

## APPLIED ANATOMY OF JANU SANDHI IN AYURVEDA

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**ABSTRACT**

*Janu Sandhi* is one of the most important weight-bearing joints of the human body and plays a vital role in locomotion and stability. In Ayurveda, *Janu Sandhi* is described under *Sandhi Sharira* and *Asthi-Sandhi Marma*, emphasizing its structural, functional, and clinical significance. The concept of applied anatomy in Ayurveda integrates classical anatomical descriptions with clinical utility, particularly in understanding disease manifestation, diagnosis, and management. This article aims to elaborate the applied anatomy of *Janu Sandhi* as per *Ayurvedic* literature.

**KEYWORDS:** janu sandhi, marma, asthi.

**INTRODUCTION**

*Sandhi* (joints) form an integral component of *Sharira Rachana* in *Ayurveda*, providing structural integrity, mobility, and

functional coordination to the human body. Among the various joints described in classical *Ayurveda* literature, *Janu Sandhi* (knee joint) holds special importance due to its weight-bearing nature and its vital role in locomotion and posture maintenance. *Ayurveda* considers *Sandhi* as one of the fundamental anatomical entities, closely associated with *Asthi Dhatu*,

*Snayu*, *Mamsa*, and *Shleshaka Kapha*, all of which collectively contribute to joint stability and smooth movement.

*Janu Sandhi* is categorized as a *Kora Sandhi* and is also included under *Sandhi Marma*, highlighting its clinical and therapeutic significance. Classical texts such as *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya* provide detailed references to the structure, function, and pathological involvement of *Janu Sandhi*, particularly in conditions dominated by *Vata Dosha*. With advancing age, improper lifestyle, trauma, and excessive strain, *Janu Sandhi* becomes highly susceptible to disorders like *Janu Sandhigata Vata*, leading to pain, stiffness, swelling, and restricted movements.

The concept of applied anatomy in *Ayurveda* emphasizes not only the structural description of organs and systems but also their functional relevance in health and disease. Understanding the applied anatomical aspects of *Janu Sandhi* is essential for accurate diagnosis, *Samprapti* assessment, and rational planning of treatment modalities such as *Snehana*, *Swedana*, *Upanaha*, *Basti*, and *Agnikarma*. Moreover, knowledge of *Marma* related to *Janu Sandhi* is crucial to avoid complications during therapeutic interventions.

In the present era, where degenerative knee disorders are increasingly prevalent, revisiting the *Ayurvedic* anatomical concepts of *Janu Sandhi* and correlating them with clinical application becomes highly relevant. Hence, this conceptual article aims to explore the applied anatomy of *Janu Sandhi* as described in *Ayurveda* and to highlight its significance in understanding disease manifestation and management from a holistic perspective.

## AIM AND OBJECTIVES

### AIM

To conceptualize the applied anatomy of *Janu Sandhi* in *Ayurveda*.

### OBJECTIVES

To describe anatomical components of *Janu Sandhi* as per *Ayurveda*.

To highlight clinical application in diagnosis and treatment.

## Review of Classical Literature

*Janu Utpatti* - the word “*janu*” is derived from the root “*jan*” which means knee.

*Nirukti* – “*uru janghayo madhya bhagaha*”<sup>[1]</sup> means that which joins the *uru* and *jangha*.

### *Sandhi*

The word '*Sandhi*' is Masculine gender which derived from the *Sanskrit* verb root "San+ Dha+ Kih"<sup>[2]</sup>

### *Nirukti*

a. "Sandhanam iti sandhi"<sup>[3]</sup>

b. "Asthidwe samyogsthana"

The word "Sandhi" indicates "Sandhana" or union of two or more structures in body. *Acharya Sushruta* stated that, in human body there are innumerable junctions between *Peshi*, *Snayu*, *Sira* and *Asthi* but the given description of *Sandhi* is only for *Asthi Sandhi*.<sup>[4]</sup>

### *Janu Sandhi*

*Acharya Sushruta* considered *Janu-Sandhi* under *Kora Sandhi* on the basis of structure and *cheshta yukta sandhi* on the basis of function. *Asthi* is the main component of a *sandhi*. *Dharana* is the prime function of *asthi*. *Asthi* is the *ashraya dhatu* for *vata dosha*. *Vrudhi* of *vata* causes *kshaya* of *asthi dhatu* and *vata kshaya* causes *asti vrudhi*.<sup>[5]</sup>

***Shleshaka kapha***: Among five varieties of *kapha*, *shleshaka kapha* is the one that resides in the joints. It keeps the joints firmly united.<sup>[6,7]</sup>

***Shleshmadhara kala***: *Kala* is a structure located between *dhatu* and *ashaya* that contains *kleda* which is described as *dhatu rasa vishesha* by *acharya vagbhata*. It is compared to *sara* present inside *kashta* of a tree. The *shleshmadhara kala* is the fourth *kala* which resides in all joints. It lubricates the *sandhi* just as greased axle to the wheel and thus facilitates smooth movement of the *sandhi*.<sup>[8,9]</sup>

***Vyana vata***: *Vata* governs every movement in the body. *Vyana Vata* is one among the five varieties of *Vata*, which resides at *Hridaya* and controls most of the motor functions.<sup>[10]</sup> *Vyana vata* governs every movement in the body including *Pancha chestas* like *Prasarana*, *Akunchana*, *Vinamana*, *Unnamana* and *Tiryag gamana*. The *Gati* or physical movement is also one of its functions. *Acarya Vagbhata* states that *Vata* is located in the *Asthi* with relation to '*Ashrayashrayi Sambandha*'. Generally augmentation or diminution of *Doshas* would be given similar effect on their respective *Dhatu* but in case of *Vata* it is opposite; with increase in *Vata*, *Asthi Kshaya* occurs. *Gayadasa* commenting on *Sushruta* has quoted the wordings of an unknown author as the *Vyana Vata* resides in *Sandhi*.<sup>[11]</sup>

**Snayu**-Among nine hundred *Snayu*, ten are present in *Janu-Sandhi*. Importance-As a boat consisting of planks becomes capable of carrying load of passengers in river after it is tied properly with bundle of ropes, all joints in the body are tied with many ligaments by which persons are capable of bearing load. More over in *Shakha* and *Sandhi*, *Pratana* variety of *Snayu* is present.<sup>[12]</sup>

**Kandara**: *Kandara* is a variety of *Snayu* which is round or cylindrical in shape. It is responsible for *prasarana* and *akunchana* of bodily parts.<sup>[13]</sup>

**Peshi**: The fleshy mass demarcated from each other is known as *Peshi*. In *Janu* they are five in number. They are strong structures that help to maintain alignment of the joint and also facilitates its movement.<sup>[14]</sup>

**Sira and Dhamani**: The *Kaphavaha siras* carrying prakrita *Kapha*, maintains the *sandhi*, ensures its *sthirata*, increases its *bala* etc. One of the functions of *Vatavaha siras* is *pancha cheshta* such as *Prasarana*, *Akunchana*. The *Raktavaha siras* does *dhatu purana* brings about *sthirata* and does *poshana*. *Asthi* is one of the *dhatu*; hence these functions are applicable for *Asthi dhatu poshana* also. The *Sparshavaha dhamani* are spread in the upward direction and these have the function of carrying the *sparsha jnana*. The *sparsha* may be *sukhakara* or *dukhakara*.<sup>[15]</sup>

**Marma**: *Janu Sandhi* is considered as a *Sandhi marma*, injuries to this leads to *khanjata* and grouped under *Vaikalyakara marma*.<sup>[16]</sup> Measurement of *Janu sandhi*: Length of *janu sandhi* is 3 *angula*.

**Table no. 1: showing Complete reviewon Janu Marma.**

Site	Meeting place of thigh and calf region
Type	<i>Sandhimarma, vaikalyakara marma</i>
Dimension	3 <i>anguli</i>
Number	2
Complication on Injury	Limping / lameness

### **Sanghata**

There are fourteen *sanghata* (assemblage of bones).One is situated in *Janu-Sandhi*.

### **Applied Clinical Significance**

*Khanjata*

Trauma to *janu marma* results in *Khanjata* (lameness/limping) and *Shopha* (swelling). Because it is a seat of *Agni*, *Soma*, and *Vayu*, injury disrupts the flow of *Prana* (life force), leading to chronic pain and restricted mobility.

#### *Janu Sandhigata Vata*

The applied anatomical understanding of *Janu Sandhi* becomes evident through its involvement in various disease conditions described in *Ayurvedic* texts. *Janu Sandhigata Vata* manifests due to degeneration of *Asthi Dhatu* and depletion of *Shleshaka Kapha*, leading to pain, stiffness, crepitus, and restricted movements.

#### *Kroshtuka Sheersha*

Described as a swelling resembling the head of *kroshtuka*(fox), indicates pathological enlargement and deformity of the knee joint, reflecting chronic involvement of *Sandhi* and surrounding structures.

#### *Bhagna*

In cases of *Bhagna*, the anatomical components of *Janu Sandhi* such as *Asthi*, *Sandhi*, and *Snayu* are distinctly involved. *Asthi Bhagna* results in loss of structural continuity of the bones forming the knee joint, *Sandhi Bhagna* leads to dislocation and loss of joint congruity, while *Snayu Bhagna* causes instability and impaired movement due to ligamentous injury. These conditions emphasize the importance of applied anatomical knowledge for accurate diagnosis and appropriate management.

#### *Amavata*

*Amavata* is another important disease affecting *Janu Sandhi*, wherein vitiated *Ama* along with aggravated *Vata Dosha* lodges in the *Sandhi*, leading to pain, swelling, tenderness, and functional limitation. The migratory nature of pain and involvement of multiple joints in *Amavata* further highlights the pathological significance of *Sandhi* as a site of *Dosha-Dushya Sammurchana*.

## DISCUSSION

Thus, conditions such as *Janu Sandhigata Vata*, *Kroshtuka Shreersha*, *Bhagna*, and *Amavata* clearly demonstrate the applied anatomical relevance of *Janu Sandhi* in *Ayurveda*, where structural derangement directly influences clinical presentation and therapeutic planning.

## CONCLUSION

From the *Ayurvedic* point of view, a physician should not merely consider the manifested symptoms of a disease but must understand the underlying *Sharira Rachana* and *Dosha–Dhatu–Kala* involvement to plan appropriate treatment. Although diseases are often approached based on their symptomatic presentation, effective management requires a comprehensive understanding of the applied anatomy of the affected site. *Janu Sandhi*, being a complex structure supported by *Asthi*, *Sandhi*, *Snayu* and *Shleshaka Kapha*, demands such an integrated approach.

For instance, in the management of *Amavata*, greater emphasis is traditionally given to *Rukshana Chikitsa* to eliminate *Ama*. However, *Janu Sandhi* is associated with *Shleshmadhara Kala*, which is responsible for lubrication and smooth joint movements. Excessive or indiscriminate use of *Rukshana* may aggravate *Vata* and further deteriorate joint integrity. Therefore, along with *Rukshana*, judicious administration of *Sneha Chikitsa* becomes essential to protect the *Sandhi*, restore *Shleshaka Kapha*, and maintain functional stability of the joint.

Thus, understanding the applied anatomy of *Janu Sandhi* enables the physician to balance therapeutic principles according to the site and stage of the disease. This conceptual approach ensures rational, individualized, and tissue-oriented management, highlighting that successful *Ayurvedic* treatment lies not only in symptom-based therapy but in a profound knowledge of anatomical and functional principles.

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