

## Common Dental Problems among Children: A Review

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### **ABSTRACT**

Throughout the journey from infancy to childhood & from childhood to adolescence, there is an important person who takes care of good oral hygiene, is a pediatric dentist. Pediatric dentistry includes disciplines such as behavior guidance, care of the medically and developmentally compromised and differently able 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. Prevention and concentrating on minimal invasive procedures are the present concept of pediatric dental practice. 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**

Pediatric dentistry; Dental problems; Oral health; Tooth

### **INTRODUCTION**

Throughout the journey from infancy to childhood & 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 [1]. 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

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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 [2]. 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 [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. Any permanent teeth are not yet seen in this phase.
- 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?**

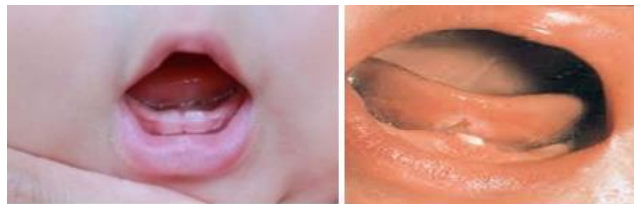
Good habit of maintaining proper oral hygiene from childhood can surely help in maintaining good oral hygiene in future too. Care of deciduous teeth starts from the very first day of eruption of first tooth in oral cavity. Malocclusion or abnormal alignment of the dentition is mainly seen due to premature 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). Ectopic eruption of single or multiple teeth may lead to malpositioning of teeth. Supernumerary (extra) teeth, retained primary teeth, or cysts are also seen in children. In contrast, premature eruption of all teeth is associated with precocious puberty or hyperthyroidism [6].

## **NATAL & NEONATAL TEETH**

Natal & 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-Streiff 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] (Figure 1 & Figure 2).

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].



**Figure 1:** (A): Natal teeth; (B): Ulcer on ventral surface of tongue due to constant irritation by natal teeth (Riga-fede disease).



**Figure 2:** (A): Oedema due to natal teeth; (B): X-ray shows natal teeth; (C): Local infiltration of lignocaine; (D): Surgical removal of natal teeth; (E): Shell type natal teeth.

### **CLEFT LIP AND/OR PALATE (CLCP)**

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] (Figure 3 & Figure 4).



**Figure 3:** (A): Cleft palate; (B): Feeding plate or obturator; (C): Intraoral placement of feeding plate.

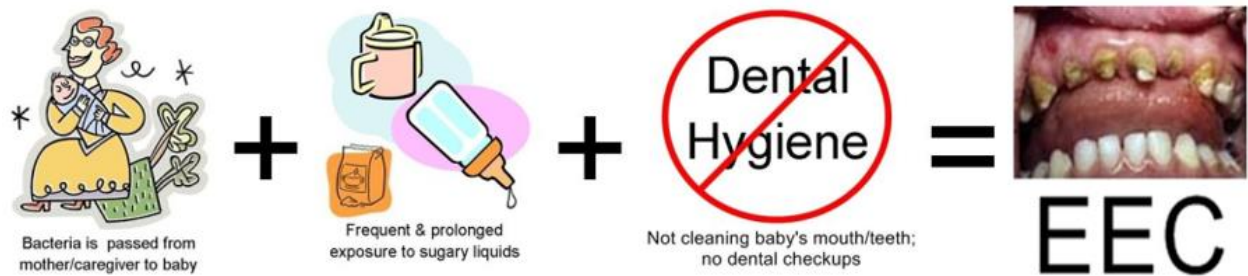


**Figure 4:** (A): Unilateral cleft lip & palate; (B): Naso alveolar moulting; (C): Re-shaping of nose with naso alveolar moulting; (D): Feeding plate with nasal stent.

## DENTAL CARIES

Dental caries is the most common chronic disease in children, mainly of low socioeconomic backgrounds, minority groups and developing countries who have limited facilities for dental care. Demineralization and breakdown of tooth organic matrix takes place in dental caries. The development of caries is a complex,

multifactorial process. Depending on the presence of dental plaque, specific acidogenic bacteria (primarily *Streptococcus mutans*), fermentable carbohydrates, and a susceptible host severity of dental caries is decided. Host factors like decreased salivary flow rate and pH may increase the risk of caries (Figure 5).



**Figure 5:** Mechanism of action, early childhood caries.

Main etiological factor of dental decay is the frequency of carbohydrate consumption, and not necessarily the quantity consumed. In other words, frequency plays very important role in development of dental caries. For example, sweets food and beverages containing more carbohydrates, consumed once in a day is less cariogenic in compare to sweet and beverages frequently taken but containing less carbohydrates [3]. The terms baby bottle syndrome and nursing bottle caries is used to describe the phenomenon of early childhood caries (ECC), which is rampant decay that causes from the poor habit of bed time bottle feeding in infants and toddlers (<age 3) in combination with *S. mutans* infection [12].

Upper primary teeth are usually damaged in early childhood caries, due to the child's overnight sucking on a bottle containing sweet milk or juice. Children with ECC are at increased risk for development of dental caries in upcoming years.

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, untreated chronic carious lesions may lead

to dental abscesses, which results in soft tissue intraoral and/or extra-oral swelling (Figure 6 & Figure 7).



**Figure 6:** (A): Severe damage of Maxillary incisors due to ECC; (B): Restoration of damaged teeth with pre-formed tooth colored Zirconia crowns; (C): X-ray before the treatment; (D): X-ray after the treatment.



**Figure 7:** (A): Damage of deciduous molars due to ECC; (B): Restoration of damaged teeth with pre-formed Stainless steel crowns; (C): X-ray after the root canal treatment (Pulpectomy) of deciduous molar.

So, early diagnosis and prevention can help in elimination of significant dental complications in pre-school kids and reduce the risk of decay in later childhood. Bottle feeding should be discontinued at 1 year of age. A pediatrician who notices signs of baby bottle caries during a routine examination should refer the child to a dentist [13].

Good dental hygiene maintenance and periodic dental visits can help prevent some dental problems and reduce the complexity of the dental treatment procedures.

### **DENTAL EMERGENCIES**

Dental emergencies are seen commonly in children mainly due to trauma or pain (e.g., from dental decay and infection). 10% of children may suffer significant tooth trauma requiring emergency management. Dental trauma

tends to occur in toddlers (age 1 - age 3) from falls or child abuse, in school-aged children (age 7 - age 10) from bicycle, scooter and playground accidents, and in adolescents (age 16 - age 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. Rapid action can save the tooth, prevent infection and reduce the need for extensive dental treatment. Mouth rinse and application of cold compresses on traumatized area leads to reduction in swelling. If a parent can find the broken tooth fragment, they should take it to the dentist [14] (Figure 8).



**Figure 8:** (A): Traumatic avulsion of permanent front teeth; (B) X-ray shows open sockets of teeth; (C) Avulsed teeth; (D): Replantation of avulsed teeth followed by splinting; (E): X-ray shows repositioned teeth in the socket.

In case of complete displacement or avulsion of permanent tooth, avulsed tooth should be rinsed and immediately inserted or replanted in the socket or until reported to the dentist, it can be stored in saliva, saline, or milk. The tooth should not be scrubbed [15].

Also, encourage kids to use a mouth guard during sports, which can prevent serious dental injuries (Figure 9).



**Figure 9:** Mouth guard.

### **ORAL HABITS**

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**

Thumb Sucking is normal and healthy for infants to suck their thumbs, fingers, pacifiers, or toys. Thumb, digit or an object sucking gives children a sense of emotional security and comfort. But if thumb sucking continues even after the age of 5-years, this habit may disturb the development of oro-facial structure and may increase problems in permanent dentition. 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 face difficulty in correct pronunciation of few words. 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 (Figure 10).



**Figure 10:** (A): Position of the thumb & damage to the oro-facial structure; (B) Open bite & proclined anterior teeth; (C): Callus formation on the thumb.

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] (Figure 11).



**Figure 11:** (A): Fixed Palatal crib appliance; (B): Blue-grass habit breaking appliance.

When tongue moves forward in an exaggerated way during speech or swallowing, the child develops tongue thrusting habit, in which tongue may 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] (Figure 12).



**Figure 12:** (A): Tongue thrusting habit causing anterior openbite & proclination of front teeth; (B): Myo-functional appliance to correct position of the tongue.

### **SPACE MANAGEMENT**

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 after premature extraction of primary teeth, the space remaining for the eruption of permanent tooth will be reduced due drifting of adjacent teeth 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 (Figure 13).



**Figure 13:** (A): Band & loop space maintainer for early loss of deciduous molars; (B): Groper's appliance to restore & maintain space for early loss of deciduous incisors.

### **WHAT TYPES OF TREATMENTS DO PEDIATRIC DENTISTS PROVIDE?**

Role of pediatric dentists is to 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**

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 conserve tooth structure as much as possible. For prevention of dental caries in children pit and fissure sealant, topical fluoride applications, diet counseling is important. As soon as tooth shows black dots or discolorations on the tooth surface, parents should consult a pediatric dentist, so that painful and complex of treatment can be avoided. If a dental disease is diagnosed in earlier stage; the dental procedures are painless and simple. If minor dental problems are ignored by the parents, children have to suffer for that, so parents should be aware of common dental problems at different age group of their young ones. In addition, 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. Oral health needs of children who are the bright future of our globe have to be upraised.

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