

## Grow Up with a Healthy Smile: Insight of Pediatric Dentistry

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### Abstract

Throughout the journey from infancy to childhood and from childhood to adolescence, there is an important person who takes care of good oral hygiene, is a pediatric dentist. As an age-specific specialty, pediatric dentistry encompasses disciplines such as behavior guidance, care of the medically and developmentally compromised and differently abled patients. Proper supervision and observation of orofacial growth and development is also part of pediatric dentistry. In addition, caries prevention procedures, sedation, pharmacological management and hospital dentistry, as well as other traditional procedures are also part of pediatric dentistry. Good pediatric dental practice starts with proper brushing, patient education, diet counselling, motivation and by spreading positivity. In the beginning pediatric dentistry was mainly concerned with extraction and restorations of deciduous teeth. The trend changed from extraction to preservations. Presently the concept of pediatric dental practice is prevention and concentrating on minimal invasion. Any curative treatment provided should be minimally invasive, preferably nonsurgical and should conserve tooth structure as much as possible. In addition, an inadequate and unsatisfactory dental treatment during childhood can permanently damage the entire masticatory apparatus of the child leaving him with many dental problems commonly encountered in today's adult population. Long lasting beneficial effects also can result when the seeds for future dental health are planted early in life (i.e. childhood). Oral health needs of children have to be upraised..

**Keywords:** *Grow Up; Healthy Smile; Pediatric Dentistry; Oral Health*

### Introduction

Throughout the journey from infancy to childhood and from childhood to adolescence, there is an important person who takes care of good oral hygiene, is a pediatric dentist. As an age-specific specialty, pediatric dentistry encompasses disciplines such as behavior guidance, care of the medically and developmentally compromised and differently abled patients. Proper supervision and observation of orofacial growth and development is also part of pediatric dentistry. In addition, caries prevention procedures, sedation, pharmacological management and hospital dentistry, as well as other traditional procedures are also part of pediatric dentistry. Good pediatric dental practice starts with proper brushing, patient education, diet counselling, motivation and by spreading positivity. In the beginning pediatric dentistry was mainly concerned with extraction and restorations of deciduous teeth. The trend changed from extraction to preservations. Presently the concept of pediatric dental practice is prevention and concentrating on minimal invasion. Any curative treatment provided should be minimally invasive, preferably nonsurgical and should conserve tooth structure as much as possible. In addition, an inadequate and unsatisfactory dental treatment during childhood can permanently damage the entire masticatory apparatus of the child leaving him with many dental problems commonly encountered in today's adult population. Child's regular dental visit is very important to find out if the cleaning done by parents at home is working, dentist can find problems in early stage and fix them before they become more complex and child can learn that going to the dentist helps prevent problems [1-3].

Whereas adult patients are having one set of permanent teeth and its various problems, children are having two sets of teeth deciduous teeth and permanent teeth. During eruption and exfoliation of these teeth mainly four phases are seen in children. These phases are called:

- 1) **Predentate phase:** This phase represents the period when only gum-pads are present and it's before eruption of deciduous teeth.
- 2) **Deciduous dentition (teeth) phase:** In this phase all of the child's teeth are still baby or deciduous teeth. The child has not yet had any permanent teeth erupt.
- 3) **Mixed dentition phase:** This is where some of the child's permanent teeth have erupted and replaced some of the primary teeth. So, they have a mixture of primary and permanent teeth. This phase has also been coined the "ugly duckling phase".
- 4) **Permanent dentition phase:** This is when all the child's permanent teeth have erupted. This is the point where pediatric dentistry ends and adult dentistry begins.

Each and every stage of dentition demands tremendous oral hygiene care. Negligence in any of the stage may invite different dental problems [4].

### What common dental problems can happen from birth through adolescence period?

Good habit of maintaining proper oral hygiene from childhood can surely help in maintaining good oral hygiene in future too. Care of deciduous teeth starts from the very first day of eruption of first tooth in oral cavity. Malocclusion or abnormal alignment of the dentition is mainly seen due to premature exfoliation of deciduous teeth, disorders of tooth eruption and altered positioning of teeth which are common pediatric dental problems [5]. Delayed eruption of all teeth indicates overall developmental delay, hormonal abnormalities and nutritional or systemic disturbances (e.g. hypothyroidism, trisomy 21, rickets, type I osteogenesis imperfecta, cleidocranial dysostosis). Failure of eruption of single or small groups of teeth suggests local causes such as malpositioning of teeth, supernumerary (extra) teeth, retained primary teeth, or cysts. In contrast, premature eruption of all teeth is associated with precocious puberty or hyperthyroidism [6].

Natal and neonatal teeth are prematurely erupted teeth (at or within the first month of life) which are often rudimentary in form and appear as mere scales of enamel or shells of tooth crowns. Teeth present in newborns have been called natal teeth. Neonatal teeth are those arising within the first 30 days of life. They represent supernumerary teeth in approximately 15% of cases, and are frequently associated with other conditions (e.g. cleft palate, chondroectodermal dysplasia, pachyonychia congenita, Hallermann-Streif syndrome). Incidence of Natal or neonatal teeth is 1:1,000 to 1:30,000. 85% of natal or neonatal teeth are deciduous mandibular incisors, followed by 11% deciduous maxillary incisors and 4% deciduous molars [7].

Treatment of natal or neonatal teeth requires no hasty extraction since these might be deciduous teeth. If teeth are mobile, extraction is indicated to prevent aspiration.

Traumatic ulcerations of the adjacent soft tissue (Riga-Fede disease) may occur during breast-feeding but often can be resolved with appropriate measures [8].

Cleft lip and/or palate (CLCP) is a congenital defect that occurs early in pregnancy and is one of the most common birth defects. Approximately 1 in 700 newborns, are affected with CLCP that is either isolated or is part of a complex congenital syndrome 83% children with cleft palate could not survive till their first birthday due to associated congenital anomalies (61%) and infection (17%) pediatric dentistry plays a crucial role in creating the foundation of appropriate oral care and overall nutrition [9].

Feeding plate or obturator is an intra oral prosthetic device that fills the palatal cleft. Provides a false roofing against which child can suckle. Reduces feeding difficulties like insufficient sucking, excessive air intake, choking. Obturator provides maxillary cross arch stability preventing the arch from collapse [10].

Unilateral cleft lip and palate (UCLP) patients have an aesthetic and functional compromise of the middle third of the face primarily involving nasal structures. The nasal cartilages, columella, philtrum, and alveolar segments should be aligned and adequately reconfigured to facilitate surgical repair of the cleft area. presurgical nasoalveolar molding (PNAM), an orthopedic device that aligns alveolar ridges intraorally and improves malposition of nasal cartilages extraorally. Nasoalveolar moulding is more successful if started within 4 months after birth [11].

Dental decay (caries) is the most common chronic disease of childhood, particularly in children of low socioeconomic backgrounds, minority groups, and developing countries who have limited access to dental care. Dental caries is characterized by demineralization and breakdown of tooth organic matrix. The development of caries is a complex, multifactorial process dependent on the presence of dental plaque, specific acidogenic bacteria (Primarily *Streptococcus mutans*), fermentable carbohydrates, and a susceptible host. Host factors that increase the risk of caries include decreased salivary flow rate and pH.

Main etiological factor of dental decay is the frequency of carbohydrate consumption, and not necessarily the quantity consumed. In other words, retaining sweets orally for prolonged periods or drinking sweetened beverages constantly is more cariogenic than consuming the same amount of sugar in a single meal [3]. Hence, the terms baby bottle syndrome and nursing bottle caries have been used to describe the phenomenon of early childhood caries (ECC), which is rampant decay that arises from the poor habit of bed time bottle feeding in infants and toddlers (< age 3) combined with concurrent *S. mutans* infection [12].

ECC usually damages the upper primary teeth, due to the child's prolonged sucking on a bottle containing sweet juice or milk during sleep hours. Children with ECC are at increased risk for developing further caries with age.

Early identification, examination and treatment of the dental caries is the key. As soon as a cavity is identified, pediatric dentist can repair the tooth using tooth-colored fillings. If the cavity is too deep, an X-ray of tooth can be made and if the carious lesion is deep; pulp therapy followed by full coverage restoration or crown is indicated. In very severe conditions with poor prognosis extraction of the tooth may be needed. Effective brushing and flossing, the proper use of fluoride and a balanced diet can help minimize the amount of decay to help child. Furthermore, long standing untreated caries may lead to dental abscesses, resultant soft tissue swelling intraorally and/or facial swelling.

Therefore, early diagnosis and prevention can help eliminate significant dental complications in toddlers and reduce the risk of decay in later childhood. Bottle feeding should be discontinued at 12 months. A pediatrician who notices signs of baby bottle caries during a routine examination should refer the child to a dentist [13].

Regular checkups and good dental hygiene can help prevent the need for this kind of extensive dental work.

Dental emergencies are a common occurrence, with the majority of cases due to trauma or pain (e.g. from dental decay and infection). As many as 10% of children may suffer significant tooth trauma requiring emergency management. Dental trauma tends to occur in toddlers (ages 1 - 3) from falls or child abuse, in school-aged children (ages 7 - 10) from bicycle, scooter and playground accidents, and in adolescents (ages 16 - 18) from fights, athletic injuries, and vehicle accidents. Facial trauma may loosen, avulse, or fracture teeth. A frequently encountered dental emergency is complete displacement of tooth from its socket or it is also called as tooth avulsion. If the tooth is broken, fractured or completely displaced from oral cavity, carry the tooth in cold milk, distilled water, coconut water or ant sterile

container and contact a pediatric dentist immediately. Fast action can save the tooth, prevent infection and reduce the need for extensive dental treatment. Rinse the mouth with water and apply cold compresses to reduce swelling. If a parent can find the broken tooth fragment, it is important to take it to the dentist [14].

If it is a permanent tooth, it should be rinsed and immediately inserted back into the gum socket (unless the patient is too young to be cooperative); alternatively, it can also be stored in saliva, saline, or milk. The tooth should not be scrubbed [15].

Also, encourage kids to use a mouthguard during sports, which can prevent serious dental injuries.

Oral habits in children have concerned dentists for many years. Oral habits such as thumb sucking and tongue thrusting may cause marked damage to oro-facial structure and function. Thumb Sucking is normal and healthy for infants to suck their thumbs, fingers, pacifiers, or toys. Object sucking gives children a sense of emotional security and comfort. But if thumb sucking continues beyond the age of 5, when the permanent teeth begin to come in, dental problems can occur. Depending on the frequency, intensity, and duration of the sucking, the teeth can be pushed out of alignment, causing them to protrude and disturb oro-facial structures [16,17].

The child may also have difficulty with the correct pronunciation of words. In addition, the upper and lower jaws can become misaligned and the roof of the mouth might become malformed. Due to constant contact with lower incisor's edges on the mucosa of the thumb, callus formation can be seen on the thumb. Due to oral habits proclination of front teeth takes place, which leads to reduce confidence due to compromised aesthetic of the child. So, treatment of oral habits will help children gain confidence and self-esteem.

To terminate the practice of thumb sucking bitter chemicals like Quinine, Asafoetida, Pepper, Castor oil or some new anti-thumb sucking solutions like Femite, have been used over the thumb but with minimal success. Chemical therapy is indicated in age group under 6 years. Over 6 years of age can plan for mechano-therapy which includes reminder or punitive intraoral habit breaking appliances such as palatal crib [17].

When a child has a tongue thrust, the tongue moves forward in an exaggerated way during speech or swallowing. The tongue may also lie too far forward during rest. It may stick out more than usual between the upper and lower teeth when the child talks and swallows. Although a tongue thrust swallow is normal for a baby, it will usually decrease and go away as the child grows. If the child keeps having tongue thrust, he might not look, speak and swallow, similar to other children of the same age. Tongue thrusting can be managed by similar mechano-therapy used for thumb sucking habit. In addition, removable myofunctional appliances such as jaw trainers or oral screen can be advised [18].

Space management is very important when a primary tooth has been prematurely lost due to caries or due to other reasons. Space maintainers hold space for the permanent tooth. If space is not maintained, teeth on either side of the extraction site can drift into the space and prevent the permanent tooth from erupting [4]. If ignored or not considered on time; condition may worsen and in future complex orthodontic corrections must be needed.

### What types of treatments do pediatric dentists provide?

Pediatric dentists provide comprehensive oral health care that includes the following:

- Infant oral health exams, which include risk assessment for caries in mother and child.
- Preventive dental care including cleaning and fluoride treatments, as well as nutrition and diet recommendations.
- Habit counselling (for example, thumb sucking).

- Early assessment and treatment for straightening teeth and correcting an improper bite (orthodontics).
- Repair of tooth cavities or defects.
- Diagnosis of oral conditions associated with diseases such as diabetes, congenital heart defect, asthma, hay fever, and attention deficit/ hyperactivity disorder.
- Care for dental injuries (for example, fractured, displaced, or knocked-out teeth).

### Conclusion

Long lasting beneficial effects also can result when the seeds for future dental health are planted early in life. Oral health needs of children who are the bright future of our nation have to be upraised. Conditions, facilities, availability and opportunity may differ, but the motto "Grow up with a healthy smile" remains allover and forever.

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