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Assistant Professor

Department of Shareera Rachana  
Ayurveda Campus, Institute of Medicine  
Tribhuvan University, Kirtipur, Nepal  
Email: [girjeevankumar@gmail.com](mailto:girjeevankumar@gmail.com)

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**Critical Review on Trimarma****Jeevan Kumar Giri<sup>1\*</sup>, Pratikshya Majagaiyan<sup>2</sup>**

<sup>1</sup>Assistant Professor, Department of Shareera Rachana, Ayurveda Campus, Institute of Medicine, Tribhuvan University, Kirtipur, Kathmandu, Nepal, <sup>2</sup>Assistant Professor, Department of Shalakya Tantra, Central Ayurveda Campus Institute of Ayurveda, Nepal Sanskrit University, Dang, Nepal

**ABSTRACT**

**Background:** *Marma* has been given importance since the ancient period. There are 107 *Marma* points identified over the human body. They are classified on the basis of structure, region, prognosis, dimension and number. Among the *Marmas* of body; *Hrudya*, *Vasti* & *Shira* are indispensable and categorised as *Trimarma*. There is a need to understand the anatomic-physiological entities and clinical importance of these *Marma* since it has been given the importance value over 107 *Marma*.

**Material and Methods:** Various literature & articles are reviewed for understanding the different aspect of *Trimarma* through various authorized text books, journals and published articles, and then the critical analysis were done to establish value of *Trimarmas* among 107 *Marmas*.

**Result and Discussion:** *Trimarma* is the *Hrudya*, *Vasti* & *Shira*. Ayurveda science has considered these are the site of *Prana* i.e. tripod of life. All the *Marma* of the body take *Ashraya* of them. Injuries and diseases to these spots lead to various complications leading to motility. The brain, heart-lungs functions and bladder function need to be supported and protected during the critical situation. So, the ABC (Airway, Breathing & Circulation) management is foremost steps in health crisis to stabilize the vitals.

**Conclusion:** Heart-lungs, Brain and bladder are anatomophysiological entity of *Trimarma*; namely *Hrudya*, *Shira* and *Vasti*. Injury to these *Marma* points give similar sign and symptoms as that of heart-lungs, brain & bladder injury.

**Keywords:** *Trimarma*, *Heart*, *Hrudya*, *Vasti*, *Shira*, brain stem etc.

**INTRODUCTION**

*Marmas* are identified as the vital areas or region that lead to ailment on manipulation.<sup>1</sup> *Prana* resides at these regions.<sup>2</sup> Any area of body where the inconstant pulsations or reflexes are generated and occurs pain on trauma are called a *Marma*.<sup>3</sup> *Vagbhata* explained *Dasjeevadhamma* as *Shira*, *Kanta*, *Jiwavandana*, *Hrudya*, *Nabhi*, *Guda*, *Vasti*, *Rakta*, *Oja*, *Shukra*.<sup>4</sup> *Charaka* explained *Dashapranayatana* as *Trimarma*, *Nabhi*, *Guda*, *Rakta*, *Shanka*, *Oja* and *Shukra* in *Shutrasthana*, and *Trimarma*, *Nabhi*, *Guda*, *Rakta*, *Shanka*, *Oja*, *Mamsa*, *Oja*, *Shukra* etc in *Siddhasthana*.<sup>5</sup> *Vriddha Vagbhata* explained *Mahamarma* as *Shira*, *Kanta*, *Jiwabandana*, *Hrudya*, *Vasti*, *Guda*, *Nabhi*.<sup>6</sup> There are 107 *Marma* points in the body, among them, the *Trimarmas* are three vital parts of the body that are clinically important. *Trimarmas* are considered *Sadyopranahara Marma*; that means injury to them bring about various lifethreatening conditions and finally lead to demise.<sup>3,2</sup>

Table 1. Trimarma<sup>7</sup>

Marma	No	Structural Basis	Shadanga Anusara	Measurement	Effect	As per Sushruta
<i>Hrudya</i>	1	<i>Sira Marma</i>	<i>Madyama Shareeragata Marma</i>	4 Angula	<i>Pranahara</i>	<i>Hrudya</i>
<i>Shira</i>	25	<i>Sira, Snayu, Sandhi, Asthi Marma</i>	<i>Urdwajatrugata Marma</i>	Vary according to Marma	<i>Pranahara</i>	<i>Vidura-2, Utshepa-2, Shanka-2, Apanga-2, Avarta-2, Sthapani-1, Phana-2, Simenta-5, Adhipat-1i, Shringataka-4</i>
<i>Basti</i>	1	<i>Snayu Marma</i>	<i>Madya Shareeragata Marma</i>	4 Angula	<i>Pranahara</i>	<i>Basti</i>

## MATERIALS AND METHODS

Several classical & contemporary literatures, publications and articles were reviewed to appreciate and comprehend the different prospectives of *Trimarma* via various authorized text books, reference books, e-books and published articles from journals. Following this, the critical analysis was done to explore the physioanatomical entity, clinical aspect of *Trimarma* and their value among 107 *Marma*.

## RESULTS AND DISCUSSION

As the *Ashaya* is destroyed the *Ashraye* is destroyed. Likewise, the destruction of any of the three *Marma* may destroy the *Prana*. Hence one should protect these three *Marma* from external as well as internal injuries.<sup>8</sup> *Charaka* explained that *Marma* are site for intense agony in compared to other body parts because *Marma* are closely related to *Chetna Dhatu*. *Acharya Charaka* mention *Vasti*, *Hrudya* and *Murdha* as a crucial among all the *Marmas*.<sup>9</sup> *Prana* inhabit at these sites.<sup>2</sup> *Marma* on exploit lead uneven pulsations/reflex or intense discomfort.<sup>10</sup> *Soma(Kapha)*, *Marut(Vata)*, *Teja(Pitta)*, *Sattva*, *Rajas*, *Tamas*, and *Bhuta Atma* inhabit in the *Marma*. Hence, a person, on injury to the *Marma* may not animate.<sup>11</sup> *Charaka* explained as *Dashapranayatana* as *Trimarma*, *Nabhi*, *Guda*, *Rakta*, *Shanka*, *Oja* and *Shukra* in *Shutrasthana*, and *Trimarma*, *Nabhi*, *Guda*, *Rakta*, *Shanka*, *Oja*, *Mamsa*, *Oja*, *Shukra* etc in *Siddhasthana*.<sup>5</sup> *Vaghbata* explained as *Dasjeevadhamma* *Shira*, *Kanta*, *jiwavandana*, *Hrudya*, *Nabhi*, *Guda*, *Vasti*, *Rakta*, *Oja*, *Shukra*.<sup>3</sup> *Vridhha Vaghbata* explained *Mahamarma* as *Shira*, *Kanta*, *Jiwabandana*, *Hrudya*, *Vasti*, *Guda*, *Nabhi*.<sup>6</sup>

*Rig Veda* was the first to locate the various *Marma points* in the human body. *Marma* are considered as indispensable component of body so, *Samhitakara* has explained it in distinct sections. *Marma* has been valued since ancient period & are the region to be paralysed or traumatized by soldiers to enervate and demolish the enemies. Combatant used to protect their vital parts of the body before going to warfare. In present time *Marma* region need to explore with its structural and functional entities to have good surgical practice and to get better results of *Marma* therapy. Description of *Marma* its location & symptoms produced after injuries to these *Marms*, are described in all Ayurvedic

texts, especially in ‘*Trimarmiyasiddhi*’, ‘*Trimarmiya Chikitsa*’, chapters in *Charaka Samhita*, ‘*Marmavibhaga*’ chapter in *Astanga Hrudya & Ashtanga Sangraha*, ‘*Pratekmarmanirdesha Sharira*’ in *Sushruta Samhita* and ‘*Shariravichaya Sharir*’ chapter in *Kashyapa Samhita*. *Tri Marma* is the components of *Mahamarma*, *Daspranayatana*, *Duwadashaprana* etc. Among the 107 *Marma* the *Trimarma* are the master of entire other *Marma* of the body since all are *Ashrita* over *Trimarma*.<sup>12</sup>

In the forensic medicine death is define as the permanent cessation of the function of brain, heart and lungs. Hearts, lungs & brain are tripod of life.<sup>13</sup> Heart and lungs work as a pair in delivering the oxygen (*Prana Vayu*) and nutrition (*Rasa*) to the entire body.<sup>14,15</sup> The function of the brain is to act over the external or internal stimuli for executing the desire effect. It controls, regulates & coordinates the function of entire body. The autonomic nervous system shows its effect by acting over the smooth muscle, gland & cardiac muscle by regulating the blood pressure, GIT motility, respiratory rate, heart rate, temperature & glandular secretion to maintain the homeostasis.<sup>16</sup> Kidneys & bladder are the organ for maintaining the fluid electrolyte balance which is essential for the normal functioning of the Heart, lung and entire body.<sup>17</sup>

### Discussion on the *Shira Marma*

*Uttamanga* i.e. the best organ of the body,<sup>18</sup> *Shira* i.e. the upper part, top, tip, forepart - Skull or Head,<sup>19</sup> *Mastaka* i.e. *Shiraso Urdhva Bhaga*,<sup>12</sup> *Mastishka* i.e. *Shirastho Majja*,<sup>20</sup> denotes brain, widely accepted as vital spot of body/*Marma*. *Prana Vata*,<sup>21</sup> *Vyana Vayu*,<sup>22</sup> *Udana Vayu*,<sup>23</sup> *Buddhivaisheshika Alachoka Pitta*, *Sadhaka Pitta*,<sup>24</sup> *Tarpaka Kapha*<sup>25</sup> is situated in the *Shira*.

The *Shira* is *Uttamanga*. *Prana Ashrita* in the *Shira*. *Shira* control & coordinate the *Indryas* function & hold them. It is the *Adhistana* of the *Indryavaha Srotas* and *Pranavaha Srotas*. Injury to *Shira* lead to *Manyasthambha* –*Torticollis*, *Ardita* –*Facial palsy*, *Chakshu Vibhrama* –*altered vision due to deviated eyeball*, *Moha* –*Delusion*, *Udweshtana* –*Squeezing type of pain*, *Shwasa* –*respiratory distress*, *Hanugraha* –*Jaw rigidity/locked jaw*, *Muka* –*Aphasia*, *Gadagada* –*Stammering speech*, *Akshinimeelana* –*Ptosis*, *Ganda spandana* –*twitching or throbbing sensation in neck region*, *Jrimbha* –*Yawning*, *Lalasrva* –*excess salivation*,

*Swarahani* –Altered voice, *Vadana-Jiwaadi Roga* –Disease of mouth, tongue etc.<sup>26</sup>

*Vidura, Utshepa, Apanga, Avarta, Staphani, Phana, Simanta, Adhipati, Shringatka* are *Shiragata Marma*. Among them *Vidura Marma* is located in the lower aspect behind the ear and injury to it leads to *Vadhirya*.<sup>27</sup> It seems the *Marma* is confined to the middle ear cleft. It consists of interconnecting air-filled spaces lined by the mucus membrane namely; Eustachian tube, middle ear cavity and mastoid air cell system & damage to these structure lead to hearing impairment.

*Apanga Marma* is located in the end of the *Bhrubo Puccha* on the outer aspect of the *Akshi* and injury to it leads to *Dristiupaghata* and *Andhayam*. *Avarta Marma* is located above the *Bhru* on the depressed part and injury to it leads to *Dristiupaghata* and *Andhayam*.<sup>27</sup> It seems the *Apanga* and *Avarta Marma* is related to the orbit and its Contents.

*Phana Marma* is located in the inner aspect of the Nasal cavity injury to it lead to *Gandha Aagnanam*.<sup>27</sup> It seems the *Phana Marma* is related to the sturcture presents inside nasal cavity.

*Staphani Marma* located in between 2 *Bhrubo*. *Utshepa Marma* located just above the *Shanka Marma* in the *Keshantaka* region. These both *Marma* are the *Vishalyagna Marma*. On forcefull extraction of the foreign body lead to fatal due to loss of the *Vayu/Maruta*. The person survives if the foreign body is neither extracted nor manipulated by external force. Self-destruction or elemination of foreign body due to healing process and postulation is never fatal.<sup>27</sup> The *Stapani*, and *Utshepa Marma* seem to be the cortical vascular components.

*Simanta Marma* is identified as 5 *Sandhi* demarcating the *Shira*. Injury of this *Marma* lead to *Unmada, Bhaya, Chittanasha & Marma*.<sup>27</sup> *Shringatka Marma* is the middle part of the anastomosis between the *Santarpana/Nurishing Sira* of *Nasa/Nose, Netra/eye, Jiwa/tongue & Karna/ear*. *Shanka Marma* is located in the upper aspect of *Bhrubo/Eyebrow* in the midway between *Karna/Ear* and *Lalata/forehead*. *Adhipati Marma* is located in the upper part of the *Mastaka/Brain* inside the cranial cavity at the level of *Romavarti/Whoral of Scalp hair*. Injury to *Shringatka* and *Adhipati Marma* lead to fatal.<sup>27</sup> It seems these *Simanta, Shringatka* and *Adhipati Marma* are the components inside the cranial cavity. The impact of injury is directly related to brain injury.

*Shira* is Collective name of group of *Marma* forms *Shira* region. *Urdhvajatrugata Marma* excluding *Gribha Marma* it includes in *Shira Marma*. As clarified in the definition of *Shira* by *Acharya Caraka* physiologically *Shira Marma* is the location of *Mastishka* (Brain). As the base is destroyed, the dependent is also destracted. Likewise, the destruction of *Shira* destroys the *Prana*. Hence, one should protect it from external as well as internal injuries. *Marma* within *Shira* are *Vidhura, Phana Apanga Avarta Utshepa Shankha Stapani Simanta Sringatka Adhipati*. *Sira* represent head containing brain and its associative (vascular component and covering, cranial nerve roots, neuroendocrine component etc)

along with entire *Panchapanchaka* of 4 sense organs (Eye, Nose, Ear & Tongue). Entire body function is controlled and coordinated by the brain. Injury to *Shira* may cause hemorrhage, inappropriate intra cranial pressure, ischemia vital center of cerebral hemisphere, ultimately result paralysis, coma or death. All the sensory and motor functions are under the control of corted, basal nucleus and cerebellum. Cardiac, respiratory & other vital centers lie within the brain stem. Cortical death leads to coma where as brain stem death (which is irreversible) declears the death of individual.

### Discussion on *Hrudya Marma*

*Hrudya* is hub of *chetana*. Ten *Moola Dhamani* (*Prana, Vyana, Apana, Mana, Buddhi, Chetana, Mahabhuta*) are linked with *Hrudya*. Major vessels associated to heart are two coronary arteries, superior venecava, inferior venecava, arch of aorta & its branches, pulmonary trunk, 4 pulmonary veins etc. Injury to *Hrudya* lead to *Apasmara* –Epilepsy, *Unmada* –Psychosis, *Chittanashadaya* –Loss of mental integrity/consciousness, *Mukha-talu-kantha shosha* –Dryness of mouth, palate & throat, *Kasa* –Cough, *Shwasa* –Breathlessness, *Balakshaya* –Weaknesses, *Klomapakarshana* –Form of chest pain due to patholohy of airway, *Jihwa nirgama* –Prolapse of tongue, *Pralapa* -Delirium.<sup>28</sup> It is seat of *Oja*.<sup>29</sup> *Hrudya* contiousneouly pumps the *Rasa Dhatu* to entire body throughout the life which lead to *Dharana, Tarpana, Vardana & Yapana* function of body.<sup>30</sup>

*Hrudya* is situated in between pectoral regions (*Stana antara*) inside the thoracic cavity at the level of cardiac orifice of stomach. It is seat for *Satva, Raja* and *Tama*. Injury to it results immediate death on shattered.<sup>31</sup>

Trauma to pericardium gives rise to severe hemorrhage and immediate death. Embolism or thrombosis in coronary artery cause ischemic of cariac muscle lead to angina pectoris associated with agonizing pain in pericardial region which radiate upward to left jaw and neck and also radiate down to medial side of the left arm and forearm. Ischemia may lead to death of myocardium leading to myocardial infarction. Injury or infection of myocardium may cause arrhythmia, bradycardia or tachycardia. A tear in the wall of the heart means ventricular rupture may cause fatal hemorrhage. Loss of cardiac propulsion may cause less blood supply to the tissue of brain causing sudden cellular and central death. *Hrudya Marma* it used to denote the pericardium, root of greater vessels and vessels, lymphatic channels, vardiatic plexus, muscles (myocardium) & connective tissue associated to it. All these structures are situated around the heart so when it will be injured it may morbidly condition or morbidity.

### Discussion on *Basti Marma*

*Basti* is related to the *Sthula gudha, Muska, Sevani, Shukravaha srotas, Mutravaha srotas, Ambuvaha srotas* and situated in the midway between these all structure as sun is situated at the centre. Injury to *Basti* leads to *Vata-Varcha-Mutro Nigraha* –Retention of flatus, urine & stool, *Vankhsna-Mehana-Basti Shula* –Pain in groin, genital and bladder region. *Kundalodavarta* – Retrgrade

movement of *Vata* and *Mutra* due to bladder abnormality, *Nabhi-kukshi-shroni Graha* –Disorder of umbilicus, lower abdomen & pelvic region, *Gulma* –Abdominal lumps, *Anilastila* –Solid mass aggregate due to *Vata*, *Upastambana* –Obstruction or retention of urine.<sup>32</sup>

*Basti* related to (*Mutrashaya*) urinary bladder but when we use the term *Basti Marma*, it includes urinary bladder its surrounding structures along with the other organs of urinary system (kidneys, ureter, and urethra) which plays the most important role to excrete the toxins, free radicals and waste product from our body (Fluid and electrolyte balance). *Basti Marma* is located in *Kati Pradeh* (loin region), structurally the interior of wall consists of *Alpa Mamsa* and *Rakta* (muscles & blood component) and acts as reservoir for urine<sup>33</sup> *Ashmari Vrana* (abscess due to calculus) and immediate death may occur. *Mutrasravivrana* (discharging abscess) is formed as complication of *Mutra Ashmari* (*urolithiasis*) leading to death of patient.<sup>34</sup>

The urinary bladder, a hollow viscous with strong muscular walls, is characterized by its elastic nature. A distended bladder may be ruptured by an injury to lower abdominal wall. Because of the superior position of the distended bladder, it may be ruptured by injuries to the inferior part of the anterior abdominal wall or by fractures of the pelvis. Trauma on urinary bladder may cause bladder rupture which may lead to acute infection developing peritonitis, shock and death. If peritoneum is involved, it may lead to peritonitis and death. The rupture may result in the escape of urine extra-peritoneally or intra-peritoneally. Rupture of the superior part of the bladder frequently tears the peritoneum, resulting in extravasations (passage) of urine into peritoneal cavity. Posterior rupture of the bladder usually results in passage of urine extra-peritoneal into the perineum. Both extra peritoneal and intra peritoneal rupture can prove fatal, so *Basti-marma* can be correlated with urinary bladder since it is the *Ashaya* of *Mutra*.

## CONCLUSION

On the basis of various reviews of the *Trimarma*; *Shira* is head with brain & its supports, *Hrudya* is cardiopulmonary units and their function. *Vasti* is the urinary reservoir (urinary bladder) which is indirectly related to urinary organ (kidneys & ureters) and they are main organ of water electrolyte balance system. In contemporary science the emergency monitoring include; Consciousness status which is related to brain function monitoring. Pulse rate, heart rate, blood pressure, respiration rate,  $O_2$  saturation, rhythm etc. monitoring and establishment which is related to cardiopulmonary function. Urinary output is the measure of function of the urinary system (kidney & bladder) again associate with fluid volume,  $P^H$ , electrolytes level etc. Tripod of life; heart, lungs, & brain. In classical treaties *Hrudya*, *Vasti* & *Shira* are mentioned. Heart and lung is considered as one unit w.r.t their function, Brain as the Master of all *Indrya*, and *Vasti* too is importance being maintenance of fluid electrolyte of body. Since, all the other body parts are directly dependent on these for execution of their normal function, *Hrudya*, *basti* and *shira* and they are considered as three vitals of body.

The knowledge of *Marma* is essential in the sports medicine, TCM, martial arts, *Marma Chikitsa*, *Shalya Tantra*, *Shareera Rachana* etc. in form of applied anatomy (*Marma Vijnana*) which bargains around the imperative focuses and the clinical viewpoint related to them. Avulsion to *Trimarmas* creates the unsettling influence within the homeostasis of body. Any illness harrowing to *Pranayatana* and/or complexity of disease and prognosis in *Trimarma* is more severe than others since these are the *Sthana* of *Dosha*, *Prana*, *Oja* etc. *Trimarma* have capability of hosting body. As the base is devastated, the dependants are as well crushed. Like wise, the destruction of any one of these three *Marma* may destroy the *Pranas* of individual. Hence one should protect these three *Marmas* form the external and as well as internal injuries. *Sushruta* being surgeon emphasizes on malfunctioning of *Marma* due to external violation by trauma but *Charaka* being the physician, he emphasizes on internal malformation resulted by the vitiated *Tridosha*. In both conditions, ultimately affect *Trimarma* leading health hazzards. therofore, *Trimarma* are illuminated among other *Marma* of the body.

## CONFLICT OF INTERESTS:

None

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