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## A CONCEPTUAL STUDY OF SNAYU SHARIR: A REVIEW

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### ABSTRACT

Ayurveda is a science which requires a lot of research to establish its authenticity along with modern medical science. The first step in this is to define the terms mentioned in Ayurvedic classics, especially the basic terms. The science cannot be implemented methodically if the terms are not properly understood. Sharira Rachana is the subject which deals with a lot of anatomical terms and defining these terms are important for application of the science. Snayu is a term which is explained elaborately in classical texts, but it is unable to point out exact structure related with it in human body. During this study, the references related to the Snayu are collected and tried to explain as a structure form. Literally the term Snayu means to bind. It is explained as a structure which helps in binding the joints and helps the body in weight bearing. Structurally it has been described something like a fibrous in nature.

**Key words:** - Snayu, fibrous structure, Sharir Rachana,

## **INTRODUCTION**

Sharira Rachana is one of the basic subjects for the principles of Ayurveda. It deals with the structure of a human body, its applied aspects & clinical importance. Most of the structural entities explained in our Samhita are very difficult to understand. It is very important to interpret the anatomical terms with reference to the Samhita. There is a lacuna in this interpretation. Snayu Sharira is one of such area which needs much more research. In the present study Snayu is explained in following manner.

### **Vyutpatti**

The word Snayu is formed from the word root (Dhatu) 'Sna'. 'Sna' Dhatu when combined with 'un' and 'yuk' Pratyaya forms the word Snayu.

### **Nirukti**

Vachaspathya states Snayu as a Srilinga Shabda. The etymology is similar to Sidhanta Kaumudi. Its function is binding the body. Details regarding Swaroopa, function and Sankhya have been adopted from Bhavprakash. Etymology of Snayu is similar to other texts as per in Shabdakalpdrum. Here also Snayu is mentioned as a Srilinga Shabda.

### **Synonyms of Snayu**

Snayu is said to be a structure which binds the Anga-Pratyanga Sandhi. According to Amarkosh Maha Snayu is called a Kandara.

### **Historical Review**

In Dhanurveda the term Snayu is mentioned in the context of describing the characteristics of a bow string. Snayu is used as bow string owing to its strength. It has been recommended to use the Snayu of deer, she-buffalo or cow. The bow string can also be prepared from other materials or Sthavara Dravyas in the absence of absolute Snayu the reference for substitute also gives an insight on the structure of actual Snayu. It has been suggested here that at the advent of Bhadrapada month the bark of Arka tree becomes commendable to prepare bow string. This explained that the body is basically formed by bones, bind strongly by Snayu which is covered by Mamsa and Shonita and finally covered by skin. Another reference of Snayu as a structural part of body it is seen below the skin and covered by

blood, bones and muscular part. This reference is in the context of method of doing Abhyanga for a king. It has been stated in this book that this body is made on the base of Asthi which is bound by Snayu. Mamsa and Shonita cover the Asthi as well as Snayu and finally it is covered by skin. Bharthari in Neethishatak at one context explains that even though it does not satisfy his hunger, a dog is happy to get a bone which is covered with Snayu and little Vasa and has no Mamsa on it. From this we can understand that Snayu is a structure which is very closely related to bone that even if there is no Mamsa on an Asthi, Snayu can be still found on it. Kalhana in Rajtarngini has mentioned in the context of explaining an injured state in which Devi's hands are devoid of Mamsa, only Asthi and Snayu.

## **Ayurveda Review**

### **Definition of Snayu**

A very clear structural description about by Acharya Dalhana that Snayu is Shanakaar. Acharya Sharngadhara mentioned Snayu as a structure which supports the body by binding Mamsa, Asthi and Medas. According to Chakrapani Snayu, Sira etc. are binding structures in the body. These are formed by the essence part of food. Snayu binds the Mamsa, Asthi and Meda potently and as these are stronger than Sira, can bind the joints also very strongly.

### **Utpatti of Snayu**

From the unctuous portion of Medas both Sira and Snayu are formed, Sira arises from Mrudu Paaka and Snayu from Khara Paaka. The essence of Meda is the Asthi, Snayu and Sandhi; and its waste is Sveda. Snayu as Mastulunga Moola. Snayu is Moolasthana of Mastulunga according to Kashyapa Samhita. Mastulunga has been explained as a type of Medas in Sushruta Samhita.

### **Snayu Sankhya**

According to Sushruta Snayu are nine hundred in numbers; of these six hundred are in Shakha, two hundred and thirty in the Kosht and seventy in Griva and above. Of these, six are present in each of the fingers of the foot, so thirty in total; the same number in Pada Tala, the same in Pada Kurca and Gulpha; the same number in Jangha; ten in Janu, forty in

Uru, ten in Vankshana – thus these are one hundred and fifty in one leg; in this way other leg and the two arms are described. Sixty are present in Kati, eighty in Prustha, sixty in the two Parshva, thirty in Ura, thirty six in Griva, thirty four in Murdha-in this manner nine hundred Snayu are described.

### **SnayuBheda (Types of Snayu)**

Snayu are of four kinds i.e. Pratanvati, Vrutta, Pruthu and Sushira. Pratanvati (spread out / broad) are present in Shakha (extremities) and Sarva Sandhi (all bony joints). Vrutta (round/ cylindrical) are known as Kandara by the experts. Pruthu (thick big) are present in Parshva (flanks), Uras (chest) Prustha (back) and Shir (head). Sushira (hollow, ring like) are present at the terminal part of Amashaya (stomach), Pakvashaya (large intestine) and Basti (urinary bladder).

### **SnayuPrayojana (Function of Snayu)**

Just as a boat built with wooden planks placed side by side, when fastened tightly by ropes in many ways becomes capable of carrying weight in water, steered by a man, similarly the human body will be able to carry weight, so long as the joints are fastened tightly by Snayu in many ways. Neither Asthi, Peshi (muscles), Sira nor Sandhi kills the person when injured just as Snayu.

### **Concept of Kalaa**

Kala becomes visible; these are differentiated as SnayuPraticchana (covered/formed from ligaments), JarayuSantata (expansion of continuation of foetal covering) and Sleshmveshtith (coated with kapha).

The moisture that remains inside the space in the Dhatus gets (Paka) processed by the Ushma present in them, forms into structure like those found in tree and becomes covered with Snayu, Sleshma and Jarayu. It is called as Kalaa.

The first Kala is Mamsadhara Kala, which is present inside the muscles, and which allows the Sira, Snayu and Dhamani to spread their branches inside the muscles. Among them, the first one is by name Mamsadhara, within which are spread the Sira, Snayu,

DhamniandmSrotas just as the roots, shoots and creepers of lotus plant are spread in the ground full of slit.

### **Concept of Basti**

Basti is situated in the midst of the umbilicus, back, waist, scrotum, rectum, groins and penishave one orifice and thin skin, placed with its faced downwards: Basti, BastisirasPaurusha, Vrushana and Guda are interrelated and situated inside the cavity of the pelvis, pelvic bone: it is shaped like Alabu and supportedby Sira and Snayu.

### **Concept of Snayuarma**

The muscles present on the sclera increasing in thickness, rough and very white in colour is called as Snayuarma.

### **DISCUSSION**

During the etymological review, we came across a few instances that Snayu is a structure which binds theAnga-Pratyanga Sandhi. Synonyms of Snayu are said to be Snasa, Vatsana, Sira, Nadi and Dhamani. InAmarakosha, it is mentioned that Snayu holds the Asthi(joints) together in Anga and Pratyanga. It alsomentioned Snayu as a structure which covers body structures.

According to SANSKRIT ENGLISH- DICTIONARY (Sir Monier Williams) it is found that -स्नायु- (A cord to some to fr. A/sha contracted from sina, pres base of /si 'to bind 'cf. also /snai any sinewor ligament in the human and animal body. Tendon, muscle, nerve, vein.

Etymologically Snayu is considered as a structure which performs the function of holding and binding the various structures of human body like bones, muscles and adipose tissue.

Acharya Sushruta mentioned that Snayu is Shanakara. Snayu is used for tying bow and as a Seevan Dravya.

Again, in the context of Arma, a type of Arma is named as Snayuarma because it resembles Snayu in appearance.

In Dhanurveda the term Snayu is mentioned in the context of describing the characteristics of a bow string.

Snayu is used as bow string owing to its strength. Detailed observation of these structures reveals them as generally fibrous structures which are strong enough to withstand a certain amount of tension. Observations of Snayuarma show it as a white, tough structure. An overall observation of these structures gives the impression that Snayu is a fibrous structure visible in the body.

Aponeurosis, ligament, tendons, retinaculum, nerve, deep fascia and other fibrous structure in the body fits into the above description.

In the classics, the function of Snayu is to bind Mamsa, Asthi and Medas thereby helping in weight bearing.

According to commentary by Dalhan, it is said that Snayu is seen to be binding Sharira Avayava. A review of the contemporary science reveals that Mamsa are binded to the bones by ligaments and tendons, the bones are binded together at each joint by ligaments. In the breast the fatty structure is held in place by ligaments called as suspensory ligaments. This substantiates that Medas is also held or binded by ligaments.

In general, the function of fibrous structures in a human body is to bind the body structures intact to have the ability to move bearing its own weight as well as bearing extra weight. The body can stand erect or sit or even lift him up against the gravity due to proper attachment of muscle and bone intact.

It should be a very strong structure, so that it holds the bones and muscles together and helps in the transfer of weight. It must be present around the joints as bones are held together here. So, the term Snayu literally means to bind. It is also explained as a tendon, ligament attached to bone at either end. It's also mentioned as a cord, sinew, ligament in the human or animal body.

Ligaments and tendons are similar in structure but differ in the way they are attached. Fascia is also fibrous in nature and covers the muscles, hence can be included under Snayu.

In the Methrayani Upnishad explained that the body is basically formed by bones binded strongly by Snayu which is covered by Mamsa and Shonita and finally covered by skin. In

this context we can say that Snayuterm indicate the ligament because ligaments are connected bone to bone.

In the Agnipurana another reference of Snayu have been found as a structural part of body which seen below the skin and it covered blood, bones and muscular part. This reference is in the context of method of doing Abhyanga for a king. In this context we can say that Snayu term indicate the deep fascia its binding nature and location. Because deep fascia situated below the skin and covered the bone, muscle and vessels Ligaments connect bone to bone and tendons connect muscles to bone. According to this reference Snayumay be correlated with ligament because ligament and tendon are deeply situated structure below the deep fascia (part of skin) and covered by muscle, vessels and nerve. Bharthuhari in Neetishataka at one context explains that even though it does not satisfy his hunger, a dog is happy to get a bone which is covered with Snayu and little Vasa and has no Mamsa on it. From this we can understand that Snayu is considered to be a structure which is very closely related to bone that even if there is no Mamsa on an Asthi, Snayu can be still found on it. Ligaments connect bone to bone and tendons connect muscles to bone. Hence there is no muscular attachment on the bony Sanyu it can correlates to structurally ligament.

Kalhana in Rajtarngini has mentioned in the context of explaining an injured state in which Devi's handsare devoid of Mamsa, only Asthi and Snayu. In the end we can say that Snayu is structurally similar toligament and attached with the bone.

Acharya Dalhana defines Mastulunga as MastakaMajja which is in the form of partially melted ghee. An observation of the related structures was done which include the layers of brain. Among the 3 layers of brain, duramater is a fibrous structure which is the toughest among the meninges. Duramater plays an important role as a protective covering as well as a binding structure. According to Acharya Sharngdhara,Snayu helps in binding Medas too which is discussed early. Mastulunga is also referred as Majja which is a type of Medas. As the fibrous limiting membrane of brain and having the function of binding, duramater canbe considered as Snayu which is referred to as Mastulunga Moola.

Snayu are of four kinds; we will describe all these, here; Pratanvati, Vrutta, Pruthu and Sushira.

### **PratanavatiSnayu :-**

Pratanvati means a tendril, a shoot, a low spreading plant, a spreading creeper and branching out. These are said to be present In Shakha and all Sandhi. So Pratanavati type of Snayu should be present in all joints of body and extremities and they should be having branching pattern and like a creeper. So, the structures which resembles PratanavatiSnayu are

**Ligaments-** As these are present in all joints.

**Nerves-** As these are like creepers and have branching pattern.

**VruttaSnayu:-** Vrutta means round or circular. These are cord like structures present in the body. Acharya Susruta also calls VruttaSnayu as Kandara. Kandara is called MahaSnayu or Mahanadi. It is a cord like structure which is similar to Snayu but large in size. So Kandara should be large circular or cord like structure. In human the structures resembling Kandara or VruttaSnayu are

**Tendons-** As these are cord like

**Large Nerves cords-** These are also cord like and resemble tendon.

### **PruthulaSnayu :-**

The word meaning of Pruthula is a broad, large or great. So, these should be structures which are Large, broad and flat resemble PruthulaSnayu in our body are Aponeurosis

Fascia

### **SushiraSnayu:-**

Sushira means porous, hollow, cavity etc. Acharya Susruta explains that SushiraSnayu is present in the terminal part of regions like Amashaya, Pakvashaya, Basti etc. So, these are structures which are porous like in nature and present in the openings of hollow organs and hold these hollow organs (viscera). So, the structures which resemble SushiraSnayu are sphincters and visceral ligament.

In the context of SnayuPrayojan (function of Snayu) Sushruta mentioned that Snayu is like ropes in us body. Like the rope holds the wooden planks together, Snayu holds the body



together making it capable of weight bearing. So long as the joints are fastened tightly by Snayu in many ways. In the end it can be correlate the ligament because ligament also firmly attached to the joints, fixed and support the joint and make a joint weight bearing part of body.

In the context of Basti Sushruta mentioned that it is situated inside the cavity of the pelvis, pelvic bone: it is shaped like Alabu and supported by Sira and Snayu. In the end we can say that Snayu is a supportive and covering structure and can be directly correlated to ligament, because urinary bladder is situated in the pelvic cavity and supported by pelvic ligament.

In the context of Kalaa Acharya Sushruta has been mentioned that Kalaa is separating or differentiating entity between the Dhatu and Aashya in the body. Aashaya means Avasthan Pradesh, by this we can understand lining between Rasa (plasma), Rakta (blood) etc. tissue and their Aashaya (blood vessel) is called Kalaa.

These are not mere the limiting membranes but also perform some vital functions of the body. The word Kalaa stands for property or a quality, so these are some special membranes in the body which are having important role in performing body physiology. It is formed by three types of components such as SnayuPratichanna, JarayuSantat and ShleshmaVeshtita. According to Ghanekar Acharya all these three structures may or may not be necessarily present in each and every kalaa, even one or two of the above-mentioned structures may be found existing in the kalaa. So Kalaa are considered to be protected by SnayuPratichanna or covered by JarayuSantat with or without ShleshmaVeshtita (a thin film of serous spread over them). In the end we can say that SnayuPratichanna, JarayuSantat and ShleshmaVeshtita can be correlated with fibrous, serous and mucous membrane respectively.

In the context of MamsadharaKalaa we can say that it is structural entity which is covering the muscle and provide space for passing Sira, Snayu and Dhamni. In the end we can say that Mamsadhara Kala can be correlates to deep fascia and it is pierced by vein, artery and nerve. In the end we can say that Snayu can be correlated to nerve in the context of Moolasthan Acharya described Snayu and Tvacha are Moolasthan of Mamsavaha Srotas. In

the external environment Moola words denote the root of tree due to their function of Dharana and Poshana such as similar reference regarding the Sroto Moola is also found due to their sustaining and nourishing functions. Injury on Moola Sthan, effect on its depending on entity. Mamsa Dhatu present muscles form in the body. Every movement of the body depend on the muscle and Snayu is also involved in the locomotor activity. Inserting or ending part of muscle is known as a tendon and it is attached to the bones, holds the muscle (sustain) and covered by skin. Any injury to these structures will effect on muscle function. So, in the end we can say that Snayu is structurally like tendon in the context of Moolasthan of Mamsavaha Srotas.

## CONCLUSION

Snayu is a structure which performs the function of holding and binding the various structures of human body like bones, muscles and adipose tissue. Snayu is used as bow string owing to its strength. Detailed observation of these structures reveals them as generally fibrous structures which are strong enough to withstand a certain amount of tension. Observations of Snayuarma show it as a white, tough structure.

An overall observation of these structures gives the impression that Snayu is a fibrous structure visible in the body. Aponeurosis, ligament, tendons, retinaculum, nerve, deep fascia and other fibrous structures in the body fits into the above description. The meaning of Snayu is different in different contexts such as ligament in binding bone and joints; tendon in binding the muscle and dura matter and aponeurosis in binding the Meda. Snayu are of four kinds; we can consider below mentioned entity.

**Pratanavati Snayu** – Ligaments of the limbs and nerve

**Vrutta Snayu** - Tendons and large nerve cord

**Pruthula Snayu** - Aponeurosis and Fascia

**Sushira Snayu** - Sphincters and ligament of viscera

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