

**AN ASSESSMENT OF *DANTA- SAMPAT LAKSHANA* IN *ASTHIDHATU SARA-ASARTA* - AN OBSERVATIONAL STUDY**

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**ABSTRACT**

According to *Ayurveda Dosha, Dhatu* and *Mala* are the roots of the body. *Dhatu* are the tissues which nourish the body and support it. *Upadhatu* are originated from excellent part of *dhatu*. The supreme quality and superb functional aspect of *Dhatu* is known as '*Sara*'. Acharya Charak has given various parameters for the assessment of *sarata* of *dhatu*. *Asthi* is one of the seven *dhatu*, the main function of *asthi dhatu* is *dharan*. According to *sharangdhara upadhatu* of *asthi dhatu* is *danta* and nourished by the *sara* portion of it. *Danta* is one of the parameter mentioned for the assessment of *asthidhatu sara-asarata*; described as *sthoor danta* and *drudh danta*. Acharya Kashyapa

has mentioned the term *Dantasampat lakshane* i.e. good quality of *danta* and *dantamula*. Various parameters are given for the assessment of *Dantasampat lakshana*. As there is close relation between *Asthi* and *Danta*. The study is conducted so that *dant-sampat lakshana* can be used as one of the parameter for the assessment of *Asthi dhatu sara-asarata*.

**KEYWORDS:** Dhatu, Asthidhatu, Asthidhatu sarata, Upadhatu, Danta.

**INTRODUCTION**

*Ayurveda* is the science which depends on various basic fundamental principles like *Dosha, Dhatu* and *Mala* which are the root cause of the body.<sup>[1]</sup> *Dhatu* is the entity which maintains the structural and functional equilibrium of the body. These *Dhatu* are seven in number, these

*Dhatu* undergo two fold conversions into essence and excretion having been acted upon by the respective one of the seven *Agni*.<sup>[2]</sup>

*Asthidhatu* is one of the *Dhatu* out of seven *Dhatu*. It is the hardest and firmest *Dhatu*, devoid of skin and muscles but reside under it. On *Medadhātu* innate heat combining *Prithvi*, *Tejas* and *Vayu* etc. together give rise to hardness and thus produce *Asthidhatu*, within are filled up by the marrow (*majjadhatu*), the essence of *Medadhātu*.<sup>[3]</sup> The main function of *Asthidhatu* is 'Dharan', to hold the body up straight and nourishment to *Majjadhatu*.<sup>[4]</sup> All the muscles, veins and ligaments are supported by the bones they do not either get broken or fall of from their places. Decrease in *Asthidhatu* gives rise to pain in the bones, breaking and dryness of bone and teeth.<sup>[5]</sup> When *Asthidhatu* increases more than normal, it leads to formation of *Adhyasthi* (hypertrophy of bone) and *Adhidanta* (formation of extra teeth).<sup>[6]</sup>

*Upadhātu* are generated from *Dhatu*. They are nourished from Sara portion produced in digestion of nutrient fluid in *Dhatuvaha Strotas*. It means they are not produced directly from *Ahara-rasa*.<sup>[7]</sup> It is needed for *Ahara-rasa* to undergo more digestion for giving rise to *dhatu* as well as *Upadhātu*. According to Sharangdhara samhita *Danta* is an *Upadhātu* of *Asthi Dhatu*.<sup>[8]</sup>

*Danta* is formed from the excellent part of the *Asthidhatu* and nourished from the Sara portion of *Asthidhatu*. Falling and reappearance mainly depends upon the status of bone and bone marrow and these are said to be basic factors responsible for dentition, besides in condition of decline of bone (*asthikshaya*) the tendency of falling of teeth increases.<sup>[9]</sup>

The best qualities of the teeth and gums i.e. *Dantasampat lakshan* are mentioned in Kashyapa Samhita are *Purnata* (Presence of total 32 numbers of teeth in oral cavity), *Samata* (All teeth are equal in size as mentioned in literature), *Ghanata* (Thickness of the teeth), *Shuklata* (Whiteness of the teeth), *Snigdhatā* (Unctuousness of teeth), *Shlakshnata* (Smoothness of teeth), *Nirmalata* (Cleanliness of teeth), *Niramyata* (Disease free state of teeth), *Uttaro-unnatata* (Slight protuberance of upper one of teeth), *Danta-bandhnanam-samata* (Evenness and tightness of gums), *Danta-bandhnanam-raktata* (Redness of gum), *Danta-bandhnanam-snigdhta* (Unctuousness of gums), *Bruhatghan Mulat* (Compactness of gum with big roots) *Sthir Mulat* (Stableness of roots).<sup>[10]</sup>

Supreme quality and superb functional aspect of *Dhatu* is *Sara*.<sup>[11]</sup> Acharya Charak has advocated examination of *Sarata* in *Dashavidha Parikshana*. It is the only clinical method of investigation by which state of the *Dhatu* and functioning capacity of the *Dhatu* can be understood. *Sarata* is described in order to assess *Bala* i.e. strength of an individual.<sup>[12]</sup> *Dhatu Sarata* is divided into three types *Pravar sarata*, *Madhyam sarata* and *Avar sarata*. *Pravar sarata* is the essence of all *Dhatu*, having great respect, positive attitude towards everything, capacity to withstand and longevity of life. *Madhyam sarata* is having moderate degree of quality of *Sara*. *Avar sarata* is having minimum characteristics of different *Sara*. *Sarata* is important to evaluate the strength of individual, to maintain the immunity of the individual (*vyadhikshamatva*), to heal the disease, to estimate the prognosis of disease and also to prescribe suitable doses of medicine.<sup>[13]</sup>

*Asthidhatu sarata* individuals have *Sthula* (prominent) *Parshni* (heel), *Gulph* (ankle), *Janu* (knee), *Aratni* (long forearm), *Jatru* (collar bone), *Chibuk* (chin), *Shir* (head), *Parva* (phalangeal joint), also *Asthi* (bone), *Nakh* (nail) and *Danta* (teeth). Such persons are *Mahotsaha* (enthusiastic), *Kriyawanta* (active), *Kleshasaha* (enduring), *Sara* and *Sthira Sharir* (having strong and firm body) as well as *Ayushamanta* (longevity of life).<sup>[14]</sup>

According to Acharya sharangdhara *Danta* is *updhatu* of *Asthidhatu*. When there is increase in *Asthidhatu* it shows the symptom like *Adhidanta* i.e. Formation of extra teeth. When there is decrease in *Asthidhatu* it give rise to *Danta bhanga*, *Danta rouksha* and *dwija prapatan* (dryness, breaking and falling of teeth). In *Asthidhatu sarata* individual have *sthul* and *drudh danta* (prominent and strong teeth).

As there are many similarities between *Asthi* and *Danta*, the study is planned to explore *Danta-sampat lakshana* as one of the parameter for assessment of *Asthi dhatu sarata* and *asarta*.

## AIM

An assessment of *Danta-sampat lakshan* in *asthidhatu sara-asarata* - an observational study.

## OBJECTIVES

1. To assess the *Asthidhatu Sara-asarata* of individuals as described in *Ayurveda*.
2. To assess the *Danta-sampat lakshana* of individuals as described in *Ayurveda*
3. To study *Danta-sampat lakshana* as one of the parameter for assessment of *Asthi dhatu sara-asarata* of individuals.

## MATERIALS AND METHODS

**Place of work:** Shree Ayurveda College, Nagpur.

### Plan of work

1. Selection of volunteers according to inclusive and exclusive criteria.
2. Total 60 volunteers of both sex equally has been taken for study which were divided into two groups according to age; 21-30 years and 31-40 years.
3. There detailed case history and informed written consent were obtained for participation in the present study.
4. Categorization of selected volunteers into two groups *Asthidhatu Sarata* and *Asthidhatu Asarata* on the basis of format given by MUHS has been carried out with the help of Swa-Anguli Praman, material used was tailor tape.
5. *Danta-sampat lakshana* assessed on the basis of format prepared from *Granthokta* features in the volunteers of all the two groups with the help of dental probe and mirror.
7. The relation between *Danta-sampatata* and *Asthidhatu Sarata* was compared.

## SELECTION OF SUBJECT

### Inclusion Criteria

1. Male and female volunteers of age group 21-40 years.
2. Healthy volunteers were selected.

### Exclusion Criteria

1. Person having bone and dental related disorders.
2. Having history of taking calcium and mineral orally within last six month.
3. Pregnant and lactating mothers.
4. Individuals taking alcohol, soft drink, tobacco chewers and smokers.
5. Having congenital anomaly like dwarfism, pituitary gigantism etc.
6. *Ashto-nindit* persons.
7. *Madhyam Asthisara* persons also excluded.

### Assessment of *Asthidhatu-Sarata*

Physical features assessment was done on the basis of *Swa-anguli praman mapan*. The individual having greater value in length or circumference of bone is considered as *Sthul asthi*. All *Asthi* and *Sandhi* are measured as mentioned in *Asthisara* individual like heel, ankle, knee, elbow, collarbone, chin, head and joints and also other long bones, nails etc.

The Physio-psychological features of *Asthidhatu sarata* e.g. *Mahotsah*, *Kleshshatwa*, *Kriyawant* etc. were assessed by *Prashna pariksha* and then by *Yukti* and *Anuman praman*.

Each correct feature had been given 1 mark then total scoring and percentage of total scoring was calculated.

By  $100/18 \times \text{total score} = \% \text{ of total score}$ .

<i>Asthi Sarata</i>	% of scoring
<i>Asthi Sara</i>	More than 70 % to 100 %
<i>Asthi Asara</i>	Less than 30 %

### Assessment of *Danta-sampat lakshana* (symptoms of ideal dentures)

*Danta-sampat lakshana* were assessed on the basis of format prepared from given *Granthokt lakshana* like *Purnata*, *Samata*, *Ghanata*, *Shuklata*, *Nirmalata*, *Niramayta*, *Uttaro-unnatata*, and *Danta-bandhananam Samata*, *Raktata*, *Bruhat-mulata*, and *Sthir-mulata* by using dental probe and mirror.

Each correct feature has been given 1 mark then total scoring and percentage of total scoring was calculated.

By  $100/10 \times \text{total score} = \% \text{ of total score}$ .

<b>Danta Sampatata</b>	<b>% of scoring</b>
Danta Sampat	More than 70 % to 100 %
Danta Asampat	Less than 30 %

## OBSERVATION AND RESULT

In this work total 60 subjects were selected and examined on the basis of *Granthokta* features for *Asthidhatu Sarata*. Subjects were divided into two groups *Asthidhatu Sara* and *Asara*. Observations and results summarized as follows:-

**Table no. 1 Distribution of study subjects.**

<i>Sara-asarta</i>	Frequency	Percentage
<i>Asthi sara</i>	30	50
<i>Asthi asara</i>	30	50
Total	60	100

Total 60 subjects were taken in two groups that is 50% in *Asthi Sara* and 50% in *Asthi Asara*.

**Table no. 2: Age wise distribution of study subjects.**

Age in years	<i>Asthi sara</i>		<i>Asthi asara</i>	
	Number	Percent	Number	Percent
21-30	15	50	15	50
31-40	15	50	15	50
TOTAL	30	100	30	100

Table shows that from the sample of 60 subjects, 50% were in the age group of 21-30 years and 50% were in the age group of 31-40 years.

**Table no. 3: Sex wise distribution of study subjects.**

Sex	<i>Asthi sara</i>		<i>Asthi asara</i>	
	Number	Percent	Number	Percent
Male	15	50	15	50
Female	15	50	15	50
Total	30	100	30	100

In this sample of 60 subjects, 50% were male and 50% were female in each group of *Asthi Sara* and *Asthi Asara*.

**Table no. 4: Comparison of danta sampat lakshana in asthi sara and asthi asara group.**

<i>Danta sampat</i>	<i>Asthi sara</i>		<i>Asthi asara</i>		Chi <sup>2</sup>	P
	Number	Percent	Number	Percent		
Yes	23	76.66	8	26.66	15.01	0.001, HS
No	7	23.33	22	73.33		
Total	30	100	30	100		

On applying Chi-square test to the above data  $X^2 = 15.1$  with  $p = 0.001$  which shows that difference of *Danta-sampat lakshana* in both the groups is highly significant.

**Table no. 5: Age wise comparison of danta sampat lakshana in asthi dhatu sara and asara group.**

	<i>Danta sampat</i>	Age group		Chi <sup>2</sup> -value	P-value
		21-30	31-40		
<i>Asthi sara</i>	Yes	12	11	0.1863	0.66, NS
	No	3	4		
	Total	15	15		
<i>Asthi asara</i>	Yes	10	25	0.6818	0.409, NS
	No	20	5		
	Total	30	30		

For *Asthidhatu Sara* subjects  $X^2 = 0.1863$  with  $p = 0.66$  which shows *Danta-sampat lakshana* in both age groups is non-significantly different.

For *Asthidhatu Asara* subjects  $X^2 = 0.6818$  with  $p = 0.409$  which shows *Danta-sampat lakshana* in both age groups is non-significantly different.

**Table no. 6: Sex wise comparison of danta sampat subjects in asthi dhatu sara and asara subjects.**

	<i>Danta sampat</i>	Male	Female	CHI <sup>2</sup> -value	p-value
<i>Asthi sara</i>	Yes	11	12	0.1863	0.66, NS
	No	4	3		
	Total	15	15		
<i>Asthi asara</i>	Yes	3	5	0.6818	0.409, NS
	No	12	10		
	Total	15	15		

For *Asthidhatu Sara* subjects X<sup>2</sup> value is 0.1863 with p value 0.66 which shows *Danta-sampat lakshana* in both age groups is non-significantly different.

For *Asthidhatu Asara* subjects X<sup>2</sup> value is 0.6818 with p value 0.409 which shows *Danta-sampat lakshana* in both age group is non- significantly different.

## DISCUSSION

As shown in table no 1, statistical point of view total 60 individuals were taken for the study which were divided into two equal groups i.e. 30 subjects of *Asthi sara* and 30 subjects of *Asthi asara*.

### Age wise distribution of study subjects

As shown in table no. 2 & 5, healthy individuals of age group 21-40 were selected; they were divided into two groups equally that is 21-30 years and 31-40 years to find relation in *Danta sampat lakshan* and age the difference we found is statistically non-significant in both age groups so there is no correlation between *Danta sampatata* and *Asthi sarata* as compared to age.

### Sex wise distribution of study subjects

As shown in table no. 3 & 6, in both group of *Asthi sara* and *Asthi asara* equal number of male and female were taken to find the correlation of *Danta-sampat lakshana* in *Asthi sara* and *Asthi asara*, the difference we found is statistically non-significant so there is no correlation between *Danta sampatata* and *Asthi sarata* with respect to sex.

### Comparison of danta sampat lakshana in Asthi sara and Asthi Asara group

As shown in table no. 4, to find relation between two variables chi square test was applied. Chi-square value is 15.01 and p is equal to 0.001 so the difference is highly significant. This

shows that there is a positive relation between two variables i.e. *Danta-sampatata* and *Asthi sarata*.

## CONCLUSION

From above observations and results we found that individuals having *Danta-sampat lakshana* are more in *Asthi Sara* group as compared to *Asthi Asara* group so there is a relation between *Asthi dhatu Sara-asarata* and *Danta-sampatata*. Hence proved that, *Danta-sampat lakshana* can be used as one of the parameter for the assessment of *Asthidhatu Sarata*.

While comparing *Danta-sampat lakshana* in *Asthidhatu Sara* and *Asara* in different age and sex groups the difference was non-significant. Hence it proves that, there is no relation of *Danta-sampatata* with *Asthi dhatu Sara* or *Asarata* with respect to age and sex.

## REFERENCES

1. Sushrut, sutrasthan 15, Doshadhatumalakshayavruddhi vidyanyam adhyayam shlok no. 3, edited by kaviraj ambikadatta shastri, sushrut samhita part I, reprinted edition, varanasi, chaukhamba sanskrit sansthan 2012, pg. 73.
2. Charak, chikitsasthan 15, Grahanidosh chikitsitam, shlok 15, edited by Dr. Brahmanand Tripathi, Charak Samhita, reprint edition, varanasi, choukhamba surbharati prakashan 2014, pg. 553.
3. Charak, chikitsasthan 15, Grahanidosh chikitsitam, shlok 30-31, edited by Dr. Brahmanand Tripathi, Charak Samhita, reprint edition, varanasi, choukhamba surbharati prakashan, 2014, pg. 556.
4. Vagbhata, sutrasthan 11, Doshadividnyanyam adhyayam, shlok 4, edited by Dr. Brahmanand Tripathi, Ashtang Hridaya, reprint edition, Delhi, chaukhamba sanskrit pratishtan, 2011, pg 160.
5. vagbhata, sutrasthan 11, Doshadividnyanyam adhyayam, shlok 19, edited by Dr. Brahmanand Tripathi, Ashtang Hridaya, reprint edition, Delhi, chaukhamba sanskrit pratishtan 2011, pg 164.
6. Vagbhata, sutrasthan 11, Doshadividnyanyam adhyayam, shlok 11, edited by Dr. Brahmanand Tripathi, Ashtang Hridaya, reprint edition, Delhi, chaukhamba sanskrit pratishtan 2011, pg 162.
7. Chakrapanidatta, chikitsasthan 15, Grahanidosh chikitsitam, shlok 17, edited by acharya jadavji trikamji, Charak Samhita, reprint edition, varanasi, chaukhamba surbharati prakashan, 2000, pg 515.

8. Shargadhara, purvakhanda adhyay 5, kaladikakhyan, shlok 29, edited by Acharya pandit Radhakrishna parashar Shargadhara Samhita, revised edition, Nagpur, baidhyanath Ayurveda 2012 pg no. 76.
9. Vagbhata, uttersthan 2, Balamaypratishedha adhyay, shlok no. 21, edited by vaidya Anant Damodar Athwale, Asthang Sangraha, reprint edition, Pune, Shrimad Atrey Prakashan 1980 pg. 633.
10. Kashyap, sutrasthan 20, dantajanmikadhyay, shlok 8, edited by pandit hemraj sharma, Kashyap samhita, reprint edition, varanasi, chaukhamba sanskrit sansthan 2012, pg 13.
11. Chakrapanidatta, vimansthan 8, rogbhishagjitiya vimanam, shlok 102, edited by acharya jadavji trikamji, Charak Samhita, reprint edition, varanasi, chaukhamba surbharati prakashan, 2000, pg 278.
12. Charak, vimansthan 8, rogbhishagjitiya vimanam, shlok 114, edited by Dr. Brahmanand Tripathi, Charak Samhita, reprint edition, varanasi, choukhamba surbharati prakashan, 2014, pg. 766.
13. Charak, vimansthan 8, rogbhishagjitiya vimanam, shlok 115, edited by Dr. Brahmanand Tripathi, Charak Samhita, reprint edition, varanasi, choukhamba surbharati prakashan, 2014, pg. 767.
14. Charak, vimansthan 8, rogbhishagjitiya vimanam, shlok 107, edited by Dr. Brahmanand Tripathi, Charak Samhita, reprint edition, varanasi, choukhamba surbharati prakashan, 2014, pg. 765.