



**ANATOMICAL PERSPECTIVES OF ASTHI SHAARIRA AND RELATED  
ABNORMALITIES: AN AYURVEDA REVIEW**

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**ABSTRACT**

*Dosha, Dhātu* and *Mala* are three major elements of the body classified as fundamental components by ancient philosopher of Ayurveda. *Dharana & Poshana* of *Sharira* is major functions of *Dhatus* and *Asthi* is one of them. *Asthi* is the hard framework of body which supports body and forms internal skeleton. Ayurveda *Samhitas* encompasses sufficient information about the *Asthi Sharir* and this knowledge considered beneficial for Ayurveda physician involving in disease diagnosis and management. The ancient Indian text described various aspects of *Asthi Sharir* (osteology) including anatomical and physiological perspectives. Physiologically *Asthi dhātu* acquire great significance since it connects body, provides structure and frame, gives stability to the body, nourishing nervous tissue, facilitates movement and responsible for body posture, etc. The abnormalities related to the *Asthi Sharir* also mentioned in various traditional texts along with their therapeutic management. Present article described constituents, types, anatomical and pathological aspects of *Asthi Sharir*.

**KEYWORDS:** *Ayurveda, Sharirrachna, Asthi, Dhātu, Osteology.*

**INTRODUCTION**

*Asthi* as a hard part of body provides rigidity and physical built up which also support many physiological activities. *Keekas, Kulyamn* and *Hada* are the synonym of *Asthi*, which resembles hard substance that provides support to the body. *Asthi Dhātu* described as tissue-humoral systems of body which are formed in a sequential manner. *Asthi Dhātu* is one of the important *Dhātu* of the body which remain present inside the *Mamsa Dhātu*.

*Asthi* is predominant to *Prithivi* and *Vayu Mahabhuta* amongst the *Panchabhautika* constitution. *Prithivi* and *Vayu Mahabhuta* impart their quality of firmness and movement into the *Asthi Dhātu*. *Asthi* possess dry and rough nature due to the predominance of *Vayu Mahabhuta* while *Prithivi Mahabhuta* imparts quality of heaviness. The roughness, toughness, hardness and dryness of *Asthi* is due to the predominance of specific *Mahabhuta* constitution.<sup>[1-4]</sup>

Ayurveda gives various perspectives related to the anatomical aspects of body, in this connection Ayurveda suggested different concepts of skeleton system or *Asthi Sharira*. The *Asthi* is described as important *Dhātu* of human body, which gives rigidity and support to the human body. *Asthi* is responsible for *Majja Pushti* and

*Deha Dharana*, it supports *Mamsa Dhātu*, connects frame work of body and provides physical strength. The *Sankhya* of *Asthi* according to different philosophies is depicted in **Figure 1**.

|               |   |
|---------------|---|
| 360 in number | • As per <i>Charaka</i> and <i>Vagbhata</i> |
| 300 in number | • According to <i>Sushruta</i>              |
| 206 in number | • According to modern anatomy               |

**Figure 1: Sankhya of Asthi according to different philosophies.**

**Utpatti and Poshana of Asthi Dhātu**

*Rasa* converted into *Rakta* after being digested by *Rasagni* and *Rakta* digested by *Raktaagni* to forms *Mamsa*. Similarly *Dhatus* gets converted into others preceding *Dhātu*. The newly formed *Dhātu* nourished by *Dhatwagni* of particular *Dhātu*. The *Utpatti* and *Poshana* of *Asthi Dhātu* take places in similar way. The

*Ghanatava* of *Asthi Dhatu* is due to the *Vayu Mahabhuta* and *Snighatava* is due to the *Jala Mahabhuta*.

### Anatomical Aspects

*Asthi* is considered as seat of *Vata* and acts as *Ashraya* and *Vata* acts as *Ashrayee*. *Snayu* are tied with *Asthi* in body, *Asthi* play anchor role towards the specific frame work of body and supported by *Snayu*, *Dhamni* and *Sira*.<sup>[4-6]</sup>

*Asthidhara Kala* is related with *Purisha dhara kala* which exists in *Pakvashaya*, it separates waste products in colon. The formation of *Vata* and *Purisha* affects qualities of *Asthi Dhatu*, therefore *Purisha-Dhara Kala* can be correlated with *Asthi-Dhara Kala*. The *Danta* is considered as *Upadhatu* of *Asthi* and *Asthi* also produces *Malas* as similar to other *Dhatu*s. *Kesh*, *Lomai* and *Nakha* are considered as *Malas* of *Asthi*. *Asthi* possess *Guru*, *Kathin*, *Sthula*, *Kharai* and *Sthira Gunas*. The distribution of *Asthi* in the *Shadanga* of *Sharira* is depicted in **Table 1**.

**Table 1: Distribution of *Asthi* in the *Shadanga* of *Sharira*.**

| According to <i>Sushruta Samhita</i>    |     | According to <i>Ashtanga Sangraha</i> |     |
|---|-----|---------------------------------------|-----|
| <i>Shaakha</i>                          | 140 | <i>Shaakha</i>                        | 140 |
| <i>Shroni, Parshva, Prushtha, Uras:</i> | 117 | <i>Madhya Sharira</i>                 | 120 |
| <i>Greevordhva</i>                      | 63  | <i>Urdhva Sharira</i>                 | 100 |

### Types of *Asthi*

*Kapalasthi*, *Valayasthi*, *Tarunasthi*, *Nalikasthi* and *Ruchakasthi* are various types of *Asthi* classified based on their size, shape and position.

- ✓ ***Kapalasthi*** are flat in nature, which covers brain. These *Asthi*'s found in *Nitamba*, *Janu*, *Amsa*, *Talu*, *Shankha*, *Ganda*, *Madhyashira* and *Vankshana*.
- ✓ ***Valayasthi*** are round or hemi circle in shape. These *Asthi* found in *Pada*, *Pani*, *Uru*, *Prustha* and *Parshva* area of body.
- ✓ ***Tarunasthi*** are soft, which are considered as bones which have not fully developed i.e. bones of child. *Taruna Asthi*'s present in *Greeva*, *Akshikuta Ghrana* and *Karna*.
- ✓ ***Nalikasthi*** are tubes like long bones and hollow from the inside. *Pada Anguli*, *Hasta Anguli*, *Pada Tala*, *Kurcha*, *Jangha Asthi* and *Bahu Asthi*, etc. are described as *Nalaka Asthi*.
- ✓ ***Ruchakasthi*** are meant to chew food and facilitate taste sensation. The *Dashanas* resembles *Ruchakasthi* which are 28 or 32 in number, in this regard *Danta* can be considered as *Asthi* of this category.<sup>[6-8]</sup>

### ABNORMALITIES/ASTHI VIKARAS

Injury, surgical accident, trauma and congenital issues, etc. may affects health status of *Asthi Sharira* and causes problem in physiological functioning associated with *Asthi Sharira*. *Adhidanta*, *Adhyasthi*, *Dantabheda*, *Asthibheda*, *Asthishoola*, *Dantashoola*, *Vivarnata*, *Smashru Dosh*, *Asthi toda* and *Kunakha*, etc. are *Asthi Pradoshaja Vikaras* which are mentioned in different Ayurveda texts. *Yogendranath Sen* mentioned *Loma*, *Smashru* and *Kesha* as *Malas* of *Asthi Dhatu*, therefore some texts considered *Keshadi Doshas* as *Asthi Pradoshaja Vikara*.

### Trauma or Injury Effects

1. *Tarunasthi* (Cartilage) get bent after trauma.
2. *Nalkasthi* (Long bones) gets break due to the injury
3. *Kapalasthi* (Flat bones) gets cracked after trauma or injury.

4. *Ruchkasthi* (Teeth) becomes fragmented after injury.
5. *Valayasthi* (Curved bones) gets cracked or break after trauma.

The ancient texts classified skeletal injuries into two types; *Sandhimukta* and *Kandabhagna*, which described as joint dislocation and bone fracture respectively in modern science. The *Karkataka*, *Churnitam*, *Ashwakarana*, *Pichhitam*, *Asthichallita*, *Majjanugatam*, *Kanda bhagna*, *Atipatitam*, *Chinnam*, *Vakra*, *Sputita* and *Patitam* are different types of *Kandabhagna*.<sup>[8-11]</sup>

The Ayurvedic text has described various approaches of *Asthibhagna Chikitsa* which includes following approaches:

- ✓ ***Anchan***: To apply traction
- ✓ ***Pidana***: Manipulation by local pressure
- ✓ ***Sankshep***: Opposition and stabilization of fractured part of bone
- ✓ ***Bandhan***: Immobilization.

### CONCLUSION

*Asthi* serves as the sturdy foundational framework within the body, providing structural support and forming the internal skeleton. Ancient Indian texts expound upon various dimensions of *Asthi Sharir*, encompassing both anatomical and physiological perspectives. *Asthi* emerges as a pivotal *Dhatu*, contributing to bodily rigidity and support. It is also responsible for nurturing *Majja* and *Deha Dharana*, supporting the *Mamsa Dhatu*, integrating the body's framework and enhances physical resilience. *Kapalasthi* located in areas like *Janu*, *Amsa*, *Nitamba*, *Talu*, *Shankha*, *Madhyashira* and *Ganda*, etc. *Valayasthi* characterized by their rounded or semi-circular shape. *Tarunasthi* exhibiting a softer nature, found in *Greeva* and *Karna*. *Nalikasthi* resembling elongated tubes with hollow interiors, encompass bones like *Hasta Anguli*, *Pada Anguli*, *Pada Tala* and *Jangha Asthi*, etc. *Ruchakasthi* serve the purpose of masticating food and enhancing the sense of taste. *Danta* can be categorized as an *Asthi* within this classification. Furthermore, various *Asthi Pradoshaja Vikaras*, or bone-

related disorders, are elaborated upon in diverse Ayurvedic texts, including *Adhyasthi*, *Adhidanta*, *Dantabheda*, *Asthishoola*, *Asthibheda*, *Dantashoola*, *Smashru Dosh*, *Asthi toda* and *Vivarnata*, etc. *Pidana* and *Bandhan*, etc. are some ancient approaches which are used to align and stabilize fractured bone segments.

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