

# Role of Vata Dosha in Degenerative Disease with Special Reference to Osteoarthritis (Sandhigata Vata)

Dr.Md Altaf Khadri<sup>1</sup>, Basavanthrao Patil<sup>2</sup>

<sup>1</sup>Final Year PG Scholar, Department of Kriya Shareera, SJGAMC KOPPAL, Karnataka, India

<sup>2</sup>Assistant professor Department of Kriya Shareera, SJGAMC KOPPAL, Karnataka, India

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**Abstract**—Ageing and degeneration are inherent processes governed by the principles of Kriya Sharira. This review analyses the central role of Vata Dosha in this spectrum, focusing on the degenerative joint condition known as Sandhigata Vata, correlating with Osteoarthritis (OA). The argument establishes a physiological pathway: the natural age-related increase in Vata's specific qualities (Guna Vriddhi) disrupts the micro-functions of its five sub-types Prana, Udana, Samana, Vyana, and Apana. This dysfunction impairs the sequential nourishment (Dhatu Poshana Krama) and structural integrity of bone (Asthi) and joint (Sandhi) tissues, leading to the characteristic depletion (Dhatu Kshaya) and functional decline seen in degeneration. By framing OA as a manifestation of this specific Vata-driven physiological shift, the model provides a rational foundation for its pathogenesis beyond mere structural damage.

**Index Terms**—Dosha, Vata Dosha, Kriya Sharira, Dhatu Kshaya, Ageing, Guna, Degenerative Disease, Sandhigata Vata, Osteoarthritis, OA

## I. INTRODUCTION

Ageing (Jara) is described in Ayurveda as a Svabhavika and inevitable physiological process marked by a gradual predominance of Vata Dosha.<sup>1</sup> This stage of life is not considered pathological by itself; however, it is associated with progressive functional decline and increased vulnerability to degenerative disorders. From a Kriya Sharira perspective, ageing represents a shift in the internal physiological balance, wherein catabolic processes outweigh anabolic mechanisms due to Vata dominance.

Osteoarthritis (OA) is one of the most common degenerative joint disorders encountered in the elderly population. It is characterized by progressive loss of articular cartilage, subchondral bone changes,

osteophyte formation, and functional impairment of the joint.<sup>2</sup> Although conventionally described as a disease of “wear and tear,” current understanding recognizes osteoarthritis as a complex process involving altered joint metabolism, impaired repair mechanisms, and biomechanical instability.



In Ayurveda, a comparable clinical condition is described as Sandhigata Vata, a type of Vatavyadhi wherein vitiated Vata Dosha localizes in the joints (Sandhi).<sup>3</sup> Classical texts describe Sandhigata Vata with features such as joint pain (Sandhi Shula), stiffness (Stambha), crepitus (Atopa), and pain during flexion and extension (Prasarana–Akunchana Vedana), closely resembling the clinical presentation of osteoarthritis.

Vata Dosha, composed predominantly of Akasha and Vayu Mahabhutas, is the primary regulator of movement, circulation, neuromuscular coordination, and tissue dynamics.<sup>4</sup> Its intrinsic qualities (Gunas), namely Ruksha, Laghu, Sheeta, Khara, Sukshma, and Chala, play a crucial role in maintaining physiological functions when balanced, but become pathogenic when aggravated.<sup>5</sup> During ageing, the natural increase of these Gunas (Guna Vriddhi) leads to progressive

depletion of tissues (Dhatu Kshaya), particularly affecting Asthi and Majja Dhatus, which are structurally and functionally related to Vata.<sup>6</sup>

From a Kriya Sharira standpoint, degeneration is not merely a structural phenomenon but a result of disturbed physiological functions governed by Vata Dosh. Impairment in the coordinated activity of Vata subtypes disrupts tissue nourishment, stability, and repair, ultimately leading to joint degeneration. Therefore, understanding osteoarthritis through the conceptual framework of Sandhigata Vata provides a deeper physiological explanation that integrates systemic functional decline with localized joint pathology.

The present conceptual review aims to elucidate the role of Vata Dosh in degenerative changes, with special reference to Osteoarthritis (Sandhigata Vata), by analysing the process through the principles of Kriya Sharira, particularly Guna Vriddhi, Dhatu Kshaya, and functional derangement of Vata Vata as the Governing Principle in Normal Physiology Vata, composed of Akasha and Vayu Mahabhutas, is the principle of motion and transformation.<sup>4</sup> Its defining Gunas are Ruksha Laghu, Sheeta, Khara, Sukshma, and Chala.<sup>5</sup>

In equilibrium, these Gunas are essential for life:

- Chala Guna drives all rhythmic physiological movements.
- Sukshma and Laghu Gunas enable the transport of nutrients through micro-channels (Srotas).
- Ruksha Guna regulates tissue moisture and prevents stagnation.<sup>6</sup>

These properties manifest through five sub-types, each governing specific physiological domains:

1. Prana Vata: Located in the head and chest. Its key function is Praspanana (oscillation/pulsation), governing respiration, cardiac rhythm, and sensory-motor coordination.<sup>7</sup>
2. Udana Vata: Located in the thorax. Its function is Udvahana (upward movement), responsible for speech, effort, memory, and the upward flow of neural impulses and motivation.<sup>8</sup>
3. Samana Vata: Located around the digestive fire (Jatharagni). Its function is Viveka (discrimination/separation), crucial for digesting food, separating nutrient (Sara) from waste (Mala), and initiating tissue metabolism.<sup>9</sup>

4. Vyana Vata: Pervading the entire body from the heart. Its function is Purana (filling, distributing), responsible for systemic circulation, nerve impulse conduction, and motor activities like flexion and extension.<sup>10</sup>

5. Apana Vata: Located in the pelvic region. Its functions are Dharana (holding, retention) and expulsion, governing the stability of the pelvic girdle, elimination, and reproductive functions.<sup>11</sup>

This coordinated activity makes Vata the prime regulator of all physiological functions, from cellular metabolism to systemic movement.

## II. DISCUSSION

The Pathophysiological Shift: From Guna Vriddhi to Dhatu Kshaya

Ageing involves a natural increase (Vriddhi) in Vata's inherent Ruksha, Laghu, and Sheeta Gunas.<sup>12</sup> This is the fundamental Kriya Sharira disturbance that sets the stage for degeneration.

This Guna aggravation manifests as functional impairments in the Vata sub-types:

- Impairment of Samana Vata (Viveka Kriya): The increased Ruksha and Sheeta Gunas dampen the metabolic Agni. This impairs the Viveka (discriminative) function at the tissue (Dhatvagni) level, especially in slow-turnover tissues like bone (Asthi). The separation of nutrient (Sara) from waste (Mala) becomes inefficient, leading to poor tissue formation and accumulation of metabolic by-products.<sup>13</sup>
- Impairment of Vyana Vata (Purana Kriya): The Sukshma and Chala Gunas become erratic. The Purana (perfusing) function weakens, leading to inadequate nourishment (Rasa) delivery through the Asthivaha Srotas (channels supplying bone). This creates areas of micro-nutritional deficit in the bone matrix.<sup>10</sup>
- Consequence – Asthi-Majja Kshaya: The combined failure of Viveka and Purana functions results in Asthi Kshaya (bone tissue depletion) and Majja Kshaya (marrow depletion). This is not simply volumetric loss but a qualitative decline in tissue integrity, creating porous, brittle bone and a reduction in the nutritive marrow.<sup>14</sup>

The Local Manifestation: Sthana Samsraya in Sandhi (Joint)

The systemic state of Dhatu Kshaya creates a local microenvironment conducive to pathology.

1. Creation of Kha-Shunyata: Asthi Kshaya increases micro-spaces (Kha) within the subchondral bone and joint matrix. This is a structural void born from a physiological error.
2. Violation of 'Vatah Shunyanupraveshi': A core physiological principle states Vata moves into and fills empty spaces.<sup>15</sup> The systemically aggravated Vata, now with vitiated Gunas, is drawn into the Kha-Shunyata of the weakened joint.
3. Synergistic Dysfunction at the Joint:

- The Ruksha and Khara Gunas of the accumulated Vata desiccate and roughen the Shleshak Kapha (synovial fluid and cartilaginous matrix), destroying joint lubrication.<sup>16</sup>
- The Sheeta Guna further reduces local metabolic repair.
- Apana Vata's impaired Dharana (holding) function reduces ligamentous and muscular tone around the joint, causing instability.<sup>11</sup>
- Prana Vata's disturbed Praspandana disrupts the rhythmic sensory feedback (proprioception) from the joint.<sup>7</sup>

Table 1: “Kriya Sharira-Based Progression from Physiological Balance to Degeneration”

Stage	Physiological Process	Key Dysfunction	Outcome in Joint
1. Initial Shift	Age-related Vata Guna Vriddhi (Ruksha, Sheeta).	Systemic increase in catabolic tendency.	Predisposition to tissue depletion.
2. Systemic Error	Impairment of Samana (Viveka) & Vyana (Purana) functions.	Faulty tissue metabolism & perfusion.	Asthi-Majja Kshaya; Nutritional deficit.
3. Local Change	Creation of Kha-Shunyata in bone/joint.	Structural micro-voids due to Dhatu Kshaya.	Altered joint biomechanics.
4. Local Aggravation	Sthana Samsraya of vitiated Vata in Sandhi.	Vata's Ruksha, Sheeta Gunas act locally.	Desiccation of Shleshak Kapha; Stiffness.
5. Functional Loss	Impairment of Apana (Dharana) & Prana (Praspandana).	Joint instability & poor proprioception.	Pain, crepitus, instability (OA signs).

### Correlation with Osteoarthritis Pathology

This Kriya Sharira model provides a functional explanation for the structural lesions of OA:

- Asthi Kshaya and Kha-Shunyata correlate with subchondral bone porosity, cysts, and osteopenia.
- The action of Ruksha and Khara Gunas on Shleshak Kapha correlates with cartilage fibrillation, loss of proteoglycans, and surface erosion.
- Impaired Apana Vata (Dharana) correlates with ligamentous laxity and joint instability.
- The entire process manifests as the classic symptoms: Sandhi Shula (pain), Stambha (stiffness), and Atopa (crepitus).<sup>3</sup>

### III. CONCLUSION

Sandhigata Vāta, corresponding to osteoarthritis, may be viewed as the localized clinical culmination of an age-related, Vāta-dominated physiological transformation, rather than a mere disorder of mechanical wear. The degenerative process follows a definable sequence, beginning with Guna vriddhi of Vāta, progressing to functional impairment of its

subtypes particularly Samāna and Vyāna Vāta and resulting in Dhātu kṣaya, which ultimately manifests as structural deterioration and functional compromise of the joint. Interpreted through the framework of Kriya Śāstra, this understanding shifts the focus from the joint as a passive site of degeneration to an active locus of disturbed systemic physiology. Degeneration, therefore, is best understood as a failure of essential physiological functions nourishment, movement, stability, and rhythmic coordination all of which are governed by Vāta Doṣa. This perspective not only refines the conceptual understanding of Sandhigata Vāta but also reaffirms the relevance of Ayurvedic physiological principles in explaining and addressing degenerative joint disorders.

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