

## A CRITICAL REVIEW OF KANTHSIRA MARMA WITH SPECIAL REFERENCE TO SIGNIFICANCE OF SADYAPRANHAR MARMA.

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### **Abstract:-**

*Sharirsthan* is the unique part of *Sushrut Samhita* and *Marma Sharira* is the soul of sharirsthan. As it has been said *marma sharir* is *shalyavishayardh* i.e. half knowledge of Surgery, one should give importance to this ancient traumatological anatomy, presented by the great *Acharya Sushruta*. The *marmas* are said to be vital part of our body and any injury or trauma to these vital points leads to instant death, severe pain or enduring disability according to site and type of injury. Among nineteen *sadyapranhar marmas kanthsira* is selected for the study because it has clinical as well medicolegal importance. Hence specific site of *kanthsira* has to be decided and studied anatomically. The literature study and cadaveric dissection was carried out to confirm the structures at *kanthsira marmasite*. Any severe injury to *Kanthsira* results in sudden death while mild injuries can be treated as Critical illness, as it is mentioned a *viddha lakshan* of *kanthsira*. After compiling the various ancient and modern texts and on detailed dissection of the cadaver, the structures present at the site of *Kanthsira* Can be understood as Common Carotid artery with its bifurcation i.e. ICA and ECA, Jugular Veins i.e. IJV and EJV these four blood vessels on both sides of trachea-larynx ;so bilateral eight vessels can correlate with *kanthsira*

**Key Words:** - *Marma, Sadyopranhara, dissection, kanthsira.*

### **Introduction: -**

“Prevention is better than Cure” as it is the moto of *Ayurveda* which is an ancient health science and as it has been said that *marmasharir* is *shalyavishayardh* i.e. half Knowledge of Surgery so one should give importance to this ancient traumatological anatomy to prevent form injuries as well to treat injuries. In the ancient time, the people have to face fights or war to achieve the freedom or their rights. The weapons like *gada*, lance., arrow, sword etc were used in such war and due to that injuries like cuts, blunts or punctures involving various structures like muscles, bones along with arteries, nerves or visceral organs were seen.

So the *Vaidya's* of that era fully utilized this knowledge of war injuries for the constructive study of *marmasharir*.

*Acharya sushruta* has defined, the *marma* as anatomical site where *mamsa, sira, snayu, asthi and sandhi* meet together and *pran* specially lives at these places. So *marma* are also called as *jeevasthan* or *pranayatan*. He has referred 107 vital points as *marmas*. He also has classified *marmas* into categories like regional *marma*, structural dominance wise *marma* and the most important classification is *marmatype* according to injury effects e.g. *sadyopranhar, kalantar pranhar, vishalyaghana, vaikalyakar and rujakar marmas*. Among all above *sadyopranhara marmas* are said to be very important and injury to these structure leads in sudden death; but when injury is in peripheral region of those *marma* site, they will act like *kalantar pranhar marma*.

*Sadyopranhar marmas* are nineteen in number; four *shrungatak, One adhipati,*

two shankh, eight Kanthsira, one guda, one hridaya, one basti and one nabhi.

### ***Kanthsira Marma:-***

Among above nineteen *kanthsira* is selected for study because it is easily approachable site for accidents. *Acharya sushruta* has explained *Kanthsira* as *sadyopranhara marma* which is *urdhwajatrugat* and structural dominance wise it is *sira* so it also has the name '*Ashtormatruka*' or '*siramatruka*'. The site of *kanthsira marma* is given '*Greevaya Ubhayath*' i.e. bilaterally of *kanth* (Larynx) and *viddha lakshans* are given sudden death as well as Critical illness.

Blunt trauma injury to the neck may occur due to high speed car accident or a fall or from hyperextension of the neck in sports or exercise. Now a days most incidents of homicidal deaths due to throttling and strangulations are seen. In those acts the pressure on the blood vessels of the neck region causes cerebral hypoxia or anoxia. Stimulation of the carotid sinus causes vagal cardiac arrest which leads into neurocardiac death.

### **Aim & Objectives :-**

- 1) To collect the references from different *Ayurvedic* texts regarding the concept of *kanthsira marma*.
- 2) To decide the site of *kanthsira marma* according to references and cadaveric dissection.
- 3) To take the photographs of dissected part to make all the peculiarities clear.
- 4) To come to a conclusion regarding site, structure and importance of *kanthsira marma*.

### **Methodology:-**

- 1) This article is conceptual, all available references of *marmas* and

*kanthsira* have been collected from *Ayurved* treaties and modern science.

- 2) Websites also have been searched for the same.
- 3) For this study a detailed cadaver dissection was performed in the dissection hall of the department of the *Rachana sharir*, at Vidarbha Ayurved Mahavidyalaya, Amravati. Superficial as well deep structures were seen in the dissection to study the proper *marma* site.
- 4) The information Collected from literature was correlated to the finding from dissection and a humble attempt has been made to draw a conclusion.

### **Observations of Dissection: -**

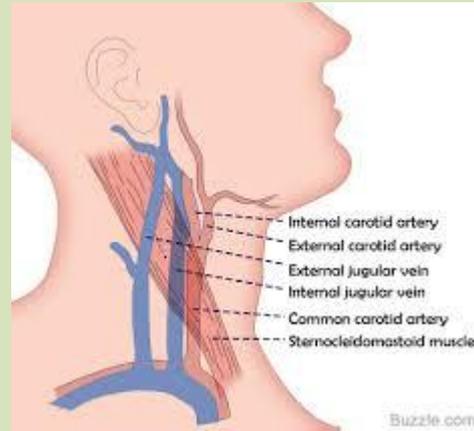
The site of *Kanthsira marma* mentioned by *sushrutacharya* is "*Greevaya Ubhayath*" and *Dalhanacharya* says it's *praman* is *chaturangul* i.e. 4 *anguli*. *Acharya Vagbhat* has mentioned the place "*kanthnadiubhayath*" so the area considered for dissection was front of the neck especially lateral side of larynx and trachea.

A region was marked on cadaver and first incision was taken from chin to the suprasternal notch in the midline while reflecting the flaps of skin, simultaneously platysma with external jugular vein was observed near posterior border of sternocleidomastoid. We removed deep fascia and separated infrahyoid muscles, which were crossed by a pair of anterior jugular vein.

Following Structures were observed lateral to the trachea and larynx.

- 1) Carotid sheath was observed in the carotid triangle containing CCA, IJV and Vagus nerve from inner to outer side.

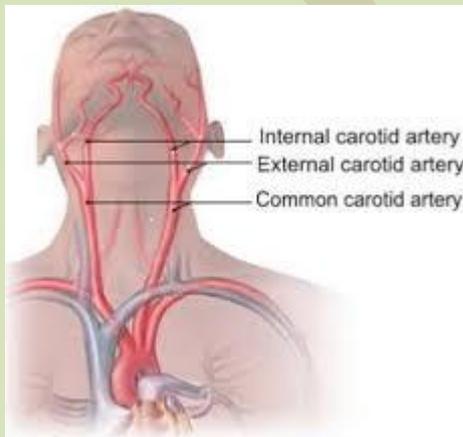
- 2) Hypoglossal nerve was anterior to the carotid sheath.
- 3) The CCA was then separated by blunt dissection up to the upper margin of thyroid cartilage, where it divides into internal and external carotid arteries.
- 4) CCA didn't show any branch instead of ICA and ECA; where as ECA gives off a number of branches in the above of carotid triangle.
- 5) We observed the facial vein , Lingual vein, which drains into IJV.
- 6) EJV is observed superficially below and inferolateral to mandible and lateral to posterior border of sternocleido mastoid which comes downward to form jugular arch.
- 7) Carotid body and carotid sinus both structures were confirmed at the bifurcation of CCA and at the commencement of CCA and ICA respectively.
- 8) The vagus nerve was observed deeply between CCA and IJV bilaterally.



Surface marking of blood vessels



Findings of Dissection as name given



Surface marking of CCA

### Discussion :-

As the study was carried out in two parts literature study and cadaver study.

#### **A) Literature study:-**

The points to be understood regarding *kanthsira* were-

- 1) *Kanthsira is sadyopranhara marma* as *agni mahabhuta* is dominant here, if injury occurs sudden death is expected according to *vidda lakshana*.
- 2) According to regional classification it is *urdhwajatrugat marma*.
- 3) If we see structural classification it comes under *sira marma*.
- 4) They are total 8 in number, four on each side of *kanth*

- 5) It measures 4 *anguli* in dimensions (1 *anguli* is approximately 2cm)
- 6) *Marma viddha lakshana* says, if injury occurs to *kanthsira* it leads into death or critical illness.

#### B) Cadveric study:-

It is done to confirm the structures at *marma* site i.e. '*Greevaya Ubhayath*' of '*kanthnadi Ubhayath*' as it has been mentioned in *sushrutsamhita* and in *Ashtang hriday* respectively. So the area was considered to dissect both lateral of trachea and larynx the structures were observed like CCA, IJV, Vagus nerve in the carotid sheath. Bifurcation of common carotid into ECA and ICA was observed also carotid body and carotid sinus like bulgings were seen. IJV and its tributaries like facial vein, lingual vein were seen within carotid triangle. Hypoglossal nerve was observed anterior to carotid sheath. EJV running downwards to reach jugular arch was observed.

Both study reveals corelevance of the important structures like ICA, ECA, EJV & IJV in the lateral part of neck region with *kanthsira*. The word *sira* is used here for both arteries and veins. *Acharya sushruta* has mentioned *sira* as '*Asurgvaha*' the word for blood vessels also he has used *sira* as *dhamni* by calling it *raktvaha sira*. Similarly *acharya Charak* also used word *sira* for blood vessels and lymphatics. *Tikakar Arundatta of Ashtang hridaya* has referred *arunsira* as arteries having *Prasandan*.

The clinical and medicolegal importance of above structures explains how they are vital and injury or trauma will definitely cause death. clinical importance presence of a carotid pulse has been estimated to indicate a systolic blood pressure of more than 40mmHg. Carotid sinus and carotid body are the important structures and performs press receptor as well chemo receptor respectively. For central venous catheterization internal jugular vein is ideal to measure pressure within the right atrium.

Whenever pressure is applied to the neck region; 5 types of mechanisms may occur i.e. arterial occlusion, venous obstruction, reflex mechanism, airway collapse and mechanical neck injuries. Out of which reflex mechanism and airway collapse are related to midline structures in the neck and remaining three are related to lateral part of the neck. In hanging, death is caused by a compression of the arterial vessels of the neck, while survived cases of hanging shows infarcts in the brain due to CCA injury. In homicidal death acts like mugging, garroting, Bansdola weather strangulation or throttling pressure is given such compression of CCA results in loss of consciousness within 7-10 secs due to cerebral hypoxia or anoxia. Autopsy finding shows brain swelling, brain edema or brain congestion. The carotid artery injuries caused by blunt trauma often cause thrombosis and delayed neurological deficits.

#### Conclusion :-

After compiling the various ancient and modern texts, also on detailed dissection of the cadaver, the structures present at the site of *Kanthsira* can be understood as Common Carotid artery with its bifurcation i.e. ICA and ECA, Jugular Veins i.e. IJV and EJV these four blood vessels on both sides of trachea-larynx, so bilateral eight vessels can correlate with *kanthsira*. If we think of *viddha lakshana* of *kanthsira* it has been mentioned injury or trauma to *kanthsira* results in death or critical illness, which is enumerated in modern science also causes like CCA compression, CCA injury, venous obstruction results in death. Hence *Kanthsira* is *sadyapranhar marma* which is clinically as well medicolegally very important structure.

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**Abbreviations:-**

- CCA** - common carotid artery  
**ECA** -external carotid artery  
**ICA** -internal carotid artery  
**EJV** - external jugular vein  
**IJV** - internal jugular vein