

ANATOMICAL ASPECT OF MANIBANDHA MARMA ALONG WITH ITS TRAUMATIC EFFECT

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ABSTRACT

Acharya Sushruta a prominent ancient *Ayurvedic* practitioner, listed the parts of body having seven layers of skin, 300 bones, 210 joints, 900 ligaments, 500 muscles, 16 tendons, 700 veins and arteries and nerves as well as 107 *Marmas*. *Marma* are therefore vital and significant recognizable components of human body. *Acharya Sushruta* was a surgeon and he highlighted how crucial *Marmas* are in surgical practice. As he said in any act of surgical procedure knowledge of *Marmas* is very essential. *Trimarma Hridaya, Shira, Basti* has been elucidated by *Acharya Charak*. They are regarded as *Chetana Sthan*. *Marma* therefore has a strong foundation in anatomy. 107 *Marmas*, which can get injured and cause serious consequences or even death, are critical locations on the body. While every *Marma* on *Aghat* (injury) does not result in death, but cause devastating side effects on the person. Different *Acharyas* have specified many types of *Marmas* based on factor such as their position, composition, quantity, size and

trauma related symptoms (*Vidha Lakshanas*). Upper limb contains the *Manibandha Marma*. It incorporated in *Sandhi Marma* and situated near the *Manibandha Sandhi*. These are two in number and having *Primaan* of two *Angul*. In accordance with prognostic categorization, it is regarded as *Rujakar Marma*. Any injury to *Manibandha Marma* leads to *Kunthta*, which means the hand's inability to perform work. In this study a sincere attempt has been made to thoroughly examine the *Manibandha Marma*. One can easily put relation between *Ayurvedic* and modern view. This will assist *Ayurvedic* students and practioners to understand and

address the idea of *Marma*. This endeavour aims to identify and pinpoint the precise anatomical location of *Manibandha Marma* by cadaveric dissection.

KEYWORDS: Marma, Manibandha Marma, Rujakar Marma, Wrist Joint.

INTRODUCTION

The most significant and crucial topic in *Ayurveda* is *Marma*. Since *Marma* points are thought to be the location of *Prana*, or life force, damage to these sites can cause excruciating pain, loss of function and sensation and even death.

Ayurveda, the ancient Indian system of medicine, includes not only the treatment protocol in the *Samhitas* but also contain structural anatomy of body in *Sharir Sthana*. *Sharir Sthan* of *Samhitas* describe even the subtle part of human body. *Acharya Sushruta* believes that knowledge of *Marma Sharira* covers the half knowledge of surgery.^[1] According to ancient text, these vital points should not be damaged, and due attention should be paid in this regard even while performing the surgical procedures.

Marmas are defined as point that are going to vital, excessively poignant or painful. *Marma Ghata* is defined as wounding the vitals.^[2] *Marma Sthan* is the place of irregular pulsation and pain on pressure and sense of *Jiva Sthan*.^[3]

Patients who receive *Shalya Chikitsa* will benefit from the listing of *Marma Shastra*. To ensure a successful operation, the surgeons are urged not to disturb any *Marma* and to safeguard even the local *Marma Sthana* from blunt or sharp equipment.^[4]

The patient either passes away or may become malformed even if he survives after *Marma Sthana* are disrupted by any of the tools.^[5]

To help the surgeon recognize these structures and protect themselves from harm while performing surgery, the dimensions of *Marma* also explained.

Shalya Tantra is best understood and used when one has a thorough understanding of the structure, dimensions, injuries and locations of these *Marma* points. Hence medical authorities have described the *Marmas* to have covered half the scope of *Shalya Tantra*.

According to *Acharya Sushruta* there are 107 *Marmas* in human body these are the site of *Prana* and life.^[6] As a result, depending on the *Marma* structure involved, any injury to these regions has serious repercussions.

MATERIAL AND METHODS

All the literature about *Marma Sharir* and *Manibandha Marma* along with an anatomy wrist joint was collected from various *Ayurvedic* classics text like *Sushruta Samhita*, *Charak Samhita*, *Ashtang Hridaya*, *Ashtang Sangraha*, *Ayurvedic* commentaries and modern books like Gray's Anatomy, B.D. Chaurasia, Snell Clinical Anatomy etc. review Articles, Journals etc.

DISCUSSION

Almost all of the classical writings created during *Samhita Kala* describe the location and architecture of *Marma* and provide a thorough explanation of *Viddha Lakshana* and illnesses. The earliest reference of *Marma* in a *Samhita* is found in the *Charaka Samhita*. *Acharya Charaka* acknowledged that there were 107 *Marmas* in all, but he did not explain them. He prioritized the *Trimarmas* (*Shira*, *Hridya* and *Basti*) in *Siddhi* and *Chikitsa Sthan*. *Acharya Charaka* has opined that it is the site of *Chetana*, hence the pain there would be more intense than in other areas of the body.^[7]

Marma has been discussed by *Acharya Madhavkara* in context of *Mahahikka*.^[8]

Any type of harm to the *Marma* produce *Antradaha* which consider as *Ashadhaya Roga*.^[9] A person with weak *Agnibala* and having *Prameha Pidika* at the site of *Marma Sthan* is incurable.^[10]

Acharya Sharangdhar define *Marma* as basis of life.^[11]

107 *Marma* points have been elucidated by *Acharya Sushruta*. *Mamsa*, *Sira*, *Snayu*, *Asthi* and *Sandhi* these are five constituent elements of each *Marma* point and they are name according to their predominance.^[12] According to *Dalhan*, the *Sushruta Samhita's* editor, gave term in context of *Marma*.

“*Maryanti Iti Marmaani*” the *Marmas* are essential body components since they might cause deadly complications or death if they are harmed.^[13]

The *Shabda Kalpa Druma* describes the *Mani Bandha* as the spot where the *Prakoshtha* (Forearm bones) and *Paani* (Hand bones) meet.^[14]

It is the *Moola* of *Paani*, according to *Dalhana*.^[15]

According to Monier Williams' lexicon, the terms "*Mani*" and "*Mani Bandha*" refer to tying or placing something on the wrist. It is situated at the confluence of *Prapani* and *Hasta*. *Mani Bandha* one of the body's most delicate and important site of *Marma* found in the hand, specifically in the wrist joint. The *Manibandha Marma* is situated at the junction of the forearm as well as the upper limbs. The radial ulnar, median nerve, arteries, radioulnar, and radioulnar are the structures involved in wrist joints.

Ayurveda explains and categorizes the total of 107 Marmas into five categories

1. *Shadanga* (Regional), 2. *Ashraya* (Structural), 3. *Vyapath* (Prognostic) 4. *Mana* (Dimensional) 5. *Sankhya* (Numbers)

Acharya Sushruta has explained 5 types of *Marmas* according to their *Ashraya*

These are as follow-

1. *Mamsa Marma* 2. *Sira Marma* 3. *Snayu Marma* 4. *Asthi Marma* 5. *Sandhi Marma*^[16]

Ashtang Hridya describe *Dhamani Marma* extra in this classification.^[17]

Manibandha Marma included under the heading of *Sandhi Marma*.^[18]

Prognostic Sclassification includes 5 type of *Marmas* ie. 1. *Sadyapranahara Marma*, 2. *kalantar Pranahara Marma* 3. *Vishalyaghana Marma* 4. *Vaiklyakara Marma* and 5. *Rujakara Marma*.^[19]

On basis of prognostic classification *Manibandha Marma* included in *Rujakar Marma* these are 8 in number.

The distribution of *Rujakara Marma* in the body is as follows: - Four of them are in the *Bahu* (upper limb), specifically *Manibandha* and *kurchashira*, and four are in the *Sakthi* (lower limb), specifically *Gulpha* and *Kurchashira*.^[20] *Manibandha Marma* is a type of *Sandhi Marma* and it is the place of *Manibandha Sandhi*. The exact location of *Manibandha Marma* is mentioned as junction between *Parkoshta* and *Pani*. *Manibandha Marma* can be taken as wrist joint in modern anatomy. These are two in number, situated at wrist joint.^[21]

Location – *Shakha*

Number of Marma – two

Type – *Sandhi*

Primaan – Two *Angul*

Prognostic classification or Prinaam – *Rujakar Marma*

Modern view – Wrist Joint

On basis of prognostic classification *Manibandha Marma* consider under the *Rujakar Marma*. *Rujakar Marma* Agni and *Vayu Guna* dominant and any harm to these *Marma* leads to *Ruja*.^[22] If it is handled by an untrained *Vaidya*, it results in malformation of that portion.^[23] Any injury to *Manibandha Marma* leads to *kunthta*.^[24] According to *Dalhan* any harm to *Manibandha Marma* causes *Kunthta* which means hand's incapacity to perform work.^[25]

According to *Ghanekar Teeka Manibandha Marma* consider as wrist joint that consist of distal radioulnar and radiocarpal joint.^[26]

Following structures are found during the dissection of manibandha marma

A) Mamsa – following muscles are found around the wrist joint

-Flexor carpi radialis, flexor carpi ulnaris, extensor carpi radialis longus, extensor carpi radialis brevis, flexor digitorum superficialis.

B) Sira / Dhamani – Radial artery, Ulnar Artery.

C) Snayu – tendon of flexor digitorum superficialis. Tendon of flexor digitorum profundus, palmer ulnocarpal ligament, palmer radiocarpal ligament, ulnar collateral ligament, radial; collateral ligament.

D) Asthi – inferior surface of lower end pf Radius, Scaphoid lunate triquetral articulate top form wrist joint.

E) Sandhi – radiocarpal joint, distal radioulnar and intercarpal joint. These all are joined and form wrist joint.

Wrist Joint (Radiocarpal Joint)

- **Articulation:** Between the distal end of the radius and the articular disc of inferior radioulnar joint above and the scaphoid, lunate, and triquetral bones below.
- **Type:** Synovial ellipsoid joint.
- **Capsule:** The capsule encloses the joint and is attached above to the distal ends of the radius and ulna and below to the proximal row of carpal bones.
- **Ligaments** - On the palmar aspect, there are two palmar carpal ligaments. The palmar radiocarpal ligament is a broad band. It begins above from the anterior margin of the lower end of the radius and its styloid process, runs downwards and medially, and is attached below to the anterior surfaces of the scaphoid, the lunate and triquetral bones.

The palmar ulnocarpal ligament is a rounded fasciculus. It begins above from the base of the styloid process of the ulna and the anterior margin of the articular disc, runs downwards and laterally, and is attached to the lunate and triquetral bones. Both the palmar carpal ligaments are considered to be intracapsular.



Cadaveric dissection of Elbow Joint

On the dorsal aspect of the joint, there is one dorsal radiocarpal ligament. It is weaker than the palmar ligaments. It begins above from the posterior margin of the lower end of the

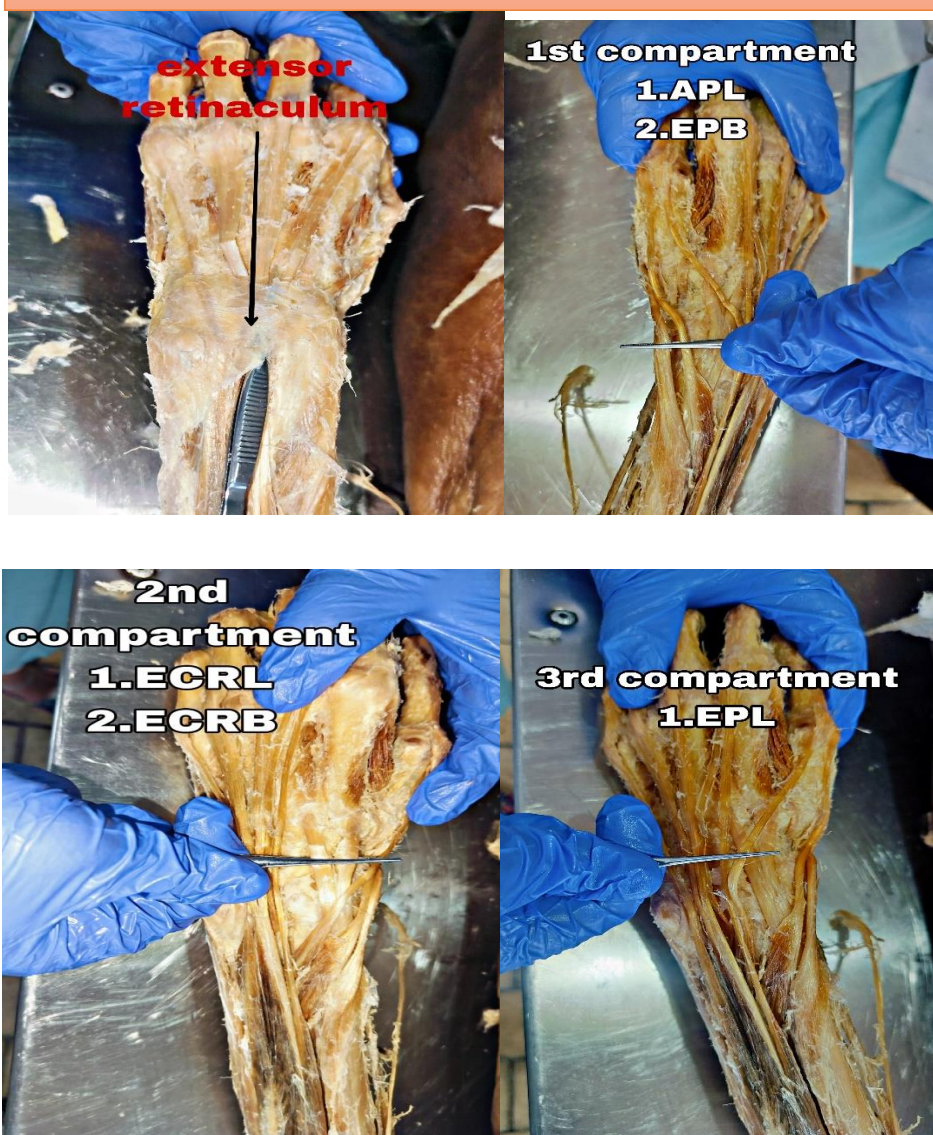
radius, runs downwards and medially, and is attached below to the dorsal surfaces of the scaphoid, lunate and triquetral bones.

The radial collateral ligament extends from the tip of the styloid process of the radius to the lateral side of the scaphoid bone. It is related to the radial artery.

The ulnar collateral ligament extends from the tip of the styloid process of the ulna to the triquetral and pisiform bones. Both the collateral ligaments are poorly developed.

- **Blood supply** – Anterior and Posterior carpal arches.
- **Nerve supply** - Anterior and posterior interosseous nerve.
- **Movements** – flexion, extension, abduction, adduction, and circumduction.

Muscles Present at the site of Elbow joint





Clinical Aspect

- Because of the complex nature of the joint and the multiple articulations, any injury to the ligaments attached to the proximal or the distal row of carpal bones may cause subluxation of the carpals ventrally or dorsally leading to painful condition of the wrist.
- Forearm space of Parona is a rectangular space situated deep in the lower part of the forearm just above the wrist. It lies in front of the pronator quadratus, and deep to the long flexor tendons. Superiorly, the space extends up to the oblique origin of the flexor digitorum superficialis. Inferiorly, it extends up to the flexor retinaculum, and communicates with the mid palmar space. The proximal part of the flexor synovial sheaths protrudes into the forearm space. The forearm space may be infected through infections in the related synovial sheaths, especially of the ulnar bursa. Pus points at the margins of the distal part of the forearm where it may be drained by giving incision along the lateral margin of forearm.
- A fall on the outstretched hand can strain the anterior ligament of the wrist joint, producing synovial effusion, joint pain, and limitation of movement.^[27]
- **Carpal Tunnel Syndrome** - The carpal tunnel, formed by the concave anterior surface of the carpal bones and closed by the flexor retinaculum, is tightly packed with the long flexor tendons of the fingers, with their surrounding synovial sheaths, and the median nerve.

Clinically, the syndrome consists of a burning pain or “pins and needles” along the distribution of the median nerve to the lateral three and a half fingers. It is produced by compression of the median nerve within the tunnel.

- **Colle’s Fracture** - is a fracture of the distal end of the radius about 1 in. (2.5 cm) proximal to the wrist joint. resulting from a fall on the outstretched hand.

The force drives the distal fragment posteriorly and superiorly, and the distal articular surface is inclined posteriorly.

This posterior displacement produces a posterior bump, sometimes referred to as the “dinner-fork deformity” because the forearm and wrist resemble the shape of that eating utensil.^[28]

▪ Klumpke's Paralysis

SITE OF INJURY – Lower trunk of brachial plexus.

Cause of injury – undue abduction of arm, as in clutching something with hands after a fall from height or birth injury.

nerve roots involve – C8, T1

Muscles paralysed - intrinsic muscles of hands T1

Ulnar flexor of wrist and fingers C8

Deformity – Claw hand due to unopposed action of long flexor and extensor of fingers. In claw hand there is hyper extension at metacarpophalangeal joints and flexion at interphalangeal joint.

CONCLUSION

After anatomically exploring the area considered as *Manibandha Marma* in the classics, wrist joint or the radio – carpal joint. This *Marma* is located at the junction of distal radioulnar joint and radiocarpal joint. Injuries to this *Marma* result in chronic discomfort. As is well known, joint trauma causes chronic pain that lasts for a very long period. Injury to this *Marma* leads to persistent pain. As we know trauma to joint leads to continuous pain for long time Colle's fracture and also the degenerative joint diseases of wrist are very painful. The fracture may lead to deformity like dinner fork deformity, Displacement of lunate can lead to compression of median nerve resulting in carpal tunnel syndrome. As a result, Characteristics features like *Stabhata* and *Kunthta* are well understood.

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