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SNAYU SHARIR: A COMPREHENSIVE REVIEW OF CLASSICAL AND ANATOMICAL PERSPECTIVES

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ABSTRACT

Rachana Sharir deals with the systematic study of human body structures through their morphological and functional attributes. The organization and actions of the body are governed by structures formed from the Saptdhatu, which together maintain physiological integrity.[1]Among the classical Ayurvedic texts, *Sushruta Samhita* holds a distinct position due to its detailed anatomical descriptions based on direct observation and dissection of the human body.[2] Hence, it is considered a primary reference for understanding and interpreting complex and ambiguous anatomical structures. Snayu is one of the most significant structural entities described in Ayurvedic anatomy and is mentioned extensively in various contexts such as Marma, Agnikarma, Shastra Karma, Bandhana Karma, Sivana Karma, Siravedha, and Vatavikara. Despite its repeated references, the exact anatomical identity of Snayu has remained a subject of scholarly discussion. [2] Classical texts describe Snayu as strong, fibrous structures responsible for binding, stability, weight bearing, and maintenance of joint integrity. The present review aims to systematically compile and analyze the literary references of Snayu from *Sushruta Samhita*and other Ayurvedic texts, and to correlate these descriptions with modern anatomical structures. Based on structural and functional similarities, Snayu can be conceptually correlated with fibrous connective tissues such as ligaments, tendons, and fascia described in contemporary anatomy. This integrative

understanding is expected to provide clarity regarding the anatomical basis of Snayu Sharir and facilitate appropriate clinical application of therapeutic principles described in *Sushruta Samhita* for the management of Snayu-related disorders.

KEYWORDS: Snayu Sharir, Sharir Rachana, Fibrous Connective Tissue, Ligaments, Tendons, Fascia, Ayurvedic Anatomy.

INTRODUCTION

Concept of Sharir Rachana in Ayurveda

Ayurveda presents a highly systematic and comprehensive understanding of the human body under the discipline of *Sharir Rachana*. This branch deals not only with the structural organization of the body but also with its functional relevance and clinical applicability. Unlike descriptive anatomy limited to gross observation, Ayurvedic anatomy integrates structure, function, development, and pathology into a unified framework. The human body is described as a well-organized entity formed by the harmonious interaction of Saptdhatu, Dosha, Mala, and Agni, each contributing to structural integrity and physiological balance.[3,4]

Sharir Rachana serves as a foundational subject for understanding disease manifestation, diagnostic reasoning, and therapeutic planning. The anatomical entities described in classical texts are deeply rooted in functional anatomy and surgical relevance. However, many of these structures are described using terminology and conceptual frameworks distinct from those of modern medical science, which often leads to ambiguity in interpretation. Therefore, accurate understanding and reinterpretation of these terms are essential for the proper application of Ayurvedic principles in contemporary clinical practice.

Among the various structural components described in Ayurvedic literature, *Snayu Sharir* represents one of the most significant yet complex anatomical concepts requiring deeper exploration and scientific correlation.

Importance of Sushruta Samhita in Anatomical Understanding

Among all classical Ayurvedic texts, *Sushruta Samhita* occupies a unique and authoritative position in the field of anatomy and surgery. The descriptions of bodily structures in Sushruta Samhita are considered more precise and practical compared to other Samhitas, primarily because they are based on direct observation and systematic cadaveric dissection. Sushruta's

approach to anatomy is empirical, making his descriptions highly reliable for understanding intricate structural relationships within the body.[2]

Due to this methodological superiority, Sushruta Samhita is regarded as the gold standard for resolving doubts related to ambiguous anatomical entities. Structures such as Marma, Sira, Dhamani, Kala, and Snayu are repeatedly mentioned across various contexts in the text, highlighting their functional and clinical importance. However, the scattered nature of these references necessitates a comprehensive literary compilation and critical analysis to establish a coherent anatomical concept.[2]

Snayu Sharir: An Overview

Snayu is described as one of the most vital structural elements of the human body in Ayurvedic anatomy. It plays a crucial role in maintaining stability, facilitating movement, bearing weight, and protecting joints from excessive strain. Snayu is repeatedly referenced in diverse contexts such as Marma Sharir, Shastra Karma, Agnikarma, Bandhana Karma, Sivana Karma, Siravedha, and Vatavyadhi, indicating its extensive involvement in both surgical and medical domains.[1]

Despite its importance, Snayu remains one of the least clearly understood anatomical structures due to challenges in correlating classical descriptions with modern anatomical terminology. Unlike Asthi (bones) or Mamsa (muscles), which have relatively direct modern equivalents, Snayu represents a collective concept rather than a single anatomical structure. This has resulted in varied interpretations among scholars, necessitating a detailed review grounded in both literary and anatomical perspectives.

Vyutpatti and Nirukti of Snayu

The term *Snayu* is derived from the Sanskrit root (*Dhatu*) “Sna,” which conveys the meaning of binding, fastening, or holding together. When combined with appropriate suffixes such as *un* and *yuk*, it forms the word Snayu, signifying a structure responsible for binding various components of the body.[7]

According to classical lexicons such as *Vachaspatya* and *Shabdakalpadruma*, Snayu is described as a feminine noun (*Strilinga Shabda*), emphasizing its distinct structural identity. These texts consistently define Snayu as a binding structure that provides firmness and

stability to the body. Bhavaprakasha elaborates upon its form (*Swaroopa*), function (*Prayojana*), and numerical distribution (*Sankhya*), reinforcing its anatomical importance.[9]

Etymologically and functionally, Snayu is consistently described as a fibrous, tough, and binding entity, closely associated with joints and weight-bearing structures.

Synonyms and Conceptual Interpretation

According to *Amarakosha*, Snayu is also referred to as *Kandara*, a term that highlights its cord-like and tensile nature. The use of multiple synonyms across texts reflects the structural diversity and functional versatility of Snayu. These descriptions collectively suggest that Snayu is neither muscle nor vessel but a distinct structural entity responsible for mechanical stability.[7]

Historical References of Snayu

The concept of Snayu is not confined to medical texts alone; it is also referenced in ancient treatises such as *Dhanurveda*. In this context, Snayu is described as an ideal material for bowstrings due to its strength, durability, and tensile capacity.[1] Snayu derived from animals such as deer, cow, or buffalo was considered superior, while plant-based substitutes were recommended in its absence. This analogy provides valuable insight into the physical properties of Snayu—strong, fibrous, elongated, and capable of withstanding tension.

Literary references from works like *Neetishataka* by Bhartṛhari and *Rajatarangini* by Kalhana further support the close association of Snayu with bones. Descriptions of bones devoid of muscle yet still covered with Snayu suggest that Snayu persists even in the absence of muscular tissue, reinforcing its independent structural identity.

Snayu as a Distinct Anatomical Entity

Classical texts clearly differentiate Snayu from Mamsa (muscle), Peshi, Sira, Dhamani, and Srotas. Sushruta distinctly enumerates different total numbers for Snayu and Peshi, indicating that these are separate anatomical structures. While Sira and Dhamani are associated with the conduction of blood and other fluids, no classical reference suggests that Snayu participates in fluid transport. Instead, Snayu is consistently described as a binding and stabilizing structure.

This distinction is crucial for avoiding conceptual overlap and for accurately correlating Snayu with appropriate modern anatomical structures.

Snayu in Classical Ayurvedic Literature

Snayu According to Sushruta

Sushruta provides the most elaborate description of Snayu Sharir. He describes Snayu as being distributed throughout the body, with particular concentration around joints, vital organs, and weight-bearing regions. Sushruta emphasizes that injury to Snayu results in severe pain, deformity, stiffness, loss of function, and sometimes fatal outcomes, highlighting its critical role in maintaining structural integrity.[1]

Snayu According to Charaka

Charaka primarily discusses Snayu in the context of bodily support, strength, and movement. Although his anatomical descriptions are less detailed than Sushruta's, he clearly acknowledges the functional significance of Snayu in maintaining posture and physical stability.[3]

Snayu According to Vagbhata

Vagbhata integrates the concepts of Sushruta and Charaka, emphasizing the role of Snayu in joint stability and movement. He also associates Snayu disorders with Vata Dosha, linking anatomical impairment with functional pathology.[4]

Classification of Snayu

Classical texts classify Snayu into four major types based on morphology and arrangement:

- **Pratanvati Snayu** – elongated and branching structures found in extremities and joints
- **Vritta Snayu** – cylindrical or cord-like structures, often referred to as Kandara
- **Prithula Snayu** – broad, flat, and thick structures present in the trunk
- **Sushira Snayu** – structures with openings or hiatus, located at visceral outlets [1]

This classification indicates that Snayu represents a group of fibrous connective structures rather than a single anatomical entity.

Anatomical Correlation with Modern Anatomy

Modern anatomy describes several fibrous connective tissues that closely resemble the classical description of Snayu.

Ligaments

Ligaments connect bones at joints and provide stability by limiting excessive movement. This function directly corresponds to the role of Snayu in stabilizing Sandhi and preventing dislocation.

Tendons

Tendons transmit muscular force to bones, enabling movement and posture maintenance. Their tensile strength and cord-like appearance align well with descriptions of Pratanvati and Vritta Snayu.

Fascia

Fascia forms broad connective tissue sheets enveloping muscles and organs. Its supportive and binding role correlates with Prithula Snayu described in Ayurvedic texts. [10]

Functional Significance of Snayu

Snayu plays a vital role in:

- Joint stabilization
- Controlled and coordinated movements
- Weight bearing
- Structural support of soft tissues
- Maintenance of posture and alignment

Ayurveda emphasizes that impairment of Snayu leads to stiffness, pain, tremors, convulsions, and deformity—symptoms commonly attributed to Vata vitiation.

Clinical Relevance

Snayugata disorders are considered among the most difficult conditions to treat. Improper diagnosis or surgical handling of Snayu can result in severe complications such as chronic pain, deformity, or even death. Special caution is advised during procedures like Siravedha, as injury to Snayu may lead to grave consequences.[1]

The extensive references to Snayu across Sushruta Samhita highlight its importance from both medical and surgical perspectives.

Rationale and Aim of the Review

The scattered references of Snayu across classical texts often create conceptual confusion among practitioners and scholars. Therefore, the present review aims to systematically compile, analyze, and interpret these references to establish a clear and scientifically sound concept of Snayu Sharir. Such clarification will serve as a guiding framework for clinicians and academicians, facilitating accurate diagnosis and effective management of Snayu-related disorders.

MATERIALS AND METHODS (REVIEW METHODOLOGY)

The present study is a **narrative literary review** aimed at critically analyzing the concept of *Snayu Sharir* as described in classical Ayurvedic literature and correlating it with relevant structures of modern anatomy. The review methodology was designed to ensure comprehensive coverage of classical references along with contemporary anatomical interpretations.

Source of Data

The material for the present review was collected from both **classical Ayurvedic texts** and **modern anatomical literature**.

Ayurvedic sources included:

- Sushruta Samhita (Sharir Sthana, Chikitsa Sthana and Sutra Sthana)
- Charaka Samhita (Sharir Sthana and Chikitsa Sthana)
- Ashtanga Hridaya and Ashtanga Sangraha
- Bhavaprakasha
- Amarakosha and other classical Sanskrit lexicons

Available commentaries of Acharyas such as Dalhana, Chakrapani, and Arundatta were also consulted wherever required to clarify conceptual ambiguities.

Modern sources included:

- Standard anatomy textbooks (Gray's Anatomy, Cunningham's Manual of Practical Anatomy, Moore's Clinically Oriented Anatomy)
- Published research articles and review papers related to ligaments, tendons, fascia, and connective tissue
- Indexed databases such as PubMed and Google Scholar for contemporary scientific understanding

Method of Review

Relevant references related to Snayu were systematically collected from classical texts using keywords such as *Snayu*, *Kandara*, *Bandhana*, *Sandhi Sthirata*, and *Vatavyadhi*. These references were compiled, categorized, and analyzed based on:

- Morphological description
- Functional significance

- Anatomical distribution
- Clinical relevance

The Ayurvedic descriptions were then **critically compared** with modern anatomical concepts of fibrous connective tissues such as ligaments, tendons, and fascia, based on structural and functional similarities.

Inclusion Criteria

- Classical references directly describing Snayu
- Passages indicating structural or functional attributes of binding tissues
- Modern anatomical descriptions related to fibrous connective tissues

Exclusion Criteria

- References unrelated to anatomical or structural aspects
- Purely philosophical descriptions without anatomical relevance

Method of Analysis

A **qualitative descriptive approach** was adopted. Correlation was done on the basis of:

- Structure
- Function
- Location
- Clinical behavior following injury

No statistical analysis was applied, as the study was purely conceptual and literary in nature.

Comparative Tables

Table 1: Concept of Snayu in Ayurveda and Modern Anatomy.

Aspect	Snayu (Ayurveda)	Modern Anatomy
Basic nature	Fibrous, binding structure	Fibrous connective tissue
Primary function	Stability, support, movement control	Stability, force transmission
Tissue type	Tough, non-contractile	Dense connective tissue
Clinical significance	Severe disability on injury	Functional loss on injury

Table 2: Types of Snayu and Modern Correlation.

Type of Snayu	Classical Description	Modern Correlation
Pratanvati	Elongated, branching	Tendons
Vritta (Kandara)	Cord-like	Tendons / Ligaments
Prithula	Broad, flat	Fascia

Type of Snayu	Classical Description	Modern Correlation
Sushira	Associated with openings	Fascial rings / Aponeuroses

Table 3: Snayu vs Mamsa vs Sira.

Feature	Snayu	Mamsa	Sira
Function	Binding, stability	Movement	Transport
Texture	Hard, fibrous	Soft, fleshy	Tubular
Injury effect	Severe pain, deformity	Weakness	Bleeding

DISCUSSION

The concept of *Snayu Sharir* reflects a profound and function-oriented understanding of structural anatomy in classical Ayurvedic literature. Unlike modern anatomy, which classifies body structures primarily on the basis of histology, embryological origin, and microscopic features, Ayurveda adopts a functional and clinical approach to anatomical classification. This difference in perspective explains the longstanding debate regarding the exact anatomical correlation of Snayu with structures described in contemporary science.[1]

Etymological analysis clearly indicates that the term *Snayu* is derived from the root meaning "to bind or fasten." Classical lexicons such as *Amarakosha* describe Snayu as a structure that holds together the *Asthi* at *Anga* and *Pratyanga* and also covers internal body components. References from Sanskrit-English dictionaries further describe Snayu as a cord-like or sinew-like structure, emphasizing its binding and supportive nature. These descriptions consistently suggest that Snayu is a non-contractile, fibrous structure primarily responsible for stability rather than movement generation.[7]

Acharya Sushruta repeatedly highlights Snayu as a strong and resilient structure, comparing it to bowstrings used in warfare and describing its utility in surgical procedures such as *Seevana Karma*. Such analogies point toward its tensile strength and resistance to mechanical stress. Observations from classical examples like *Snayuarma*, which appears as a white, tough structure, further reinforce the fibrous and non-muscular nature of Snayu.

Functionally, Snayu is described as binding *Mamsa*, *Asthi*, and *Medas*, thereby enabling weight-bearing and maintaining postural stability. This concept finds close resemblance in modern anatomy, where ligaments bind bone to bone, tendons connect muscle to bone, and fascial structures support and compartmentalize muscles and viscera. The presence of ligaments stabilizing joints, suspensory ligaments supporting adipose-rich organs such as the

breast, and deep fascia enveloping muscles validates the Ayurvedic view that Snayu contributes significantly to structural integrity.

Classical literature also presents diverse references indicating that Snayu is closely associated with bones even in the absence of muscle tissue, as noted in literary texts like *Neetishataka* and *Rajatarangini*. These descriptions strongly favor ligaments over tendons in certain contexts, as ligaments remain attached to bones irrespective of muscular presence. Similarly, descriptions from *Agnipurana* suggesting Snayu as a deep-seated structure beneath the skin that envelops muscles, bones, and vessels correlate well with deep fascia and ligamentous frameworks.

The fourfold classification of Snayu—*Pratanvati, Vrutta (Kandara), Prithula,* and *Sushira*—demonstrates an advanced recognition of structural variability. *Pratanvati Snayu*, with its spreading and branching pattern, resembles ligaments, tendons, and even peripheral nerves. *Vrutta Snayu* or *Kandara* corresponds to thick, cord-like tendons. *Prithula Snayu*aligns with broad, flat structures such as aponeuroses and fascia, while *Sushira Snayu*, located at the openings of hollow organs, resembles sphincters and visceral ligaments.

Clinically, Snayu is accorded great importance in Ayurveda. Sushruta emphasizes that injury to Snayu leads to severe pain, deformity, and functional loss, making it a critical *Marma Adhisthana* and a challenging *Vranavastu*. The recommended treatment modalities—*Sneha, Upanaha, Bandhana, Mardana,* and *Agnikarma*—further underline the need for cautious and timely management, a principle equally upheld in modern musculoskeletal and surgical practice.

Thus, Snayu Sharir should not be confined to a single anatomical entity but should be understood as a collective representation of fibrous connective tissues, including ligaments, tendons, fascia, and related supportive structures. This integrative interpretation bridges classical Ayurvedic anatomy with modern anatomical science and provides a rational foundation for clinical.

CONCLUSION

Snayu is an important fibrous connective tissue described in Ayurvedic anatomy, primarily responsible for binding, supporting, and stabilizing various structural components of the human body. Classical literature consistently emphasizes its role in holding

together *Asthi*, *Mamsa*, and *Medas*, thereby enabling weight-bearing, posture maintenance, and controlled movement. The repeated comparison of Snayu with bowstrings highlights its tensile strength and ability to withstand mechanical stress, confirming its non-contractile yet highly resilient nature.

Literary review and anatomical correlation clearly indicate that Snayu does not represent a single anatomical structure but rather a collective concept encompassing various fibrous connective tissues. Tendons, ligaments, aponeuroses, fascia, retinacula, peripheral nerve sheaths, and certain visceral supporting structures can be included within the broader framework of Snayu, depending upon their location and function. Observations such as *Snayuarma* further support the view that Snayu is characteristically white, tough, and fibrous in appearance.

The classical classification of Snayu into *Pratanvati*, *Vrutta*, *Prithula*, and *Sushira* types reflects an advanced understanding of structural and functional diversity. *Pratanvati Snayu* can be correlated with limb ligaments and branching nerve structures; *Vrutta Snayu* with tendons and large nerve cords; *Prithula Snayu* with aponeuroses and fascia; and *Sushira Snayu* with sphincters and visceral ligaments. This classification demonstrates that ancient Ayurvedic scholars recognized the varied morphological patterns of connective tissues long before the advent of modern histological science.

From a clinical perspective, disorders and injuries involving Snayu are predominantly associated with *Vata Dosha* and are known to cause pain, stiffness, instability, deformity, and functional impairment. Sushruta emphasizes the need for prompt and careful management of Snayu-related conditions, as these structures are *Marma Adhisthana* and difficult *Vranavastu*. Therapeutic measures such as *Sneha, Upanaha, Bandhana, Mardana,* and *Agnikarma,* along with specific substances like *Kshoudra, Gud, Sneha,* and *Madhuchhista,* are advocated for effective management of *Snayugata Vata* and related pathologies.

Thus, *Snayu Sharir* represents a vital and well-defined anatomical concept in Ayurveda that closely corresponds to fibrous connective tissues described in modern anatomy. An integrated understanding of Snayu not only strengthens the anatomical foundation of Ayurveda but also enhances its clinical relevance in the management of musculoskeletal and neuromuscular disorders.

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