Conceptual study of Marmabhigata WSR to Head, Neck, Upper and Lower Extremity

Urewar M.V.
Professor, Department of Shalyatantra.
Bharati Ayurved Medical College and Hospital, Durg, Chhattisgarh

ABSTRACT:
Sushruta's concept of Marma is a significant contribution, and it should be treated as a mirror of surgery, as there are 107 vital points in various parts of the body that should be carefully handled during surgery and always protected from injury, as they contain the component of life or vital energy (prana). Marma, an Ayurvedic science, is a treatise on Surgico-anatomical learning. The Sushruta samhita's chapter 'Marma sharira' provides thorough information about Marmas based on the bodily organs or structures involved, the time-bound repercussions of the trauma, the area and sizes, the locales and locations across the body, and so on. Marma was defined by Ayurveda as essential areas of the body that produce death on severe damage or suffering similar to death or the site of irregular pulse and pain on pressure, as well as the seat of life (Jivasthana). This is the point where Prana (a component of life or vital energy) meets five structures: Sira (veins), Snayu (nerves), Sandhi (joints), Mamsa (muscles), and Asthi (bones). Any injury or mechanical involvement that directly affects the Marma sthana (Marmas' sites) results in death or significant effects sooner or later. Bhrama (confusion), Pralapa (delirium), Dourvalya (weakness), Chittanasha (lack of consciousness), Strastanga (restlessness), loss of sensation in parts, rise in body temperature, loss of joint function, unconsciousness, shallow breathing, severe pain, bleeding, loss of perception of senses, and so on are some of the general manifestations.

Key-words: Marma, Vital point, Sushruta, Surgical procedure, Consequences, Prana.

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Introduction:

Marma was defined by Ayurveda as essential spots of the body that produce death on severe damage or pain close to death or the site of irregular pulse and pain on pressure, as well as the seat of life (Jivasthana). This depicts the point where five structures, namely Sira (veins), Snayu (nerves), Sandhi (joints), Mamsa (muscles), and Asthi (bones), meet. It is the point at which Prana (a component of life or vital energy) resides or flows through via its Swabhava (in general) and Vishesa (in particular), and any harm to it results in Prananas (death).\cite{1,2} Acharya Sushruta discussed Marma from the perspective of damage, but Acharya Charaka only mentioned three Marma that deal with disorders associated with them. Marma was first described in ancient times, when there was no emergency care. Ayurveda is the only science that can explain some topics. One of these chapters is Marma sharir. The necessity of Marma knowledge has been stressed by Acharya Sushruta, who believes that a surgeon cannot execute a good operation without it. Ayurveda defines 107 Marma, which are categorised according to their structure, location, post-traumatic impact, and size.\cite{3} A thorough examination of Ayurvedic doctrines reveals that the components Dosha, Dhatu, Mala, Agni, and Srotas, also known as Samprapati Ghatakas (pathogenesis components), are given top priority in the treatment of any disease in general, while the concept of Marma is included in the prognostic evaluation of a disease. Because of its practical application, the Marma vijayanam (science of Marma) has grown in importance. The name Marma comes from the Sanskrit phrase "Mriyete asmin iti Marma," which implies there is a risk of death or major health harm if these critical components are injured, and the term "Sthana," which denotes its location; when both are combined as "Marmasthana," the result is "Marmasthana".\cite{4,5} The name Marma was originally used in India's Vedic literature, the Rigveda, to describe soldiers who were ready to go to fight. They are instructed to properly equip themselves with the necessary ornaments to protect the essential portions (Marma) of the body from harm by the armour, so that they may win without sustaining any injuries to his vital parts of the body.\cite{6,7} These spots or points were used by the warriors as targets for eliminating opponents as well as for hunting wild animals. These susceptible bodily parts can
be exploited for both rehabilitation and incapacitating an opponent.

**Material and Methods:**

- Literature regarding Marmas from Sushruta samhita, Charaka samhita.
- Modern literature from B.D.C Human Anatomy, Gray’s Anatomy.
- Review articles, journals etc.

**Classification of Marma:**

Ayurvedic scholars classified the Marma points in relation to the five principal components of the body’s physical structures.\(^{[8,9]}\) These are:

1. Mansamarma (Marma located in the flesh or muscle);
2. Siramarma (in vessels);
3. Snayumarma (in muscles);
4. Asthimarma (in bones) and
5. Sandhimarma (in joints).

**Marmabhigata (Injury to Marma):**\(^{[10,11]}\)

Marmabhigata denotes any minor or severe damage to Marma in the body caused by incision, stabbing, burning, or an external impact. The degree and kind of damage to the Marmas are likely to cause subjective symptoms in Marmabhigata. In light of these considerations, Sushruta has placed a greater focus on treating with the symptoms that arise as a result of the trauma’s effects. Bhrama (confusion), Pralapa (delirium), Dourvalya (weakness), Chittanasha (lack of consciousness), Strastanga (restlessness), loss of sensation of parts, rise in body temperature, loss of joint function, 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 some of the general manifestations.\(^{[12,13]}\) 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.

**Consequence and patho-physiological changes resulting from trauma to specific Marma**

![Classification of Marma](image-url)
Upper extremity\textsuperscript{14,15,16}

- **Kshipra (1/2 Angula)** - It is located between the thumb and the index finger. It produces Aksepaka (clonic spasms or convulsions) in the hand, which might result in death.
- **Tala Hridaya (1/2 Angula)** - It is located in the centre of the palm, where the line meets the middle finger. Trauma causes excruciating agony and death.
- **Kurcha** - Located on both sides of Kshipra Marma, above it (4 Angula). Shivering and bending deformities of the hand ensue.
- **Kurcha Sira (1/2 Angula)** - Below and to one side of Manibandha sandhi (Wrist joint). It produces swelling and discomfort in the afflicted area.
- **Manibandha (2 Angula)** - The wrist joint, which connects the palm of the hand to the forehand. It produces discomfort, stiffness, and Kunitwa (Deformity).
- **Indravasti** – It is located in the middle of the forearm, facing the hand’s ventral side (2 Angula). Excessive bleeding occurs, resulting in mortality.
- **Kurpura** – It is located at the elbow joint, where the forearm and arm meet (3 Angula). It renders the limb permanently disabled.
- **Ani** – It is three Angula (finger) above the elbow joint on both sides (3 Angula). Any damage to the arm results in swelling, stiffness, or paralysis.
- **Bahvi - 1/2 Angula** in the middle of the arm. Due to a lack of blood flow, trauma produces wasting or atrophy of the arm.
- **Lohitaksha** - Located at the root of the upper extremities (brachium), above the Bahvi Marma (1/2 Angula), next to the auxiliary fold. Due to blood loss or decreased blood flow, injury causes Pakshaghata (hemiplegia) and Shosa (atrophy) of the whole upper extremity.
- **Kakshadhara (1/2 Angula to 1Angula)** - Located between the chest and arm pit. It causes the limb to become paralysed.

Lower extremity\textsuperscript{17,18,19}

- **Kshipra (1/2 Angula)** - Located between the great toe and the second toe of the foot. It produces Aksepaka (clonic spasms or convulsions) in the leg, which might result in death.
• **Tala Hridaya** - A straight line drawn from the root of the middle toe (1/2 Angula) to the mid of the sole of the foot (plantar aspect). This causes agony and death if it is injured.

• **Kurcha** – It is located on both sides and above the Kshipra Marma (4 Angula). Shivering and bending deformities of the foot are caused by trauma.

• **Kurcha Sira** - This substance can be seen on both sides of the Gulpha Sandhi (ankle joints) (1 Angula). Any injury to this results in swelling and discomfort in the afflicted area.

• **Indravasti** – It is located in the middle of the Jangha (leg) in the Parsani (heel or calcaneum) line (1/2 Angula). Excessive bleeding results in death if this is damaged.

• **Janu** – Located at the point where Jangha (leg) and Uru (thigh) meet (3 Angula). Limping or lameness is a result of an injury (difficulty in walking).

• **Ani** – It can be found on both sides of the lower one-third of the femur, three fingers above the Janu (knee joint) (half Angula). Urusthambha is caused by injury to this marma (Enormous swelling and stiffness of the thigh).

• **Urvi** - It can be found in the middle of the Uru (thigh) (1 Angula). Sakthi wasting (atrophy of the arm and legs) occurs as a result of blood loss or reduced blood supply.

• **Lohitaksha** (1/2 Angula) – It is located at the root of the Uru (thigh) fold, above the Urvi Marma and below the Vankshana Sandhi (Hip joint). Due to a lack of blood or a decreased blood flow, it produces Pakshaghata (hemiplegia) and Shosa (atrophy) of the whole inferior limb.

• **Vitapa** – It grows between the Vanksana (Groin) and the Vrisana (Testis) rivers (1 Angula). Impotency or oligospermia come from any marma injury.

**Head and Neck** [20,21,22]

• **Nila Manya** - It can be seen on either side of the Kantha nadi (trachea) high up in the neck (4 Angula). Injury results in a loss of speech, a distorted voice, and a loss of taste.

• **Matrika** – It may be found in the external jugular veins, the post-external jugular veins, and the
common facial veins (4 Angula). Damage results in instant death.

- Krikatika - It is found at the point where the head and neck meet (half angula). Mookatwa is caused by injury (Deafness).
- Phana - On both sides of the nasal tube and at the top of the nose (1/2Angula), it is located. The sense of smell is lost as a result of an injury.
- Apana (1/2Angula) - It is positioned on the outer side of the orbits, below the lateral end of the Bhru (eyebrow). It results in Andhatwa (Blindness or defective vision).
- Avarta (1/2Angula) – It is located above and below the Bhru (eyebrow). Andhatwa can be caused by an injury (Blindness or impaired vision).
- Sankha - Located between Karna (ear) and Lalata (forehead), immediately beyond the superciliary arch’s terminal (1/2Angula). Any injury can result in instant death.
- Utkshepa – It is located on both sides of the head (1/2Angula) above the Sankha (temple) and at the hairy border of the scalp (parietal area on the scalp). If the Shalya (foreign body) is retrieved by force shortly after an injury, the person will perish.
- Sthapani (1/2Angula) - Between the Bhrus (eye brows or superciliary arches) and the bony vault. If the Shalya (foreign body) is retrieved by force shortly after an injury, the person will perish.
- Simanta – This is a five-jointed structure in the vault of the skull (4 Angula). Unmada (insanity), Bhaya (fear), and Chittanasa (madness or absence of consciousness) are all symptoms of damage that lead to death.
- Sringataka – Marma is found in the confluence of Siras (veins), and it feeds the Ghrana (nose), Shrotra (ear), Akshi (eyes), and Jivha (mouth) (4 Angula). Any damage results in instant death.
- Adhipati - Located superiorly within the skull at the junction of Sira (vein), (1/2Angula). Injury results in instant death.

Discussion:

Marma points consist Agni, Soma, Vayu, Satva, Raja and Tama. Agni, Soma, Vayu, Satva, Raja, and Tama are the Marma points. It is self-evident that if these body
elements are disrupted or harmed, the man will die or suffer. The misalignment of 'jananendrias' with the subject for which they are intended might result in unconsciousness. This also leads to dosha (vata, pitta, kapha) and guna (energy) imbalances (satva, raja, tama). This might be the source of the body's physiological imbalance. The nadis (subtle nerves) and chakras (energy centres) of the subtle body and mind are connected via marmas. Marmas are basically energetic hubs where life energy gathers and circulates. Significant damage to the marmas causes severe and frequently unusual symptoms. Sushruta has also attempted to find the existence of Trigunas, Mahagunas, and the Bhootatma (Supreme force or life essence) in the Marmas, in which Soma (Jala tatva), Maruta (Vayu tatva), and Teja (Agni tatva) symbolise the Tridosas in the body, and Satva, Raja, Tama, and the Bhootat.\textsuperscript{[23,24]} Because different organs or components of the body, such as Mamsa, Sira, and Snayu, are impacted after trauma, the symptoms vary correspondingly. Injury to Mamsa Marma causes constant oozing of blood, pallor of the skin due to anaemia, loss of perception power of Indriyas (sense organs), and eventual death; injury to Sira Marma causes constant flow of thick blood in large quantities, as well as manifestations such as thirst, giddiness, dyspnea, delusion, and hiccup, all of which lead to death. Snayu Marma injury causes Ayam (body contraction or bending), Akshepa (convulsion), Stambha (stiffness), severe agony, inability to ride, sit, or stand, deformity in the bodily organs, and even death. Injury to Asthi Marma causes intermittent bleeding mixed with bone marrow and pain, while injury to Sandhi Marma causes a feeling of being surrounded by thorns at the injury site, shortening of the organ or lameness even after the wound has healed completely, loss of strength and movement, emaciation or atrophy (of the affected body organ), and swelling or edema of the (distal) joints.\textsuperscript{[25,26]} The Hridaya (heart), Mastiska (brain), and Phupphus (lungs) are also crucial organs in the body, according to current science. Any injury or stress to these regions of the body might induce shock or death. Given the surgical interference with the Marmas, it's critical to pay attention to their size and area of coverage. During the surgical treatment on these Marma regions, extreme caution in terms of depth and breadth is required, since even a minor departure from the schedule might result in terrible consequences. A finger's breadth away from the Urvi, Kurcha Shira, Vitapa,
Kaksha, and a Parshva Marma, an incision should be made, however a clean space of two fingers should be avoided when making any incision concerning Stanamula, Manibhandha, or Gulpha Marma.\textsuperscript{[27,28]}

The position and dimension of each local Marma should be taken into account first, and the incision should be performed in such a way that an incision, even extending or affecting in the least, the edge or side of the Marma, may be fatal, according to the Sushruta samhita. When any Marma sthana has a surgical treatment, extreme caution should be exercised. There is no Marma that does not cause some or all harm. The pathological alterations that occur at the Marma's site are among the most difficult to cure. Even if they are treated with the utmost care by a skilled surgeon, problems are almost certain to occur. The importance of the place where all five living surgical tissues are underneath the spot is precisely specified and signified by Sushruta. Surgery is clearly engaged in only five tissues where special attention is required. Even today, surgical doctrine revolves around these tissues.

**Conclusion:**

During a surgical operation over the Marma part of the body, Sushruta's chapter "Marma Sharira" is a mirror of surgery. For surgeons, it has been properly said that "knowledge of Marmas is half of knowledge of surgery," because people die quickly if they are damaged, and even if some of them survive thanks to the surgeon's effectiveness, they will almost certainly become disabled.

Though modern understanding of anatomy and physiology has removed the mystery surrounding the surrounding structures at the location of Marmas and reduced or eliminated the risky and perilous duty for surgeons. The concept of Marma, as recorded in ancient literature, may help to crystallise the subject matter, based on the extensive knowledge of experienced surgeons who pay special attention to critical systems such as arteries, veins, nerves, tendons, and ligaments.

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