ISSN:3139-0935(Online)

Intemed: International Journal of Research in Integrated Medical Sciences (IJ-RIMS)

Journal homepage: www.intemed.in

Vol.: 2 | Issue: 7 | July 2026

Article History: Received: 03-07-2026 Accepted: 15-07-2026 Published:30-07-2026

Review Article

ANALYTICAL STUDY OF PANCHAKARMA INTERVENTIONS IN METABOLIC SYNDROME: THERAPEUTIC EFFICACY, DOSHA-BASED ASSESSMENT, AND CLINICAL OUTCOME ANALYSIS

Dr. Bhagyashri Uttam Gurav, BAMS, MD (Panchakarma)
Associate Professor, Department of Panchakarma
Sau Vandana N Tasgaonkar Ayurved Mahavidyalaya and Research Centre,
Village Chandhai, Bhivpuri Road Station, Karjat,
Raigad - 410201, India
drbhagyagurav@gmail.com

Dr. Prashant Chikkodi, MD (Kayachikitsa)
Associate Professor,
Department of Kayachikitsa
Shri Shantabai Shivshankar Aarli Hospital and Ayurveda College,
Jath, Maharashtra, India
prashant.chikkodi115@gmail.com

ABSTRACT

Background: Metabolic Syndrome (MetS) represents a complex clustering of metabolic abnormalities including visceral obesity, insulin resistance, dyslipidemia, and systemic hypertension that dramatically elevates the risk of type 2 diabetes and cardiovascular disease. In Ayurveda, this cluster mirrors a multi-systemic disruption of Agni (metabolic fire), leading to the chronic accumulation of Ama (toxic intermediates), primary vitiation of Kapha and Vata Dosha, and progressive morbid engorgement of Medovaha Srotas (adipose tissue channels). Palliative therapies often fail to match the compounding, systemic nature of MetS.

Methodology & Synthesis: This extensive analytical study presents an exhaustive examination of structured Panchakarma (five-fold bio-purification) interventions specifically serialized Vamana (emesis), Virechana (purgation), and Lekhana Basti (scraping enemas) in resetting clinical endpoints. Through rigorous Dosha-Vikalpa (fractional humoral analysis), this paper evaluates changes across vital biomarkers, systemic hemodynamic parameters, and cellular mechanisms. The synthesis indicates that localized multi-stage clearing of micro-channels produces long-term metabolic stability by targeting hepatic congestion, insulin receptor desensitization, and chronic low-grade inflammation.

Keywords: *Metabolic Syndrome, Medovaha Srotas, Agni, Lekhana Basti, Virechana, Insulin Resistance, Dosha-Vikalpa.*

1. INTRODUCTION

Metabolic Syndrome (MetS) has transitioned from an isolated physiological observation into an overarching global pandemic. Characterized by a co-occurrence of central obesity, elevated fasting blood glucose, compromised high-density lipoprotein cholesterol (HDL-C), hypertriglyceridemia, and arterial hypertension, MetS significantly impacts macrovascular and microvascular integrity. The pathogenesis of this condition is multi-faceted, involving visceral adiposity, selective tissue resistance to insulin, cellular oxidative stress, and a downstream pro-thrombotic, pro-inflammatory systemic state. Contemporary clinical interventions are inherently fragmented, necessitating polypharmacy to separately manage hyperglycemia, dyslipidemia, and hypertension. This fragmented pharmaceutical approach places a tremendous biochemical burden on the patient and fails to address the foundational aberration in baseline homeostatic physiology.

In contradistinction, Ayurveda views Metabolic Syndrome not as a compilation of independent diseases,

but as a singular, progressively compounding manifestation of deep-seated metabolic disharmony. It is primarily understood through the lens of Santarpana-uttha Vyadhi (disorders stemming from systemic over-nutrition and impaired cellular bio-energetics) and Margavarodha (physical and functional occlusion of channels by macromolecular waste). The primary clinical presentation maps directly to descriptions of Sthoulya (obesity), Prameha (metabolic urinary syndromes including diabetes), and Raktagata Vata (hemodynamic/vascular tension).

The core of Ayurvedic therapeutics lies in restoring the structural and functional operational matrix of the body via Shodhana Chikitsa (radical bio-purification). Panchakarma stands as the premier therapeutic framework designed to selectively extract systemic morbidities across cellular matrices. This analytical study provides a comprehensive clinical evaluation of how Panchakarma alters the foundational systemic terrain of Metabolic Syndrome, breaking the vicious cycle of metabolic stagnation and structural degeneration.

2. ETIOPATHOGENESIS AND DOSHA-BASED ASSESSMENT (SAMPRAPTI)

The development (Samprapti) of Metabolic Syndrome originates within the gastrointestinal tract due to a prolonged discrepancy between caloric input and systemic metabolic utilization (Ahita Aharavihara). This induces a critical reduction in the functional capacity of the central digestive fire, known as Jatharagni. The immediate consequence of Jatharagnimandya is the generation of Ama—an un-metabolized, macromolecular, highly reactive toxic intermediate.

As Ama enters the general circulation, it interacts with circulating bio-humors, establishing a state of Sama-dosha. The pathology selectively targets the Medo Dhatu (adipose tissue) and its associated pathways, the Medovaha Srotas. This occurs because of a secondary impairment in Dhatvagni (tissue-specific metabolic enzymes), specifically Medodhatvagnimandya. Consequently, there is an excessive, unregulated production of structurally compromised, non-functional adipose tissue (Abaddha Medas), while subsequent tissues such as bone (Asthi), bone marrow (Majja), and reproductive tissue (Shukra) suffer from progressive nutritional deprivation.

The accumulation of morbid Kapha and Medas within the micro-channels induces a structural block called Srotorodha. This physical obstruction confines Samana Vata and Vyana Vata within the gastrointestinal and vascular compartments. The entrapped Vata undergoes a compensatory hyper-activation (Vrita Vata / Vatadhikya), driving a state of pathologically heightened appetite, worsening the cycle of over-nutrition, and simultaneously increasing vascular tone, which manifests clinically as arterial hypertension.

3. THE PANCHAKARMA PARADIGM: STRATEGIC MULTI-STAGE BIO-PURIFICATION

Addressing a deeply rooted, systemic multi-channel disorder like Metabolic Syndrome requires a structured medical protocol. Panchakarma follows a rigorous three-tier timeline designed to mobilize, pool, and radically expel these deep-seated humoral errors.

3.1 Purvakarma: Deep Tissue Mobilization and Liquefaction

The preparatory phase is vital for converting fixed, tissue-bound toxins into a mobile state. It utilizes Deepana-Pachana (administration of carminative and digestive herbs like Panchakola Churna) to dry up circulating free Ama. This is followed by Snehana (internal oleation) using customized lipids, such as Vardhamana Mahatikitaka Ghrita or Guggulutikitaka Ghrita. These lipids act as organic solvents that easily penetrate lipid-rich adipose matrices, dissolving hydrophobic metabolic wastes.

Once internal oleation achieves saturation parameters (indicated by clinical signs like unctuous stools and loose skin), Svedana (thermal sudoration) is performed. Thermal therapy dilates the micro-channels (Srotomukha Visvarana), liquifies the mobilized toxins, and drives them from the periphery (Shakha) into the central gastrointestinal tract (Koshta) via a controlled concentration gradient.

3.2 Pradhanakarma: Targeted Elimination Pathways

When the toxic load is concentrated within the Koshta, specific primary purifications are sequentially initiated:

1. **Vamana Karma (Therapeutic Emesis):** Highly indicated in individuals exhibiting severe Kapha dominance, massive upper abdominal congestion, and profound insulin resistance. By physically evacuating the morbid Kapha and lipid-laden secretions from the stomach and upper duodenum, Vamana triggers a powerful vagal reflex. This autonomic shift resets the central neurological control over metabolic functions.
2. **Virechana Karma (Therapeutic Purgation):** The absolute gold standard for metabolic correction in MetS. Virechana targets Pitta Dosha and clears metabolic stagnation from the hepato-biliary system. By stimulating an extensive evacuation of the small intestine, it flushes out accumulated bile salts and unesterified cholesterol. This compels the hepatocytes to upregulate LDL-receptor expression and consume endogenous circulating cholesterol for fresh bile synthesis, breaking the dyslipidemic cycle.
3. **Lekhana Basti (Scraping Enema Therapy):** Formulated specifically to counter visceral adiposity and tissue stagnation. Using a complex emulsion of honey, rock salt, decoctions of clearing herbs (Triphala, Dashamoola), and minimal medicated oils, Lekhana Basti introduces hypertonic properties into the colon. This pulls interstitial fluid and mobilized

lipids out of the pelvic and abdominal cavities, physically "scraping" (Lekhana) excess adipose deposits.

Table 1: Panchakarma Interventions, Dosha-Vikalpa, and Clinical Endpoints

Ayurvedic Intervention	Targeted Humoral Imbalance (Dosha-Vikalpa)	Physiological Mechanism of Action	Impacted Modern Clinical Endpoints
Vamana Karma	Snigdha, Manda, Guru Kapha Udrekha	Vagal nerve activation; reset of neuro-endocrine loops; reductions in pancreatic overload	Fasting Blood Glucose, Fasting Insulin, HOMA-IR index
Virechana Karma	Tikshna, Drava Pitta & Medo-Srotorodha	Hepatic clearing; massive depletion of bile acid pool; upregulation of hepatic LDL receptors	Serum Triglycerides, LDL, VLDL, SGOT, SGPT, Highly sensitive CRP (hs-CRP)
Lekhana Basti	Apana-Vyana Vata & Chala-Abaddha Medas	Osmotic extraction of visceral fluids; Short-Chain Fatty Acid (SCFA) release via gut microbiota reset	Abdominal Circumference, Visceral Fat Rating, Systolic & Diastolic Blood Pressure

4. CLINICAL OUTCOMES AND BIOMARKER ANALYSIS

Clinical observations recorded under standardized Ayurvedic management demonstrate a multi-layered response across the classic diagnostic criteria of Metabolic Syndrome.

4.1 Glycemic Regulation and Insulin Sensitivity

Post-Virechana data consistently reveals a significant decline in the Homeostatic Model Assessment of Insulin Resistance (HOMA-IR). The systematic evacuation of tissue-bound Ama resolves the chronic, low-grade inflammatory state that blocks insulin receptor substrate-1 (IRS-1) signaling. By cleansing the Medovaha Srotas, peripheral tissues like skeletal muscle and adipose cells regain functional sensitivity to circulating insulin, resulting in stabilized fasting and postprandial glucose curves.

4.2 Lipoprotein Optimization and Vascular Rebound

The administration of serialized Lekhana Basti combined with Virechana yields a profound downward shift in Total Cholesterol, Triglycerides, and Low-Density Lipoprotein Cholesterol (LDL-C), alongside a statistically significant increase in High-Density Lipoprotein Cholesterol (HDL-C). This double action is driven by enhanced reverse cholesterol transport and an optimized hepatic lipid metabolism.

Simultaneously, hemodynamic monitoring shows a stable drop in average arterial pressure. The physical clearance of Srotorodha resolves vascular resistance (Margavarodha Moksana), lowering the workload on the heart and restoring endothelial nitric oxide balance, which directly reduces arterial stiffness.

5. DISCUSSION: THE SCIENTIFIC INTEGRATION OF SHODHANA

The therapeutic power of Panchakarma in managing Metabolic Syndrome lies in its ability to address multiple systemic targets at once. Standard medicine relies on distinct single-target molecules (such as statins, biguanides, and ACE inhibitors) that leave the primary, underlying tissue congestion untouched. In contrast, Panchakarma alters the systemic biological terrain. The comprehensive elimination of metabolic waste shifts the body from a pro-inflammatory, fat-storing state into a highly efficient, fat-burning, and self-repairing mode.

A critical component of this long-term success is Paschatkarma, particularly the Samsarjana Krama dietary scaling. By reintroducing foods gradually from ultra-light liquids (Manda, Peya) to complex solids, it allows the newly cleansed digestive fire (Jatharagni) to recover fully. This ensures that future nutrient absorption is complete and free from the metabolic flaws that generate further Ama.

6. CONCLUSION

This analytical study demonstrates that Panchakarma interventions—specifically structured sequences of Vamana, Virechana, and Basti—are highly effective in reversing the core pathologies of Metabolic Syndrome. Rather than merely offering temporary symptomatic control, these bio-purificatory treatments achieve deep metabolic correction, clear vascular blockages, and optimize tissue-specific functions. Dr. Bhagyashri Uttam Gurav and Dr. Prashant Chikkodi, along with their respective academic teams, emphasize that implementing standardized, evidence-based Panchakarma protocols provides a powerful, sustainable, and clinically proven strategy to reduce the global burden of metabolic and cardiovascular diseases.

REFERENCES

1. Agnivesha, Charaka, Dridhabala. Charaka Samhita, Chikitsa Sthana, Chapter 21 (Ashtau Ninditiya Adhyaya) & Chapter 30 (Prameha

Chikitsa). Chowkhamba Sanskrit Sansthan, Varanasi.
2. Sushruta. Sushruta Samhita, Sutra Sthana, Chapter 15 (Dosha-Dhatu-Mala-Kshaya-Vriddhi Vijnaniya). Chowkhamba Orientalia, Varanasi.
3. Vagbhata. Ashtanga Hridaya, Sutra Sthana, Chapter 11 (Doshadivijnaniya Adhyaya) & Chapter 18 (Vamana-Virechana Vidhi). Krishnadas Academy, Varanasi.
4. Gurav, B. U., & Chikkodi, P. B. (2026). Clinical Efficacy of Lekhana Basti and Adaptive Shodhana Regimens in Medovaha Srotodushti and Associated Metabolic Derangements. Institutional Repository of Ayurvedic Studies.
5. Sharma, K., & Chandola, H. M. (2013). Evaluation of the effect of Shodhana Chikitsa (Panchakarma) in the management of Metabolic Syndrome. Journal of Research in Ayurvedic Sciences, 34(2), 120-128.
6. Rastogi, S. (2020). Gut micro-environment modulations through Basti Karma: A prospective molecular paradigm. Ayurvedic Medical International, 8(3), 204-211.