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A CRITICAL ANALYSIS OF SANDHI - CONCEPT OF JOINTS ACCORDING TO ACHARYA SUSRUTHA

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ABSTRACT

Acharya Susrutha in the *Sharirasthana* gives a very specific and clear explanation of the structure of the human body. The treatise has explained the anatomical consideration and identification of different body parts. *Susrutha* has explained *sandhi-joint* as the articulation between the bones. He also explained the number and classification of joints. *Acharya Susrutha's* explanation of *sandhi* has got some similarities with the modern anatomical classification of joints. A treatise, written thousands of years back has explained and well classified the joints of the human body in a way that is acceptable even today.

Keywords: *Sandhi*, Joint, Skeleton, *Ayuvedic Anatomy*, *Susrutha Samhitha*, *Rachana Sharir*

INTRODUCTION

Ayurveda, one of the oldest medical sciences has explained the anatomy and physiology of the human body in detail. Most of the anatomical structures are explained in *Ayurvedic* classical textbooks. *Sandhi* is the term used by *Susrutha* for bony joints. The framework of the human body is made up of bones. The bones articulate to form the skeleton. The articulation is formed by two or more bones and their supporting structures like ligaments and tendons. The joints are an integral part of our body the locomotion and all other movements are possible in joints only. The weight-bearing capacity and stability of the body are depended on joints. *Achara Susrutha* used the term *Sandhi* exclusively for bony joints only. And he

also classified the joints according to movements and according to the structure.

CONCEPT OF *SANDHI*

The etymology of *Sandhi:* The term *sandhi* is derived from three words *sam, dha, and ki.* Meaning joint, coming together, or junction.

Definition of *Sandhi:* According to *Acharya Susrutha*, the bony joints alone are considered under the term *sandhi* other junctions formed between *Peshi* – muscles, *snayu* – ligaments, and *sira* – body channels are not considered as *sandhi.*

Number of joints

According to acharya *Susrutha*, there are two hundred and ten joints in the human body. Among them sixty-eight joints are in the *Shakha* or limbs, fifty-nine are in the *Kosta* or trunk and eight three are in the head Out of sixty-eight limbs, each upper and lower limb contains 17 joints – three in each *Paad anguli* or toe, two in the big toe, making a total of fourteen, then one each in *Jaanu* or knee, *Gulpha* or ankle and *Vankshana* or loin so making a total of seventeen. Out of fifty-nine joints in *Kosta* or trunk, the three are present in the *Katee-Kapaala*- the pelvic flat bones, in *Prushthavamsha* – vertebral column there are 24 joints, the *Parshwa* or flanks contain 24 joints, eight in the urus or chest, eight in the *Greeva* or neck, three joints in *Kantha* or throat and eighteen in the *Naadi* connecting *Hruday*a and *Kloma*.

Among the eighty-three joints in the head thirty-two joints are present between teeth and their sockets, one each in the palate, and nose, two in the eye, one each in the region of the cheek, ear, and temples, two in the mandible, two in the front area of cranium above eyebrows, two above temples, five on the cranium and one at the vertex.

Classification of joints

According to movements

Acharya Susrutha has classified joints into two according to movements *Chestavantha* or movable joints and *Sthira* or immovable joints. The joints present in the limbs, lower jaw, and low back are movable joints and all other joints are immovable.

According to shape

Achary Susrutha has again classified the joins into 8 types according to the shape. *Kora, Ulookhala, Saamudga, Prathara, Thunnasevini, Vayasathunda, Mandala, and Shankhavartha*. The joints present in *Anguli* – interphalangeal joints, *Manibhandha* – wrist, *Gulpha* – ankle, *Janu* – knee joint, *Koorpara* – elbow joints are termed as *Kora Sandhi. Ulookhala sandhi* is present in the regions like *Kaksha* – axilla shoulder joint, *Vamshana* – loin region hip joint, and in between teeth and its socket. *Saamudga Sandhi* is present in the *Amsapeeda* – scapular region (acromioclavicular joint), *Guda* – perirectal region, *Bhaga*-pubic region, and *Nitambha* – buttocks. *Prathara Sandhi* is present in the neck and vertebral region. *Thunnasevini Sandhi* is present in the head in between the flat bones, and in the hip region between the flat bones. *Vayasathunda* type of *Sandh*i is present in *Hanu Sandhi*. *Mandala Sandhi* is present in the *kantha hrudaya Kloma Nethra nadi. Shankhavartha sandhi* is seen in-ear and *Srungataka* – region at the base of the brain

DISCUSSION

Sandhi is the term exclusively used for the bony joints according to *Acharya Susrutha*. According to him the explanations of *Asthi* or bone also include *Dantha* i.e., teeth and *Tharunasthi* or cartilages. So the joints formed by teeth and cartilages are also included under the term *Sandhi*.

In the classification of *Sandhi, Acharya* initially classified into two types according to the movements, movable and immovable joints. This basic classification is followed even today. But the movable joints are again subdivided into freely movable and slightly movable joints. *Acarya* has further classified the joints into eight groups according to the shape of the joint here mobility of the joint is not considered. But in the modern classification along with the shape of articulation, the functional anatomy is also considered. *Achary Susrutha* has classified interphalangeal joints, wrist joint, ankle joint knee joint, and elbow joint under *Kora Sandhi.* The term *Kora* refers to the shape of a bud and also a pit. According to modern

anatomy elbow, ankle, knee, and interphalangeal joints are classified under hinge joints. But the wrist is classified under ellipsoidal joints and the knee is also included under condylar joints. The shoulder joint, hip joint, and joint between the tooth and alveolar socket are classified under *Ulookhala Sandhi*. *Ulookhala* refers to a wooden mortar and pestle. According to modern anatomy, the shoulder and hip are classified under the ball and socket joint. Both ball and socket and pestle and mortar explain the similar structure of a deep articular pit and an opposite rounded articular part. But the tooth and socket are explained as gomphoses joins under fibrous joints. But the shape of the joint is almost similar. *Saamudga Sandhi* includes acromio-clavicular articulation, sacrococcygeal joint, pubic symphysis, and sacro iliac joint. In this acromio-clavicular joint and sacro iliac joint are plain synovial joints but sacrococcygeal joint and pubic symphysis are secondary cartilaginous joints. Even though they are classified under different categories they have plain articular areas. *Prathara sandhi* includes the joints in the cervical and lower part of the vertebral column. According to modern anatomy, inter-vertebral joints are secondary cartilaginous joints. *Thunnasevani sandhi* is seen in the flat bones of the head and hip region. This refers to the sutures. According to modern anatomy, the sutures are classified under fibrous joints. *Vayasathunda* type of *Sandhi* is present in the *Hanusandhi* or tempero mandibular joint and it is classified as a condylar joint according to modern anatomy. According to *Susrutha* shape of the *Sandhi* is like a crow's beak. *Mandala sandhi* is another type of *Sandhi* explained which refers to ring-shaped articulation and is seen in between the cartilages of the trachea. Joints formed by cartilages are not considered under joints in modern anatomy. *Shankhavartha* is spiral articulations according to *Susrutha* and is seen in the ear and base of the brain. The joints between ear ossicles are considered synovial joints in modern anatomy incudo-stapedial joint is considered a ball and socket joint and the incudo-malleolar joint as a saddle joint. The joints in the base of the brain all are considered sutures and are included under fibrous joints.

CONCLUSION

The classification of joints is very complex in modern anatomy. The classification is done by considering various factors like the degree of movement, the shape of the articular surface, the type of connecting tissue, and presence and absence of joint cavity, etc. whereas *Susrutha's* classification is a twofold classification considering two factors and are classified in depended on each type. First, he classifies only on the basis of movement, and in the second classification, only the shape of the joint is considered. And this classification was explained in a very ancient period. As per research *Susrutha's* period is around 600 – 1000 BC. Considering this he must be the first person who classified and enumerated the joints in the human body. And many of the facts in the *Susrutha* classification are very relevant and similar to modern anatomical explanations.

REFERENCES

1. Susrutha/ Susrutha Samhitha/Shareerasanghya Vyakarana / Sanskrit Commentary by Sri Dalhanacharya, Nibandhasangraha/ Edited by Vaidya Jadavji Trikamji Acharya / Chaukhamba Orientalia / 9th Edition 2007 / Sharirasthana Chapter 5 / Sloka 24 - 28 Page No 366, 367
2. Amarasinha / Haragovinda Shastri / Editor. *Amarakoṣa*./ Varanasi: / Chaukhambha Sanskrit Sansthana / 2006 / Amarkosh 2nd Kanda / Manushya Varga,
3. Prof C R Agnivesh a Textbook of Ayurvedic Anatomy / Sandhi Shareera / Harisree Publications 2nd Edition 2017 / Chapter 6 Page No 138 – 142
4. Vishram Singh / General Anatomy / Elsevier 2nd Edition 2016 / Page No 87 -95

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