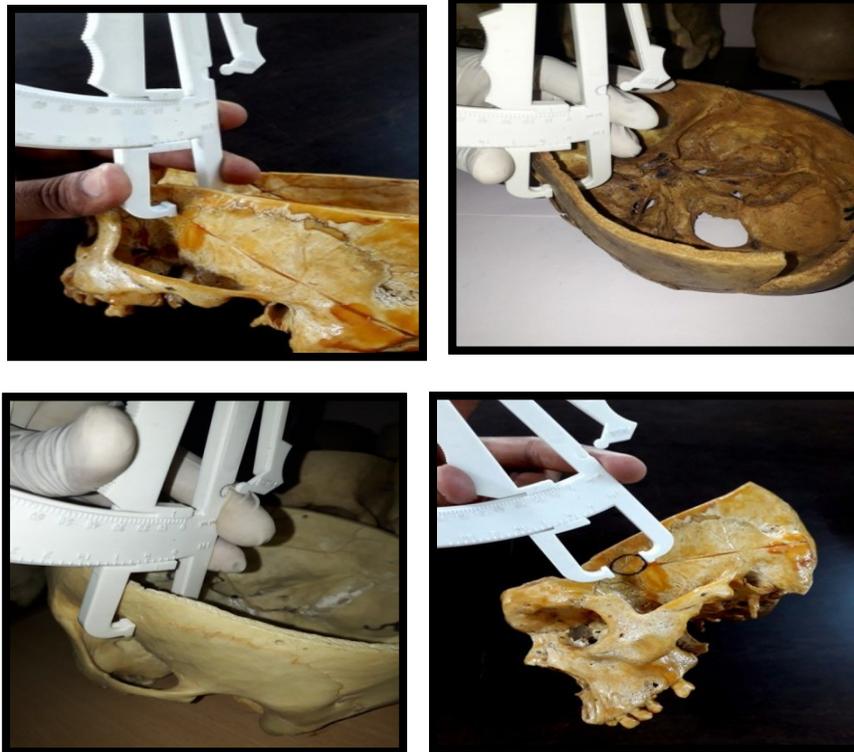


**Graph 1:** Bar graph representing distance range between glabella to anterior border of crista galli (in cm.) and number of skulls.

The mean of above values is 1.31cm. which is nearer to *Ardhangul Parimana* of "Sthapani Marma" as mentioned in *Ayurveda classics*. Superior sagittal sinus lies within this *Ardhangul Parimana* and injury to this can produce subdural haemorrhage and responsible for "Vishalyaghna" like condition. Therefore, it may be correlated with "Sthapani Marma".

**Utkshepa Marma**

In *Ayurveda classics*, "Utkshepa Marma" is a "Snayu Marma" situated "Shankhyopari-Keshante".<sup>3,4</sup> anatomically it can be correlated with "pterion point". This point is located at the temporal region of the skull.<sup>10,12</sup>



**Photographs showing Morphometric study at the site of Utkshepa Marma with the help of vernier caliper**

The *Parinama*(dimension) of "Utkshepa Marma" is *Ardhangul*,<sup>3,4</sup>which is approximately one cm.<sup>8,9</sup> Similar as "Sthapani Marma"; *Ayurveda* classics have not mentioned any method to measure *Parimana* of *Marma*. Therefore, researcher had attempted to find the anatomical structures, which are present within the dimension of "Utkshepa Marma", either in periphery or superficial too deep from the point of pterion. For

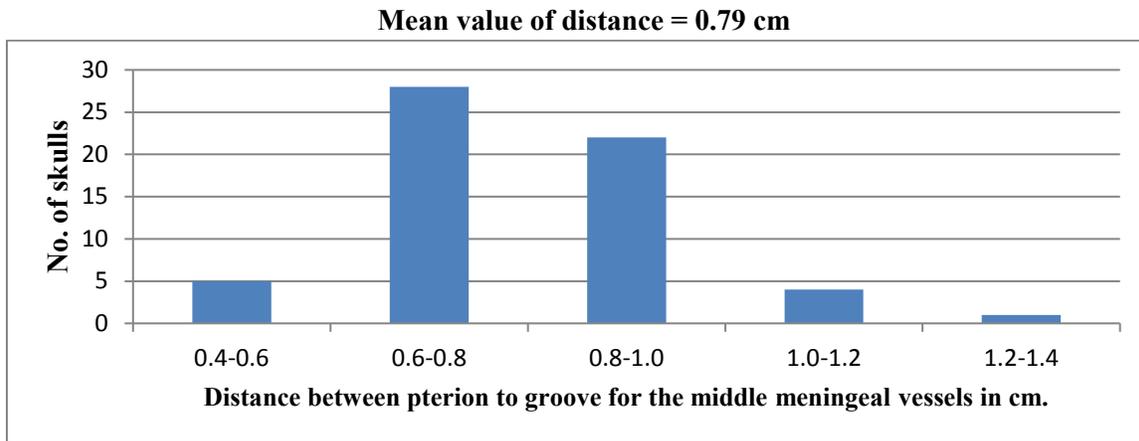
above purpose a circle of radius 1 cm. radius was drawn considering pterion as center point.

While during study researcher measured the depth (superficial to deep) from the point of pterion. During measurement researcher found a groove in middle cranial fossa.<sup>10,11,12</sup> The middle meningeal vessels lie in this groove, which are responsible for extradural haemorrhage as well as "Vishalyaghna" like condition.

The mean of distance from pterion to groove was found 0.79cm. which is tabulated as follows.

**Table 2:** Distance range between Pterion to Groove for middle meningeal vessels in different 60 skulls

S.No.	Distance range between Pterion to Groove for middle meningeal vessels (in centimeter)	Number of skulls
1.	0.4 - 0.6	05
2.	0.6 - 0.8	28
3.	0.8 - 1.0	22
4.	1.0 - 1.2	04
5.	1.2 - 1.4	01



**Graph 2:** Bar graph showing distance range between Pterion to groove for middle meningeal vessels (in cm.) and number of skulls.

The above discussion clearly shows that the distance from pterion to groove within *Ardhanul Parimana*, which is similar to *Parimana* of "Utkshepa Marma" as, mentioned earlier. Injury to this anatomical site may cause extradural haemorrhage and responsible for "Vishalyaghna" like condition. Therefore, this site can be correlated with "Utkshepa-Marma".

## CONCLUSION

"*Sthapani Marma*" is a "*Sira Marma*" it can be correlated with Glabella point. *Parimana* of "*Sthapani Marma*" is "*Ardhangul*", which is nearer to one cm. on the bases of morphometric study the dimension of "*Sthapani Marma*" has been measured 1.31 cm. The anterior end of superior sagittal sinus lies within this range. The superior sagittal sinus is responsible for condition like "*Vishalyaghna*". *Parimana* of "*Utkshepa Marma*" is "*Ardhangul*" which is nearer to one cm. & it can be compared with the structure "Pterion". Based on morphometric study the dimension of "*Utkshepa Marma*" has been calculated 0.79 cm. Responsible anatomical structures for "*Vishalyaghna*" like condition lie within this range.

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