

PURĪSHĀRĀ KALĀ SA EVA ASTHIDHARĀ KALĀ: AN ANALYTICAL REVIEW THROUGH THE GUT–BONE AXIS FRAMEWORK

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ABSTRACT

Background: *Kalā* in Ayurveda denotes functional and structural membranes that regulate tissue metabolism. Traditional scriptures mention seven different *Kalās*. However, historical comments on *Purīśadhārā Kalā* (the lining of large intestine) are evidently compared with *Asthidhara Kalā* (the layer of bone-supporting tissue). This dynamic is increasingly being explored in modern medicine by the use of “gut–bone axis”. **Objective:** The present review aims to evaluate the clinical and physiological validity of the statement “*Purīśadhārā Kalā sa eva Asthidharā Kalā*” by correlating modern biochemical research works on gastrointestinal and skeletal interactions with classical Ayurvedic literature.

Materials and Methods: A conceptual analysis was done based on primary Ayurvedic treatises (*Sushruta Samhita*, *Charaka Samhita*, *Ashtanga Hridaya*) and contemporary

physiological studies on colon health, microbial fermentation, and mineral metabolism.

Results: *Acharya Dalhana*, in the past, associated these membranes with *Visha Vega* attacking the bone joints, and *Kashyapa* described infantile *Fakka* as a metabolic effect of digestive failure. The *Pakwashaya* (colon) has special Ca²⁺-Na⁺ ion channels that help keep the skeleton intact, and it makes short-chain fatty acids (SCFAs) via microbial fermentation. Moreover, gut microbes synthesize Vitamin K₂, a necessary cofactor for γ -carboxylation of osteocalcin and mineralization of the bone matrix. Impaired intestinal barriers limit calcium

absorption, resulting in demineralization of bone to maintain serum equilibrium. **Conclusion:** The gut-bone axis provides scientific validation to the traditional aphorism. *Purīṣadhārā Kalā* is a major metabolic regulator of bone strength rather than an eliminative border. Thus therapeutic techniques directed at the colon are of utmost importance in the management of systemic skeletal disorders.

KEYWORDS: *Purīṣadhārā Kalā*, *Asthidhara Kalā*, Gut–Bone Axis, *Pakwashaya*, *Asthi Dhatu*, Bone Mineral Density.

INTRODUCTION

In Ayurveda, the idea of *Kala* is unique and has been given significant prominence because of its numerous physio-anatomical and therapeutic significance. The oldest source of anatomical concepts that depicts structures at both the microscopic and gross levels is the *Susrutha Samhita*. *Acharya Sushruta* in “*Garbhavyakarana Sharir Adhyaya* explained the concept of *Kalas* and He further discusses their vital role during the management of snakebites in *Kalpasthanā* which contribute the presence and functioning *Kalas* till the end of life. *Acharya Sushruta* defines *kala* as ‘*Dhatwashayanter Maryada*’ where *Dhatu* refers to one which does the *Sharira dharana* like *Rasa*, *Raktadi dhatu* etc. *Ashaya* refers to *Avasthanā Pradesha* and *Maryada* is the *Antara* between *Dhatu* and *Ashaya*.^[1]

According to *Acharya Vagbata*, *Dhatwagni* transforms *Kleda*, which is located in the inside of the *Ashaya*, into *Pakwa*, which in turn creates *Kala*.^[2] The concept is illustrated by a cross-section of wood showing its layers and internal structure, similarly *Dhatu*s are found dissecting the *Mamsa*. *Purishadhara Kala* is one among *Sapta Kala* explained in *Samhita*. Which is located in *Pakwashaya* (Large Intestine) inside the *Anta Koshta* (abdomen). Large intestine is also associated with the function of formation & separation of *mala* in the *pakwashaya*.^[3]

AIM AND OBJECTIVES

1. To systematically review Ayurvedic classical texts regarding the conceptual framework of *Purīṣadhārā Kalā*.
2. To investigate the physiological relationship between intestinal function and skeletal health.
3. Explanation of ‘*Purishdhara Kala sa eva Asthidhara Kala*’ with concept of gut bone axis.

MATERIALS AND METHODS

This is a conceptual study of research, and all relevant references have been gathered from a variety of classical Ayurvedic texts, including the Sushruta Samhita, Charaka Samhita, and Ashtanga Hridaya, as well as available commentaries on it. Literature is also compiled from modern textbooks for the information related to gastro-intestinal tract, Gut-bone axis, and digestion, both physiology and pathology. Various research article searched related to *purishadhara Kala* and its functional aspects.

DISCUSSION

Kala refers to ‘*Dhatwashayanter Maryada*’ which separates *Dhatu* and *Ashaya*. As per *Astanga sangraha*, the process of formation of *Dhatu* takes place in many stages in the initial stage; *Dhatu* is in the form of liquid which is called *Dhatu Rasa*. This *Dhatu Rasa* gets converted into the next *Dhatu*. During this process, some *Kleda* remains between *Dhatu* and *Ashaya* entitled as *Dhatu Sara Shesha* which is not converted into *Purva Dhatu* or *Uttara Dhatu* is minimal in nature become *Pakwa* by *Dhatwagni* then formed as *Kala*.^[4] *Snayu*, *Jarayu* and *Shleshma* are the fundamental principles involved in the formation of *Kala*.^[5] *Snayu* denotes structural support, *Jarayu* represents barrier/selective permeability, and *Shleshma* indicates lubrication and nourishment; these three structures might be associated with fibrous, serous, and mucous layers, respectively.

Acharya Sushruta did not include *Asthidhara Kala* in *Sapta Kala*, but *Acharya Dalhan* identifies *Purīśadhārā Kalā* as equivalent to *Asthidhara Kala*. This is based on *Visha Vega* manifestation in the *fifth Kala* affecting *Asthi Dhatu*, demonstrating *Parwabhedha* (specific symptoms related to *Asthi Dhatu*).^[6] In *Pakwashay*, *Purīśadhārā Kala* serves as a repository for *Asthi Dhatu*, emphasizing its function in nourishing and maintaining *Dhatu*. Classical texts, such as *Acharya Kashyap’s* description of *Fakka* (Rickets), illustrate how impaired calcium and phosphorus absorption leads to skeletal deformities, aligning with the function of *Purīśadhārā Kala* in maintaining bone health.

Modern physiology supports this correlation, as the colon contains Ca^+ - Na^+ ion channels in smooth muscle fibres that allow calcium influx during action potentials. Calcium, a key component of *Asthi Dhatu*, is regulated by these channels, providing the mechanistic basis for *Purīśadhārā Kalā* as *Asthidhara Kala*. These channels facilitate intestinal motility while temporarily maintaining *Dharan* of *Asthi Dhatu*. Additionally, the colon’s absorptive

functions and bilirubin metabolism integrate digestive physiology with skeletal nutrient regulation.^[7]

The gut–bone axis is a critical regulatory pathway linking intestinal health to skeletal integrity. Microbial fermentation of undigested carbohydrates produces short-chain fatty acids (SCFAs), which enhance intestinal calcium and magnesium absorption, modulate osteoblast activity, and reduce osteoclastic bone resorption, thereby supporting bone mineral density.^[8]

Additionally, The large intestine contains beneficial bacteria that can produce menaquinones, a form of vitamin K₂, which adds to the body's overall vitamin K₂ supply. This vitamin plays an important role in bone health because it acts as a cofactor in the γ -carboxylation of osteocalcin, a protein necessary for proper bone matrix mineralization. Through this process, the activity of gut microbiota in the colon indirectly supports the maintenance and strength of bones, highlighting an important connection between intestinal microbial function and skeletal health.^[9]

Calcium is absorbed in the gut via both active and passive mechanisms, and although the small intestine is the primary site, distal intestinal segments also participate in calcium transport; inflammation, dysbiosis, or mucosal damage in the large intestine can diminish this absorptive capacity.^[10] When gut integrity is compromised, fewer calcium ions enter the bloodstream, forcing the body to maintain serum calcium by mobilizing it from bone, leading to bone demineralization, secondary osteoporosis, and rickets-like features.^[11]

CONCLUSION

The Ayurvedic concept of *Purīṣadhārā Kalā* further emphasizes the deeper connection between intestinal function and systemic health. This *Kala* is located in *Pakwashaya* (large intestine). This *Kala* is responsible for maintaining and nourishing *Asthi Dhatu* (bone tissue) and separating and eliminating waste. The interpretation of "*Purīṣadhārā Kalā* itself acts as *Asthidhara Kalā*." This theory is further corroborated by current scientific research on the gut-bone axis that shows that the large intestine plays a role in microbial metabolism, mineral absorption and the synthesis of compounds like vitamin K₂ and short-chain fatty acids that support bone mineralization. Therefore intestinal health is a large part of bone strength and overall physiological balance.

REFERENCES

1. Sushruta Samhita Dalhana Acharya Virachita Nibhandhasangraha Vyakhya Vaidya Yadavaji Trikamaji Acharya Choukhambha Surabharati Prakashana Reprint Edition, 2012. Sharir Sthana verse 4/5.
2. Astanga Hridaya (hindi commentary) Vaidya Brahmanand Tripathi Varanasi; Chaukamba Sanskrit pratishtana. Shareera Sthana verse 3/9.
3. Acharya Susruta, Susruta Samhita hindi Commentary Ayurveda Tattva Sandipika by Kaviraja Ambikadutta Shastri (Part 1) Chaukhambha Sankrit Sansthan Varanasi, Reprint 2012, Page no- 40 Chapter 4th Sharirasthan Garbhavyakransharir Adhyaya shloke no- 16, 17.
4. Astanga Sangraha Indu Virachita Shashilekha Vyakhya Vaidya Jyotirmitra Acharya Choukhambha Sanskrit series Varanasi edition, 2012. Shareera Sthana verse 5/30.
5. Astanga Sangraha Indu Virachita Shashilekha Vyakhya Vaidya Jyotirmitra Acharya Choukhambha Sanskrit series Varanasi edition, 2012. Shareera Sthana verse 5/30.
6. P.V. Sharma Susruta-Samhita (Vol-2) Chaukhamba Visva bharati 2001.
7. Research Article by Christy Jose Cherian, Manjeet Singh Role of Purishadharakala calcium & bilirubin metabolism IJAAR VOLUME 1 ISSUE 7 SEP-OCT 2014.
8. Weaver CM. Diet, gut microbiome, and bone health. *Curr Osteoporos Rep.*, 2015 Apr; 13(2): 125-30. doi: 10.1007/s11914-015-0257-0. PMID: 25616772; PMCID: PMC4996260.
9. Lai Y, Masatoshi H, Ma Y, Guo Y, Zhang B. Role of Vitamin K in Intestinal Health. *Front Immunol.*, 2022 Jan 5; 12: 791565. doi: 10.3389/fimmu.2021.791565. PMID: 35069573; PMCID: PMC8769504
10. https://www.sciencedirect.com/science/article/abs/pii/S0960076022000498?utm_source=chatgpt.com12:25am,21-02-2026
11. Fleet JC, Schoch RD. Molecular mechanisms for regulation of intestinal calcium absorption by vitamin D and other factors. *Crit Rev Clin Lab Sci.*, 2010 Aug; 47(4): 181-95. doi: 10.3109/10408363.2010.536429. PMID: 21182397; PMCID: PMC3235806.
12. P. V. Sharma Caraka "Samhita (Vol1) Chaukhambha Orientalia 2008.
13. Research Article by Carina Bertoldi Franco Osteoporosis in gastrointestinal diseases *Transl Gastrointest Cancer*, 2015; 4(1): 57-68. doi: 10.3978/j.issn.2224-4778.2014.08.01.
14. Pradeep Kumar Moharana A text book of anatomy (volume two) Chaukhamba Sanskrit Pratishtan, 2009.