

Overview of Dentition as per Kashyapa Samhita

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Abstract : Various Ayurvedic texts have referred teeth and process of dentition, however, Kashyapa Samhita envisages elaborated description of dentition which is evident from the fact that one special chapter Dantjanmika Adhyaya has been provided. An adult has total 32 teeth, out of these, eight are known as Sakritjata, also named Savarudha (permanent teeth). Rest twenty four teeth are known as Divija (secondary/deciduous teeth). Out of these, Rajdanta (Incisors) erupt first during infancy in upper jaw (middle of jaw), however, in some children may appear in lower jaw first, which has been considered as inauspicious by Kashyapa. Bast (lateral incisors) erupt just lateral to Rajdant (central incisors) which are also called lateral incisors. Danshtra (Canine) erupt lateral to Bast teeth, and are also know as cutting teeth. Rests of the teeth are called Hanvyva (Molars). Kashyapa Samhita has very scientific sequence of teeth eruption, which starts during intrauterine life with insemination of dental lamina, Nisheka (insemination) occurring during 4-6 months of intrauterine period. Similarly, Murti (structural changes), Udbhid (eruption of first teeth), Purvaroop (prodromal symptoms), Upadrava (complications) etc. have also been enumerated. The sequence of teeth eruption, decaying as well as re-eruption has been described very elaborately. Eruption (month) of deciduous teeth coincides with the month (age of child in months) with the month of insemination. The deciduous teeth start decaying (the month of eruption) and later permanent teeth (20) appear in corresponding year.

Index Terms: Sakritjata, Divija, Rajdanta, Bast, Danshtra, Hanvyva, , Kukunaka, Dant Shabada, Sdantjanma.

Introduction

Teeth are very essential structure in human body, as they play an important function in the process of digestion which initiates from oral cavity. Teeth cut macro food materials into microparticles, through the process of grinding and also mixing saliva (ptyline) with food. It helps in easy and early progression of food towards stomach. Although, ancient Ayurvedic texts have referred teeth as well as the process of dentition, however Kashyapa Samhita¹ envisages very elaborated description of dentition which is evident from the fact that one special chapter has been provided in the book, named as Dantjanmika Adhyaya (Ka. Sam. Sut. 20).

Teeth have special importance in correct pronunciation (Ka. Sam.20/4)¹ as falling of central incisors has been considered as inauspicious because such person has been barred to perform Shradha (ritual performed to pay homage to one's ancestors, especially to one's dead parents) as such person cannot recite hymns properly. As per Sushruta Samhita³ (Sharira 5), teeth help in dividing food into tiny particles. Teeth have been termed as Ruchika Asthi and enumerated under bones (Asthi Updhatu) however, Sharngdhara has considered teeth as a Mala of Asthi. Teeth are also considered to be derived from Pitrija-bhava (paternal inheritance).

Classification of Teeth¹ (Ka. Sam. Sut. 20/4)

An adult has total 32 teeth, out of these eight are known as Sakritjata, also called Savarudha (permanent teeth). Rest twenty four are designated as Divija (secondary/deciduous teeth) , as they appear twice in life time.

Nomenclature of Teeth¹ (Ka. Sam Sut. 20):

I.Rajdanta⁴ (Incisors): These erupt first of all during infancy and are present in upper jaw (middle of jaw). These teeth are considered as pious (holy) because if these fall due to any reasons, such individuals can't perform holy ceremonies like Shradha etc. as such individual is unable to recite Vedic hymns correctly. These teeth also provide beauty to the face because such person whenever smiles, empty space is exposed, which looks ugly. These teeth normally first appear in the upper jaw however, in some children, may appear in lower jaw first this condition has been considered as inauspicious by Acharya Kashyapa (Ka. Sam. Sut. 20/6).

II.Bast⁵ (lateral Incisors): These teeth erupt just lateral to Rajdant (central incisors) and are termed as Bast (lateral incisors).

III.Danshtra⁶ (Canine): These erupt lateral to Bast teeth also called cutting teeth.

IV. Hanvya⁶ (Molars): Rest of teeth are called Hanvya. The total count, as per above description, seems to be ten only. One jaw actually contains sixteen teeth, so count is not so, because the number mentioned above is of twenty Dwija teeth (deciduous/primary teeth). Modern dental knowledge provides Dental Formula, which is known as ICPM⁷.....

- I - Incisors (cutting)
- C - Canine (Holding)
- P - Premolar (Grinding)
- M - Molar (Grinding)

Adult=2 1 2 3

Child= 2 1 2 0

As per adult dental formula (ICPM = 2 1 2 3)

- Central Incisors = Rajdant
- Lateral Incisors = Basta
- Canine = Danshtra
- Premolar (1) = Hanvya (1)
- Premolar (2) = Hanvya (2)
- Molar (1) = Hanvya (3)
- Molar (2) = Hanvya (4)
- Molar (3) = Hanvya (5)

Hence, no variation exists between description of ancient Ayurvedic texts and modern dental texts.

SEQUENCE OF TEETH ERUPTION

Kashyapa Samhita¹ (Ka. Sam. Sut/20) has provided very scientific sequence of teeth eruption, which starts during intrauterine life i.e. starting with insemination of dental lamina.

I. Kashyapa Samhita¹ (Ka. Sam. Sut/20.7) has classified Nisheka (Insemination) occurs during 4-6 months of intrauterine period.

II. Murti (Structural changes): It includes calcification and mineralization of teeth during intrauterine period.

III. Udbhid (Eruption of teeth): The first tooth eruption after birth.

IV. Purvaroop (Preliminary indications): Various symptoms which appear before the eruption of teeth.

V. Upadrava (Complications): These are the abnormalities which usually occur at the time of teeth eruption, which are related to shape of teeth and various disorders occurring during teething.

VI. Prashasta (Proper) / Aprashasta (Improper) teething: These include various sign and symptoms indicating the future outcome of dentition.

VII. Upakrama of complications (Treatment procedure): It includes treatment of complications from which children suffer during dentition.

Teeth eruption of 4 types (both normal & abnormal) as elaborated under:

1. Samvrita: Such type of teeth is not appreciated as they exhibit ugly looks. These could be discolored due to non compliance of A.N.C. norms by pregnant lady. Use of tetracycline during pregnancy can be the one of causes of such types of teeth.
2. Samudga: Such teeth are less in number and have more tendency of early decaying. It may happen due to presence of various disorders in child like osteogenesis imperfecta, gingival disorders etc.
3. Vivrita: This condition presents excessive salivation. Child may not be able to close mouth properly. It happens due to teeth malfitting, mal-occlusion, deformity of mandible or facial bone, high arched palate, macro-dentities, congenital adrenal hyperplasia etc.
4. Danta Sampat: This type of eruption is considered to be normal i.e.
 - Count of teeth is full,
 - Normal sized,
 - Smooth and shining,
 - White in color,
 - Non sticky,
 - Very clean
 - Devoid of deposits of any kind,

- Non presence of any dental disorder,
- Mild elevation of upper jaw (forward protrusion).

These teeth are uniform and perfectly fitted in sockets and color of gums is red, smooth, naturally big and firm and also having firm roots. Briefly such teeth have all features of normal denture.

Abnormal teeth may be devoid of any above mentioned features, so are not appreciated. These teeth may be less in number, excess in number, mal-fitted or occluded, over white, black/dark colored, irregular placement or sockets are deformed⁸. Addition to above mentioned features, other types of abnormalities have been enumerated in Kashyapa Samhita¹ as under:

- Natal teeth⁸.
- Eruption of first incisors over the upper jaw.
- Abnormal gaps between teeth.
- Less in number.
- More in number.
- Look horrible due to mal-placement as well as non aligned.
- Discolored (pigmented) teeth.

Kashyapa Samhita¹ has described, sequence of teeth eruption, decaying as well as re-eruption, very scientifically (Ka. Sam. Sut. 20/1-6).

The time (month) of insemination of dental lamina as well as calcification and mineralization during intrauterine period. Eruption (month) of deciduous teeth coincides with the month of insemination (age of infant), the deciduous teeth start decaying (the month of first eruption corresponding with age) and later on permanent teeth (20) appear in the corresponding year.

Factors influencing dentition:

Kashyapa¹ has explained very elaborately the reasons why some children have variation in teeth eruption and experiencing allied defects. Most important factor is genetic (racial familial and hereditary), non observance of norms of ANC (consuming the contraindicated food and lifestyle by mother during pregnancy). Other factors include individual variations, systemic disorders and growth related factors in children.

These can be summarized as follow:

- Genetic factors.
- Hereditary factors.
- Negligence during ante natal period.
- Individual variations.
- Systemic disorders.

The description of Kashyapa Samhita¹ seems to be near perfect and scientific as almost all possible causes, which are known today, have been included in causation and variations of teeth eruption. Teeth are formed by Asthi and Mazza i.e. teeth being hard structure thus, have been termed as Asthi whereas pulp and pulp cavity, which contain nerves, lymph, arteries and odontoblast layer, may be considered as Mazza.

Variations in dental eruption as per sex have also been reported in Ayurvedic texts. Kashyapa Samhita¹ (Ka. Sam. Sut. /20) reports that eruption of teeth is usually eventless in female children in comparison to male children. The reason being, the female gums are hollow as well as soft, hence they experience lesser pain during teeth eruption. However, dentition it is quite painful and prolonged in male children, because their gums being more hard and tough.

Chronology of teeth eruption (dentition)

Both Kashyapa Samhita¹ (Ka. Sam. Sut.20) and Ashtanga Samgraha⁴ (Ash. Sm.3/2-24) have described it very elaborately. Insemination of tooth buds occurs during intra uterine period, usually during 6-8th month of pregnancy thus, teeth eruption occurs in 6-8 month of infancy. It is important observation reported by Ayurvedic scholars. Similarly the concept of insemination of teeth buds seems to be very unique because in spite of very limited sources available during ancient times, so close observation have been made. Similarly description of re-eruption of teeth corresponding with the month of first eruption of teeth during infancy.

Embryological aspects of dentition:

Kashyapa Samhita¹ (Ka. Sam. Sut. 20) has specifically mentioned embryological aspects of dentition, as elaborated above, seems to be very unique and scientific. Modern embryology⁸ has very elaborated description of process of formation of teeth it occurs in alveolar process of maxilla and mandible (upper and lower jaw). The epithelium covering the convex border of alveolar process is thickened and projects in to mesoderm, known as dental lamina. Later, different local thickenings in dental lamina are converted into milk teeth, known as enamel organs.

Total ten enamel organs are present (five on each side) and these grow in the shape of cups. These cups are covered by mass of mesenchyma known as dental papilla. Both enamel organ and dental papilla form the tooth gums. The cells of enamel organs, which lines the papilla, become columnar, are known as ameloblast and just near to them mesenchyma forms odontoblast layer. Both these are separated by basilar membrane.

The odontoblast lays down dentine enamel on its deeper surface. At the end of full formation of enamel, ameloblast layer disappears. As ossification progresses, the roots of teeth are covered by bone. Dental lamina produces series of buds which are present on medial side of each developing milk teeth. These buds form enamel organs just like milk teeth. These give rise to permanent teeth, at posterior side of milk teeth. After birth, germs of all temporary and permanent teeth are formed in a rudimentary form. In brief, status of entire dentition is decided in the fetus, only teeth appearance matters. The process of dentition described by Kashyapa Samhita seems to be near similar to modern dentition however, not so much elaborated.

Time of Dentition

Ashtanga Samgrah⁴ (Ash. Sm. Utt. / 2.14) reports that eruption of teeth starts from the age of 8th month onwards in healthy children, which is known as appropriate time of teething and such children have long life span. However, others having dentition from 4th months onward, possess low to medium life span comparatively. Very few newborns may have teeth present (natal teeth) at the time of birth.

Kashyapa Samhita¹ (Sut. 20) has mentioned the details of infants who have earlier (before eight months) dentition, which are being which has been summarized as follows:

- i. At birth (Natal teeth)
 - Congenital adrenal hyperplasia
 - Congenital syphilis
 - Osteogenesis imperfecta
- ii. 4th month
 - Weak and shaky teeth
 - Improper mineralization
 - Difficulty in feeding milk
 - Oral hygiene not proper
- iii. 5th month
 - Shaky - low mineralization
 - Over sensitive - Improper binding in sockets and gums
 - Prone to diseases - Incomplete nervation
- iv. 6th month
 - Irregular – Mal-occlusion
 - Deposition of dirt - Lead poisoning
 - Discolored - Fluorosis
 - Dental caries - Syphilis
- v. 7th month
 - Splitting - Calcium deficiency
 - Irregular lines - Iron deficiency
 - Dry - Mal-occlusion
 - Uneven - Mal-fitting
 - Broken
 - Irregular teeth
 - Occlusion of teeth
- vi. 8th month
 - Long life



- Ideal dentition

To sum up, Ayurvedic scholars have presented very keen observations regarding dentition. Earlier the dentition (before 8th month) severity of the chances of various dental disorders as well as occurrence of more pain during dentition period.

Although, few Ayurvedic texts have mentioned Annaprashan⁹ (weaning) at the age of 6th month but Kashyapa Samhita has advocated it at the age of 10th month, because at this age, teeth are comparatively more firm thus, infants can chew cereals properly. Time of Annaprashan, mentioned by Kashyapa Samhita seems to more logical and scientific.

Ayurvedic concepts of Dentition:

As per Ashtanga Samgrah⁴ (Ash. Sam. Utt. 2/17,23) when Asthi and Majja get mature with the passage of time, these enter Dantasya which can be considered as maturation of dental lamina. At this stage, a slight elevation happens in teeth sockets and gums of upper and lower jaw (mineralization) occurs which is followed by splitting of gum fibers which causes itching in gums with presence of mild pain. Kapha, situated in gums causes itching due to which biting of nipple during feeding can occur or else infant puts fingers or any hard substance in mouth to get relief from it. Vata, when vitiated, causes enlargement of gums however, when associated with Pitta, creates dryness, which destroys Dhatu beeja, which destroys the process of dentition resulting in cessation of dentition.

Ashtanga Samgrah⁴ (Ash. Sam. Utt. 2/16, 17, 23-24) has also put forth his view regarding failure of re-eruption of secondary teeth. In case teeth fall unnaturally i.e. due to trauma, injury to Dhatubeeja occurs the base (Adhishthan) of teeth. Due to injury, vascularity of Adhishthan (base) is disturbed which results in excessive bleeding, later, these get atrophied. Basically, due to injury of dental lamina, the teeth buds are destroyed hence, dentition cannot happen.

Ayurvedic texts have reported occurrence of pain during dentition (Ash.Sam. Utt. 2/25 and Ash. Hri. Utt 2/26-27). The intensity of pain during dentition has been compared with the pain that occurs in cats when due to injury of spinal cord or the pain experienced by peacock at the time of feathering. The similarity of pain in these animals may appear little vague as assessment pain seems to be difficult in animals. However, it might have been imagined by Acharyas by noticing change in their behavioral activity.

The victims of pain are usually those infants who have nutrition and immunity levels comparatively lower than the normal infants. Thus, majority of children may not experience dentition disorders or pain. The most possible reason of pain during dentition may be due to splitting of hard muscle fibers of gums by the pressure caused by hard teeth. Gums, during dentition, usually turn soft and fragile thus, prone to risk of infection. Due to discomfort of pain as well as excessive itching of gums, infants may put any hard object, fingers etc. inside mouth which enhances the probability of oral infection during dentition. Vangsen has also referred about risks during dentition on the basis of month (age of infant) however, it seems to be far-fetched.

Both Vagbhatas^{4,5} (Ash. Sam. Utt 2/13 and Ash. Hri. Utt. 2/26-27) have very specifically mentioned dentition as seat of many disorders and have provided list of various ailments. These can be summarized as follows:

Dentition disorders^{1,4,5}

These disorders usually disable the child especially with fever (mild/moderate) and forehead being mostly warm/hot. It is believed that when these symptoms are present in initial stages of teeth eruption, mother can guess the initiation of teeth eruption.

- General - Fever, pain
- G.I.T disorders – Diarrhea, vomiting, thirst.
- Eye disorders– Abhishyanda (conjunctivitis), Pothaki, Kukunaka (swelling of eyes)
- Skin disorders – Visarpa
- Respiratory disorders – Kasa (cough), Shawas (dyspnoia)
- Misc. Bhrama (delirium), headache

Overall view of various texts reveals that, earlier the dentition more are the chances of complications which could be due to compactness of gums and tooth buds. Weaning period of infant, which coincides with dentition, can also promote more chances of various disorders due to variation in feeding material and methods of feeding. Immunity levels during infancy are usually low, which makes them more vulnerable to various disorders. Upper respiratory infections are comparatively higher in infants thus, adds to agony of infants and making them more prone to various disorders.

Dental Hygiene in children:

Usually, little care is taken in children in relation to oral hygiene but many recipes have been recommended in various Ayurvedic texts, are useful for oral hygiene of children:

I.Dantshodhan Churna(Ash. Hr.Utt. 22/106)

II.Rajanyadi Churna (Ash. Sm. Utt. 2/54-55)

III.Vachadi Ghrita (Ash. Sm. Utt. 2/33)

IV.Samanjadi Ghrita(Ash. Sm. Utt. 2/59-60)

V.Brushing with dental brush need be avoided because it can cause injury to gums and teeth.

Treatment

Ashtang Hridya⁵ (Ash. Hri. Utt. 2/32) has warned that teething disorders need not to be over treated because dentition is a normal phenomenon (developmental milestone). These are self-limiting thus, all the symptoms subside with completion of dentition process . Hence, all these need only symptomatic or supportive measures.

Ashtang Samgrah (Ash. Sam.Utt.. 2/22) has advised Pratisarn (rubbing of gums) with powder of Pippli or powder of Dhataki flowers duly mixed with honey. Use of these helps in easy teeth eruption. Powder of Vacha, Brihati, Patha, Katuki, Ativisha, Pippali etc mixed with honey need to be applied over gums. Both Vagbhatas^{4,5} (Asht. Hri. 3/35-38; Asht. Sam. 3/31-44) have recommended Kashyapa Ghrita along with milk and Mastu. Tying of Katak or root of white Sinduwar can be tied to the neck. Bhaishjya Ratnawali has mentioned Dantodbhed Gantantaka Rasa. It needs to be rubbed over gums and teeth area.

Miscellaneous disorders of dentition

1. Dant Shabada (teeth grinding)

Parents usually observe it at night while child is sleeping. It may be mild or severe however, parents are usually concerned and ask for remedy. It may be present physiologically in growing babies, however may be the consequences of anger, insult or just temper tantrum. Teeth grinding may be caused due to psychiatric disturbance also. However, the condition may be noticed in following disorders:

- a) Worm infestation
- b) Calcium deficiency
- c) Dental malfitting
- d) Hydrocephalus
- e) Meningitis

Treatment differs as per the cause however, anthelmintic treatment is the first choice in case above mentioned pathological conditions have been excluded.

I.Usually Vatahar treatment relieves it.

II.Gandoosh with decoction of Till, Yashtimadhu and milk is beneficial .

III.Trivrita Vatahar decoction may be useful in form of Gandoosh and Kawal.

Chakardutt⁶ has advised Karkatshringi Ghrita / Lepa (Chakardutt Mukhroga). Vrindamadhva (Balroga section) has also recommended Kakatshringi oil treated with milk which is applied to over soles of child. However, etiopathogenesis needs to be kept in mind in Dant Shabda treatment.

2. Delayed eruption of Dwija:

Ashtanga Hridya⁵ (Ast.Hr.Utt.2/62) has elaborated the reason of delayed eruption of Dwija teeth. The basic reason being Vitiated Vayu which reaching in roots of teeth in jaw, it causes delay in eruption of these teeth. Although, no treatment has been mentioned in texts, but as a principal of treatment, drugs palliating Vayu, can be given in from of Kawal/ Gandoosh.

3. Sdantjanma^{1,5,6} (Natal teeth)

Ayurvedic texts (Kas. Sam. Sut.20/6, Ash. Sam. Utt.2/41 and Ash. Hri. Utt.2) have considered such condition as inauspicious. Even appearance of first tooth in upper jaw has been considered as bad omen. Certain religious rites have been recommended to ward off the ill effects of it.

Kashyap Sahmita¹ (Su.20) has advised Maruti Ishiti Yajna and Sthalipaak to alleviate its bad effects, mentioned in Prajapatya Vidhi. Traditionally, such children should be donated to some other community and then re-purchased. Teeth need to extracted because such teeth can cause difficulty in feeding the baby. Usually, these teeth are loose and shaky; hence chances of aspiration can happen. Natal teeth are usually present in lower jaw so increases chances of injury to breast of mother, so the better way is to remove them.

References

1. Tewari, P.V.(1996) “Kashyapa Samhita or Vriddhajivakiya Tantra”.1st Edition, publisher chaukambha Visvabharti, Gopal Mandir Lane, Varanasi-1(U.P.).
2. Prasad, R. C. (1995). Shraddha: The Hindu Book of the Dead. Motilal Banarsidass.
3. Gayadasacharya (1980). Nayachandrika Comm. of “Sushruta Samhita” with Nibandhasamgraha Comm. of Dalhanacharya. 4th edition Published by Chaukhambha Orientalia , Varanasi.
4. Vidyalankara, Atrideva (1963). “Ashtanga-Samgraha” (Part-2), Hindi Comm. 1st edition Krishandass Academy, Varanasi.
5. Gupta Atrideva (1962). “Ashtanga-Hridaya”: Hindi Comm. 3rd edition Chaukhambha Sanskrit Series Office,Varanasi.
6. Sastry, C.H.S. (2015). “Chavali’s Principles and Practice of Pediatrics In Ayurveda” 2nd revised edition, Published by Chaukhambha Vishwa Bharathi Varanasi, India,
7. “IAP Text book of medicine” (1972).1ST edition. Publishers Jaypee Brothers., Medical publisher’s private limited, New Delhi,
8. Arthur Nowak and Paul Casamassimo (2018). “Handbook of Pediatric Dentistry”. 5th Edition, American Academy of pediatric Dentistry.
9. Shashtri, Kashinath (1969). “Charaka Samhita” –Ayurvedadipika commentary of Chakrapanidatta, and Vidyotini Comm.1st edition. Published by Chaukahambha Sanskrita Sansthana, Varanasi.
10. Murthy Shrikantha K.R (2012). “Comm. of Asthanga Samgraha”, 2nd edition. Published by Chaukahambha Orientalia, Varanasi.

