

The Chapter “*Marma Sharira*” of *Sushruta* is Mirror of Surgery

Sujit Kumar Dalai

Bharati Ayurved Medical College & Hospital, Durg, Chhatisgarh

ABSTRACT

The chapter ‘*Marma sharira*’ of *Sushruta samhita* (ancient manuscript of *Ayurveda*) gives detailed information of *Marmas* based on the body organs or structures involved, the time bound consequences of the trauma, the area and the sizes, the sites and location over the body fall in various groups have been the probable approaches towards the understanding of the concerned literatures. ‘*Marma*’ literary communicates the sense of vital parts of the body. Any injuries or mechanical involvement directly affecting the *Marma sthana* (sites of *Marmas*) results to death sooner or later or serious consequences. There are 107 vital points in various parts of the body, which should be carefully dealt during *Shalya kriya* (surgical procedure) & should always be protected from injury, as the essence of life (*prana*) rest in them. *Sushruta* depicted that “knowledge of *Marmas* is half of the knowledge of surgery” because knowledge on various dimensional classification, their nature, extent of area, consequence & consequential prognosis of *Marma* plays crucial role for the surgeons, particularly during the course of surgical procedure over the *Marma* area of the body.

Keyword: *Marma*, Vital point, *Sushruta*, *Shalya kriya*, Surgical procedure, Consequence prognosis, Extent of area

INTRODUCTION

The science of *Marma* or *Marma vidya* is extraordinary and dynamic *Ayurvedic* therapy that has tremendous value in health, longevity, spiritual practice and diseases. *Marma* therapy or *Marma chikista* (Treatment through vital points) is an important method of *Ayurvedic* treatment for entire spectrum of health complaints in major and minor.

In comparison to an elaborate and tedious description of all the structures of the body, the knowledge of regional Anatomy finds its better scope in management of the injuries involving the *Marma* or the vital parts of the body. Besides the perfect knowledge of anatomy, the surgeons have to rely upon their own experiences and take care of the vital structures like nerves, arteries, joints and tendons, etc. Through knowledge of *Marma* popularized the excellence of Indian surgeons in the field of the surgery even though the details of anatomical approaches in the field concerned were not so performed. We are highly indebted to *Sushruta* for his incomparable work in this subject of *Ayurveda*. The branch dealing with the anatomical or a structural aspect of the body is dealt under the heading of *Sharira*. The *Marma* have been included as one of the important in *Sharira sthana* (Chapter 6th) of *Sushruta samhita*.^[1] The location and name of *Marma* according to the surface anatomy of the body were found necessary in the field of management through medicine and surgery, like many other branches of *Ayurvedic* literature.

This term *Marma* is first ever traced in Vedic literature of India i.e. *Rigveda*, in connection with warriors ready to go to battlefield. They are advised to make themselves fully equipped with required ornaments to protect the vital parts (*Marma*) of the body by the armor so that they may get the victory without having any injury on his vital part of the body.^[2]

The *Marma vijayanam* (science of *Marma*) attained greater significance in view of its practical application. Etymologically the term *Marma* has its

genesis from Sanskrit phrase "Mriyete asmin iti Marma" means there is possibility of death or serious damage to health when these vital parts got injured [3] and the term "Sthana" is suggestive of its location; when both joins together as "Marmasthana," it implies the place of vital importance in the body, which injured results to death sooner or later or serious consequences. Ayurveda described the term Marma as vital points of the body which causes death on traumatic injury [3] or pain similar to death [4] or the place of irregular pulsation and pain on pressure [5] and in the sense of Jivasthana (seat of life) also. [6] This is representing the juncture of five structures i.e Sira (veins), Snayu (nerves), Sandhi (joints), Mamsa (muscles) and Asthi (bones) meet together though all these structures but it is need not be present at each Marma and in this juncture where Prana (component of life or vital energy) resides or flows through by its swabhava (generally) as well as vishesa (specifically) and any injury to it leads to Pranana (death/sever pain). [7,8] This explains Marmas as important connection centers or crossroads.

Sushruta samhita gives detailed information of Marmas based on the body organs or structures involved, the time bound consequences of the trauma, the area and the sizes, the sites and location over the body and lastly the number of Marmas fall in various groups, have been the probable approaches towards the understanding of the concerned literatures.

CLASIFICATION OF MARMA

The main body organ and structures involved in the site of Marmas have been Mamsa (muscles), Sira (blood vessels), Snayu (nerve or tendon or ligament), Asthi (bones) and Sandhi (joints). Depending upon the structure, the body Marma has been designated as Mamsa Marma, Sira Marma, Snayu Marma, Asthi Marma & Sandhi Marma. [9,10]

Under the consideration of consequences or prognosis of trauma over

Marmas, Sushruta has classified into five groups i.e., Sadya pranahara Marma (death immediately after injury), Kalantara pranahara Marma (death after lapse some time), Vishalyaghna Marma (death soon after removing the Shalya), Vaikalyakara Marma (injury precipitating the restlessness) and Rujakara Marma (injury causing severe pain) and their total numbers are 19,33,3, 44 and 8, respectively. [10,11]

Again individual Marmas are included in different groups according to the significance of size or extent of area. It is stated that Urvi, Kurcha Sira, Vitapa and Kakshadhara Marmas measure one finger each. Sthanamula, Manibandha and Gulpha measure two fingers each. Two Kurpara and two Janu Marmas measure three fingers each. Hridaya, Vasti, Kurcha, Guda, Nabhi and four Marmas of head (Sringataka) and five Simantas, twelve Marmas of neck (two Nila, two Manya and eight Matrika) are measured equal to the size of the closed fist and are four fingers each. The remaining Marmas are thought to be measuring half finger only. [12]

Considering the sites and location of Marma based on the Shadangas (six part of body) of the body, Sushruta has given only five regions, (1) the head and neck (2) the chest (3) the abdomen (4) the back (5) the extremities dealing with the distribution of 107 Marmas. He has also clearly stated that there are 37 in the head and neck, 12 in Uddara pradesh (abdomen) and Ura pradesh (chest), 14 in Prustha (back) and 11 in each of the extremities (superior and inferior). [13]

MARMABHIGHATA (INJURY TO MARMA)

Marmabhighata suggests any injuries to Marma in the body due to incision, stabbing, burning or external blow which is mild or severe in nature. [14] Marmabhighata is likely to produce subjective manifestations governed by the extent and the nature of injuries to the Marmas. Considering these factors Sushruta has dealt them in three broad headings

namely, (1) General symptoms (2) particular symptoms (3) consequential prognosis. More emphasis has been given in dealing with the manifestations based on the consequences precipitating during the course of the trauma. Certain general manifestations like *Bhrama* (confusion), *Pralapa* (delirium), *Dourvalya* (weakness), *Chittanasha* (lack of consciousness), *Strastanga* (restlessness), loss of sensation of parts, rise in body temperature, loss of

function of the joints, unconsciousness, shallow breathing, severe pain, bleeding, loss of perception of senses, giddiness, paleness of the body, burning sensation over the cardiac area and postural un stability are commonly seen in *Marmabhighata*.^[15,16]

Above all the sign and symptoms are results when *Marma* is injured. Apart from these sign and symptoms some specific disease are produced in Individual *Marma* also.^[17]

Table 1: Consequence and patho-physiological changes resulting from trauma to specific Marma of upper extremity along with their location and extent of area

Sl. No.	Name of the Marma	Location	Extent or Area	Nature and Consequence of Marma	Consequential Prognosis
1	<i>Kshipra</i>	In between thumb and the index finger	1/2 <i>Angula</i> (0.93 cm)	<i>Snayu Kalantara pranahara</i> &	<i>Aksebaka</i> (clonic spasm or convulsions) of the hand and ultimately leads to death
2	<i>Tala Hridaya</i>	Mid of the palm at joining the line along with the middle finger	1/2 <i>Angula</i> (0.93 cm)	<i>Mamsa Kalantara pranahara</i> &	Severe pain and death
3	<i>Kurcha</i>	Above on both sides of <i>Kshipra Marma</i>	4 <i>Angula</i> (7.5 cm)	<i>Snayu Vaikalyakara</i> &	Shivering and bending deformity of the hand
4	<i>Kurcha Sira</i>	Below and one side of <i>Manibandha sandhi</i> (Wrist joint)	1/2 <i>Angula</i> (0.93 cm)	<i>Snayu Vaikalyakara</i> &	Pain and swelling of the affected part
5	<i>Manibandha</i>	At the junction in between palm of the hand and fore hand i.e. Wrist joint	2 <i>Angula</i> (3.75 cm)	<i>Sandhi Vaikalyakara</i> &	Pain, rigidity or <i>Kunitwa</i> (Deformity)
6	<i>Indravasti</i>	Mid of the fore arm facing to ventral aspect of the hand	2 <i>Angula</i> (3.75 cm)	<i>Mamsa Kalantara pranahara</i> &	Excessive hemorrhage leads to death
7	<i>Kurpura</i>	At the junction of the forearm and arm i.e. Elbow joint	3 <i>Angula</i> (5.6 cm)	<i>Sandhi Vaikalyakara</i> &	Permanent disability of the limb
8	<i>Ani</i>	On both the sides, three <i>Angula</i> (finger) above the elbow joint	3 <i>Angula</i> (5.6 cm)	<i>Snayu Vaikalyakara</i> &	Swelling, Stiffness or paralysis of the arm
9	<i>Bahvi</i>	In the mid of the arm	1/2 <i>Angula</i> (0.93 cm)	<i>Sira Vaikalyakara</i> &	Wasting or atrophy of the arm due to loss of diminished blood supply
10	<i>Lohitaksha</i>	At root of the upper extremity (brachium) adjacent to auxiliary fold and above the <i>Bahvi Marma</i>	1/2 <i>Angula</i> (0.93 cm)	<i>Sira Vaikalyakara</i> &	<i>Pakshaghata</i> (hemiplegic) and <i>Shosa</i> (atrophy) of the whole upper extremity due to loss of blood or diminished blood supply
11	<i>Kakshadhara</i>	In between the chest and arm pit	1/2 <i>Angula</i> to 1 <i>Angula</i>	<i>Snayu Vaikalyakara</i> &	Precipitates paralysis of the limb

Table 2: Consequence and patho-physiological changes resulting from trauma to specific Marma of lower extremity along with their location and extent of area

Sl. No.	Name of the Marma	Location	Extent or Area	Nature and Consequence of Marma	Consequential Prognosis
1	<i>Kshipra</i>	In between great toe and the second toe of the foot	1/2 <i>Angula</i> (0.93 cm)	<i>Snayu Kalantara pranahara</i> &	<i>Aksebaka</i> (clonic spasm or convulsions) of the leg and ultimately leads to death
2	<i>Tala Hridaya</i>	Mid of the sole of the foot (plantar aspect) to a straight line drawn from the root of the middle toe	1/2 <i>Angula</i> (0.93 cm)	<i>Mamsa Kalantara pranahara</i> &	Pain & Death
3	<i>Kurcha</i>	Above and both sides of the <i>Kshipra Marma</i>	4 <i>Angula</i> (7.5 cm)	<i>Snayu Vaikalyakara</i> &	Shivering and bending deformity of the foot
4	<i>Kurcha Sira</i>	Both sides of <i>Gulpha Sandhi</i> (ankle joints)	1 <i>Angula</i> (1.86 cm)	<i>Snayu Vaikalyakara</i> &	Pain and swelling of the affected part
5	<i>Gulpha</i>	Junction (ankle joint) of <i>Pada</i> (foot) and <i>Jangha</i> (leg)	2 <i>Angula</i> (3.75 cm)	<i>Sandhi Rujakara</i> &	<i>Stabdhapada</i> , <i>Khanjata</i> i.e. pain, rigidity or limping foot, and impotency
6	<i>Indravasti</i>	Mid of the <i>Jangha</i> (leg) in the line of the <i>Parsani</i> (heel or calcaneum)	1/2 <i>Angula</i> (0.93 cm)	<i>Mamsa Kalantara pranahara</i> &	Excessive hemorrhage leads to death
7	<i>Janu</i>	Junction of <i>Jangha</i> (leg) and <i>Uru</i> (thigh)	3 <i>Angula</i> (5.6 cm)	<i>Sandhi Vaikalyakara</i> &	Limping or Lameness (difficulty in walking)
8	<i>Ani</i>	Both the sides of lower one third part of the femur, three fingers above the <i>Janu</i> (knee joint)	1/2 <i>Angula</i> (0.93 cm)	<i>Snayu Vaikalyakara</i> &	<i>Urusthambha</i> (Enormous swelling and stiffness of the thigh)
9	<i>Urvi</i>	Mid of the <i>Uru</i> (thigh)	1 <i>Angula</i> (1.86 cm)	<i>Sira Vaikalyakara</i> &	Wasting of the <i>Sakthi</i> (atrophy of the arm and legs) due to loss of blood or diminished blood supply
10	<i>Lohitaksha</i>	Root of fold of <i>Uru</i> (thigh), above the <i>Urvi Marma</i> and below the <i>Vankshana Sandhi</i> (Hip joint)	1/2 <i>Angula</i> (0.93 cm)	<i>Sira Vaikalyakara</i> &	<i>Pakshaghata</i> (hemiplegic) and <i>Shosa</i> (atrophy) of the whole inferior extremity due to loss of blood or diminished blood supply
11	<i>Vitapa</i>	In between the <i>Vanksana</i> (Groin) and the <i>Vrisana</i> (Testis)	1 <i>Angula</i> (1.86 cm)	<i>Snayu Vaikalyakara</i> &	Rise impotency or oligospermia

Table 3: Consequence and patho-physiological changes resulting from trauma to specific Marma of head & neck along with their location and extent of area

Sl. No.	Name of the Marma	Location	Extent or Area	Nature and Consequence of Marma	Consequential Prognosis
1	<i>Nila Manyu</i>	High up in the neck on either side of the <i>Kantha nadi</i> (trachea)	4 Angula (7.5 cm)	<i>Sira</i> & <i>Vaikalyakara</i>	Loss of speech, defective voice, loss of taste
2	<i>Matrika</i>	Anterior external, post external jugular veins and common facial veins	4 Angula (7.5 cm)	<i>Sira</i> & <i>Sadya pranahar</i>	Immediate death
3	<i>Krikatika</i>	Junction of Head and Neck	1/2 Angula (0.93 cm)	<i>Sandhi</i> & <i>Vaikalyakara</i>	Instability of Neck and death
4	<i>Vidhura</i>	Below and behind the ear	1/2 Angula (0.93 cm)	<i>Snayu</i> , <i>Sira</i> & <i>Vaikalyakara</i>	<i>Mookatwa</i> (Deafness)
5	<i>Phana</i>	Both side of nasal passage & near the roof of the nose	1/2 Angula (0.93 cm)	<i>Sira</i> & <i>Vaikalyakara</i>	Loss of sense of Smell
6	<i>Apanga</i>	Outer side of orbits and below the lateral end of the <i>Bhru</i> (eyebrow)	1/2 Angula (0.93 cm)	<i>Sira</i> & <i>Vaikalyakara</i>	<i>Andhatwa</i> (Blindness or defective vision)
7	<i>Avarta</i>	Above and below the <i>Bhru</i> (eyebrow)	1/2 Angula (0.93 cm)	<i>Sandhi</i> & <i>Vaikalyakara</i>	<i>Andhatwa</i> (Blindness or impaired vision)
8	<i>Sankha</i>	In between <i>Karna</i> (ear) and <i>Lalata</i> (forehead) and just above the termination of the superciliary arch	1/2 Angula (0.93 cm)	<i>Asthi</i> & <i>Sadya pranahara</i>	Immediate death
9	<i>Utkshepa</i>	Above the <i>Sankha</i> (temple) and near the hairy margin of the scalp (parietal region on the scalp) on both the sides of the head	1/2 Angula (0.93 cm)	<i>Snayu</i> & <i>ViShalyaghna</i>	Keeps the person alive till it lodges over these or if it comes out after suppuration but he cannot survive if the <i>Shalya</i> (foreign body) is extracted out by force immediately after injury
10	<i>Sthapani</i>	In between the <i>Bhrus</i> (eye brows or superciliary arches and underneath the bony vault)	1/2 Angula (0.93 cm)	<i>Sira</i> & <i>ViShalyaghna</i>	Same as <i>Utkshepa Marma</i>
11	<i>Simanta</i>	Five structural Joints in the vault of skull	4 Angula (7.5 cm)	<i>Sandhi</i> & <i>Kalantara pranahara</i>	<i>Unmada</i> (insanity), <i>Bhaya</i> (Fear) and <i>Chittanasa</i> (Madness or lack of Consciousness) leading to death
12	<i>Sringataka</i>	Junction of the confluence of <i>Siras</i> (vein) providing nutrition to the <i>Ghrana</i> (nose), <i>Shrotra</i> (ear), <i>Akshi</i> (eyes) and <i>Jivha</i> (tongue)	4 Angula (7.5 cm)	<i>Sira</i> & <i>Sadya pranahara</i>	Immediate death
13	<i>Adhipati</i>	Inside the cranium superiorly at the confluence of <i>Sira</i> (vain). This point is just under the romabert (ringlet of the hair)	1/2 Angula (0.93 cm)	<i>Sandhi</i> & <i>Sadya pranahara</i>	Immediate death

Table 4: Consequence and patho-physiological changes resulting from trauma to specific Marma of abdomen along with their location and extent of area

Sl. No.	Name of the Marma	Location	Extent or Area	Nature and Consequence of Marma	Consequential Prognosis
1	<i>Guda</i>	Attached to <i>Sthulantra</i> (Large intestine) i.e. anal region	4 Angula (7.5 cm)	<i>Mamsa</i> & <i>Sadya pranahara</i>	Immediate death
2	<i>Vasti</i>	Within the <i>Kati pradesha</i> (Pelvis) i.e. bladder	4 Angula (7.5 cm)	<i>Snayu</i> & <i>Sadya pranahara</i>	Immediate death except an wound which is formed during extraction of a calculus
3	<i>Nabhi</i>	In between <i>Pakvashaya</i> (Colon) and <i>Amashaya</i> (Stomach) i.e. Umbilicus	4 Angula (7.5 cm)	<i>Sira</i> & <i>Sadya pranahara</i>	Immediate death

Table 5: Consequence and patho-physiological changes resulting from trauma to specific Marma of thorax along with their location and extent of area

Sl. No.	Name of the Marma	Location	Extent or Area	Nature and Consequence of Marma	Consequential Prognosis
1	<i>Hridaya</i>	Superficially located in between <i>Stana granthi</i> (breast) and near the opening of the Stomach i.e. Heart	4 Angula (7.5 cm)	<i>Sira</i> & <i>Sadya pranahara</i>	Immediate death
2	<i>Stanamula</i>	Bilaterally two fingers below the <i>Stana</i> (breast)	2 Angula (3.75 cm)	<i>Sira</i> & <i>Kalantara pranahara</i>	Fills up the <i>Kostha</i> (thoracic cavity) with cough and proves to be fatal with troublesome cough & breathing
3	<i>Stanarohita</i>	Two fingers above the <i>Chuchuka</i> (nipples) of both the <i>Stana Granthi</i>	1/2 Angula (0.93 cm)	<i>Sira</i> & <i>Kalantara pranahara</i>	Fills the cavity with blood and ends in death due to cough and dyspnea
4	<i>Apalapa</i>	Below the <i>Amsakuta</i> (Shoulder joint) and above the sides or lateral aspect of chest (in the axilla)	1/2 Angula (0.93 cm)	<i>Sira</i> & <i>Kalantara pranahara</i>	Hemorrhage leads to result in pus formation becomes fatal
5	<i>Apastambha</i>	Both the side of <i>Ura</i> (Chest)	1/2 Angula (0.93 cm)	<i>Sira</i> & <i>Kalantara pranahara</i>	Fills the chest with air and results in death due to cough and dyspnea

Table 6: Consequence and patho-physiological changes resulting from trauma to specific Marma of back along with their location and extent of area

Sl. No.	Name of the Marma	Location	Extent or Area	Nature and Consequence of Marma	Consequential Prognosis
1	<i>Katikataruna</i>	Both the side of the <i>Pristhavamsa</i> (Vertebral column) corresponding to each <i>Shronikasthi</i> (Hip bone)	1/2 <i>Angula</i> (0.93 cm)	<i>Asthi & Kalantara pranahara</i>	Pallor, discoloration of skin due to hemorrhage or loss of blood
2	<i>Kukudara</i>	Both the side of the <i>Pristhavamsa</i> (Vertebral column) and the lateral sides of the outer part of <i>Jaghanasthi</i> (femur)	1/2 <i>Angula</i> (0.93 cm)	<i>Sandhi & Vaikalyakara</i>	Loss of sensation and movement in lower part of the body
3	<i>Nitamba</i>	Above <i>Shroni kanda</i> (Hip bone) which covers the <i>Ashaya</i> (Viscera) and connects the lateral part of Vertebral column	1/2 <i>Angula</i> (0.93 cm)	<i>Asthi & Kalantara pranahara</i>	Sosa (atrophy) in lower extremity with weakness leads to death
4	<i>Parsvasandhi</i>	Just at the middle of <i>Janghanaparsva bhaga</i> (Gluteus region) and joining the lower part of two flanks	1/2 <i>Angula</i> (0.93 cm)	<i>Sira & Kalantara pranahara</i>	Death due to collection of blood in Pelvic cavity
5	<i>Brihati</i>	Posteriorly both side of the <i>Pristhavamsa</i> (Vertebral column) at the level of <i>Stanamula</i> (Base of the breast)	1/2 <i>Angula</i> (0.93 cm)	<i>Sira & Kalantara pranahara</i>	Excessive bleeding results into death
6	<i>Amsa Phalaka</i>	In the upper part of the <i>Pristha</i> (back) near to the scapular region and on both the sides of vertebral column attached to <i>Trika</i> (Sacrum)	1/2 <i>Angula</i> (0.93 cm)	<i>Asthi & Vaikalyakara</i>	Sosa (Atrophy) of <i>Bahu</i> (Arm)
7	<i>Amsa</i>	In between the root of the arm and neck, joins the <i>Amsa-peetha</i> (Scapular region) and <i>Skandha</i> (Shoulder) together	1/2 <i>Angula</i> (0.93 cm)	<i>Snayu & Vaikalyakara</i>	Stiffness in upper extremity produces loss of function to the arm

DISCUSSION

In view of the organs or components of the body like *Mamsa*, *Sira*, *Snayu*, etc., getting affected at the time of trauma, the particular symptoms also vary accordingly. Injury to *Mamsa Marma* will give rise to continuous oozing of the blood, pallor of the skin due to anemia, loss of perception power of *Indriyas* (sense organs) and eventual sudden death, injury to *Sira Marma* there will be constant flow of thick blood in large quantity and manifestation like thirst, giddiness, dyspnoea, delusion, and hiccup which ultimately leads to death, injury to *Snayu Marma* will give rise *Ayam* (contraction or bending) of the body, *Akshepa* (convulsion), *Stambha* (stiffness), sever pain, inability in riding, sitting and standing, deformity in the body organs, and even death, injury to *Asthi Marma* results into intermittent bleeding mixed with bone marrow and felling of pain, injury to *Sandhi Marma*, there is sense of felling of full of thorns at the site of injury, shortening of the organ or lameness even when wound is completely healed up, there is loss of strength and movement, emaciation or atrophy (of the affected body organ) and swelling or edema of the (distal) joints. [18]

The five categories like *Sadya pranahara*, *Kalantar pranahar*, *Vaikalyakara*, *Vishalyaghna*, and *Rujakara Marmas* have been worked out based on the

end results that one has to face soon after injuries over the *Marmas*. The consequences and the symptomatology point out the prognosis of the case are variable depending upon the intensity, the type of weapon used, depth of the wound and the loss of type of tissue. It is apparent from the above said statement that if all the types of *Marmas* are injured extensively they may all prove fatal. Trauma to *Sadyapranahara Marmas* results in inability of sense organs to perceive their respective subjects. Mind and intelligence can't function properly and severe pain precedes the death. Fatal period of death is immediate or within seven days. As this group of *Marmas* possesses *Agni Mahabhuta* which is fiery properties get very quickly inflamed and they prove fatal to the life. When *Kalantara pranahara Marma* is injured, loss of *Agni*, *Soma* and *Dhatu*s (blood etc) causes extreme pain leading to eventual death. Fatal time is 15 days to one month. As this group of *Marmas* posses *Agni* as well as *Saumya* properties, *Agni guna* gets inflamed rapidly but *Saumya guna* takes a considerable time in diminishing. Thus this group of *Marmas* proves fatal after some time of Injury. An injury to any of the *Vaikalyakara Marmas* produced permanent disability of the affected part. Death supervenes immediately or after some time. As this group of *Marmas* possesses *Saumya guna*, it

supports the *Prana* by virtue of its stabilizing and cooling properties. Injured *Vishalyaghna Marmas* cause *Shwasa* (Asthma), *Kasa* (Cough) and results in death. Death does not occur until weapon exists at site of entry. As soon as weapon is removed death occurs. *Vishalyaghna Marmas* are *Vataja* in properties, so long as the *Vata* remains they are obstructed by the *Shalya* (foreign body), patient survives. But as soon as the *Shalya* is extracted out, the *Vata* escapes from the *Marma sthana* and patient dies. Therefore, if the *Shalya* comes out after suppuration in *Marma sthana* then the patient can survive. Injured *Rujakara Marmas* gives rise to various types of pain or pain like condition in affected organs, which ultimately results in deformity of the same part. This group of *Marmas* is predominant in *Agni* and *Vayu gunas*. They are specially pain germinating in their properties. On the contrary, one says that the pain results from all *Panchbhutas*.^[19-21]

In another context *Sushruta* has further tried to locate the presence of *Trigunas*, *Mahagunas* and the *Bhootatma* (Supreme power or life principle) in the *Marmas*, in which *Soma (Jala tatva)*, *Maruta (Vayu tatva)*, *Teja (Agni tatva)* representing the *Tridosas* in the body and *Satva, Raja, Tama* as well as the *Bhootatma* are situated in *Marmas* hence injuries to these *Marma* are likely to result fatal.^[22]

The modern science also recognizes the *Hridaya* (heart), *Mastiska* (brain) and *Phupphus* (lungs) as very vital organs in the body. Any trauma or injury to these parts of the body may lead to shock or may cause death. These three important organs may be taken as a Triploid of life. In *Ayurveda* instead of lungs, *Vasti* (urinary bladder) has been recognized under the heading of *Tri Marma*.^[23]

Keeping in view the surgical interference over the *Marmas*, it is very important to take care of their size and extent covered by them. During the course of surgical procedure over these *Marma* areas, great care of its extent in respect of depth and breadth is very essential as a little

bit of deviation beyond the schedule may lead to fatal consequences. An incision should be made at the spot a finger's width remote from the *Urvi, Kurcha Shira, Vitapa, Kaksha*, and a *Parshva Marma*, whereas, a clear space of two fingers should be avoided from its situation in making any incision about *Stanamula, Manibhandha* or *Gulpha Marma*. Similarly a space of four fingers should be avoided in respect of the four *Shringataks*, five *Simantas* and ten *Marmas* in neck nila etc; a space of half a finger being the rule in respect of the remaining (fifty six). versed in *Sushruta samhita* regarding science of surgery & have laid down the rule that, in a case of surgical procedure, the situation and dimension of each local *Marma* should be first take into account and the incision should be made in a way as an incision, even extending or effecting in the least, the edge or the side of the *Marma*, may prove fatal. Hence, vigilantly attention should be taken when any *Marma sthana* undergoes in surgical procedure.^[24]

There is no *Marma* which may not produce little harm or no harm. The pathological changes produced at the site of the *Marma* are most difficult conditions to treat. Even if they are treated with the greatest care under the expert surgeon, complications are sure to follow.

Sushruta specifically defined and signifies the importance of the place where all five living surgical tissues are underlying the place. It is evident that surgery is involved in only five tissues where particular care is mandatory. The doctrine of surgery even today encircles round this five tissues and art of healing without residual loss rest in five tissues. Three possibilities have been discussed by *Sushruta* in terms of *Sadya pranahara, Kalantar pranahara* and *Vishalyaghna* as entrapment of vital organs, *Vaikalyakara* as in compensatory loss of tissue and *Rujakara* as compensatory loss of tissue at the loss of pain.

The above said dimensional classification given by *Sushruta* is of great importance for the surgeons, particularly

during the course of surgical procedure over the *Marma* area of the body. It has been rightly stated that "knowledge of *Marmas* is half of the knowledge of surgery" for the surgeons because persons die immediately if they are injured even if some of them survive due to surgeon's efficiency they definitely become victim of disability. [25]

Now-a-days, with the advancement of modern surgery, the major operations are being very often performed over the heart, brain and the bladder which have been accepted as *Maha Marmas* by both *Charak* and *Sushruta*. According to *Sushruta's* view, an injury or trauma to these organs or *Marmas* of the body may cause death. In case such major operations are tackled by the skilful expert surgeon even then the possibility of defect to concerned body organ is inevitable. In present day of advance surgery, there should be clear-cut knowledge of vascular system, nervous system, muscles and their origin insertion, ducts and their courses, with a view to have an expertise operations on the patients. The ancient literature, no doubt, lacks with the knowledge of advance anatomical background in comparison to the present advances in the field. Though knowledge of anatomy and physiology of today have really removed the mystery of surrounding structure situated at the site of *Marmas* and minimized or made more less or nil the hazardous and dangerous task for surgeon. The concept of *Marma* described in ancient literature is possibly to make the subject matter more crystallized, based on the wide experience of expertise surgeons paying more attention towards the vital structures like arteries, veins, nerves tendons and ligaments. The surgeons based on their practical knowledge could map out the risky spots of the body and consequently postulate their own theory of *Marma*. This was the reason that made the surgery of ancient India to get more popularized and enabled it to achieve the highest position during the days of ancient civilization of the world.

CONCLUSION

The *Ayurvedic* science of *Marma* is itself a treatise on Surgico-anatomical learning. The concept of *Marma* is a great contribution of *Sushruta* and should be treated as mirror of surgery as it has been mentioned 107 vital points in various parts of the body, which should be carefully dealt during surgery & should always be protected from injury, as the component of life or vital energy (*prana*) rest in them. Therefore surgical procedures to be performed very carefully or vigilantly after considering the measurement of the *Marma's* area, sign-symptoms and consequence prognosis, as injured even on margin of *Marma* leads to deformity or death.

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