



Review Article

ELABORATE THE CONCEPT OF 'SNAYU' FROM SHUSHRUT SAMHITA

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ABSTRACT

In the subject of *Rachana sharir*, The structures of the human body are studied with the help of morphology. Actions are formed on the basis of structures formed by *Saptdhatu*. Body composition is shaped according to the required physiology. The concepts in the *Sushrut Samhita*, which are superior in physical knowledge, are more scientific than those of other *Samhita* texts, because those structures were described by actual corpse research. Therefore, if you want to determine the suspicious structures in the body, the *Sushrut Samhita* is the standard for that. The *Snayu* is very important structure of the body. It is mentioned in the *Samhita* in various contexts. *Snayu* is mention in reference of *Marma*, *Agnikarma*, *Shastra karma*, *Bandh Karma*, *Sivan Karma*, *Siravedha* and *Vatvikara*. In this review article the *Snayu* structure is confirm as per the references in *shushrut Samhita*. Co-relation with modern anatomical structure has been done. This confirmation will help the physician to treat the *Snayu vikruti* as per the *Chikitsa sutra* stated in *Shushrut Samhita*.

INTRODUCTION

Snayu is an important structure in the body. *Sushrut* quoted the references of *Snayu* in various context from *sutra Sthana* to *Uttar tantra*. *Snayugat vyadhi* are among the most difficult to treat and can lead to incurable diseases due to improper diagnosis and treatment. Serious symptoms such as *Sthambha Kampa* (tremor), *Shoola* (pain), *Shopha* (edema), *Aakshepa* (convulsions) are expressed by the shelter of the *Snayu*.^[1] Half the subject of surgery is *Marma vidnyan*, in which 27 out of 107 *Marma* are described as *Snayu marma*.^[2] Special care is taken of the structure of the *Snayu* while performing important activities like *Siravedha*. Otherwise, there is a possibility of complications like *Punar Vidhha*, which leads to *Ruja* (severe pain), *Shopha* (edema), *Vaikalya* (deformity) *Marana* (death)^[3]. *Snayu*, an important anatomical structure of the body is described in the *Sushrut Samhita*, from *Kayachikitsa* and surgical point of view.

The *Sharir Rachana* (anatomical structures) described in the *Sushrut Samhita* are actually recorded with the help of corpus research, so the *Sushrut Samhita* is more convincing in determining the anatomical structures of the body.

The reference of *Snayu* were scattered in the *Sushrut Samhita*, those scatter references were described in many contexts, raises the question in the minds of practitioners. For example, *Aakshepa vyadhi* is because of contraction in the *Snayu*,^[4] the *Snayu* are attached to the *Sandhi*, the *Snayu* are the structures associated with soft organs like *Aamashaya*, *Pakwashaya* and the *Basti*,^[5] *Snayu* are *Marma adhisthana* etc.^[6] The aim of this review article is to compile the references, critically analyze those references, and established the scientific concept of *Snayu*. *Sandigdharth prakashak paribhasha* will prove to be *Dipibhuta sunichhita* for the Ayurvedic physicians.

Analogy

Snayu is used as a *Sivya dravya* (suturing material) and it has been described as a *Shanakar updhatu vishesa*. *Shan* means Jute fibers. That means *Snayu* is very tough, long, thread like structure, it looks like jute fibers.^[7]

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Sinew is also a word of Germanic and Greek origin which is used for tendon. It has much more resemblance with the Sanskrit word *Snayu*.

Snayu is not Mansa nor Peshi

Study of various references showed that *Snayu* is different structure than *Mansa*. *Mansa* is also having the synonyms as a *Peshita*. Sushrut used *Mansa* or *Peshita* (flesh) as a *Samanya paribhasha* (general terminology) and *Peshi* (muscle) as a *Vishesha paribhasha* (specific terminology).^[8] He also counted different total numbers of *Snayu* and *Peshi*. *Snayu* are 900 and *Peshi* were 500 in number.^[9]

Snayu is Different From Sira, Dhamani and Srotus

In *Sushrut Samhita*, the structure called *snayu* is always accompanies with the *Sira*.^[10-13] Also, total number of these structures in human body is also different.^[14] Blood flows through *Sira* and *Dhamani* but no single reference is there in *Samhita* that *Snayu* conducts the blood.

Types of Snayu

Sushrut has described four types of *Snayu* were present in human body *Pratanvatya*, *Vrutta*, *Pruthula* and *Sushir snayu*.^[15] *Snayu* which were like long creepers, present in *Urdhva* and *Adho shakha* and at the *Sandhi sthana* are called *Pratanvatya snayu*. *Sandhi* was formed by union of two or more bones. During cadaveric dissection the long, slender tendon, and nerves which are cord like structure crosses the joint and inserted on the succeeding bone, and responsible for the movement were observed in the human body. *Vrutta snayu* also called as *Kandara*.^[16] They were 16 in number's.^[17] *Hast* (hand), *Paad* (foot) *Gat kandara* tips are the *Nakha* (nails).^[18]

The *Kandara* related with *Griva* (neck) and *Hrudaya* (chest) is *Medhra* (penis). *Kandara* related with *Shroni* (pelvis) and *Prustha* (back) were end as a *Bimba* (gluteal).^[19] According to anatomical knowledge this description shows similarity with the superficial, broad muscles of anterior and posterior aspect of thorax, abdomen and muscles of back which were ends in tendons and aponeurosis.^[20]

Pruthul snayu were broad, flat large *Snayu* ^[21], especially present in *Parshwa* (lateral), *Urah* (chest), *Shir* (head) and *Prustha* (back),^[22] muscles present in

this region they have broad sheet like origin and insertion.

Sushir snayu prakara means *Sachhidra* (hiatus) *Snayu*, *Snayu* type having hiatus (opening) in it. These were present at the end of *Amapakwashaya*, and *Basti*. The end part of *Ampakwashaya* and *Basti* travels through the *Sushir snayu*. This description appears similar to pelvic floor. Pelvic floor transmits the urethra, vagina, and anal canal. Pelvic floor has two hiatus, anteriorly urogenital hiatus through which urethra in both sexes and vagina in female pass through and posteriorly rectal hiatus through which anal canal passes.

Snayu Formation

Meda dhatu is *Utpatti sthana* of *Snayu*. *Sira* (vessels) and *Snayu* has the same origin, but *Sira* are flexible and distensible because they are formed by *Mrudupaka* of *Meda* and *Snayu* are though, strong because of *Khara paak* of *Meda*. After birth, blood vessels from foetal circulations get transformed into the special fibrous connective tissue, similar to ligaments.^[23]

While describing the urinary bladder *Sushrutacharya* stated that *Basti* (urinary bladder) is completely enveloped by *Sira* and *Snayu*^[24], if we study the bladder wall and covering, it is made up of vesicle venous plexus and adventitial layer which is fibrous connective tissue.^[25]

Other Considerations

While explaining the sign and symptoms of *Snayugat Shalya*, *Sushrutaacharya* stated *Snayujaal utkshepana*, *Shopha*, and *Ugra ruja*.^[26] Commentator in the commentary explain *Snayujaal* as a *Snayu samuha*, present at the *Gulpha* (ankle) and *Mani bandha* (wrist) *Sthana*. In the hand and wrist foreign body were mostly found in the tendon.^[27]

Snayu is a *Pitruj bhava*, therefore it is *Sthir* (stable), *Kathin* (strong)^[28], it is not *Mrudu* (soft) nor elastic.

Countable number of *Snayu* in human body is 900. *Shakha* is having 150 *Snayu* each, that becomes 600, *Koshtha* is having 230 and *Griva Pradesh* 70 *Snayu*.^[29]

Table 1: Sushrutaacharya mention 27 snayu marma

S.No	Marma Naam	Total Number	Type as per Rachana	Vidhya Lakshana	Anatomical correlation
1	Aani	4	Snayu Marma	Shopha, Stabdhbahuta.	Quadriceps tendons, hamstring tendon ^[30]
2	Vitap	2	Snayu marma	Alp shukrata, Shandhata	Inguinal canal (superficial inguinal ring with spermatic cord)
3	Kakshadhara	2	Snayu marma	Pakshaghaat	Brachial plexus cords

4	<i>Kurch</i>	4	<i>Snayu marma</i>	<i>Paad Bhraman, Vepan</i>	Post traumatic tremor nerve injuries due to flexor tendons in hand and foot.
5	<i>Kurchashir</i>	4	<i>Snayu marma</i>	<i>Ruja, Shopha.</i>	Carpel tunnel contents
6	<i>Basti</i>	1	<i>Snayu marma</i>	<i>Sadyapranhar</i>	Urinary bladder
7	<i>Kshipra</i>	4	<i>Snayu marma</i>	<i>Aakshepa</i>	First inter-meta tarsal /carpel space with tendons of lumbricals and digital nerves.
8	<i>Ansa</i>	2	<i>Snayu marma</i>	<i>Stabdha bahuta</i>	Trapezius tendon ^[31]
9	<i>Vidhur</i>	2	<i>Snayu marma</i>	<i>Badhirya</i>	Sternocleidomastoid tendon, suprarectal triangle. ^[32]
10	<i>Utkshepa</i>	2	<i>Snayu marma</i>	<i>Vishaylaghna</i>	Temporal fascia, fibrous endosteal layer of dura mater. ^[33]

In *Netraroga* like *Arm* the skin which looks like *Snayu* is growing towards the *Krushna mandala* (cornea).^[34]

DISCUSSION

References of *Snayu*, from Sushrut Samhita has been compiled, and correlation of these references with modern anatomy was done. Considering these references, it has been cleared that *Snayu* structure is different than *Sira* (veins), *Dhamani* (artery), *Asthi* (bones), *Twacha* (skin) and *Peshi* (muscle). *Snayu* is non contractile, less stretchable structure. Considering and co relating the references regarding the types of *Snayu* it has been stated that

- 1) *Pratanvatya snayu prakara*- Nerves, tendons and ligaments
- 2) *Pruthu snayu prakara*- Aponeurosis (flat tendons)
- 3) *Vrutta snayu prakara*- Tendons
- 4) *Sushir snayu prakara*- Pelvic diaphragm having anorectal hiatus, hiatus for urethra.

Snayu Rachana is homologues with the fibrous connective tissues in the body.

With these discussions and confirmation, we can determine the treatment protocol for the injuries and diseases related with nerves, tendons and ligaments.

Shushrutachrya suggested the use of *Sneha*, *Upnaha*, *Agnikarma*, *Bandhan*, *Mardana chikitsa* in *Snayu vikara*.^[35] He also stated that physician should be more alert and careful while treating the disease and injuries of *Snayu*. It should be carefully examined and should be treated without delay.^[36] These structures are *Marma adhisthana*, and *Vranvastu*, that means wound in *Snayu* is very difficult to treat.^[37] Tendon, fascia, peripheral nerves, these are the anatomical structure observed at *Snayu marma sthana*. *Vidhha Lakshana* also because of injury of tendons, peripheral nerves, ligament injury.

In *Snayu chhedana* immediate bandage tends to heal the *Vrana* (wound) quickly and that to without any complication.^[38]

CONCLUSION

Snayu is fibrous connective tissue present in the human body. It has various forms as per the functional requirement of the body. Tendons, aponeurosis, fascia, peripheral nerves, ligaments are the different forms of the *Snayu* found in human body. Ailments of these structures will be treated with the help of *Chikitsa sutra* of *Snayugat Vata*. Sushruta Acharya advice *Kshoudra* (honey) and *Gud* (jaggery) and *Sneha* (oil), *Madhuchhista* (bee wax), for *Agnikarma* in *Snayu vikara*. In various diseases of tendon, ligament, fascia, peripheral nerve and aponeurosis, physician can use the *Upakrama* (treatment protocol) such as *Sneha* (oilation), *Upnaha* (polties), *Agnikarma*, *Bandhan*, *Mardana* (massage).

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