

A REVIEW ON THE CONCEPT OF SHUSHIR SNAYU AND ITS APPLIED ANATOMY

Pankaj Singh¹, Lipi Raturi^{2*}, Deepika Rawat³, Anjali Mandarin⁴ and Babeeta⁵

¹Assistant Professor, Department of Rachana Sharir, Himalayiya Ayurvedic (P.G) Medical College and Hospital, Fatehpur Tanda, Jeevanwala, Dehradun, Uttarakhand, India.

^{2,3,4,5}P.G. Scholar, Department of Rachana Sharir, Himalayiya Ayurvedic (PG) Medical College and Hospital Fatehpur Tanda, Jeevanwala, Dehradun, Uttarakhand, India.

ABSTRACT

AYURVEDA has its own importance in this whole world of science, which has a lot to offer to the world in the field of health science. As in literary world of *Ayurveda* Science, there is still much more research is going to be done. As *Acharya Sushrut* is independently discussed in his literature about the anatomical elements such as *SIRA*, *SNAYU*, *MARMA*, *KALAA*. Among these elements *SNAYU* is one among which is need to be discussed here, because it is closely related to '*SANDHI*' in human body. '*SNAYU*' means 'to bind as they securing and supporting the joints and bearing body weight.

KEYWORDS: *Snayu, Sandhi, Snayu Sharir, Kandara.*

INTRODUCTION

As *Sharir Rachana* is one of the basic Subject in theory of *Ayurveda* as well as its applied aspect and importance also necessary to study the complete Body structure. *Acharya Sushruta* has described the anatomical and functional importance of *SNAYU* in the chapter of

SHARIR STHANA i.e *SHARIR SANKHYA VYAKARAN SHARIRAM* of *SUSHRUTA SAMHITA*. The whole body's strength depends upon *SNAYU*, *ASTHI*, *MAMSA*, etc. *SNAYU* is an important structure which binds the *MAMSA*, *ASTHI*, and put it together, thereby helping in weight bearing. It has described the *Snayu* formation in foetus is the result of '*KHARAPAKA OF MEDA DHATU*' by *pitt (Tejas)*. Most of the structural entities explained in our *Samhita's* are very difficult to understand and its very important to interpret the

Article Received on
05 July 2024,

Revised on 25 July 2024,
Accepted on 15 August 2024

DOI: 10.20959/wjpr202416-33607



*Corresponding Author

Dr. Lipi Raturi

P.G. Scholar, Department of
Rachana Sharir, Himalayiya
Ayurvedic (PG) Medical
College and Hospital
Fatehpur Tanda,
Jeevanwala, Dehradun,
Uttarakhand, India.

anatomical terms with the modern point of view. This interpretation is not fully developed and there is a gap that needs to be filled in this topic. *SNAYU SHARIR* is one of such area which needs much more research. In this present article we will discuss about this structure that what exactly it is, because it requires much more extensive research is needed in the *SNAYU SHARIR*. These are total 900 in numbers present in our body.

AIM

1. To study Anatomical consideration of *SHUSHIR SNAYU*.

MATERIAL AND METHOD

Conceptual study

1. Ayurvedic literature

- a) To explore the concept of *SNAYU* which are mentioned in all classical texts of *Ayurveda*.
- b) Reviewing all the classics of *Ayurveda* including commentaries regarding *SHUSHIR SNAYU*.

2. Modern literature

- a) Reviewing of all the available literature about LIGAMENT, TENDON, APONEUROSIS, SPHINCTERS which are related to Modern Anatomy.
- b) To find out *SHUSHIR SNAYU* at the level of joints according to *Ayurvedic* and Modern Science.

Review of literature

Ayurvedic review literature

In Sanskrit, the word '*SNAYU*' is to tie. According to *Sushrut Sharir Sthana* in which the Fourth chapter i.e '*Garbh vyakaran Sharir*'.^[1] According to *Acharya Sushruta* given the whole detail including its total number, types, uses and divisions and its applied anatomy of *Snayu*. *Acharya Dalhan* has described a clear structure of *SNAYU* as '*SHANAKAAR*' which is rope like structure as it is used to tie the joint and keep up the body posture straight, strong, erect by giving the weight carrying capacity.^[2] *Snayu* supports the structure of body through *MAMSA*, *ASTHI*, *MEDA*. It is very powerful and stronger than *SIRA*. It can bind the joint also very strongly and tightly. *Acharya Sushruta* is the only who considered the *Snayu* as a suturing material for the *Vrana* in the twenty fifth chapter of *Sutra sthan* i.e '*Asthaviddhasastrakarmya*'.^[3] *Acharya Sushruta* has stated that *Snayu* is a type of *MARMA*. As he has given the *lakshans* / symptoms of *Snayu Viddha Lakshan*.^[4]

कौब्ज्यं शरीरावयवावसादः क्रियास्वशक्तिस्तुमुला रुजश्च ।

चिराद्द्वरणो रोहति यस्य चापि तं स्नायुविद्धं मनुजं व्यवस्येत् ॥ (SU. SUTRA. 25/37)

Acharya Sharangdhar says Snayu is made up of Mamsa, Asthi, and Meda.^[5]

स्नायवो बंधनं प्रोक्ता देहे मांसास्थिमेदसाम्॥

Acharya Charak stated that number of Snayu in human body is 900 and not clearly specified further details of SNAYU. Acharya Dalhan is considered Maha Snayu in 'Pittraj bhav'. Acharya Bhav Prakash says SNAYU as 'KANDARA' which he further stated that flexion and extension are the function of large SNAYU which is known as 'KANDARA'^[6]

Types of snayu^[7]

स्नायूश्चतुर्विधा विद्यात्तास्तु सर्वा निबोध मे ।

प्रतानवत्यो वृत्ताश्च पृथ्व्यश्च शुषिरास्तथा ॥

प्रतानवत्यः शाखासु सर्वसन्धिषु चाप्यथ ।

वृत्तास्तु कण्डराः सर्वा विज्ञेयाः कुशलैरिह ॥

आमपक्वाशयान्तेषु बस्तौ च शुषिराः खलु ।

पार्श्वोरसि तथा पृष्ठे पृथुलाश्च शिरस्यथ ॥

There are four types of SNAYU

1. *Pratanvat* – Sakha or Sarva sandhi.

Spreads like tentacles, broad and wide are aponeurosis, broad terminal sheets of tendon).

2. *Vritta* – Round in shape, also called as *kandara*.

They are round and oval cords like structure but large in size. These are known as 'KANDARA'.

3. *Shushir* – Hollow Pipes and Ring like Opening/Sphincters.

SHUSHIR means porous, hollow, or cavity, these are soft rings like structure and located at the end of the Amashaya, Pakwashaya, and Basti. As SHUSHIR derived from BAMBOO.

The feature of BAMBOO looks like hollow and hence it represents the hollow rings like opening.

4. *Prathu* – Flanks, Chest, and Back.

These are thick and flat in shape and located in trunk region and head region. It is present in the THORAX, BACK, and HEAD REGION as they are larger, broader, and flat than other type.

There are four types of *SNAYU* in which one of them is *SHUSHIR SNAYU*. *SHUSHIR* is a word that simply means hollow, porous, cavity, void etc. As acharya Sushruta described '*SHUSHIR*' *SNAYU* is terminal part of *AMASHAYA*, *PAKWASAHYA*, and *BASTI*.^[8] *SHUSHIR* is a term which is derived from *bamboo*. The *Bamboo* is a ring like opening structure, hollow from inside. So, the muscle fibers are arranged in a ring like structure, and form an opening within it. There is no doubt that we used to say *SNAYU* instead of *PESHI* or *MUSCLES*, because we used to understand that the *PESHI* is *SNAYU* only. And it is an example of *SHUSHIR SNAYU*. Literally the *SHUSHIR SNAYU* are SPHINCTERS and VALNULAR BANDS of muscles.^[9] As *SHUSHIR SNAYU*'s structure is quiet resembles with the *SNAYU*. That is why these *PESHI'S* called *SNAYU*. The End part of the Peshi's is made up of *SNAYU SUTRA* (FIBROUS STRUCTURE). When Fibrous structures are in round and rope like structures called TENDON. Anatomical correlation can be done with the above structures. As we consider them according to its anatomical, functional, structural, and location of *SHUSHIR SNAYU* i.e weight bearing function is done by the sphincters which is again situated in the end part of the stomach i.e pyloric sphincter, end part of large intestine i.e Anal Sphincters, end part of the Urinary bladder i.e Urethric Sphincters. As Acharya *Sushruta* has stated that *SHUSHIR SNAYU* is related to pakvashyante sthan and correlated it with the structure i.e *GUDA*. According to the location of *GUDA*, it is the end part of the pakwahyante, which is the site of *GUDA*. As we have three valliya's in *GUDA* region. One of them is '*SAMAVARINI VILLI*' which is supposed to correlate as EXRENAL SPHINCTER. As if this SPHINCTER is somehow get injured or damaged, the process was failed and FECAL INCONTINENCE will occur and ANO RECTAL related disorders occur.

Modern literature

On the basis of Anatomical Structure, Clinical Symptoms, Function, Location, this term ‘SNAYU’ somehow very close to Ligament, Tendon, Aponeurosis, Sphincters, fascia in Modern Science. SNAYU are basically bundle of fibrous connective or their modification which binds the body part or structure together. It may be in the form of –

1. **Ligament** – Fibrous bands which connect the adjacent bones, forming integral part of joints.^[10]
2. **Tendon** – Fibrous connective tissue is serving as connecting element for the attachment of muscles and bones and other parts.^[11]
3. **Aponeurosis** - Broad and Large Tendon distributed over a large area. Aponeurosis and Tendon are somehow similar in their function, structure, and location too.^[12]
4. **Sphincters** – A ring of muscles that surrounds an opening in the body and that become tighter in order to close the opening.

There are mainly **THREE types of Sphincters**^[13]

1. Pyloric sphincters

The Pyloric Sphincters is formed by a circumferential thickening of circular muscle interlaced with connective tissue septa and some longitudinal muscle fibers. And is probably thicker than the adjacent stomach and duodenum.^[14]

2. Anal sphincters

- a) Internal Sphincters
- b) External Sphincters

1. **Internal anal sphincters** – The Internal Anal Sphincters is the specialized, thickened terminal part of the inner circular muscle of the large intestine.^[15]
2. **External anal sphincters** – The External Anal Sphincters is a large, voluntary sphincters that forms a broad band on each side of the inferior two third of the anal canal.^[16]

As we compare Sphincters with the *Gudavalliya's* i.e *PRAVAHANI VALLI*, *VISARJANI VALLI*, *SAWARNI VALLI*. These three *valliya's* in which *Samavarni valli*, which is supposed to correlate as External Sphincters. As if this Sphincter is somehow get injured and damaged, the process was failed and fecal incontinence will occur and *PakwashayaGat viddh lakshans* also occur, which are similar to the Anal Disorder in modern science.

Urethral sphincters

Urinary bladder is the temporary house of urine which gets emptied through the urethra. The External Urethral Sphincters is the sphincters urethra. In case of pylorus or anal canal, the sphincters are placed at the terminal ends.^[17] When these sphincters get injured or damaged like if Pyloric Sphincter get damaged, it shows disorders, Haemorrhoids, Anal Fistula, fecal incontinence, Urinary incontinence. Similar symptoms which is seen in *Amashaya gat vyadhi lakshan* i.e PYLORIC STENOSIS. Similarly, if Anal Sphincters and Urethral Sphincters get injured or hit, it shows much similar disorders or symptoms which we have seen in *Pakwashaya gat* and *Guda Gat Vikar* like Anorectal Incontinence.

DISCUSSION

1. On the basis of their structure, *SHUSHIR* means Porous, hollow, or Cavity, soft rings like structure as *SHUSHIR* derived from Bamboo looks like hollow, it represents ring like opening. As in the Modern Science, it can be correlate with a ring of muscles that surrounds an opening in the body and that can become tighter in order to close the opening.
2. On the basis of their Location, SPHINCTERS are Found mainly of an organ or at the end of an organ, to avoid Regurgitation at particular site from one site to another site of an organ. *SHUSHIR SNAYU* also present at the terminal ends of the organs like Stomach (Pyloric End), Large Intestine (Anal End), Urinary bladder (Urethral End) which looks like hollow pipe or ring like opening structure at the end of the organs, which prevents back flow of food, water, pancreatic juices, bile etc. So, we can correlate *SHUSHIR SNAYU* with the SPHINCTERS which are present in the terminal part of the organs in the body.
3. In Modern Science, we can Correlate *SHUSHIR SNAYU* as a Circular sing like structure present at the end of the *Amashaya, Pakwashya and Basti*. Their functions are almost as it controls and adjust the gastric flow resistance to physiological need. These sphincters serve as a gateway between the stomach & the Small Intestine. It prevents digested food and digestive juices from reentering the stomach.
4. On the basis of their function, SPHINCTERS can Correlate with Smooth muscles & skeletal muscles that is Internal Anal Sphincters which are Involuntary in action and External Anal Sphincters are Voluntary in action, So, the SPHINCTERS come under in

both Smooth muscle specifically and skeletal Muscle on some extent. *SNAYU* can Correlate with *PESHI* or Muscle fibers also because *PESHI* & *SNAYU* only due to its voluntary and Involuntary action of the SPHINCTERS. So, we can correlate the *SHUSHIR SNAYU* as the SPHINCTERS and Valnular Bands of muscles.

CONCLUSSION

1. From the above discussion, it can be concluded that *SNAYU* describe in *Ayurveda* are similar to LIGAMENTS, TENDON, APONEURSOSIS, SPHINCTERS in Modern Science, which can be in the form of *PRATANWATI SNAYU*, *VRITTA SNAYU*, *PRITHUL SNAYU*, and *SHUSHIR SNAYU* respectively. So, according to Structural, Functional, and Location of the *SHUSHIR SNAYU* has been compared with the ‘SPHINCTERS only, which are located at the end part of *AMASHAYA*, *PAKVASHAYA*, and *BASTI*.

REFERENCES

1. Vaidya Jadav ji, Trikamji and Narayana Ram Acharya ‘ Kavyatirtha’ Sushrut Samhita with Nibandh Sangraha commentary of Sri Dalhanacharya, Nidan sthan in Sanskrit, Varanasi, Chaukambha Orientalia; Reprint, Sutra Sthana Chapter, 2013; 25, 20: 19.
2. Pandit Kaviraj Ambika Dutta Shastri, Sushruta Samhita, Ayurveda Tattva Sandipika, Hindi commentary Reprint, Varanasi, Chaukambha Sanskrit Sansthan, Sutra Sthan, Chapter, 2017; 1, 25: 135.
3. Pandit Kaviraj Ambika Dutta Shastri, Sushruta Samhita, elaborated Ayurveda Tatva Sandipika Hindi commentary, Varanasi: Chaukambha Sanskrit Sansthan, Sharir Sthan, Chapter No, 2009; 1, 25: 37.
4. Pandit Sharangdhar Acharya, Sharangdhar Samhita, Hindi Commentary by Brahmanand Tripathi, Varanasi, Chaukambha Surabharti Prakashani, Reprint, 2010; 5, 55: 62.
5. Shri Brahmasanskar Mishra, Bhav Praskash, Chaukmabha Sanksrut Sansthan, Varanasi, Chapter, 1999; 1, 3: 3-268.
6. Raja Radhakant Dev, Shabdkalpdrum; Varanasi: Chaukambha Sanskrit, Page no, 5, 3: 456.
7. Pandit Kaviraj Ambika Dutta Shastri, Sushruta Samhita, Ayurveda Tattva Sandipika, Hindi Commentary, Varanasi: Chaukambha Sanskrit Sansthan, Sharir Sthan, Chapter no, 2009; 1, 5: 38-62.

8. Pandit Kaviraj Ambika Dutta Shastri, Sushruta Samhita, Ayurveda Tattva Sandipika, Hindi commentary, Varanasi: Chaukambha Sanskrit Sansthan, Sharir Sthan, Chapter no, 2009; 1, 5: 39-47.
9. B.D Chaurasia, Hand Book of General Anatomy, fourth CBS publishers and distributors Pvt Ltd, New Delhi, Chapter, 2009; 9: 198.
10. A.C. ANNADALE, CONCISE ENGLISH DICTIONARY LONDON, BLACKIE 1900.
11. Susan Standring (editor – in – chief) R. Shane Tubbs (Section Editor), GRAYS ANATOMY, The Anatomical basis of Clinical practice, Edition, 42, 08: 63-1163.
12. Susan Standring (editor – in – chief) R. Shane Tubbs (Section Editor), GRAYS ANATOMY, The Anatomical basis of Clinical practice, Edition, 42, 08: 64-1201.
13. Keith L. Moore, Arthur F. Dalley, Anne M. R Agur, Clinically oriented Anatomy, Edition -sixteenth, Editors - S.Aruna, M.Siva Kumar, Published by Wolters Kluwer, volume, 2: 641.
14. B.D Chaurasia, Human Anatomy Regional and applied dissection and clinical, CBS Publisher and distributed Pvt. Ltd. New Delhi, Section, 2, 5: 30-375.