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SADYAPRANAHARA MARMA: RELEVANCE IN TRAUMA SAFETY AND SURGICAL PRECISION IN PRESENT SCENARIO

Dr. Sreevidya G.*, Dr. Rashmi Bharti

Assistant Professor, MD Ayurvedic College and Hospital, Sikandra, Agra.

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***Corresponding Author**

Dr. Sreevidya G.

Assistant Professor, MD Ayurvedic College and Hospital, Sikandra, Agra.

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ABSTRACT

Marma Sharira, a unique concept in Ayurveda, identifies vital anatomical points where mamsa (muscle), sira (vessels), snayu (ligaments/nerves), asthi (bone), and sandhi (joints) converge. Among the 107 Marmas described by *Acharya Sushruta*, *Sadyapranahara Marmas* are the most critical—injury to them leads to instantaneous death (*sadya prana harana*). Modern medical science recognizes these as regions where trauma results in rapid cardiovascular, respiratory, or neurological collapse. This paper correlates *Sadyapranahara Marmas* with modern anatomy and discusses their relevance in trauma care, emergency management, surgery, and anesthetic safety.

KEYWORDS: *Sadyapranahara Marma, Marma Sharira*, trauma, emergency medicine, anesthesia, surgery, Ayurveda anatomy.

INTRODUCTION

Ayurveda describes *Marma Sharira* as the science of vital points essential for the maintenance of life and health. The concept forms an integral part of Ayurvedic anatomy, first detailed in the *Sushruta Samhita (Sharira Sthana 6/27–32). Sushruta* enumerated 107 Marmas, categorized by their composition, site, dimension, and effect of trauma. They are considered as the seat of *aayu*.

Classification of Marmas

Based on the anatomical composition, the *marma* can be classified as *mamsamarma, astimarma, siramarma / dhamani marma, snayumarma* and *sandhimarma*. Another

classification based on the potential complications arising due to trauma to the *marmas.* They are *Sadyapranahara, Kalanthara pranahara, Vishalyaghna, Vaikalyakara and rujakara marmas.*

In the modern context, these correspond to critical trauma zones involving the brain, heart, major vessels, and vital organs. The understanding of these areas has direct relevance in trauma management, emergency resuscitation, surgical safety, and anesthetic planning.

Integrating ancient *Marma Sharira* concepts with modern anatomy enhances patient safety, clinical outcomes, and medico-legal understanding.

Classical Review of *Sadyapranahara Marma*

Definition and Classification

Sadyapranahara Marma are those that, upon injury, result in immediate fatality. *Sadyapranahara.*

Marma—the most vital—are said to cause instantaneous death due to immediate loss of *Prana* or within seven days after trauma when injured.

Number and Location

Total: 19

Predominant regions: Head, neck, thorax, and abdomen.

Sadyapranahara marmas

Shankha (2)

asthi marma, jatrurdva marma, ardhangula pramana and are two in number.

Adhipati (1)

sandhi marma, jatrurdva

marma, ardhangula pramana and is One in number.

Hridaya (1)

siraa marma,

ura marma, swapanitala pramana and it is one in number.

Nabhi (1)

siraa marma, udara marma, swapanitala pramana and is one in number.

Guda (1)

mamsa marma, udara marma, swapanitala pramana and is one in number.

Basti (1)

Snaayu marma, udara

marma, swapanitala pramana and it is one in number.

Srungataka(4)

Siraa marma, jatrurdva marma, swapaanitala pramana and are four in number.

Matruka(8)

Siraa marma, jatrurdva marma, swapanitala pramana and are eight in number.

Anatomical and Clinical Correlation

Each *Sadyapranahara Marma* corresponds to vital structures in modern anatomy. A thorough understanding of surface marking is necessary while performing surgery to prevent the damages.

Injury happens to nerves, vessels, tendons and ligaments can lead to fatal consiqences and thus has tobe handle with at most care.

Trauma to the *Sadyapranahara Marma* leads to fatality. Severe trauma to the *marma* can lead to vascular damage and hemorrhage leading to shock and immediate death.

Marma **Name Location (Classical) Probable Modern Anatomical Correlation and Effect of Injury are given below**.

Shankha Marma: Bilateral temples Temporal region—middle meningeal artery, superficial temporal artery, temporal lobe of brain injury leads to extra dural hemorrhage, cerebral trauma, extra dural hematoma → instant unconsciousness.

Adhipati Marma: The confluence of sinus.Crown of the head Junction of sagittal and coronal sutures; superior sagittal sinus, parietal lobe and its injury leads to fatal intracranial bleeding, brain trauma brain death.

Hridaya Marma: Coronary arteries, great vessels (aorta, pulmonary trunk). Injury leads to cardiac arrest, instantaneous death.

Nabhi Marma: celiac plexus, superior mesenteric vessels Injury leads to hypovolemic and neurogenic shock due to splanchnic nerve and vascular injury.

Guda Marma: Superior &Inferior rectal arteries, veins, and internal and externsl venous plexus.

Injury leads to massive hemorrhage, sepsis in guda region, neurogenic or hemorrhagic shock.

Basti Marma: Pelvic cavity Urinary bladder, internal iliac vessels, pelvic plexus Injury leads to Hematuria, bladder rupture, hemorrhage.

Srungataka Marma: Junction of sensory organs in head Cavernous sinus region; internal carotid artery and cranial nerves III–VI. Injury leads to rapid loss of consciousness, fatal bleeding, cerebral ischemia, immediate collapse.

Matruka Marma

Located on either side of the neck, near the pathway of speech and respiration Carotid bifurcation region containing common carotid artery, internal and external carotid arteries, vagus nerve (CN X), hypoglossal nerve (CN XII), and laryngeal nerves Vital for speech, breathing, swallowing, and cerebral blood flow.

Injury leads to Hemorrhagic shock from vascular rupture, Asphyxia from laryngeal nerve or tracheal injury, cardiac arrest due to vagal reflex or carotid sinus stimulation. Airway compromise, voice loss.

These points are physiologically essential for maintaining circulation, respiration, and neural control—supporting the classical claim of immediate lethality when injured.

According to Acharya Susrutha, Sadyapranahara Marma are agniguna pradhana. Aashu ksheenatha and kshapana are its characteristic features. Immediate depletion of dhathu cause immediate death.

Physiological and Pathological Basis

Injury to *Sadyapranahara Marma* results in immediate cessation of vital functions. Modern physiology supports this.

Hridaya, Basti, and *Nabhi Marmas* involve vascular shock and cardiac arrest.

Shankha, Adhipati, and *Shringataka Marmas* relate to cerebral centers controlling respiration and consciousness.

Matruka Marmas affect major cervical vessels and nerves, leading to rapid hypoxia.

Hence, the classical description of *sadya prana harana* reflects the pathophysiological consequences of trauma to vital neurovascular structures.

Relevance in Trauma and Emergency Management

1. Correlation with the ABCs of Trauma Care

The *Sadyapranahara Marma* directly correspond to the Airway–Breathing–Circulation (ABC) approach of emergency medicine.

Airway: *Matruka Marma* injury (neck trauma causing airway obstruction or vagal inhibition).

Breathing: *Hridaya Marma*(chest injury compromising respiration).

Circulation: *Nabhi, Basti*, and *Guda Marmas* (intra-abdominal or pelvic trauma causing shock). Thus, the ancient Ayurvedic understanding mirrors the modern trauma resuscitation sequence.

2. Emergency Management Principles

Immediate assessment of airway, breathing, and circulation in *marma* regions. Protection of vital zones during immobilization and first aid.

Rapid hemostasis and vascular control in *Hridaya*, and *Nabhi* injuries. Neurological monitoring in head *Marma* injuries (*Shankha*, *Adhipati*).

3. Forensic Application

Fatal trauma to *Sadyapranahara Marma* often explains instant death in homicide or road traffic accidents. Recognition of these points helps in determining cause and mechanism of death.

Relevance in Surgery

1. Surgical Anatomy and Precision

Knowledge of *Sadyapranahara Marma* can prevent accidental damage to vital structures during surgical interventions.

Neck surgeries: Avoid injury to *Matruka* regions(carotid sheath, vagus nerve). Thoracic procedures: Care in *Hridaya* area (pericardium, great vessels).

Abdominal and pelvic surgeries: Caution near *Nabhi*, *Basti*, and *Guda Marmas* (major vessels and plexuses).

2. *Marma Raksha* Principle in Surgery

The Ayurvedic tenet of *Marma Raksha* (protection of vital areas) aligns with modern surgical ethics of "do no harm" and principles of anatomical dissection.

Relevance in Anesthetic Safety

Airway Management: *Matruka Marmas* correlate with the neck region where improper intubation or tracheostomy may damage carotid or vagal structures, causing bradycardia or arrest.

Regional Anesthesia: Awareness of *Marma* zones prevents inadvertent nerve or vascular injury during cervical, thoracic, or spinal blocks.

Monitoring: Vital sign monitoring (ECG, pulse oximetry, BP) reflects *Prana Vayu* functions described in *Ayurveda*.

Anesthetic planning should respect these regions to ensure patient safety and minimize life-threatening complications.

Integrative Significance

Marma Sharira bridges ancient anatomical observation with modern trauma physiology.

The *Sadyapranahara Marma* correspond to critical trauma regions identified in ATLS (Advanced Trauma Life Support).

Teaching *Marma Sharira* in modern anatomy and surgical education can enhance clinical vigilance and patient outcomes.

DISCUSSION

The *Sadyapranahara Marma* represent ancient knowledge of vital areas now substantiated by modern anatomical and clinical evidence. This *marma* points correspond to central nodes of circulation and nervous control—heart, brain, and major plexuses—whose injury leads to

rapid systemic collapse, validating the classical concept of *sadya prana harana*.

Understanding these sites.
Improves trauma triage and resuscitation.

Guides surgeons and anesthetists in avoiding critical structures.

Promotes an integrative anatomical model blending traditional and modern sciences.

Integrating this knowledge with modern trauma systems could enhance triage prioritization, surgical precision, and educational frameworks. Furthermore, Marma therapy—though primarily preventive or rehabilitative—must exclude *Sadyapranahara Marmas* to avoid catastrophic outcomes, underlining their continuing clinical relevance.

CONCLUSION

Sadyapranahara Marma correspond anatomically to the head, neck, thorax, and abdominal vital zones recognized in modern trauma, surgery, and anesthetic care. The Ayurvedic emphasis on *Marma Raksha* (protection of vital points) is a precursor to today's trauma safety and surgical precision principles. Integrating this ancient anatomical knowledge into emergency and operative medicine strengthens patient safety, ethical practice, and holistic understanding of life-preserving structures.

The *Sadyapranahara Marma* concept demonstrates the profound anatomical insight of classical *Ayurveda*. Their relevance extends beyond traditional medicine into modern surgery, trauma management, forensic analysis, and medical ethics. Future research integrating imaging, neurovascular mapping, and clinical correlation will further substantiate the scientific validity of these ancient vital points, preserving their value in modern health sciences.

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