

# Study Of Shirogat (Head Region) Avedhyasira And Marma With Special Reference To Adhipati And Shankha As Avedhyasira And Sadhyapranharmarma.

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## Abstract –

*Ayurved is science of healthy life, which has its unique and useful basic concepts. Out of these concepts, Avedhyasira and Marma-Vigyan are important structural concepts which are described by AcharyaSushrutin SushrutaSamhitaSharirsthan and by AcharyaVagbhat in AstangHridayaSharirsthan. Without studying Avedhyasira and Marma, Surgeon cannot perform skilled and perfect surgery as well as for physician it will be definitely difficult to treat the patients without knowing the perfect location of these structures. In our present study we emphasized on Avedhyasira and Marmain the head region. Specially Adhipati and Shankhathese two structures which are studying in the text as Marma and Avedhyasira are the same, which in the modern texts are given as vital parts. With the help of correlation with modern anatomy, here we try to explain exact anatomicalstructure mentioned as Adhipati and ShankhaAvedhyasiraand sadhyapranharMarma.*

*In ancient time AcharyaSushrut and Vagbhat have clearly mentioned these structures from which incision should not be taken and more care should be taken as they are vital parts and fatal of life. Injury to these structures may cause death also.*

**Keywords -** Avedhyasira, sadhyapranharMarma, Adhipati, Shankha, Shirogat.

## INTRODUCTION:

Ayurveda is known for its basic concepts which are unique and very useful in the modern era. The explanation about Marma and avedhyasirais given in SushrutSamhita, AstangHridaya and CharakSamhita literature. In SharirsthanSushrutaacharyahas explained about 108 Marmas, illustration of Avedhyasiras and explanation about Siravyadha means puncturing the siras for treatment intention is given very nicely. Marma and avedhyasira are also described in AstangHridayaSharirsthan.

Marma is the place which has unusual throbbing and pain on touch. The marmas (vital spots) are so called because they cause death, and they are the meeting place of muscle, bones, tendons, arteries, veins and joints, life entirely resides in them (any injury or assault to these causes danger to life)<sup>1</sup>

These are the vital points of the body. A trauma to Marma may causes death. These are the points containing life (Jeevanasthana) where Marma, sira, Snayu, asthi and sandhi come together. A detailed description composing of the number of Marmas, their constitution,

situations in the body, their angulipraman as well as signs and symptoms when injured is well elaborated in the 'Marmashariram'

AcharyaSushruta described sira after describing marma. Above the neck and in head region total 50 vedhyasira are described. No incision or opening should be made into any of these fifty vessels situated in the region above the clavicles<sup>2</sup>. Nomenclature of vedhyasira and marma are same indicates that both has close relationship between them. The name of some Marma and the name of vedhyasira are same.

Avedhyasira are the Anatomical structures which are either deep vessels or the vessels which can lead the harmful effects by puncturing them. So, this is the perfect indication for physician to avoid Vedhan (puncturing) of these Avedhyasira.

This is further corroborated by the fact that the sira are found to enter into the marmas for the purpose of keeping of maintaining the moisture of the local ligaments (Snayu), bones, muscles and joints thus sustain the organism<sup>3</sup>.

Therefore, a study was carried out to evaluate the importance of vedhyasira and marma in the present days and to create a relationship between the two. 'Adhipati and Shankha structure which acts as both the vedhyasira and siramarma was chosen for the study.

In our present study we emphasized on Avedhyasira and Marma in the head region. Specially Adhipati and Shankha these two structures which are studying in the text as Marma and Avedhyasira are the same, which in the modern texts are given as vital parts. With the help of correlation with modern anatomy, here we try to explain exact anatomical structure mentioned as Adhipati and Shankhaavedhyasira and sadhyapranharMarma.

#### **Aim and Objectives:**

**Aim:** To correlate ShirogatAvedhyasira and Marma

#### **Objectives:**

1. To study ShirogatAvedhyasira
2. To study ShirogatMarma
3. To come to conclusion that Adhipati and Shankha should be considered asAvedhyasira and SadyapranherMarma and to find out the exact anatomical structure.

#### **Material and Method:**

This is a study of two basic concepts of AcharyaSushruta and AcharyaVagbhat. It was my humble attempt to collect all the relevant references from different *Samhitas* (*i. e. SushrutSamhita, AstangHrudayamand CharakSamhita*) as well as other available ancient and modernbooks.

- (1) Study and collection of references related to concept of *avedhyasira*.
- (2) Study and collection of references related to *marma- sharira* from different *Samhitas*.
- (3) Study the correlation between *avedhyasira* and *Shirogatmarmain Shir* (head) region.
- (4) Correlation of these terms with modern anatomical structures.

#### **Literature Review:**

As per AcharyaSushrut and Vagbhat total number of sira in the body are 700. Out of them for the whole body vedhyasira are 98.

Meaning of vedhyasira is the veins which should not cut or incised and punctured. In urdwajatrugat region (above the neck) total 50 vedhyasiras are present<sup>4</sup>.

#### **Description of UrdwajatrugatAvedhyaSira:** <sup>5</sup>

Sr No.	Region	Total No. of Sira	AvedhyaSira
1	Griva&Hanu	18	Nila - 2, Manya-2, Krukatika - 2, Vidhur- 2, Matruka - 8 & In Hanu Pradesh - 2
2	Jivha&Nasa	08	For taste perception - 2, For speech - 2, For smell perception - 4.
3	Netra	06	For closing & opening of eyelids - each 2, Situated at Apang (outer angle of eye) - 2

4	Lalat (Forehead)	07	At Sthapani – 1, Avarta – 2, At border line of hair – 4.
5	Karna (Ear)	04	Responsible for perception of sound – 2, In Shankha (situated at joints of temples)- 2
6	Head	08	At (border line of hair) Utkshap – 2, Simant (sutures in skull) -5 & Adhipati (Obelion point on the skull)- 1

In SushrutSamhitaSharirsthan, Dr. Ghanekar compared urdwajatrugatavedhyasira (in head and neck region) with modern structure<sup>6</sup>.

Sr. No.	urdwajatrugatAvedhyasira	Modern Correlation
1	Nila, Manya, Krukatika, Vidhur, Matruka	External, Internal Carotid arteries and jugular veins. Posterior auricular vessels
2	In Hanu (Sandhidhamanī on either side)	Internal maxillary vessels
3	In Jivha - For taste perception, For speech.	Profunda lingulae vessels
4	In Nasa - For smell perception.	Angular vessels
5	Netra – Apang	Palatine Vessels
6	Karna – Shabdavahinee	Anterior tympanic vessels
7	Lalat - In margin of hair line, In both Avarta, In Sthapani	Supraorbital, Superficial temporal vessels, Frontal branch of the superficial temporal, Nasal branch of
8	Shankha	Superficial temporal vessels
9	Murdha- Adhipati, Utkshap, Simant	Parietal branch of superficial temporal, branches of occipital and superficial temporal vessels

#### Description of UrdwajatrugatMarma:

Total Marmas (vital spots, vulnerable places) in the body are 107. Out of them there is total 37 Urdwajatrugatmarma (vital organs in head and neck region) present<sup>7</sup>. The vital parts should be protected from trauma, otherwise adverse effect can be seen like sudden death, disability, death due to considerable loss of tissue and severe pain, sudden removal of foreign body from that region may be fatal.

Following table shows region, number, nomenclature and type according to effect of the marma<sup>8</sup>.

Sr No	Region	Total No. of Marma	UrdwajatrugatMarma	Type of marma according to effect
1	On either side of trachea	04	Nila, Manya	Vaikalyakarmarma
2	On either side of neck	08	Matruka	Sadyapranhermarma
3	At the meeting place of head and neck	02	Krukatika	Vaikalyakarmarma
4	At the back and below of ear	02	Vidhur	Vaikalyakarmarma
5	On either side of nose, near the upper part	02	Phana	Vaikalyakarmarma

	of nasal passage and inside them.			
6	Below the end of eye brow, outside the eyes.	02	Apang	Vaikalyakarmarma
7.	Just above the eyebrows, in centre.	02	Avarta	Vaikalyakarmarma
8.	Laterally between ear and forehead	02	Shankha	SadhyapranharMarm a
9.	Above Shankhamarm a, at the border of hair line	02	Utkshap	VishalyaghnaMarma
10.	Between the two eyebrows	01	Sthapani	VishalyaghnaMarma
11.	Joints present in the skull	05	Simant	KalantarPranherMar ma
12.	In palate region in between the vessels nourishing eye, ear, nose and tongue.	04	Shrungatak	SadhyapranharMarm a
13.	Inside the cranium by the confluence of vessels and joints surrounded by ring of hair.	01	Adhipati	SadhyapranharMarm a

#### **Shankha and Adhipati as vedhyasira and sadhyapranharmarma –**

According to acharyaSushrut and VagbhatAdhipati and Shankhamarma and vedhyasira has been described as follows;

Above the tail end of brows, adjoining the ears, on the forehead two Shankhamarma are located, injury to these causes 'quick death'<sup>9</sup>.

Inside the head, at the meeting place of the joints of veins, on the top and at the spiral of hairs is located the Adhipati, injury to this causes quick death<sup>10</sup>.

In Shankha (temples) sixteen siras are situated. Out of them two situated at the joints of temples should not be cut. Also, Adhipatisira (bregma in the center of the skull) should not be cut<sup>11</sup>.

Near the ear at the end of forehead, in the temple region there are two Shankhamarma which are fatal instantly. It is a part of temporal bone where superficial temporal artery and interior to this a middle meningeal artery are situated. Trauma to this region leads to shock which causes sudden death. Or due to cutting of vessel, compression occurs that lead to death<sup>12</sup>.

Shankhamarma is the place where injury on temple piercing or blunt causing rupture of middle meningeal artery at the point before it leaves bony support and climbs over the meninges<sup>12</sup>.

Adhipatimarma is the place where the injury on obelion point involving the underlying superior sagittal sinus or parietal emissary veins terminating to the sinus<sup>12</sup>.

### **Modern view about Adhipati and Shankhamarma / avedhyasira**

Urdwajatrugatmarma (vital organs in head and neck region) can be correlated with modern structures as given below:<sup>13& 14</sup>

1. Phana – Olfactory nerves and ethmoidal vessels
2. Vidhur – Postero-auricular artery and nerve
3. Apang – Zygomatico temporal vessels
4. Avarta – Fronto- Zygomatico sphenoidal sutures
5. Utkshap – Area where frontal, sphenoid, temporal and parietal bones are joining. A penetrating wound may be entering through this area, causing injury to anterior branch of middle meningeal artery.
6. Sthapani – Frontal veins, joining the sinus lying behind it.
7. Simant – Five joints in the head (sutures of the cranium)
8. Shrungatak -- Confluence of cavernous and inter- cavernous sinuses situated in the base of the skull.
9. Shankha -- Part of temporal bone. There is a superficial temporal artery and interior to this there is middle meningeal artery.
10. Adhipati -- Interparietal suture and superior sagittal sinus at the point where two parietal emissary veins meet the sinus.

Urdwajatrugatavedhyasira can be correlated with modern structures as given below:<sup>6</sup>

1. Matraka – Carotid arteries and Jugular veins
2. Krukatika – Occipital vessels
3. Vidhur -- Posterior auricular vessels
4. Hanu – Internal maxillary vessels
5. Rasvahe, Wagvahe -- Deep lingual vessels
6. Aupanasikee – Angular vessels
7. Apang -- Zygomatico- temporal vessels
8. Shabdavahinee -- Anterior tympanic vessels
9. Keshantanuga – Supraorbital, Superficial temporal vessels
10. Avarta -- Frontal branch of the superficial temporal vessel
11. Sthapani -- Nasal branch of the frontal vein
12. Shankhasandhigat -- Superficial temporal vessels
13. Utkshap – Parietal branch of superficial temporal vessels
14. Simant-- Branches of occipital and superficial vessels
15. Adhipati -- Branches of occipital and superficial vessels

### **Adhipatimarma and avedhyasira**

The parietal foramen, on each side, pierces the parietal bone near its upper border, 2.5 to 4cm in front of the lambda. The parietal foramen transmits an emissary vein from the veins of scalp to superior sagittal sinus<sup>15</sup>.

Emissary veins connect extracranial veins with intracranial veins and are important clinically because they can be a conduit through which infections can enter cranial cavity. Emissary veins lack valves, as do the majority of veins in the head and neck<sup>16</sup>.

The obelion is the point on the sagittal suture between the two-parietal foramen<sup>15</sup>.

The obelion point is the point intersected by the interparietal suture and an imaginary line drawn through two parietal emissary foramina to inter parietal suture<sup>17</sup>.

This area may be vulnerable from two points of view; one is the infection and other is the consequences of hemorrhage. When the scalp is discontinued in the area of obelion point there is a chance of involvement of parietal emissary vein lying under the scalp. The introduction of foreign substances may lead to bacterial invasion which may be transferred to the superior sagittal sinus through emissary veins which is very fatal condition.

The second possibility is the gaping of the inter parietal suture due to high intensity stroke will lead to laceration of meningeal layers of duramater ultimately causing intra cranial hematoma which is again the fatal condition.

### **Shankhamarma and avedhyasira**

It is a part of temporal bone and there is a superficial temporal artery and interior to this there is a middle meningeal artery. A part of temporal bone at pterion region is a thin bony structure which protects the soft and delicate substance lying under shelter of it<sup>18</sup>.

Pterion / anterolateral fontanelle is the thin part of skull. In roadside accidents, the anterior division of middle meningeal artery may be ruptured, leading to clot formation between the skull bone and dura mater or extradural hemorrhage<sup>19</sup>.

Extradural hemorrhage is caused by arterial damage and results from tearing the branches of middle meningeal artery, which typically occurs in the region of “**Pterion**”. Blood collects between periosteal layer of dura and calvaria and under arterial pressure slowly expands<sup>20</sup>.

The typical history is of a blow to the head (often during a sports activity) that produces a minor loss of consciousness. Following the injury, the patient usually regains consciousness and has a lucid interval for a period of hours. After this rapid drowsiness and unconsciousness ensue, this may lead to death<sup>20</sup>.

Soextradural hemorrhage and subdural hemorrhage are highest in head injury cases. Therefore, the possibility of middle meningeal artery laceration is common. The chances of laceration of this artery are more at the point where it leaves the bony canal at ‘pterion’<sup>21</sup>.

### **Result:**

This study was undertaken to prove the Adhipati and Shankha structure as marma and avedhyasira. These structures were correlated with the anatomical structures present at the particular places where these marma and sira were said to be located as per acharyaSushrut and Vagbhat. After review of classical literature and study of modern anatomy books references, we were able to prove that Adhipatimarma and avedhyasira could be the superior sagittal sinus present below the obelion point on the skull. Shankhamarma and avedhyasira can be correlated with the middle meningeal artery which lies under the pterion.

### **Discussion:**

After marma and avedhyasira literature review and correlation of that literature with modern science literature, Adhipati and Shankhamarma/ avedhyasiracould be considered the structures present in their vicinity, which may or may not have direct relation with it should also be taken under consideration. In any kind of injury, the structure affected shows its impact on the neighboring structure<sup>22</sup>. In case of injury to siramarma, blood which is thick flows out continuously and in large quantity, from its loss, thirst, giddiness, dyspnea, delusion (unconsciousness), and hiccup manifest leading to death<sup>23</sup>. From this statement, Adhipati and Shankha structures as marma and avedhyasira could be the same. Few of the studies on related aspects of this study were reported<sup>24-29</sup>.

As per study of ShirogatAvedhyasira and Shirogatmarma, both are same in the head region.

Avedhyasira in head region are avarta - 02, Sthapani – 01, Apang – 02, Utkshap – 02, Shankha – 02, Simant – 05, Adhipati – 01.

Shirogatmarma are avarta - 02, Sthapani – 01, Apang – 02, Utkshap – 02, Simant – 05, Shrungatak – 04, Vidhur - 02, Phana – 02, Shankha – 02, Adhipati – 01, Avarta – 02.

### **CONCLUSION:**

After reviewing the literature and modern text book, we can conclude that marma points and avedhyasira should have to protect as stated by acharyaSushrut and Vagbhat. Adhipatimarma and avedhyasira is the structure which can be correlated with superior sagittal sinus present below the obelion point on the skull. Shankhamarma and avedhyasira is the structure which is present at pterion, where bony part of skull is very thin and it can be correlated with middle meningeal artery which lies under the pterion. Hence these structures should be protected, otherwise they may be fatal for the life.

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