



## Dental Anatomy: An Ayurvedic Review

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### Abstract

An ayurveda has eight branches of specialisation. Out of which the one in which the details of diseases, medical and surgical treatment of eye, ear, mouth, throat are described, is called shalakyā<sup>1</sup>. There are no direct references or detail description of tooth anatomy in ayurvedic samhita. Tooth is considered as a pratyanga (~sub organ) of mukha. This article is an attempt to compile the scattered references from ayurvedic samhita and establish the concept of danta sharir (~dental anatomy). This is also a sincere effort to focus the different scientific terminologies, facts, observations made by our ancient acharya related with danta.

### Key word

Danta, shaarira, anatomy of tooth, ayurvedic samhita.

### Introduction

Yogratnakar has mentioned the seven pratyanga (~subdivision) of mukha (~mouth), in which he mention danta (~tooth) as one of the pratyanga.<sup>2</sup>

In Ayurveda, the dental anatomy is not described under one head, but one can find the physio anatomical concept of danta. Danta performs several function within the oral cavity. They begin the digestive process by breaking down food, they protect the oral cavity, in Panini vyakarana, danta is called varnasthana, which aid in proper speech. Those varna are called 'dantya varna' (~pronounce with the help of teeth)<sup>3</sup>. Danta also affect the physical appearance<sup>4</sup>.

### Synonymous of danta

Danta had given synonymous which explained the shape, structure and functions of teeth. **Dashana** means to bite, which can be used for cutting the food as well as tool for self protection. **Radana** word used to explain the sharp pointed edged structure and tearing function of teeth, particularly canine tooth. **Khadana**<sup>5</sup> synonymous used to denote the grinding function. Humans have two successive sets of teeth, initially the deciduous teeth and consecutively the permanent set, as teeth appears twice in life they are called **dvija**.<sup>6</sup>

### Number

Total number of danta are thirty two, out of which twenty four teeth are dvija (milk teeth), and rest of eight teeth are sakrutjjata, which erupts only once in life.<sup>7</sup>

### Measurement

The length of human tooth is two anguli, one anguli teeth is enclosed within the alveolar sockets and covered by dantamansa (~gums) rest remaining one anguli tooth is projecting in the oral cavity.<sup>8</sup> Dantamansa are main support for teeth.<sup>9</sup> According to modern anatomy the teeth vary from canine to molars, but average length of human teeth is around 20mm.<sup>10</sup> Of which, the crown is measured around 7mm and the root on average is around 13mm. Two anguli length approximately measures to be 24mm, this length correlates with the length of central incisor teeth, ayurveda has given immense importance to these teeth by designating them as rajdanta and consider them as a holy teeth, if these teeth are broken or absent one should be deprived from performing any spiritual rituals.<sup>11</sup>

### Criteria for prakrut (~healthy) danta

Healthy and normal teeth are called 'dantasampat'. Kashyapa has stated the criteria that the teeth which are poorna(~thirty two in number), sama(~normal length), Ghana(~compactly arrange), shukla(~pearled white), snigdha(~shinning) , slakshna(~smooth), nirmal(~clean), niramaya(~without any dental disease ) are called perfectly healthy teeth.<sup>12</sup> Any deviation from above criteria are called aprakrut danta (~abnormal, diseased teeth).

Kashyapa mention a list of abnormality of teeth . Heenadanta (~hypodontia), Ulbanadanta (~hyperdontia), sitadanta (~amelogenesis imperfect hypomaturation), asitadanta (~dentinogenesis imperfect), adhidanta(~supernumery teeth).<sup>13,14</sup>

### Physiological anatomy of danta

Danta is considered as asthidhatu. Out of five types of asthi(~bones), danta is known as 'ruchasthi' because only after grinding the food and mixing of bodhaka kapha(~saliva) we could able to sense the taste of food. <sup>15</sup>Chewing allows us to feel the shape or texture of food, making you more sensitive to the taste of food.

Acharya set a direct relation between asthidhatu and danta .But Sharangdhara had modified the concept,he described danta as the upadhatu (~ by product ) of asthi.<sup>16</sup> But he also stated the similarity and difference between danta and asthi. This opinion coincides with the modern anatomy. It states that teeth and bones are not same.

But they do admit that there is some interrelationship between the osteoporosis and teeth loss.<sup>17</sup>

### Types of teeth

Kashyapa mentioned the four types of danta , based on their function and shape.<sup>18</sup> They are as follows,

1)Rajdanta (~central incisor) – the upper and lower front four teeth, which cut the food with their sharp edge.

2)Vasta (~canine)- at the corner of the mouth are the vasta teeth, These teeth have one cusp or pointed edge.

and are used for holding or grasping the food and are very strong and stable teeth.

3) Danshtra (~pre molar) - Behind the vasta, are the danshtra which are designed for holding food like the canines, but they also function to crush the food.

4) Hanavya(~molar)- The teeth farthest back in the mouth are called as hanavya. These have broad chewing surface with four or five cusps and are designed for grinding the food.

### Dantasandhi

According to structural classification, the joint between danta and dantamula is said to be ulukhala sandhi(~ball and socket type), and functionally it is sthira (~synarthrosis) sandhi. <sup>19</sup>

Instead of ball shaped convex rounded surface, the tooth have conical process or peg which fits into a socket of another bone therefore modern anatomy considered it as an peg and socket joint .

### Danta vikas(~tooth development)

According to Ayurveda,six factors are very essential for the development of fetus.<sup>20</sup> Out of which Danta are considered as pitruja bhava. All body structures which are sthira(~firm consistency), kathina(~hard), ruksha(~dry) are considered as pitrujabhava.<sup>21</sup>

At the time of birth, tooth are not fully developed therefore ayurveda called them as a jatasya uttarkalaja (~ developed later in life ) structure.Various stages of tooth development are described by Kashyapa . These stages are sukshma(~tooth germ stage), murtibhava(~bell stage), Udbheda(~tooth eruption), patana (~falling of deciduous teeth), punarudhbahava (~eruption of permanent set), sthiti. Development of teeth, dental diseases , health of

teeth, is influenced by various factors , such as jati (~race), matruja pitruja (~hereditary),sva-karmavishesha (~socioeconomic status ).<sup>22</sup>

Tooth development begins in intrauterine life. The shonita which appears in the pits of gums further develops as a teeth.<sup>23</sup> Dantodbheda (~teething) is a process in tooth development in which the teeth enters the mouth and become visible.

Ayurveda has stated some rules related with tooth eruption. First rule states that the month at which tooth appears, they will take same days to erupt, means if danta appears in the fourth month of age of child, then within four days they will erupt. Second rule states that the month at which teeth erupt , it will take same number of years to replace by the permanent set of teeth .<sup>24</sup>

Teeth eruption is very painful in male child as compare to female child, because male child have hard consistency of gums, female child having smooth one.<sup>25</sup> Teeth which erupts at the age of eighth month of child is considered as a dantasampad (~ideal healthy teeth).If teeth erupt before eight year, they will suffer from daurbalya(~weakness), amaybhahulya(~diseased) , vaivarnya(~discoloration), ghunadanta(~dental caries).<sup>26</sup>

### Discussion and conclusion

From above various aspect it is very clear that ayurveda has described the physioanatomical view of danta. The observations and facts laid by acharyas related with anatomy of danta are very scientific.

Swastharakshana(~prevention), and vyadhiparimokshana(~cure) are two aims of ayurveda . To restore the health of danta, ayurveda give immense importance to dantadhavana (~brushing) by considering it as an essential and must do routine in dinacharya. One should use the herbal brush for it. Lower jaw teeth should be cleaned first.

Tongue cleaning also increases the strength of teeth. One should not break the hard substance by teeth, as it will damage the tooth and also exerts pressure over nerves which may causes ardita (~facial palsy).<sup>27</sup>

Nasya, doompana,kavala, gandusha, dantmala nirharana, raktamokshana are various methods of treatment used by ayurveda.

Danta is used as a tool for diagnosing the prakruti,(~body constitution),and dhatusarata(~ qualitative analysis of body elements).<sup>28</sup> Observations related with teething have scope for clinical researchers. Modern dentistry does not know the exact cause of teething, but ayurveda consideres it as a function of Vata dosha.

Ayurveda established the interrelationship between asthi and danta. Therefore while describing the chikitsa sutra(~line of treatment) in dental diseases there is much emphasis on vatahara (~calming of vata dosha) vidhi.<sup>29</sup>

Furthermore Shushrutadi acharyas listed various dantagata , dantamoolgata vyadhi, with their medical and surgical procedures .He described that one should practise the tooth extraction procedure on denture of the dead animal. As a surgeon Shushruta told us to take care while extracting the tooth from upper jaw , as too much traction causes complication such as squint or facial palsy.<sup>30</sup> Dental surgeries such as plaque remover, draining the dental abscess, tooth extraction, cavity filling are mention in ayurveda.<sup>31</sup>

Thus purpose of this article is to compile the scattered references of danta , and to reveal the concept , observations, terminologies, and scientific facts stated in ayurvedic samhita.

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