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## **SANDHI SHARIR IN AYURVEDA AND APPLIED ANATOMY IN KNEE JOINT: A REVIEW**

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### **ABSTRACT**

In Ayurvedic Classics Atreya, Dhanvantari Sushruta and all other communities have made it important the knowledge of body to have undoubtedly for the sake of knowledge. The definition of Sandhi in various Ayurvedic literature are given as “asthisamyogasthaana” or “to unite” or “the meeting point of two or more structures. counted so only Asthi Sandhi or bony joints should be considered under the term Sandhis. In our Ayurvedic literature different Acharyas have mentioned different numbers of Sandhi. According to Acharya Sushruta Sandhis are two hundred and ten in number, which are responsible for various movements, and are distributed throughout the body. In Ayurvedic Samhitas the description of anatomy of Sandhi in detail is not found. It is observed that the incidence of joints disorders is increasing in today’s world. It is the burning problem for people and society. A thorough knowledge of the structure and function of the joint is required to diagnose and treat the diseases of joints.

**KEYWORDS:** Sandhi, Asthi Samyoga, To Unite

## INTRODUCTION

In Ayurvedic classics like Charaka Samhita, Sushruta Samhita etc. a huge knowledge regarding Shareer. Nidana and Chikitsa are available. For an expert 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 universe.

## AYURVEDIC REVIEW

According to Acharya Sushruta only Asthi Sandhi should be considered whereas other Sandhi of Snayu, peshi and Sira are innumerable and should be excluded while counting.

### Classification of Sandhi- Main classification is of two types.

1. Kriyanusar (Based on Kriya)
2. Rachananusar (Based on Rachana)

#### 1. Kriyanusar Vargeekaran (Based on Movement):

The Sandhis are of two types.

1 Chal (Cheshtayukta Sandhi) Diarthrosis

2 Achal (Sthira Sandhi) Synarthrosis

The Sandhis which are situated in the Shakhas, Kati and Hanu are Cheshtayukta Sandhi while all the remaining Sandhi comes under the Sthira in nature.

The Cheshtayukta Sandhis are further classified into two types based on their extent of movement.

They are-

#### 1 Bahu chala (freely movable)

#### 2 Alpachala (slightly movable)

The Sandhi of Shakhas, Kati and Hanu are of Bahuchala variety and the Sandhi of Prushtha etc. are Alpachala variety. Rachananusar Sandhi Vargeekaran (Based on structure) Based on

the structure Acharya Sushruta had described 8 types of Sandhi. They are Kora, Ulukhala, Samudga, Pratara, Tunnase-vani, Vayastunda, Mandala and Shankhavarta.

**Kora Sandhi (Hinge joint)** As per the description of Haranchandra in commentary of Sushrut Samhita, Kapat etc. is taken for Nibandhan of a special device called Kora is known that the Kabja (hinges). The Kora Sandhi is seen in the following region- Anguli (phalangeal), Manibandha (wrist joint), Gulpha (Ankle joint), Janu (Knee joint) and Kurpara (Elbow joint)

**Ulukhala Sandhi (Ball and socket joint)** These types of Sandhi look like stone grinder used in the kitchen in olden days that's why it is named so. The Ulukhala variety of joints is found at Kaksha (Shoulder joint), Vankshana (Hip joint) and Dashana (Teeth).

**Samudga Sandhi (Saddle joint)** This variety of Sandhi looks like a box. This variety of Sandhi looks like a box. These Samudga Sandhis is seen at Ansapeeth (Acromio-clavicular joint), Guda (Sacrum), Bhaga (Pubis) and Nitamba (Ilium). Pratara Sandhi (Gliding or plane joint) According to Dalhana, the articulating surfaces of this variety of joint are flat in nature and floating, supported by cushion and friction is seen in between the articulating surfaces. In Sushruta's opinion this variety of joints are located at Greeva (Cervical vertebrae), kasherukha (Vertebrae) and Prushthavansha (Thoracic vertebrae).

**Tunnasevani Sandhi (Sutures)** The commentator Gananath Sen has opined that articulating surfaces

resembles dentate edges which are supported and stucked together or embedded into one other. This type of Sandhi is found at Sirakapala (Skull) and Katikapala (Hip bone-sacrum, coccyx).

**Vayastunda Sandhi (Condylar joint)** According to Gananatha Sen the Hanu which is situated within

Shankhasthi both side of chin and create T.M.J. (Temporo-Mandibular joint) is considered as Vayastunda Sandhi. Even Sushruta has got similar opinion about Vayastunda Sandhi.

**Mandala Sandhi**

According to Dalhana the Sandhi, which are oval, or round are called as Mandala Sandhi. This type of Sandhi is present in Kantha (Throat), Hrudaya (Heart) and Netra (Eye) Clomnadi (Trachea).

### **Shankhavarta Sandhi**

According to Haranachandra, these are circular in nature which resembles the circles of a snail or Shankha. According to Sushruta they are found in Shrotra (Ear) and Shringataka (Cavernous sinus).

### **Sandhi Sankhya:**

According to Acharya Charaka - 200 Sandhi in body. According to Acharya Sushruta - Body comprises 210 Sandhi. Of these sixty-eight are in the four extremities; fifty-nine in the trunk (Koshtha); and eighty-three in the neck and the region above it.

## **DISCUSSION**

In Ayurvedic classics Sandhis have been classified into eight types by taking account of shapes of Sandhi's mainly, movement of Sandhis has not been considered whereas in modern science, the classification of Sandhis has been done by taking account of both structure and function (movement).

## **CONCLUSION**

The various classical texts of Ayurveda have defined Sandhi as a meeting place of two or more Asthis. Ayurveda and modern science both are same classification basis on the structural and function. Kora

Sandhi can be considered as hinge joint, Ulukhala Sandhi may include ball and socket variety of synovial joint and gomphosis variety of fibrous joint. Ansapeetha, Guda, Bhaga, Nitamba has Samudga Sandhi can be considered as acromioclavicular, sacrococcygeal, pubic symphysis, and sacroiliac joint respectively. In Pratara, Greeva and Prushtavansha may include intervertebral joint. Suturas Tunnasevani and Hanu in Vayasatunda may be taken as temporomandibular. Sankhavarta include Shrotra and Shringataka can be correlated with cochlea and region of nasal conchae.

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