

AN AYURVEDIC APPROACH TOWARDS DENTITION AND DENTAL CARE:
CRITICAL REVIEWDr. Ganesh Kumar^{1*}, Dr. Dheeraj Khajuria², Dr. Swapnil C. Raskar³, Dr. Rajanish Meti⁴¹PG Scholar, Department of Kaumarbhritya, Parul Institute of Ayurved, Parul University, Vadodara, Gujarat.²PG Scholar, Department of Dravyaguna, Parul Institute of Ayurved, Parul University, Vadodara, Gujarat.³Assistant Professor, Department of Kaumarbhritya, Parul Institute of Ayurved, Parul University, Vadodara, Gujarat.⁴Professor & HOD, Department of Kaumarbhritya, Parul Institute of Ayurved, Parul University, Vadodara, Gujarat.***Corresponding Author: Dr. Ganesh Kumar**

PG Scholar, Department of Kaumarbhritya, Parul Institute of Ayurved, Parul University, Vadodara, Gujarat.

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ABSTRACT

Danta is considered as the *upadhatu* of *Asthi dhatu*. It has predominance of *Prithvi* and *Vayu* mahabhuta and contributes for the stoutness and rigidity of tooth. Among the five varieties of bones, teeth are called as *Ruchakaas*. The emergence of the 1st tooth in oral cavity in an infant is considered an important milestone in child's life. The development is in four continuous stages – initiation stage, bud stage, cap stage, bell stage and then maturation. During dentition there is an altered metabolism and so the child suffers from various diseases both local and constitutional. The management is done through both external and internal medications. The present review highlights about formation of teeth, teeth disorders, its management with critical analysis of Ayurveda and Modern perspectives. The total 8 single drug screened from *Bhavaprakasha nighantu* that are used in teeth disorders.

KEYWORDS: *Danta*, Teeth, Dentition, Teeth disorders, *Kashyapa samhita*, *Bhavaprakasha nighantu*.**INTRODUCTION**

Teething is a normal physiology, development stage that all children experience and usually initiate from 6 month to 3 year of age. The emergence of the 1st tooth in oral cavity in an infant is considered an important milestone in child's life.

Among the the five varieties of bones, teeth are called as *Ruchakaas* as they not only add to the splendour and beauty of the person but also stomachic by helping the substances to be chewed or ground. In other words, *Ruchaka* means "which imparts taste" *Asthi* means "bone". Thus *Ruchakaasthi* means "that which is associated with the function of imparting taste". Just like any other bone, teeth also have *Asthi* and *Majja* and hence they are the *saara bhaga medas*. The blood that gets deposited in the alveolar pits of the jaw becomes teeth later after birth. Each of the teeth is said to have *Beeja* part or the dental crypt which when destroyed the tooth does not erupt. The teeth that erupts from tissues of incomplete virility in a normally growing infant fall out in course of time and the replenishing tendency of the tissues of the body in a growing child make the teeth erupts a second time and these are called the *dwijaas*.

There are references of total number of teeth, types of teeth in Ayurveda. *Danta*/teeth are 32 in number.

MATERIAL AND METHODS

The material was collected from the classical Ayurvedic literature, Ayurvedic Paediatrics textbooks, Research journals etc. Online Databases were also used for the search of relevant literature.

RESULT AND DISCUSSION**Physiology of tooth formation^[1]**

Danta is considered as the *upadhatu* of *Asthi dhatu*. It has predominance of *Prithvi* and *vayu mahabhuta* and contributes for the stoutness and rigidity of tooth. *Charaka* has included teeth among the body parts which grow after birth. Classics have described number of teeth along with their sockets as thirty two. The *Dasanas* or *Dantas* are considered as *Ruchakasthi*, one among the type of *Asthi*'s.

The teeth develop from ectoderm and mesoderm. The development is in four continuous stages – initiation stage, bud stage, cap stage, bell stage and then maturation. In the initiation stage the dental lamina connects the developing tooth bud to the epithelial layer of mouth. During the Bell stage, localized proliferation of cells in the dental laminae forms round or oval swellings, the tooth buds, which grow into the mesenchyme. In the cap stage, the deep surface of each ectodermal tooth bud becomes invaginated by mesenchyme called the dental papilla, which gives rise to

the dentin and dental pulp. The ectodermal, cap-shaped covering over the papilla is called an enamel organ as it produces the future enamel of the tooth. Hard tissues, including enamel and dentin, develop during the next stage of tooth development i.e. the crown, or maturation stage. Tooth eruption is described as the movement of a tooth, primarily in the axial direction, from its site of development in the jaw bone to its functional position in the oral cavity.

As per Ayurveda, ideally tooth eruption should begin in the eighth month of life. The *dhathus* which are involved in the eruption of teeth are *Asthi* and *Majja*. The *dhathus* get localised in the root of gums and along with doshas results in tooth eruption. The *Dhatubija* or tooth buds consists of localised proliferation of cells in the dental lamina. These buds grow into mesenchyme and develop into primary teeth. As per various studies, on an average, the eruption of primary teeth begins at about the age of 8 months with the mandibular central incisors, and ends at the age of about 30 months with the maxillary second molars. Thus, in most children the total period of eruption of primary teeth extends for about 2 years. The eruption phase has been classified into the following stages: pre-eruptive, intraosseous, mucosal penetration, pre-occlusal and postocclusal.

In the pre-eruptive stage, the tooth crown is formed and the position of the tooth within the jaw bone is relatively stable. In the intraosseous stage the root begins to form and the tooth starts by much slower movement, moving inside the jaw bone towards the oral cavity. The mucosal penetration stage occurs, in general, when half to three-fourths of the root of the erupting tooth has been formed. The pre-occlusal stage is relatively short, whereas the post-occlusal stage is much longer and it is characterized by much slower tooth movement. Although the movement of teeth during eruption primarily occurs in the axial direction, the teeth actually move in all the three planes of space.

Dantotpatti Kala (Period of dentition)

Teeth are said to erupt in a normally healthy growing child from 8th month onwards. However, though abnormally a child may be born with teeth (*Raakshasa*) they often can erupt at any time after birth. The earlier the eruption of teeth, the more the child suffers. The metabolic disturbances during the period of dentition give rise to various constitutional disorders. The earlier such disorders the more the child suffers in its growth and development and fails to have a good and complete virility of the tissues including that of the teeth.

It is inauspicious for father if teeth erupt in 1st, 2nd or 3rd months. Teeth that emerge during 4th month are weak, easily become decayed and are prone for a number of diseases. It indicates bad days for the brother of the child. Teeth erupts during 5th month have a tendency to trickle and shed out with diseases and give rise to dantaharsha. Such event is bad sign mother and brother.

The teeth that erupt in 6th month are discoloured, inverted, take filth and become carious. In such cases the parents are said to lose money and become destroyed. The teeth that spring out in 7th month have a fastened origin, are dry, irregular, have streaks on them and break easily into pieces. It is harmful either for the child or for the attendants there. The teeth that erupt in 8th month have all the qualities of good and atypical teeth. The teeth are supposed to spring up in succession from before backward i.e. the *Raaja dantas* erupts first, the *vasti dantas* later and so on. Eruption first of the later teeth is considered unlucky.^[2]

Four different ways of tooth eruption^[3]:

- 1) *Saamudgam*: Where the tooth remains short from regular collision and withering.
- 2) *Samvrudda*: Where the tooth remains concealed: thereby getting filthy and as such unlucky.
- 3) *Vivrudda*: Where the tooth remains wide and uncovered thereby regularly getting washed with the trickling saliva and as such it gets discoloured.
- 4) Atypical eruption: Eruption with full accomplishment in which the teeth remains clean, white, firm, glossy, soft and even, successive elevation, the roots being big firm and compact. The gum margins there appear even, red and glistening. This is called *Danta sampada*.

The appearance of teeth in girls is early and causes less trouble due to porousness of teeth and soft nature of gums, it is noted that in boys this takes much time and causes so many troubles due to compactness of teeth and stable nature of gums. It is also noted by the great saints that insemination, manifestation, eruption, development, falling, firmness and weakness depend upon racial specification, period of insemination, nature, imitation of parents and own deeds. Appearance of growth, decline, properties and defects of other body parts is also in the same way.^[4]

Tooth eruption is a process in tooth development in which the teeth enter the mouth and become visible. It is currently believed that the periodontal ligament plays an important role in tooth eruption. The first human teeth to appear, the deciduous (primary) teeth (also known as baby or milk teeth), erupt into the mouth from around 6 months until 2 years of age, in a process known as "teething". These teeth are the only ones in the mouth until a person is about 6 years old creating the primary dentition stage. At that time, the first permanent tooth erupts and begins a time in which there is a combination of primary and permanent teeth, known as the mixed dentition stage, which lasts until the last primary tooth is lost. Then, the remaining permanent teeth erupt into the mouth during the permanent dentition stage.^[5]

PRASHASTA DANTA^[6]: Description about the ideal teeth is available in *Kashyapa Samhita*, it is described as *Danta Sampat* (Ideal dentition), its *Lakshana* (Qualities) are *Poornata* (complete), *Samata* (evenness), *Ghanata*

(compactness), *Snigdha* (glossy), *Shuklata* (spotless), *Shlakshnata* (smoothness), *Nirmalata* (clean), *Niramayata* (disease free), little elevated and properly placed. *Danta bandhana* should be *Sama* (evenness), *Snigdha* (unctuous), *Raktata* (reddish), *Drudha* (strong), *Ghana* (dense) and *Sthira moola* (steady root).

APRASHASTA DANTA^[7]: The teeth which are less in number or more in number, white or black in colour with undivided gum are called inauspicious by sages.

Table no. 1: Time of Dentition.^[8]

Primary dentition	Time of eruption, months		Time of fall, years	
	Upper	Lower	Upper	Lower
Central incisors	8-12	6-10	6-7	6-7
Lateral incisors	9-13	10-16	7-8	7-8
First molar	13-19	14-18	9-11	9-11
Canine	16-22	17-23	10-12	9-12
Second molar	25-33	23-31	10-12	10-12

Permanent teeth	Time of eruption, years				
	Upper	Lower		Upper	Lower
First molar	6-7	6-7	First pre- molar	10-11	10-12
Central incisors	7-8	6-7	Second premolar	10-12	10-12
Lateral incisors	8-9	7-8	Second molar	12-13	11-13
Canine	11-12	10-12	Third molar	17-21	17-21

Dental formula^[9]

Because every mammal's teeth are specialised for different functions, many mammal groups have lost teeth not needed in their adaptation. Tooth form has also undergone evolutionary modification as a result of natural selection for specialised feeding or other adaptations. Over time, different mammal groups have evolved distinct dental features, both in the number and type of teeth, and in the shape and size of the chewing surface.

It is a method of describing the number and arrangement of teeth in man and animals using letters and figures. It is written as an expression of the number of each type of tooth in one side of the upper jaw over the number of teeth in one side of the lower jaw. The letters correspond to the type of teeth (I = Incisor, C = Canine, P = Premolar, M = Molar). Humans have two dental formulae, one for the primary dentition and one for the permanent dentition^a.

Human (primary dentition): 20

I 2/2 C1/1 M2/2

Human (secondary dentition): 32

I 2/2 C 1/1 P 2/2 M 3/3

Dentition disorders^[10]

During dentition there is an altered metabolism and so the child suffers from various diseases both local and constitutional

Local disorders: A decrease or increase in the number of teeth, teeth of white or black colour with asymmetrical bases are considered to be inauspicious. The local disorders of teeth can be grouped as follows:-

a) Eruptive disorders: These include:

i) *Sadanta janma*:- To be born with teeth is unlucky as the child is considered *raakshasa* and such a child is

said to bring menace to the family. The mother is said to die in a short time.

- ii) *Poorvamuttara danta janma*: Initial eruption of teeth other than those in the front (*Raaja danta*) in an infant is considered unlucky. Eruption of the latter teeth at first before the front teeth could erupt is considered to be a misfortune.
- iii) *Viralala danta*: The teeth should normally be placed even and well intersected. Teeth situated far apart are an unfortunate condition.
- iv) *Heena danta*: The vitiated *vaayu* along with *pitta* when makes any of the dental crypts wither off, they fail to grow up in giving rise to the eruption of teeth and such person shall not get all the 32 teeth.
- v) *Adhika dantata(Vardhana)*: The *vaayu* that moves about along the jaw when divides any of the dental crypts such person shall get an extra teeth which when grows gives rise to terrible pain pressure due to inadequate space. The pain subsides when once the tooth cuts and had grown up.
- vi) *Akaala danta: Shaarangadhara* has simply mentioned *Akaala dantata* as one of the disease manifestation. The teeth may cut either too early or too late. The child who gets teeth during the first, second or third month is just like *yama* bringing death of his father. Too late eruption even till 14 months is considered lucky.

b) Structural Disorders: Atypical tooth should be well situated, fully grown, glossy and firm. Teeth having following structural defects indicate abnormal manifestations either of the genes or of the growth of the body. They are considered to be unfortunate for the child. These disorders include.

i) *Karaala danta*: Terrific, uneven, jogged and pointed teeth like that of goddess *kaali* are called *karaala danta*. This occurs probably from genetic

information and in few cases from habit formed thumb sucking.

- ii) *Vivarna danta*: It is a discoloured tooth. Any of the drugs like tetracycline when used in growing infant get deposited in the erupting teeth thus getting its colour altered. A completely dead tooth becomes black and is described as *shyaava danta*. This happens when the blood supply to it becomes cut off.
- iii) *Sphutita dantata* (Cracked tooth):- Vitiating *vaayu* during eruption probably brings out a crack in the tooth.
- c) **Functional Disorders:** These include:
- i) Dental itch (*Danta kandu*):- Deposition of *sleshma* for nourishing the dental crypts in the dental alveoli preparatory to eruption of teeth causes elevated margins giving rise to itching. They get rubbed while the child bites them to satisfy the itch thereby giving to a bristling sensation in the body.
- ii) Bruxism (*Danta sabda*): In a child who takes a non unctuous diet the vitiated *vayu* moves the *siraas* of the *hanu* or the mandible and so, that child bites the teeth during sleep and thus makes noise. Such condition is called bruxism. The other causes of bruxism include the minor psychic disturbances and *krimi roga*.
- d) **Constitutional Disorders:** During dentition the *vaayu* gets benumbed at the alveolar roots. It gets mixed up or pervaded by the *kapha* present in the bones and marrow and extending all throughout the body along with the *pitta* vitiate various tissues and their by products and give rise to various constitutional disorders.

Management of dentition disorders: In more severe type of disturbances, the following measures may be adopted along with other symptomatic treatment of the disease, *dosha* and *dushya*.

Single Drugs used in teeth disorders: In *Bhavaprakasha nighantu*, out of total 426 drugs, only 8 drugs are described for teeth disorders.

Sr. No.	Drug	Latin Name	Family	Guna	Rasa	Vipaka	Virya	Chemical Constituents
1.	<i>Bhringraja</i> ^[11]	<i>Eclipta alba</i> Hassk.	Asteraceae	<i>Ruksha, laghu, tikshana.</i>	<i>Katu, tikta.</i>	<i>Katu</i>	<i>Usna</i>	Ecliptine, Wedelolactone.
2.	<i>Jaati</i> ^[12]	<i>Jasminum grandiflorum</i> Linn.	Oleaceae	<i>Laghu, Snigdha</i>	<i>Tikta, kashaya.</i>	<i>Katu</i>	<i>Ushna</i>	Salicylic acid, Jasminine.
3.	<i>Yuthika</i> ^[13]	<i>Jasminum auriculatum</i> Vahl.	Oleaceae	<i>Laghu,</i>	<i>Tikta, Madhur, Kashaya</i>	<i>Katu</i>	<i>Shita</i>	Volatile oil
4.	<i>Bakula</i> ^[14]	<i>Mimusops elengi</i> Linn.	Sapotaceae	<i>Guru</i>	<i>Kashaya, katu.</i>	<i>Katu</i>	<i>Shita</i>	Saponins, Volatile oil
5.	<i>Tilaka</i> ^[15]	<i>Wendlandia exerta</i> DC.	Rubiaceae	<i>Guru dheer</i>	<i>Katu</i>	<i>Katu</i>	<i>Ushna</i>	-
6.	<i>Khadir</i> ^[16]	<i>Acacia catechu</i>	Fabaceae	<i>Laghu, Ruksha.</i>	<i>Tikta, kashaya.</i>	<i>Katu</i>	<i>Shita</i>	Catechin, Catechutannic

1. Local applications and amulets

- i) Gum margins: Application of the gum margins with honey mixed with powders of *pippali* or *pippali moola* and *dhaataki pushpa* or of *Amalaki* juice.
- ii) Palms and feet: Bruxism is said to be cured by application to the palms and feet of milk boiled with *karkata saaka*.
- iii) Amulets: Eastern roots of the white *sindhu vaara* hanged in the neck, or of the roots of the *shankpushpi*, *yavaasa* or *katphala* tied to the arms give relief to the child suffering from dentition disorder.

2. Internal medications

- i) *Avleha*: Prepared from the powders of dried meat of osprey, *chataka*, quail and of wild dog is said to bring the altered metabolism to normalcy in dentitional disturbances.
- ii) *Ghrutam*: Various *ghritas* are advocated for internal use as *lehana*. They include:
- a) *Vachadi ghrita* (*Ashtanga hridaya*)
- b) *Samangadi ghrita*
- c) *Kumara kalyana* (*Vangsen*) etc.
- iii) The diseases like *kaasa*, *jwara*, *atisaara* etc. Should be treated symptomatically.

3. Religious measures

In case when a child is born with teeth he is often given away to other persons of low community along with some money. Some peoples have the habit of repurchasing the child after having donated him to others. The demon *Naigmesha* is worshipped along with all the vedic practices including *yagna*, *japa*, *homa*, *bali*, *shanti* etc. The *sthaalipaaka to agnipurusha* is also advised to be done with *anaahitaagni*.

		Willd						acid.
7.	<i>Irimeda</i> ^[17]	<i>Acacia farnesiana</i> Willd.	Fabaceae	<i>Laghu, ruksha</i>	<i>kashaya</i>	<i>Katu</i>	<i>Ushna</i>	Tannin.
8.	<i>Tila</i> ^[18]	<i>Sesamum indicum</i> Linn.	Pedaliaceae	<i>Guru, Snigdha</i>	<i>Madhura</i>	<i>Madhura</i>	<i>Ushna</i>	Sesamin, sesamalin, carbohydrate, protein, calcium

CONCLUSION

From the critical review, it is concluded that *Kashyapa samhita* gives detail explanation on various aspects of dentition and tooth eruption. Its description is very closer to modern parallels. The elaborate description regarding the various dental, gums and other oral cavity disorders and their management are very helpful in present scenario. The single drug usage description is very useful in clinical practice.

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