



INTERPRETATION OF 'PESHI' ON THE BASIS OF LITERARY AND CADAVERIC STUDY

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ABSTRACT

The concept of *Snayu* and *Peshi* is in controversy. Most of scholars consider *Peshi* as a muscle^{1a} and *Snayu* as ligament, tendon, sphincter, aponeurosis etc^{1b}. Some consider *Peshi* as fascia, intermuscular septum etc.^{1c} and *Snayu* as muscle^{1d}. Hence to understand about concept of *Peshi*, it becomes necessary for a scholar to understand what actually *Peshi* means. For this purpose literature and cadaveric study was done. Most of people consider *Peshi* as Muscle. The reason may be *Peshi* covers *Sira*, *Snayu*, *Asthi*, etc. If we consider it as the covering to all the structures then it indicates muscle, which most of the experts might have considered. But if we consider it as individual covering then *Peshi* may be fascia, intermuscular septum, adventitia of artery and vein, epineurium of nerve, periosteum, fibrous capsule etc. When we conduct region wise dissection, the number of muscles and tendons are fairly similar to number of *Snayu* than the *Peshi*.

Keywords: *Snayu*, *Peshi*, Muscles, Tendons

INTRODUCTION: *Ayurveda* is very ancient medical science. At that time, the method of dissection followed by the Sushruta was entirely different from method of dissection which is followed today. Further, the structures explained by Sushruta had a physiological base and hence many of these structures explained are not clear to us anatomically. To understand these structures, the concept of correlation began, which led to many controversies. Sushruta has stated various structures in the body like *Sira*, *Snayu*, *Asthi*, *Sandhi* etc., their importance and associated pathological conditions in various *Sthanas* of *Samhita*. Hence to understand the structural involvement in the clearly the pathological conditions, the concept regarding the particular structure should be clear.

The concept of *Snayu* and *Peshi* is one of the controversial concepts. Most of scholars consider *Peshi* as a muscle¹ and *Snayu* as ligament, tendon, sphincter, aponeurosis etc². Whereas some consider *Peshi* as fascia, intermuscular septum etc³. and *Snayu* as muscle⁴.

Hence to understand about concept of *Peshi*, it becomes necessary for a scholar to understand what actually *Peshi* means.

We have gone through the literature from Sushruta Samhita in detail regarding their *Karya*, *Sthana*, *Sankhya*, etc. A human cadaver dissection study was also carried out. During dissection it is observed that, *Peshi* matches more with fascia, intermuscular septum etc than the Muscle.

AIM: Interpretation of '*Peshi*' in terms of anatomical structure.

OBJECTIVES:

1. Compilation of literature about *Snayu* and *Peshi* from various Samhita.
2. Correlation of *Peshi* with different structures mentioned in modern texts and
3. Conduction of cadaveric study for the confirmation of a particular anatomical structure out of correlated structures of *Peshi* mentioned in modern anatomy.

MATERIALS:

1. Literature study: Ayurvedic literature – *Brihatrayee* and other *Samhita* and Modern - Graysanatomy, Cunningham, etc. were referred.
2. Material for Dissection Study: Cadaver, Various instruments of dissection and Digital camera.

METHODS:

Type of Study: Literary and cadaveric study

Place of study: Dept. of Rachana Sharir, Bharati Vidyapeeth (Deemed to be University), College of Ayurved, Pune, India.

Study Design:

- 1) Literary study is carried out by collecting references regarding *Peshi* and *Snayu* from *Samhita*.
- 2) The details about *Peshi* and *Snayu* from Ayurvedic literature is correlated with structures mentioned in modern anatomy.
- 3) The structures correlated with *Peshi* and *Snayu* are visualized and confirmed through cadaveric dissection.

The entire study was conducted for rational interpretation of *Peshi* by answering following two questions with proper justification.

1. Why *Peshi* is not muscle?

2. Why *Snayu* can be muscle?

OBSERVATIONS: Observations while literary and cadaveric studies are noted and put forth as;

1). Why *Peshi* is not muscle?

a) On the basis of *Karya*⁵: From a reference regarding *Peshi*, *Sanvrit* is its *Karya* (function)⁵ it means covering, i.e. *Peshi* covers *Sira*, *Snayu*, *Asthi*, etc. Here it seems unclear that whether the covering is for all structures together or for the individual structure. If we consider it as the covering to all the structures then it indicates muscle, which most of the experts might have considered. But if we consider it as individual covering then *Peshi* may be fascia, intermuscular septum (covering of *Snayu*), adventitia of artery and vein, epineurium of nerve (covering of *Sira*), periosteum (covering of *Asthi*), fibrous capsule (covering of *Sandhi*) etc. The later opinion looks to be more rational. The following observations are in support to the above statement.

b) On the basis of *Sankhya* and *Sthan*:

i) In female 20 extra *Peshi* have been explained out of which 5 are in each *Stana*⁶. When we dissect the *Sthana* (breast) of a female we never found any muscle instead we get suspensory ligaments¹⁵. So *Peshi* cannot be the muscle.

ii) Sushruta stated 6 *Peshi* in *Yakruta* (liver), *Pliha* (spleen) *Unduka*⁷. But when we dissect the particular *Sthana* (liver¹⁶ and spleen¹⁷) we never found any muscle.

iii) Sushruta stated 4 *Peshi* and 36 *Snayu* in *Griva* (Neck)⁸. When we dissect the particular part we get almost 40 muscles¹⁸. The number matches with number of *Snayu* and not with number of *Peshi*.

1. Table.

Example	No of Peshi	No. of Snayu	No. of muscles
In <i>Stana</i>	5	-	-
In <i>Yakruta</i> and <i>Pliha</i> (Liver & Spleen)	6	-	-
In <i>Griva</i> (Neck)	4	36	Near about 40

From this above information we can say that *Peshi* cannot be exactly correlated with the muscles.

2) Why *Snayu* can be muscle?

a) On the basis of *Karya* : Sushruta tells about *SnayuVidhya Lakshana*⁹. Here commenting on the word "*Kriyaswashaktistumula*" Dalhana says that the body movement like *Utkshepana*, *Apakshepana*, *Prasaran* (relaxation), *Ankunchan* (contraction) etc.⁹ functions has to be considered for *Kriya*. Hence we can say that the above mentioned functions (*Karya*) are of *Snayu*. All these functions are more related with the functions of muscles.

b) On the basis of *Prakara, Swaroop and Sthana*: Four types of *Snayu* are being mentioned on the basis of *Swaroop* as follows¹⁰:

1. *Pratanvat*, 2. *Vrutta*, 3. *Pruthula* 4. *Sushir*

1) *Pratanvat*: The meaning of word *Pratanvat* means tendril or a plant with tendrils or branching out or ramification¹¹. In the cadaver dissection such structures are seen as different tendons of the muscles like extensor digitorum longus, flexor digitorum profundus¹⁹ which have a single belly with four branches (tendons). Most of such structures are in extremities and Sushruta also says that *Pratanvat Snayu* are found in *Shakha* and *Sandhi*. Hence we can compare *Pratanvat Snayu* with muscles with branched tendons of extremities. (Figure 4)

2) *Vrutta* : The meaning of word *Vrutta* means round, rounded¹². During dissection we have observed different muscles which are rounded like Sartorius²⁰, rectus abdomens, rectus femorius etc. Hence, here we can compare *Vrutta Snayu* with rounded muscles. (See Figure 3)

3) *Pruthula*: The meaning of word *Pruthula* means flat, broad, large¹³ etc. According to the Sushruta these are the *Snayu* which are present in *Parshwa*, *Prusta*, *Ura* and *Shira*. In cadaveric dissection of above sites we observe the muscles like trapezius²¹ in *Prushta*, latissimus dorsi in *Parshwa*, pectoralis major in *Ura* and occipitofrontalis in *Shira*, which are the flat muscles according to the modern. Hence we may compare *Pruthula Snayu* with the flat muscles. (See Figure 2)

4) *Sushir* : The meaning of word *Sushir* is tube, hollow space¹⁴. According to the Sushruta this *Sushir Snayu* are present at the end part of *Amashaya* (stomach), *Pakvashaya* (large intestine) and *Basti* (urinary bladder). While dissecting these particular sites it is observed that the sphincters which are pyloric sphincter in stomach²², anal sphincter in anus and urethral sphincter in urinary bladder²³. Hence we may compare *Sushir Snayu* with sphincters. (See Figure 1)

DISCUSSION:

1] On the basis of literary research:

1. When we go through the word *Peshi* then its functions are stated as covering of various structures like *Sira*, *Snayu*, *Asthi* etc. When we correlate this to the modern literature then they are the fascia, intermuscular septum, fibrous capsule, periosteum etc.

2. When we go through the *Sthana* and *Sankhya* of *Peshi*. Sushruta mentioned that there are *Peshi* in *Stana* (breast), *Yakruta* (liver), *Pliha* (spleen) etc. But during dissection no muscles observed at these sites. So *Peshi* cannot be the muscle.

3. According to Dalhanacharya *Akunchan*, *Prasaran*, *Utkshepana*, *Apakshepana* etc. are the functions of *Sanyu*.⁹ Contraction²⁴ (*Akunchan*) is the basic function which is performed by the muscle as per modern literature.

4. The function of *Snayu* is contraction and hence it can be identified as the muscle. So here *Snayu* can be correlated with muscles.

5. When we go through word meaning of different types of *Snayu* then the *Pratanvat* means tendons, *Vrutta* means long and rounded, *Pruthula* means flat and broad and *Sushir* means sphincters, which are the types of muscles (on the basis of shape).

6. When we consider the neck region here Sushruta mentioned 4 *Peshi* and 36 *Snayu*, when we go through the modern literature there are near about 40 muscles present in this region. Number of muscles matches more with number of *Snayu* than that of *Peshi*.

2) On the basis of cadaveric study:

When we go through the *Sthana* and *Sankhya* of *Peshi*. Sushruta mentioned that there are *Peshis* in *Stana* (breast), *Yakruta* (liver), *Pliha* (spleen) etc. But during

dissection no muscles observed at these sites. So *Peshi* cannot be the muscle.

CONCLUSION:

By illlacting Definition, *sthana*, *kriya*, number of *Peshi* mentioned in Ayurvedic literature and then correlating it with modern texts and observing same in the cadaveric study. We may conclude that

1) *Peshi* mentioned by the Sushruta are actually the fascia, intermuscular septum, advenetia of artery and vein, epineurium of nerve, periosteum, fibrous capsule etc and

2) *Peshi* can not the muscle.

Acknowledgment: We are thankful to Bharati Vidyapeeth (Deemed to be University), Principal- B.V.D.U. College of Ayurved, Pune. for their support to promote us.

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Fig. 2 Pyloric sphincter (Dissected part of stomach)

Figure 1



Fig 2. Lattissimus dorsi (Dissected part of back)

Figure 2



Fig. 2 Rectus femoris (Dissected part of thigh)

Figure 3



Fig. 2 Tendons of flexor digitorum profundus (Dissected part of palm)

Figure 4

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Source of support: Nil Conflict of interest: None Declared

Cite this Article as : [Kadam Rupaji J. Interpretation of 'Peshi' on the Basis of Literary and Cadaveric Study] www.ijaar.in : IJAAR, VOLUME III ISSUE XII Jan -Feb 2019 Page No: 1691-1696