

Concept of Sandhi Sharir in Ayurveda with Modern Correlation

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ABSTRACT

According to Ayurveda, knowledge of whole body is important in view of gaining knowledge. Sandhi is explained as “Asthi sanyoga sthaana” that clearly means the meeting point of two or more structures. There are different numbers of sandhis according to different ayurvedic sages.

सङ्ख्यातस्तु दशोत्तरे द्वे शते |

Sushruta in sharir sthana chapter 5 verse 28 says that there are 210 sandhis¹.

Types of sandhis and their distribution in body is told in Ayurveda but their sharir rachana is not explained in detail. Nowadays joint disorders and problems are growing day by day. It is a major issue in both domestic and professional life. Hence wholesome knowledge of joints both structurally & functionally is a need of study in today's era from both Nidana & Chikitsa point of view.

Keywords: Sandhi, Asthi Sanyoga, Nidana, Chikitsa.

INTRODUCTION

Ayurvedic classics like Charaka Samhita, Sushruta Samhita impart a wholesome knowledge of Sharir, Nidana and Chikitsa.

शरीरे चैव शास्त्रे च दृष्टार्थः स्याद्विशारदः |
दृष्टश्रुताभ्यां सन्देहमवापोह्याचरेत् क्रियाः ||

For an Knowledgeable Vaidya to treat a disease thorough knowledge about the disease and Shareer of its related part is very mandatory. One who knows Shareer (i.e. anatomy and physiology of human body) in detail, only he can know and understand Ayurveda which can bring happiness to the universe².

Every aspect of Sharir is well explained & elaborated in detail in ancient samhitas. One topic that holds importance is Sandhi sharir. Sushurta especially has elaborated the knowledge of concept of Sandhi sharir in detail in sharir sthana. Sushrut says only Asthi Sandhi should be considered whereas other Sandhi of Snayu, peshi and Sira are countless and should be not considered while counting them.

Sandhi prakara:

1. According to Kriya
2. According to Rachana
1. According to Kriya : 02 types³:

सन्धयस्तु द्विविधाश्चेष्टावन्तः , स्थिराश्च ॥२४॥
शाखासु हन्वोः कट्यां च चेष्टावन्तस्तु सन्धयः ।
शेषास्तु सन्धयः सर्वे विज्ञेया हि स्थिरा बुधैः ॥२५॥

1. Chal (Movable joints) i.e. Diarthrosis : sandhi present in Shakha, Kati & Hanu
2. Achal (Immovable joints) Synarthrosis: all the other remaining joints

Chal sandhi : 02 types:

1. Bahu chala (freely movable joints) : Sandhi present in Shakha, Kati & Hanu
2. Alpa chala (slightly movable joints) : Sandhi present in Prushtha etc.

According to Rachana, Sushrut mentioned 08 Sandhi prakara⁴:

त एते सन्धयोऽष्टविधाः- कोरूलूखलसामुद्रप्रतरतुन्नसेवनीवायसतुण्डमण्डलशङ्खावर्ताः ।
तेषामङ्गुलिमणिबन्धगुल्फजानुकूपरेषु कोराः सन्धयः, कक्षावङ्गणदशनेषूलूखलाः, अंसपीठगुदभगनित
म्बेषु सामुद्राः, ग्रीवापृष्ठवंशयोः प्रतराः, शिरःकटीकपालेषु तुन्नसेवन्यः, हन्वीरुभयतस्तु वायसतुण्डाः, क
ण्ठहृदयनेत्रक्लोमनाडीषु मण्डलाः, श्रोत्रशृङ्गाटकेषु शङ्खावर्ताः ।
तेषां नामभिरेवाकृतयः प्रायेण व्याख्याताः ॥२७॥

1. Kora
2. Ulukhala
3. Samudga
4. Pratara
5. Tunna sevani
6. Vayastunda
7. Mandala
8. Shankhavarta.

Kora Sandhi:

This can be related to Hinge joint & is found in Anguli, Manibandha, Gulpha, Janu & Kurpar sandhi.

Ulukhala Sandhi:

This can be related to Ball & socket joint & is found at Kaksha, Vankshana & Dashana.

Samudga Sandhi :

This can be related to Saddle joint & is found in Ansapeeth, Guda , Bhaga & Nitamba.

Pratara Sandhi :

This can be related to Gliding /plane joint & is found in Greeva, kasherukha & Prushthavansha.

Tunna sevani Sandhi :

This can be related to sutures & is found in Shirakapala & Katikapala.

Vayastunda Sandhi :

This can be related to Condylar joint & is found in Shankha asthi i.e. Temporo-Mandibular joint.

Mandala Sandhi :

This are circular in nature & can be seen in Kantha , Hrudaya, Netra & Kloma nadi.

Shankhavartha Sandhi :

These are like shape of snails shankha & is found in Shrotra & and Shringataka.

Sandhi Sankhya:

Charaka⁵ : 200

Sushrut : 210 :

सङ्ख्यातस्तु दशोत्तरे द्वे शते ।
तेषां शाखास्वष्टषष्टिः, एकोनषष्टिः कोष्ठे, ग्रीवां प्रत्यूर्ध्वं त्र्यशीतिः ।

68 shakha gata,
59 koshta gata
83 urdhva jatrugata⁶.

एकैकस्यां पादाङ्गुल्यां त्रयस्तयः, द्वावङ्गुष्ठे, ते चतुर्दश; जानुगुल्फवङ्कणेष्वेकैकः, एवं सप्तदशैकस्मिन् सक्थि भवन्ति; एतेनेतरसक्थि बाहू च व्याख्यातौ;

Every finger of lower extremity has 3, 2 in great toe i.e. total 14. Janu, gulfa, vankshan each 1. Total 17 in each lower extremity. Likewise in upper extremity. So 17×4 = 68 in extremities⁷.

त्रयः कटीकपालेषु, चतुर्विंशतिः पृष्ठवंशे, तावन्त एव पार्श्वयोः, उरस्यष्टौ;

3 in Shroni falaka. 24 in Prushtha vansha. 24 in parshva & 08 in vaksha. Total 59.⁸

तावन्त एव ग्रीवायां, त्रयः कण्ठे, नाडीषु हृदयक्लोमनिबद्धास्वष्टादश, दन्तपरिमाणा दन्तमूलेषु, एकः काकलके नासायां च, द्वौ वर्त्मण्डलयोर्नेत्राश्रयौ, गण्डकर्णशङ्खेष्वेकैकः, द्वौ हनुसन्धी, द्वावुपरिष्टाद्भ्रुवोः शङ्खयोश्च, पञ्च शिरःकपालेषु, एको मूर्ध्नि ॥२६॥

Greeva gata 08, kantha 03, hridaya kloma nadi 18, dantamula 32, kakalaka 01, nasa 01, vartma mandala 02, ganda 01, karna 01, shankha 01, hanu 02, shira kapala 05, murdha 01. Total 83.⁹

अस्थनां तु सन्धयो ह्येते केवलाः परिकीर्तिताः ।
पेशीस्नायुसिराणां तु सन्धिसङ्ख्या न विद्यते ॥

Sushruta in sharir sthan chapter 5 verse 33 says that only Asthi sandhi are being described. Sankhya of Sandhi of Peshi, snayu, sira is unknown.¹⁰

As per modern anatomy, Joint is defined as a meeting point of 2 or more bones or cartilages that allows free & different types of movements for locomotive purpose¹¹.

Classification of joints

A. Structural types of joints:

1. Fibrous Joints

- Here synovial cavity is absent & fibrous connective tissues holds the bones together.
- This type of joints have little movements or no movements.
- Further 03 fibrous types are :
 1. Sutures,
 2. Syndesmoses
 3. Interosseous membranes

Eg. Sutures in skull, Teeth-jaw, Tibia & Fibula :lower end.

2. Cartilaginous Joints

- Here synovial cavity is absent & hyaline or fibro cartilages holds the bones together.
- This type of joints have little movements or no movements.
- Further 02 fibrous types are :
 1. Primary
 2. Secondary

Eg. Pubic symphysis, Diaphysis & epiphysis, 1st costal cartilage & Manubrium sterni.

3. Synovial Joints

- There is a synovial cavity between the articulating bones.
- This type of joints have free movements.
- Here the articulating bones are covered by hyaline cartilage that acts as a shock absorber & reduction of friction of bones.

Eg. Shoulder joint, Hip joint.

B. Functional types of joints¹²

- Syn arthrosis/Immovable
- Amphi arthrosis/Slightly movable
- Di arthrosis/Freely movable

Syn arthrosis/Immovable:

1. Sutures:

Seen in coronal suture present between frontal and parietal bones of skull.

2. Gomphosis :

Seen in roots of teeth socket.

3. Syndesmosis:

Here Articulating bones are hold together by dense fibrous connective tissue.

Amphi athrosis /Slightly movable:

1. Synchondrosis : Primary cartilaginous joint which is connected by hyaline cartilage.

Eg. Joint between diaphysis & epiphysis of long bones like humerus, femur etc.

2. Symphysis : Secondary cartilaginous joint which is connected by broad, flat disc of fibro cartilage.

Eg. Intervetebral discs, Pubic symphysis.

Di arthrosis /Freely movable:

1. Gliding:

1. Inter carpal & inter tarsal joint.

2. Joint between Navicular and II, III cuneiforms of tarsal bones.

2. Hinge:

1. Elbow ankle & Inter phalangeal joint.

2. Joint of elbow in which joint between trochlea of humerus & trochlear notch on ulna.

3. Pivot:

1. Joint between Atlas & Axis.

2. Joint between head of radius & radial notch on ulna.

4. Condylloid:

1. Joint between radius and carpals.

2. Temporo mandibular joint

3. Knee joint

5. Saddle:

Joint between Trapezium & metacarpal of the thumb.

6. Ball and socket:

1. Shoulder joint

2. Hip Joint.

DISCUSSION:

Ayurvedic sandhi prakara are structural types whereas Modern anatomical classification of bones are both structural as well as functional types. Kora Sandhi (Garta/pit): As per modern view, Anguli, Gulpha, Kurpar are hinge type of synovial joint. Manibandha is ellipsoid type of synovial joint. Janu is compound type of synovial joint. Ulukhala Sandhi (mortar with pestle): Kaksha, Vankshan are ball and socket joints. Dashana is gomphosis joint. Samudga Sandhi (Box like structure): Ansapitha, Nitamba are plane joints. Guda & Bhaga are Secondary cartilaginous joints.

Pratara Sandhi (Samatala or flat part of joint forming bones): Greeva vansha & Prushtha vansha are Intervertebral joints. Tunna Sevani Sandhi (sutures): Shiro kapala, Kati kapala. Vayastunda Sandhi (like a crow's beak): Hanu Sandhi is the condylar joint that can be correlated with Temporo mandibular joint.

Mandala Sandhi : It is found in Kantha, Hrudaya, Netra & Kloma Nadi. In Netra joints between 05 Mandala to form 06 Sandhi. Shankha varta Sandhi (irregular): Shrotra in samhitas is written in the context of Shankha varta Sandhi.

CONCLUSION

- Ayurveda believes that 2 or more Asthi come together to form Sandhi.
- Ayurvedic sandhi prakara are structural types whereas Modern anatomical classification of bones are both structural as well as functional types.
- Kora Sandhi can be correlated with Ellipsoid joint & Condylar variety of joint.
- Ulukhala Sandhi can be correlated with Ball & socket joint & Gomphosis joint.
- Samudga Sandhi can be correlated with Plane joints & Secondary cartilaginous joints.
- Pratara Sandhi can be correlated with Secondary cartilaginous joints.
- Tunna Sevani Sandhi can be correlated with Sutures.
- Vayas tunda Sandhi can be correlated with Condylar joint.
- Mandala Sandhi is found in Kantha, Hrudaya, Netra & Kloma Nadi. In Netra joints between 05 Mandala to form 06 Sandhi.
- Shankhavarta Sandhi can be correlated with the joint of Ear ossicles along with cochlea. Shrungataka marma in nose is related to concha.

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