IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Kshipra Marma: Anatomical and Clinical Correlation with Extensor Hallucis Longus and Dorsal Digital Nerves

[1]Dr. Basanagouda, [2]Dr. Vivek A Nair, [3]Dr. Haroon Irshad

[1,2]Final year Post graduate scholar, [3]Professor
[1,2,3]Department of Ayurveda Samhita Siddhanta (Basic Principles of Ayurveda)
[1,2,3]Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Thanniruhalla, Hassan – 573201, Karnataka.

Abstract : *Kshipra Marma*, described in Ayurvedic literature as a *Snayu Marma* located between the big toe and second toe, is associated with severe symptoms when injured, including convulsive disorders, twitching, jerking movements, and significant blood loss, potentially leading to death. The precise anatomical correlation of *Kshipra Marma* has been debated, with various structures, such as the Deep Transverse Metatarsal Ligament (DTML) and Long Plantar Ligament (LPL), being proposed as potential candidates. However, these structures do not fully align with the classical descriptions or the clinical symptoms traditionally attributed to *Kshipra Marma*.

This study re-evaluates the anatomical basis of *Kshipra Marma*, considering the limitations of the DTML and LPL in fulfilling the criteria outlined in Ayurvedic texts. Through a detailed anatomical analysis, the Extensor Hallucis Longus (EHL) tendon is proposed as a more plausible correlate. The EHL's proximity to the dorsal digital nerves, coupled with its anatomical location and potential for nerve irritation or damage, aligns more closely with the symptoms described in the classical literature.

The findings suggest that the EHL tendon better satisfies the criteria for *Kshipra Marma*, warranting further investigation into its clinical significance. This research contributes to a more accurate understanding of Ayurvedic *Marma* points in the context of modern anatomy, offering insights that could enhance both the diagnostic and therapeutic applications of Ayurveda.

Keywords: Kshipra Marma, Extensor Hallucis Longus, Snayu Marma, Dorsal Digital Nerves, Anatomical Correlation

---

INTRODUCTION

Marma signifies the vital points in the body, where any injury can prove fatal, emphasizing their critical importance to life. Among them *Kshipra Marma* is classified as a *Sakthi / Urdhwa-Adho-Shakhagata Marma*[1] in Ayurvedic texts, occupies a vital location at the web space in between thumb and index finger of both hands and feet. The term "*Kshipra*" literally means "fast," referring to a *Marma* point known for its rapid action or the ability to provide swift relief, hence called *Kshipra Marma*[2]. The precise anatomical correlation of *Kshipra Marma* has been a subject of ongoing research and debate, with various anatomical structures being proposed as its modern correlate.

Traditional Ayurvedic literature provides a rich and detailed account of *Marma* points, but the translation of these descriptions into contemporary anatomical terms poses significant challenges. The identification of *Kshipra Marma* is particularly complex due to the region's intricate network of muscles, tendons, ligaments, nerves, and blood vessels. Past studies have proposed various candidates for *Kshipra Marma*, including the Deep Transverse Metatarsal Ligament (DTML) and Long Plantar Ligament (LPL)[3]. However, these structures do not fully align with the classical descriptions and the clinical symptoms associated with *Kshipra Marma*, necessitating further investigation.

This study aims to clarify the anatomical basis of *Kshipra Marma* by reviewing these previously suggested structures and exploring alternative candidates that better match the traditional descriptions. By examining the Extensor Hallucis Longus (EHL) tendon and its relationship with the dorsal digital nerves, this research seeks to provide a more accurate anatomical correlation for *Kshipra Marma*, contributing to both the understanding and clinical application of Ayurvedic principles in modern medical practice.

MATERIALS AND METHODS: This study reviewed the classical Ayurvedic text, *Sushrutha Samhita*, along with relevant articles to determine the characteristics and precise location of *Kshipra Marma*. Anatomical literature was then reviewed to identify potential correlates, particularly focusing on structures in the region between the big toe and the second toe. The Extensor Hallucis Longus tendon, dorsal digital nerves, and other relevant structures were examined for their anatomical positions, functions, and potential implications in injury scenarios. The criteria for evaluating the plausibility of these structures as correlates of *Kshipra Marma* included proximity to the described location, nerve and blood vessel involvement, and the potential for causing the symptoms traditionally associated with *Kshipra Marma*.

REVIEW OF LITERATURE

***Kshipra Marma*:** *Kshipra Marma*, classified as a *Snayu Marma* in *Sushruta Samhita*[4], is located between the thumb (big toe) and index finger (second toe) of the foot[5], measuring ½ *angula* in dimension[6]. According to classical descriptions, an injury to this *Marma* can result in severe and potentially fatal symptoms, including convulsive disorders / twitching / jerking movements, and gradual blood loss leading to death[7], underscoring its critical clinical significance.

Kalantara Pranahara *Marma*[8]: Injury to *Kalantara Pranahara Marma* results in gradual death, in contrast to the immediate fatality caused by *Sadhyopranahara Marma*. *Kalantara Pranahara Marma* is predominantly associated with the Agni and Soma *Mahabhutas*, reflecting the fiery nature (*Agneya Guna*) of *Rakta* and the cooling nature (*Sheeta Guna*) of *Rasa Dhatu*. *Pitta Dosha* and *Kapha Dosha* reside in these *Marmas*, respectively. Although the Agni element is quickly extinguished, the presence of *Soma* element leads to a slow demise. Injury to this *Marma* causes gradual bleeding, leading to *Dhatu Kshaya*, resulting in pain (*Vedana*) and ultimately death (*Marana*).

The long plantar ligament[9]: The long plantar ligament, the longest ligament in the tarsus, originates from the plantar surface of the calcaneus, just anterior to its tuberosity's processes and anterior tubercle. It extends to the ridge and tuberosity on the plantar surface of the cuboid, where its deep fibers attach, while its superficial fibers continue to the bases of the second to fourth, and occasionally the fifth, metatarsal bones. This ligament, in conjunction with the groove on the plantar surface of the cuboid, forms a tunnel for the tendon of the peroneus longus muscle. It plays a crucial role in maintaining the integrity of the lateral longitudinal arch by effectively limiting its depression.

Deep Transverse Metatarsal Ligament[10]: It consists of four short, flat bands that link the plantar ligaments of adjacent metatarsophalangeal joints. Positioned dorsally to the interossei muscles and ventrally to the lumbricals, these ligaments are closely associated with the digital blood vessels and nerves, contributing to the structural stability of the forefoot.

Extensor hallucis longus[11]

Origin:

a) Posterior half of the middle two-fourths of the medial surface of the fibular shaft, positioned medial to the extensor digitorum longus.
b) Adjoining portion of the interosseous membrane.

Insertion: Dorsal surface of the base of the distal phalanx of the big toe.

Nerve Supply: Deep peroneal (fibular) nerve.

RESULTS: In the foot, structures such as the Long Plantar Ligament, Deep peroneal nerve branches, Dorsal Pedis Artery, and others have been considered in past studies as structures that correlates for *Kshipra Marma*. However, these classifications often lack clarity as they involve diverse structures, whereas Ayurvedic texts specifically describe *Kshipra Marma* as a *Snayu Marma*. The Extensor Hallucis Longus (EHL) tendon, which runs along the top of the foot to the big toe, is positioned dorsally and in close proximity to the dorsal digital nerves. While the EHL does not entirely cover these nerves, its parallel and adjacent position makes it a potential site of nerve irritation or damage when injured. This proximity to the nerves could explain the symptoms of convulsive disorders, twitching, and jerking movements described in Ayurvedic texts.

DISCUSSION: The anatomical correlation of *Kshipra Marma* has been debated, with various scholars proposing different structures as potential candidates. Among these, the Deep Transverse Metatarsal Ligament (DTML) and Long Plantar Ligament (LPL) have been suggested due to their anatomical locations and functions.

Consideration of the Deep Transverse Metatarsal Ligament (DTML): The DTML is a strong ligament that connects the heads of the metatarsal bones, providing stability to the transverse arch of the foot. Some scholars have considered it as a potential correlate for *Kshipra Marma* due to its structural significance and its location within the foot. However, the DTML is situated more deeply within the foot and is primarily involved in maintaining the transverse arch, rather than the movement of individual toes. It does not directly interact with the nerves or tendons responsible for the symptoms traditionally associated with *Kshipra Marma*, such as convulsive disorders or twitching. Moreover, injury to the DTML is unlikely to cause significant nerve damage or rapid blood loss, which are key symptoms described for *Kshipra Marma* in Ayurvedic texts. Therefore, while the DTML is an important structure within the foot, it does not meet the criteria to be classified as *Kshipra Marma*.

Consideration of the Long Plantar Ligament (LPL): The LPL runs along the sole of the foot, connecting the calcaneus (heel bone) to the bases of the second through fifth metatarsal bones. It supports the longitudinal arch of the foot, and its location and function have led some researchers to consider it as *Kshipra Marma*. However, the LPL is located deeper within the foot and is not positioned between the big toe and the second toe, where *Kshipra Marma* is traditionally described. Additionally, the LPL's primary role is in maintaining foot structure and stability, rather than interacting with the big toe and second toe. The lack of direct involvement with the dorsal digital nerves or arteries makes it an unlikely candidate for causing the symptoms of convulsive disorders, twitching, and significant blood loss. As such, the LPL does not satisfy the requirements to be classified as *Kshipra Marma*.

Extensor Hallucis Longus (EHL): Given the limitations of the DTML and LPL as correlates for *Kshipra Marma*, the Extensor Hallucis Longus (EHL) tendon emerges as a more plausible anatomical structure. The EHL is positioned dorsally, running along the top of the foot to the big toe, and is in close proximity to the dorsal digital nerves. This proximity allows for the possibility of nerve irritation or damage in the event of an injury, leading to the symptoms traditionally associated with *Kshipra Marma*, such as convulsive disorders and twitching movements. The anatomical characteristics of the EHL, therefore, align more closely with the descriptions in Ayurvedic texts, making it a more appropriate location for *Kshipra Marma*.

CONCLUSION: The Extensor Hallucis Longus tendon, due to its proximity to the dorsal digital nerves, emerges as a likely anatomical correlate for *Kshipra Marma*. Injuries to this tendon can lead to nerve irritation, causing symptoms such as convulsive disorders and twitching/jerking movements, which align with the traditional Ayurvedic description of *Kshipra Marma*. This finding justifies further anatomical investigation into the EHL tendon as the primary location for *Kshipra Marma*.

REFERENCES

1. Acharya Y.T, editor, Nibandhasangraha Commentary of Sri Dalhanacharya on Sushrutha Samhita of Sushrutha, Shareerasthana; Pratyeka Marma nirdesha shaareera: chapter, verse 6. Varanasi: chaukhambha krishnadasa academy, 2019: p. 370.
2. Maske SV, Shah R. A review of Adhoshakhagat Kshipra Marma and its clinical significance. Ayurlog: Natl J Res Ayurved Sci. 2020 Jul;8(4):1-5.
3. Mishra A, Shrivastava V. Exploring the science of Marma - an ancient healing technique - Part 2. Creative Commons. Published online: 2020 Jun 27. [Accessed on: 2023 May 11]. Available from: https://creativecommons.org/licenses/by/4.0/.
4. Acharya Y.T, editor, Nibandhasangraha Commentary of Sri Dalhanacharya on Sushrutha Samhita of Sushrutha, Shareerasthana; Pratyeka Marma nirdesha shaareera: chapter, verse 7. Varanasi: chaukhambha krishnadasa academy, 2019: p. 370.
5. Acharya Y.T, editor, Nibandhasangraha Commentary of Sri Dalhanacharya on Sushrutha Samhita of Sushrutha, Shareerasthana; Pratyeka Marma nirdesha shaareera: chapter, verse 24. Varanasi: chaukhambha krishnadasa academy, 2019: p. 375.
6. Acharya Y.T, editor, Nibandhasangraha Commentary of Sri Dalhanacharya on Sushrutha Samhita of Sushrutha, Shareerasthana; Pratyeka Marma nirdesha shaareera: chapter, verse 29. Varanasi: chaukhambha krishnadasa academy, 2019: p. 370.
7. Acharya Y.T, editor, Nibandhasangraha Commentary of Sri Dalhanacharya on Sushrutha Samhita of Sushrutha, Shareerasthana; Pratyeka Marma nirdesha shaareera: chapter, verse 24. Varanasi: chaukhambha krishnadasa academy, 2019: p. 375.
8. Achary M, Thomas A. A comprehensive and conceptual study on Kalanthara Pranahara Marma of Uras. Int J Ayu Pharm Chem. 2023 Mar 10;20(2):35-42.
9. Williams PL, Dyson M. Gray's anatomy. 37th ed. Avon: The Bath Press; 1980. p. 538.
10. Chaurasia BD. B D Chaurasia’s Human Anatomy. 7th ed. New Delhi: CBS Publishers & Distributors Pvt Ltd; 2016. p. 112.
11. Chaurasia BD. B D Chaurasia’s Human Anatomy. 7th ed. New Delhi: CBS Publishers & Distributors Pvt Ltd; 2016. p. 112