

Marma Chikitsa in Musculoskeletal Diseases

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Abstract—Musculoskeletal diseases (MSKDs) are among the most prevalent health conditions worldwide, causing significant pain, disability, and economic burden. In the Ayurvedic perspective, these disorders arise mainly due to Vata Dosha imbalance, resulting in manifestations such as Sandhigata Vata (osteoarthritis), Katigraha (lumbago), Manyastambha (cervical spondylosis), and Mamsagata Vata (muscular stiffness). While modern medicine offers pharmacological and surgical management, these approaches often target symptomatic relief and may be associated with adverse effects or limited long-term efficacy. Ayurveda offers a holistic, non-invasive alternative through Marma Chikitsa a therapeutic system based on the stimulation of specific vital points (Marma) that regulate Prana Vayu and sustain physiological balance. This review explores the classical concepts, anatomical correlations, therapeutic mechanisms, and clinical applications of Marma Chikitsa in musculoskeletal diseases. Literature was collected from Ayurvedic compendia such as Sushruta Samhita, Charaka Samhita, Ashtanga Hridaya, and from contemporary research databases including PubMed, AYUSH Research Portal, Google Scholar, and ResearchGate. The review highlights that the 107 Marma points described in Ayurveda correspond anatomically to nerve plexuses, muscular junctions, vascular intersections, and myofascial trigger zones. Therapeutic stimulation of these points through gentle pressure, massage, or oil application improves local circulation, relieves muscular tension, enhances joint mobility, and modulates neural pathways involved in pain transmission. Clinical studies have demonstrated promising outcomes of Marma Chikitsa in osteoarthritis, lumbar and cervical spondylosis, frozen shoulder, and tendon disorders, showing significant improvements in pain (VAS scores), stiffness, and range of motion. Mechanistic hypotheses suggest that Marma stimulation operates through neuromodulation, gate-control mechanisms, and autonomic balance, aligning ancient Ayurvedic principles with modern neurophysiological science. In conclusion, Marma Chikitsa represents a scientifically plausible and clinically valuable therapy for musculoskeletal disorders. It offers a holistic, low-cost, and safe intervention that can complement both Ayurvedic Panchakarma and modern rehabilitative

practices. However, further well-designed clinical trials and standardisation of therapeutic protocols are essential to establish its efficacy and integration into evidence-based musculoskeletal healthcare.

Index Terms—Marma Chikitsa, Ayurveda, musculoskeletal diseases, vital points, joint pain, osteoarthritis, lumbar spondylosis.

I. INTRODUCTION

Musculoskeletal diseases (MSKDs) constitute one of the most prevalent groups of chronic disorders affecting the human population worldwide. They include a wide range of conditions such as osteoarthritis, rheumatoid arthritis, cervical and lumbar spondylosis, soft-tissue injuries, tendinopathies, and chronic low back pain. These disorders are not only a major cause of pain and disability but also contribute significantly to reduced quality of life and productivity. According to the World Health Organization (WHO), nearly 1.7 billion people globally suffer from musculoskeletal conditions, making them one of the leading contributors to years lived with disability (YLDs).¹ From the Ayurvedic standpoint, musculoskeletal disorders predominantly arise from the vitiation of Vata Dosha, which governs all movements and neuromuscular functions in the body. Conditions such as Sandhigata Vata (osteoarthritis), Katigraha (lumbago/lumbar spondylosis), Manyastambha (cervical spondylosis), and Mamsagata Vata (muscular disorders) are classical descriptions that parallel modern MSKDs. The Vata derangement leads to dryness (Rukshata), stiffness (Stambha), and pain (Shoola), which manifest as the hallmark symptoms of musculoskeletal afflictions.²

Ayurveda advocates a holistic approach for the management of such disorders, emphasizing restoration of Dosha balance, rejuvenation of Dhatus (body tissues), and removal of obstructions (Avarana) in Srotas (channels of circulation). Among the diverse

therapeutic modalities in Ayurveda including Snehana (oleation), Swedana (sudation), Basti (medicated enema), and Rasayana Chikitsa (rejuvenation therapy) Marma Chikitsa holds a unique position as a subtle yet profound manual therapy focused on the body's vital points. 3

The term Marma is derived from the Sanskrit root मृ (‘‘to kill’’ or ‘‘to harm’’), indicating their significance as vital anatomical locations where injury or improper manipulation can be fatal or cause severe dysfunction. The Sushruta Samhita identifies 107 Marma points distributed throughout the body, described as junctions (Sandhi) of Mamsa (muscles), Sira (blood vessels), Snāyu (ligaments/tendons), Asthi (bones), and Sandhi (joints). These points are considered the seats of Prāṇa the vital life force and are responsible for maintaining structural and functional integrity. 4

Marma Chikitsa or Marma Therapy refers to the therapeutic stimulation, massage, or gentle pressure applied at these points to regulate Prāṇa Vāyu, alleviate pain, restore mobility, and balance physiological energy. The therapy is believed to influence both physical and subtle energy systems of the body, leading to improved neuromuscular coordination, relaxation, and circulation. Traditionally, it was practiced as part of Shalya Tantra (surgical science) and Kayachikitsa (general medicine), and was later refined as a therapeutic art in Dhanurveda (the ancient Indian martial science), where knowledge of Marma was used both to harm and to heal. 5

In recent years, Marma Chikitsa has attracted renewed interest among researchers and clinicians as an integrative approach in managing musculoskeletal disorders. Preliminary clinical trials and observational studies have reported significant reductions in pain, stiffness, and joint inflammation with Marma therapy, especially in osteoarthritis, frozen shoulder, and spinal disorders. The therapeutic mechanism is hypothesized to involve neuromodulation, local circulation enhancement, and myofascial release, corresponding to modern physiological concepts such as the gate-control theory of pain and autonomic nervous system regulation. 6

While the fundamental principles of Marma Chikitsa originate from ancient Ayurvedic texts, its scientific exploration in the modern context is still in its infancy. There exists a pressing need to reinterpret the classical descriptions of Marma points in terms of anatomical,

physiological, and biomechanical correlates to make them more accessible for clinical research and practice. The integration of Marma Chikitsa with conventional physical therapy and rehabilitative strategies holds promise for holistic pain management, particularly in chronic degenerative musculoskeletal conditions where pharmacological interventions provide only symptomatic relief. 7

Hence, this review aims to explore the classical foundations, therapeutic principles, anatomical correlations, clinical evidence, and potential applications of Marma Chikitsa in musculoskeletal diseases. By combining traditional Ayurvedic insights with modern scientific reasoning, it seeks to establish Marma Chikitsa as a bridge between ancient wisdom and contemporary rehabilitation science a safe, effective, and holistic modality for musculoskeletal health.

II. AIMS AND OBJECTIVES

Aim:

To review the classical principles, mechanisms, and clinical evidence of Marma Chikitsa in the management of musculoskeletal diseases and to evaluate its therapeutic potential in modern clinical practice.

III. OBJECTIVES

- To explore the classical Ayurvedic concept of Marma and its therapeutic significance.
- To establish the anatomical and physiological correlation of Marma points relevant to musculoskeletal disorders.
- To review available clinical and experimental studies on Marma Chikitsa in musculoskeletal diseases.
- To discuss therapeutic protocols, safety considerations, and integration of Marma Chikitsa with other Ayurvedic and modern modalities.
- To identify research gaps and propose future directions for standardisation and evidence generation.

IV. MATERIALS AND METHODS

Study Design:

This is a narrative literature review based on classical Ayurvedic scriptures, modern anatomical correlations, and published clinical research.

Data Sources:

Classical Texts: Sushruta Samhita, Charaka Samhita, Ashtanga Hridaya, Sarngadhara Samhita, and Bhela Samhita were examined to understand the classical background of Marma Chikitsa.

Databases: PubMed, Google Scholar, ResearchGate, AYUSH Research Portal, and International Ayurvedic journals were searched.

Classical Concept of Marma and Marma Chikitsa

Definition And Classification

In classical texts such as Sushruta Samhita, marma is defined as the junction of structures mamsa (muscle), sira (vessels), snāyu (ligaments/tendons), asthi (bone) and sandhi (joints) wherein prāna (life-force) resides.⁸ There are traditionally 107 marma points in the body. Marma is classified on anatomical basis (e.g., mamsa-marma, sira-marma, snāyu-marma, asthi-marma, sandhi-marma) and also on functional basis (e.g., Sadyapranahara, Kalantra, Vishalyaghana etc.)⁹

Therapeutic principle of Marma Chikitsa¹⁰

“Marma Chikitsa” refers to the therapeutic stimulation/manipulation of these vital points for healing. This may include pressure, massage, oil-application, heat, sudation, etc.

Classical rationale: by stimulating the marma, one modulates prāna flow, clears obstructed channels, balances the doshas, restores dhatu-samhara and promotes self-healing.

Texts also warn that injury to a marma (marmabhighāta) can lead to severe consequences illustrating the sensitivity of these zones and their clinical relevance.

Classical references in MSK context

In the Sharīra-Sthāna sections of texts like Sushruta Samhita, marma points are described in the context of Shalya (surgical) and Shalakya (head/neck) settings. Their relevance to joint, tendon, ligament junctions is explicit. For example, Snāyu marma are tied to ligament stability; Asthi marma to bone junctions.¹¹

Anatomical and Pathophysiological Correlation in Musculoskeletal Diseases

Anatomical basis

Modern anatomical study maps marma points as zones where multiple anatomical elements converge: muscle-ligament-tendon-vessel-nerve junctions. For example: snāyu marma (ligamentous points) are found at major joint stabilisers.¹²

Thus, the marma concept aligns with modern junctional anatomy e.g., myotendinous junctions, entheses, periarticular soft-tissue interfaces.

Pathophysiology of MSK disorders and marma relevance

In disorders such as osteoarthritis (OA), ligament/tendon injuries, spine degenerative changes, the pathology often involves joint cartilage wear, soft-tissue stiffening, restricted mobility, pain via nerve/muscle involvement, circulatory/lymphatic impairment and neuro-genic inflammation.¹³

Stimulating marma points may influence:

- local micro-circulation and venous/lymphatic drainage
- neuromodulation of pain (via nerve convergence at marma)
- soft-tissue release at junctions of muscle-ligament-bone
- modulation of fascia, joint capsule, entheses

Traditional texts also emphasise marma as sites where dosha imbalances manifest for example, Vata accumulation at sandhi/asthe indicates “sandhigata vāta” (joint Vata disorder). In osteoarthritis, this analogy may be drawn.

V. MECHANICAL AND NEUROPHYSIOLOGICAL HYPOTHESES¹⁴

Recent reviews propose mechanistic hypotheses:

- Gate-Control Theory of pain: non-noxious stimulation of marma points may activate large-fiber afferents and inhibit nociceptive transmission.
- Neuromodulation: marma stimulation may modulate autonomic nervous system, HPA axis and inflammatory mediators.
- Myofascial release effect: marma massage may reduce fascial stiffness, improve joint mobility and soft-tissue pliability.
- Circulatory improvement: increased local blood flow, removal of metabolic by-products and improved nutrient delivery to cartilage/ligaments.
- Energy-flow (Prāna) concept: While subtle, this offers the Ayurvedic rationale of clearance of obstructions in nadi/channels and restoration of balance.

VI. EVIDENCE FOR MARMA CHIKITSA IN MUSCULOSKELETAL DISORDERS

Osteoarthritis and joint-related disorders

A study on Osteoarthritis of knee (Janu Sandhigata Vāta) used marma therapy (on four marma points of the leg: Kshipra, Gulpha, Indravasti, Janu) plus Janu Basti with Ksheerbala taila. Twenty patients completed. Significant improvement in Shoola (pain), Shotha (swelling), Stabdhata (stiffness), Atopa (crepitus), and objective indices (WOMAC, ROM, walking time) were reported. 15

Another review reported marma manipulation (unmardana) in OA knee improved pain, stiffness and function. Spine disorders (lumbar/cervical)

A case study of Lumbar spondylosis (Katigraha) managed with marma chikitsa reported improvement in pain and movement restriction.

A review of marma therapy in musculoskeletal context includes lumbar and cervical spondylosis among conditions where marma therapy “can significantly reduce pain, enhance joint mobility, and improve functional outcomes”. 16

Other soft-tissue/enthesis disorders (tennis elbow, frozen shoulder)

- A small pilot RCT in lateral epicondylitis (tennis elbow) found marma therapy (twice/week 6 weeks) gave ~40 % reduction in VAS pain vs ~15 % in control; grip strength improved 25 % vs 10 %.
- A review on snāyu marma (ligamentous/tendinous) emphasises their relevance in soft-tissue disorders.

VII. SUMMARY OF EVIDENCE

Many case-studies, small pilot trials, reviews support marma therapy’s benefit in pain relief, mobility improvement, functional outcomes in MSKDs.

Limitations: small sample sizes, heterogenous protocols, lack of large RCTs, often adjunct to other therapies.

Systematic reviews call for larger-scale RCTs and standardisation of protocol.

Practical Clinical Protocols for Ayurvedic Practitioners

Indications & patient selection

Patients with joint pain/stiffness (e.g., osteoarthritis), spine degenerative changes (lumbar/cervical

spondylosis), soft-tissue/enthesis pain (tennis elbow, shoulder pain)

Chronic but stable condition, without acute inflammatory or surgical emergency requirement

As adjunct to Ayurvedic classical therapies (Abhyanga, Swedana, Basti) and conventional physiotherapy, under inter-disciplinary coordination

Caution in presence of: acute fracture, severe neurological deficit, uncontrolled systemic disease, iatrogenic anticoagulation (risk of deep-tissue manipulation).

VIII. IDENTIFICATION OF RELEVANT MARMA POINTS 17

For MSKDs, consider marma around:

- Joints: Janu (knee), Gulpha (ankle), Kshipra (foot), Kurcha (heel/infra-foot)
- Spine: Katikataruni (lower lumbar region), Nitamba (hip region)
- Elbow/shoulder: Kurpara (elbow marma), Kurcha or Amsaphalaka (shoulder)
- Ligament/tendon junctions: Snāyu marma category (e.g., around tendinous insertions)

Mapping the marma location precisely (using classical measurement units e.g., angula) is important before therapy.

Therapeutic technique 1

- Preparation: oleation (Sneha – medicated oil), local fomentation (Swedana) to soften tissues
- Marma stimulation: manual pressure/massage on selected marma points (gentle to moderate), duration ~1-5 minutes per point, repeated 2-3 times per session depending on tolerance.
- Combine with adjacent joint mobilisation, gentle stretching, Abhyanga of the limb/spine
- Frequency: example protocols include twice/week for 6 weeks, or daily in home self-administration after initial supervised phase (as in knee OA study)
- Home-care teaching: patient may be taught self-stimulation of marma points with fingers, combined with local oil massage.

Integration with classical Ayurveda treatment 19

- For joint disorders: integrate with Janu Basti, Snehana, Swedana, Rasayana (for dhatu nourishment)

- For spine disorders: combine with Katibasti, Patra Pinda Swedana, Abhyanga, physiotherapy
- Ensure assessment of dosha involvement, dhatu status, ama presence and tailor internal medicines accordingly (e.g., Vata pacifying rasayanas)
- Record baseline and follow-up assessments: pain (VAS), stiffness, range of motion, functional indices (e.g., WOMAC for knee), patient-reported outcomes

Safety and contraindications 20

- Avoid excessive force or direct manipulation in marma with underlying major vascular/nerve trunk involvement
- In acute inflammation/fracture, defer marma stimulation until stabilisation
- Modify if patient has bleeding disorder, anticoagulation, malignant bone disease
- Document any adverse events (haematoma, worsening pain, neurological signs) and adjust accordingly

IX. DISCUSSION

Musculoskeletal diseases encompass a diverse group of disorders characterized by pain, stiffness, inflammation, and restricted mobility affecting the joints, muscles, tendons, and ligaments. In Ayurveda, these are predominantly manifestations of Vata Dosha vitiation, commonly observed as Sandhigata Vata, Katigraha, Mamsagata Vata, and Snayugata Vata. Marma Chikitsa, a unique Ayurvedic manual therapy, provides an integrative, non-invasive therapeutic approach for these disorders. 21

Integration of Classical Concept with Modern Understanding

The classical description of Marma in Sushruta Samhita highlights these points as vital junctions of Mamsa, Sira, Snayu, Asthi and Sandhi regions where Prana Vayu resides. Modern anatomical correlation interprets these as neurovascular and myofascial junctions' areas of high sensory innervation and vascular interaction. This anatomical overlap provides a rationale for how Marma stimulation can influence local circulation, neuromuscular transmission, and pain modulation mechanisms. 22

The therapeutic manipulation of Marma points produces a systemic effect through mechanical, neurological, and energetic pathways. Gentle pressure

or massage at specific Marma points activates mechanoreceptors, which, through afferent neural pathways, modulate pain transmission (Gate-Control Theory). This harmonises well with the Ayurvedic concept of Vata Samana through Prana Sanchalana restoring balanced energy flow in the body.

X. MECHANISM OF ACTION IN MUSCULOSKELETAL CONDITIONS

The beneficial effects of Marma Chikitsa in musculoskeletal disorders may be explained through multiple mechanisms:

Neuromodulation and Pain Relief:

Mechanical stimulation of Marma points activates large-diameter afferent fibres (A-beta) that inhibit pain transmission from A-delta and C-fibres at the spinal level. This reduces central sensitisation and perceived pain intensity. 23

Improved Local Circulation: 24,25

Pressure and massage at Marma points enhance microcirculation and lymphatic drainage, reducing inflammation and muscular congestion around joints and tendons.

Muscle Relaxation and Fascia Release:

Marma manipulation may act similarly to myofascial release, reducing stiffness and improving muscle tone and flexibility.

Balancing of Vata Dosha:

Since Vata governs movement and neuromuscular coordination, its regulation via Marma Chikitsa addresses the root cause of musculoskeletal disorders in Ayurvedic pathophysiology.

Psychophysiological Modulation:

The gentle, rhythmic touch of Marma therapy can have a calming effect on the autonomic nervous system, reducing stress-induced muscular tension and promoting a parasympathetic (healing) state.

XI. COMPARATIVE PERSPECTIVE WITH OTHER THERAPIES

Marma Chikitsa can be compared with acupressure, trigger-point therapy, and physiotherapeutic manual techniques, yet it differs fundamentally by its integration of the Pranic and Dosha concepts. While modern physiotherapy focuses on structural rehabilitation, Marma therapy addresses both

structural and energetic imbalances, thereby achieving holistic healing. 26

Combination of Marma Chikitsa with classical Panchakarma interventions such as Abhyanga, Swedana, Basti, and Janu Basti can yield synergistic results. In osteoarthritis, Marma therapy enhances the action of Sneha Dravya absorption and facilitates joint lubrication and nourishment of Asthi and Majja Dhatu. Similarly, in spinal disorders like Katigraha, application of Marma stimulation around Katikataruna, Nitamba, and Kurcha marma points reduces muscular spasm and stiffness more effectively when coupled with Kati Basti or Patra Pinda Sweda.

XII. CLINICAL EVIDENCE AND OBSERVATIONS

Clinical studies reviewed in this article indicate significant improvement in parameters such as pain (VAS score), stiffness, swelling, and range of motion following Marma Chikitsa in musculoskeletal conditions. Studies on Janu Sandhigata Vata demonstrated that stimulation of lower limb Marma points (Kshipra, Gulpha, Indravasti, Janu) alongside local oil therapy produced substantial reduction in pain and improved joint function. 27

In spine disorders such as Katigraha and Manyastambha, Marma Chikitsa at Katikataruna and Amsaphalaka Marma provided significant symptomatic relief. Comparative trials have suggested that patients receiving Marma Chikitsa exhibit faster recovery and better quality-of-life indices compared to those receiving only Abhyanga or conventional physiotherapy. 28

XIII. CONCLUSION

Marma Chikitsa presents a viable, clinically relevant, manual therapy adjunct for musculoskeletal disorders in Ayurveda practice. The classical concept of marma offers meaningful anatomical-functional correlation; early clinical evidence supports benefits in pain relief, joint mobility and functional improvement. For Ayurvedic practitioners working in orthopaedic/rehabilitative/gynecological contexts, incorporating marma protocols (with proper patient selection and integration) may enhance outcomes. However, to firmly establish marma therapy's place in MSKD management, larger high-quality trials,

protocol standardisation and mechanistic research are required. In the interim, pragmatic adoption with careful documentation and patient-centred monitoring is recommended.

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