

## STUDY OF *MANIBANDH SANDHI* WITH SPECIAL REFERENCE TO '*ANGULI PRAMANA*' AS DESCRIBED IN *SUSHRUT SAMHITA*.

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Received on: 21/11/2020; Revised on: 03/12/2020; Accepted on: 06/12/2020

### ABSTRACT

Study and knowledge of *Sharira* is of prime importance as it contributes for *Ayu* of an individual, proper treatment and healthy life of mankind. While describing *Sharira* in Classics it is termed as *Shadanga Sharir*. *Anga-pratanga* are parts of *Sharira* and *Sandhi* is one of them. *Pramana sharira* is the concept described in classics for measurement of body parts and its elements. This concept is also useful for *Atura Pareeksha* as per *Charaka*, for the detail study of *Ayu* of *Rogi* and to do *chikitsa* accordingly. In *Pramana Sharir* indicates measurements of external features of body parts. It helps to understand knowledge *sharir* useful in routine Ayurvedic practice. As per classics *Acharyas* explained the concept *pramana of Swa-Angula*, for the measurement various body parts for that particular individual. *Swa angula pramana* is scientific method stated in Ayurveda classical texts. Detail study of literature i.e *Ayurveda* and modern was done for better understanding of *Sandhi* and its *Pamana sharir*. Cross-sectional observational study was done of 30 healthy volunteers for justifying the concept of *Swa- angula pramana* as described in *Sushruta Samhita*.

**Keywords:** *Sharira, Anga Prayanga, Pramana, Swa angula, Manibandha Sandhi.*

### 1. INTRODUCTION

In *Ayurveda* the *Sharira* is given the prime importance as it contributes for *Ayu* (longevity of life) of an individual. Complete knowledge of *Sharira* is necessary at all times for the *Vaidya* to maintain health of mankind. *The Sharir* is described as *Shadanga* as per classics. It is made up of *Anga-pratanga*. *Sandhi* is the structure where two or more elements joined together and the union is termed as *Sandhi*, but specifically speaking the sandhi is the union of two or more Bones (*asthi*). *Asthi-sandhi* are described by *acharyas*, according to *Rachana* and *Kriya Sharir*. *Sandhi* are also described according to the region or *shadangatwa*.

*Manibandh Sandhi* is *urdhwashakhagat sandhi*,<sup>1</sup> which is responsible for various functions of the hand. The *Pramana* of *manibandh Sandhi* is 12 *angula* as per *Sushruta*. According to fundamentals of *Ayurveda*, study of *Pramana sharir* is essential to have the detail knowledge of *Hitayu, Ahitayu, Sukhayu and Dukhayu*. Study of *Sharir Rachana* as per *Ayurveda* is the detail description of the measurements of body parts and its elements.

*Praman Shareera* indicates the importance of measurement, in *Sushrut Samhita* *Pramana Shareer* is described in 35<sup>th</sup> chapter of *Sutrasthana*.<sup>2</sup> *Pramana* is used as a tool for *Atura Pareeksha* by *Charaka*. *Pramana* is the tool

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of measurement of body parts of *Sharir*. Hence it is very much important in applied practice. *Acharya Caraka* explained *Dashavidha pareeksha vidhi* and *Pramana pareeksha* one among them. *Chikitsa* is considered as 'karya' in Ayurveda and *Vaidya* should examine (*Parikshan*) *Karyadesha* i.e. *Atura Shareera* (physical examination) before starting the treatment. The prime aim of *Pareeksha* is to know *Rogi Bala*. As per *Acharya Sushruta* it is the important tool to get information regarding *Ayu* of the individual along with *Bala*.

Hence for determining *Ayu* of an individual the study of the *Sharira Pramana* is important. As per classics *Acharyas* explained the concept *pramana of Swa-Angula*, for the measurement of body parts of that particular individual. It is the ideal and individualistic parameter. *Swa angula pramana* of individual parameter is a scientific method for measurement. Previously studies were carried out to determine *Prakruti* based on *anguli pramana*.<sup>3</sup> In present study on the *Manibandh sandhi* is carried out to justify the *Anguli pramana* of it as described in *Sushruta Samhita*

## 2. METHODS

### 2.1. Objectives

- ◆ Study the concept of *Sandhi Shareera* and *Pramana Shareera* as described in *Samhita*.
- ◆ Conceptual Study of *Manibandh Sandhi* according to *Ayurveda* as well as modern view.
- ◆ To justify the existing knowledge about *Pramana* of *Manibandh Sandhi* as described in *Sushruta Samhita*.

### 2.2. Study design

Present study was Observational, Descriptive, and Cross-sectional study. It was carried out at BSDT *Ayurveds* College Wagholi. Pune. Measurement i.e. *Parinaha* of *Manibandh Sandhi* of 30 healthy individuals was taken. Informed consent was taken before the study.

### 2.3. Literary study

The literary study was carried out by reweaving

*Ayurved Samhita (Bruhtrayee and Laghutrayee)*. References from *samhita* related to the topic were collected. All the *Ayurved Samhita* was reviewed for the study but references were specially taken from *Sushrut samhita*, as *Sushruta* is best in *Sharira*. Modern books of Anatomy were also referred for the study.<sup>4,5</sup>

### 2.4. Instruments

- ◆ Measuring tape
- ◆ Vernier callipers

### 2.5. Assessment Criteria

Width of the right-hand *Madhya parva* of *Madhyam anguli* (width of proximal interphalangeal joint of Rt. Hand middle finger) was considered to measure the *parinaha* of the *Manibandh Sandhi*.

### 2.6. Selection of study subjects

#### 2.8.1. Inclusion criteria

- ◆ Healthy volunteers of either sex
- ◆ Age group between 20-40 yrs.

#### 2.8.2. Exclusion criteria

- ◆ Age below 20 and above 40 yrs.
- ◆ Having any congenital related to wrist joint anomalies
- ◆ Any surgical history of wrist joint

## 3. RESULTS AND DISCUSSION

### 3.1. Measurements of *Parinaha* of *Manibandh sandhi*

In present study, *parinaha* of *Manibandha sandhi* of 30 individuals was measured. 6 (20%) volunteers were having the *manibandh sandhi parinaha* between 11-11.5 *angula*. 23 (76.66%) volunteers were having the *manibandh sandhi parinaha* between 11.6-12.5 *angula*. 1 (3.33%) volunteer was having the *manibandh sandhi parinaha* between 12.6-13 *angula*. Above calculations show that near 80% volunteers are having the *angula pramana* of 12 *angula*, as above 11.5 and below 12.5 are considered as equal to 12 *angula*. Details are illustrated in Table No. 1.

### 3.2. Discussion on *Sandhi*

The word *Sandhi* is derived from root *Sam + dha + ki*. *Sandhi shabda* belongs to pulling “*Sam*” *upsarga* is used. As it is originated by “*Dha*” *dhatu* and *ki pratyaya*. That means “*sandhanamiti*”.i.e Holding together, joining or binding. Definition of *Sandhi* in *Ayurvedic* literature can be understood as the union of any structure. But *Acharya* considered mainly the meeting place of two or more bones as *Sandhi*.<sup>6</sup> They are described as *Rachatamak* and *Kriyatatmak*. *Rachanatmaka* are related to structures from which the joint is formed and *Kriyatatmak* suggests the action can be done related to that joint. Name of the *Sandhi* in classics are given according to their *Rachana* i.e. shape. *Sushruta* described that *Sandhi* are mainly related with *Asthi Sandhi* (5<sup>th</sup> chapter of *Shareerastana*).<sup>7</sup> He explained that the term *Sandhi* is applicable only to the connection between bones. He used the term ‘*Kevala*’ while explaining the same topic to stress this point.<sup>7</sup>

*Shleshaka Kapha* is one of the components of *Kaphadosha* which is located at *Sandhi* to help in their function.<sup>8</sup> *Sleshmadharakala* is the 4<sup>th</sup> *Kala* in the body situated in the *Sandhi* which performs the lubrication for movements.<sup>8</sup> As a wheel easily turns upon a well-greased axle, so the *Sandhi* moistened by *sleshma* perform easy movements. According to *Acharya Sushruta*, *Sandhi* is one of the five types of *Marma*.<sup>9</sup> *Marma* naturally and specifically forms the seat of *Prana*. There are three *Roga Marga* according to the occurrence of disease. *Asthi Sandhi* is one of the components of *Madhyamarogamarga*.<sup>10</sup> *Chakrapani* explained that this division of *Rogamarga* is helpful to assess *Sadhya-Asadhyata* of disease. The disease which is located in *Marma* and *Sandhi* is to be regarded as *Yapya*. *Manibandh sandhi* is *kora* variety of *cheshtavanth sandhi*. The *shleshaka kapha* and *shleshshmadhara kala* are located in all the *sandhi* which help for the free movement and protection of the joint. Synovial fluid and membrane of joint can be considered as *sheshaka kapha* and *shleshshmadhara kala* respectively. Structures present in *Manibandh*

*sandhi* are given in Table No 2.

### 3.3. Discussion on *Pramana* and *Anguli pramana*

Basically, two types of *pramana* are explained in *Ayurveda* classics. They are *Anjali* and *Anguli pramana*. The *Anjali pramana* is used for measuring other body constituents including fluids. *Anguli pramana* is based on *swa-angula pramana* used for measuring dimensions (*Ayama, Vistara and Parinaha*) etc. of different *anga-pratyanga* of the body. In the era of *Sushruta* and *Charaka*, *Swa-angula pramana* was used for estimating *Anga-pratyanga* and other body constituents. The patient should be examined by measuring *anga-pratyang* by using *Swa-angula* as unit measurement. It helps in determine the *Ayu* and *Bala* of patient. The patient or individual with appropriate *praman* of *anga-pratyanga* is considered to attain *deerghayu*. *Pramana* is one of the examinations mentioned in *Dashvidha pareeksha*.<sup>11,12</sup> Assessment of *swa angula pramana* is more scientific methods and is individualistic.

*Anguli* are the terminal branches of both upper and lower limbs. They are 20 in number and of 5 type’s viz. *Angushta, Pradeshani, Madhayama, Anamika* and *Kanishthika*. *Pramana* is the tool through which knowledge is obtained. *Mana paribhasha* is the quantitative measurement of different of different items which comprises different measures like *Tula, Angula, Prasta* etc. *Anguli pramana* is a unit of measurement followed in olden days to denote the dimension like *Ayama, vistara, parinaha, utsedh*. As per classics different methods are described to measure one *angula* viz. 1. Width of *madhayam parva* of *madhayama angula*, 2. Measurement obtained by taking the length of *madhayama angula* and dividing by five, 3. Measurement obtained by taking width of palm and then dividing by four, 4. *Nakha tala bhaga* of *angushta*. In the present study width of *madhayam parva* of *madhayama angula* was taken for the measurement.

### 3.4. Importance of *Pramana shareera* based on *swa-angula*

- ◆ *Acharya* opines that an individual having proper measurements of *anga-pratyanga* will be endowed with longevity, wealth, prosperity, happiness, *ojas*, strength etc.
- ◆ *Praman Shareera* is useful in measuring dimensions of different parts of body.
- ◆ It is one among the *Dashvidha paseekshaya bhavas* by *Charaka* which is useful in assessing the *Ayu* of patient.
- ◆ It helps to identify and segregate the *Nindit purusha* explained in *Ayurvedic* classics i.e. it helps in determining *Atideergha* and *Atihryasva laxanas*.
- ◆ *Swa angula pramana* is justified as per *Sushruta samhita* of *Manibandh sandhi* as 12 *angula*.

#### 4. CONCLUSION

- ◆ *Manibandh sandhi* is the region between *Prapani* and *Hasta of Uradhavashakha*.
- ◆ It is formed by the articulation of inferior surface of lower end of radius, articular disc of inferior radioulnar joint, scaphoid, lunate and triquetral bones.
- ◆ *Praman of Manibandh sandhi* is 12 *angula*, described in *Sushruta samhita*.
- ◆ *Praman* described as *swa-angula* in *Samhita*, is the individualistic approach of *Praman shareera* which helps to plan the treatment and decide the prognosis depending on the result of *Dashvidha Pariksha*.
- ◆ Observations of the present study of *Pramana* of *Manibandh sandhi parinaha* revealed that more than 80% volunteers had the *parinaha* of *manibandh sandhi* is average 12 *angula*. *Pramana* described by *Sushruta Samhita* is justified in the present study also.

#### REFERENCES

1. Shastri Ambikadutta Editor (Reprint ed.). *Ayurved Tatva Sandipika Hindi Commentary on Sushruta Samhita of Sushruta* (Vol 1), Sharirasthana: Chapter 5, Verse 24. Varanasi: Choukhamba Sanskrit Sansthan, 2012; p. 60.
2. Ibidem 1 (Vol 1), Sutrasthana: Chapter 35, Verse 12-17. p. 168-170.
3. Ibidem 1 (Vol 1), Sharirasthana: Chapter 5, Verse 28. p. 61.
4. Chaurasia BD, Garg Krishna, Mittal PS, Chandruputla Mrudula. *Human Anatomy* (Vol I). Reprint 4<sup>th</sup> ed. New Delhi: CBS Publishers & Distributors, 2004; p. 151-153.
5. Gerard J Tortora, Bryan H. Derrickson. *Principles of Anatomy and Physiology* (Vol 1). 12<sup>th</sup> ed. Reprint by, John wiley and sons (Asia) Pvt Ltd., 2008; p. 264, 269, 276, 278.
6. Sharma Rashmi, Kamble Pushpalata, Bhati Kirti. Study of *Prakruti* with perspective to *Anguli Pramana*. *International Ayurvedic Medical Journal* 2015; 3(5): 1540-43.
7. Dr. Trupti Arun Jadhav, Dr. Rajendra K. Patil. A Critical Review on *Sandhi Sharir* with special reference to *Upamana Pramana*. *J Ayurveda Integr Med Sci* 2020; 5: 386-395.
8. Ibidem 1 (Vol 1), Sharirasthana: Chapter 4, Verse 14-15. p. 40.
9. Ibidem 1 (Vol 1), Sharirasthana: Chapter 6, Verse 3. p. 67.
10. Shri Satya Narayan Shastri Editor (5<sup>th</sup> ed.). *Vidyotini Hindi Commentary on Charak Samhita of Charaka* (Vol 1), Sutrasthana: Chapter 11, Verse 48. Varanasi: Choukhamba Sanskrit Sansthan, 1977; p. 235.
11. Ibidem 10 (Vol 1), Sharirasthana: Chapter 7, Verse 14. p. 914-15.
12. Ibidem 10 (Vol 1), Vimansthana: Chapter 8, verse 94. p. 771.

## TABLES

Table No 1. *Anguli Pramana* of *Manibandh Sandhi* in volunteers

Sr. No.	1 angula in cm.*	<i>Parinaha</i> of <i>manibandh sandhi</i>	
		In centimetre	In <i>Angula pramana</i>
1	1.4 cm	16.5 cm	11.78 <i>angula</i>
2	1.5 cm	16.5 cm	11 <i>angula</i>
3	1.3 cm	16.2 cm	12.46 <i>angula</i>
4	1.4 cm	17.8 cm	12.49 <i>angula</i>
5	1.3 cm	15.0 cm	12.50 <i>angula</i>
6	1.4 cm	16.0 cm	11.52 <i>angula</i>
7	1.5 cm	19.0 cm	12.46 <i>angula</i>
8	1.3 cm	14.5 cm	11.55 <i>angula</i>
9	1.4 cm	16.8 cm	12 <i>angula</i>
10	1.2 cm	14.0 cm	11.66 <i>angula</i>
11	1.3 cm	14.5 cm	11.15 <i>angula</i>
12	1.3 cm	16.5 cm	12.49 <i>angula</i>
13	1.2 cm	14.8 cm	12.33 <i>angula</i>
14	1.3 cm	15.0 cm	11.53 <i>angula</i>
15	1.4 cm	16.0 cm	11.52 <i>angula</i>
16	1.1 cm	13.5 cm	12.27 <i>angula</i>
17	1.3 cm	14.3 cm	11 <i>angula</i>
18	1.4 cm	16.7 cm	11.92 <i>angula</i>
19	1.3 cm	14.9 cm	11.56 <i>angula</i>
20	1.3 cm	14.5 cm	11.15 <i>angula</i>
21	1.1 cm	12.6 cm	11.55 <i>angula</i>
22	1.4 cm	15.4 cm	11 <i>angula</i>
23	1.2 cm	14.4 cm	12.96 <i>angula</i>
24	1.2 cm	14.3 cm	11.91 <i>angula</i>
25	1.1 cm	13.2 cm	12 <i>angula</i>
26	1.3 cm	15.5 cm	11.92 <i>angula</i>
27	1.3 cm	15.2 cm	11.69 <i>angula</i>
28	1.3 cm	14.3 cm	11 <i>angula</i>
29	1.2 cm	14.1 cm	11.75 <i>angula</i>
30	1.3 cm	14.8 cm	11.58 <i>angula</i>

(1 *angula* = *Madhya parva* of *Madhyama Anguli*)

**Table No. 2. Structures related to *Manibandh sandhi***

Sr. No.	Head	Number & Description
1	<i>Sandhi sankhya</i>	2 ( <i>urdhava shakha</i> )
2	<i>Snayu</i>	30
3	<i>Peshi</i>	10
4	<i>Kandhara</i>	4
5	<i>Jala</i>	8 (4 in each <i>sandhi</i> )
6	<i>Seemant</i>	2
7	<i>Sanghata</i>	2
8	<i>Dhamani</i>	<i>Urdhavagata dhamani</i>
9	<i>Marma</i>	<i>Sandhi, rujakara, shakhagat, 2 angula</i>

**Cite this article as:**

Sharma RR, Pillae S, Karle GS, Pande PP. Study of Manibandh Sandhi with special reference to 'Anguli Pramana' as described in Sushrut Samhita. International Journal of Research in Ayurveda and Medical Sciences 2020; 3 (4): 283-288.

**Source of Support: Nil; Conflict of Interest: None declared.**